GIRT BY SEA: ANTIPODEAN LESSONS IN COASTAL ADAPTATION LAW

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I. INTRODUCTION

Australia is an island nation, 'girt by sea'.[2] The coast plays a fundamental role in Australia's national identity, economy, and cultural and social life,[3] as well as providing critical ecosystem goods and services.[4] Since European colonization, sections of Australia's eastern seaboard have undergone intensive development, from Melbourne in the south to Cairns, in Far North Queensland. Over 80% of Australia's population currently lives within fifty kilometers of the coast.[5] Coastal values are already at risk from a range of hazards,[6] but while Australia's coast experiences periodic damage from tropical cyclones, east-coast lows, or mid-latitude depressions,[7] it has yet to experience the large-scale erosion or inundation that has occurred in parts of Europe or the Atlantic and Gulf Coasts of the United States.[8]

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[2] PETER DODDS MCCORMICK, ADVANCE AUSTRALIA FAIR (1878), selected as Australia's national anthem in 1984.

[3] GRAEME F. CLARK & EMMA L. JOHNSTON, AUSTRL. GOV'T DEP'T OF THE ENV'T AND ENERGY, AUSTRALIA STATE OF THE ENVIRONMENT 2016: COASTS, INDEPENDENT REPORT TO THE AUSTRALIAN GOVERNMENT MINISTER FOR ENVIRONMENT AND ENERGY 2 (2017).

[4] *Id.*; VICTORIAN COASTAL COUNCIL, DEP'T OF ENV'T & PRIMARY INDUST., VICTORIAN COASTAL STRATEGY 2014 13–15, [hereinafter VICTORIAN COASTAL STRATEGY 2014], https://www.marineandcoasts.vic.gov.au/__data/assets/pdf_file/0025/405835/VCS_2014.pdf (last visited Mar. 10, 2020); Marcus Sheaves et al., *Principles for Operationalizing Climate Change Adaptation Strategies to Support the Resilience of Estuarine and Coastal Ecosystems: An Australian Perspective*, 68 MARINE POL'Y 229 (2016).

[5] Clark & Johnston, *supra* note 3, at 54–99. *See also*, AUSTL. DEP'T OF CLIMATE CHANGE, CLIMATE CHANGE RISKS TO AUSTRALIA'S COAST: A FIRST PASS NATIONAL ASSESSMENT (2009), http://www.climatechange.gov.au/sites/climatechange/files/documents/03_2013/cc-risks-full-report.pdf (last visited Mar. 10, 2020); AUSTL. DEP'T OF CLIMATE CHANGE, ENVIRONMENT AND ENERGY, CLIMATE CHANGE RISKS TO COASTAL BUILDINGS AND INFRASTRUCTURE: A SUPPLEMENT TO THE FIRST PASS NATIONAL ASSESSMENT (2011).

[6] Clark & Johnston, *supra* note 3, at 54–99.

[7] ANDREW D. SHORT & COLIN D. WOODROFFE, THE COAST OF AUSTRALIA (2009).

[8] Orrin H. Pilkey & Andrew G. Cooper, *Society and Sea Level Rise*, 303 SCIENCE 1781 (2004); U.S. CLIMATE CHANGE SCIENCE PROGRAM, COASTAL SENSITIVITY TO SEA-LEVEL RISE: A FOCUS ON THE MID-ATLANTIC REGION (2009).

Australia's existing coastal vulnerability will be exacerbated by climate change.[9] Slow-onset sea level rise, more severe storms, and the combination of these slow and extreme events, will accelerate coastal erosion and shoreline recession, and cause both gradual inundation and temporary flooding in Australia and worldwide.[10] Assessments of the likely impacts of climate change on Australia's coasts estimate that over US$200 billion in infrastructure is exposed to erosion or inundation, with associated implications for the provision of essential services, such as electricity, water, transport, and water management.[11] A third of the estimated 711,000 homes located in Australian coastal zones risk inundation with a 1.1 meter sea level rise (the revised projection for 2100). [12]

Any increase in coastal hazards will have significant economic, social, and of course, ecological impacts. The importance of Australia's coastal zone and its vulnerability to climate change impacts make climate change adaptation a high priority for coastal decision-makers across municipal and state-level urban and spatial planning, as well as natural resource and infrastructure agencies.[13] The impacts on local communities and property owners also means that coastal

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[9] *Summary for Policymakers, in*, CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY. PART A: GLOBAL AND SECTORAL ASPECTS. CONTRIBUTION OF WORKING GROUP II TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 1-32 (C.B., et al., eds., 2014) [hereinafter CLIMATE CHANGE 2014]; Stephane Hallegatte et al., *Future Flood Losses in Major Coastal Cities*, 3 NATURE CLIMATE CHANGE 802 (2013).

[10] The Intergovernmental Panel on Climate Change's Fifth Assessment Report (IPCC AR5) predicted future sea level rise of 0.26–0.98 m by 2100. CLIMATE CHANGE 2014, *supra* note 9, at 374; Kathleen McInnes et al., *Information for Australian Impact and Adaptation Planning in Response to Sea-level Rise*, 65 AUSTRALIAN METEOROLOGICAL & OCEANOGRAPHIC JOURNAL 127–149 (2015). In 2019, the IPCC increased the projected upper limit to 1.1m, to reflect observed acceleration of sea level. *Summary for Policymakers*, *in* IPCC SPECIAL REPORT ON THE OCEAN AND CRYOSPHERE IN A CHANGING CLIMATE (H.-O. Pörtner, et al., eds. 2019), *available at* https://report.ipcc.ch/srocc/pdf/SROCC_SPM_Approved.pdf (last visited Mar. 10, 2019).

[11] Michael Bradley, Ingrid van Putten & Marcus Sheaves, *The Pace and Progress of Adaptation: Marine Climate Change Preparedness in Australia's Coastal Communities*, 53 MARINE POL'Y 13 (2015); VICTORIAN COASTAL STRATEGY 2014, *supra* note 4, at 17–24.

[12] *See* AUSTL. GOV'T DEP'T OF CLIMATE CHANGE, CLIMATE CHANGE RISKS TO AUSTRALIA'S COAST (2009), *available at* https://www.environment.gov.au/system/files/resources/fa553e97-2ead-47bb-ac80-c12adffea944/files/cc-risks-full-report.pdf (last visited Mar. 10, 2020).

[13] HOUSE OF REPRESENTATIVES STANDING COMM. ON CLIMATE CHANGE, WATER, ENVIRONMENT AND THE ARTS, CANBERRA HOUSE OF REPRESENTATIVES, HOUSE OF REPRESENTATIVES COMMITTEE REPORT: MANAGING OUR COASTAL ZONE IN A CHANGING CLIMATE: THE TIME TO ACT IS NOW. CANBERRA: AUSTRALIAN GOVERNMENT (2009); Nicole Gurran et al., *Climate Change Adaptation in Coastal Australia: An Audit of Planning Practice*, 86 OCEAN & COASTAL MGMT. 100 (2013).

adaptation is a fraught legal and policy space.[14] Legacy development, competing public and private values, short- and long-term objectives, and uncertainty over the timing and magnitude of impacts give rise to conflicts in the design, implementation, and contestation of coastal adaptation planning laws and policies.[15]

This article examines the current state of coastal adaptation planning in Australia. It argues that there has been significant progress in precautionary planning and adaptive decision-making over the past decade. Although entrenched interests continue to favor coastal development and protection of vulnerable property, these special interests appear to be loosening their grip on coastal adaptation policy. Part II provides a brief overview of the emergence of coastal adaptation law in Australia, outlining the division of powers over coastal management across levels of government and the general features of current approaches. Part III then discusses the adaptation priorities reflected in current coastal management law and coastal planning policy, highlighting the emphasis on avoidance and retreat, and the strong policy preference against protection. Part IV reflects on barriers to future progress, noting the ongoing tensions between protecting public values and private property and the problems associated with devolving adaptation decision-making to local government. The Article concludes in Part V with consideration of the prospects for future development of coastal adaptation law in Australia.

[14] Mark T. Gibbs, *Consistency in Coastal Climate Adaption Planning in Australia and the Importance of Understanding Local Political Barriers to Implementation*, 173 OCEAN & COASTAL MGMT. 131, 131 (2019); Mark T. Gibbs, Olivier Thebaud, & Donna Lorenz, *A Risk Model to Describe the Behaviours of Actors in the Houses Falling into the Sea Problem*, 80 OCEAN COASTAL MGMT. 73 (2013); Anna Hurlimann et al., *Urban Planning and Sustainable Adaptation to Sea-Level Rise*, LANDSCAPE & URBAN PLAN. 126, 84 (2014).

[15] Miguel F. Frohlich et al., *Towards Adaptive Coastal Management: Lessons from a "Legal Storm" in Byron Shire, Australia*, 179 OCEAN & COASTAL MGMT. 5 (2019); Ashley Robb et al., *Our Home is Girt by Seawalls? Preserving the Public Interest in an Era of sea level rise*, Envtl. & Plan. L.J. 395–421 (2019); Justine Bell & Mark Baker-Jones, *Retreat from Retreat – The Backward Evolution of Sea-Level Rise Policy in Australia, and the Implications for Local Government*, 19 LOC. GOV'T L.J. 23 (2014).

II. THE EVOLUTION OF 'COASTAL ADAPTATION LAW' IN AUSTRALIA

Coastal adaptation law is complex, dispersed, and continually evolving.[16] Australia's coastal management framework consists of an overlapping and fragmented mix of national, state, and local government laws and policies, across intersecting policy domains. These include coastal management, land use planning, building standards, biodiversity conservation, fisheries, catchment management, and climate change.[17] The Commonwealth Constitution does not specifically grant the federal government law-making power over coasts, climate change, or the environment, although legislative authority could be derived from other Constitutional heads of power, particularly the external affairs power (giving effect to international environmental agreements), the trade and commerce, and corporations power.[18] Despite these sources of law-making power, and despite numerous national inquiries that have called for greater federal government involvement in coastal management, the federal government has limited its role to high-level policy coordination, some preliminary coastal hazard mapping, and funding.

Land use planning and coastal management are therefore state responsibilities.[19] Every state has its own planning regime, with overarching legislative objectives and processes and more detailed requirements specified in

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[16] Anita Foerster et al., *Transferable Lessons for Climate Change Adaptation Planning? Managing Bushfire and Coastal Climate Hazards in Australia,* 30 ENVTL. & PLAN. L.J. 469, 476 (2013) [hereinafter *Transferable Lessons for Climate Change Adaptation Planning*].

[17] *See generally* Barbara Norman & Nicole Gurran, *Adapting to Long Term Coastal Climate Risk Through Planning Approaches and Instruments*, *in* COASTADAPT INFORMATION MANUAL 5 (3d. ed. 2018); ANDREW MACINTOSH, ANITA FOERSTER & JAN MCDONALD, NAT'L CLIMATE CHANGE RESEARCH FACILITY, LIMP, LEAP OR LEARN? DEVELOPING LEGAL FRAMEWORKS FOR CLIMATE CHANGE ADAPTATION PLANNING IN AUSTRALIA 36–38 (2013), [hereinafter LIMP, LEAP OR LEARN]. For critiques of individual states, see Zada Lipman & Robert Stokes, *That Sinking Feeling: A Legal Assessment of the Coastal Planning System in New South Wales*, 28 ENVTL. & PLAN. L.J. 182 (2011); Robert Ghanem & Kirsty Ruddock, *Are New South Wales' Planning Laws Climate-Change Ready?*, 28 ENVTL. PLAN. & L.J. 17 (2011); Robert Ghanem, Kirsty Ruddock & Josie Walker, *Are Our Laws Responding to the Challenges Posed to our Coasts by Climate Change?*, 31 U.N.S.W.L.J. 895 (2008); Justine Bell, *Planning for Climate Change and Sea Level Rise – Queensland's New Coastal Plan*, 29 ENVTL. PLAN. & L.J. 61 (2012); Jonathan Verschuuren & Jan McDonald, *Towards a Legal Framework for Coastal Adaptation: Assessing the First Steps in Europe and Australia*, 1 TRANSNAT'L ENVTL. L. 355 (2012); John Watson, *Practical Precautions, Reasonable Responses: How South Australia's Planning Regime Adapts to the Coastal Impacts of Climate Change*, 32 ENVTL. PLAN. & L.J. 256 (2015); Elisa de Wit & Rachael Webb, *Planning for Coastal Climate Change in Victoria*, 27 ENVTL. PLAN. & L.J. 23 (2010).

[18] GERRY BATES, ENVIRONMENTAL LAW IN AUSTRALIA (10th ed. 2019).

[19] LIMP, LEAP OR LEARN, *supra* note 17; Norman & Gurran, *supra* note 17.

planning policies. Local or municipal governments—referred to as councils in Australia—are responsible for implementing state planning law and policy, through strategic planning documents and in the determination of development assessment decisions. [20] State governments across Australia have reformed coastal management and planning laws in a range of ways to respond to the prospect of heightened risks under climate change.[21] While there are no specific adaptation laws anywhere in the country,[22] the state of Victoria has adopted both general climate change legislation and specific coastal management reforms. The *Climate Change Act 2017* (Vic) requires the development of adaptation action plans relating to natural and social systems and the built environment.[23] The *Climate Change Act* also requires government decision-making across several other statutes, including in relation to coastal planning, to consider the impacts of climate change.[24] Generally, however, the principal mechanism for delivering climate change adaptation in Australia's coastal communities is through land use planning, in conjunction with either specific coastal management planning policies or coastal management legislation.

Planning laws generally require local authorities to consider the impacts of coastal hazards on development, and to protect beach amenity and habitat protection.[25] State policies provide guidance to local authorities on how to account for erosion, shoreline recession, inundation, and storm surge in strategic plans. Some set specific requirements such as planning benchmarks or setback requirements for sea level rise.[26] This framework influences the nature and location of new development and thereby reduces exposure to coastal hazards, but the application of these measures is typically left to local planning authorities.

Specific coastal management legislation complements these planning arrangements in some jurisdictions, providing the criteria by which site-specific development proposals are assessed in the coastal zone and, sometimes,

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[20] *Id.*
[21] *Id.*
[22] Jan McDonald, *A Short History of Climate Adaptation Law in Australia*, 4 CLIMATE L. 150, 151 (2014).
[23] *Climate Change Act 2017* (Vict.) ss 34–40 (Austl.).
[24] *See id.* s 17, sch 1.
[25] The most recent and progressive regimes are in New South Wales, Victoria, and Western Australia. *Coastal Management Act 2016* (N.S.W.)*; Marine and Coastal Act 2018* (Vict.); W. AUSTL. STATE PLANNING AUTH., W. AUSTL. STATE COASTAL PLANNING POLICY cl. 2.6. [hereinafter W. AUSTL. PLANNING POLICY].
[26] *Transferable Lessons for Climate Change Adaptation Planning*, *supra* note 16; Norman & Gurran, *supra* note 19.

establishing independent specialist assessment panels. These laws require preparation of statewide coastal strategies and local and/or regional coastal management plans that prescribe management and adaptation priorities for each part of the coast, including areas mapped as hazard prone.[27] The Western Australian *State Coastal Policy*, for example, requires coastal managers and developers to undertake coastal adaptation planning, where existing or proposed development is at risk from coastal hazards over the timeframe of 100 years.[28]

The state government of Australia's most populous state, New South Wales, does not specify the timeframes over which decisions must consider climate change impacts. Instead, this is done at the level of each local government area, resulting in inconsistent coastal planning requirements along the coast. For example, the *Interim Coastal Hazard Adaptation Code* for the Shire of Eurobodalla, south of Sydney, sets different planning periods for considering the building life of a development: a maximum of fifty years for residential and commercial development (though commercial development may be assessed over a longer timeframe depending on its characteristics), and 80–100 years for major new infrastructure and land releases.[29] Using this approach, the Shire council may require larger setbacks, design modifications, or financial assurances for longer-life development.

With ultimate responsibility for coastal adaptation falling to local governments, most coastal local authorities in Australia have now considered and developed plans for coastal climate impacts in some form.[30] In some jurisdictions, plans have responded to current risks and dynamics. For most coastal councils, however, there is a genuine concern for both future-ready planning approaches and a desire to manage potential exposure to legal liability for approving new development in inappropriate locations. The sophistication of this local coastal adaptation planning has depended in large part on the size and resources of the

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[27] *Id.*; Philipa England, *Climate Change and Coastal Settlements: the Story so Far,* AUSTL. ENV'T R. 343 (Oct. 2012); Philippa England, *Too Much Too Soon? On the Rise and Fall of Australia's Coastal Climate Change Law*, 30 ENVTL. & PLAN. L.J. 390 (2013) [hereinafter *Too Much Too Soon*].

[28] W. AUSTL. PLANNING POLICY, *supra* note 25, at cl. 5.5.

[29] EUROBODALLA SHIRE COUNCIL, INTERIM COASTAL HAZARD ADAPTATION CODE (2015), https://www.esc.nsw.gov.au/development-and-planning/tools/development-control-plans/Interim-Coastal-Hazard-Adaptation-Code_Amended-post-WRL-hazard-study.pdf (last visited Mar. 10, 2020).

[30] Gurran et al., *supra* note 13; Michael Bradley et al.., *The Pace and Progress of Adaptation: Marine Climate Change Preparedness in Australia's Coastal Communities*, 53 MARINE POL'Y 13 (2015).

local authority, and the level of political commitment to the problem. Further, strong adaptation plans are assisted by the clear articulation of adaptation priorities.

III. ADAPTATION PRIORITIES IN COASTAL PLANNING

Coastal adaptation choices are shaped by physical climatic differences and a complex mix of political, cultural, social, and legal factors.[31] A range of adaptation options is recognized in both the academic and policy literature, typically, grouped based on their overall objective of avoidance, retreat, accommodation, or protection.[32] Until recently, the dominant approach along the developed parts of Australia's coastline has been to construct or install seawalls, groynes, or artificial reefs, alone or in conjunction with beach nourishment and restoration to protect infrastructure. This coastal armoring has exacerbated the impacts of development on coastal habitats.[33] Where protective structures are not accompanied by sand nourishment, they have also had significant adverse impacts on the beach and adjacent properties that do not have protection.[34]

The most recent wave of coastal management laws in Australia has done a far better job of requiring long-term adaptation planning for coastal climate hazards.[35] For example, the Western Australian *State Coastal Planning Policy* (SPP2.6) governs all future land use decisions affecting the coastal zone.[36] The objectives of the Policy include to:

- "ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical criteria;…
- "provide for public coastal foreshore reserves;" and

[31] Xiangbai He, *Legal and Policy Pathways of Climate Change Adaptation: Comparative Analysis of the Adaptation Practices in the United States, Australia and China*, 7 TRANSNAT'L ENVTL. L. 347 (2018).
[32] Kelly L. Leo et al., *Coastal Habitat Squeeze: A Review of Adaptation Solutions for Saltmarsh, Mangrove and Beach Habitats*, 175 OCEAN & COASTAL MGMT. 180, 181–83 (2019).
[33] *Id.* at 181.
[34] Bruce Thom, *Geography, Planning and the Law: a Coastal Perspective*, 35 AUSTRALIAN GEOGRAPHER 3, 8 (2004).
[35] Jan McDonald, *Ebb and Flow of Coastal Adaptation in Australia, in* CLIMATE CHANGE IMPACTS ON OCEAN AND COASTAL LAW: U.S. AND INTERNATIONAL PERSPECTIVES 627 (Randall S. Abate ed., 2015).
[36] W. AUSTL. PLANNING POLICY, *supra* note 25, at cl. 2.3, 5.5.

- "protect, conserve and enhance coastal values."[37]

The *Coastal Policy* requires unacceptable levels of risk to be reduced to acceptable levels, based on an adaptation planning hierarchy that prioritizes avoiding the presence of new development in vulnerable areas and retreating from, or relocating assets in, areas subject to an intolerable risk of damage. Accommodation—through design or management strategies—is a third-best option where there is sufficient justification for not avoiding development and protection is considered a last resort, as well as where there is a need to preserve the foreshore reserve, public access, and public safety.[38] Local authorities are required to prepare Coastal Hazard Risk Management and Adaptation Plans (CHRMAP) using guidelines prepared by the Western Australian Planning Commission, then amend their planning schemes in line with those CHRMAPs.[39] For example, the Shire of Dandaragan recently included a special control area in its planning scheme that contemplates the need for future retreat. It provides that all proposed development within the control area requires approval, and that approval will only be issued on a temporary or time-limited basis.[40]

The new coastal management framework in New South Wales clarifies that coastal environmental values should be prioritised above other values. The 2018 New South Wales *Coastal Management State Environmental Planning Policy* provides that the development controls of the four coastal management areas prevail in the following order:

1) the coastal wetlands and littoral rainforests area;
2) the coastal vulnerability area;
3) the coastal environment area; and
4) the coastal use area.[41]

[37] *Id.* at cl 4.
[38] W. AUSTL. PLANNING POLICY, *supra* note 25, at cl. 5.5(iii).
[39] W. AUSTL. PLANNING COMM'N, COASTAL HAZARD RISK MANAGEMENT AND ADAPTATION PLANNING GUIDELINES (2019) [hereinafter WAPC, CHRMAP Guidelines], https://www.dplh.wa.gov.au/getmedia/76fb800f-07ad-479a-8efc-50dc2d812448/GD_CST_coastal_hazard_risk_management (last visited Mar. 10, 2019).
[40] Personal Communication with Ashley Robb on October 21, 2019.
[41] N.S.W. COASTAL MANAGEMENT STATE ENVIRONMENTAL PLANNING POLICY cl. 18 (2018) [hereinafter N.S.W. PLANNING POLICY].

The *Policy* is still too new to know how it will be implemented. If the hierarchy is applied in the manner specified, it suggests a clearer prioritization of public values in future coastal management planning than has historically occurred.[42]

Victoria's coastal adaptation priorities must be gleaned from a range of statutes and policy documents. The 2018 Victorian *Marine and Coastal Act* sets out key objectives for the planning and management of the marine and coastal environment in that state, but the clear priority is for adaptation to coastal climate hazards that protects beach amenity. The first three statutory objectives, in order, are:

1) protection and enhancement of the coastal and marine environment;
2) promoting resilience to climate change; and
3) respecting natural processes in planning for and managing current and future risks from coastal hazards and climate change.[43]

In comparison, the highest priority of the 2014 *Victorian Coastal Strategy* is to ensure the protection of significant environmental and cultural coastal values.[44] It then emphasizes the need for integrated planning for future management, and the importance of public benefit in the use of scarce public coastal resources.[45] Finally, the State's *Climate Change Adaptation Plan* for 2017–2020 identifies principles to guide the government's approach to adaptation. These include:

- the importance of flexible and iterative approaches and the need to preserve future options;
- consideration of long-term costs and externalities of climate impacts;
- the need for inter- and intra-generational fairness, recognition of inevitable trade-offs and limits to adaptation; and
- the allocation of responsibility for risks on those best-placed to manage them.[46]

[42] Frohlich et al., *supra* note 15.
[43] *Marine and Coastal Act 2018* (Vict.) s 7 (Austl.).
[44] VICTORIAN COASTAL STRATEGY 2014, *supra* note 4, at 29.
[45] *Id.*
[46] STATE OF VICTORIA DEP'T OF ENV'T, LAND, WATER AND PLANNING, VICTORIA'S CLIMATE CHANGE ADAPTATION PLAN 2017–2020 17 (2016),

A. Implementation of Adaptation Priorities in Local Plans

Implementation of over-arching adaptation priorities has so far occurred primarily through state planning policies or local adaptation plans. The coastal adaptation plans and strategies developed to date have followed a broadly similar process that is underpinned by a risk management framework. First, a coastal hazard (inundation or erosion) risk assessment is conducted to identify risks and understand the impacts of coastal hazards using downscaled climate modelling, and mapping of heights using LIDAR or other technology and shoreline composition (sandy beach, rocky cliffs, estuary, etc.). In Queensland and Victoria, the state governments have undertaken this mapping. The results of this vulnerability assessment form the basis for a voluntary and generally self-selecting community consultation process in which hazards and potential adaptation options to avoid or manage risks are identified and discussed.[47] The costs and benefits of each strategy are then evaluated before developing a final plan.[48] This body of adaptation planning, strategizing, and research in both academic and grey literature has produced a wealth of knowledge and insights about models of collaborative governance for coastal adaptation, and lessons for the future. But despite a broadly consistent method being adopted, these coastal adaptation plans and strategies have resulted in very different recommendations. Some plans recommend retreat, others accommodation, others still various forms of protection or defense.[49] To date, the most consistent feature across the country has been the preference for protective works in areas of intensive (high-value) urban development and infrastructure, highlighting the limits of avoidance as an adaptation strategy.[50]

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https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0024/60729/Victorias-Climate-Change-Adaptation-Plan-2017-2020.pdf (last visited Mar. 10, 2020).

[47] Gibbs, *supra* note 14, at 132; WAPC, CHRMAP Guidelines, *supra* note 39, at 9. *See also*, AUSTRALIAN STANDARD RISK MANAGEMENT - GUIDELINES (2018), AUSTRALIAN STANDARD CLIMATE CHANGE ADAPTATION FOR SETTLEMENT AND INFRASTRUCTURE - A RISK BASED APPROACH (2013), CLIMATE CHANGE IMPACTS AND RISK MANAGEMENT: A GUIDE FOR BUSINESS AND GOVERNMENT (2007), AUSTRALIAN STANDARD ENVIRONMENTAL RISK MANAGEMENT - PRINCIPLES AND PROCESSES (2006), AND CLIMATE CHANGE RISK AND VULNERABILITY: PROMOTING AN EFFICIENT ADAPTATION RESPONSE IN AUSTRALIA, REPORT TO THE AUSTRALIAN GREENHOUSE OFFICE (2005).

[48] WAPC, CHRMAP Guidelines, *supra* note 39, at 9.

[49] Gibbs, *supra* note 14, at 133.

[50] *Id.*

B. The Limits of Avoidance as a Coastal Adaptation Priority

In many places, the opportunity to avoid exposure to coastal climate hazards altogether is well and truly passed with the granting of freehold title over foreshore land and extensive coastal development.[51] In highly-developed parts of coastal Australia, however, there is an expectation that local planning authorities should at least avoid *new or intensified* development in areas exposed to climate risks.[52] The expectation to minimize further exposure by avoiding new development applies at both the strategic and project approval levels. The typical approach to strategic land use requires development approval for new development within mapped areas, including intensification of existing land use. Development approval depends upon the consistency of the proposal with hazard projections over the planning timeframe for particular development times (large infrastructure having the longest planning timeframe). The Western Australian *State Coastal Polic*y, for example, requires coastal managers and developers to impose restrictions where existing or proposed development is at risk over the timeframe of 100 years.[53] Specifically, development must be set back from the coastal foreshore if it will be vulnerable to coastal processes over the next 100 years, *or* to maintain conservation of the values, functions, and uses of the current reserve. These kinds of setback requirements are set out in Victorian, South Australian and Queensland state planning policies, and the coastal adaptation plans for some, but not all, local government areas in New South Wales.[54]

Several planning cases have applied the precautionary principle to avoid further exposure by restricting new development, focusing on how new development may expose future communities financially and legally or deprive those future communities of access to the coastal foreshore. For example, in a case involving coastal land in the Gippsland Lakes region of Victoria's southern coastline, the Victorian Civil and Administrative Tribunal drew on the precautionary principle and intergenerational equity to refuse new development, saying:

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[51] In many places where the property boundaries are fixed by survey, known as a 'right line' boundary, public foreshore reserves have been eroded and the fixed boundary of private land is now on the beach or even in the water. Thom, *supra* note 34, at 10. Thom notes that approximately 50,000 N.S.W. properties are bounded by the mean high water mark, but because title was registered in periods of beach accretion, foreshore landowners have defended boundaries with walls.

[52] In N.S.W., no development may be approved for the coastal zone if it might increase coastal hazards. *See* N.S.W. PLANNING POLICY, *supra* note 41, at cl. 15.

[53] W. AUSTL. PLANNING POLICY, *supra* note 25, at cl. 5.5.

[54] Norman & Gurran, *supra* note 19; LIMP, LEAP OR LEARN, *supra* note 17.

> . . . It is no longer sufficient to rely only on what has gone before, to assess what may happen again . . . rising sea levels are to be expected. The range of impacts may well be beyond the predictive capability of current assessment techniques. In the face of such evidence, a course of action is warranted to prevent irreversible or severe harm . . . There is a longer-term risk of intergenerational liability that should be avoided.[55]

A recent decision in Western Australia shows that this trend is occurring more widely but is especially apparent where the policy framework is clear about how climate risks are to be considered. In the first test of Western Australia's new *State Coastal Policy*, discussed above, the Western Australian State Administrative Tribunal (WASAT) (which determines merits appeals from municipal planning decisions and the state planning commission, the WAPC) rejected a proposal for new development on the basis that it did not meet the setback requirements stipulated in the state's coastal planning framework. The WAPC rejected a localized strategic plan, known as a local structure plan, for a coastal area north of Perth, which would have guided a new subdivision of land along a 2.6 kilometer stretch of coastline.[56] A coastal foreshore reserve had already been ceded to the Crown as a condition of an earlier subdivision approval in 1997, but expert evidence pointed to the prospect of shoreline recession of 145–171 meters over the 100-year period. This meant that the entire current coastal foreshore reserve would be lost to recession, and that a much larger portion of the land was therefore required to be protected against further development.

The WASAT held that the developer was required to cede land to the State to maintain the foreshore, without payment of compensation, even though it acknowledged this would have a significant economic impact. It held that preserving this future foreshore reserve would benefit incoming residents and ecological values alike.[57] According to the WASAT:

> Even though the initial incoming population on the land, and the population over the next half-century or longer, will have access to all or at least some of the currently existing coastal foreshore

[55] *Gippsland Coastal Board v South Gippsland Shire Council (Vic)* (Austl.).
[56] *Two Rocks Investments Pty Ltd and Western Australian Planning Commission (WA)* [2019] WASAT 59 (Austl.).
[57] *Id.* at 6.

> reserve, ultimately the community on the land, which is facilitated by the granting of subdivision or development approval now, will require the coastal foreshore reserve, which is not vulnerable to coastal processes at the end of the 100-year planning timeframe in the year 2120, for its use and enjoyment as the coastal foreshore.[58]

The WASAT did not refuse development of the entire region, however. Consistent with a policy purpose of "encourag[ing] innovative approaches to management coastal hazard risk,"[59] the WASAT did approve interim retention and development of two areas in the short term, as "coastal nodes." While it could be developed in the short-to-medium term, this land was required to be vested to the Crown when it became vulnerable, which the SAT determined to be when the 'horizontal shoreline datum' reached forty meters from the land.

As these cases show, an avoidance strategy has been easier to achieve in planning cases involving 'greenfields' sites, where there is not yet any investment in infrastructure. In these locations, avoiding exposure by simply refusing building in such areas is still an economically feasible (and politically acceptable) option. Where development authorities must consider applications to protect, develop, or redevelop land in already built-up areas, however, the case for avoidance is weaker and far more politically fraught.

In *Newton v. Great Lakes Council,* for example, the New South Wales Land and Environment Court upheld an appeal challenging the decision of Great Lakes Council to impose a twenty-year time restriction on a development approval for a house in one of the state's top coastal erosion hotspots.[60] The Great Lakes Council had modelled the erosion line over various timeframes, and the 2033 erosion line cut across the site. Accordingly, it granted approval for only twenty years—a time in the future when these effects may be expected to have materialized. The court considered it unreasonable to impose a time limit on this development, when no other property was subject to the same provision, especially given that the purchasers of the land had been given no forewarning of this type of control in the pre-purchase planning certificate issued by council, and because the council had also required construction standards aimed at ensuring the building's integrity in light of the erosion threat. Perhaps unsurprisingly, since the time of this decision, at least two severe storms have caused extreme erosion

[58] *Id.* at 7.
[59] W. AUSTL. PLANNING POLICY, *supra* note 25, at cl. 2.4-2.6.
[60] *Newton and Another v Great Lakes Shire Council (NSW)* [2013] NSWLEC 1248 (Austl.).

along the beach in the area, including partial loss of the main access road. The State and local governments have been required to fund the installation of an AU$3.7million sand pumping facility, in order to sustain sand nourishment over periods of intense erosion.[61]

C. Limiting Coastal Protection

In addition to soft protection works such as sand nourishment, Australia has a long history of using coastal protection structures like seawalls and rock groynes.[62] While such structures have enabled coastal development to proceed and enabled governments to avoid difficult decisions about retreat and relocation, these hard structures have significant and well-documented drawbacks. In particular, seawalls have adverse impacts on the beach and on neighboring properties.[63] Their effectiveness will also reduce in the future, as sea levels exceed design levels, thus exposing the managers of such structures to upgrade, repair, or compensate landowners for the impacts of failure.[64] Restricting and, potentially, removing such coastal defenses may therefore be necessary to protect beach amenity and coastal environmental values and, in some cases, private property.

As discussed in Part II:A above, coastal protection is ranked lowest in the hierarchy of preferred strategies in most Australian states.[65] State governments and local councils in Australia have adopted several strategies aimed at limiting further shoreline protection. These include removing or declining to maintain structures on public land and prohibiting or restricting the construction of coastal protection works on private land.[66]

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[61] *Sand Will be Transferred from Winda Woppa to Jimmys Beach*, MANNING TIMES, Mar. 16, 2019, https://www.manningrivertimes.com.au/story/5950260/jimmys-beach-sand-transfer-system-is-on-schedule/ (last visited Mar. 10, 2020).
[62] Ben Harman et al., *Global lessons for Adapting Coastal Communities to Protect Against Storm Surge Inundation*, 31 J. OF COASTAL RES. 790, 798 (2015); Robb et al., *supra* note 15.
[63] Karl F. Nordstrom, *Living with Shore Protection Structures: A Review*, 150 ESTUARINE, COASTAL & SHELF SCIENCE 11 (2014); John N. Kittinger & Adam L. Ayers, *Shoreline Armoring, Risk Management and Coastal Resilience Under Rising Seas,* 38 COASTAL MGMT. 634 (2010); ORRIN PILKEY & JAG COOPER, THE LAST BEACH (Duke University Press, 2014).
[64] K. Coleman, *Coastal Protection and Climate Change*, 84 AUSTRALIAN L.J. 421 (2010). *But see* John Corkill, *Claimed Property Right Does Not Hold Water*, 87 AUSTRALIAN L.J. 49–58 (2013).
[65] *E.g.*, *Coastal Planning Policy* (W. Austl.) cl. 2.6 (Austl.) (2013); GOV'T OF WESTERN AUSTL., WA COASTAL ZONE STRATEGY (2017); Robb et al., *supra* note 15, at 398.
[66] Ashley Robb et al., *Development Control and Vulnerable Coastal Lands: Examples of Australian Practice*, URB. POL'Y & RES. (2018); Robb et al., *supra* note 15, at 398.

Before examining the effectiveness of such restrictions, it should first be noted that there has been debate in Australia over whether property owners have a common law right to protect their properties from the action of the sea, and whether coastal managers are under a common law legal duty to protect coastal land from actions of the sea.[67] Whether landowners have the right to protect property has not been judicially considered, but there is at least some support for recognition of a common law right to protect private property from actions of the sea in certain circumstances.[68]

Whether there is any corresponding public duty to protect private property is another matter. Writing in the *Australian Law Journal*, the lawyer representing the group of wealthy coastal landowners at Belongil Beach on the New South Wales north-coast (Australia's most litigated, high-value erosion hotspot[69]) argued that coastal managers should have such a duty. She claimed it was part of the British common law which Australia inherited, aligns with the public interest, and has not been abrogated by statute.[70]

The case for a duty to protect coastal foreshore is stronger where coastal managers have taken actions that exacerbate the actions of the sea. For example, the litigants in the Belongil litigation have consistently argued that construction of a sea wall to protect the business center up-drift of their properties worsened erosion because it starved the beach of sand.[71] These questions still await judicial determination in Australia because the Byron Shire Council reached an out of court settlement with all litigants to the Belongil dispute while it was still before the New South Wales Supreme Court, at the urging of their insurers.[72]

Whether or not such right to protect land ever existed, they are modified by statutory restrictions in many Australian coastal jurisdictions. In Western Australia, new coastal protection projects are only permitted:

- after all other options for avoiding and adapting to coastal hazards have been fully explored;
- where they are primarily proposed in the public interest;
- where there will be no off-site impacts; and

[67] John Corkill, *Principles and Problems of Shoreline law*, NOG, NCCARF (2012).
[68] Coleman, *supra* note 62. *But see* Corkill, *supra* note 62, at 49–58.
[69] Frohlich et al., *supra* note 15, at 5–6.
[70] Coleman, *supra* note 62.
[71] Robb et al., *supra* note 15, at 400.
[72] *Id.*

- where funding for construction and maintenance is provided from the outset.[73]

This principle also applies to the repair and upgrade of existing projects.[74] The position is similar, but slightly weaker, elsewhere. In Queensland, a new coastal protection project must be a last resort when:

- erosion poses an imminent threat to public safety or existing structures;
- the property cannot reasonably be relocated or abandoned;
- the proposed project ensures that private property is located as far landwards as practicable; and
- any increase in risks for adjacent areas is mitigated.[75]

Restrictions on coastal protection in the 2016 New South Wales *Coastal Management Act* have limited the options available to coastal managers in the Belongil Beach erosion hotspot. The Act prohibits the approval of coastal protection works unless the proponents can show that they will not unreasonably limit public access to, or use of, a beach or headland, or pose a threat to public safety.[76] Property owners are also required to bear the costs of maintenance or land restoration works that might be required, with the funding of such works either through financial assurance or bond, or by payment of an annual charge for coastal protection services.[77]

These requirements have been hard to satisfy—politically if not legally. In 2016, the Byron Shire Council prepared a draft Coastal Zone Management Plan (CZMP) that proposed construction of an "adaptive 'seawall with walkway'" to

[73] W. AUSTL. PLANNING POLICY, *supra* note 25, at s 5.7(i); GOV'T OF WESTERN AUSTRL., COASTAL ZONE STRATEGY 7 (2017).
[74] W. AUSTL. PLANNING POLICY, *supra* note 25, at s 5.7(ii).
[75] QUEENSL. DEP'T OF ENV'T & HERITAGE, COASTAL MANAGEMENT PLAN 7 (cl. 1.7) (2013), https://www.qld.gov.au/__data/assets/pdf_file/0029/67961/coastal-management-plan.pdf (last visited Mar. 10, 2019); QUEENSL. DEP'T OF STATE DEV., INFRASTRUCTURE AND PLANNING., STATE PLANNING POLICY 51 (2013).
[76] QUEENSL. DEP'T OF STATE DEV., INFRASTRUCTURE AND PLANNING., STATE PLANNING POLICY s 27.
[77] S 27(2) cl. 12 of the 2018 Coastal Policy provides further that development on land within the coastal vulnerability areas may only proceed if structures are engineered to withstand current and projected coastal hazards, are not likely to adversely alter coastal processes or reduce public amenity and access, and manage risk to life and public safety. It also requires measures to ensure appropriate responses to, and management of, anticipated coastal processes and current and future coastal hazards.

resolve the erosion problems at Belongil Beach.[78] The prospects of sourcing the required sand to conduct sand nourishment if the seawall led to erosion were poor, so the proposal was fundamentally flawed. On this basis, the proposal did not meet the statutory requirements that arrangement be in place upfront to manage impacts or assure the removal of the seawall if it interfered with coastal processes.[79] The New South Wales Coastal Panel advised the Minister for Environment that the Draft CZMP did not meet the requirements to receive certification under the 2016 *Coastal Management Act*, and the council withdrew the draft in 2017.

Litigation over the right of owners to repair protective structures has further confused the issue. After years of litigation, the local government agreed to an out-of-court settlement for several landowners to discontinue their Supreme Court action to clarify the scope of the Byron Shire Council's duty of care. In addition to an AU$2.75 million monetary payment to property owners, the settlement prevented the Byron Shire Council from removing any current protection from in front of the properties, or removing lawfully-approved repairs where applications for approval were made within twelve months of the order.[80] This has constrained the Byron Shire Council's capacity to develop better long-term options.

In a further twist, the New South Wales Land and Environment Court has recently ruled that attempts by beachfront owners to repair the sea walls in front of their homes are unlawful. In *Ralph Lauren Property Ltd v Transitional Coastal Panel* and related cases,[81] the owners of three Belongil Beach properties appealed against the refusal of the New South Wales Transitional Coastal Panel—the specialist body empowered to assess applications for coastal development—of

[78] BYRON SHIRE COUNCIL, COASTAL ZONE MANAGEMENT PLAN Part A-x (2016, draft).
[79] Frohlich et al., *supra* note 15, at 8.
[80] *Id.* (citing the Extraordinary Meeting Minutes of the Byron Shire Council's meeting held on July 14, 2016, *available at* https://byron.infocouncil.biz/Open/2016/07/OC_14072016_MIN_585_EXTRA.PDF (last visited Mar. 10, 2020). Frohlich reports that the decision to settle was heavily influenced by the council's insurer and their concerns over financial exposure if the litigation found the council liable for reduced property values as a result of the early Jonson Street projects: "The insurers were simply interested in getting out of the situation as cheaply as possible . . . So, when they were offered a settlement, . . . they weren't interested in who was right or wrong" Interviewee quoted in Frohlich et al., *supra* note 15, at 8.
[81] *Ralph Lauren Property Ltd v New South Wales Transitional Coastal Panel* (Austl.); *Stewartville Pty Ltd v New South Wales Transitional Coastal Panel* (Austl.); *Robert Watson v New South Wales Transitional Coastal Panel* [2018] NSWLEC 207 (Austl.).

their applications to repair and upgrade rock and concrete rubble sea walls on the public beach seaward of their properties. The residents had argued that the project would protect public property and improve public safety and access to the beach. They also argued that, as they proposed only to repair existing seawalls, they could not cause any additional damage to the beach. The Transitional Coastal Panel[82] argued that permitting repair:

> would formalise uncoordinated and piecemeal responses to coastal erosion processes operating at Belongil Beach, regularise unlawful works located largely on public land for the protection of private property, and confer a valuable private benefit at the expense of the public.[83]

The New South Wales Land and Environment Court upheld these concerns, finding that the size and extent of the works would result in them significantly impeding public access.[84] Chief Judge Preston rejected arguments that the repair would not materially increase the impacts caused by the existing walls because "by law, the sea walls should not exist on the beach" at all.[85] No development consent had ever been issued for construction of the sea walls that were in place and, while this did not preclude approval being granted for the repair projects, nor did it allow applicants to benefit from earlier unlawful projects.[86] Despite this decision, but consistent with the earlier out-of-court settlement, Byron Shire Council consented to minor repairs to the seawalls conditional upon the landowners agreeing to remove structures once the state government approves a proposal to protect the entire beach and provide equivalent levels of protection.[87]

In theory, limiting protective structures enables a form of staged retreat that allows market forces to adjust the valuation of coastal properties to reflect risk over time and does not require planning agencies to pay compensation for forced removal of structures. However, there are numerous other examples of sea

[82] This is the temporary body established under the transitional arrangements of the N.S.W. 2016 Coastal Management Act, prior to the establishment of the N.S.W. Coastal Council.
[83] *Ralph Lauren Pty Ltd v New South Wales Transitional Coastal Panel* (Austl.); *Stewartville Pty Ltd v New South Wales Transitional Coastal Panel* (Austl.); *Robert Watson v New South Wales Transitional Coastal Panel* [2018] NSWLEC 207, ¶7 (Austl.).
[84] *Robert Watson,* NSWLEC 207, at ¶122.
[85] *Id.* at ¶127.
[86] *Id.*
[87] Frohlich et al., *supra* note 15, at 10.

walls and other hard structures being approved and built, underscoring the gap between legislative and policy constraints and the political dimensions of coastal planning.[88] In practice, the decision to allow protective structures is influenced by several factors, including the technical capacity of the decision-maker to evaluate risks and wider public benefits (discussed above), and legal powers to enforce obligations to fund and maintain such structures.[89] What is clear is that, despite the policy statements to the contrary, "landholders have an expectation to protect property and have demonstrated a willingness to: act politically; take action through courts; and build protections illegally."[90]

IV. ALLOCATION OF RISK IN COASTAL ADAPTATION

There has been considerable policy rhetoric about the appropriate roles of public and private actors in adaptation planning. Australian policy documents make clear that private parties are responsible for adaptation and managing risks to private property wherever feasible.[91] Both the Victorian and the Western Australian framework offer detailed guidance on how risks should be allocated. The 2017 Western Australian *Coastal Zone Strategy* makes clear that private parties are responsible for managing risks to private property, while government bears responsibility for managing risk to public goods and assets and developing local policies and regulations.[92] Providing information to current owners and prospective purchasers of hazard-prone land is a key mechanism by which government may discharge its responsibility to enable private adaptation through appropriate information.[93]

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[88] This pattern is consistent with the experience of strict prohibitions and restrictions in the United States. William Neal, *Why Coastal Regulations Fail*, 156 OCEAN & COASTAL MGMT. 21 (2018).
[89] For example, the availability of agreements on title or covenants, public liability waivers, and financial securities. LIMP, LEAP OR LEARN, *supra* note 17, at 56; Robb et al., *supra* note 62, at 404.
[90] Robb et al., *supra* note 62, at 404–405 (footnotes omitted).
[91] AUSTL. DEP'T OF THE ENV'T, CLIMATE CHANGE COMMUNITY DISCUSSION: ROLES AND RESPONSIBILITIES FOR CLIMATE CHANGE ADAPTATION IN AUSTRALIA [hereinafter CLIMATE CHANGE COMMUNITY DISCUSSION]; AUSTL. PRODUCTIVITY COMM., BARRIERS TO EFFECTIVE CLIMATE CHANGE ADAPTATION (2012), https://www.pc.gov.au/inquiries/completed/climate-change-adaptation/report/climate-change-adaptation.pdf (last visited Mar. 10, 2020). Both the Victorian and the Western Australian frameworks offer detailed guidance on how risks should be allocated.
[92] GOV'T OF WESTERN AUSTL., WA COASTAL ZONE STRATEGY (2017), https://www.dplh.wa.gov.au/getmedia/a608b7f4-85c6-414e-b370-c3c2c0c28102/CST-WA_Coastal_Zone_Strategy (last visited Mar. 10, 2020).
[93] VICT. STATE GOV'T, VICTORIA'S CLIMATE CHANGE ADAPTATION PLAN 2017-2020 27 (2016) (stating that "Most importantly, we need to ensure that government, community and industry can easily access, understand and apply current and emerging information" and "Risk assessments

Accurate coastal hazard information enables property owners to prepare and plan for future impacts. But it can also influence expectations of what level of public support or action should be expected in the future. Some jurisdictions may provide online maps showing the future hazard line projections which a prospective purchaser can access and evaluate. These maps are sometimes offered in conjunction with zoning schedules that outline what restrictions may apply to certain mapped hazard lines. This approach requires that interested parties are both aware of these maps and have the capacity to interpret and interrogate them.

More helpful is the provision of property-specific information—provided by vendors to prospective purchasers as a standard part of risk disclosure upon sale. For example, Western Australia's *State Coastal Policy* requires that identified coastal hazards should be disclosed to people likely to be affected.[94] The method for doing this for existing development is not specified, but for sites that are the subject of subdivision or development applications, the following notation is required on the certificate of title:

> VULNERABLE COASTAL AREA – This lot is located in a [*sic* – *an*] area likely to be subject to coastal erosion and/or inundation over the next 100 years.[95]

This notation is framed broadly and does not distinguish between present and future hazards. It also does not provide any indication of how planning controls will affect the site, so its generality may be problematic for guiding decision-making.

New South Wales requires vendors to provide purchasers of prescribed information about restrictions on properties. A "Section149(2) Certificate" details restrictions on development or use of the land, and is a mandatory accompaniment to contracts for the sale of land. This certificate must include the fact that land is located in the coastal zone as mapped under the 2018 *Coastal Management State Environmental Planning Policy*.[96]

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help state and local governments and the wider community to understand the exposure of particular areas or assets to the impacts of climate change.").

[94] W. AUSTL. PLANNING POLICY, *supra* note 25, at cl. 1(1) and 7.

[95] *Id.* at cl. 5.5(ii)

[96] N.S.W. DEP'T OF ENV'T & PLANNING, PLANNING CIRCULAR: NOTATIONS ON SECTION 149 PLANNING CERTIFICATES FOR LAND AFFECTED BY THE DRAFT COASTAL MANAGEMENT SEPP (2016), https://www.planning.nsw.gov.au/-/media/Files/DPE/Circulars/planning-circular-

While mapping and hazard notices may be a useful tool, there are still years of value in most beachfront properties before coastal climate change impacts render them dangerous or unusable. The market has shown no signs of adjusting property prices to reflect their vulnerability to coastal hazards, even where extreme events actually occur and the property is damaged. But warnings about future hazards can at least start to send signals about how an area might be expected to look by 2050 or 2100, especially if done in conjunction with restrictions on the installation or repair of hard protection structures. It is important that information to prospective purchasers should be consistent in both format and the timing of when it is required, so as to avoid market distortions that unfairly disadvantage owners in local government jurisdictions with tighter information policies.[97] This is particularly true between areas attracting similar pools of prospective purchasers. As noted in the discussion of planning benchmarks, not all local governments have undertaken extensive detailed hazard mapping to provide such information to property owners or the public. The absence of information on title or in a planning certificate may convey a false sense of safety about one site, while the provision of information about other sites may unfairly suggest that they are comparatively riskier.

The provision of coastal hazard information as a statewide policy seems generally to be met with little hostility, but coastal hazard notices advised by individual councils have been strongly resisted by landowners.[98] For example, in 2009, the New South Wales municipality of Gosford added the following statements to pre-purchase (s149(5)) certificates for 9000 properties:

> "this land has been identified as being potentially affected by sea level rise of up to 0.9m by the year 2100."[99]

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notations-on-section-149-planning-certificates-for-land-affected-by-the-draft-coastal-management-sepp-2016-07.pdf?la=en (last visited Mar. 10, 2020).

[97] A proposal to include climate change hazard information on land titles in Victoria was rejected because of risk of inconsistent notices, and problems in obtaining finance and insurance for properties subject to such notations.

[98] Paul Govind, *Managing the Relationship between Adaptation and Coastal Land Use Development through the Use of s 149 Certificates*, 7 MACQUARIE J. INT'L COMP. ENVTL. L. 94 (2011), *available at* http://classic.austlii.edu.au/au/journals/MqJlICEnvLaw/2011/5.pdf (last visited Mar. 10, 2020).

[99] *See* Vikki Campion, *Sea Level Rise Planning Clause Dumped*, THE DAILY TELEGRAPH, July 4, 2012, https://www.dailytelegraph.com.au/sea-level-rise-planning-clause-dumped/news-story/5c6c032ca67d467bd9f02826195c7a4e?sv=b7e98011578063409dd09c65fbaf2cac (last visited Mar. 10, 2020).

Other councils inserted similar warnings, aiming to limit their exposure to future liability to purchasers who might claim that the council knew about the coastal hazard problem, but did not act to warn people.[100] Despite there being no evidence of a lasting impact on property values for either the notice or the occurrence of extreme events,[101] the New South Wales state government determined that such general statements are not acceptable subjects of a Section 149 Certificate. The Act permits Councils to include "general information about past, current, or future matters that may potentially affect the land," but generalized statements about potential future exposure are not considered appropriate.[102] To be acceptable the hazard information must be converted into enforceable planning restrictions.[103]

What emerges from this brief review of Australia coastal adaptation law is a picture of strong policy commitment to protecting the environmental and cultural values of the beach and coast, with clear prioritization of avoidance and retreat from hazardous locations. In practice, however, the heavy investment in coastal property and infrastructure means that the gap between policy and practice persists.

V. BARRIERS TO ADAPTIVE COASTAL LAW IN AUSTRALIA

Recent improvements in the legal and policy framework for adaptive coastal planning and management are welcome, but their effectiveness is constrained by several key barriers that have plagued this policy domain for over three decades.[104] These barriers are interrelated and either contribute to, or

[100] Govind, *supra* note 102, at 96; *Too Much Too Soon*, *supra* note 27, at 394–97.
[101] Stephen Yeo, *Effects of Disclosure of Flood- Liability on Residential Property Values*, 16 AUSTL. J. OF EMERGENCY MGMT. 35, 40 (2003).
[102] McDonald, *supra* note 35, at 635.
[103] *Too Much Too Soon*, *supra* note 27, at 395.
[104] Julia B. Wyman, *Climate Change Adaptation Strategies in New England, in* CLIMATE CHANGE IMPACTS ON OCEAN AND COASTAL LAW: U.S. AND INTERNATIONAL PERSPECTIVES 480 (Randall S. Abate ed., 2015); Sandra S. Nichols & Carl Bruch, *New Frameworks for Managing Dynamic Coasts: Legal and Policy Tools for Adapting U.S. Coastal Zone Management to Climate Change*, 1 SEA GRANT L. & POL'Y J. 19 (2008); Megan M. Herzog & Sean B. Hecht, *Combatting Sea-Level Rise in Southern California: How Local Governments Can Seize Adaptation Opportunities While Minimizing Legal Risk*, 19 HASTINGS WEST-NORTHWEST J. ENVTL. L. & POL'Y 463 (2019).

explain, the lack of political will to drive stronger coastal adaptation.[105] There is a growing literature outlining the political and other barriers to delivering on the promise of adaptation plans and strategies. This literature draws principally from the experience of wealthy coastal nations, particularly the United States, and covers both the general limitations of current coastal management regimes[106] and the difficulties of specific state and local laws and policies to promote coastal adaptation.[107] Australia's experience suggests a similar set of barriers.[108]

The first challenge facing Australian coastal managers is the practical constraint on first-best adaptation planning because so much of the exposed coast is already heavily developed. Previous laws and decisions permitted extensive sub-division and development of the coastal foredunes that served as natural buffers. As these properties have steadily increased in value, it has created lock-in

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[105] Susanne C. Moser & Julia A. Ekstrom, *A Framework to Diagnose Barriers to Climate Change Adaptation*, 107 PROC. NAT'L ACAD. SCI. 22026 (2010); Lea Berrang-Ford, James D. Ford, & Jaclyn Paterson, *Are We Adapting to Climate Change?*, 21 GLOBAL ENVTL. CHANGE 25 (2011).

[106] *E.g.*, Rosina Bierbaum et al., *A Comprehensive Review of Climate Adaptation in the United States: More than Before, but Less than Needed*, 18 MITIGATION & ADAPTATION STRATEGIES FOR GLOBAL CHANGE 361 (2012); Benjamin L. Preston, Richard M. Westaway, & Emma J. Yuen, *Climate Adaptation Planning in Practice: an Evaluation of Adaptation Plans from Three Developed Nations*, 16 MITIGATION & ADAPTION STRATEGIES GLOBAL CHANGE 1407 (2011); Tim Measham et al., *Adapting to Climate Change through Local Municipal Planning: Barriers and Challenges*, 16 MITIGATION & ADAPTATION STRATEGIES GLOBAL CHANGE 889 (2011); ANNE SIDERS, SABIN CTR. FOR CLIMATE CHANGE L., COLUM. L. SCH, MANAGED COASTAL RETREAT: A LEGAL HANDBOOK ON SHIFTING DEVELOPMENT AWAY FROM VULNERABLE AREAS (2013).

[107] *E.g.*, JUSTIN GUNDLACH & P. DANE WARREN, SABIN CTR. FOR CLIMATE CHANGE L., COLUM. L. SCH., LOCAL LAW PROVISIONS FOR CLIMATE CHANGE ADAPTATION (2016); Jesse Reiblich et al., *Enabling and Limiting Conditions of Coastal Adaptation: Local Governments, Land Uses, and Legal Challenges*, 22 OCEAN & COASTAL L.J. 156 (2017); Sara C. Aminzadeh, *Rising to the Challenge: California Coastal Climate Change Adaptation*, *in* CLIMATE CHANGE IMPACTS ON OCEAN AND COASTAL LAW: U.S. AND INTERNATIONAL PERSPECTIVES 533 (Randall S. Abate ed., 2015); Keith Richard, *Avoiding Unintended House Boats: Towards Sensible Coastal Land Use Policy in Massachusetts*, 48 NEW ENG. L. REV. 101 (2014); KENNETH T. KRISTL, ENVTL. AND NATURAL RES. L. CLINIC, WIDENER UNIV. SCH. OF L., ASSESSING THE LEGAL TOOLBOX FOR SEA LEVEL RISE ADAPTATION IN DELAWARE: OPTIONS AND CHALLENGES FOR REGULATORS, POLICYMAKERS, PROPERTY OWNERS, AND THE PUBLIC (2014); Kelley M Jancaitis, *Florida on the Coast of Climate Change: Responding to Rising Seas*, 31 ENVIRONS: ENVTL. L. & POL'Y J. 157 (2008); Megan Higgins, *Legal and Policy Impacts of Sea Level Rise to Beaches and Coastal Property*, 1 SEA GRANT L. & POL'Y J. 43 (2008); Jessica Grannis et al., *Coastal Management in the Face of Rising Seas: Legal Strategies for Connecticut*, 5 SEA GRANT L. & POL'Y J. 59 (2012); Sarah Burch, *Transforming Barriers into Enablers of Action on Climate Change: Insights from Three Municipal Case Studies in British Columbia, Canada*, 20 GLOBAL ENVTL. CHANGE 287 (2010).

[108] AUSTL. PRODUCTIVITY COMM., *supra* note 93.

or path dependency that makes it difficult for decision makers to initiate policies of retreat, or even avoidance of further exposure.[109] The key to political tractability of adaptation strategies is to develop options that are both affordable and that do not generate community outrage.[110] It is a brave council indeed that is willing to tell owners that their beachfront properties must be removed or allowed to fall into the sea. This is especially so in places where there have already been efforts at fortification that create an expectation of ongoing protection, including the construction of seawalls, dumping of rocks or car bodies, or temporary sandbagging.

The political difficulty is compounded by the recognition of so-called "existing use" rights in the planning regimes of all states and territories.[111] Where such rights exist, the options available to coastal managers are limited to restrictions on further protection, formal buyouts and acquisitions and voluntary encouragement to adapt or retreat.[112] While the Belongil litigation is the only case in which common law rights to protect property have been raised, conflicting views about the relative importance of public values and private property rights underpin many coastal adaptation challenges.[113] Most of the conflicts over coastal adaptation concern groups of private landowners asserting their private property rights over the wider public interest in preserving beach access or spending precious resources on other priorities.[114]

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[109] Frohlich et al., *supra* note 15; LIMP, LEAP OR LEARN, *supra* note 17; Allan W. Young, *How to Retreat: The Necessary Transition from Buyouts to Leasing*, 46 COASTAL MGMT. 527 (2018), https://www.tandfonline.com/doi/full/10.1080/08920753.2018.1498716 (last visited Mar. 10, 2020); Jon Barnett et al., *From Barriers to Limits to Climate Change Adaptation: Path Dependency and the Speed of Change,* 20 ECOLOGY & SOC'Y 5 (2015), https://doi.org/10.5751/ES-07698-200305 (last visited Mar. 10, 2020); Oona A. Hathaway, JOHN M. OLIN CTR. FOR STUD. IN LAW, ECON., & PUB. POL'Y WORKING PAPERS, PATH DEPENDENCE IN THE LAW: THE COURSE AND PATTERN OF LEGAL CHANGE IN A COMMON LAW SYSTEM (2003), http://digitalcommons.law.yale.edu/lepp_papers/270 (last visited Mar. 10, 2020);

[110] Gibbs, *supra* note 14, at 135.

[111] Frohlich et al., *supra* note 15, at 5.

[112] *Id.* at 6.

[113] Thom, *supra* note 34, at 13.

[114] This is especially problematic in the state of New South Wales which, through historical legal anomaly, has a far higher proportion of coastal foreshore in private ownership than any other Australian state. Thom estimates 40–50% of coastal foreshore in private ownership in N.S.W., compared to just 10% in Victoria. Thom, *supra* note 34, at 13. *See also* Tayanah O'Donnell & Louise Gates, *Getting the Balance Right: A Renewed Need for the Public Interest Test in Addressing Coastal Climate Change and Sea Level Rise*, 30 ENVTL. PLAN. & L.J. 220 (2013).

The influence of these special interest groups on decision-making involving public interest values is profound, especially when accompanied by media coverage or threats of litigation.[115] A group of property owners affected by a decision forms a highly-concentrated coalition that has a strong interest in vocal opposition. By contrast, public values, both present and long term, are more dispersed across the community, and advocates are less well organized and often poorly represented in formal processes. The influence of special interest groups in environmental, land use, and natural resources planning is nothing new. Writing nearly half a century ago, Joseph Sax highlighted the need for the protection of "diffuse public interests" in the face of "tightly organised groups with clear and immediate goals."[116] The power of such groups is arguably higher in Australia because the public trust doctrine has found neither legal nor political traction.[117] While many in the United States might debate whether the public trust doctrine is the best means by which to deliver efficient coastal adaptation,[118] there is little doubt that the absence of any common law protection affects local authorities' willingness to undertake retreat-oriented adaptation strategies.[119]

A second barrier to adaptation planning in Australia is the mismatch between where responsibility has tended to lie - with local government - and the levels of government that have the technical resources and financial capacity to implement strategic approaches.[120] Under Australia's federal arrangements, planning and coastal matters are a state responsibility. The involvement of the national government is limited to approving developments that might have impacts on "matters of national environmental significance," - including Ramsar

[115] Robb et al. report that 94% of surveyed local planners considered it likely that landholders would take political action or litigation against prohibitions on new protective structures and over 90% thought it likely that elected officials would support that opposition and lift restrictions. Robb et al., *supra* note 15, at 412.
[116] Joseph Sax, *The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 556 (1970).
[117] Bruce Thom, *Climate Change, Coastal Hazards and the* Public Trust *Doctrine*, 8 MACQUARIE J. INT'L COMP. ENVTL. L. 21 (2012).
[118] Some suggest that by allowing for uncompensated redistribution, the public trust doctrine is resisted by current resource owners and results in a model of litigation and settlement among disputing parties which is more expensive than the purchase of private rights through market transactions. Jedidiah Brewer & Gary D. Libecap, *Property Rights and the Public Trust Doctrine in Environmental Protection and Natural Resource Conservation*, 53 AUSTRALIAN J. AGRIC. & RESOURCE ECON. 1 (2009).
[119] Gurran et al., *supra* note 13, at 106 (quoting Thom, *supra* note 34).
[120] LIMP, LEAP OR LEARN, *supra* note 17; AUSTL. GOV'T, NATIONAL CLIMATE CHANGE ADAPTATION FRAMEWORK (2007); AUSTL. GOV'T, ADAPTING TO CLIMATE CHANGE IN AUSTRALIA: AN AUSTRALIAN GOVERNMENT POSITION PAPER (2010).

wetlands[121] - and to providing funding for priority initiatives. States set broad policies and frameworks, then devolve local planning and development decisions to local government, thereby giving "effect to the subsidiarity principle, which provides that government functions should be performed at the lowest level possible for ensuring effectiveness."[122] This is considered appropriate because climate impacts vary from place to place and the appropriate response may be site-specific.[123]

The devolution of adaptation decisions to local government is problematic for a number of reasons. These include the heightened susceptibility of local government to special interest forces[124] and its narrow (local) conception of the "public interest."[125] While these issues affect all aspects of adaptation planning, they are especially problematic when coastal regions have values that are nationally important. Devolving strategic coastal planning to local governments also means that opportunities for efficiency and confidence-building across the wider community are lost. While there are exceptions across the country, many local authorities report a strong preference for state government leadership in identifying areas where coastal fortification should be permissible or prohibited, and the criteria for assessing applications for constructing protective structures.[126] It is clear that effective, equitable, and durable coastal adaptation planning will require collaboration among all three levels of government.

Expecting local governments to carry the coastal adaptation load also assumes that the level of government to which responsibility is allocated has the resources and capacity to design and implement meaningful adaptation measures, which may not be the case.[127] In fact, local governments in Australia have very

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[121] *See EPBC Act- Frequently Asked Questions*, AUSTL. GOV'T, DEPT. OF AGRIC., WATER, AND THE ENV'T, https://www.environment.gov.au/epbc/publications/factsheet-epbc-act-frequently-asked-questions (last visited Mar. 10, 2020).
[122] RESEARCH HANDBOOK ON CLIMATE CHANGE ADAPTATION POLICY 73(E.C.H. Keskitalo & B.L. Preston, eds, 2019).
[123] AC Foerster et al., *Trade-Offs in Adaptation Planning: Protecting Public Interest Environmental Values*, 27 J. OF ENVTL. L. 459, 476 (2015).
[124] Gurran et al., *supra* note 13, at 104; Michael Bradley et al., *The Pace and Progress of Adaptation: Marine Climate Change Preparedness in Australia's Coastal Communities*, 53 MARINE POL'Y 13 (2015).
[125] Foerster et al., *supra* note 127, at 486.
[126] LIMP, LEAP OR LEARN, *supra* note 17; Robb et al., *supra* note 15, at 414; Frohlich et al., *supra* note 15, at 10.
[127] B.M. Taylor et al., *Scaling-Up, Scaling-Down, and Scaling-Out*, 51 GEOGRAPHICAL RESEARCH 292, 300 (2013).

little capacity to raise additional funds to do "good" coastal planning. Well-funded municipalities with large rate-bases can pay for expert site-specific data, while in others, council officers are left to make sense of publicly-available information. It is often inefficient to have adjoining coastal councils engage in separate data collection and engagement processes. More problematic is the risk that one council could plan in such a way as to transfer risks to the coastal assets of an adjacent council. There are also important equity concerns for small municipalities that simply cannot afford the cost of this mapping, consultation, and implementation. Resource constraints are amplified when it comes to paying for the implementation of elements of such plans, such as buyouts or forms of hard or soft protection.

States have more capacity to fund coastal adaptation, but the federal government is best placed to fund coordinated efforts. Yet the federal government sees its role as limited to "leadership, information and research support" for action by sub-national governments.[128] While this makes sense from the perspective of local knowledge and a focus on local solutions,[129] it ignores local government resource constraints and their calls for a stronger role for Commonwealth and state policy.[130] The implementation gap created by this fiscal mismatch is not unique to Australia,[131] but the precarious legal status of local government (as creatures solely of state legislation) and Australia's Constitutional allocation of powers compound these challenges.

A third, related, barrier to effective adaptation planning is the preoccupation of local government with exposure to litigation.[132] This fear of

[128] AUSTL. PRODUCTIVITY COMM., *supra* note 93 (cited in Gurran et al., *supra* note 13, at 102); AUSTL. LOCAL GOV'T ASS'N, SELECT COUNCIL ON CLIMATE CHANGE, ROLES AND RESPONSIBILITIES FOR CLIMATE CHANGE ADAPTATION IN AUSTRALIA (2012); LIMP, LEAP OR LEARN, *supra* note 17.
[129] Lea Berrang-Ford et al., *A Systematic Review of Observed Climate Change Adaptation in Developed Nations*, 106 CLIMATE CHANGE 327 (2011); Gurran et al., *supra* note 13, at 101.
[130] Gurran et al., *supra* note 13, at 107.
[131] This is consistent with local governmental coastal adaptation planning across the developed world. Berrang-Ford et al., *supra* note 133; Gurran et al., *supra* note 13, at 101.
[132] Jan McDonald, *A Risky Climate for Decision-Making: The Liability of Development Authorities for Climate Change Impacts*, 24 ENVTL. & PLAN. L.J. 405 (2007); NICOLA DURRANT, LEGAL RESPONSES TO CLIMATE CHANGE Ch. 20 (2010); BAKER & MCKENZIE, LOCAL COUNCILS' RISK OF LIABILITY IN THE FACE OF CLIMATE CHANGE – RESOLVING UNCERTAINTIES: A REPORT FOR THE AUSTRALIAN LOCAL GOVERNMENT ASSOCIATION 41 (2011); Rahul Thyagarajan, *Constructing a Negligence Case under Australian Law against Statutory Authorities in Relation to Climate Change Damages*, 8 CARBON & CLIMATE L. REV. 208 (2014); C. Warnock, *Global Atmospheric Pollution: Climate Change and Ozone*, in ENVIRONMENTAL LAW IN NEW ZEALAND

litigation relates to decisions to approve new developments in hazard prone areas (litigation in tort by future residents),[133] decisions to refuse developments in hazard prone areas (planning appeals by property developers),[134] decisions to remove or not maintain existing protection structures (tort actions by existing residents), and decisions either to upgrade existing or install new structures (brought by community members).[135] Concerns over legal exposure are largely unfounded, given the higher standard of negligence that must be demonstrated to establish liability. In assessing conduct, courts will evaluate the budgetary position of the authority and the other public interest considerations it must take into account.[136] Liability is unlikely, though admittedly not impossible. For example, where a local authority creates conditions which exacerbate coastal erosion, there may be a high expectation that it will ameliorate these risks, and failure to do so could constitute actionable negligence. Simply refusing to protect coastal homes, or to permit landholders to do so, is unlikely to constitute actionable negligence, however, in the absence of additional factors.

This fear is particularly unfounded in New South Wales, which is where most of the litigation has occurred. The 1993 New South Wales *Local Government Act* contains a novel provision that shields local government from liability for decisions and actions relating to coastal land that are done in good faith.[137] The Act establishes a rebuttable presumption of good faith for councils that substantially comply with the state government's coastal management manual. This qualified protection should give local authorities the confidence to implement local adaptation policy,[138] although some authors have also noted its

789, 822 (P. Salmon & D. Grinlinton, eds., 2015); T. O'Donnell, *Legal Geography and Coastal Climate Change Adaptation: the Vaughn Litigation*, 54 GEOGRAPHICAL RESEARCH 301 (2016).

[133] *See generally* McDonald, *supra* note 136; BAKER & MCKENZIE, *supra* note 136, at 41; Philippa England, *Heating Up: Climate Change Law and the Evolving Responsibilities of Local Government,* 13 LOC. GOV'T L.J. 209 (2008).

[134] *E.g.*, *Taip v E. Gippsland Shire Council* [2010] 177 LGERA 236; *Gippsland Coastal Bd. v S. Gippsland Shire Council* [2008] VCAT 1545; *Northcape Properties v Dist. Council of York Peninsula* [2008] SASR 57; *Minister for Planning v Walker* [2008] 161 LGERA 423; *Myers v S.3 Gippsland Shire Council* (No. 2) [2009] VCAT 2414; *Aldous v Greater Taree City Council* [2009] NSWLEC 17; *Ronchi v Wellington Shire Council* [2009] VCAT 1206.

[135] *See supra* Part III:C for a discussion of the Belongil beach litigation.

[136] *See, e.g.*, *Civil Liability Act 2002* (NSW) ss 42–46 (Austl.) and equivalent provisions in other jurisdictions; BAKER & MCKENZIE, *supra* note 163, at 41.

[137] *Local Government Act 1993* (NSW) s 733 (Austl.). It also protects local authorities in respect of decisions relating to flood-prone or bushfire-prone land.

[138] Lipman & Stokes, *supra* note 17, at 195

potential for reducing accountability for maladaptive behavior that has substantial longer-term financial consequences.[139]

In practice, however, local government concern over litigation relates not only to the possible outcome, but to the costs of having to defend expensive actions, especially for very small councils with a limited rate base. Indeed, even the prospect of having to defend an action brought by a disgruntled landowner has led local authorities to adopt strategies that entrench the status quo and limit future adaptation options, as has occurred in Byron Shire.[140] The financial cost of fighting litigation combined with the political backlash generated by media attention on the case constitute deterrent enough.

Interestingly, despite local government's aversion to litigation, coastal adaptation planning cases heard to date have made a significant contribution to our understanding of what is needed. The formal precedent value of planning appeal decisions involving coastal adaptation issues is necessarily limited by the merits-review nature of the litigation, but they demonstrate several aspects of the current state of coastal adaptation planning in Australia. First, they both reflect and drive an increased awareness of the need for long-term adaptation planning of our coasts. Second, they highlight the importance of strong legal and policy frameworks for decision-making. Decisions that tend to curtail development rights have been easier to sustain where they are supported or mandated by strong legal requirements. Third, some cases show that courts can facilitate and expedite adaptation by overcoming legislative inertia in the way that they interpret and apply existing provisions.[141] Finally, the different approaches of courts across the country also highlight the challenge of consistency across Australia's vast coastline.

In light of past experience and this recognition of the significant financial, legal, and political barriers to coastal adaptation, the final section of this article considers how Australia might improve its response to the challenge of rising seas.

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[139] Bell & Baker-Jones, *supra* note 15, at 34.
[140] *See supra* Part III:C for a discussion of the Belongil beach litigation.
[141] Joseph Wenta & Jan McDonald, *The Role of Law and Legal Systems in Climate Change Adaptation Policy*, *in* RESEARCH HANDBOOK ON CLIMATE CHANGE ADAPTATION POLICY 69 (E.C.H. Keskitalo & B.L. Preston eds., 2019); Jacqueline Peel & Hari M. Osofsky, *Sue to Adapt?*, 99 MINN. L. REV. 2177, 2246 (2015).

VI. CONCLUSION - FUTURE PRIORITIES FOR COASTAL CLIMATE ADAPTATION IN AUSTRALIA

If integrated, adaptive coastal management were easy, Australia's planning towards such management would have made it a world leader. Based on research and planning following the first government inquiry into the need for new approaches, it would have implemented sweeping reforms four decades ago. To date, however, the challenges of harnessing and coordinating priorities across three levels of government and multiple competing sectors of users of the coastal zone have so far proved insurmountable. This demands that we learn from past failures and reasons for slow progress.

Australian coastal managers and planners do not suffer from a lack of tools, laws, policies, or plans to implement coastal adaptation.[142] There is a wealth of statements about the importance of forward-looking planning decisions that reduce or, at least do not increase, exposure to coastal hazards. What is lacking is the resources and capacity to move from planning to implementation of the hierarchy of adaptation options identified in policy documents. This demands more consistent funding for coastal adaptation amongst many competing adaptation priorities, such as drought and bushfire management.

Improved coastal adaptation also requires political consistency and courage. Such courage might come from a recognition that the accelerating rate of sea level rise will compromise the effectiveness of coastal protection sooner than expected. Scaling back the timescale over which protections are expected to be effective will alter the cost-benefit equation for persisting with such efforts. A public accounting and recognition of what will be lost if we choose certain pathways will also help frame longer-term acceptance that impacts on both public values and private property rights are unavoidable.

Implementation would also be easier if decision makers progressed from simply calculating adaptation costs and benefits to deciding how these costs should be allocated across the community and across time. For example, requiring property owners to provide financial assurances that they will continue to cover the costs of sand nourishment to offset beach loss caused by their protective works might change their perspective on whether such measures are really worthwhile.

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[142] Jan McDonald & Megan Styles, *Legal Strategies for Adaptive Management Under Climate Change*, 26 J. ENVTL. L. 25 (2014).

It is tempting to hope that Australian coastal managers will be jolted into action by the occurrence of one of two more severe storm erosion events; that this will be the window of policy opportunity that enables a nationwide realization that our coastline will change dramatically over the decades ahead.[143] Yet Australian coastal managers have so far done a poor job of learning from the experience of others. In fact, in recent years, the government response to extensive damage from tropical cyclones or east-coast low pressure systems has been to commit publicly to long-term protection, even in areas with a long history of erosion.[144] Such political opportunism may garner support from those powerful few whose properties are directly affected, but it significantly compromises the capacity to undertake long-term planning.

While students of Australian coastal adaptation might hope for such transformative moments, it seems far more likely that progress will continue to be iterative, and likely to always be playing catch up. As the impacts of climate change are felt across all aspects of Australia's physical environment, economy, and society, competition for limited resources will only increase. This is likely to include tensions between competing claims for compensation or support from private interests, be it farmers arguing for drought assistance or farm buy-outs, urban communities' efforts to combat urban heat island effects, or peri-urban communities exposed to bushfire risk. Among these competing claims, it is imperative that Australian policy does not lose sight of the public values of our coastline. These values must inform adaptation decision-making in the future, even if sea level rise threatens to wash some of them away.

[143] Indeed, some suggest a deliberate strategy on the part of some councils to adopt a wait-and-see approach that is more likely to allow for "retreat cost-shifting" if landowners end up bearing the responsibility to demolish structures that pose a risk to public safety. Frohlich et al., *supra* note 15 (citing Young, *supra* note 113).

[144] The cyclone building standards introduced after Cyclone Yasi hit the coast of far North Queensland were downgraded from standards to guidelines to alleviate the financial burden for property owners. They imposed no duty to "build back better.'' Similarly, when an extreme weather event caused extensive damage to beachfront properties and a local surf lifesaving club at Sydney's Collaroy-Narrabeen beaches, the state government immediately supported the installation of temporary beach protection works. This undermined years of council negotiation, dating back to the 1960s, that sought to consider the opposition of the wider local population to coastal protection. In 2002, about 3,000 residents formed a 1 km 'human wall' along the beach to protest against the construction of an engineered sea wall. Thom, *supra* note 121.