SUSTAINABLE OCEANS AND COASTS NATIONAL STRATEGY 2021-2030

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ACKNOWLEDGEMENT OF COUNTRY

FUTURE EARTH AUSTRALIA ACKNOWLEDGES AND PAYS RESPECTS TO THE NGUNNAWAL PEOPLE, THE TRADITIONAL OWNERS OF THE LANDS ON WHICH THE FUTURE EARTH AUSTRALIA OFFICE IS LOCATED. WE ALSO ACKNOWLEDGE AND PAY OUR RESPECTS TO THE TRADITIONAL OWNERS AND THE ELDERS PAST, PRESENT, AND EMERGING THROUGHOUT AUSTRALIA AND RECOGNISE THEIR CONTINUING CONNECTION TO LAND, WATERS, AND CULTURE. THEY HOLD THE MEMORIES, TRADITIONS, CULTURES, AND HOPES OF ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLES OF AUSTRALIA.

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EXECUTIVE SUMMARY

Australians love our 'blue ribbon'

Australians hold a deep affinity for our oceans and coasts. These areas are beautiful, diverse, complex places that work in synchronicity with each other. Aboriginal and Torres Strait Islander peoples have known this for thousands of years, speaking of Land and Sea Country as an interconnected whole, rather than as separate ecosystems. This is what we mean when we speak of Australia's blue ribbon: the connections from estuaries to coasts to oceans that encircle and enrich the country. Recognising oceans and coasts as a single interconnected system presents extraordinary opportunities for the betterment of the nation through a sustainable future.

An urgent need for change

Oceans and coasts support our communities and our economy, but they are under immediate and increasing threat from a number of compounding and overlapping pressures, including climate change, pollution, invasive species, habitat and biodiversity loss, and a growing population catalysing coastal development and greater infrastructure needs. This strategy recognises that our natural environment, and the changes it is experiencing, will play a central role in forcing sustainability transitions. The time frame in achieving this change is urgent.

Australia can lead

This strategy calls for Australia's leadership in enabling healthy oceans and coasts for a just and environmentally sustainable future for all. Such leadership can provide input into the UN Sustainable Development Goals. The goals, though global, can provide national targets for sustainable development. More than this, Australia's explicit recognition of sustainable oceans and coasts, during this United Nations Decade of Ocean Science for Sustainability, presents us with an enormous opportunity to lead, not only for the national interest and benefit, but also on the international stage.

In leading, it is important that Australia is proactive. This strategy represents a bottom up, sector-supported plan, supported by community groups, industry and business, all levels of government, Aboriginal and Torres Strait Islander peoples and managers across Country, the research sector, national peak bodies, the non-profit sector, and civil society. It provides a pathway to achieving transformative change in how we treat our ocean and coastal systems.

It is cognisant of and complementary to other activities, including those of the National Marine Science Committee and activities being undertaken as part of the UN Decade of Ocean Science for Sustainable Development. It can also service international commitments in line with the High Level Panel for a Sustainable Ocean Economy.

Integrated action for the blue ribbon: resilient coastal communities and the blue economy

To achieve sustainable oceans and coasts for Australia, two areas will be critical to address: the blue economy and resilient coastal communities. A blue economy looks to create a thriving society via sustainable and equitable use of coastal and marine resources, including food production, energy generation, aquaculture, tourism, and transport. These industries are vibrant and growing in their use of the blue ribbon, and can be harnessed to strengthen our economy through sustainable means. A blue economy can also support thriving coastal communities, which are facing increasing threats from coastal inundation, fires, floods, and cyclones. Australia needs resilient communities that are able to withstand, absorb, adapt to, and recover from the effects of the many stresses and hazards they will face in a rapidly changing environment. Together, these focus areas can ensure the sustainable delivery of the vision of a vibrant blue ribbon, now and into the future.

Centring Australia's First Peoples

We listened carefully to a number of Australia's First Peoples throughout this process – from initial imaginings through to the creation of this strategy. Knowledge perspectives that sit outside of traditional Western science paradigms can provide critical knowledge that can be missed by scientific method, and while we always need scientific endeavours, our approach to centre First Peoples in this strategy is purposeful.

We need all knowledge to halt environmental degradation, reverse where possible negative impacts, anticipate appropriate adaptive and resilience measures, and proactively shape and secure alternate economies.

Now is the time for Australia to seize the moment

As a nation of innovators, we are well placed to lead, but support systems are needed to harness this incredible resource.

A national agency, responsible for shaping and delivering initiatives that support sustainable oceans and coasts, is urgently needed.

A suite of programs that support the work of the national agency are proposed in this strategy's actions and implementation plan. Such programs maximise opportunities to develop new economies, properly enable First Peoples' leadership, support local initiatives, and deliver learning opportunities across all sectors that are involved with the coastal and marine sectors.

About this strategy

This strategy provides seven recommendations intended to illuminate support systems in achieving sustainable oceans and coasts. Alongside these recommendations, we list tangible actions that can be taken in achieving these, ideas for the design and implementation phases of these actions, and further ideas relating to the monitoring and evaluation of the successes or learning opportunities that arise. We offer insights on anticipated outcomes, and we detail who is responsible for delivering each of these activities. Leaders from all sectors must play an active role in achieving sustainable oceans and coasts for Australia.

This strategy represents a cross-sectoral plan for achieving sustainable oceans and coasts across Australia by 2030. It provides a thoughtful and innovative way forward for our federal and state governments and other leaders across the nation, as well as a roadmap for implementing our shared vision for the future of oceans and coasts.

RECOMMENDATIONS

EMPOWER INDIGENOUS LEADERSHIP

RECOMMENDATION 1

Elevate First Peoples' knowledge and practices into ocean and coastal management

BUILD RESILIENT COMMUNITIES

RECOMMENDATION 2

Restore, protect, and sustainably utilise ocean and coastal ecosystems to enable resilient coastal communities

DECARBONISE THE BLUE ECONOMY

RECOMMENDATION 3

Actively decarbonise the blue economy while sustainably fostering energy security

COLLABORATIVE GOVERNANCE

RECOMMENDATION 4

Adopt an integrated and ecosystem-based management approach to ocean and coastal planning coordinated across all levels of government

MAKE INFORMED DECISIONS

RECOMMENDATION 5

Use best available data and science to support decision making in ocean and coastal management and planning

SUPPORT STEWARDSHIP

RECOMMENDATION 6

Support grassroots initiatives that increase community trust and promote local stewardship of oceans and coasts

PRIORITISE DIVERSE VALUES

RECOMMENDATION 7

Foster champions and incorporate cultural values into ocean and coastal policies and plans

"To care for sea country we must first learn to care for each other. In working together as First Nations and other Australians, we build the relationships between us to repair previous harms of exclusion from marine stewardship and create the foundations for knowing each other in respectful, positive ways. When we speak to each other from a place of recognition, and value the multiple and varied forms of knowledges that sea country needs for her health and continuance, then we are able to translate the care for each other into the principles of how we nurture sea country. Everybody can walk straight then, everybody will have their roles and responsibilities that build and maintain the deep connections that First Nations have and conserve the cultural knowledges that benefit all Australians, but primarily sea country."

Dr Emma Lee,
trawlwulwuy woman from *tebrakunna* country,
Aboriginal and Torres Strait Islander Research Fellow

1

INTRODUCTION

VISION

Ensure healthy coasts and oceans for a just and environmentally sustainable future

THE VALUE OF OCEANS AND COASTS

Australia is a coastal nation – the ocean and coasts are embedded in our national self-image and in our hearts. This connection spans millennia; Aboriginal and Torres Strait Islander peoples have been stewards of oceans and coasts for thousands of years, and their connection to the land, coasts, and oceans forms a deep understanding of their existence and identity as Australia's First Peoples. Today, many Australians live by the coast, and our affinity for the ocean extends beyond our local beach or waterway, beyond the boundaries of local and state governments, to embrace the nation as a whole.

Our coasts and oceans are beloved for their beauty and the wealth of biodiversity they house. Australia boasts some of the largest coral and rocky reef systems in the world, half of the world's seagrass species (Larkum et al., 2018), and the nation's mangrove forests are the third most extensive globally (Commonwealth of Australia, 2017). In combination, Australia's coastal habitats and wetlands (reefs, mangroves, saltmarshes, and seagrass meadows) play a critical role, filtering water coming off the land and down the rivers (removing sediments, nutrients, and other pollutants), forming the base of coastal food webs and providing habitats to a multitude of species (Creighton et al., 2019). Wetlands are also crucial to coastal protection, stabilising sediments, reducing erosion, and holding shorelines in place. By absorbing flood waters, dissipating storm surges, and reducing wave energy by 37 to 71%, they help preserve valuable coastal real estate, infrastructure, and other assets, substantially lowering damage costs due to storms (Carnell et al., 2019). These richly productive systems are also excellent carbon stores, capturing tens of thousands of tonnes of CO_2 per year, storing carbon at faster rates than terrestrial forests, and potentially locking it away for thousands of years.

Oceans and coasts are vital resources for our current and future local, state, and national economies, with many industries having footprints in both environments. For example, global trade is contingent on ocean shipping routes and the availability of protected coastal harbours and port environments to receive those commodities for further distribution. As of 2018, the transport of freight and passengers, ship building and repair, and marinas and other boating infrastructure are together worth around $7 billion to Australia's GDP (AIMS, 2020). This is dwarfed by the more than $25 billion domestic and $5 billion international that coastal and ocean tourism injects into Australia's economy. Recreational fisheries provide around another $2 billion, and commercial and aquaculture fisheries represent around $3 billion. Terrestrial industries such as the building industry also rely on estuaries to source sand and gravel supplies and have looked to marine sources as land-based materials are in short supply around our largest cities. The ocean oil and gas industry is also significant at around $20 billion. The indirect economic activity and the total employment associated with the ocean and coastal sectors is vast, with around 393,000 full time equivalent jobs associated with these industries and services. Emerging marine industries, such as offshore energy and aquaculture, constitute exciting economic frontiers, particularly for terrestrially isolated communities. Investment and protection of the blue economy associated with ocean and marine systems is thus a national priority.

Communities also hold difficult to quantify, yet no less rich, social, cultural, and spiritual values for oceans and coasts. The deep connections that Aboriginal

and Torres Strait Islander peoples hold to Land and Sea Country are both ancient and continuous, based on generations of knowledge and cultural heritage. The oceans and coasts hold many cultural sites and seascapes with continuing cultural significance that are actively maintained by Aboriginal and Torres Strait Islander peoples. Coasts and oceans are also part of the Australian identity, providing space for communities to play and connect with each other. Around 1 in 5 Australians go recreational fishing each year (Henry & Lyle, 2003) and surf lifesaving clubs have been an Australian staple since 1907, saving more than 630,000 people (sls.com.au). Access to coasts and oceans is deeply valued across Australia and tied to social wellbeing.

OCEANS AND COASTS UNDER THREAT

The environmental, economic, social, cultural, and spiritual values we derive from oceans and coasts are all under immediate and increasing threat from a number of overlapping and synergistic pressures. Climate change is the most serious of all threats facing our oceans and coasts. Driven by increasing greenhouse gas emissions resulting in global warming, climate change is causing sea level rise and more frequent extreme weather events that threaten our coastal infrastructure and industries (IPCC, 2019). Furthermore, atmospheric and marine heatwaves, warming average ocean temperatures, and acidifying ocean conditions have caused major ecosystem destruction in an estimated 40% of our natural coastal ecosystems in the past decade, encompassing partial collapses of kelp forests, coral reefs, and mangrove ecosystems (Babcock et al., 2019).

At local scales, competing and unsustainable practices result in over-extraction of marine resources, noise and plastic pollution, introduction of non-native species, and physical degradation and habitat loss, as growing populations catalyse coastal development, land use changes, and greater infrastructure needs. With so much of the coastal and marine space subject to human activities, cumulative effects on biodiversity and the non-living environment are already degrading and destroying the oceans and coasts we hold so dearly, and only threaten to worsen if we do not take action.

At home and abroad, people are realising the impacts of all these pressures and the urgency for action needed to address them. Initiatives such as the UN Decade of Ocean Science for Sustainability (oceandecade.org) and the High Level Panel for a Sustainable Ocean Economy (oceanpanel.org) are drawing international attention to the multiple threats facing oceans and coasts, as well as to the potential to move towards more sustainable practices.

THE OPPORTUNITIES

With a clear need for urgent action, there are many opportunities that can bring about positive change and move our coasts and oceans from a future of deterioration to one of sustainability. We can reframe the conversation and rewrite our futures if we see our coasts and oceans not as problems to be fixed, but opportunities for creating a just and environmentally sustainable future for all.

Healthy oceans and coasts can support:

- ***a robust blue economy*** that uses sustainable techniques to ensure long-lasting prosperity for many generations to come;
- ***resilient coastal communities***, encompassing both people-centred communities and ecosystems that are equipped for changes and damaging events; and
- ***sustained cultural heritage***, especially Aboriginal and Torres Strait Islander heritage, that connects people and their health and wellbeing to the land, coasts, and oceans.

To make these changes, we need to manage change in our coastal and ocean environments in a more sustainable way. This will require better connections between disciplines, management strategies, First Peoples, and other stakeholders.

THIS STRATEGY

The ocean and coastal landscapes that define our island nation are vast, diverse, unique, and irreplaceable, yet fragile and under urgent threat. This is our 'blue ribbon'. It encircles us, connects land and sea, and forms an integral part of our livelihoods, identities, and wellbeing. It is a prized asset that must be safeguarded and secured, so that it might continue to thrive.

To care for oceans and coasts, we need to reimagine our place in the ecosystem; rather than being separate from or above nature, humans sit within natural ecosystems like the coast and oceans, and we thrive when they thrive: economically, socially, and culturally. We can learn from Aboriginal and Torres Strait Islander peoples to further our understanding of these interconnections via the notion of 'Country'. This means that our business-as-usual approaches to environmental protection and resource management will need to be upgraded to ensure more holistic governance practices, integrated strategies, and sustainable activities. This presents both challenges and opportunities to reimagine a strategy for sustainable oceans and coasts in Australia for the future.

We are an imaginative and resourceful people, and together we can champion a vision that delivers healthy coasts and oceans for a sustainable future. Concrete steps for the next decade are the basis for a lasting legacy for present and future generations.

This strategy aims to develop tangible and feasible recommendations that can move us towards caring for our oceans and coasts. It has been undertaken explicitly in codesign with the Australian community, including Aboriginal and Torres Strait Islander peoples, and engagement with a range of sectors, while being cognisant of the current legislative and jurisdictional landscape.

We begin in Section 2 by outlining the context in which we release this strategy. The four main components are first, that oceans and coasts are inherently connected to each other and the land, through the concept of Land and Sea Country; second, that we are party to existing national and international commitments; third, that the blue ribbon encircling the country is core to our national values and identities; and fourth, that we have focused on two common themes, 'Blue Economy' and 'Resilient Coastal Communities' as part of our vision for the future of oceans and coasts in Australia.

In Section 3, to provide evidence for our recommendations, we summarise expert knowledge on threats to Australia's oceans and coasts, as well as ocean and coastal policy, both of which explore Aboriginal and Torres Strait Islander peoples' knowledge and perspectives. We also provide a synthesis of the findings from our stakeholders consultation process that included virtual workshops across all states and territories.

Section 4 moves to actions; we provide our strategic recommendations and a roadmap to implementation. In total, this document points to the key actions we will need to take to transition to sustainable oceans and coasts for all of Australia.

2 CONTEXT

SEA COUNTRY

Australia's coastal and marine environments are the unceded territories of Australia's Aboriginal and Torres Strait Islander peoples. Over millennia the application of their knowledge systems has supported sustainable and healthy ecosystems that ensured the ongoing survival of Aboriginal and Torres Strait Islander peoples and culture. This knowledge is built on a holistic understanding of land and seas as 'Country' – an integrated whole, where there is no distinction between land and sea and which reflects the inviolable and seamless connection between people and environment. This projects thought towards 'a sense of belonging', 'a sense of place' – not towards propriety interests but towards responsibilities. Understanding self in these ways, relationships to, and responsibilities for the health of the physical environment provides important considerations for rethinking our relationship to the planet. The term 'Mother Earth', as used by indigenous peoples across the world, introduces a position of care in that relationship. This establishes the planet not as a resource but as 'a life-giving entity', in the same way we would understand how a mother brings life into the world. For Aboriginal and Torres Strait Islander peoples, 'Caring for Country' makes clear what is sacred to our 'being' as humans in the natural world.

While the imposition of colonial rule created massive disruption to their countries, Aboriginal and Torres Strait Islander peoples today remain active participants in land and sea management across Australia, playing a major role in caring for our coast and marine ecosystems (Nursey-Bray & Hill, 2010; Fischer et al., 2020). There are over 700 Aboriginal and Torres Strait Islander Rangers, located within over 120 Land and Sea Management offices who work on caring for the Country and maintaining Indigenous knowledge in partnership with scientific institutions. This includes management work on quarantine, enforcement, surveillance, monitoring, research, and knowledge co-production, as well as maintaining stories and songlines. Indigenous Protected Areas, many of them coastal and marine, now constitute over 46% of Australia's national reserve system.

This strategy is committed to working in ongoing future partnership with Aboriginal and Torres Strait Islander peoples to meet the challenges we face together, and in ways that explicitly build social justice and governance outcomes for First Peoples, as well as ecosystem benefits.

COMMITMENTS AND PRIORITIES

By promoting healthy Australian oceans and coasts, our nation can continue to uphold its commitments to both binding international agreements, such as those focused on oceans governance, environmental protection, biodiversity conservation, and natural resource extraction, as well as the voluntary commitments it has made through informal law.

Australia is a party to several binding international agreements focused on oceans governance. The most significant is the United Nations Convention for the Law of the Sea, which settles maritime boundaries, confirms rights to explore and exploit the oceans and resources, and creates obligations to protect, preserve, conserve, and manage. In addition, other binding international law focuses on environmental protection and preventing pollution (e.g. International Convention for the Prevention of Pollution from Ships, London Convention and London Protocol), wildlife and biodiversity conservation (e.g. Convention on International Trade in Endangered Species of Wild Fauna And Flora, Convention on Migratory Species, Convention on Biological Diversity), and natural resource extraction (e.g. United Nations Fish Stocks Agreement, regional fisheries management organisation conventions).

In addition to these binding commitments, Australia's voluntary commitments offer considerable potential given their flexibility and agility, and are outlined below. Australia has also conducted national assessments on ocean and coastal health that are important to consider.

The Sustainable Development Goals

The United Nations (UN) Sustainable Development Goals (sdgs.un.org/goals), to which Australia is a signatory, provide an integrated framework for sustainable development as both an internationally coordinated and domestic governance mission. They

work in synergy with binding treaty obligations and provide much needed targets and indicators to assess action and evaluate success.

Many of the goals and their targets emphasise coastal and marine protection, sustainable consumption of resources, and equitable access to solutions by reducing land and marine based impacts and for restoring, maintaining, and strengthening coastal and marine ecosystems.

This integrated approach to coastal and oceans management underpins this strategy. A healthy coastal and marine environment supports a healthier coastal community, which in turn supports more sustainable coastal and marine economies over the long term.

The UN Decade of Ocean Science for Sustainable Development

Ensuring the maintenance of productive marine ecosystems, reducing threats to marine environments and coastal communities, and achieving an equitable and sustainable ocean economy are also key challenges identified under the UN Decade of Ocean Science for Sustainable Development 2021–2030 (the Ocean Decade). Recognising that the functioning of the ocean, and therefore human wellbeing and livelihoods, is currently threatened, the implementation plan for the Ocean Decade identifies that a transformation in ocean science and ocean partnerships is key to developing and implementing solutions that reduce and manage current threats to the ocean and coastal communities.

The Ocean Decade is calling on institutions and people working across sectors, governments, disciplines, and communities to come together, achieving solutions to local and regional challenges that no one component could achieve singularly, and address the Sustainable Development Goals.

The High Level Panel for a Sustainable Ocean Economy

The High Level Panel for a Sustainable Ocean Economy (the Ocean Panel) is a joint global initiative in which 14 world leaders (including the Australian Prime Minister), representing diverse oceanic perspectives, have combined their support for “a sustainable ocean economy in which effective protection, sustainable production, and equitable prosperity go hand in hand”. The Ocean Panel seeks to build momentum and find pathways to transition to a sustainable ocean economy through action at a domestic level while elevating the sustainable ocean economy agenda in the decisions of businesses, researchers, and policy bodies worldwide.

The panel has outlined a call to action around five transformational areas (ocean health, ocean wealth, ocean equity, ocean finance, and ocean knowledge) and identified their commitments within each transformational area (HLP, 2020). This includes a commitment to holistic ocean management, with all ocean areas under national jurisdiction to be sustainably managed under Sustainable Ocean Plans by 2025, and a commitment to work in unison to safeguard areas beyond national jurisdiction (HLP, 2020).

The Ocean Panel launched its *New Ocean Action Agenda* in December 2020. It outlines a vision for a sustainable ocean economy, the initiatives already in action to progress the vision, and a set of recommendations for sustainable ocean management by 2025 in national waters. They strongly align with both the anticipated societal outcomes of the UN Decade of Ocean Science for Sustainable Development and the Sustainable Development Goals.

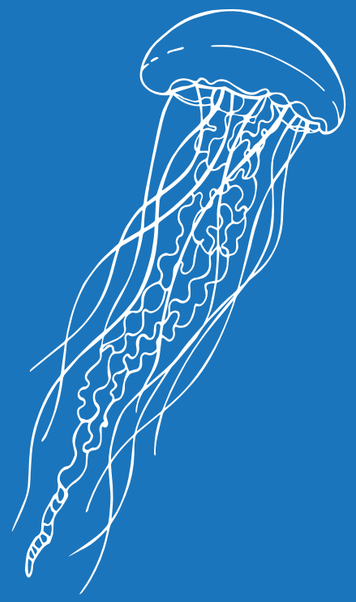
National Commitments

At a national scale, the most recent national State of the Environment report, completed in 2016 (with the next scheduled for release in the second half of 2021), identified that while environmental policies and management in some areas had improved the situation for the environment, coastal regions and associated biodiversity were deteriorating and under threat (Jackson et al., 2016). The primary threat to the environment was identified as climate change, having high impacts on marine and coastal environments and causing declining trends. The report identified that complementary, collaborative, and effective planning and decision-making frameworks supported by integrated policies and adaptive management actions were needed across all components of Australia’s environment. The National Marine Science Committee mid-way review of its decadal National Marine Science Plan (2015–2025) also reiterates that ocean health is currently under threat and if Australia is to continue to build a strong economy and support a vibrant society, maintaining a healthy ocean (and the land-based environments they are connected to) is important.

AUSTRALIA'S BLUE RIBBON

Globally, over 40% of the world's population lives within 100 km of where the land and sea meet (Kummu et al., 2016). On the island continent that is Australia, that figure rises to an estimated 50% of the population living within 7 km of the ocean and 85% within 50 km (Clark & Johnston, 2016). Australia is truly a coastal nation, with the majority of its population living within or along the blue ribbon that connects its vast ocean estate with the land.

Although the coasts and the ocean are often considered separately in research and management, they are a continuum linking terrestrial and freshwater environments with those in the ocean. The diversity of views and definitions of where coasts end and oceans begin reiterates that these environments are highly interconnected. The 'line in the sand' is an imagined one (see box below: 'What is a coast?'). Aboriginal and Torres Strait Islander peoples have known this for thousands of years, speaking of Land and Sea Country as an interconnected whole, rather than as separate ecosystems. Australia's First Peoples used and sustained coastal and marine resources based on this interconnection and continuum.



WHAT IS A COAST?

The Australian coast is not simply the line where the land meets the sea, because coastal processes extend both inland and into the coastal ocean. However, popular ideas of the coast can mean that people hold the notion of 'beach' as the definition of the coast. The Australian State of the Environment report notes that the coast is "notoriously difficult to define" from an environmental perspective (Clark & Johnston, 2016). The most recent federal parliamentary inquiry into coastal zone management (HORSCCCWEA, 2009) refers to the broad "catchment-coast-ocean continuum". At an operational level, various governments have their own definitions of the coast. Each Australian state defines the coast slightly differently to suit their own legislative and jurisdictional arrangements. The Australian Federal Government recognises that the definition of the coast differs according to how it is measured and for what policy purpose it is defined.

Clearly, there are difficulties in being too descriptive about a single definition of the coast. Instead, we need to take an integrated management approach that recognises the links between the land, coast, and ocean, learning from the Indigenous concept of Land and Sea Country. This sees an inclusive approach, one that recognises the interconnectedness of waterways, beaches, and the seas.

Australia's most productive natural systems and landscapes are on the coast, inalienable to the freshwater systems upstream. This makes them the natural home to the vast majority of Australians on this desert continent. These systems also provide homes to thousands of species, with 75 to 95% of all fish species caught by recreational and commercial fishers spending at least part of their lives in estuaries and inshore wetlands (Creighton, 2013).

Given these innate connections linking land, rivers, coastal ecosystems, and the sea, we must reform our thinking, institutions, and frameworks to consider them as an interconnected whole. Holistic approaches are vital if economic growth is to be achieved and threats are to be managed while socio-cultural values are maintained.

INTEGRATED ACTION WITHIN THE BLUE RIBBON

The richness of the blue ribbon, the wildlife and landscapes, the human communities, and the level of critical economic activity makes thinking about and addressing this diversity a far from trivial task. To help make it tractable, the working group highlighted two aspects we see as key to shaping the blue ribbon over the next decade and beyond. These are the blue and resilient coastal communities. Both will be necessary if we are to tackle the many challenges facing our communities, blue ribbon ecosystems, and the nation as a whole. We chose these themes as Australia is in a unique position to get ahead of the wide scale development of the blue economy, to make sure it is structured from the outset to be sustainable, avoiding missteps made on land. This must be done without overlooking the need to support coastal communities. Consequently, these two theme areas are important to delivering the vision of a vibrant blue ribbon now and into the future.

Resilient Coastal Communities

There are 36,000 km of coastline where more than 85% of the Australian population resides (Clark & Johnston, 2016). These communities span large cities to coastal towns and hamlets with a variety of needs; some are more dependent on the coast than others. These communities face increasing threats, including coastal inundation, heat stress, bushfires, cyclones, and other storms. Indeed, these threats came to life in the last year, with the fires of 2020, the extreme storms of the early months of 2020 and 2021, and the ongoing COVID-19 pandemic underlining the extreme levels of disruption Australia's communities will face in the future.

Australia needs resilient communities that can withstand, absorb, adapt, and recover from the effects of the many stresses and hazards they will face in this rapidly changing world. The cost of not acting when preparing for these threats will be substantial to people and the environment; sea level rise alone is projected to cause losses of USD$800-1000 billion globally (IPCC, 2019). Therefore, we must move to and develop more resilient coastal communities, both human and ecological, that are prepared for the coming challenges.

Indeed, we must remember that our human communities prosper when our ecological communities are thriving, protected, and resilient. Healthy coastal ecosystems can provide food and habitats for diverse plants and animals including commercial and recreational fish species and protect coastal infrastructure from erosion, storm damage, and flooding. Coastal wetlands are also efficient carbon sinks, storing blue carbon for millennial timescales and providing natural climate solutions to address elevated atmospheric carbon dioxide. We also enjoy recreation activities on our coasts when these areas are unpolluted, healthy, and beautiful. Human and ecological communities must both be addressed as we work to build resilience.

Blue Economy

During preparations for the Rio+20 or Earth Summit (United Nations, 2012), many maritime nations, especially the island states, urged the UN to recognise the importance of oceans to hundreds of millions globally and to extend the 'green economy' vision to the oceans – a 'blue economy' (Silver et al., 2015). The UN Member States committed "to protect and restore the health, productivity, and resilience of oceans and marine ecosystems to maintain their diversity, enabling their conservation and sustainable use for present and future generations" (United Nations, 2012). Thus the term 'blue economy', representing the sustainable and equitable use of marine resources, supporting thriving and resilient communities and ecosystems, was coined.

In a nation such as Australia, where there are such strong connections between the land and the ocean, it makes sense to accept that the concept of the blue economy applies to the blue ribbon: the coastal strip and influencing catchments, all the way to our ocean. In this context, a blue economy that looks to create a thriving society via sustainable and equitable use of coastal and marine resources is a natural fit with the Australian environment and people from all our diverse cultures.

Marine and coastal industries already make a substantial contribution to Australia, totalling $81.2 billion according to the AIMS Index of Marine Industry 2020 (AIMS, 2020). If development in Europe is any guide, marine-based industries could grow significantly over the coming decades.

"The interconnectedness of our oceans and the management of marine resources requires engagement with neighbouring countries to support their approaches to marine and coastal resource management, so as to enhance the sustainability of our global blue economy which in turn will reinforce actions in Australia that support building resilient communities and ecosystems nationally and locally."

Michael Annear,
Director of International Programs,
Australian Red Cross

3 KNOWLEDGE

OVERVIEW OF THREATS

The threats to oceans and coasts are myriad and overlapping and must be considered as we chart a path for a sustainable future for our blue ribbon. These areas are burdened by many users crowding the same space and straining resources, while environmental issues like climate change further exacerbate conditions. Humans can also indirectly impact the fate of oceans and coasts through socio-political factors and policy structures that shape how we use and perceive the blue ribbon.

To capture the breadth and depth of threats facing Australian oceans and coasts, we systematically reviewed the academic literature over the past ten years. Using the search terms 'coast', 'ocean', 'marine', 'Australia', and 'threat', we compiled a group of relevant papers to analyse and describe these threats. From these threats, we identified the impacts they had on four values: environmental, economic, socio-cultural, and Indigenous. These impacts augment the 'triple-bottom-line' concept that balances profit, people, and the planet, by adding an explicit recognition of the key importance of Aboriginal and Torres Strait Islander peoples to Australia.

In this systematic review, we considered peer-reviewed academic literature that identified a threat to our oceans and coasts. While this review reveals the topics that academics have been researching and discussing over the last decade, it cannot tell us about the perspectives and concerns of other user groups – for that information, see 'Consultation: What do stakeholders say?' (page 35).

Findings

Through our search of more than 2600 papers, we identified 228 papers from the last decade that described 311 threats to Australian oceans and coasts. We grouped these into three major categories:

1. threats from use and extraction
2. broader environmental and human induced threats
3. policy and socio-political threats.

The first group of these threats arise from use and extraction of oceans and coasts that modify the environment: damaging and destroying crucial habitats, negatively impacting biodiversity and iconic species, and degrading our blue ribbon's social and cultural values. While some of these threats such as pollutants and marine debris can and should be eradicated, others are inherent parts of our human economy, including urban development, recreation, fishing, agriculture, and shipping. Australia's projected population growth indicates that settlements in coastal areas will continue to develop, bringing with them land use change and greater infrastructure needs, while agricultural practices and fishing must expand to provide for these populations. Indeed, the expansion of industrial activities, including mineral extraction and processing, oil and gas exploration, renewable energy, and shipping and port development, adds to the diversity of activities occurring in the coastal and marine space. In such multiple use environments, conflict between users often limits recreational and cultural access to our blue ribbon.

The second group of threats are broader environmental threats that are exacerbated by human activities. Human-induced climate change is the most prominent of these threats, influencing the full span of the blue ribbon from coasts to oceans. In the ocean, the effects of climate change include increased temperatures, ocean acidification, and changes in ocean currents, which together create conditions that increase the risk of mass coral bleaching, cause species range shifts, and can cause mismatches in the timing of important reproductive events. The accelerating pace of climate change is also problematic because it drastically shortens the timescales at which marine organisms can adapt to changing conditions, meaning that many may not keep pace. Coastal areas are also exposed to climate-induced threats, including sea level rise, extreme weather events, inundation, and erosion, which together can degrade or destroy not only key ecosystems, but also our coastal communities and infrastructure. Other environmental threats are intertwined with human activities as well; for instance, invasive species are often introduced by human transport like shipping or by expanding their ranges due to climate change. Similarly, high levels of turbidity from sediment can be linked to dredging activities, destroying seagrass meadows and coral reefs. These threats demonstrate how human activities can modify the environment with consequent impacts.

The third group of threats focuses on policy and socio-political threats. Several socio-political factors have hindered progress on sustainable oceans and coasts in Australia. These include a focus on profits over broader concepts of human wellbeing and environmental sustainability, diverging perceptions of sustainability and conservation between researchers and civil society that are sometimes driven by the media, and a gap between intentions and behaviours regarding conservation. Additionally, maritime security threats, including illegal, unreported, and unregulated fishing, have been highlighted as crucial to address.

In addition to describing these threats, we also summarised the impacts of these threats on four values: environmental, economic, socio-cultural, and Indigenous. We found that the majority of impacts described were environmental (69%), followed by economic (13%), socio-cultural (12%), and Indigenous (5%). This finding highlights the overwhelming number of impacts reported in the scientific literature for ocean and coastal ecosystems, resulting in widespread habitat and biodiversity loss.

Gaps and Opportunities

Our systematic literature review revealed a range of gaps in our knowledge and practice of oceans and coasts.

First, some direct human impacts on oceans and coasts, including pollution and debris, are unnecessary and harmful, and must be diminished to the fullest extent possible. Other activities such as agriculture, fisheries, aquaculture, shipping, and urban development cannot simply end, but must proceed for society to continue and develop. Therefore, we must change how we conduct these activities to better align with this strategy's vision: healthy coasts and oceans for a just and environmentally sustainable future for all.

Second, with so much of the coastal and marine space subject to human activities, biodiversity and the non-living environment are subject to cumulative impacts. While we have separated our discussion of threats into categories for ease of description, the reality is that many of these threats are inherently linked and exacerbate one another (see box on page 26, 'From catchments to reefs: integrated oceans and coasts'). Of the 228 papers reviewed, only 20% described multiple threats, and even fewer examined the impacts of cumulative threats (whether interacting or overlapping). Yet we know that these threats do not occur in isolation; the past year alone has seen catastrophic fires coinciding with unprecedented levels of flooding. Indeed, the importance of addressing cumulative effects has been realised globally, and activities in this space are growing rapidly. Together, these findings point to a need for an integrated, systems-level approach to determine optimal management strategies and establish overarching standards, legislation, and policies to mitigate cumulative effects. They also point to the efficacy of working in partnership with Aboriginal and Torres Strait Islander peoples to learn from their enduring experience of managing multiple ecological systems, their Countries, over millennia.

Third, the socio-cultural threats to oceans and coasts cannot be overlooked. Without a consistent national vision and collective effort towards building a sustainable blue ribbon, our ambitions will not be realised. Despite the deep connections that Australians feel with their oceans and coasts, vested interests can shift priorities in management and policy towards short-term profits at the expense of long-term sustainability. The complexity and politicisation of ocean and coastal issues can also muddle progress as conversations become polarised and mired in distrust. These relationships need to be built and maintained to see our vision through.

Finally, our findings highlight the lack of attention paid to economic, socio-cultural, and especially First Peoples' knowledge and perspectives. While many researchers are employed to study the ecosystem, the community members we spoke to in our workshops reflected the need to balance concerns for their social communities, Aboriginal and Torres Strait Islander groups, and livelihoods, with and in correlation to the ecosystems that support them. Future management regimes also need to incorporate social justice and pathways for recognising and valuing the agency and voice of Aboriginal and Torres Strait Islander peoples in contemporary policy frameworks. Indeed, this

highlights a disparity we identified between our literature review and our community consultation: the scientific literature as yet, written largely by non-Indigenous scholars, does not reflect the centrality of and need to include the rights and knowledge of Australia's First Peoples (Fischer et al., 2020). The tide is changing in this respect, with new guidelines recently issued by the North Australian Indigenous Land and Sea Management Alliance Ltd (NAILSMA) and CSIRO on best practices for Indigenous-led strengthening and sharing of knowledge for land and sea management (Woodward et al., 2020). These principles are being integrated into major environment reporting such as the State of Environment Report 2021 (see box on next page: 'State of the Environment Report').

Overall, our results highlight a clear distinction between where we have come from in the last ten years and where we aspire to go: towards a strong community desire for the centring of First Peoples' perspectives and knowledge.

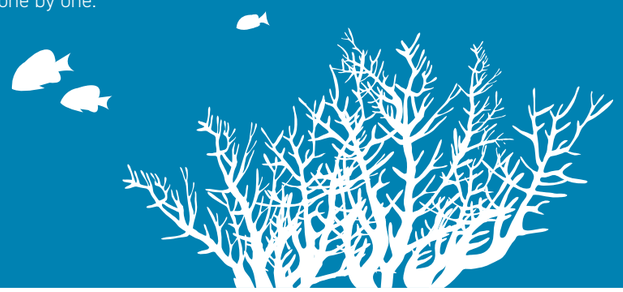
FROM CATCHMENTS TO REEFS: INTEGRATED OCEANS AND COASTS

The threats impacting Australian oceans and coasts are overlapping and interconnected. Here, we explore these connections through the example of a river system that empties onto a reef.

The rivers that flow into the ocean have a great deal of impact on the water quality in the estuary and its surrounding oceanic waters. Expansions in agriculture, mining, and urban development are increasing the amount of pollution washing into these rivers. High loads of nutrients can cause eutrophication, toxic phytoplankton blooms, and hypoxic conditions near the shore, as well as coral bleaching and crown-of-thorns starfish outbreaks in deeper waters. Sediments, and associated turbidity, can cause major losses in seagrasses and corals and changes to community composition and richness. Pesticides are also harmful, killing mangroves and negatively affecting corals.

Exacerbating all of these pollutants is the threat of climate change, which can change rainfall patterns and cause massive plumes of pollutants and sediments to wash out of river mouths with greater frequency and higher intensity. This further degrades mangrove and seagrass habitats, which are simultaneously losing habitat to sea level rise, squeezing them between coastal developments and the rising ocean. As these habitats degrade, they turn from excellent reservoirs of carbon storage into carbon emitters, increasing the amount of greenhouse gases in the atmosphere and exacerbating climate change.

It is clear that these threats are deeply interwoven and exacerbate one another. We must approach the management of the blue ribbon with an eye to all threats at once, rather than one by one.



STATE OF THE ENVIRONMENT REPORT

The State of the Environment Report is an independent review of the state of the environment, commissioned by the Australian Government every five years. Written by a panel of independent authors and based on the best available evidence, the State of the Environment Report provides authoritative information on the state of the Australian environment and assesses how effectively the Australian environment is being managed. The report is influential in shaping policy and action, and with sections devoted to coasts and marine environments, it is pertinent to our strategy.

A new feature of the forthcoming 2021 State of the Environment Report will elevate the importance of Aboriginal and Torres Strait Islander peoples' leadership and knowledge of the environment. Indigenous and non-Indigenous authors have jointly developed Indigenous Co-Authorship Collaboration Guidelines, Strategy, and an Indigenous Glossary to support the drafting, reporting, and consultative process. Additionally, with Indigenous co-authors contributing to all twelve themes and an Indigenous lead co-chief author of the entire report, Indigenous voices, values, and knowledge will be used to inform decision making for better environmental outcomes in caring for Country.

POLICY AND GOVERNANCE

Introduction to Policy and Governance

Given the urgency of threats affecting Australia's oceans and coasts, there is an imperative to review and develop appropriate ocean and coastal policies to create opportunities for a sustainable future for oceans and coasts.

There have been several national approaches, frameworks, or plans developed in response to environmental pressures to oceans and coasts. These include, for example, the *National Fisheries Bycatch Policy* (1999) and the *National Cooperative Approach to Integrated Coastal Management* (2006). The success or failure of these has depended on levels of cooperation between state and federal governments, or a linkage to legislative requirements such as fishery export assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

There are federal policies relating to Commonwealth jurisdiction, such as *Australia's Ocean Policy* (1998). There are also some important and relevant reviews, including the recent review of the EPBC Act.

In addition, there has been a range of national reports and strategies produced by the Australian Federal Government, such as the *Assessment of Climate Change Risks to Australia's Coasts* (2009) and the *National Climate Change Resilience and Adaptation Strategy* (2015). These reports and strategies often rely on state government support through the Council of Australian Governments (COAG). There are also numerous state-based policies and pieces of legislation that incorporate matters of national environmental significance at a regional level, such as the *Harvest Strategy Policy* for aquatic resources in Western Australia (2015) or the *NSW State Environmental Planning Policy (Coastal Management)* (2018).

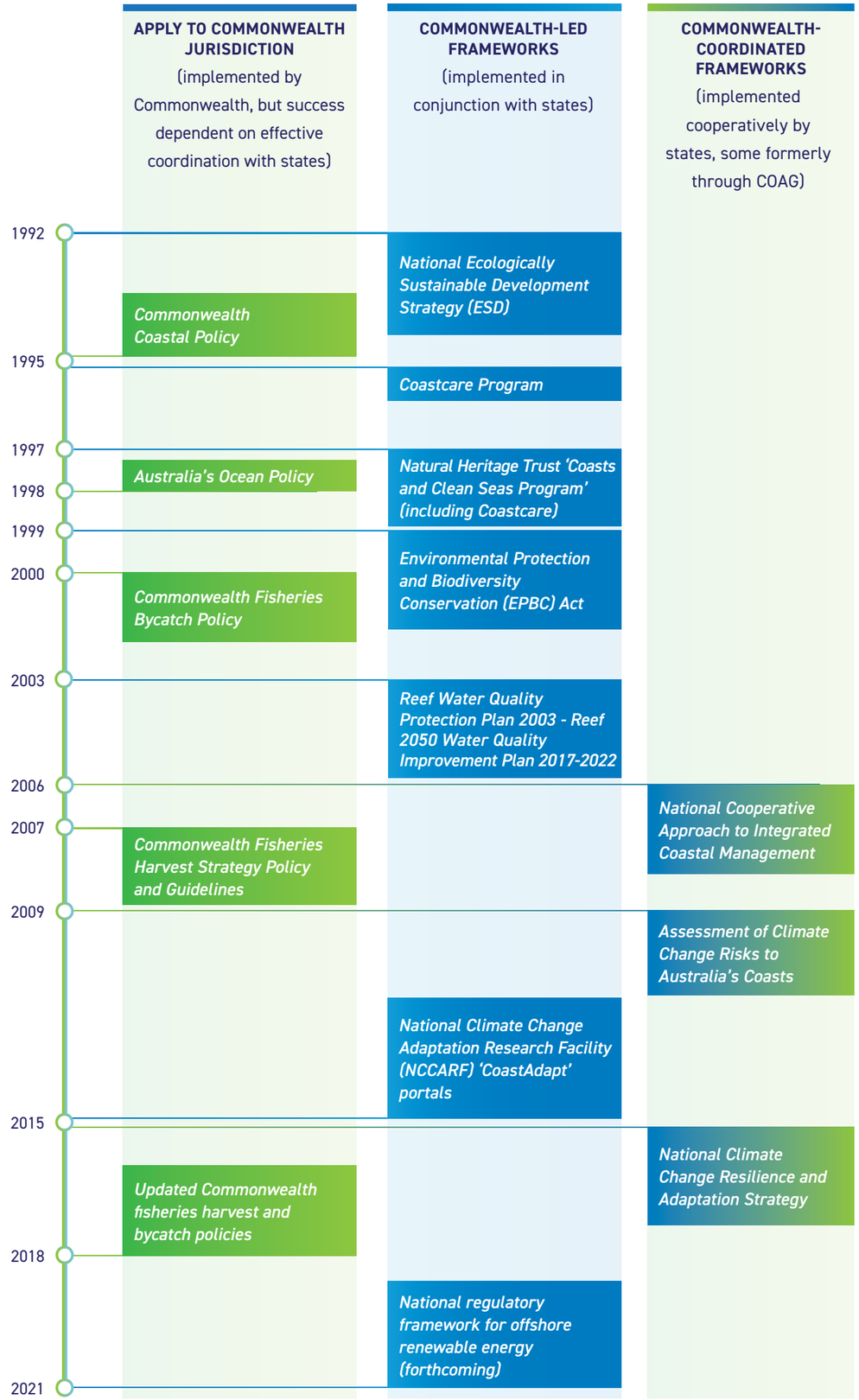
WHO GOVERNS AUSTRALIA'S OCEANS AND COASTS?

Governance of Australia's oceans and coasts is both divided and shared between Commonwealth, state, and local government. This coexists with traditional Aboriginal and Torres Strait Islander custodial systems that define the Country of Traditional Owner groups and predates British colonisation.

Given the continuum of activities that extend from the coast to sea, the Offshore Constitutional Settlement, agreed in 1979, resulted from negotiations between the Commonwealth and the states and territory to identify which level of government has the power to make laws in which area. Under the settlement, each sector's issues are dealt with separately within agreed arrangements, including a legislative package, an offshore petroleum package, an offshore fisheries package, a Great Barrier Reef package, and new ancillary arrangements (Haward & Vince, 2008). The settlement generally defines that the states and territory have responsibility for waters out to 3 nautical miles offshore (named 'coastal waters') while the Commonwealth is responsible for waters from 3 to 12 nm (the territorial sea), the exclusive economic zone that extends out to 200 nm, and the extended continental shelf.

Australia's ocean and coasts are affected by many activities occurring on land. It follows that a range of others also participates in governing pertinent issues. While responsible for coastal planning and how activities affect coasts, state, and territory governments are also responsible for issues such as agriculture and primary resources, water planning and use, national parks, primary industry, mining, and land use planning. Policy in these areas, then, have important implications for coastal and ocean health.

Despite not being constitutionally empowered, state and territory governments have made local governments, and other local advisory and management committees and/or boards, responsible for a range of issues that have significant impacts on ocean and coastal systems. These include municipal water use and infrastructure, land use planning and rules, how and where towns and cities develop, and the development and maintenance of some public infrastructure. Regional councils and council cooperatives are commonly formed to plan and act on these issues in tandem.



Other examples where the Australian Federal Government has attempted national coordination of coastal management include the Integrated Coastal Advisory Group elevated into a former COAG committee, the National Coastal Council 2010–2011, Marine Coastal Community Network (NGO), National Climate Change Adaptation Research Facility, and Coastcare. For various reasons, these no longer have Commonwealth support.

Some non-government organisations and philanthropic organisations are providing leadership in supporting coastal and marine science and community-led restoration (e.g. The Nature Conservancy; Schmidt Ocean Institute) or responding to national disasters affecting the coast (e.g. the Red Cross).

There are gaps and opportunities for developing future policies and integrating existing separate jurisdictional approaches. Given that this strategy is a forward-looking ten-year strategy, there are several emerging policy opportunities (such as the development of the blue economy and the importance of management by Aboriginal and Torres Strait Islander peoples) that will need a new approach and identification of new themes that require future action at a national level.

Overview of Ocean and Coastal Policies

COASTAL POLICIES

There is no national coastal policy or legislation. Coastal management in Australia has been noted for a lack of national coordination and integration, primarily because of complex governance structures (Harvey, 2016). The most recent of a number of national coastal management inquiries (HORSCCCWEA, 2009) recognised the need for better integration and effective adaptation to climate change in coastal management.

Only four Australian states have dedicated coastal legislation, and three of these (QLD, NSW, and VIC) recently initiated significant coastal policy reform (Harvey & Clarke, 2019). Western Australia (WA), which has coastal management as part of its planning legislation, has also experienced significant change. Two states (NSW and VIC) repealed their existing coastal legislation, replacing each with entirely new legislation that sets integration as a goal in its objects and guidelines, albeit with different mechanisms for achieving integration in each state.

The objects of the NSW *Coastal Management Act 2016* include a sustainable and integrated approach to coastal management to mitigate risks from coastal hazards, including the effects of climate change. Another object supports the *Marine Estate Management Act 2014* in a clear push to provide better integration across the coastal and marine continuum. One of the more innovative planning reforms is the inclusion of sediment compartments as part of a national framework (Thom et al., 2018).

The Victorian *Marine and Coastal Act 2018* is aimed at integration across the coastal and marine environment. It contains guiding principles, including the need for integrated and ecosystem-based management. The Act's companion *Victorian Coastal Policy* (2020) includes a marine spatial planning framework to guide integrated and coordinated long term planning and management of the marine environment.

Coastal policies are currently challenged in dealing with the significant impacts from hazards in and around Australian coastal settlements. These impacts will increase substantially with climate change, including the insidious adverse effects of sea level rise. Increasing storm, heat, drought, and fire intensity and severe compound flooding events are degrading coastal and nearshore marine ecosystems as well as threatening the lives of coastal dwellers. In the past decade, more than 40% of Australia's marine habitats have been severely impacted by extreme climate events (Babcock et al., 2019), stripping back coastal protections and reshaping the local ecosystems.

Homes and infrastructure under threat have been documented through first and second pass risk assessments since 2009. This persistent exposure of property and public assets puts at risk so much of what Australian society values and will want protected. There has been some success in developing a national response to assess coastal management risks associated with climate change (DCC, 2009; DCCEE, 2011; HORSCCCWEA, 2009). In particular, the risk assessment reports identified the numbers of coastal properties and infrastructure that could be at risk from climate-induced sea level rise and potential erosion.

OCEAN POLICIES

Ocean policy and legislation have been developed concurrently by the Commonwealth and states and the Northern Territory (Vince et al., 2015). The result is a complex and fragmented policy and legislative environment involving hundreds of policies, laws, and independent entities (Haward & Vince, 2008; Yin & Techera, 2020). This is compounded by the fact that marine uses, activities, and resources have been traditionally managed on a sectoral basis involving hundreds of policies and laws and independent entities pertaining to different jurisdictions (Haward & Vince, 2008).

Given the interconnectedness of the marine social-ecological system, it is important that ocean governance does not diverge unnecessarily across jurisdictions. In fact, improving ocean governance requires harmonising policy and legislation where appropriate (Yin & Techera, 2020).

In this regard, *Australia's Oceans Policy* (1998) aimed to provide an integrated and holistic framework based on approaches such as ecosystem-based management and marine spatial planning (Vince et al., 2015).

However, navigating the complex and interrelated sectoral issues proved somewhat challenging. The exclusion of the states and coastal zone from the policy process resulted in limited integration across jurisdictions and sectors (Vince, 2018). In response, there have been initiatives at the state level, such as *NSW Marine Estate Management Strategy 2018–2028* and Victoria's *Marine and Coastal Act 2018*, as well as cross-jurisdictional initiatives such as the management of the Great Barrier Reef (see box below: 'Reef 2050 Water Quality Improvement Plan 2017-2022').

Moving towards a genuinely national approach to ocean management will require the inclusion of the states and territory and consideration of the coastal zone, which were largely overlooked in the previous iteration of Australia's Ocean Policy (Vince, 2018).

POLICIES AND LEGISLATION RELATING TO ABORIGINAL AND TORRES STRAIT ISLANDERS' SEA COUNTRY MANAGEMENT

First Peoples' holistic approach to environmental management does not distinguish between land and sea. By contrast, the complex landscape of multiple Australian jurisdictions takes a sectoral approach to management policies, which is further complicated by land rights issues, particularly for Sea Country.

Legislation in the 1970s, such as the *Great Barrier Reef Marine Park (GBRMP) Act*, the Northern Territory land rights legislation, and the Torres Strait Treaty, provided a precursor for Sea Country policies and agreements. Subsequent management agreements were created largely as a reactive

REEF 2050 WATER QUALITY IMPROVEMENT PLAN 2017-2022

The 'Reef 2050 Water Quality Improvement Plan 2017-2022' is the most recent statement by the Australian and Queensland governments on their joint efforts beginning in 2003. The plan requires cooperation with both governments, Traditional Owners of Land and Sea Country, local government, authorities, and private tenure landowners. Initially, the goal was to halt and reverse the decline of water quality in the Great Barrier Reef. Now, the plan has specific targets for improving water quality. There are comprehensive scientific research programs underpinning the efforts on both land use improvement and in assessing progress towards the targets.

This effort is a cooperative program under an intergovernmental agreement established in 1979 between the Queensland and Commonwealth governments to cooperate on management of the Great Barrier Reef, the so-called Emerald Agreement between the Prime Minister and Premier. The scope of the plan includes both jurisdictions, extending across the Queensland Great Barrier Reef Catchment (424,000 km^2) and the Commonwealth Great Barrier Reef Marine Park (344,400 km^2). The total government investment in improving Reef water quality since 2013 through to 2024 is more than $900 million.

response to a number of successful Commonwealth High Court challenges won by First Peoples over land and sea rights such as Mabo (Torres Strait), Yanner (Northern Territory), Croker Island (Northern Territory), Blue Mud Bay (Northern Territory), and Akiba (Torres Strait).

In the 1990s, Australia introduced a policy on Indigenous Protected Areas (IPA). IPAs are voluntary agreements entered into between the Australian Government and relevant Indigenous groups. IPAs are regions of Land and Sea Country that become protected areas managed by the relevant Aboriginal and Torres Strait Islander group for biodiversity conservation (Rist et al., 2018). There are now 78 IPA agreements in Australia, with just over 10% having a marine component. The first IPA including Sea Country was the Dhimurru IPA in northeast Northern Territory. The Yolŋu People, Traditional Owners of the Dhimurru IPA, gained legal ownership of their land and intertidal zone under the *Aboriginal Land Rights (Northern Territory) Act 1976* (Cth). In 2021, the government allocated $11.6 million over two years to establish nine IPAs that expressly incorporate Sea Country.

Another form of voluntary management created in the Great Barrier Reef region is the Traditional Use of Marine Resources Agreement (TUMRA). A TUMRA is a community-based partnership with the state and federal governments, mandated within the *Great Barrier Reef Marine Park Act 1975*, with the state and federal governments that outlines agreements on the joint management of the traditional use of Sea Country, especially traditional take of important species such as turtle and dugong. The TUMRA program is part of the decade-long Indigenous Land and Sea Country Partnerships program covering broader Sea Country planning and management. There are now nine TUMRA within the Great Barrier Reef region. There is also an Indigenous Land Use Agreement (ILUA) that covers eighteen traditional owner groups. Located in the Cape York, the land use agreement called the Kuuku Ya'u People's Marine Park ILUA covers 1,970 km^2 of sea in the Great Barrier Reef Marine Park. It describes the native title rights and interest of the Kuuku Ya'u People and a range of joint management agreements for the area. These agreements now span over 25% of the Great Barrier Reef Marine Park that is managed by its First Peoples.

CO-MANAGEMENT

A number of co-management and joint management arrangements also exist over Sea Country. Co-management arrangements outline a partnership between a state government or the Australian Federal Government and the respective First Peoples. In South Australian national parks, for example, where there are now 12 co-management agreements in place, co-management enshrines four principles: (1) continued cultural, spiritual, and traditional use of the park by the relevant Aboriginal group; (2) continued enjoyment of the park by members of the public; (3) preservation and protection of Aboriginal sites, features, objects, and structures of spiritual or cultural significance; and (4) protection of natural resources, wildlife, vegetation, and environmental features of the park.

The work of Girringun Aboriginal Corporation in Queensland is an example of successful marine co-management where over 20 years they have worked with multiple partners to assure shared cultural, economic, and environmental outcomes for their Sea Country. They have evolved co-management to be a process rather than a product (Zurba et al., 2012; Nursey-Bray & Rist, 2009) which means it is ongoing and active.

In Australia, there also exists a range of jointly managed marine estates. For example, the Yawuru people of Roebuck Bay in Western Australia have developed a joint management plan that describes how the marine and coastal estates in the region will be managed. Another example is the Gaagal Wanggaan (South Beach) National Park joint management program in New South Wales, where Aboriginal people of the Nambucca Valley and the National Parks and Wildlife Service jointly manage the park via a board of management.

Finally, across Australia, there is a wide range of Sea Country plans being implemented, providing another forum through which Aboriginal and Torres Strait Islander peoples contribute to the ongoing management of our oceans. Examples include the Lungtalanana, Babel Island, and Big Dog Island Healthy County Plan in Tasmania, the Thuwathu/Bukimulla Sea Country plan for the Gulf of Carpentaria in Queensland, the Kooyong Sea Country Plan in Victoria, and the Ngarrindjeri Nation Yarluwar-Ruwe Sea Country Plan in South Australia, amongst many others.

KEY LEGISLATION, POLICIES, AND MANAGEMENT AGREEMENTS RELATING TO FIRST PEOPLES' SEA COUNTRY MANAGEMENT

1992 — Mabo decision: Overturned Terra Nullius and recognised native title leading to the promulgation of the *Native Title Act 1993* (*Mabo v Queensland* (No 2) [1992] HCA 23, (1992) 175 CLR 1).

1999 — (*Yanner v Eaton* [1999] HCA 53) The taking of a crocodile was prosecuted under state legislation and disputed at the High Court, which decided that the taking of crocodile was an exercise of native title rights and confirmed that native title holders could exercise such rights on native title land.

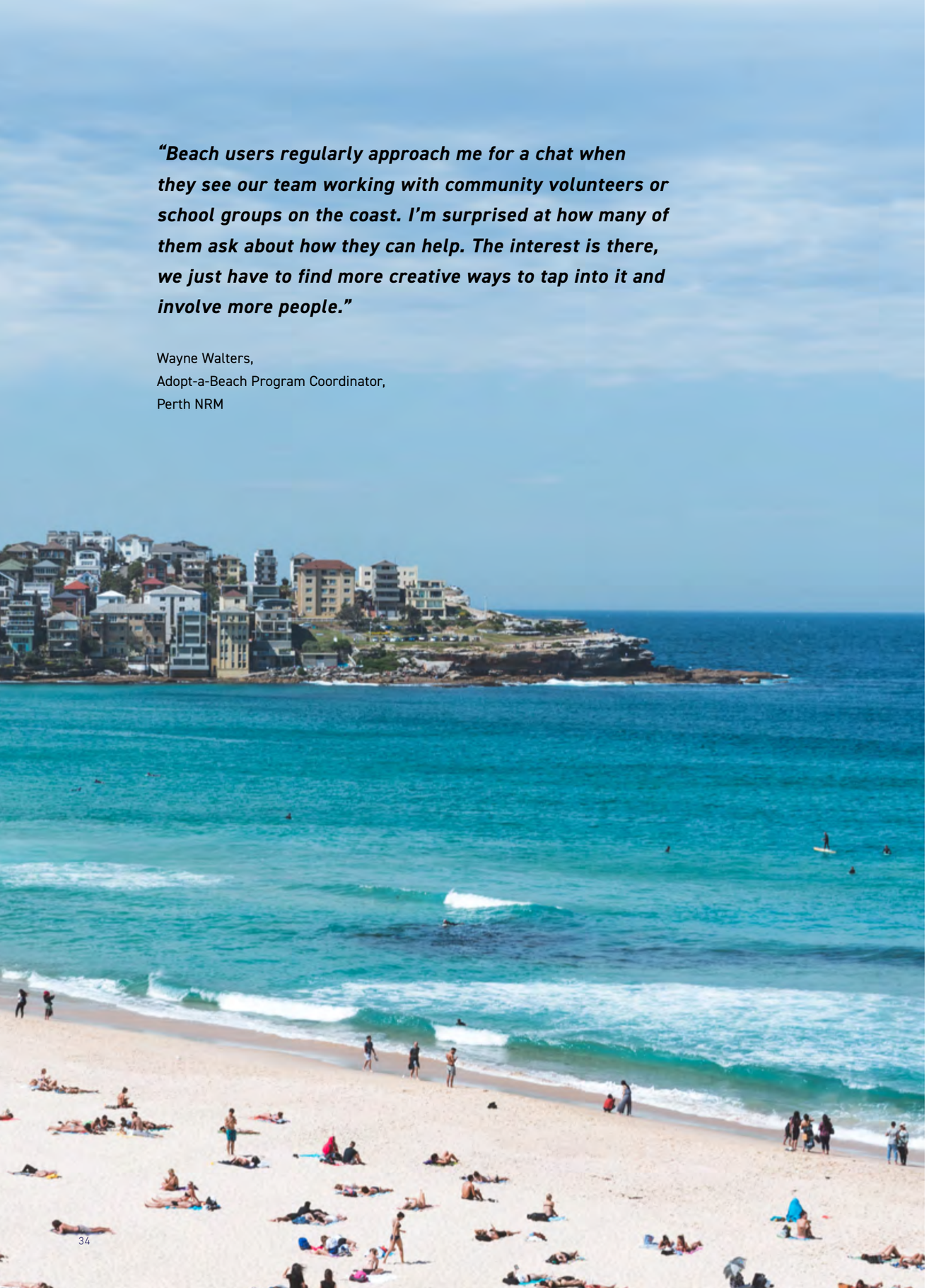
2001 — Croker Island (High Court) decision: Native title recognised to their seas surrounding their island (*Yarmirr v Northern Territory* [2001] HCA 56, (2001) 208 CLR 1).

2008 — Blue Mud Bay case: Sea Country rights granted to the Yolnu people of the Northern Territory. This case led to a decision that stated that entry onto waters over Aboriginal land, for a purpose such as fishing, requires permission from the relevant Aboriginal Land Trust and was a case that applied to approximately 85% of the coastline of the Northern Territory (*Northern Territory v Arnhem Land Aboriginal Land Trust* (2008) 236 CLR 24).

2013 — In 2013, the High Court considered a matter where traditional owners harvested undersized abalone and were prosecuted under the state Fisheries law for fishing without a relevant licence. The High Court determined that state legislation did not extinguish the native title rights to hunt and fish, confirming the position in Yanner v Eaton (*Karpany v Dietman* [2013] HCA 47; 252 CLR 507).

The first litigated High Court decision occurred in relation to commercial rights and interests in the Torres Strait and was on behalf of the Torres Strait Regional Seas Claim Group v Commonwealth of Australia. They determined that a native title right to commercially exploit fish did exist in relation to 13 Torres Strait Island communities for "trading or commercial purposes." This was determined as part of the right of the peoples to operate traditional systems of land and custom and rights to fish. While this decision was challenged, it was ultimately upheld (*Torres Strait Regional Seas Claim Group v Commonwealth of Australia* [2013] HCA 33; 250 CLR 209).

2020 — The Blue Mud Bay Implementation Action Plan was launched.



"Beach users regularly approach me for a chat when they see our team working with community volunteers or school groups on the coast. I'm surprised at how many of them ask about how they can help. The interest is there, we just have to find more creative ways to tap into it and involve more people."

Wayne Walters,
Adopt-a-Beach Program Coordinator,
Perth NRM

Gaps and Opportunities

Numerous government-led inquiries over the last 40 years reveal fragmented governance and a lack of integration. The most recent federal coastal management inquiry (HORSCCCWEA, 2009) found it necessary to review previous inquiries. However, the major concern was that multiple recommendations from these reports had produced very little action. This presents a challenge for the development of an integrated strategy. A major obstacle to integration in ocean and coastal management remains the separation of responsibilities between the federal and the state and territory governments.

Policy integration, or the lack thereof, remains a key challenge to ocean and coastal governance in Australia. The case of emerging offshore marine industries, such as ocean renewable energy, is illustrative. Obstacles to these industries include:

- high regulatory complexity, including numerous agencies with responsibility over different aspects of offshore activities with overlaps between these agencies (Haward, 2019)
- siloing across sectors creating inefficiencies as well as opposition, stalling progress (Stephenson et al., 2019)
- lack of dedicated arrangements to regulate them (Haward, 2019)
- inconsistent marine planning for ocean renewable energy across state and federal jurisdictions (Hemer et al., 2018)
- possible permit requirements for ocean renewable energy projects from different entities across local, state and federal jurisdictions
- variations in the permission system and its level of maturity at local and state government levels across the country (Hemer et al., 2018).

Considering the enduring challenges to ocean governance in Australia, many scholars have called for renewed efforts towards a new oceans policy capable of connecting contemporary pressing issues (e.g. climate change, pollution, marine conservation) with integrated approaches (Vince, 2018). Consistency of jurisdictional and policy arrangements is also essential to address the challenge of fragmented coastal policy responses and outcomes (O'Donnell, 2019).

CONSULTATION: WHAT DO STAKEHOLDERS SAY?

To build a strategy for a thriving and sustainable blue ribbon, the voices of those living and working in the blue ribbon must be heard. These stakeholders hold a wealth of knowledge, ideas, and innovations, grounded in the reality and priorities of places. Schools, governments from local, state, and federal level, small to large businesses, academics, surf clubs and conservation groups, non-profit organisations, peak bodies, philanthropic groups, and think tanks are all part of the equation. The voices of Aboriginal and Torres Strait Islander peoples must also be heard, and managers must negotiate and create spaces that ensure active participation and involvement in decision-making fora and policy deliberations.

In September 2020, the Future Earth Australia secretariat designed and facilitated small group discussions over Zoom with leaders and key decision-makers across a range of sectors and interests related to oceans and coasts, in all states and territories. Over 200 people deliberated on their vision for the future of sustainable oceans and coasts, both in their state and in Australia, and how we forge pathways to achieve them.

The ideas and priorities identified in this process provide up-to-date information on the desires and challenges of ocean and coastal stakeholders and draw a path forward for joint action and progress. The opportunities associated with sustainable oceans and coasts must be owned and informed by those who use and protect them.

Aboriginal and Torres Strait Islander Peoples Yarn

Throughout the consultation process, we sought to include Aboriginal and Torres Strait Islander voices in our workshops. However, we also respected the voice of Aboriginal and Torres Strait Islander people who asked for a First Peoples only talking space. Therefore, on 9 November 2020, we hosted a virtual yarn for Aboriginal and Torres Strait Islander peoples to enable them to share their perspectives on ocean and coastal sustainability.

The yarn was led by Professor Martin Nakata and attended by a diverse group of Aboriginal and Torres Strait Islander peoples with many years of expertise in

ocean and coastal affairs. Their stories were different and personal but echoed similar ideas. For instance, many reflected that a key component of sustainability is to consider intergenerational equity, and that it is our responsibility to our grandchildren to protect our environment, Australia's First Peoples' Country, for the future. Though this strategy is planned for ten years, it really should consider five generations and be designed so that management systems will still be in place for generations to come.

The need for a 'knowledge corridor' between Western and First Peoples' knowledge was highlighted, given that Western science is not always conducive to Aboriginal and Torres Strait Islander peoples and their knowledge systems. First Peoples knowledge is ancient, spanning thousands of years, and coming from many different First Peoples groups is very diverse. This depth and breadth would provide significant benefits to Western ways of thinking about and managing oceans and coasts. Cultural corridors on Country are similar, where nobody owns the corridor, but knowledge is shared and there are standards to use it. Yet, this knowledge must also be protected and shared by Aboriginal and Torres Strait Islander people on their own terms.

The First Peoples' concept of Land and Sea Country was held up as a model for integrating the concepts of oceans and coasts. It is crucial to resist the Western scientific instinct to taxonomise, categorise, and separate things, such as coasts versus rivers versus estuaries. By seeing a larger entity and seeing Mother Earth as one life-giving force from a First Peoples' standpoint, we can move away from a competitive Western mentality and help one another. Furthermore, with an understanding of "Mother Earth" as life-giving, people would not pollute it, but use science to live within their means.

Participants also highlighted the diversity of Aboriginal and Torres Strait Islander peoples, and the differing needs they will have with respect to this strategy. One-size-fits-all solutions will not suffice, as Aboriginal and Torres Strait Islander groups have differing levels of resources, management authority, and access to Sea Country.

Synthesis

The main commonalities across the workshops and yarn can be incorporated into three core framings:

1. Aboriginal and Torres Strait Islander knowledge and empowerment

2. Enabling productive and outcomes focused connectivity with bottom-up actions and top-down institutional frameworks

3. Regulatory capability that exemplifies leadership through reliance on science, data, and independent oversight.

ABORIGINAL AND TORRES STRAIT ISLANDER KNOWLEDGE AND EMPOWERMENT

This theme was the clear dominating feature across all the workshops. Participants spoke to this theme in ways such as "centring Indigenous knowledge"; "ensuring First Peoples' voices are heard and acted upon"; "empowering Indigenous peoples to lead" and "building and prioritising a knowledge corridor between Western and Indigenous peoples". Aboriginal and Torres Strait Islander peoples themselves spoke of the critical and urgent need for knowledge of Country to be given its due weight, particularly in light of the 2019–2020 Australian bushfires, and thought that this must be meaningful and led by Indigenous peoples.

Exchange between Western science and Indigenous knowledge and perspectives was also considered a high priority in designing, implementing, and achieving a ten-year strategy for sustainable oceans and coasts.

ENABLING PRODUCTIVE AND OUTCOMES FOCUSED CONNECTIVITY WITH BOTTOM-UP ACTIONS AND TOP-DOWN INSTITUTIONAL FRAMEWORKS

This common theme cut across several different examples but was dominant in all workshops. It was spoken of in ways that include: "mainstreaming multidisciplinary projects"; to "enabling stewardship of our oceans and coasts"; "educating the public about the cultural value of our coastal and marine spaces"; "recognising Land and Sea Country as all-encompassing"; and "a strong need for a connected national network, supported by the states and led by the federal government, which acts to financially support and otherwise empower local–level sustainability programs". Implicit across all of these is a desire to connect across geographical scales and to be more efficient in determining who is responsible for what in the context of the next ten years of sustainable oceans and coasts.

Participants considered that knowledge sharing was crucial, and that this should be enabled by federal leadership and support, including funding. Part of this should include a public education initiative to explore sustainable oceans and coastal literacy and empowering all Australians to be "champions of the coast".

REGULATORY CAPABILITY THAT EXEMPLIFIES LEADERSHIP THROUGH RELIANCE ON SCIENCE, DATA, AND INDEPENDENT OVERSIGHT

A clear desire was expressed from a range of stakeholder perspectives that sustainable oceans and coasts need real-time data, decisions based on science, and a regulatory oversight that enables cross-jurisdictional action. This action is most needed to connect bottom-up and top-down approaches and to scale knowledge and perspectives.

Participants spoke of the "need to emphasise trust, fairness and empowerment of communities" working at the local scale – especially Aboriginal and Torres Strait Islander communities. Leadership needed to be mindful of the "different needs and values of different groups when engaging at the local level", something a national network could help coordinate. While basic research and ongoing investment in science is important, it was emphasised that a great deal of knowledge already exists. The challenge is in accessing this knowledge (data/information should be freely and widely available, while respecting First Peoples' customs on knowledge sharing) and then applying it.

An additional arm to this common theme was the desire to leverage public and private sectors to invest in both the blue economy and resilient coastal communities. A national agency could work to leverage the desire for independence, the need for scaling bottom-up and top-down approaches, the need for leadership, and a desire to bring all stakeholders together with a long-term strategic focus as a common goal. Explicit was the desire for all voices – Traditional Owner groups, local councils, state government bodies, and peak bodies – to be heard and valued equally.

SUMMARY

As an island nation, national security, maritime trade, and immigration are policy arenas for the Australian Government and impact how the nation thinks about and treats our sustainable oceans and coasts. We also know that the frameworks supporting decision making in Australia are complex, and that there is a large role for managing oceans and coasts at state and local levels. This complexity was captured in discussions in each state and territory. For example, the Northern Territory has significant challenges for sustainable fisheries, tourism, and relationships with Aboriginal and Torres Strait Islander peoples. Participants considered the challenges for the top end to be unique, and desired a robust, coordinated, and place-based approach to long-term sustainability actions.

In Queensland, a clear priority was protecting the Great Barrier Reef and recognising the value of the water-coast-ocean continuum. The continuum approach aligns with Land and Sea Country and recognises the holistic way in which land, including waterways, and the sea are connected. In New South Wales, there was a strong desire to leverage public–private partnerships and industry investment in ocean and coastal sustainability. Victoria had a strong emphasis on repairing relationships with Aboriginal and Torres Strait Islander groups and focusing on the southern coast and ocean.

Participants in Tasmania, Victoria, and South Australia prioritised ensuring that basic science would continue to provide real-time data to support evidence-based policy and investment decisions, as well as learning from successes in existing initiatives, such as those in the Natural Resource Management (NRM) sector. In Western Australia, also reflected in New South Wales, a number of participants felt that more robust and independent regulatory schemes might assist in "stitching up" the already good work that is happening around the country. There was also a strong desire to support grassroots initiatives that develop ideas of "sustainable ocean and coastal stewardship" across the population.

In-depth analyses from each state and territory are available as outcomes papers on our website: futureearth.org.au/initiatives/ocean-and-coastal-sustainability

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SEGUE TO ACTION

IMPLICATIONS FOR THE NATION

All of the knowledge sources drawn upon in developing this strategy concur that Australians of all backgrounds have a deep connection to our coasts and adjacent waters, to Australia's blue ribbon. We live in, on, and beside it. We share a palpable excitement for the opportunities and support it provides. Even those who live far from Australia's coasts feel a connection, marvelling at how it shapes their weather and environment. While our individual relationships may have been shaped uniquely, that shared connection to Australia's blue ribbon will be critical for realising our ambition of ensuring that Australia's coasts and oceans are healthy and can provide a just and environmentally sustainable future for all Australians.

'We are all in this together' may have become a well-worn phrase over the past year, but now more than any other time, we need to embrace that concept. We need to act collectively as a marine nation to ensure the needed tools, infrastructure, policies, understanding, and vision are in place to ensure our oceans are healthy and our communities resilient.

This involves recognising where we have come from – the fragmentation, the missteps, the partial appreciation, a continued short-term focus – and pivoting to what is needed: a maturity of approach strengthened by integration that also recognises diversity. This begins by recognising that the threats facing and already impacting Australian oceans and coasts are overlapping and interconnected; they are building cumulatively in ways that overwhelm management and mitigation methods that have been relied on over the past century. The incremental patchwork approach of a federation of states creates inertia and complexity that cannot meet and cope with the pressures, especially not in the long term. Instead, we must integrate our understanding and coordinate our will to act, even as we allow for place-based approaches to the actions taken to address specific issues and deliver long-term sustainability.

Over the past century, as Western knowledge has grappled with increasing complexity, it has come to understand that integration provides an appreciation of the many connections across space, time, and social connections. Without that understanding, actions can lead to unintended consequences. That broad view also provides an awareness of how diversity provides strength to that more extensive system by tailoring responses to specific circumstances and needs. This scientific understanding has matured over the last two decades but has also provided a touch point, a realisation that this new perspective is convergent with the understanding and perspective on systems held by First Peoples.

Repairing relationships with First Peoples, actively acknowledging their rights, and building 'knowledge corridors' between the different groups can further foster our shared understanding and provide for both the recognition of a diverse suite of traditional management practices and the discovery of brand-new approaches that learn from both knowledge bases.

Biophysically and socio-culturally, Australia is a diverse continent. It is widely acknowledged that that a single solution will not suffice, especially given the multitude of pressures facing our coasts and oceans. Some actions will be simple, at least conceptually – we can all agree that pollution and debris should be reduced (eradicated where possible). Other issues will be more complicated.

Nevertheless, as a society, we can already see how the pressures are reshaping our ecosystems and beginning to put heavy pressure on coastal communities. In some areas, this has helped motivate grassroots initiatives to rebuild local habitats and support sustainability, deepening the sense of local stewardship. In other areas, it has seen a push for new regulatory management and assessment options capable of connecting across pressing and competing issues (such as climate change, pollution, exploitation, and marine conservation).

Regardless of how we get involved, it is the inherent responsibility of all of us – whether through personal action, new policies to ensure coordination of governance across jurisdictions, new public–private partnerships, or the open sharing of knowledge across many sources in support of evidence-based decision making – to invest in and deliver ocean and coastal sustainability. Doing this not only delivers healthier ecosystems for today but explicitly injects intergenerational equity into the blue ribbon, making sure its ecosystems and communities are healthy for our grandchildren too.

WHERE TO NEXT?

This strategy recommends that the vision of this strategy, **to ensure healthy coasts and oceans for a just and environmentally sustainable future**, becomes a national priority for Australia. Centring and delivering on this will support resilient communities and new economies arising out of the blue economy.

In bringing together the deep knowledge of our Expert Working Group and stakeholders consulted over the last year, we have a list of seven recommendations to help Australia move towards a vision for the nation that centres sustainable oceans and coasts. Achieving these recommendations will help Australia to progress the Sustainable Development Goals and framing implementation out to 2030 aligns with the UN Decade for Ocean Science for Sustainability.

The recommendations in this strategy are each underpinned by key actions, a design and implementation phase, and a monitoring and evaluation phase, as well as a suggestion as to which stakeholders might promote each action item. The implementation of these actions will occur at different timescales due to the complexity of working with multiple stakeholders across diverse geographies. All stakeholders will have a role to play in driving positive change.

There is a desire – across the nation and globally – to shine a light on the sustainable oceans and coasts that comprise our blue ribbon. The UN Decade of Ocean Sustainability gives us ten years to be both visionary and practical in implementing what is needed to deliver sustainable oceans and coasts. For Australia, a combination of visionary ambition and practical implementation of inclusive solutions means that there are many opportunities for driving ideas into actions.

"This is the decade of reckoning. Reckoning the impact of humans on our oceans and coasts, and reckoning for past mistakes (and misdeeds) in environmental management. The oceans are warming, acidifying, deoxygenating, and we have been replacing protein with plastic around Australia and the globe. If we are to thrive beyond this decade, we must work together at a frantic pace to firstly halt and then reverse this damage. The most difficult challenge will not be the development of sustainable practices, it will be their implementation. This will require the prioritisation of a common wellbeing and the deep acknowledgement through all levels of society, industry, and government, that healthy people rely on healthy country. Our future depends on the creation of just, agile, and highly integrated governance for our rapidly changing oceans and coasts."

Professor Emma Johnston AO FTSE FRSN
Dean of Science University of New South Wales,
Co-Chief Author of the Australian Government's State of the Environment Report 2021

RECOMMENDATIONS AND IMPLEMENTATION PLAN

EMPOWER INDIGENOUS LEADERSHIP

RECOMMENDATION 1

ELEVATE FIRST PEOPLES KNOWLEDGE AND PRACTICES INTO OCEAN AND COASTAL MANAGEMENT

Indigenous knowledge and practices are critical for healthy oceans and coasts. They have successfully shaped a range of management plans, but there is a need for a broader scale of inclusion and empowerment of Aboriginal and Torres Strait Islander voices. This knowledge has grown and been shaped for tens of thousands of years and can be a catalyst for a deeper understanding of ocean and coastal systems and sustainable practices for their management.

Both Aboriginal and Torres Strait Islander peoples and the broader oceans and coastal community have a desire for Indigenous people to have a greater role in incorporating their knowledge and practices surrounding Land and Sea Country into ocean and coastal management and research. Indeed, this is seen as a critical element of our vision for a 'just and environmentally sustainable future', one that acknowledges historical inequities in ocean and coastal research and management and works to redress them.

For Indigenous knowledge to be appropriately integrated at all scales, a knowledge corridor of mutual respect and understanding needs to be created. This will require capacity building for both Indigenous groups and the government bodies they will work with. Indigenous managers will need to be able to access relevant knowledge and take part in and contribute to appropriate decision-making bodies. An Indigenous network of knowledge brokers can leverage existing investment in Indigenous leadership and guide Indigenous knowledge collation and sharing. At the same time, First Peoples have a right to self-determine how knowledge is shared, which must be respected. Decision-making bodies will need to achieve full engagement, creating space for and funding Indigenous-led conversations. An independent authority can review existing Indigenous inputs into decision-making frameworks to find gaps and opportunities to share best practices. By developing support structures, governments can enable First Peoples' leadership in ocean and coastal management.

	ACTION ITEMS	DESIGN AND IMPLEMENTATION PHASE	MONITORING AND EVALUATION PHASE	WHO?
1	Review existing decision-making processes to ensure Indigenous ocean and coastal knowledge holders are represented. First Peoples' knowledge must be respectfully considered, acknowledged, and, where appropriate for and decided by First Peoples, incorporated into decisions	Establish an independent authority to undertake a review of First Peoples' inputs into decision-making frameworks	Evaluate and update initial review of First Peoples' inputs into ocean and coastal decision-making processes	The Australian Climate Service established in 2021 to review existing First Peoples' inputs; the research community to evaluate and update First Peoples' inputs into processes
2	Leverage existing investment in First Peoples leadership by establishing a network of First Peoples knowledge brokers who are tasked with establishing a process of First Peoples' knowledge collation and sharing with respect to oceans and coasts, in accordance with First Peoples' values	Establish a network of Traditional Owners and First Peoples, including a leadership committee	Refresh the leadership committee to ensure new ideas and diversity of inclusion	Traditional Owners, in partnership with the Australian Federal Government
3	Create space for, facilitate, and fund First Peoples-led conversations concerning ocean and coastal policy and management	Fund the activities of the network of First Peoples knowledge brokers	Update framework of relevant activities; report annually to funding bodies on deliverables/ KPIs	Australian Federal Government to lead and fund, in partnership with peak Indigenous bodies
4	Enable effective First Peoples' participation in management, planning, and development	Dedicate financial support for First Peoples-to-First Peoples learning opportunities so that successful approaches from across Australia and around the world can be leveraged to build a system appropriate to the diversity of Australian needs	Report on the network of First Peoples knowledge brokers at the 18-month mark, and update activity reports by the 3rd year	Australian Federal Government to lead and fund, in partnership with peak Indigenous bodies

OUTCOMES

- **An established alumni of Traditional Owners and First Peoples who have shaped and developed Aboriginal and Torres Strait Islander leadership in and across sustainable oceans and coasts**
- **A substantial body of work completed by the leadership committee of the network and associated contributors, evidenced by reports, metrics, and other indicators**
- **A holistic approach to ocean and coastal management consistent with First Peoples' perspectives**
- **Wider societal recognition of the value of First Peoples' knowledge and perspectives**
- **Improved wellbeing, sustainable livelihood, and ecosystem outcomes**
- **Indigenous knowledge partnerships that are restitutive and rights based, respecting free, prior, and informed consent**

CASE STUDY:
TORRES STRAIT LAND AND SEA MANAGEMENT

The Torres Strait has been under traditional management for millennia. Current governance arrangements are well developed and built around strong collaborative partnerships between rights holders (First Peoples), their representative bodies, all levels of government, industries, researchers, and community members. The Torres Strait Land and Sea Management Strategy, prepared in 2016, is a product of those partnerships. It was developed using a pioneering participatory planning process, bringing together Western science, management experience and the knowledge of Traditional Owners to jointly determine a vision and agree on the best pathways and mechanisms to achieve that vision.

The strategy ensures Torres Strait Islander and Aboriginal peoples can continue their stewardship of the region, sustainably managing and benefiting from the land, sea, and cultural resources of the area into the future. It does this by explicitly empowering the region's First Peoples to have a central and lead role in the region's sustainable management. The approach is founded on the holistic relationship of First Peoples with their islands and Sea Country. It takes an adaptive management (learn by doing) approach, encouraging all involved to continually learn and improve land and sea management approaches. At the heart of this particular adaptive management approach is an ongoing dialogue and meaningful engagement which continues the rich collaborations with partner organisations and all levels of government. In this way the resilience of the 16 key values identified for the region – spanning the themes of People, Sea, and Land – can be maintained and enhanced despite the significant challenges presented by climate change, population changes, and socio-economic development across the region.

Key aspects of delivering the strategy have been Indigenous community-based management initiatives, including the extremely successful Ranger Program, and the coming together of best available traditional and scientific knowledge, industry, and other stakeholder perspectives to prepare profiles for each of the 17 inhabited islands and the inaugural Torres Strait state of the environment report card. This transparently lays out the significance, condition, and trend for the key regional values. The intent is for a time series of these reports to guide ongoing management.

BUILD RESILIENT COMMUNITIES

RECOMMENDATION 2

RESTORE, PROTECT, AND SUSTAINABLY UTILISE OCEAN AND COASTAL ECOSYSTEMS TO ENABLE RESILIENT COASTAL COMMUNITIES

Our nation is threatened when our communities are unprepared for the changing environmental conditions that will arise from climate change and other threats. This requires us to think about how we can address the many cumulative impacts facing coastal communities today and plan for future threats.

With 85% of Australians living within 50 kilometres of the coastline, significant assets and housing are at risk of major coastal and marine impacts. This will require either retrofits or rebuilds of existing infrastructure that are sustainable, resilient, and adaptable. We must also rethink the relationship between people and the environment, with sustainable development holding both in equal measure, and consider intergenerational equity of our people and our environments.

These problems occur at both local and national scales, and so must be our solutions. Coastal homes and infrastructure will need management plans at the local level that acknowledge the multiple, cumulative impacts and uncertain future ahead through adaptive management strategies. The Local Adaptation Pathways Program, or similar programs, can identify and enable adaptive capacity building opportunities for coastal communities. At the national scale, large-scale studies on socio-ecological system change, function, and resilience can build our knowledge of how best to protect our ecological and human communities with best-practice methods and management strategies, and feed back into local adaptation programs.

As with market shifts with respect to climate risk related disclosure, we foresee a need for the development of sustainable finance principles to guide market decisions related to blue economy and resilient coastal communities. The role of the Task Force on Climate-related Financial Disclosures and key regulators such as the Australian Prudential Regulation Authority and the Australian Securities and Investments Commission, in enabling changing business practices with respect to climate change risk, is illustrative. Australia's blue ribbon needs sustainable ocean and coastal finance principles to guide future investments.

While preparing for threats, we must also take a solutions-oriented approach and look for opportunities to build resilience in our communities. Nature-based solutions are a clear win for both ecological and human communities. For instance, restoring degraded coastal habitats and ecosystems like tidal marshes, mangroves, and seagrasses can not only protect our coastal communities and infrastructure from storms and flooding damage, but also serve as carbon repositories to prevent further degradation from climate change. These 'blue carbon' projects can help Australia to meet international agreements such as the Paris Agreement while serving our coastal communities.

	ACTION ITEMS	DESIGN AND IMPLEMENTATION PHASE	MONITORING AND EVALUATION PHASE	WHO?
1	Enhance the resilience of human settlements and supporting infrastructure by investing in nature-based solutions, such as the restoration of degraded habitats and ecosystems	Accelerate investment in nature-based solutions for coastal management by legislating frameworks that drive investment while prioritising protection of the natural environment	Review and evaluate investments to account for maladaptation and for new, emerging opportunities	State, territory, and federal governments, industry, research community, and the First Peoples' network established in Recommendation #1
2	Lead and then leverage market and other opportunities to encourage public–private partnerships and private capital investments in sustainable oceans and coasts	Design a framework to guide public-private sector investment in nature–based solutions for coastal management, including mechanisms to incentivise development of sustainable finance principles applicable to broader ocean and coastal sustainability principles	Assess and evaluate investments to date; modify and expand as appropriate to anticipated/changed/evolving market conditions; use policy levers to incentivise the private market to embed sustainable finance principles into practices	All sectors, with industry and regulators to have a role in guiding sustainable ocean finance principles
3	Re-establish the Local Adaptation Pathways Program (LAPP) (or similar) to enable federally funded local adaptation initiatives that address cumulative impacts and incorporate adaptive capacity in support of sustainable oceans and coasts	Explicitly link LAPP Phase 2 to resilience and adaptation activities to identify and enable adaptive capacity–building opportunities	Evaluate suitability of LAPPs, redesign/modify as appropriate, and review/implement key adaptation measures, including through policy	Federal government to invest in re-establishing LAPPs; all tiers of government and the research community to evaluate LAPPs
4	Facilitate coordinated large scale (regional or national) studies on socio-ecological system change, function, and resilience of oceanic and coastal systems with measurable/quantifiable practical impact(s)	Consult and design a framework to call for applications and then assess applications, to undertake these studies	Review the impact of these studies; issue a round 2 call	NESP Marine and Coastal Hub to facilitate large scale studies; federal and state governments to support

OUTCOMES

- **Investment in practical, scalable adaptation options, provision for the flourishing of new industries, and mechanisms to avoid maladaptation**
- **Enhanced resilience of coastal communities in particular and the Australian economy in general**
- **Management arrangements that address cumulative effects, responses, and offsets that are ecologically feasible**
- **Increased mobilisation of resources to finance sustainable use and conservation**
- **Improved trade opportunities**

CASE STUDY:
SEYCHELLES DEBT SWAP

While governments will have an important role to play in protecting and bolstering the resilience of marine ecosystems and adjacent coastal communities, the private sector, NGOs, and community can also support transformative change. In 2018 the Republic of Seychelles entered a ground breaking agreement where it traded a reduction of its sovereign debt in exchange for protecting a third of its marine and coastal area. This agreement, brokered between Paris Club creditors and the Seychelles Government, represented the first-ever climate adaptation debt restructuring process. It saw $21.6 million of Seychelles' debt converted (at a rate of 93.5 cents on the dollar) into investments in coastal protection and adaptation.

The majority of the fund was raised by the Nature Conservancy's NatureVest, which raised a $15.2 million impact loan, with a further $5 million of grant funding coming from the Oceans 5 (an international collaboration of philanthropists focused on marine conservation). The Seychelles Conservation and Climate Adaptation Trust (SeyCCAT) was established to manage the flow of funds. The first promissory note issued to SeyCCAT by the Seychelles Government was for $15.2 million (at 3% over 10 years) to repay the NatureVest loan. A second promissory note, for $6.4 million, is to fund a program of conservation activities and capitalise future endowments.

The financing will see 400,000 km^2 of Seychelles Exclusive Economic Zone conserved. The funds will also support the implementation of a Marine Spatial Plan for Seychelles' waters, an area 3,000 times the nation's landmass. This landmark effort has been such a successful example of blended finance that the Nature Conservancy has explored similar deals for other countries with a similar mix of conservation needs and significant debt levels.

DECARBONISE THE BLUE ECONOMY

RECOMMENDATION 3

ACTIVELY DECARBONISE THE BLUE ECONOMY WHILE SUSTAINABLY FOSTERING ENERGY SECURITY

One of the major threats to Australian oceans and coasts is climate change, having major negative impacts across environmental, economic, socio-cultural, and First Peoples values. A sustainable future for oceans and coasts must move to decarbonise our blue economy by finding long-term solutions for a sustainable and thriving Australian economy. These solutions must equally weigh ecosystem values with economic values.

Some solutions can be found in new technologies, such as those being developed for renewable energies in ocean and coastal areas. We can promote renewable energy systems by providing incentives, removing impediments, and creating explicit regulatory market signals to accelerate adoption and transition by end-users to renewable forms of energy in coastal and marine spaces. We can also push the boundary further, supporting research into the efficacy of new decarbonising technologies such as the generation of green hydrogen and carbon dioxide removal. Our workforce can be trained to develop and provide these new technologies, armed with renewable energy and sustainability-relevant skills.

New developments must also reflect the reality of a rapidly changing climate. Requiring transparent disclosure of the full emissions profile of ocean and coastal supply chains is one way to demonstrate our commitment to a low emission future, while incentivising innovation from the private sector.

Finally, while technologies and developments must focus on decarbonisation, we must not lose sight of sustainable practices in our oceans and coasts. Some practices may be unsustainable over short- or longer-term horizons; to ensure our readiness for changing conditions and markets we must ensure an explicit focus is on embedding adaptive capacity and adaptive management processes for oceans and coastal uses. Embedding such capacity and management processes into decision making should be supported by law.

	ACTION ITEMS	DESIGN AND IMPLEMENTATION PHASE	MONITORING AND EVALUATION PHASE	WHO?
1	Promote renewable energy systems by providing incentives, removing impediments, and creating explicit regulatory market signals to accelerate adoption and transition by end-users to renewable forms of energy in coastal and marine spaces	Consult with industry and community groups to determine barriers and enablers in current state and federal regulatory frameworks and amend to ensure sustainability principles are explicitly embedded	Evaluate pathways of innovation to ensure delivery of efficient technology that aims at zero waste generation and carbon neutral footprints	Blue Economy CRC and the Australian Federal Government
2	Ensure that all regulatory processes for the use of Australia's oceans and coastal systems are underpinned by sustainable and adaptive theories of change and accompanying frameworks	Invest in research and development to better support technology capability and human adaptive capacity in renewable energy and nature-based solution industries	Measure, quantify, and evaluate the anticipated increased rates of marine renewable energy generation, innovation in energy storage and transport systems, and co-location of renewable production with other sectors achieving decarbonisation	Philanthropy, government, and industry to invest in research and development; Australian Federal Government to monitor and evaluate
3	Require transparent disclosure of the full emissions profile across ocean and coastal supply chains	Engage with the Australian Prudential Regulation (APRA) to encourage companies to develop decarbonisation plans with science-based targets and strategies, in collaboration with expert knowledge	Review at five years progress on disclosure of full emissions profiles	Australian Federal Government to set policy frameworks, relevant regulatory bodies to have oversight
4	Support research into the efficacy of carbon dioxide removal (CDR) technologies and support the development of sustainable, low footprint commercial scale CDR programs	Support training programs to increase the workforce with renewable energy and circular economy relevant skills; re-skill workers in emission-intensive industries to work in mitigation and decarbonised industries (including CDR)	Review and evaluate training programs, optimise where appropriate	Australian Federal Government

OUTCOMES

- **Established and supported new economies and markets that drive economic advancement across Australia and in the national interest**
- **Increased innovation across the Australian economy**
- **Recognition of the role of supply chains in signalling market innovation opportunities**
- **Capacity building and jobs creation in CDR and related areas**
- **Improved energy security on all time-scales, improving resilience against shocks in international supply chains**

CASE STUDY:
RENEWABLE ENERGY, AT HOME AND ABROAD

The private sector is leading Australia's shift towards decarbonisation, recognising the urgent need to mitigate risks associated with a high carbon world. Coastal and offshore industries – the blue economy – has some unique challenges in this context, with a high dependence on fossil-fuel powered, off-grid, and mobile operations in the offshore environment. Internationally, growth of offshore renewable energy technologies, including offshore wind as a commercially mature sector, along with emerging wave, tidal, and other technologies, are helping to enable a low carbon transition for blue economy sectors.

Offshore wind has displayed rapid growth at an average annual growth rate of 24% since 2013, to a total global installed capacity of 35 GW in 2020 (GWEC, 2021). This energy has been predominantly directed to grid-connected utility scale markets with the UK and China leading the way. Increasingly, developments are looking to how offshore wind can support decarbonisation of offshore industry. Norway, for example, has earmarked two areas in the North Sea for development of up to 4.5 GW of offshore wind capacity to help the Norwegian oil and gas industry transition to a future low-carbon business model. Furthermore, several high-profile companies are exploring the potential of using offshore wind to produce green hydrogen in the North Sea. Norway, Denmark, Germany, and the Netherlands all have large scale industrial projects underway, focused on the benefits hydrogen can deliver for a low-carbon economy, including in blue economy ports and shipping sectors. Presently, offshore green hydrogen production is cost-prohibitive relative to grey hydrogen (generated from natural gas), but GW scale offshore wind farms are seen as capable of providing the economies of scale required to reduce the cost of green hydrogen. Australia does not yet have any offshore wind deployed, but several projects are proposed, with the east Gippsland Star of the South project being the most mature, progressing through its environmental approvals process.

Emerging offshore renewable energy technologies are also demonstrating their worth to the decarbonisation of blue economy sectors. Wave energy technologies remain at a pre-commercial stage, but successful deployments have been and are being undertaken in all parts of the world. In Australia, WaveSwell Energy (WSE) have has deployed its UniWave200 wave energy converter, providing electricity into King Island's unique distributed generation power system, and demonstrating the consistency benefits of wave energy to small island microgrids. WSE, whose technology operates like an artificial blowhole, with the wave motion driving air through a turbine, also sees application of its technology integrated into coastal protection, breakwater, and sea-wall structures. An example of similar technology integrated into a harbour breakwater has been operational at Mutriku harbour in the Spanish Basque country since 2011. Wave technologies have also been demonstrated to meet the energy needs of offshore aquaculture operations in China, and similar application is being pursued by Australia's Carnegie Clean Energy. Desalination, offshore mining, ocean observations, and automated vessel charging are examples of the blue economy industry, community, and business operations identified as opportunities for emerging wave, tidal, and ocean thermal energy conversion technologies.

Contributed by Mark Hemer (CSIRO) and Stephanie Thornton (Australian Ocean Energy Group)

COLLABORATIVE GOVERNANCE

RECOMMENDATION 4

ADOPT AN INTEGRATED AND ECOSYSTEM-BASED MANAGEMENT APPROACH TO OCEAN AND COASTAL PLANNING COORDINATED ACROSS ALL LEVELS OF GOVERNMENT

The development of a sustainable ocean and coastal strategy for Australia must recognise separate jurisdictional responsibilities between local, state, and federal governments. However, there is a need to coordinate and align across jurisdictions to avoid discordant outcomes. Ecosystems, organisms, and threats do not conform to jurisdictional boundaries and without coordination, most biodiversity, which lives outside of reserves and protected areas, could be at risk, meaning human communities reliant on the services delivered by that diversity are at risk. An integrated approach is needed to recognise jurisdictional differences and promote adoption of best practices across these boundaries. This can be achieved through a national agency that coordinates ocean and coastal governance across all tiers of government while delivering programs at scale.

This agency should act in support of integrated and ecosystem-based principles. It can remove undue complexity and conflicts between jurisdictions, address gaps for new sectors or in offshore waters, and clarify rights and responsibilities, all while incorporating explicit dispute resolution provisions and clearly defined, consistent, and meaningful penalties. This agency can create a set of nationally accepted standards to instil community confidence in the consistency of management while still leaving room for flexibility, recognising that a one-size-fits-all approach can be limiting and prevent adaptability. A national approach will ensure that there is a broad agreement on principles, acknowledging that the application and implementation through policy and legislation will likely differ across jurisdiction.

Importantly, this agency will have a clear view of decision-making processes across jurisdictions, enabling a review of the inclusivity of decision-making processes. Ocean and coastal users have diverse values and goals, but they all share a vested interest in a sustainable future for oceans and coasts, as well as knowledge that will assist in facilitating such a future. To ensure that these voices are all heard and contribute to a sustainable future, codesign and co-production should be embedded in decision–making processes, paying particular attending to ensuring First Peoples representation and community participation in ocean and coastal decision making.

The activities coordinated by this national agency can help to meet international commitments, such as Australia's recent pledge through the High Level Panel for a Sustainable Ocean Economy to sustainably manage 100% of the ocean area under national jurisdiction by 2025.

RECOMMENDATION 4: COLLABORATIVE GOVERNANCE

	ACTION ITEMS	DESIGN AND IMPLEMENTATION PHASE	MONITORING AND EVALUATION PHASE	WHO?
1	Implement and invest in a national agency to enhance and coordinate ocean and coastal governance across the three tiers of government, focusing on legislation and policy alignment and consistency of standards	Establish the national agency, in conjunction with the states	Establish/embed 3-year reviews of independent agency efficacy, including public reporting of activities and outcomes	Australian Federal Government
2	Identify ways to strengthen existing legislation to achieve common goals and respond to impacts (including cumulative impacts)	Develop a cross jurisdictional roadmap for sustainable development that sees consistent zoning, usage levels, and guidelines	Review and report on identified legislative and policy gaps; finalise a review of standards and table a process to ensure consistency across jurisdictions	An independent body to conduct the initial legislative review; local, state, territory, and federal governments, working with the First Peoples' network established in Recommendation 1, to finalise consistency of zoning, levels, and guidelines
3	Develop principles of inclusivity of decision-making processes to ensure First Peoples representation and community participation in ocean and coastal policies	Design and undertake a review of existing inclusivity frameworks	Assess new frameworks on a biannual basis	The national agency
4	Enable certification and nationally accepted standards to instil community confidence in the consistency of management, planning, and development processes for ocean and coastal issues	Fund research to understand which national standards are needed, what these would look like, how they would work, and how to achieve/deliver national standards to the nation	Implement a national standards framework via policy and programs under the national agency	Australian Federal Government, via the national agency

OUTCOMES

- **Clear responsibilities and accountability across the three tiers of government in Australia**
- **Enhanced trust in public service and delivery of oceans and coasts policy and programs**
- **Consistency of vision and application that reduces wastage in planning and development processes**
- **Delivery of international commitments**
- **Enhanced knowledge sharing and social capital through exchange of learnings and information, creating efficiencies and avoiding duplication**

CASE STUDY:
THE GREAT BARRIER REEF MARINE PARK (GBRMP)

Management of the GBRMP is a good example of collaborative and integrated governance because there is overarching legislation, all levels of government are involved (vertical integration), and there is integration between government and local groups (consultative and advisory committees). There is a Ministerial Forum of Commonwealth and Queensland government ministers that coordinates policy at the ministerial level. Under the Commonwealth's *Great Barrier Reef Marine Park Act 1975,* the GBRMP Authority, which includes a nominee of the Queensland government, has statutory responsibility for care and development of the GBRMP and for providing advice to the responsible Commonwealth Minister. The Authority members are appointed by the Commonwealth Minister. There are also several non-statutory advisory groups, appointed by GBRMPA for tourism and local government advice, and two groups established under the Reef 2050 Plan (non-statutory), appointed by the Commonwealth Government minister. These are the Independent Expert Panel for the Great Barrier Reef and the GBR Reef Advisory Committee which has cross-sectoral industry, Indigenous, and NGO representation.

These collaborations exemplify the rewards of collaborative and integrated governance. Formalised links between all levels of government ensure a coordinated approach, while the inclusion of consultative and advisory committees ensures a wider range of interests are represented in decision-making processes. Particularly exemplary is the elevation of Aboriginal and Torres Strait Islander management roles and values, such as through dedicated strategies like the 'Aboriginal and Torres Strait Islander Heritage Strategy for the Great Barrier Reef Marine Park' and 'Traditional Owners of the Great Barrier Reef: The Next Generation of Reef 2050 Actions', as well as through dedicated Traditional Use of Marine Resources Agreements (TUMRAs).

Contributed by Russell Reichelt AO FTSE (Australian Sherpa to the High Level Panel for a Sustainable Ocean Economy)

MAKE INFORMED DECISIONS

RECOMMENDATION 5

USE BEST AVAILABLE DATA AND SCIENCE TO SUPPORT DECISION MAKING IN OCEAN AND COASTAL MANAGEMENT AND PLANNING

To ensure that we are making sound decisions, we need to leverage the best available knowledge on ocean and coastal systems. Too often, data can be challenging to find, inaccessible to certain stakeholder groups, or unusable. An open access online platform that links and provides all available information sources will ensure that all stakeholders, from local government areas to Australian Government agencies, have access to and can utilise the same data in a consistent manner. This framework should uphold FAIR principles ensuring that information is Findable (i.e. discoverable), Accessible (i.e. readily available), Interoperable (i.e. different sources of information can be compared, combined and used together), and Reusable (i.e. available for repeated use now and into the future). Existing databases and networks, including the Australian Ocean Data Network (AODN), the Integrated Marine Observing System (IMOS), Digital Earth Australia Coastlines (DEA Coastlines), AusSeabed, OzCoasts, and Terrestrial and Earth Resource Network (TERN), are widely used and praised, and their successes can be linked and built upon.

This platform can also help in coordinating and expanding national monitoring of oceans and coasts. Many valuable datasets exist, but these can be piecemeal, limiting national datasets, monitoring, predictions, and management. Inputs into this monitoring system can also be diverse and draw from initiatives such as citizen science and community monitoring programs.

Coordination of this information will facilitate the incorporation of the best available knowledge into decision-making processes concerning oceans and coasts, as well as ongoing reporting requirements such as State of the Environment reports.

Decision-making processes and tools can benefit from diverse information and its systematic application. To move towards systems-based decision making and implementation pathways, a digital transdisciplinary evidence and cross-sectoral information program can be created. New jobs and training programs to work with this type of information will support this transition.

	ACTION ITEMS	DESIGN AND IMPLEMENTATION PHASE	MONITORING AND EVALUATION PHASE	WHO?
1	Invest in a persistent, actively managed online portal that includes real-time data and information resources held by a range of agencies pertaining to oceans and coasts, ensuring data are consistent with FAIR principles	Design and fund an open access data portal	Ensure data portal is up to date and open access so that it can be easily interrogated for tailored national, regional, or sub-regional multi-layer data requests	The new Australian Climate Service and other partners as appropriate, including other relevant data access platforms
2	Coordinate and expand national monitoring of the oceans and coasts, and the provision of information that is necessary for sustainable management	Fund citizen science initiatives and connect these with the First Peoples' network established in Recommendation 1	Monitor and enable inputs from diverse knowledge perspectives, including from citizen science initiatives, and ensure these perspectives provide input into policy design and implementation	Australian Federal Government to fund initiatives and facilitate connections; all sectors to monitor and enable inputs
3	Investigate and connect with relevant sources of transdisciplinary evidence and cross-sectoral information to incorporate systems-based decision making and implementation pathways	Fund a dedicated digital transdisciplinary evidence and cross-sectoral information program, and complementary training programs	Independently review the of the comprehensiveness and utility of the transdisciplinary evidence and cross-sectoral information program; review the training program every 2 years	Australian Federal Government

OUTCOMES

- **Trust in data and science with open access platform**
- **Avoidance of duplication of data efforts**
- **Support for a wide range of stakeholders to make decisions at scale**
- **A workforce trained for new careers in transdisciplinary and cross-sectoral work**
- **Strengthened evidence-based decision making**
- **Shared information platforms that support faster innovation and technology development and more effective delivery on national and global issues, such as sustainable use and climate change**
- **Reduction in unintended consequences, opportunity costs, and cumulative effects**

CASE STUDY:
USING DATA TO SUPPORT DECISION MAKING IN VICTORIAN AND NEW SOUTH WALES POLICIES

Practical applications of using the best available data and science to support decision making in ocean and coastal management and planning are growing. Often there is a requirement for policy and practice to adapt to enable the use of the best data and science for decision making. Recent examples included the very clear legislative advances in Victoria and NSW.

One of the nine objectives in the new Victorian *Marine and Coastal Act 2018* is 'to build scientific understanding of the marine and coastal environment', and elsewhere in the Act, tools and requirements exist to embed scientific evidence into decision making. One is the explicit need for scientific evidence and data, along with the views of rights-holders and stakeholders input to the new Marine Spatial Planning Framework in the Vic Marine and Coastal Policy (DELWP, 2020). To aid implementation of the requirements for evidence to be used, the policy has has explicit descriptions of the evidence needed (e.g. policy 14.26 states: 'The best available evidence and information (including Traditional Owner knowledge and practices, scientific and socio-economic research, citizen science, industry, and the community) must be utilised'. Such legislative and policy clarity is essential in multiple use environments to ensure conflict between users of our blue ribbon is worked through.

In New South Wales, in order to develop the Marine Estate Management Strategy as an evidence-based and coordinated strategy, a threat and risk assessment of the entire estuarine and marine areas of the marine estate was conducted to identify threats, assess the risks the threats posed against defined risk objectives, and inform marine estate management decisions by prioritising those threats and risks (BMT WBM, 2017). The assessment of risks allowed identification of priority threats, key stressors, spatial scale of risk, and key activities that result in cumulative impacts, and was supported by detailed information on the extent and condition of environmental assets and reviews of the available scientific literature about threats to the environmental assets and associated benefits.

These policies demonstrate different ways that data can be used to support decision making that favours sustainable oceans and coasts.

Contributed by Anthony Boxshall (Victorian Marine and Coastal Council) and Alan Jordan (NESP Marine and Coastal Hub)

SUPPORT STEWARDSHIP

RECOMMENDATION 6

SUPPORT GRASSROOTS INITIATIVES THAT INCREASE COMMUNITY TRUST AND PROMOTE LOCAL STEWARDSHIP OF OCEANS AND COASTS

Australian grassroots initiatives and community groups have their fingers on the pulse of their local oceans and coasts, embedded as they are in the day-to-day changes of their ecosystems and peoples. They play a vital role in building trust, maintaining a sense of community, and acting as stewards for their local oceans and coasts, yet they are often overlooked and underfunded. Bolstering their capability in human effort, on-ground outcomes, and sharing ideas will improve ocean literacy for all Australians and provide local-level actions in a national-scale vision for sustainable oceans and coasts. It will also provide returns well in excess of any investment, making information gathering and sharing across Australia's vast coastline feasible economically and socially through community science and monitoring programs.

Existing networks and initiatives hold great knowledge, but the local scale of activities or the sectoral siloing of groups can prevent the sharing of best practices. Reviving the National Marine and Coastal Community Network and facilitating an annual Australian ocean and coastal forum will create a trusted system by which knowledge can be brokered between groups and promote broader community engagement. Reviving the Coastcare program can build on existing initiatives to formalise a national system of stewardship. These activities can also help grassroots initiatives to connect across diverse communities and feed up to a national vision of the UN Decade of Ocean Science for Sustainable Development.

RECOMMENDATION 6: SUPPORT STEWARDSHIP

	ACTION ITEMS	DESIGN AND IMPLEMENTATION PHASE	MONITORING AND EVALUATION PHASE	WHO?
1	Invest in establishing and hosting an annual ocean and coastal forum	Design and implement the annual ocean and coastal forum, connecting diverse stakeholders, and providing these inputs into the data sharing platform established in Recommendation 5	Review and evaluate the strategy and impact of the forum at three-year intervals	Federal, state, and territory governments leading; all sectors involved
2	Fund core capability for community groups, citizen science programs, school programs, and other grassroots initiatives	Require 2–year reporting from funded programs and core capability development, to determine impacts of initiatives	Evaluate reporting and scale interventions	The national agency established in Recommendation 4
3	Revive the National Marine and Coastal Community Network and Coastcare	Fund for 5 + 5 years, the National Marine and Coastal Community Network and Coastcare program	Review and evaluate the activities and impact of the National Marine Coastal Community and Coastcare program at 2–year intervals, and optimise as necessary	Federal, state, and territory governments, in partnership with the First Peoples' network established in Recommendation 1 and the research community
4	Identify and fund a suite of bespoke grassroots initiatives that deliver the UN Decade of Ocean Science for Sustainable Development vision for Australia	Identify the synergies with the development of benefits of resilient coastal communities activities, blue economy activities, and bespoke grassroots initiatives	Implement a 2–year reporting framework on these programmatic activities	The national agency established in Recommendation 4

OUTCOMES

- **Improved community stewardship and ocean literacy**
- **Innovation supporting genuine participatory processes that work at scale**
- **Enhanced connectivity, information exchange, and collaboration between grassroots organisations**
- **Increased coordination of activities supporting the UN Decade of Ocean Science for Sustainability**

CASE STUDY: COASTCARE

Coastcare (1995–2002) was a very successful Australian community-based coastal stewardship program. The program formed a component of the National Heritage Trust funded Coasts and Clean Seas Program. It had international significance because it was a unique program that formally linked three tiers of government and the community toward a common purpose. It is a good example of integrated coastal management. Coastcare was essentially a multi-million-dollar grants program funded by the Australian Federal Government with matching funds from the states to provide resources to encourage community participation in coastal management activities.

A major achievement for the Coastcare program was the acceptance of an Australian Government role through an agreed set of memoranda of understanding, with all states and representatives of local government. This was signed in 1995 and established the principle of partnership and the processes for intergovernmental cooperation in coastal management.

A key to the success of Coastcare was the appointment of coordinators and facilitators hosted by local government to connect with the coastal community groups. Australian Federal Government funding provided the bulk of salaries of the Coastcare facilitators which formed a network of regionally based staff who sustained the program at the local level.

PRIORITISE DIVERSE VALUES

RECOMMENDATION 7

FOSTER CHAMPIONS AND INCORPORATE CULTURAL VALUES INTO OCEAN AND COASTAL POLICIES AND PLANS

Australia is a coastal nation, and its people hold deep cultural values associated with oceans and coasts. Yet these diverse cultural values are often overlooked in policies and planning in favour of cost-benefit analyses and other economic incentives or ecological considerations. This pattern is driven in part by the difficulty of quantifying and comparing cultural values with economic and ecological values. This deficit is improving; for instance, the United Nations System of Environmental-Economic Accounting, currently being implemented by the Australian Federal Government with state and territory partners under the National Environmental-Economic Accounting Strategy and Action Plan, recognises 'cultural services' as one of three types of ecosystem services that can be measured. However, to fulfil such reporting requirements and, more importantly, to capture the diverse values of ocean and coastal users, especially Aboriginal and Torres Strait Islander peoples, robust engagement with stakeholders is needed. A systematic exploration of cultural values can then be properly elevated into relevant planning and policy procedures for oceans and coasts.

Key to this cultural exploration will be uplifting new and underrepresented voices in the ocean and coastal space, including women, youth, and Aboriginal and Torres Strait Islander peoples. Local champions of oceans and coasts can serve as cultural ambassadors for their communities, amplifying the work that is already being done on the ground, drawing national and international attention to key issues and solutions, and creating connections and momentum to promote greater awareness and respect for the cultural significance of Australia's oceans and coasts. A peer-to-peer mentoring program, in which former champions mentor new ones, can foster knowledge sharing and strengthen intergenerational equity.

RECOMMENDATION 7: PRIORITISE DIVERSE VALUES

	ACTION ITEMS	DESIGN AND IMPLEMENTATION PHASE	MONITORING AND EVALUATION PHASE	WHO?
1	Identify and implement explicit recognition of ocean and coastal cultural values across Australia and incorporate those values into relevant policies, planning instruments, strategies, and action plans	Collect, measure, and quantify the diversity of values associated with Australia's oceans and coasts, and legislative reform that includes First Peoples and other values in the objects clauses of relevant legislative and policy frameworks	Regularly review and revise the rate of incorporation of values into legislative and policy frameworks	Philanthropy and Australian Federal Government to fund and support the collecting, measuring, and quantifying of diverse values as delivered by the research community and community groups; federal and state governments to conduct legislative reform
2	Invest in an awareness-raising program to encourage diverse perspectives, in particular women and youth, to become community leaders/ambassadors, and formally recognise First Peoples and community-based ocean and coastal champions	Establish a program of ocean and coastal 'champions', to act as ambassadors of the above identified values; implement peer-to-peer mentoring from alumni of program to active champions	Establish review process to determine effectiveness of champion ambassadors program and peer-to-peer mentoring program	Federal, state, and local governments to fund, in collaboration with partners

OUTCOMES

- **A growing cohort of diverse champions across all jurisdictions, aligning to the identified vision for Australia's sustainable oceans and coasts**
- **Enhanced ocean and coastal leadership demonstrated by all Australians**
- **Explicit signalling of the value (quadruple bottom line valuing) of oceans and coasts to all Australians, ensuring intergenerational equity and enhancing global standing in this valuation**
- **Leading by example in centring First Peoples' knowledge and perspectives in meaningful, inclusive, and thoughtful ways, for the betterment of their self-determination and for the nation**

CASE STUDY:
NSW MARINE ESTATE MANAGEMENT STRATEGY

The New South Wales Marine Estate Management Strategy 2018–2028 is the overarching framework for coordinating management of the NSW marine estate until 2028. Developed by the Marine Estate Management Authority on behalf of the NSW Government, it encompasses coastal waters out to three nautical miles, the coastline, estuaries to their tidal limits, coastal wetlands, and offshore islands. The strategy outlines the visions and principles for marine estate management in NSW, as well as the actions needed to manage priority threats to the benefits the community obtains from the marine estate.

The strategy is a novel management approach for NSW in that it addresses priority threats not only to the physical environmental assets within the marine estate, such as seagrass and rocky reefs, but also threats to the social, economic, and cultural benefits that the community obtains from the marine estate. These benefits were identified through a community survey of over 1700 residents across NSW, who provided a diverse spectrum of insights. Social benefits included enjoyment of activities such as diving, swimming, recreational boating, and fishing that improve the community's mental and physical health and wellbeing, as well as a sense of belonging within the community. Cultural benefits were reflected in tradition and cultural practices, primarily in Aboriginal cultural use. Economic benefits were linked to the viability of businesses, including fishing, aquaculture, and marine tourism.

The NSW Marine Estate Management Strategy demonstrates the viability of creating an environmental management plan that elevates and codifies cultural, social, and economic values. It is made possible by seeing community benefits and social wellbeing as aligned with environmental sustainability, rather than at odds with it. Furthermore, its framing allowed for a diversity of values to be explored and assessed separately, revealing inequities between groups. This knowledge was then used to highlight what was to be prioritised in management, such as an identified vulnerability of Aboriginal cultural heritage to a variety of threats.

CONCLUSIONS

Our consultation process, coupled with the deep working knowledge brought by our Expert Working Group, revealed the weaknesses that are holding our oceans and coasts back and the opportunities to transform our oceans and coasts into drivers of change for a just and environmentally sustainable future for all.

By viewing our oceans and coasts as an interconnected and integrated blue ribbon, we can address longstanding silos and divisions that prevent holistic and harmonised management. We can also recognise and capitalise on opportunities that span multiple arenas, such as restoring coastal wetlands to increase blue carbon sequestration while protecting coastal infrastructure and communities from storm damage and flooding. We can see that flourishing, resilient communities and social wellbeing can be prioritised alongside the blue economy, all while centring the perspectives, knowledge, and leadership of Australia's First Peoples in charting a forward path.

At the start of the UN Decade of Ocean Science for Sustainability, we have already seen national and international engagement focused on oceans and coasts, including the High Level Panel for a Sustainable Ocean Economy and the UN Sustainable Development Goals, building momentum towards a shared goal. Coherence across sectors and disciplines will be critical for us to channel our resources to a common vision.

This strategy is a living document that will shift and grow through time; the next decade will likely provide both new opportunities and unanticipated challenges for our blue ribbon. Future Earth Australia will continue to use its convening power to drive action alongside the ocean and coastal communities we have consulted over the past year. This strategy provides the foundation for action to transform our ocean and coastal futures to 2030 and beyond.

APPENDIX 1

OUR PROCESS

This strategy is a product of deep and thorough consultation and valorisation across Australia, involving community groups, Aboriginal and Torres Strait Islander peoples and managers across Country, the research sector, all levels of government, industry and business, national peak bodies, the non-profit sector, and civil society. It also received strategic input and knowledge from an Expert Working Group, consisting of experts across ocean and coastal research and governance including Aboriginal and Torres Strait Islander peoples' knowledge and management of Land and Sea Country.

In March 2020, we hosted a scoping workshop in Canberra to guide our process. The findings of this scoping workshop were published in an Outcome paper (futureearth.org.au/publications/ocean-and-coastal-sustainability-canberra-scoping-workshop). Following this scoping workshop, our Expert Working Group was formed to provide strategic guidance and expert knowledge into the process. From this broader group, smaller working groups were formed to contribute to writing the main strategy document as well as a literature review of threats to Australian oceans and coasts and an overview of pertinent policy and legislation concerning oceans and coasts.

In September 2020, we conducted a series of virtual online workshops focused in each state and territory. Participants at these workshops were carefully selected to ensure a wide cross-section of perspectives. In plenary and in small breakout groups, we explored interactively the five pillars underpinning our methodology using a series of open-ended questions that invited deep thought and discussion. Following these workshops, we synthesised the discussions and published individual outcome papers for each workshop (futureearth.org.au/initiatives/ocean-and-coastal-sustainability).

Throughout the consultation process, we sought to include First Peoples' voices in our workshops. However, we also respected the voice of First Peoples who asked for a First Peoples only talking space. Therefore, on 9 November 2020, we hosted a virtual yarn for First Peoples to enable them to share their perspectives on ocean and coastal sustainability. This discussion represented a step in an ongoing commitment to ensure that First Peoples are represented in the strategy and to get ideas on how First Peoples will continue to be involved throughout the implementation process. These findings are included in this strategy document at page 35.

As Future Earth Australia worked, we communicated our process with our Expert Working Group. We finalised an exposure draft in April 2021 and then undertook a second round of valorisation via two high-level roundtables comprising senior experts from all sectors (virtually and in Canberra) to assess and improve the exposure draft prior to the strategy's launch.

THE APPROACH: FIVE PILLARS TO GUIDE CONSULTATION

Our model for consultation was guided by five 'pillars', concepts that support a holistic approach to advancing sustainable changes in the blue ribbon. Deliberately designed to be broad and conceptual, these pillars provide a springboard for meaningful and equal engagement between stakeholders from different sectors, disciplines, and cultures, who may speak different languages, have divergent values, and draw from diverse sources of knowledge. The 'pillar' framework is useful for generating pointed and practical discussions during workshops, but in practice they are not silos, but interwoven components of a single movement.

PILLARS

VISION is the key element of our consultations, discussed at the beginning of each workshop as a means of setting a medium- and long-term frame and inviting deliberation on the key priorities and values for the blue ribbon. As we all so often work in the realm of the possible as opposed to the ideal, discussing where and how our vision is similar or different is a critical part of setting the course for the subsequent conversations about how we achieve sustainable oceans and coasts.

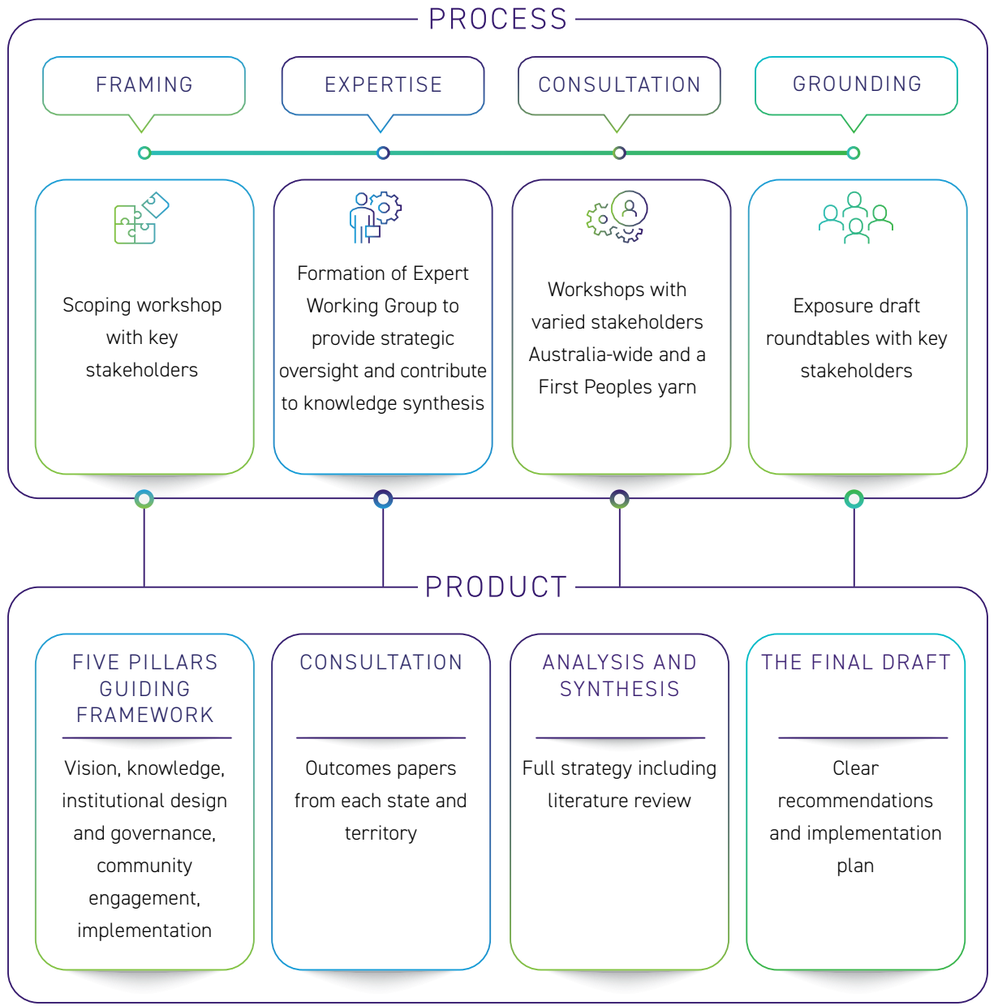
This is also an important part of embedding different ways of seeing our future into the foundation of discussion and the subsequent recommendations. We do not often have opportunities to hear from those working in a different sector, coming from a different cultural background or from a different walk of life who can illuminate a different approach. Creating such an opportunity is of paramount importance to facilitating collaborative futures.

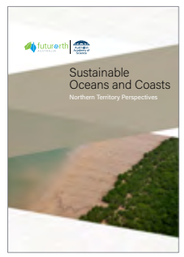
KNOWLEDGE relates to what we know, what we are missing, which gaps are most important for making the largest gains toward our vision for sustainable oceans and coasts, and how we might use different knowledge types together. Knowledge includes scientific evidence, social and cultural knowledge, knowledge of First Peoples, practical expertise across sectors associated with implementation, knowledge of place and local community, and more.

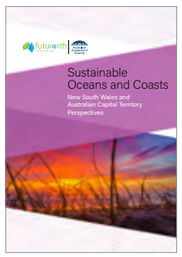
INSTITUTIONAL DESIGN AND GOVERNANCE pertain to how decision making and resources are organised, guided and executed across a range of institutions and networks that affect oceans and coasts. This naturally involves attention to the role, structure and function of government at different levels. It also looks at community structures and organisations at the local and regional level, and the influence of private enterprise, industry and finance, and think tanks, advocates and non-government organisations. Governance also pertains to the role of First Peoples and access to Country. Lastly, consultations deliberate on the way entities and rules interact in a system of governance and how this can be optimised.

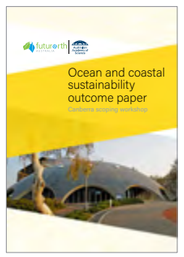
COMMUNITY ENGAGEMENT is intimately related to each of the other pillars, and looks at how community and citizens are embedded in directing, enabling, and benefiting from sustainable oceans and coasts. Community engagement pertains to the role of citizens and people in forging a collective vision, understanding the diversity within and between communities, facilitating the development and use of community-held knowledge in decision making, driving two-way communication between communities and experts, and more.

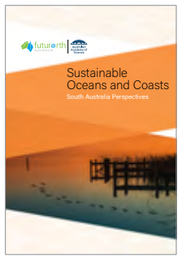
IMPLEMENTATION is a pillar in which consultation attendees provide a unique and invaluable contribution. Based in place, sector, and community, attendees discuss the most effective means to make sustainable oceans and coasts a reality across the nation.

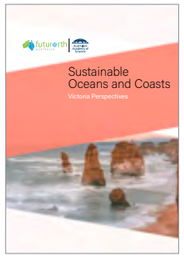


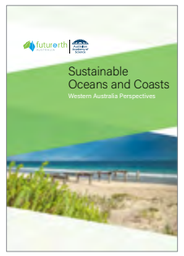












Outcomes papers were produced for the consultation workshops in each state and territory. They are available on our website: futureearth.org.au/initiatives/ocean-and-coastal-sustainability

APPENDIX 2

We thank the many people who contributed to this strategy. Below is a list of consultation workshop and roundtable registrants.

Aaron Coutts-Smith
Abbie Rogers
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Amanda Lilleyman
Ana Martins Sequeira
Andrew Ball
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Andrew Steven
Angeline Poole
Anna Grage
Annick Thomassin
Annie Lau
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Belinda Yaxley
Beverley Clarke
Bill Jamieson
Bob Costanza
Bob Muir
Bob Webb
Brendan Brooke
Brendan Donohoe
Brian Coffey
Britta Denise Hardesty
Byron Knight
Caleb Gardner
Carl Charter
Caroline Taylor
Cath Samson
Catriona Macleod
Cecilia Woolford
Charlie Huveneers
Chenae Neilson
Chris Shearer
Christabel Warren
Christina Gillgren
Christina Ting
Christine Lamont
Christophe Gaudin
Christopher Lee
Claire Ellis
Claire Phillips
Claire Streten
Claire Webber
Clare Sullivan
Damian Moroney
Damien Cole
Daniel Costelloe
Daniel Lane
Daniel Miller
Daniel Strickland
Darla Hatton Macdonald
David Collard
David Kennedy
David Rissik
David Smith
Dean Mathews
Delahay Miller
Doc Reynolds
Dora Carias
Edward Couriel
Eileen Deemal-hall
Emmalene Richards
Erlania Erlania
Estefania Arteaga
Euan Harvey
Faith Coleman
Frances Northeaast
Gareth Davies
Garry Middle
Geoffrey Wescott
Georgina Gurney
Glenda Shomaly
Glenn Shiell
Graciela Metternicht
Graeme Cumming
Graeme Stockton
Graham Durant
Grainne Maguire
Grant Hinner
Greg Johannes
Greg Leslie
Gunilla Burrowes
Hannah Gulliver
Hannah Power
Heidi Tait
Helene Marsh
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