POINT CARTWRIGHT RESERVE

REZONING PROPOSAL

A New Vision for the Future

Environmental Management and Conservation Zone

Point Cartwright Care Group Inc.

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Acknowledgement of Country

We acknowledge the Sunshine Coast Country, home of the Kabi Kabi and the Jinibara peoples, the First Peoples and Traditional Custodians of the land and waters we all now share. We pay respect to their Elders – past, present and emerging, and acknowledge the important role First Nations people play within the Australian community.

Disclaimer

This document has been prepared for discussion purposes only and is intended to explore and inform on issues of concern to the community in relation to the management of the Point Cartwright Reserve. All content provided in this document is for informational purposes only. The authors make no representations as to the accuracy or completeness of any information in the document. Information contained in this document is based on available information at the time of writing. All figures and diagrams are indicative only and should be referred to as such. No professional-client relationship has been relied upon or implied in the formulation of this document. The information provided in this document is of a general nature and should not be construed as specific advice or relied upon in lieu of appropriate professional advice.

Recognition of Contribution

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Cultural Heritage Content

While much of the information presented in this report was attained from published research, some matters of Kabi Kabi cultural heritage were attained through personal discussions with Kabi Kabi elders and was provided to the Point Cartwright Care Group specifically for the purposes of lobbying various agencies for improved outcomes at Point Cartwright Reserve. Reuse of this information may require permission from Kabi Kabi elders. This October 2022 public release has removed some aspects of Indigenous cultural heritage content contained in the previous version released to government agencies in March 2022 to respect wishes of Kabi Kabi elders.

FORWARD

The planet's biodiversity is drastically declining and this decline is accelerating along with species extinction. The advent of climate change is presenting an increased risk factor that may see many ecosystems we all take for granted collapse entirely, leading to a range of policy challenges for government entities unlike anything seen before - from energy to water to food security. Biodiversity cannot hope to be conserved only through managing a select number of large pristine parcels of land. It is by definition, dependent on the broad preservation of innumerable unique habitats and environmental processes that have evolved to survive in small niches throughout our ecosystems.

The sheer magnitude of the biodiversity loss from human activity is staggering. Species of birds, butterflies, plants and entire ecosystems are being lost every day. Depending on sources, it is estimated that between 24 and 150 species are lost every day, and Australia has the worst mammal extinction rate of any country in the world. But the documented losses may be only the tip of the iceberg. That's because it is difficult to know what is happening beyond the world of vertebrate animals. Estimates put the current global extinctions as much as 100 times higher than the geologically estimated background rate. Mass extinctions that are the direct consequence of the activities of a single species are unprecedented in geological history. The extinction of any species is an irreversible loss of part of the biological richness of the Earth.

Importantly we may be missing a bigger and more immediate threat, that being the loss of local biodiversity. Ecosystems are profoundly local, based on individual interactions of individual organisms. The loss of local ecosystems may have a more immediate and profound effect on the survival of broader natural systems and the services they provide (yale.edu). While global wildlife populations fell by 68%, on average, between 1970 and 2016, some Australian populations plummeted by up to 97% (wwf.org). Scientists predict that on our current trajectory of habitat loss and global warming, between one third and one half of all current species on the planet will face extinction by the end of this century (earthjustice.org). Their disappearance will upend ecosystems and destabilize human civilization. There exists an urgency for all policy makers and citizens to commit meaningfully to the living world outside human activity to ensure the survival of systems on which future generations will depend. It is incumbent on us to leave natural systems that have cultural and experiential meaning to future generations.

It is for these reasons that it is incumbent on urban and peri-urban town planners to develop, implement and enforce policy that aims to protect and preserve unique niche ecosystems wherever they may be present, and however inconvenient it may prove to be. Australia is one of eleven global deforestation hotspots – the only one in the developed world. In light of the loss of diversity along the East coast of Australia, zonings should give special regard for sites with remnant ecological values. The incomprehensible loss of littoral zone rainforests and ecosystems along the east coast of Australia makes those that have survived even more precious. In the absence of detailed and thorough evidence to the contrary, the precautionary principle has to be an essential benchmark and guiding tenet to prevent future catastrophic ecological consequences. Continued human social and economic stability will depend on ensuring biodiversity conservation. Appropriate land use zoning is essential to biodiversity conservation, especially where sites contain remnant littoral values. Strong vibrant biodiversity outcomes will flow from well-appointed and appropriate land use zonings within these sensitive coastline areas leading to all the benefits that come from liveable communities that are connected to nature.

Within the context of climate change, rapidly changing technologies, and a political environment of distrust of institutions and science, citizens and advocates are demanding more transparency and democracy in policy making. The frustrations in the community centre on a sense of distance and abstractness from decision makers and policy makers. Community members don't know how to shift entrenched paradigms that seem out of touch with rapidly changing social and environmental factors that will affect the lives of their children. In a 21st century world, much government policy making remains fixed on 20th century institutional rules and assumptions and general mindset of "business as usual". Point Cartwright Reserve's current dilemma is that the governance of the site remains entrenched in policy and management frameworks which have stood for many decades.

Over recent decades, the effects of those policies and management paradigms caused steady incremental degradation of the reserve's ecosystems and habitats. In recent years, with the intensification of activity on the site, massive declines in the fundamental health of the reserve's environmental values has been witnessed. These long-standing policies and management paradigms are in direct conflict with intrinsic environment and cultural heritage values that have existed on the site for thousands of years. With continued pressure in coming decades there is every likelihood irreversible degradation will result. Without a rezoning to an appropriate land use designation that puts the intrinsic values at the forefront of policy and management decisions, Council will lose an opportunity to create a wonderful exemplar littoral conservation park at Point Cartwright Reserve. To retain the existing zone is simply no longer appropriate in light of the values present on the site and the human and climate change pressures that are coming to bear on this unique site.

This town planning review must take stock of unique values on the reserve and recognise their significance, not only within the jurisdiction of Sunshine Coast Council, but also on a regional and national level. A reorientation of mindset is required away from the policies and management practices that have led to the steady decline in environmental values on the reserve over recent decades. There needs to be a refocus on providing future sustainable outcomes that ensure biodiversity conservation and intergenerational equity. The foundational land use designation is the primary means by which policy and management paradigms are developed. To this end, it is essential for the long-term survival of unique littoral ecosystems present on the reserve that a conservation-oriented zoning be prescribed. Rezoning of Point Cartwright Reserve from Open Space to Environmental Management and Conservation will be an important cornerstone in ensuring the degraded, yet significant, environment and cultural heritage values can finally be protected, restored and maintained for the enjoyment of generations to come.

For the above reasons, it is crucial that Point Cartwright Reserve be rezoned to Environmental Management and Conservation in this Town Plan review.

EXECUTIVE SUMMARY

Point Cartwright Reserve is a truly unique signature site within the Sunshine Coast Council jurisdictions. It has intrinsic ecological values with regional and national significance. It supports critically endangered littoral forests, rocky shore environs with international migratory shorebirds, riverine habitats with a plethora of marine species and diverse benthic organisms, and beaches that support the highest number of endangered loggerhead turtle hatchings on the Sunshine Coast. These attributes are recognised and protected under a range of international agreements and national instruments such as the EPBC Act.

Currently, the site's policy and management framework under the Open Space zoning is leading to rapid and potentially irreversible decline in ecological systems. The insistence of policy makers to use the site for recreational purposes lies at the heart of the problem. When the site was designated as a reserve by the state government of Queensland in 1933, it was intended as a nature-based destination. However, the site's Open Space zoning is enabling administrators to use the reserve for a range of unmet recreational needs in a growing urbanised community causing significant degradation of the site.

Strategically, the reserve has grown in importance as a remnant littoral rarity along the coastlines of the Sunshine Coast. Its natural island-like form and mix of on-site ecology is also rare. The mere absence of most of the former littoral zone rainforest and ecological communities adjacent to beaches and headlands on the Sunshine Coast, means that the significance of Point Cartwright Reserve has grown. Rich Indigenous cultural heritage and European history make up its unique human past. There could not be a better example of a site worthy of conservation status.

The reserve is desperately in need of a whole new approach aimed at restoring the unique intrinsic environmental values through protection, restoration and ongoing conservation strategies. This must begin with rezoning the site to a land use designation that is representative of its intrinsic environment and cultural heritage values. The current Town Plan review is a great opportunity to rezone the reserve from Open Space to Environmental Management and Conservation. This rezoning will help to ensure the policy and management framework governing the site is aligned to its intrinsic values, particularly in light of the macro-context of climate change, massive population increases, and ongoing urbanisation.

The benefits of rezoning far out-weigh the status quo approach under the existing zone. A rezoning to Environmental Management and Conservation Zone will help shift the mindset from the reserve being mostly a recreation destination toward the reserve being primarily a conservation area with low impact recreational and experiential opportunities as a secondary benefit. With the right approach, the site can be returned to something akin to its pre-disturbance state. Many in the community desire for Point Cartwright Reserve to become a model ecological protection and conservation park. Rezoning would provide the land use intent and framework to achieve this outcome.

A new vision for Point Cartwright Reserve is urgently needed - one that recognises and builds on the existing undervalued intrinsic attributes of the site to create an exemplar conservation park that can be celebrated for many generations to come. Such a vision will require a whole new policy and management paradigm aimed at protecting and restoring the site's unique environs. This can only be effectively and meaningfully achieved under the Environmental Management and Conservation Zone. This vision would need to be agreed with relevant state agencies that have tenure over the land parcels of the reserve and with the community.

As a conservation site, the reserve could not only contribute to the liveability of future highly urbanised coastline communities and provide nature-based experiences for residents and visitors to the Sunshine Coast, but could also remain a scenic tourist destination with excellent vantage points to notable locations elsewhere on the Sunshine Coast and for whale watching. Importantly, the reserve could be an exemplar of littoral zone conservation and Kabi Kabi cultural heritage.

Reclassification of the zoning designation of Point Cartwright Reserve to Environmental Management and Conservation Zone will help ensure a reorientation of activities and programs under an umbrella of conservation. This rezoning is essential for the long-term survival of nationally and regionally significant values. The long-term benefits to biodiversity and to the future populations on the Sunshine Coast could be immeasurable. In the short term, urgent restorative actions can be directed at the littoral rainforest, while protection measures can be directed at the rocky shores and shorebirds and, in partnership with state agencies responsible for harbour dredging, improved outcomes for the riparian zone can be achieved.

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1. INTRODUCTION

Point Cartwright Reserve is an iconic, regionally significant and rare signature rocky headland site that is surrounded by ocean and estuary influences. It supports a unique and complex mix of ecologically significant littoral environs including critically endangered littoral forests, rocky shore environs with international migratory shorebirds, and riverine habitats that support a plethora of marine species and diverse benthic organisms, and beaches that support the highest number of endangered loggerhead turtle hatchings in the Sunshine Coast Council jurisdiction. These characteristics are further supported by a rich anthropogenic heritage (Kabi Kabi and European), a unique Jurassic Period fossilised landscape, a wonderful diversity of birdlife and mix of wildlife that are all interdependent on the reserve's ancient environs for survival.

Sadly, over the past two decades residents have witnessed a sustained assault on the natural values of the reserve leading to a decline in the key features that make it unique. Many of the attributes that make Point Cartwright Reserve so special are being undermined by custodianship that is unfocussed, poorly prioritised and undervalues the natural benefits of the reserve, as well as its distinctive cultural heritage. This is compounded by a mishmash of indifferent policies and undisciplined programs that effectively encourage a growing number of users to disrespect what few assets are remaining on the site and exploit recreational opportunities without clear boundaries or regard for the perpetuation of serious and cumulative deleterious affects on the inherent natural assets. There is serious concern in the community that if action is not taken soon, Point Cartwright Reserve will irretrievably lose those facets that make it so special to so many people, and in doing so deny future generations of the same experiences. Ultimately, the aspirational promise represented by the original proclamation of the site as a nature reserve in 1933 is being lost through mismanagement and overuse.

Given the reserve's strategic significance as a remnant littoral site and the plethora of important intrinsic values on the site requiring protection and conservation, it is essential that this Town Plan review opportunity not be missed. As population and urbanisation are set to drastically intensify in coming decades, it is vital that the land designation of the site reflect its intrinsic environmental and cultural heritage values to ensure policy and programs of the future remain aligned to the principles of biodiversity conservation and intergenerational equity. Rezoning of the reserve is needed to ensure these attributes are protected and restored, to conserve the site's biodiversity, to enhance the ecosystem services and to retain wildlife habitats. Anthropogenic benefits will include future generations who will recognise the increasing significance of the site to the liveability of an ever-expanding urbanised community and growing population base.

This report advocates for a rezoning of Point Cartwright Reserve to the Environmental Management and Conservation Zone to ensure the realignment of policy and management paradigms governing the site's priorities and programs, and to help achieve outcomes that are consistent with international and national agreements and standards for protection, restoration and conservation of ecosystems present on the reserve. This report provides a rationale for the rezoning along with a summary of the site's significant intrinsic values and an explanation for regarding the current zoning as inappropriate. The following sections justify the rezoning proposal by outlining the strategic importance of the site, illuminating the changing macro-contextual framework that is highlighting the significance of the site, describing the site's significant intrinsic values, detailing the risks of the status-quo approach under an Open Space Zone and outlining the benefits of rezoning to Environmental Management and Conservation.

2. ORIGINAL INTENT

From early historical records, it is clear that the intent of the Mooloolaba Progress Association's advocacy to establish the Point Cartwright Reserve in the 1920s and '30s, was to protect and conserve the site as a nature-based scenic destination. Program delivery under the Open Space Zone is diminishing this aspiration, and importantly, is ignoring the growing importance of the site to fulfilling this aspiration within an increasingly urbanised metropolis. Existing policy and management outcomes within the Open Space Zone are degrading values that are now becoming rare. The values of the reserve would be better recognised and managed under a revised policy framework aligned to the Environmental Management and Conservation Zone.

3. INTEGRATING WITH THE MASTER PLAN

Although the Point Cartwright Care Group Inc. has been advocating for the protection of Point Cartwright Reserve's intrinsic values for some time, it has been the recent master planning process that has allowed these values to be brought to the fore more generally. While recent master planning processes on the site have instigated a change in the understanding of the reserve's significance, it has also placed a spotlight on the immense unrealised potential of the site as a conservation area. Its intrinsic values need to be protected and restored to guarantee their ongoing strategic significance for biodiversity conservation, sustainability, and the enjoyment of future generations.

The recent master planning process has also elicited the incontrovertible realisation that the existing zoning of the site (Open Space) cannot ensure appropriate conservation, restoration and protection of these values. The only meaningful way to turn around the existing mindsets, the entrenched policy and the long-standing management paradigms (that have seen the site degraded almost to the point of irreversible decline), is to change the fundamental land use designation to one that places long term biodiversity conservation and cultural heritage management at the forefront of policy and aspirational goals.

The preservation and restoration of key intrinsic values will require an alternative policy and management paradigm to be adopted. Without the land designation and intent for the site being altered to a more appropriate category, the current master planning process will be incapable of delivering outcomes that provide for the sustainable carriage of the site's unique environmental values going forward. To this end, the site needs to be reimagined through a prism of conservation management.

To fully realise the potential of the site requires rezoning to Environmental Management and Conservation. In this way policy and program delivery can be aligned to the needs of the site's intrinsic values. The master planning process is not capable of delivering these outcomes on its own. Rezoning to Environmental Management and Conservation will dovetail nicely with the findings and aspirations of the master planning process. A rezoning to Environmental Management and Conservation would support an integrated vision for the reserve as an exemplar conservation park preserved for future generations.

The following diagram shows the bounds of the Master Planning Area. From an ecological perspective, the bounds of the master planning area should include the rocky shores, rock wall groyne, riverine habitats and eastern dunal foreshores to encapsulate all interrelated biotopes. This would indicate clearly to stakeholders that these areas are all integral to the ecology of the site.

La Balsa Park and the Point Cartwright Reserve are two separate and ecologically distinct areas. The terrestrial environs of La Balsa Park contains no remnant ecological value and cannot be regarded as in any way comparable with the intrinsic characteristics of the reserve. A single planning boundary that encompasses both the reserve and La Balsa Park risks losing the unique identity, heritage and natural values of Point Cartwright in favour of homogenised parkland recreational outcomes.

Clear delineation between La Balsa Park and the Point Cartwright Reserve is essential to ensure policy and programs reflect the different conservation and management needs of the two areas. Rezoning of the reserve will reinforce the distinction between the two different areas through codified aspirational intent. Under the existing Open Space Zone, there remains a temptation for administrators to treat these two areas in a comparable way. To ensure clear differentiation between the objectives of the two areas is maintained, and the ecological objectives of the reserve are embedded in policy, it is essential that the reserve be rezoned to Environmental Management and Conservation.

Master Planning Locality Plan showing Bounds of Place Management Plan

4. A STRATEGICALLY IMPORTANT SIGNATURE SITE

Point Cartwright Reserve is a strategically important site within the mosaic of natural spaces on the Sunshine Coast because it is a remnant site located in the littoral zone (1-2 km alongside the coastline), an area largely devoid of such sites due to extensive coastline urban development. The reserve is a "signature" site due to its unique combination of high value environmental attributes and rich Indigenous cultural heritage dating back thousands of years. Point Cartwright Reserve has significant environmental values that are captured by international agreements and national legislative provisions. These include a stand of critically endangered littoral rainforest, rocky shores that support resident and migratory species of shorebirds and beaches favoured by the endangered loggerhead turtles for nesting.

The reserve is surrounded by ocean and estuary influences, giving it an "island" character. It's combination of littoral rainforest, rocky shores and riverine habitats make it a littoral zone rarity. The reserve is one of the few remaining forested rocky headlands in the littoral zone of Sunshine Coast Council jurisdiction. The presence of rich anthropogenic heritage, rocky foreshores, migratory shorebirds, ancient fossilised landscapes, endangered loggerhead turtle nesting and riverine habitats all within the one "island" site make the site strategically important to the social and environmental fabric of the Sunshine Coast, for the following reasons:

- Internationally, nationally, and regionally significant attributes;
- A littoral zone rarity on the Sunshine Coast;
- Increasing significance due to urbanisation, population growth and climate change;
- Strategic economic and social opportunities arising from a restored exemplar littoral conservation park;
- Strategic obligations relating to UNESCO biosphere status and opportunities such as the Olympics; and
- Strategic corporate objectives such as being the most sustainable region in Australia.

Successive administrations have not understood the site's significance as an ecological hub in the littoral zone. Policy and management paradigms on the site are causing lasting and sustained decline in these recognised attributes. Key objectives of national instruments established to conserve the values found on the reserve are being undermined. National recovery plan measures aimed at ensuring the survival of littoral forests are not being implemented. On site activities under the current Open Space zoning are contributing to the degradation of these key ecological objectives.

Rehabilitation and restoration of disturbed nationally significant remnant stands of littoral rainforests has not been instigated over the past twenty years due to alternative priorities under the Open Space Zone. The condition of remnant stands on the site targeted under the national recovery plan for littoral rainforests is poor. Under the Open Space zoning, highly degrading recreational outcomes are being fostered by administrators, with local regulatory instruments being developed to facilitate the perpetuation of these activities and consequently the ongoing deterioration of intrinsic values in these recognised areas of significance. For example, 24-hour dog off-leash areas have been prescribed across areas of the nationally significant littoral rainforest and across the rocky shores that host migratory birds.

Rezoning of the reserve is essential to ensure these internationally and nationally recognised attributes are managed in a way that ensures they are protected and restored to realise the objectives of the applicable policy instruments. Within a regional context the site will continue to grow in its strategic importance with the future expanding urbanisation and population growth. Under the Environmental Management and Conservation Zone, protections can more readily be implemented to manage these pressures. Locally, outcomes would include retention of species diversity, ecosystem services and experiential opportunities for future generations. Opportunities to contribute to the furtherance of relevant international agreements and national legislative provisions applying to these values would be more readily achievable as a matter of core business if the site is rezoned to Environmental Management and Conservation.

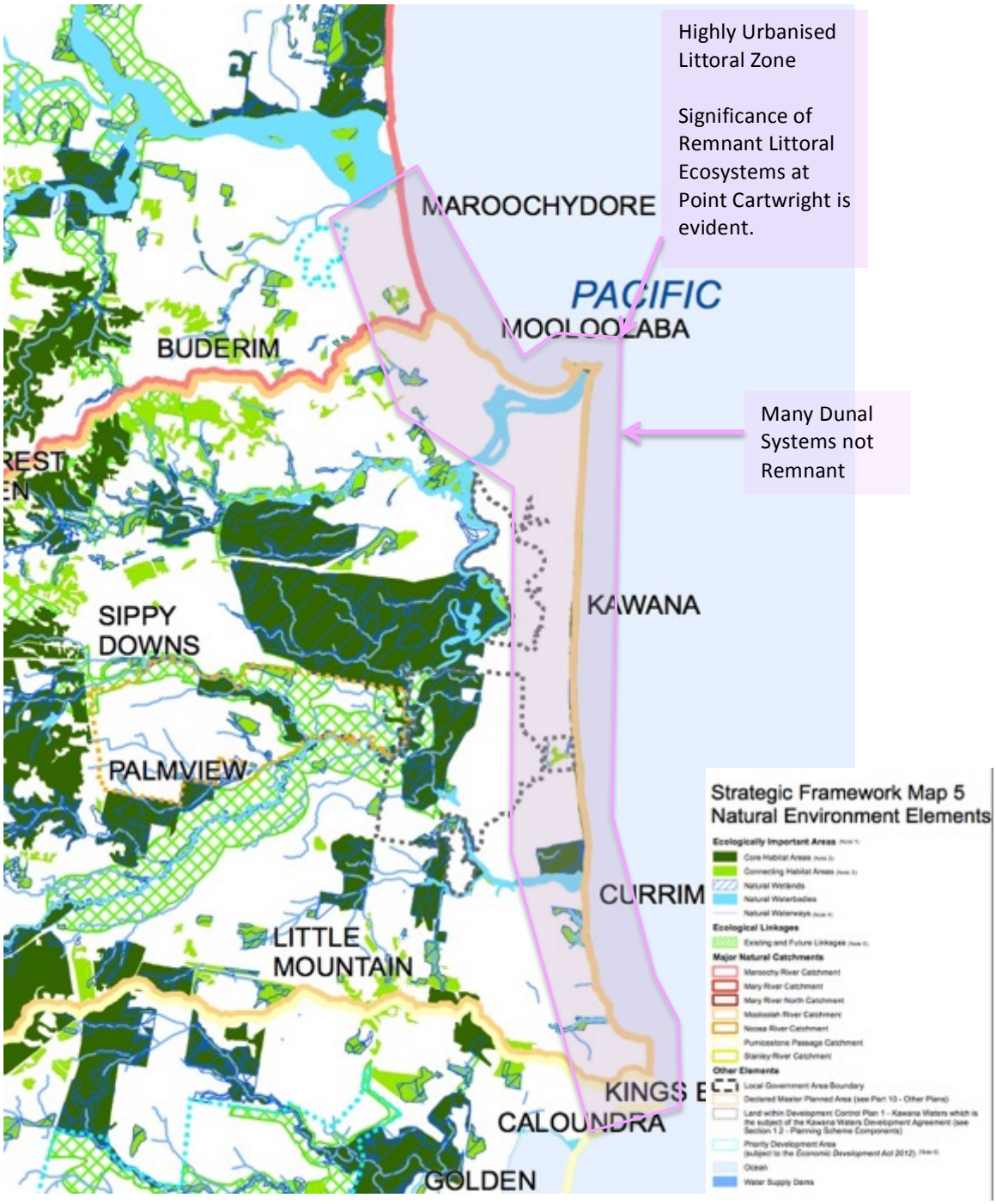
The strategic importance of the reserve cannot be looked at simply through the lens of its own high value onsite attributes. Linkages between the reserve's littoral ecosystems and the waterway systems of the Mooloolah River catchment have existed for thousands of years, and although considerably altered and heavily degraded, should be considered as a key element in the mosaic of littoral ecological values connected to the reserve. The reserve's rainforest, rocky shore and riverine habitats are a gateway for marine and terrestrial lifecycles. Conservation outcomes on the site will have flow on affects for surrounding ecosystems and visa versa.

In policy, administrators have recognised that conservation management is ecologically, socially and economically significant to human communities, and that there exists a direct connection between liveability and good biodiversity management. In practice however, these aspirations are not being achieved in a consequential manner, particularly for coastal communities that are deprived of green spaces. Policy and program delivery under the Open Space Zone at Point Cartwright Reserve over the past two decades has led to a range of contradictory objectives, perceptions and uses that are continuing to degrade the reserve's natural values.

Despite good intentions and resourcing, the inappropriate zoning of the site combined with unclear vision ultimately risks diminishing biodiversity conservation outcomes and depriving future generations of the experience of this unique place. Programs have directed resources at land management and restorative activities within the same natural areas that are being degraded by policies such as dog off-leash areas, without regard to the long-term erosion of nationally and internationally significant natural values. This is leading to a betrayal of the core remnant values that were the subject of the site's original designation as a reserve in 1933. Importantly, without intervention, there is a real risk that the potential for the reserve to be rehabilitated and restored to a former pre-disturbance state could be lost.

Council's aspirations in relation to the UNESCO Biosphere nomination could be enhanced greatly by appropriate attention to Point Cartwright Reserve within the highly urbanised Sunshine Coast coastline suburbs. Point Cartwright offers a suite of unique coastline nature experiences not readily accessed together within the Council jurisdictions. Reorienting the role, function and purpose of Point Cartwright before key remnant qualities are lost would align with Council's aspiration to become the most sustainable region in Australia. With the Olympics coming to the Sunshine Coast, the presence of an exemplar conservation site within the highly urbanised littoral zone would add significantly to the perceptions of liveability.

There is time before 2032 Olympics to implement a suite of proactive rehabilitation and restoration actions to transform the degraded state of the reserve. Now is the time to do it. The long-term strategic opportunities for local tourism and community benefits from an exemplar littoral Conservation Park will continue well into the future. Intergenerational equity for the natural and cultural heritage values would flow from biodiversity conservation on the site. A key rationale for rezoning the reserve to the Environmental Management and Conservation Zone centres around ensuring the protection, restoration and management of the complex mix of high-value ecological systems is core to the administration of the reserve.



Strategic Framework Map 5 Showing Highly Modified and Urbanised Littoral Zone

5. A SIGNIFICANT PAST – HUMAN VALUES (Cultural Heritage and History)

A Forgotten Cultural Heritage and History

Point Cartwright has the following Indigenous cultural heritage and European history values:

- Former large Indigenous village centred around a former onsite fresh water lagoon
- Point Cartwright headland place of spiritual and religious significance
- Indigenous sites of significance e.g. rock art, middens, fish traps, ceremony
- Early European and Indigenous connections involving Point Cartwright
- Early European maritime significance of Point Cartwright and Mooloolah River
- Early European recognition of Point Cartwright as a special nature-based destination

Administrators and users of the reserve have been largely unaware of the many facets of Indigenous cultural heritage and European history of the reserve. These values have been mostly overlooked throughout the reserve's contemporary history. Instead, administrators have focussed on the reserve as a recreational destination for numerous decades under the Open Space Zone. The quiet contemplative enjoyment of the natural values present on the site, together with the unique Indigenous cultural heritage and European history, present a richness of experiential and interpretative opportunities that have never been pursued since the development of surrounding suburbs.

Kabi Kabi Heritage

Point Cartwright Reserve was a place of indigenous life for thousands of years before colonisation. For the local Kabi Kabi people, the Point Cartwright area would have been their home, their medicine, their food source and their playground. Research indicates that the main village on Point Cartwright headland was near a large fresh water lagoon (now lost). The neighbouring Mooloolah Plains were hunting grounds and tournament grounds. They relied heavily on the local food sources around Point Cartwright such as fish and shellfish. Oyster middens were reported in the 1930s along the banks of the Mooloolah River rising to a height of 2 metres. Carbon dating has shown remnant oyster middens along the Mooloolah River were up to 10,000 years old. Eugarie (pippy) middens were located along the coastal dunes along with stone implements, including grinding stones and choppers. Fish traps were a common method of sourcing fish from rocky shores. Many of the remaining attributes were lost in the 1960s with the development of the coastline and canal suburbs of Kawana and related changes in the Mooloolah River harbour.

Importantly for the Kabi Kabi people, the reserve was a sacred site, a ceremonial place and part of their traditional beliefs. The landform of Point Cartwright itself has spiritual and religious significance to the Kabi Kabi as the resting place of ancestor Barringah, a spiritual guide for passed souls to travel to the Milky Way and the keeper and protector of the Mooloolah River system. Point Cartwright has prominence in the Aboriginal Dreamtime stories of the Sunshine Coast. Sites of significance such as rock art (engravings) and ceremonial sites were once present on the site. Across Australia rock art is an integral part of First Nations life and customs, dating back to the earliest times of human settlement on the continent. Petroglyphs (rock engravings) and pictographs (drawings) are a key component of rock art. Rock art around the cliffs of Point Cartwright once depicted dingo, emu, birds, dreamtime stories and a human footprint (Jackson 1939). In 1932 it was reported that the sun and salt water had already caused much of the sandstone to flake away. After the forced removal of Kabi Kabi people from the area, rock art on the cliffs eventually disappeared. According to Kerkhove (1986), Point Cartwright may have also contained a ceremonial ground. To the south of Point Cartwright there were important fighting (tournament) grounds on Mooloolah Plains and two bora rings (one at Sippy). Notable festivities involving hinterland clans and post-Bunya festival gatherings occurred on the site.

Due to the Kabi Kabi's direct reliance on the natural landscapes, ecology and wildlife, the Indigenous way of life was directly connected to the ecology and habitats of the reserve. The significance of the site for ceremonial, spiritual and religious purposes needs to be formally recognised. These important facets of anthropological use of the site should be integrated into an aspirational vision, cultural heritage management and interpretative strategy. These outcomes are much less likely to be realised under the existing Open Space Zone. Together with the layers of wonderful intrinsic littoral environmental values, the opportunities for broader integrated learning and immersive understanding of these unique facets of Aboriginal cultural heritage and European history of the site could be better facilitated and maintained if revised priorities were established in accordance with the Environmental Management and Conservation Zone.

All of the above Indigenous cultural heritage values would be given appropriate recognition, protection and conservation within the auspices of the Environmental Management and Conservation Zone and related policy and management protocols, as compared with the existing Open Space Zone.

European History

Opportunities for locals and visitors to treasure and celebrate European heritage can be best supported within the Environmental Management and Conservation Zone.

Point Cartwright was the mariners' gateway to the district. Protected by the headland, the Mooloolah River was favoured as a port over the Maroochy River, where the ocean swell and sand bars often made access hazardous. Steamships operated in the Mooloolah River, regularly carrying produce and passengers as well as timber between Mooloolaba and Brisbane. The Sunshine Coast and surrounding areas, were particularly rich in timber. Timber began to be exploited by private commercial operators at least as early as the onset of free settlement in 1842. Queensland had a seemingly unlimited supply of some of the finest cabinet timbers in the world including Cedar, Maple, Mahogany, Walnut and Silky Oak, together with excellent general utility pine including Cypress, Hoop, Bunya and Kauri. By the 1870s, most of the valuable timbers of the region, including Red Cedar, Beech and Bunyas were gone.

In the early 1900s Point Cartwright was viewed as a unique nature-based scenic destination for locals and tourists alike. Access was by boat from Mooloolaba or beach from Caloundra. An extract of an article in The Queenslander, May 1932, states: *We can imitate, but not manufacture, the environment that Nature gives us, and, though gaudily-painted rest sheds may be all very well in their way, they are not as pleasing to look upon as the wind-blown trees that fit so well the places they beautify. It is just as well that all do not think alike, else Point Cartwright might lose its quality of peacefulness. I can picture it with tea kiosks on the summit and gingerbeer bottles, tins, and scraps of paper everywhere. I am promising myself that I shall never revisit the spot unless assured that it has retained its naturalness.*

Eventually, in 1933, lobbying by the Mooloolaba Progress Association to have land at Point Cartwright declared a reserve was successful. On 26 May 1933, a notification appeared in the Moreton Mail that a decision had been made to set aside land for the purpose of a 10 acre reserve. An extract reads as follows:

Hon. P. Pease, Minister for Lands, has advised Mr. B. F. R. Nicklin, M.L.A: With reference to the Mooloolah Progress Association, which requests that an area of about ten acres at Point Cartwright, Mooloolah Heads, be reserved, I inform you that it has been approved to set the land apart as a Reserve …under the control of the Maroochy Shire Council." The action of the Minister will be appreciated by all those who enjoy visits to this picturesque spot, and now it is proclaimed a Reserve.

After World War II the Sunshine Coast gained a reputation as a popular holiday destination which historians attribute to its wonderful weather and great surfing. During the 1940s and '50s Point Cartwright Reserve became a popular day-visit area for families and tourists alike with ferries established to take people across the Mooloolah River. Unfortunately, during this time Point Cartwright continued to be depleted of vegetation, being subjected to timber theft as described in the following newspaper article: *Seaside Resorts Report Vandalism. Vandalism is very pronounced in the scenic reserve at Point Cartwright. Good Cypress Pine trees of marketable value have been removed. (Nambour Chronicle and North Coast Advertiser, Friday 27 May 1949).*

It wasn't until 1960 that the areas around Point Cartwright were formally viewed as potential population centres. The Kawana Waters Development agreement saw the former wallum and wetlands east of the Mooloolah River converted into roads, commercial lands, residential areas and canal developments. The river was dredged and revetment walls constructed along its length.

Whole of site heritage and history narratives and tourist trails may be opportunities that fit well within a whole of site interpretative strategy and/or tourism strategy for the site. The Environmental Management and Conservation Zone is best placed to foster these opportunities in a well-controlled low impact manner.

Beyond 1960 - Summary Of European Change and Landform Changes

The reserve has been subject to varying degrees of ongoing vegetation removal. The site was originally part of an early settler's farm and consequently the headland may have been clear-felled at that time, or by the prolific timber-getters of the 1800s. The site used to have a large fresh water lagoon that was central to Kabi Kabi village life. In the 1930s, published records describe locals lamenting the drying up of the lagoon (presumably in part due to the surrounding vegetation having been removed).

Rock revetment walls and groynes were created in the 1960s from large quantities of granite transported to the site and dumped along riverbanks. A rock wall groyne was constructed at the entrance of the river. Substantial changes to the depth and flows of the river resulted from extensive dredging of the river in the 1960s, to create a deep-water harbour resulting in large quantities of acid sulphate soil dredge spoil being used to reclaim parts of the river and fill low lying areas. Dredging continues today to maintain the deep-water harbour, as does in-stream dredge spoil dumping at Half Moon Bay. The reserve was mined for alluvials in the 1960s, presumably to use sand in construction works and to reclaim rocky shores. Middens may have been burned for lime to supplement construction activities (eg. cement and road base). Forested areas were damaged and significant topographical changes occurred in the centre of the site, leading to the destruction of the fresh water lagoon. Hilltop littoral forest was cleared for residential towers in 1960s.

Since the commencement of Kawana Waters development, substantial changes have occurred to the land form, vegetation and marine environs of the reserve from a series of significant earthworks and infrastructure related activities, as follows:

- Forested dunal areas immediately south of Point Cartwright were clear-felled of vegetation and the sand dunes were bulldozed to fill the low-lying areas behind them.
- Ridge-top forested areas were cleared of vegetation and levelled to create a large stable area for residential housing, which today is the site of some 85 residential units in 4 high-rise buildings.
- Canals and allotments were forged out of the tributaries and wetland areas adjacent to the river.
- The shallow sandy-bottom Mooloolah River was dredged to create a deep-water harbour and river mouth. Dredging of the Mooloolah River Entrance commenced in 1968/69 and has continued as a routine navigational requirement since.
- Construction of the present day rock groynes on the east and west side of the Mooloolah River mouth extending out into the ocean beyond the natural rock shelf commenced in late 1965.
- Sand extraction and significant reclamation works occurred on the reserve and surrounding areas to support the rock groynes and riverside revetments.
- A natural rock embayment adjacent to the Mooloolah River, most likely a primary fish trap for Kabi Kabi people for thousands of years, was filled when the eastern groyne was constructed.

- The natural landform and beach line of the headland was extended northward through reclamation adjacent to the rock groyne. This is reflected in land parcel designations that even today show no land parcel for this area. Allotments still follow the old land form extent.
- Construction of the water tower and lighthouse atop the headland.

Indigenous cultural heritage was lost to many of these changes. Notably fish traps and rocky shore oyster beds were smothered by rock wall groyne construction and reclamation activities across the adjacent rocky shores. The riverside road construction and rock revetment walls along the river's edge would have destroyed middens along riverbanks. The fresh water lagoon, which would have been a primary fresh water source and centre point of village life, was destroyed by sand mining activities leading to significantly altered topography on the site. Other Indigenous heritage was most certainly lost to these changes.

All of the changes from early settlement through to present day have markedly changed the composition of terrestrial and marine habitats and populations of wildlife at the reserve. The remaining densely vegetated forested strands along the hilled areas that were not clear-felled have remained largely intact as remnant strands from before colonisation but are in a degraded state. Unfortunately, it seems that no concerted effort has yet been made to protect and rehabilitate the natural values of these remnant areas. The dredging and resulting periodic cycles of massive deposits of silt into the Mooloolah River and the bay area will continue to have devastating consequences for sea grasses and dependent marine wildlife. Anecdotally, community members can attest that populations of green turtles and dugongs at Point Cartwright were once far in excess of what they are today. This is supported by published testaments from early twentieth century and presumably the same would apply to many other marine organisms. This is something that may not ever be known in absolute terms, but needs to be addressed through improved impact management strategies in a collaborative manner with other key stakeholders such Marine Safety Queensland (MSQ).

Rezoning the reserve to the Environmental Management and Conservation Zone will create opportunities for administrators and stakeholders to engage within a framework geared toward the long-term sustainable protection and conservation of the Indigenous cultural heritage and European history pertaining to the reserve. Improvements to existing approaches to site management and restorative actions to heal past consequences of development can be best accomplished within the bounds of the Environmental Management and Conservation Zone.

6. SIGNIFICANT NATURAL VALUES

The following passages outline the environmental attributes of the reserve that have stood for thousands of years and remain intrinsically significant on a national, regional and local level. When combined with the unique Jurassic period landscapes, the littoral character and ocean-side amenity, the site cannot be easily replicated anywhere else on the Sunshine Coast. The following environmental values are present at Point Cartwright Reserve. These are either not currently recognised, poorly understood, improperly conserved and managed, and/or in sustained decline within the existing policy and management framework under the Open Space Zone.

Environmental Conservation and Biodiversity Values:

- Nationally significant critically endangered EPBC littoral rainforest
- Resident and EPBC international migratory shorebirds (eg. Wandering Tattler)
- Rocky shores environs with rich species biodiversity of marine organisms
- Riverine habitats with highly regarded biodiversity (eg. Nudibranchs)
- Endangered Loggerhead turtle nesting on beaches
- A broad diversity of onsite wildlife and habitats including EPBC birds

Landscapes, Tourism and Scenic Amenity Values:

- Unique exposed Jurassic-Period fossilised landscapes
- Regionally significant scenic vantages, offering exceptional views north to Noosa, south to Caloundra and west to hinterland ranges
- Tourism with significant interpretative opportunities
- Seasonally significant tourism vantages eg. whale watching

Littoral Rainforest and Ecology

Point Cartwright Reserve is a unique littoral site with **r**ich and complex mix of environment values and littoral zone ecology that warrants immediate protection and restoration under a conservation management paradigm. Ensuring administrators and users of the site understand the site's intrinsic significance has been the key challenge to date. Point Cartwright Reserve's littoral ecological communities have existed for thousands of years. Unfortunately however, along the eastern seaboard of Australia sites like the reserve are now regarded as rare due to immense loss of pristine littoral habitats over many decades from coastal urban development. In fact, this is the reason new national legislative provisions were drawn up in 2019 for Littoral Rainforests and Coastal Vine Thickets under the Environment Protection and Biodiversity Conservation (EPBC) Act.

Under these provisions, even very small stands of remnant littoral rainforest are considered nationally significant and critically endangered, requiring substantial intervention and restoration to protect them from continued decline. Parts of the southeast corner of Queensland are some of the worst affected areas. Much of the original ecological communities and remnant vegetation on the coastal strip between Maroochydore and Caloundra has either been highly modified or lost completely. Point Cartwright was declared a reserve in 1933 and should be treasured as one of the last remaining natural remnant littoral rainforest and rocky shore sites with a direct connection to pre-colonisation - a small piece of what was once so plentiful before settlement of the area.

The complex mix of high-value ecology is not readily recognised as being significant on such a small site. Expectations are that significant sites worthy of conservation must be large inland reserves. Nothing could be further from the truth. The rarity of the site's combined remanent littoral zone biotopes and landscapes is what makes its preservation essential. This uniqueness is compounded and, in some regards, facilitated by the site being almost entirely surrounded by ocean and estuary water bodies, giving the site a high-value island-like ecology and character.

The vegetation of the reserve was assessed by a qualified botanist, Ann Moran, in 1993. Although the reserve has degraded over time, the reserve's vegetation community can be characterised as Littoral Rainforest as defined under the EPBC Act classification system for Littoral Rainforest and Coastal Vine Thickets of Eastern Australia.

The Littoral Rainforest ecological community described by the EPBC Act occurs on coastal headlands, dunes, sea-cliffs or other places influenced by the ocean and sea spray along the eastern seaboard of Australia. It has been rated as nationally significant and Critically Endangered. Littoral Rainforest typically occurs within one or two kilometres of the coast. Given the scarcity of remnant stands remaining along the eastern seaboard of Australia, all sites that meet the EPBC Act criteria should be considered as habitat critical to the survival of the ecological community. To satisfy the criteria for classification under the EPBC Act, the size of the strand only need be 0.1 hectare in size. This is indicative of the seriousness of the conservation and restoration needs of these stands. Point Cartwright Reserve meets these criteria.

National listing of an ecological community recognises that its long-term survival is under threat. Littoral Rainforest has been listed under the EPBC Act based on a number of factors including that it is fragmented, has small patch sizes coupled with demonstrable threats, and the reduction in the integrity of the ecological community make it critically endangered. The listing aims to prevent any further decline and to promote and assist recovery through government, landholder and community efforts. The national recovery plan for littoral rainforests requires the removal of key stressors, implementation of targeted restoration programs, installation of suitable deterrents to entry and provision of buffers to external factors. EPBC Act nationally recognised threats for littoral rainforest include:

- Recreational activity;
- Land clearance;
- Weed invasion;
- Fire and natural disturbances; and
- Animal impacts.

The littoral rainforest stand on the reserve would have been one contiguous stand from the eastern beach to the western river edges prior to early European changes in the 1800s, and mining in the 1960s. Today, even as a degraded example of limited size, professional appraisals of the site have indicated the reserve is captured by the provisions of the EPBC Act for Littoral Rainforests and Coastal Vine Thickets 2019. The provisions clearly emphasises rehabilitation to restore patches where possible and the reduction of stressors, and not just to help bolster the representation of these ecosystems, but to ensure examples remain for future generations to experience. Today, despite the decades of decline, the terrestrial vegetation surviving within the reserve is still habitat for many animals and birds that rely on the reserve for hunting, foraging and nesting. Some one hundred and fifteen species of birds have been known to utilise the reserve including some scheduled bird species. Numerous species of reptiles inhabit the reserve. The reserve has been an important breeding site in the past for the scheduled vulnerable Richmond Birdwing Butterfly.

A lot of existing management paradigms on the site are restricting the site's capacity to regenerate naturally. The current policy framework under the Open Space Zone encourages free-roaming dogs and people to traverse these sensitive stands. Controls are needed for these areas to prevent further degradation and impacts. Concerns are growing with the community about the capacity of the site to endure further intensification of activity as the Sunshine Coast continues to expand into a highly urbanised metropolis. The steady increase in pressure on the reserve over past decades has now brought the site to breaking point where the integrity of some ecological systems is at risk of collapse. This is the reason Point Cartwright Care Group Inc. lobbied Council to initiate the Master Planning process that is currently underway. It is essential that the reserve be classified and managed as a conservation park, not unlike Mary Cairncross reserve to realise the protection and restoration of the littoral rainforests. The Environmental Management and Conservation Zone can help to make this outcome a reality.

Rocky Shores

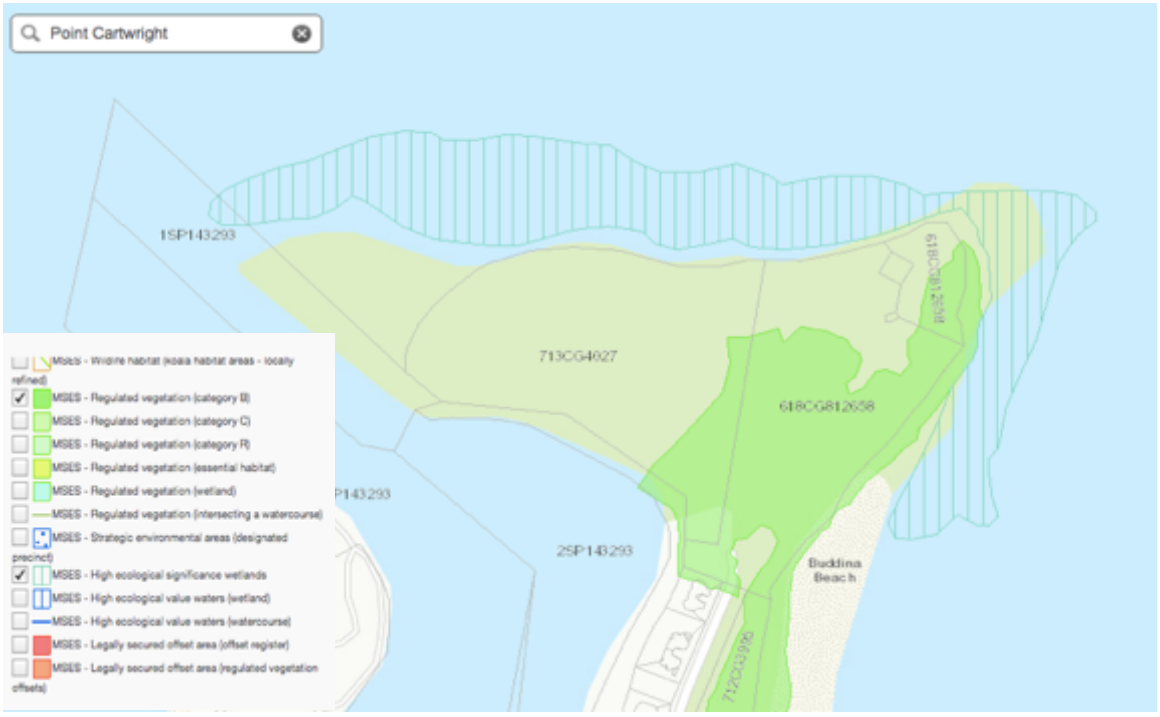
Rocky shores support a diverse mix of marine plants and animals which have adapted to survive this habitat's unique conditions. As well as supporting lots of unusual plants and animals, rocky shores are important fish nurseries and roosting and feeding grounds for birds. Along with their commonly associated algal beds, they also help stabilise inshore sediments. A rich variety of marine life can be found along rocky shores. Overlapping ocean currents, from north and south, allow tropical and temperate species to coexist on the Sunshine Coast in abundance. All foreshore species are interlinked so the removal of any species, or even a decline in its population, has a domino effect, risking the collapse of the whole intricate structure of the foreshore ecosystem. Intertidal harvesting of organisms that currently occurs at the reserve could have significant impacts on species abundance and biodiversity. A conservation management outcome would ensure the long-term sustainability of these important habitats.

Point Cartwright Reserve – Rocky Shores

The changes in the foreshore marine habitats around Point Cartwright can be inferred by examination of historical accounts of the abundance of marine species as compared with today. Numerous early publications from the 1800s and early 1900s allude to the abundance of fish and marine species in the ocean, river system and the foreshore areas around Point Cartwright. The decline in marine life is apparent from early European records that indicate Point Cartwright had exceptionally vibrant marine life, and fish stocks that were so plentiful that waters around the headland would turn black with dense schools of fish. Indigenous locals would readily catch and supply early Europeans and government surveyors with large quantities of fish, crabs and oysters caught around Point Cartwright. Reports from early newspapers describe the waters around Point Cartwright full of porpoises, turtles and dugongs. These reports attest not only to the former richness of populations of marine wildlife, but also the health of the waters, foreshores and breeding habitats.

Opportunities to reverse the decline in marine biodiversity around Point Cartwright Reserve need to be explored from a viewpoint of whole-of-site conservation. Urgent intervention is required to protect the rocky shores at Point Cartwright from daily human harvesting of shells and organisms in the intertidal zone that are essential to the foraging of resident and migratory shorebirds, as well as the long-term sustainability of ecosystem health in these intertidal zones. Biodiversity and healthy functioning of rocky shore ecology and habitat depends on the natural functioning of these ecosystems and habitats. Disturbance by humans can drastically alter the health and viability of these systems and have consequences for higher order marine organisms and wildlife. Rezoning to the Environmental Management and Conservation Zone is essential to ensure the science and ecology of rocky shores is foremost in policy and management decisions for these important biodiversity hubs.

The following map shows the rocky shores listed as high ecological significance (wetlands) on the Matters of State Environmental Significance (MSES) mapping published by the Queensland Government.



Queensland Government MSES mapping showing rocky shores as high ecological significance (wetlands)

Resident and Migratory Shorebirds

Migratory shorebirds are the world's most threatened group of birds. Australia is geographically and ecologically an important location for migratory shorebirds within the East Asian–Australasian flyway. The flyway stretches from Siberia and Alaska, southwards through east and south-east Asia, to Australia and New Zealand. Australia is a signatory to several international agreements concerning migratory species, including shorebirds (e.g. Bonn Convention, Ramsar Convention, JAMBA, CAMBA, ROKAMBA). As a signatory to these aforementioned agreements, Australia has an obligation to conserve migratory shorebirds and their habitats. Migratory shorebirds are also recognised as a matter of national environmental significance under the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999.

Wandering Tattlers (*Tringa incana*) have been regular annual visitors from Alaska to Point Cartwright with recorded sightings by citizen science groups dating back to the 1970s. EPBC Act Shorebird Guidelines emphasise that loss of any important habitat is highly likely to result in a significant impact. Often displaced birds are unable to find suitable replacement habitat. In Australia, loss of important habitat reduces availability of foraging and roosting areas, affecting the ability of birds to build up energy stores necessary for successful migration and breeding. Shorebirds are a highly threatened species due to their key habitats being those favoured by people for recreation and the timing of their presence in Australia (typically spring and summer months) coinciding with the peak summer coastal holiday season.

Shorebirds such as the resident Sooty Oystercatcher and the migratory Wandering Tattler struggle to forage at low tide at Point Cartwright due to the extraordinary number of people on the rocks. The birds are routinely disturbed or chased from their feeding activities (which can only occur across the low tide period). Many people fill their bags with the shells from their own intertidal harvesting of live and dead organisms and shells presumably for collections, fish tanks and bait. This goes on in the very same areas that these birds rely on to forage and survive. Implementation of regulatory policy by Council aimed at prohibiting the removal of anything from these feeding zones and a prohibition on dogs would go a long way to preserving and promoting populations of these shorebirds.

Existing policy and management paradigms under the current Open Space zoning of the reserve have seen 24 hour a day dog off-leash areas designated across the very rocky shore areas at Point Cartwright that resident and migratory shorebirds such as the Sooty Oystercatcher and the Wandering Tattler rely on for their survival. Urgent changes to policy and management of rocky shores at Point Cartwright is necessary to ensure the long-term sustainability of shorebird visitations. Rezoning to Environmental Management and Conservation Zone will provide the foundational land use intent and framework to help ensure future policies, practices and control measures implemented across the rocky shores at Point Cartwright are consistent with the protection and conservation of these areas.

Birdata, eBird and other citizen data sources were examined to collate a bird list for the site. This data reveals the following shorebirds have been sighted at Point Cartwright Reserve over the years:

Migratory Shorebirds

- Wandering Tattler (Sightings 1970s - 2022)
- Grey-Tailed Tattler (Sightings 2005 - 2014)
- Greater Sand-Plover (Sightings in the 1980s and 2014)
- Lesser Sand-Plover (Sightings in 1980s)
- Pacific Golden Plover (Sightings in 1980s)
- Eastern Curlew (Sighting 2015)

Resident Shorebirds

- Sooty Oystercatcher
- Pied Oystercatcher

Wandering Tattler at Point Cartwright Reserve Visits Every Summer from Alaska. Photo: © Q.Brown.

The Wandering Tattler travels more than 12,000kms all the way from Alaska to the Sunshine Coast every year to rest, feed and roost on the rocky shores of Point Cartwright Reserve during our summer months before returning to its northern hemisphere breeding grounds.

Riverine Biotope

Waterways are a vital part of the Sunshine Coast's identity, prosperity and lifestyle. They continue to provide many environmental, social and economic benefits to our region as our population grows and tourism increases. The decline in marine health and habitat in the Mooloolah River system would have begun with the smothering of large tracts of underwater rock and coral habitats, sandy mud flats, and shellfish lined river banks. These original estuarine habitats were lost to river dredging and the construction of rock revetment walls along the banks of Mooloolah River. Continual dredging to this day has resulted in the loss of vital riparian habitat including mangroves, inter-tidal substrate and seagrass habitats throughout the estuary. These areas support the nurturing of juvenile fish, crabs, prawns, dugongs and turtles.

The lower reaches of the Mooloolah River adjacent to the reserve, support one of the most diverse populations of soft-bodied marine gastropod molluscs anywhere in the world (called Nudibranch). Over the past 19 years, organisations have been recording species of Nudibranchs between Noosa and Redcliffe. To date 1094 species have been found and recorded, with 600 species of Nudibranchs having been recorded in the Mooloolah River alone. This compares with 3000 known species worldwide. According to some sources, the sea life in the lower reaches of Mooloolah River is as diverse as that of ocean reefs proximate to the Sunshine Coast (Cobb 2021). Mooloolah River has become a world-class destination for divers for this reason. Because of the proximity to the river mouth and the fact that the substrate contains many rocks that allow sea life to cling and grow, the lower estuary supports many benthic organisms. The list of species includes Eagle Rays, Common Brown Sting Rays, Cuttlefish, Nudibranchs and other molluscs, 50 species of colourful tropical fish, Pipefish, Octopus, Sea Snakes, Blind Sharks, Cowries, Cones, Sea Stars, Dolphins and Turtles (Cobb 2021). This stretch of river frontage needs to be protected and preserved.

Flabellina angelvaldesi sighted Point Cartwright Mooloolah River - Courtesy of nudibranch.com.au Gary Cobb

Routine dredging causes impacts on benthic organisms and estuary fish-breeding ecology. It causes the stability of the river system to be compromised leading to extreme sediment dumps during high flow and high rainfall events. The changes in river mouth structures would have had a direct impact on marine health and habitat commencing in the 1960s with:

- the smothering of a large tracts of productive rock and shell fish structures;
- replacement of natural bank structures with rock revetment walls; and
- continual dredging triggering turbidity events that would drastically affect seagrasses.

When combined with plumes from dredging, the indirect consequences of poor stability and increased flow regimes would also routinely affect the rocky shores and seagrasses surrounding the headland.

State agencies such as MSQ have been routinely conducting dredging and spoil dumping within the Mooloolah River adjacent to Point Cartwright Reserve. These actions have been regularly exposing acid sulphate soil (ASS) sediments to oxygen thereby generating related impacts on the water column and dumping areas. Most recently in 2020, dredge spoil from ASS sediments, dredged from the bottom of the Mooloolah River to improve navigational safety, was dumped directly back into the tidal zone at Half Moon Bay. Dumping of ASS laden dredge spoil into the reserve's Half Moon Bay would generate toxic plumes with a potential for release of metals and acidity, and deoxification of the water column. Heavy metals can accumulate in the food chain leading to cascading adverse effects to higher order organisms. Children playing at Half Moon Bay could be exposed to contaminates. Some known adverse impacts of ASS include:

- poor water quality (e.g. dissolved metal contaminants, acidic pH levels and anoxic events);
- fish kills and pathogens in fish assemblages;
- loss of critical habitat areas, aquaculture production, fish stocks, wetland biodiversity and amenity;
- acid erosion of infrastructure; and
- the need for rehabilitation of disturbed areas.

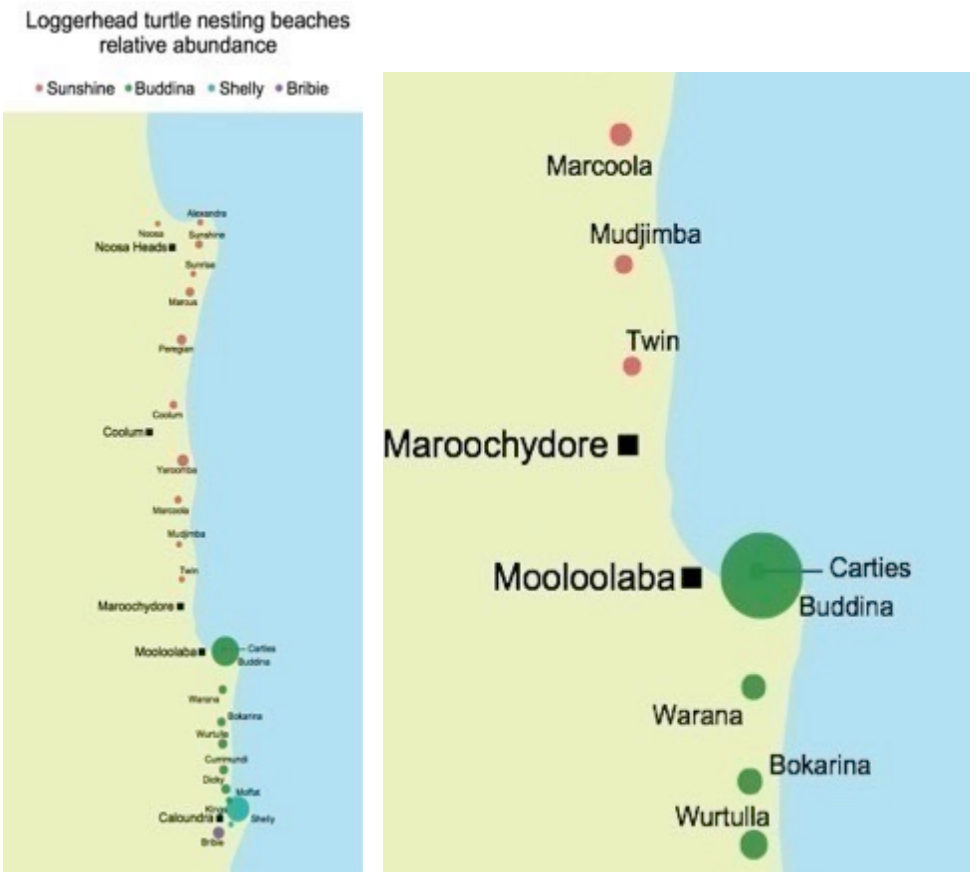
Artificial Beach Created from Dredge Spoil Dumping into Half Moon Bay

Permits for dredging and spoil dumping should not continue to be issued where those activities could impact on these sensitive habitat areas. Under a conservation paradigm these changes could be explored with relevant state agencies. Rezoning of the reserve will ensure these riverine habitats are elevated to a conservation status. In partnership with responsible state agencies these important habitats could be better managed and protected in accordance with conservation outcomes sought for the reserve. Finding alternatives to dredge spoil dumping in Half Moon Bay should be a high priority.

Endangered Loggerhead Turtle Conservation

The beaches around Point Cartwright Reserve are important turtle nesting and hatching sites. The main species of turtle that nests on the beaches around the reserve are the Loggerhead turtle and, less frequently, the Green turtle. According to Council's records, a total of 1135 marine turtle nesting crawls were recorded over 12 years to 2016 on the Sunshine Coast, of which almost 25% occurred on beaches proximate to Point Cartwright in the suburb of Buddina. The area has the highest egg laying success rate for the region. The conservation values on the reserve necessitate the site being designated as a "Dark Sky" site to encourage both turtle nesting and activity by a range of nocturnal fauna.

Newly Hatched Loggerhead Turtle Makes a Dash for the Ocean on Buddina Beach, Point Cartwright Reserve. Photo Q.Brown.



Relative Abundance of Turtle Nesting on Beaches of the Sunshine Coast (Source: Sunshine Coast Council)
Map from Turtle report (relative abundance) from K. Hofmeister, H. Twaddle, J. O'Connor, C.J. Limpus, Bribie Island Turtle Trackers, TurtleCare Sunshine Coast Volunteers and Coolum and North Shore Coast Care Volunteers (2019).

Jurassic Period Landscapes

The sandstone layers of several headlands on the Sunshine Coast are quite rare on the east coast of Australia. They reveal 200 million year old geological formations from the Jurassic era – the same ancient geological layers in which dinosaurs are found around Winton (the Greater Artesian Basin). The map below shows the distribution of the Jurassic sedimentary basins in Australia - the Nambour Basin highlighted in red. It illustrates how few areas on the east coast of Australia present with exposed sedimentary layers from the Jurassic period. Fossilised landscapes from the Jurassic period can be seen in the exposed cliffs of headlands as iron-stained sedimentary features.

Nambour Basin courtesy of Naturhistoriska Riksmuseet 2019.

Point Cartwright's Jurassic-Period Sandstone Layers (Landsborough Sandstone)

Fossilised (Silicified) Wood at Point Cartwright. Photo Q.Brown

McLoughlin (2015) referred to the Landsborough Sandstones of the Nambour Basin as the Sunshine Coast's Jurrasic Park. McLoughlin stated permineralised wood is the most commonly observed fossil type in the Landsborough Sandstone. Examples of fossil wood are best seen around the headland. Silicified logs up to several metres long are exposed on some of the wave-cut rock platforms, where they are commonly stained brown or red by their high iron content. They are typically conifer woods with distinctive rings that indicate growth under a seasonal climate. Not all the unusual structures on these rock platforms are fossils. Strange cannonball-shaped nodules, dish and turtle shell-shaped structures, and pock-marked patterns in the rock platforms that look like biological features, in reality represent a range of mineral growths, concretions and weathering characters that are not true fossils. (McLoughlin 2015)

Rezoning to Protect Natural Attributes

Rezoning of the reserve is essential to ensure the site's unique natural attributes are recognised and managed to maximise their ecosystem services, protect the unique mix of landscapes and biotopes, conserve species biodiversity in these important littoral environs, and meet Council's national and international obligations as reflected in the EPBC provisions for littoral forests and shorebird conservation.

Strategies for the conservation and restoration of the reserve's biodiversity, habitats and landscapes can be best accommodated under the Environmental Management and Conservation Zone. The long-term benefits to biodiversity conservation and intergenerational equity on the Sunshine Coast could be immeasurable. This reality becomes even more pressing as we move into a challenging future dominated by climate change and population growth. Rezoning would acknowledge the scarcity of littoral zone ecosystems and the local, regional and national importance of those values present at the reserve.

It is clear that Point Cartwright Reserve needs to be viewed as a strategically important signature site. With its rocky headland environs in the littoral zone and rare combination of attributes, the reserve is a regionally significant site. It is essential that this Town Plan review be used as an opportunity to rectify the land designation to a more suitable zoning. The protection, restoration and ongoing conservation of the reserve's unique values should be at the heart of its land use designation. Under a land use designation of Environmental Management and Conservation, an opportunity exists to foster an exemplar littoral conservation park.

Reclassification of the zoning to Environmental Management and Conservation is vital for encouraging the development of a new policy intent and management framework that ensures the long-term survival of the reserve's significant values. The Environmental Management and Conservation Zone is the most fit-for-purpose outcome for Point Cartwright Reserve. It will provide the foundational basis to turn around the long-standing under-recognised biodiversity attributes on the site and lead to programs and strategies aimed at protection, restoration, and conservation.

7. RISKS OF STATUS QUO (Open Space Zone)

The intent and function of Point Cartwright Reserve as a place for the retention and sustainable enjoyment of natural assets has become ambiguous, leading to confused stakeholders, disengaged users, conflicting uses of the site, vague policy implementation and enforcement, and the disparate allocation and prioritisation of resources. There is a growing gap between Council's approach and the community's aspirations for the reserve.

Point Cartwright Reserve is currently zoned Open Space. There is a mix of objectives and outcomes that are being fostered on the site under the broad purview of this zoning. Unfortunately, the existing policy and management paradigms are causing a sustained decline in the rich ecological values on the reserve. Going forward, a paradigm of "status quo" under the Open Space Zone will continue to degrade these intrinsic values and at the current rate, there is real risk of irreversible decline in the site's nationally significant attributes, potentially leading to the site's natural values being lost to future generations.

The biodiversity and experiential worth of the Point Cartwright Reserve continues to grow in importance every year as the Sunshine Coast's urbanisation intensifies along the coastal strip. However, Council's actions continue to signal to a broad range of users that the reserve is a recreational space to be exploited, rather than recognising the unique anthropogenic heritage and intrinsic natural qualities represented by the reserve - qualities that should be restored and preserved for future generations. The unique coastal ecological systems, biodiversity traits and combination of species that use the site cannot be readily found elsewhere on the Sunshine Coast.

The limitations of the Open Space Zone are becoming clearer over time and the existing 'balancing act' approach to facilitating recreational outcomes on the site is not working. The long-term sustainability of the site as a refuge for biodiversity and conservation values is directly in conflict with the array of recreational outcomes being fostered on the site. Retaining the existing Open Space Zone will ultimately lead to irreversible decline in the ecological integrity of the reserve's unique combination of biotopes. The risk being that he significance of Point Cartwright Reserve's intrinsic values will be diminished to a point of no return. There can be no net gain from relegating a site with so much intrinsic natural value to having recreational emphasis.

Concerns are growing about the capacity of the Point Cartwright Reserve to endure further intensification of activities as the Kawana community becomes increasingly urbanised and populous. Any suggestion that the reserve can remain in the Open Space Zone and be managed primarily as a recreational site while retaining layers of environmental management would be irresponsible in light of the ongoing decline that has been witnessed under the current management paradigm over the past decade. The steady increase in pressure on the reserve over past decades stems directly from Council's policies and programs under a recreation-dominated paradigm. The existing Open Space Zone is simply not appropriate for a site with such rich intrinsic values. Rezoning to Environmental Management and Conservation is the only responsible option for a sustainable generationally equitable outcome.

The nature and scope of existing management practices and onsite uses stem directly from the existing zoning designation. These activities are causing a sustained decline in ecological values and restricting the site's capacity to regenerate naturally. The management practices and user activities fostered on the reserve have now brought the site to a point where the integrity and biodiversity of some ecological systems is at risk of collapse. In comparison, under the Environmental Management and Conservation Zone, activities that would lead to degradation of site values would not be permissible and would necessitate the identification of more appropriate sites for these outcomes.

Unique sites that have high biodiversity significance and cultural heritage, should not be relegated to having carriage of unmet recreational needs in the community, as is currently the case with the Point Cartwright Reserve. To do so is to risk losing these values and the site becoming another statistic in an already decimated littoral zone along the coastline of the Sunshine Coast. The benefits of the Environmental Management and Conservation Zone far outweigh continuing with the status quo, which would carry ever-growing risk. Ultimately, the aspirational promise represented by the original proclamation of the site as a nature destination in 1933 could be lost through mismanagement and overuse. Rezoning to Environmental Management and Conservation is the most appropriate and responsible long-term solution to overcome the shortcomings and failures of the existing policy and management framework.

Council has recognised in their Biodiversity Strategy that conservation management is ecologically, socially and economically significant to human communities. However, in the case of Point Cartwright Reserve these sentiments are not being fulfilled in a meaningful and coordinated manner under the Open Space Zone. Unclear vision and vague policy implementation by Council over the past two decades has led to a range of contradictory objectives, perceptions and uses that are continuing to degrade the reserve's natural values. Programs have directed resources at land management and restorative activities within the same natural areas that are being degraded by policies such as dog off-leash areas, without regard to the long-term erosion of natural values. This is leading to a betrayal of the intrinsic remnant natural values, and importantly, the potential for the reserve to be restored could be lost. Despite good intentions and resourcing, Council's unclear vision and poorly integrated management framework, risks ultimately depriving future generations of the experience of this unique place, it’s natural values and its Indigenous cultural heritage and European history.

There exists an ongoing and unresolved conflict between the intrinsic values of remnant natural areas on the Sunshine Coast and the ever-increasing need to deliver more recreational outcomes. Under the existing Open Space Zone at the reserve, recreational outcomes are often improperly administered and inconsistent with other activities, and in many cases the colocation of various recreational pursuits has created unsafe spaces within the reserve. Hang gliding and remote-control aeroplanes take off and land from the most popular photo vantage point on the reserve, leading to numerous near-misses between unsuspecting tourists and inexperienced pilots. Many of these recreational pursuits are also in direct conflict with the preservation of nationally significant natural values. Rezoning of the site would properly align the site’s intrinsic natural values with foundational land use intent. Recreational outcomes which are not consistent with these objectives would not be permissible under the Environmental Management and Conservation Zone.

Under the existing Open Space Zone at the reserve, policy and programs have emphasised a range of outcomes and activities that have been in direct conflict with the retention of the nationally and regionally significant natural values of the site. As an example, the dichotomy between dogs and the environment will not go away. It needs to be addressed in a full and frank manner with the community. The public should be made aware of the significant impacts that dogs are having on the integrity of sensitive habitats, and on the success of restoration programs. The public should be informed of the impacts dogs are having on shorebird conservation objectives. For too long the reserve has been used for a range of inappropriate recreational activities due to a lack of other sites along the coastal strip, and in recent years as a surrogate for a true dog park to satisfy growing pet ownership and community needs. As a result, this special place and its truly unique mix of littoral environs is being ruined in favour of recreational outcomes, with its ecology, Indigenous heritage and European history unknown to most users. Fortunately, despite the degradation that has been allowed to perpetuate on the site, there still exists an opportunity to return the site to a former state deserving of its natural and historical heritage.

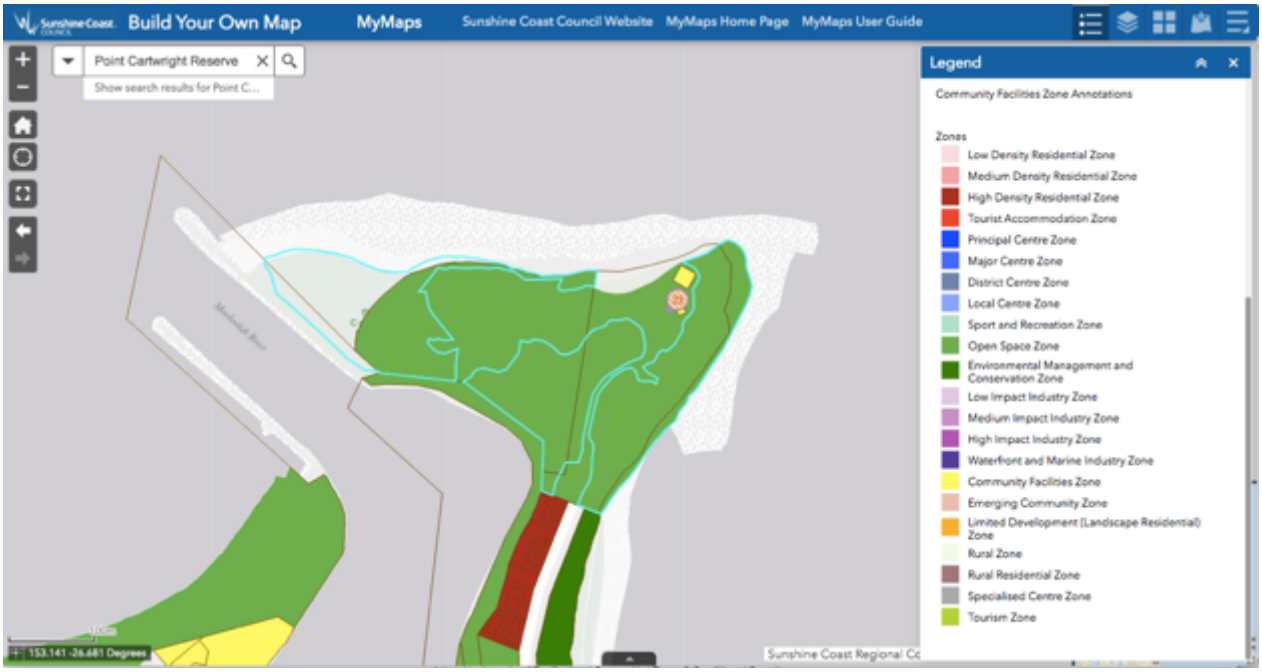
It defies logic that dogs must be on-leash in La Balsa Park where no intrinsic environmental values exist, yet dogs can be off-leash within the reserve. Council needs to take a leadership role and engage with state and federal government to identify and fund additional alternative sites for controlled dog recreation. Council should urgently consider creating a new state-of-the-art dog park within the Kawana coastal strip including water features, dog pool and dog agility courses (with good disability access). If done properly, such a site

could be a tourist destination in its own right and be the envy of many towns and cities, especially with the imminent arrival of the Olympics. Other existing dog parks could also be upgraded to provide water and recreational facilities for small, large and older dogs. Under an Environmental Management and Conservation Zone, free roaming dogs would not be appropriate within the reserve. Given the suite of conservation and cultural heritage values on the site, free roaming dogs is an incomprehensible outcome, and yet under the Open Space zoning it is a permissible activity. It is critical that a rezoning of the reserve be undertaken to ensure the preservation and long-term sustainability of the reserve's unique attributes.

It is essential that Council take a leadership role and rely on good science and the principles of intergenerational equity, regardless of the preferences of the most vocal groups. Otherwise, we might not have any remnant natural spaces left in the littoral zone in the future. There is an urgent need to restrict range and/or intensity of permissible uses / activities to ensure they are consistent with conservation of significant littoral ecology. To ensure sensitive ecological systems are not adversely affected, it is essential that a conversation be initiated on identifying new alternative sites for hosting those recreational activities that are currently contributing to the reserve's decline. Such sites should not have intrinsic environmental values. Rezoning the reserve to Environmental Management and Conservation would provide the necessary impetus for this outcome. The protection and long-term restoration of the site's true significance can best be achieved by this zoning. Creating an integrated site with a complex mix of unique and precious environmental values, managed and conserved for future generations, would be a realistic outcome within the Environmental Management and Conservation Zone. The delivery of programs and management outcomes including passive recreational pursuits would be natively achieved within this zone.

8. CONSISTENCY OF EXISTING ZONING & RECONFIGURATION OF ALLOTMENTS

This Town Plan review is an opportunity to correct the inconsistencies in the zoning designations between Buddina Beach foreshore and the reserve itself. The intrinsic values of the reserve's habitats are equivalent or even more significant than those along the Buddina Beach foreshore. This inconsistency needs to be rectified as soon as possible by rezoning the reserve to Environmental Management and Conservation. There is no logical rationale for keeping the zoning of the reserve as Open Space.



Land Use Zoning Map for Point Cartwright Reserve (sunshinecoast.qld.gov.au)

There exists a wonderful opportunity to create one single allotment to house the entirety of the reserve, rather than the multiple allotments that exist across the reserve at the present time.

There is an existing north-western portion of the site adjacent to the rock wall groyne that is well established with vegetation, pathways, seating, fencing and forested stands that does not currently have any allotment or real property description applicable to it. This is a left over from the 1960s when the area was reclaimed from the rocky shores by the dumping of sand that was mined from other parts of the site. This would be a good opportunity to finally have the area gazetted to create an allotment and real property description for this north-western portion of the site. This allotment should also be integrated into a whole-of-site single allotment.

In regard to interagency matters relating to the site and adjacent biotopes, rezoning will help to ensure the primary intent and purpose of the reserve is embedded in policy. Rezoning of the reserve will ensure land management and development actions being considered by external agencies that may affect adjacent biotopes are genuinely viewed in concert with the reserve's land use designation and conservation objectives. This should lead to improved clarity for all stakeholders as to the standards applicable to any proposed actions by external agencies. Importantly, rezoning will provide a defensible framework for Council's interagency management expectations.

9. CHANGING CONTEXT

Fortuitously, amongst the sprawling urbanisation of Kawana, the Point Cartwright Reserve has remained a natural green space from pre-colonisation through to today. When one looks at the extent of development that has occurred since the 1960s along the coastline, it is remarkable that the reserve has managed to survive. This has been due in large part to the foresight and efforts of the progress association nearly 100 years ago.

Point Cartwright Reserve sits adjacent to a sprawling and highly urbanised community. The proximity of the site to these urban centres, combined with the lack of other real coastline options with similar attributes, make the site very popular for locals and visitors. Council's ongoing intensification of infrastructure and car parking in adjacent parklands has continued to place more pressure on the intrinsic values of the reserve in recent decades. It is anticipated the future will show an ongoing change in the macro-environmental context of the reserve leading to a change in the importance of the site as a nature-based destination within the conurbation of Kawana in the following ways:

- growing population;
- increasing urbanisation of population; and
- changing needs of the community.

Massive population increases are projected on the Sunshine Coast and in the urbanised suburbs immediately adjacent to the reserve. These are likely to place pressures on the natural values of the reserve and potentially result in irreversible degradation of the site if serious and immediate interventions are not instigated. Along the Queensland coast, the human population is projected to increase significantly, with the total population in Queensland predicted to rise to 9.1 million in 2056. The Sunshine Coast's population has been estimated to rise from current estimates of 330,000 to approximately 518,000 by 2041. Council plans to meet these population increases by focussing a lot of the future growth within the narrow coastal strip of Kawana. The Kawana area currently has a population approximating 24,000 people. Council plans to increase the population of Kawana by as much as 100,000 people by increasing residential densities. It is proposed that these densities will be realised through "infill" policy within existing lower-density areas via revised town-planning zones along the coastal strip. Council has adopted an objective for the number of dwellings to increase from 11,000 to 50,000 by 2041. (Price Waterhouse Coopers 2020)

With the changing character of suburbs expected through an infill population paradigm, there will be unmet needs within the community. New sites for recreational and green space outcomes must be found through rewilding existing urban areas. In the case of Point Cartwright Reserve, the existing policy and management framework for the site within the Open Space Zone, would most likely perpetuate the current trends of decline in the intrinsic onsite values, and the reserve would likely change markedly. It is therefore critical that new approaches to the management of the site avoid irretrievably losing these values. The long-term protection of littoral ecological systems on the site must begin with a land use designation change that establishes the bounds for how the site will be used and experienced going into the future.

A rezoning to Environmental Management and Conservation is the most appropriate and necessary land use designation to ensure the unique attributes of the site can be protected and conserved into the future. The existential crisis of climate change will add an additional burden on the administrators of the reserve to ensure their policy and programs are appropriately tailored to protect and nurture the onsite values. Reclassification of the zoning to Environmental Management and Conservation is essential for the long-term survival of nationally and regionally significant values. Given the reserve's strategic significance as a remnant littoral site, it is essential that this rezoning opportunity is not missed. Rezoning would also help to ensure a better alignment of program delivery and management outcomes. The long-term benefits to biodiversity and to future populations on the coast are immeasurable.

10. CODE ALIGNMENT

When considering the provisions of the Environmental Management and Conservation Zone code, the following observations can be made:

- Rezoning presents no impediment to achieving passive recreational outcomes on the site including key existing tourism outcomes such as whale watching, scenic tourism, and sunset picnics.

- The Environmental Management and Conservation Zone would be consistent with the existing utility functions and tourism outcomes on the site. Passive recreational pursuits would be natively compatible within this zoning.

- The protection of natural values is consistent with the code for the Environmental Management and Conservation Zone in that it would provide for the protection and rehabilitation of Point Cartwright Reserve, maintain biodiversity, ecological processes, coastal processes, water quality, landscape character, scenic amenity, cultural heritage significance and community well-being.

- The reserve's existing natural attributes and park infrastructure are consistent with the zoning code for Environmental Management and Conservation.

- The reserve presents ideal opportunities for research into numerous facets of the site's biodiversity and environmental attributes, while offering opportunities for the appreciation of those values.

- The reserve presents opportunities for the development and implementation of a whole-of-site interpretative strategy that educates visitors on the reserve's values and history.

- The reserve facilitates nature-based tourism activities and other low intensity, low key activities that are compatible with and have a direct connection to the protection of the environmental values

- The reserve provides opportunities for recreational pursuits that have a direct connection with, and are consistent with the protection and appreciation of, the environmental values.

- Site infrastructure can be sensitive to the natural environs of the reserve.

- Passive recreational activities are consistent with the zone code. The location, design and management of passive recreational activities can ensure conservation of ecologically sensitive areas and natural features of the site while maintaining the tourism and scenic values, visual quality and amenity of the area. New infrastructure can readily be designed to be sympathetic with the natural amenity and be respectful to places of cultural significance.

- The site has featured a maritime lighthouse and a water tower utility infrastructure since their construction in the 1970s. These are low impact utility installations compatible with the Environmental Management and Conservation Zone and are located, designed and operated to avoid any adverse impacts on ecological systems and processes.

- Environmental Management and Conservation zone provides for infrastructure and services that are commensurate with the very limited range of small scale and low-key activities that are expected to occur in the zone.

11. NEW OPPORTUNITIES

Opportunity for Exemplar Conservation Park

Within the framework of the Environmental Management and Conservation Zone, there exists a wonderful opportunity to create an exemplar littoral zone conservation park. A "reimagining" of the reserve's role, form and function in the community is needed to achieve this outcome – one that is centred around the protection and restoration of its unique littoral characteristics and cultural heritage. The site should be classified and managed as a conservation area within Council's Reserves Network Management Plan, accommodating non-impactful recreational, interpretative and tourism outcomes while realising long-term conservation objectives, much like Mary Cairncross Reserve. A fine littoral example would be the Noosa National Park.

Interpretative Opportunities

Within the framework of a new Environmental Management and Conservation Zone, future opportunities exist for a whole-of-site interpretative trail that illuminates the natural values and rich human cultural heritage of the site. The unique attributes of the reserve should be conveyed to users of the reserve as part of a whole-of-site interpretative strategy. Currently Point Cartwright has no interpretative information on the site to inform users of the unique ecological attributes, nor the heritage and history of the reserve. Accordingly, it is difficult for users to fully appreciate the significance of the site and thereby appropriately value it. Consequently, there is a wonderful opportunity for the master planning process to be the instigator for a whole-of-site interpretative strategy for Point Cartwright Reserve.

There exists a lot of information on European history of the area that is well documented, but unfortunately it is not generally known in the public arena, particularly as it applies to Point Cartwright. The intersection between First Nations people and Europeans is a complex history. The historical connections between Point Cartwright and early convicts, the Royal Navy, surveyors, settlers and industrialists also provides insights into the role and significance of Point Cartwright to early Europeans. An integrated interpretative strategy for the reserve could include Indigenous heritage, European history, the unique geology and fossilised landscapes of the headland, and the wonderful mix of ecological biotopes on the site. The superb vistas could be explained, the whale migration described, and the ecology of the numerous seabirds that use the site detailed (such as the Osprey).

The water tower's mural has been the only real informative feature on the site and due to its large size and premiere location, the mural has been a dominant interpretative element on the site. However, it has not been integrated within a broader strategy about the site's unique heritage, history or environmental attributes. It is essential that Council ensure this significant opportunity for the mural to form part of a broader interpretative narrative for the site is not lost.

Improved Policy and Management Framework

Rezoning of Point Cartwright Reserve to Environmental Management and Conservation will encourage the development of a more appropriate policy and management framework that supports restoration and conservation outcomes that are so desperately needed. The Rezoning will help to unify aspirations, program outcomes and funding priorities to support the complex natural values and anthropogenic cultural heritage on site, while allowing for a suite of uses and outcomes with low impact. The zone of Environmental Management and Conservation would provide a policy intent, desired outcomes and range of permissible uses consistent with the restoration and protection of the reserve's significant intrinsic natural values.

12. A NEW VISION

A rezoning will provide the foundational land designation and intent necessary to develop and structure policy and deliver programs that can help to create and support a new vision for the site.

The town plan review is an important milestone and the perfect opportunity to finally realise the full potential of the reserve as a unique nature-based destination within the littoral zone of Kawana. It is an opportunity to fulfil the original intent of the site's designation as a reserve in 1933 – a place to enjoy the natural coastline character and ambience of the reserve's environment, landscapes and scenic vantages.

The master planning process should be viewed as an opportunity for a complete "reimagining" of the reserve's purpose within the broader community – an opportunity to develop a new long-term vision for the reserve as a conservation park and interpretative destination – an opportunity for systemic long-lasting protection of the reserve. It is essential that we challenge and reshape our existing notions of how the reserve is used and managed into the future or we risk irretrievably losing its natural qualities and the unique ecological values captured in its landscapes. This risk will be exacerbated under a climate change paradigm, making the imperative for a new approach even greater. Good examples for reimagining the reserve might be to look at how the Noosa National Park balances anthropogenic and natural values (as a littoral example), or Council's own Mary Cairncross Reserve, which is managed as a conservation park with some low intensity recreational aspects.

Vision Statement

The following Vision Statement has been proposed for Point Cartwright Reserve by the Point Cartwright Care Group Inc.

Point Cartwright Reserve is a unique and ancient place situated on a rocky headland east of Mooloolaba:

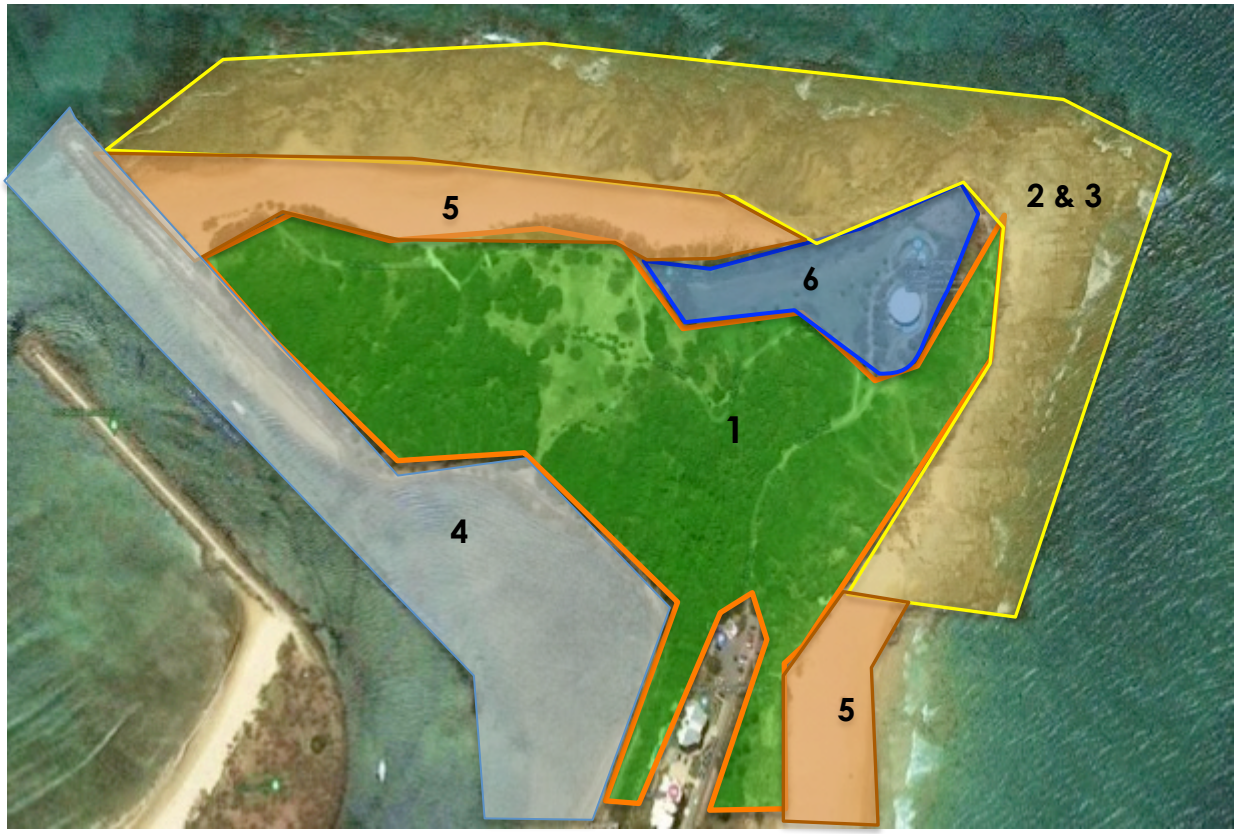
- *A special place preserved and nurtured by the Sunshine Coast Council and its residents for future generations;*
- *A refuge in a modern metropolis;*
- *A place of cultural and religious significance to Indigenous people;*
- *A place where the Indigenous and European history can be acknowledged and celebrated;*
- *A place with natural heritage dating directly back to pre-colonisation that can be experienced in a quiet contemplative environment;*
- *A place with habitats, wildlife and experiential opportunities that together, are not readily found elsewhere on the Sunshine Coast;*
- *A place with a wonderful and complex mix of coastal environs including rocky shores with migrating shore birds, riverine habitats with a plethora of benthic organisms, and remnant littoral rainforest with a wonderful mix of wildlife;*
- *A place where the flora and fauna of the site is protected, nurtured, understood and appreciated;*
- *A place where the marine and terrestrial environs are enjoyed in a non-impactful manner;*
- *A place where passive recreational and tourist opportunities are experienced in a well-controlled and respectful manner; and*
- *A place recognized for its ancient geology and fossilized landscapes from the Jurassic period.*

13. NEW OBJECTIVES AND OUTCOMES

A statement of objectives and intended outcomes of rezoning of the reserve to Environmental Management and Conservation is provided in below.

The following diagram is an illustrative proposal of how various objectives and outcomes might be achieved on the site. These objectives reflect the spatial extent of the largely undervalued nationally and regionally important intrinsic natural attributes present on the reserve. The importance of protection and restoration of these values cannot be overstated. The realisation of these objectives and outcomes cannot be achieved and sustained within the existing Open Space zoning.

The following objectives directly align with the aspirations and intent for the Environmental Management and Conservation Zone. The spatial designations represent the key precincts where the objectives could be realised on the reserve.



Illustrative Proposal of the Spatial Extent of Objectives and Outcomes Identified by the Point Cartwright Care Group.

1. Restoration of Nationally Significant Littoral Forests
Rehabilitation and restoration of remnant littoral forest stands. Reconnect hillside areas to lower reaches to repair separation caused by mining.

2. Conservation of Resident and International Migratory Shorebirds
Protection of shorebird foraging and roosting habitats by introducing policy and regulatory instruments that protect these areas, discourage disturbance and provide interpretative signage.

3. Preservation of Rocky Shore Habitats
Provide for the sustainable conservation and management of rocky shore ecology and habitats by introducing policy and regulatory instruments that restrict the removal and disturbance of intertidal organisms.

4. Protection and Restoration of Riverine Habitats
Conservation, protection and management of biodiversity values in riverine zones by introducing policy and regulatory instruments and enhanced engagement with other regulatory and administrative agencies.

5. Conservation of Endangered Turtle Nesting
Continued conservation and management of endangered Loggerhead turtle nurseries on beaches. Improved monitoring and assessment of waterways to determine abundance and diversity of marine turtle species, including the endangered Hawksbill Turtle and the Green turtle.

6. Retention of Tourism and Park Function
Retention and enhancement of district park functions including tourism vantages for whale watching, scenic views and passive recreational outcomes. Provide for improved interpretative strategies for all key natural features and human heritage of the site. Provide clear and distinct entry features with instructive and interpretative signage.

7. Whole of Site - Recovery of Lost Natural Heritage
Recovery of key natural heritage landscape features that hold important ecological value and Indigenous heritage significance such as the reestablishment of a fresh water lagoon lost from mining.

8. Whole of Site - Wildlife Habitat
Develop a whole of site wildlife management plan, giving regard to the existing and likely former species associated with former pre-disturbance states of the site. Provide for improved form and function such as foraging, hunting, and nesting through restoration and conservation strategies.

9. Whole of Site – History and Cultural Heritage Strategy
Develop in consultation with Kabi Kabi elders a whole of site cultural heritage management plan giving regard to oral history, dreamtime stories, religious and spiritual connections, former studies, reports, research and site surveys, with the aim of reducing impacts to, and enhancing human understanding of, cultural heritage significance and former site practices prior to European settlement. This should be supported by an interpretative strategy around the site's European history.

10. Whole of Site - Passive Recreational Outcomes
Develop a whole of site recreation management plan which gives regard to the spatial and logistical constraints relating to the above matters, and provides clear guidelines for how various areas of the site can be appropriately used, the range and types of uses, and the acceptable scale and type of supporting infrastructure and equipment that can be utilised in conjunction with these uses.

The above objectives directly align with the aspirations and intent for Environmental Management and Conservation zoning. Creating an integrated site with a complex mix of unique and precious environmental values, managed and conserved for future generations within a mosaic of outcomes similar to those shown above would be a realistic outcome within the Environmental Management and Conservation Zone. Within the above framework of objectives, the delivery of programs and management outcomes including passive recreational pursuits would be natively achieved.

The economic opportunities presented by nature destination tourism within the context of the reserve's vast array of characteristics and history necessitates leadership from Council to ensure these opportunities are appropriately explored and delivered in a tasteful and low-impact fashion.

The reserve presents an opportunity to create a test case for the Sunshine Coast Biosphere. The objectives and management paradigm for this outcome should be explored in more detail.

14. CONCLUSIONS & RECOMMENDATIONS

Point Cartwright Reserve is a truly unique location within the human and natural fabric of the Sunshine Coast. It is one of the Sunshine Coast's last remnant examples of littoral ecology, and contains internationally and nationally significant traits that must be accounted for in foundational policy such as its land use zoning designation. The success or failure of restorative and conservation actions will be directly dependent on this hierarchy of governance. The policy and management framework and priority programs administered on the reserve under the Open Space Zone has been directly at odds with the retention and conservation of the reserve's unique ecological and cultural heritage attributes. Even with the most diligent of good intentions, nationally significant ecosystems on the reserve cannot recover or be enhanced under the existing policy framework. The dichotomy between the activities promulgated under the existing zone and the protection of intrinsic values on the site, will undoubtedly continue the degradation that has been witnessed over the past several decades. A whole new approach to the reserve must be adopted. Rezoning to Environmental Management and Conservation is the most effective way to achieve this outcome.

Conclusions

1. The recognition, protection and long-term sustainable management of the unique mix of nationally significant ecology and rich Indigenous cultural heritage found on the Point Cartwright Reserve necessitates that the site be rezoned to the Environmental Management and Conservation Zone (rather than the existing Open Space Zone) to ensure policy and management programs are appropriate to the site's strategic significance.
2. Alternative sites must be found for impactful uses that are diminishing nationally significant ecology.
3. The conservation values on the reserve necessitate the reserve being designated as a "Dark Sky" site to promote and encourage a range of nocturnal fauna and turtle nesting activities.
4. There exists economic opportunities in nature destination tourism presented by the reserve's unique mix of human and natural values which could be exploited in a tasteful and sensitive manner.
5. The reserve offers an opportunity to engage meaningfully with the Sunshine Coast Biosphere.
6. The reconfiguration of allotments on the reserve to a single whole-of-site allotment would prove a beneficial outcome. The creation of a parcel of land on the north-western side of the reserve where reclamation works occurred in the 1960s will require state government gazetting as no allotment currently exists.

Recommendations

1. Rezone the reserve to Environmental Management and Conservation to be consistent with the protection, restoration and long-term conservation of intrinsic human and natural values.
2. Rezone the reserve to be consistent with the adjacent Buddina Beach foreshore zoning designation of Environmental Management and Conservation.
3. Develop a new Vision, Objectives and Desired Outcomes for the site supported by detailed management plans for Cultural Heritage and History, Environment and Recreation.
4. Restrict the type and scope of uses on the reserve to those consistent with the preservation of Indigenous cultural heritage and the restoration of intrinsic environmental values.
5. Identify and foster alternative sites to host impactful activities that are degrading the reserve's ecology.
6. Engage with relevant state government agencies that hold tenure over the reserve and surrounding waterways to impart the significance of the site's intrinsic values and seek support for a conservation park and the necessary rezoning of the reserve to Environmental Management and Conservation.
7. Engage with relevant state government agencies that hold tenure over the reserve to reconfigure allotments into one contiguous whole of site allotment. Seek state government gazetting of the north-western portion of the site where no allotment currently exists and engage with relevant agencies to include into one amalgamated allotment.
8. Engage with relevant stakeholders to designate the reserve as a "Dark Sky" site to promote and encourage a range of nocturnal fauna and turtle nesting activities.
9. Develop a whole of site interpretative strategy and implement measures to communicate and engage with users about the significance of the site's cultural heritage and environmental attributes.

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POINT CARTWRIGHT RESERVE

REZONING PROPOSAL

APPENDICES

Point Cartwright Care Group Inc.

Prepared by Quentin Brown

March 2022

APPENDIX 1

POINT CARTWRIGHT RESERVE

BACKGROUND INFORMATION

APPENDIX 1 – BACKGROUND INFORMATION

FOSSILISED LANDSCAPES

Point Cartwright's Jurassic Period Sandstone Layers

Fossilised (Silicified) Wood at Point Cartwright

Headlands of Sunshine Coast reveal Jurassic Layers

Nambour Basins courtesy of Naturhistoriska Riksmuseet 2019.

Jurassic Period Fossilised Landscapes in Headland Layers
The sandstone layers of several headlands on the Sunshine Coast are quite rare on the east coast of Australia. They reveal 200 million year old geological formations from the Jurassic era – the same layers that dinosaurs are found in at Winton (the Greater Artesian Basin). This map shows the distribution of the Jurassic sedimentary basins in Australia - the Nambour Basin highlighted in red. It illustrates how few areas on the east coast of Australia present with exposed sedimentary layers from the Jurassic period. Fossilised landscapes from the Jurassic period show up in the sedimentary layers of exposed cliffs of headlands in this area as iron stained remnant layers. (McLoughlin 2015)

Fossilised (Silicified) Wood at Point Cartwright

INDIGENOUS CULTURAL HERITAGE

Before Europeans arrived in Australia, Indigenous people were governed by laws that were laid down by their Creative Ancestral Beings. The Creative Beings travelled across the countryside giving the earth the shape we now recognise. They formed the air, the sky, the rivers and tributaries, the mountains, and all the other features we see today. They then created the plants, animals and people who were to inhabit the landscape. Groups of people (clans) were given their own languages and the law which all were required to obey. The Creative Beings told the first people how they should behave toward one another. They also defined the boundaries of the country that would belong to each group, and laid down how the land should be cared for by use and ceremony. The basic principle was that people were obliged to maintain the land and its traditions for future generations. When the ancestors finished the creative work, they rested. Their forms are in landscape features called “dreaming places” or sacred sites. Indigenous Australians derive significant social meaning and a concept of belonging through relationships between each other’s tribes, clans, families and the land. The land is integral to their culture and way of life. (Lewis 2014)

Point Cartwright is part of the traditional lands of the Kabi KabI people. Kabi Kabi is the name of the language spoken by the local Aboriginal people. The Kabi Kabi country stretched from the Pine River in the south, to Burrum River in the north, and west to the Conondale ranges. According to Kabi Kabi elder Kerry Jones, the traditional lands, campsites, pathways and cultural heritage of the Kabi Kabi First Nations people included lots of coastline, surf beaches, and rocky headlands. There were many “clans” within this vast area, and all of these family groups shared this language, and would come together on a regular basis for special ceremonies, such as marriage, initiation, and especially festivals. They hunted the ranges and fished the rivers and the ocean. They practiced holistic land management that ensured the health of the land for future generations. Land is their mother. They are responsible for caring for it. Aboriginal people followed the traditional lore of ‘mimburi’ which means the continual flow of every living thing (Hand 2011). Following ‘mimburi’ meant that people only ate certain animals and plants at certain times of the year to ensure those plants and animals didn’t die out from over-use. By varying their diet, the Kabi Kabi ensured that favoured food items would not cease to exist.

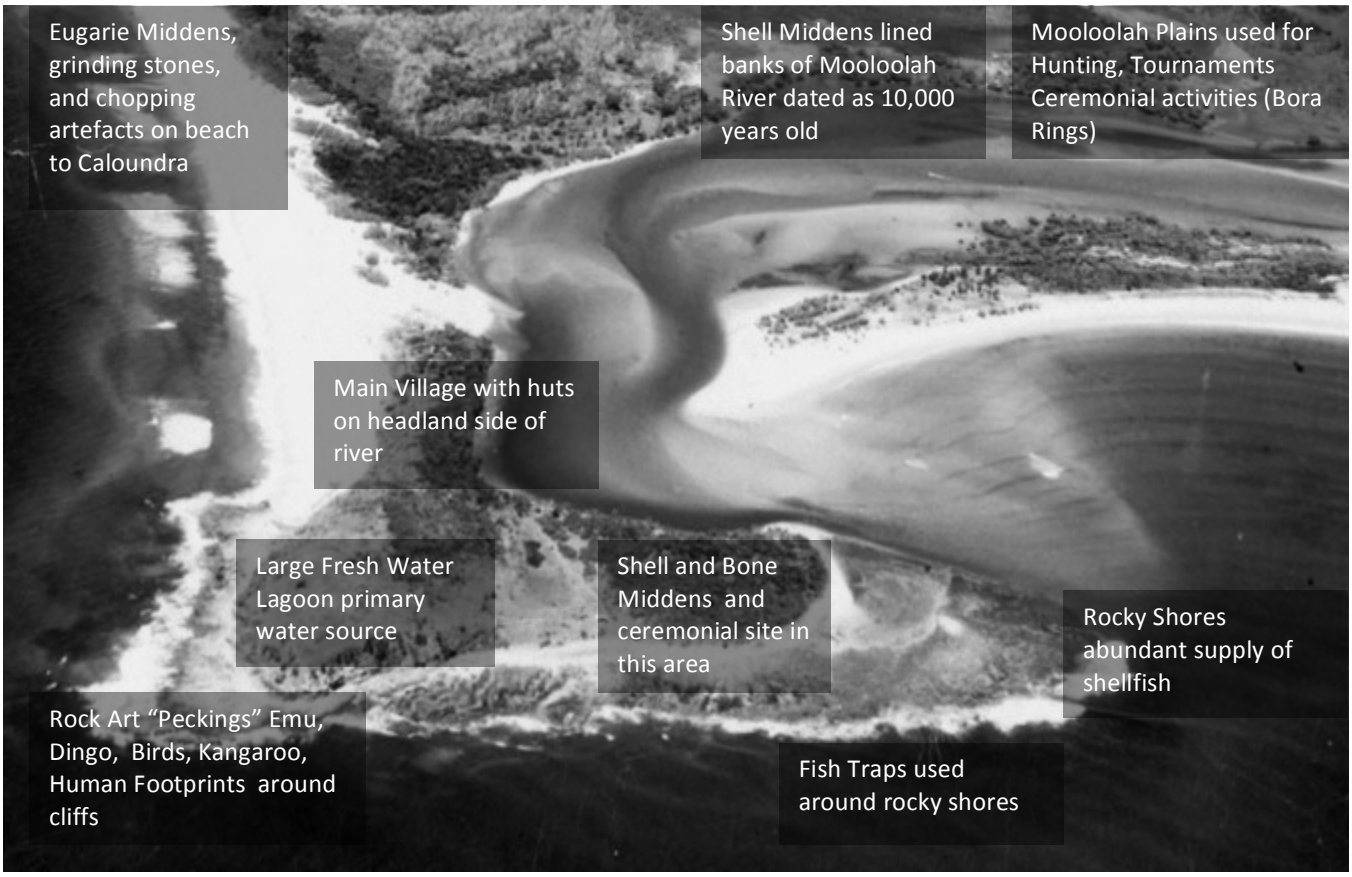
The Bunya Pine is one of the oldest living plants in the world and is of great cultural significance to the Aboriginal peoples of this region. In 1842, Governor George Gipps had the entire Sunshine Coast and hinterland from Mt Beerwah north to roughly Eumundi declared a "Bunya Bunya Reserve" for the protection of the bunya tree after Andrew Petrie advised the Governor of the importance of bunya groves in Aboriginal culture. For thousands of years, the Kabi Kabi people would hold a three yearly festival at Baroon Pocket with people coming from great distances. By 1860, the Bunya Bunya Reserve was scrapped and timbergetters harvested the trees in large numbers and later the ceremonial site was permanently inundated when the Baroon Pocket Dam was constructed. The planting of Norfolk Pine trees by Europeans, a tree not seen before by Indigenous peoples nor a part of their folk lore, was considered territorial marking of land and an act of war. Kabi Kabi people continued to live in the Sunshine Coast area until the late 1800s and early 1900s, when they were forced from their traditional lands and many were moved to Barambah Reserve (Cherbourg), near Kingaroy, Yarrabah (near Cairns) and Palm Island.

Point Cartwright was a special place with the Indigenous peoples of the Sunshine Coast for thousands of years. Bridgette Chilli (pictured) is a Kabi Kabi elder and direct descendent of the local Murrula People who inhabited Point Cartwright and surrounding lands. Bridgette refers to her ancestors as ‘canoe makers and shellfish eaters’. (Pers. Comm. B.Chilli, 11 Dec 2021)

SIGNIFICANCE OF POINT CARTWRIGHT TO THE KABI KABI

Village Life at Point Cartwright

Research indicates that at Point Cartwright there were two established villages located on opposite sides of the Mooloolah River mouth. The main village on Point Cartwright headland was near a large fresh water lagoon. (Kerkhove 2014) Aboriginal life would have centred around access to fresh water. For the local Kabi Kabi people, the Point Cartwright area would have been their home, their medicine, their food source and their playground. Huts were observed at Point Cartwright by shipwrecked castaways Finnegan, Parsons and Pamphlet in 1823 when they stayed with the local Kabi Kabi at Point Cartwright for three days on their travels northward. Andrew Petrie on his survey of Point Cartwright in 1842 encountered local villagers at Point Cartwright. In 1861, Lt Heath of the Royal Navy found the local Kabi Kabi very friendly and hospitable, offering much fresh caught fish and shellfish to his crew. Lt Heath resupplied his fresh drinking water from the fresh water lagoon at Point Cartwright.



Picture of Point Cartwright cir. 1960 with Annotations of Indigenous Cultural Heritage Considerations

Food and Middens

According to research by J.G Steele (1983) and R. Kerkhove (1986), the coastal Kabi Kabi people relied heavily on fish and shellfish. Oyster Middens were reported in the 1930s along the banks of Mooloolah River rising to a height of 2m. Large shell middens that were found at Point Cartwright in the 1930s (Jackson 1939). Research has indicated that Eugarie (pippy) middens were located along the coastal dunes between Mooloolaba and Caloundra along with stone implements, including grinding stones and choppers. Fish, kangaroo, possum, mussels and dugong were some of the main foods sources (Hand 2011; Wood 1988). Fish traps were a common method of sourcing fish from rocky shores. Carbon dating has indicated oyster middens along the Mooloolah River to be 10,000 years old. The coastal reaches between Caloundra and Point Cartwright were well known for the versatile Pandanus tree. Its uses were extensive, but a favourite was the pandanus fruit. Point Cartwright was a major site for groups after the Bunya Festival where up to 1,000 gathered. Bunya hosts were treated to pandanus, oysters and fish (Kerkhove 2014).

SIGNIFICANCE OF POINT CARTWRIGHT TO THE KABI KABI

Place of Cultural & Ceremonial Significance – Rock Art ("Peckings")

Point Cartwright was also a place of cultural significance with rock engravings known as "peckings" in and around the sandstone cliffs (now lost). Jackson (1939) observed that rock carvings were found extensively along the Point Cartwright cliffs and included Emu, Kangaroo, Dingo, small birds and at least one human footprint (Steele 1983). In 1932 it was reported that the sun and salt water had already caused much of the sandstone to flake away, leading to the engravings to eventually disappear. According to Kerkhove (1986), Point Cartwright may have also contained a ceremonial ground. Tournament grounds and Bora Rings were also located on Mooloolah Plains.

Example Emu Rock Pecking at Topham Trail, NSW

A Place of Ancestral Dreamtime

Point Cartwright (Mooloolaba) appears in the Ninderry and Coolum Aboriginal Dreamtime Story. There were many recorded versions of the Maroochy Aboriginal Dreamtime stories and there are some different elements within the same song/story-cycles. In the Dreamtime, the entire Maroochy and Mooloolah catchment areas and key geographic features such as Mudjimba Island, Mooloolaba, the Glasshouse Mountains and Mt Beerwah are linked to each other through a story of two warriors, Ninderry (Mount Ninderry) and Coolum (Mount Coolum) who were seeking the affections of the same woman named Marutchi (Maroochy). It is said that the "fight" that ensued shaped the landscape of today. In the stories, Point Arkwright and Point Cartwright (referred to as Mooloolaba) also participated in the fight by tossing stones (likely henchmen to Coolum). In the aftermath, Coolum's head was severed and rolled into the ocean to form Mudjimba Island. When Maroochy heard that Coolum was dead, she ran into the hills and cried so much that her tears formed a river that flowed to the sea and became the Maroochy River.

Dreamtime Connections - Ninderry and Coolum Dreamtime – Role of Mooloolah (Point Cartwright)

Many years ago, during the dreamtime, a beautiful Aboriginal girl named Maroochy was loved by another of her tribe, Coolum, a young warrior whose union to Maroochy had the approval of the elders. One day a mighty warrior named Ninderry, who belonged to a fierce and warlike tribe, stole Maroochy while Coolum was out hunting. When Coolum returned and found that Maroochy had been abducted, he set off in pursuit following their tracks. Fearing (as custom decreed) to demand Maroochy's return from such a fierce warrior, Coolum crept into the camp while Ninderry was asleep and set Maroochy free, before fleeing back to their tribe's territory on the coast. Ninderry was furious when he awoke to find Maroochy gone and Coolum's tracks leading her from the camp. He flew into a mighty rage and set out after the young couple.

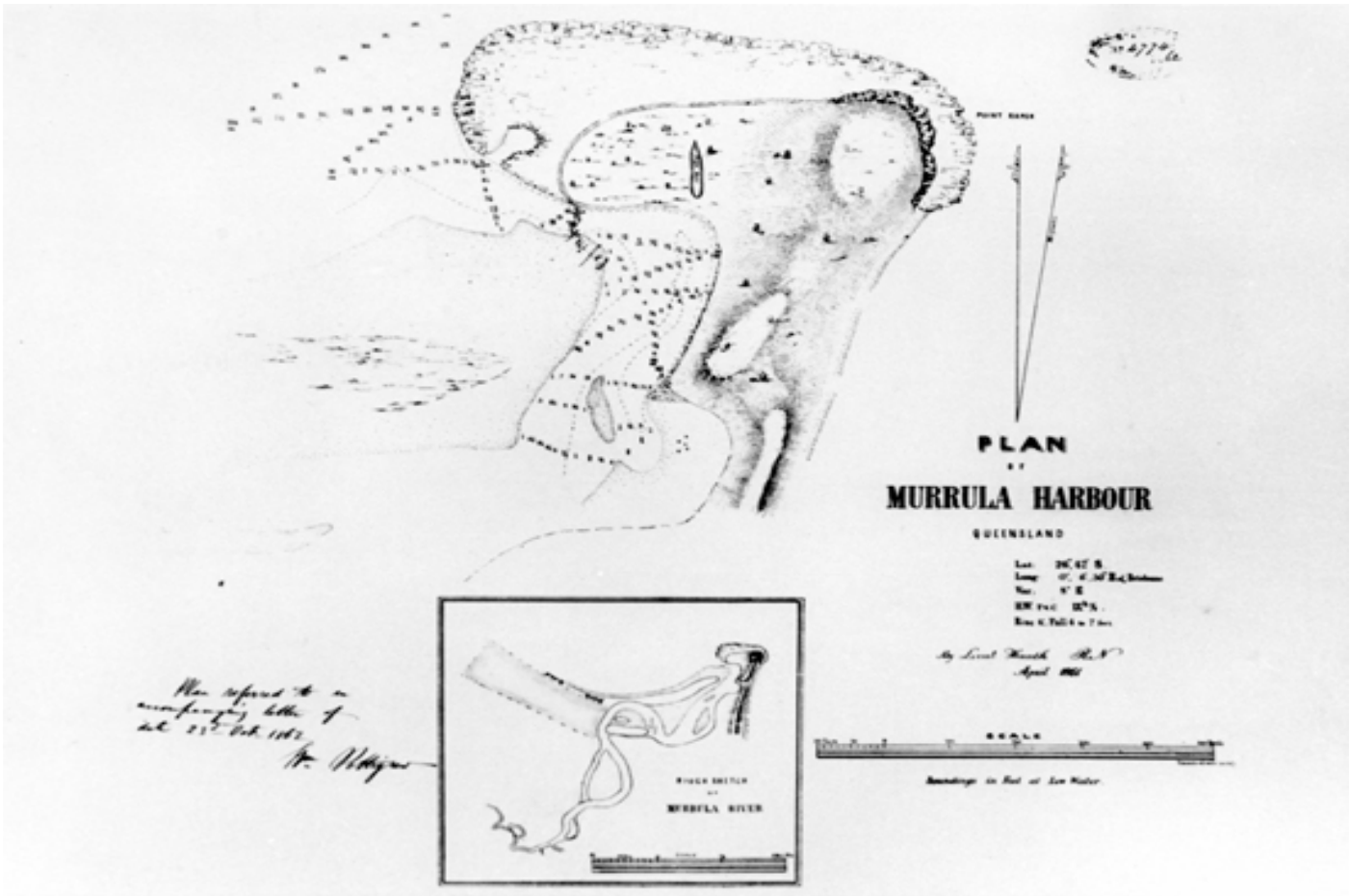
When Ninderry caught sight of them, he threw a nulla (club) at Coolum, knocking off his head which rolled into the sea and became Mudjimba Island. Coolum's headless body fell and turned into stone, becoming Mount Coolum. The Spirit God, known to the Undanbi as Birral, had been watching these events from his crystal throne in the sky and was deeply incensed by Ninderry's foul deed. He struck him down, turning him into stone where he became Ninderry Crest. Filled with sorrow at the loss of her beloved Coolum, Maroochy fled to the Blackall Ranges, weeping so much that her tears flowed down the mountain range to form the Maroochy River. As time passed, she decided to try and find Coolum's spirit that had gone from his body. To aid her quest, she transformed herself into a black swan (Muru-kutchi) and to this day, journeys up and down the river, flying to the swamps and lakes, searching for the spirit of her treasured Coolum.

EARLY EUROPEAN & INDIGENOUS CONNECTIONS

1823
In 1823, shipwrecked convict-castaways Finnegan, Pamphlet and Parsons were assisted by numerous hospitable tribes as they made their way northward from Moreton Bay. They spent approximately three days staying with local villagers at Point Cartwright. They were supplied with food (including fish) by the locals who lived in huts. After learning how to cross the Mooloolah River from the locals, they proceeded northward to Maroochy River.

1842
Andrew Petrie surveys Point Cartwright for Dixon's Moreton Bay Map. Petrie recorded accounts of interactions with local Kabi Kabi at Point Cartwright before returning to Caloundra along beach. It is a positive account of how, with the assistance of his Indigenous off-sider, Petrie managed to keep locals at a distance without firing his rifle. Petrie recalled that in 1837 convict runaways had reported very large Mother of Pearl oysters at Point Cartwright. Petrie himself experienced the Mother of Pearl oysters at Point Cartwright, one with seven indents. Bridgette Chilli and Lyndon Davis are direct descendants of King Andy (worked with Andrew Petrie).

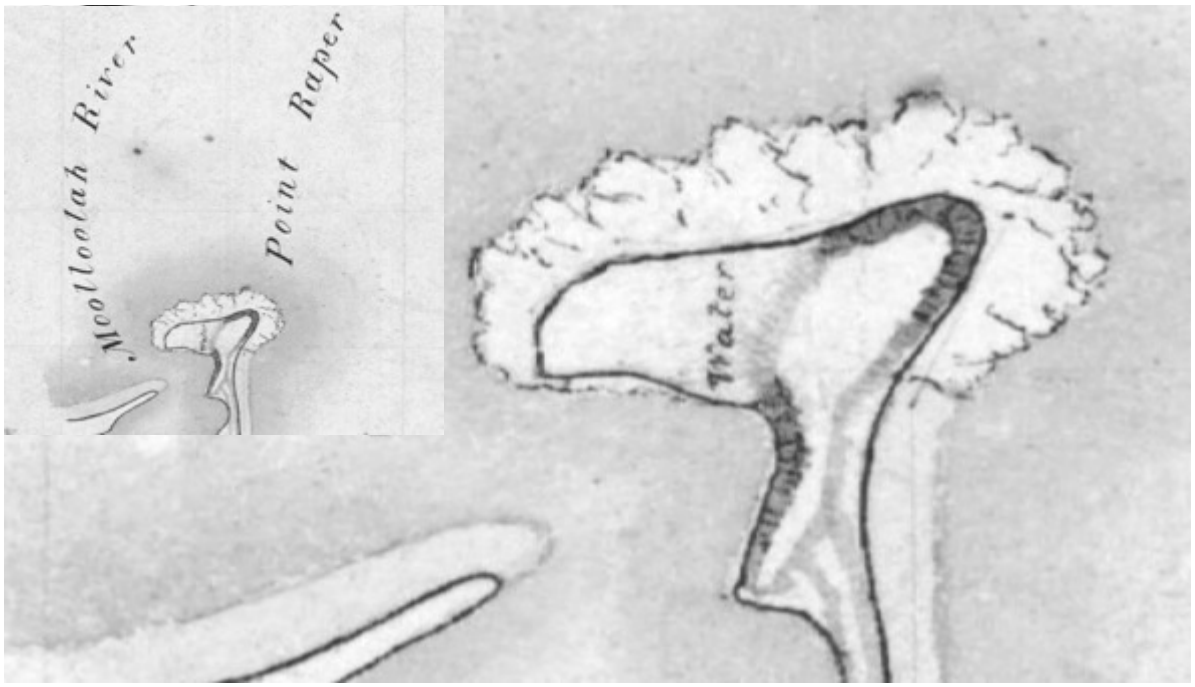
1861
Lt Heath Royal Navy Survey Map. Map Recognises Local Murrula People in Harbour Name
Map shows Rocky Embayment & Fresh Water Lagoon used for Drinking Water Supply



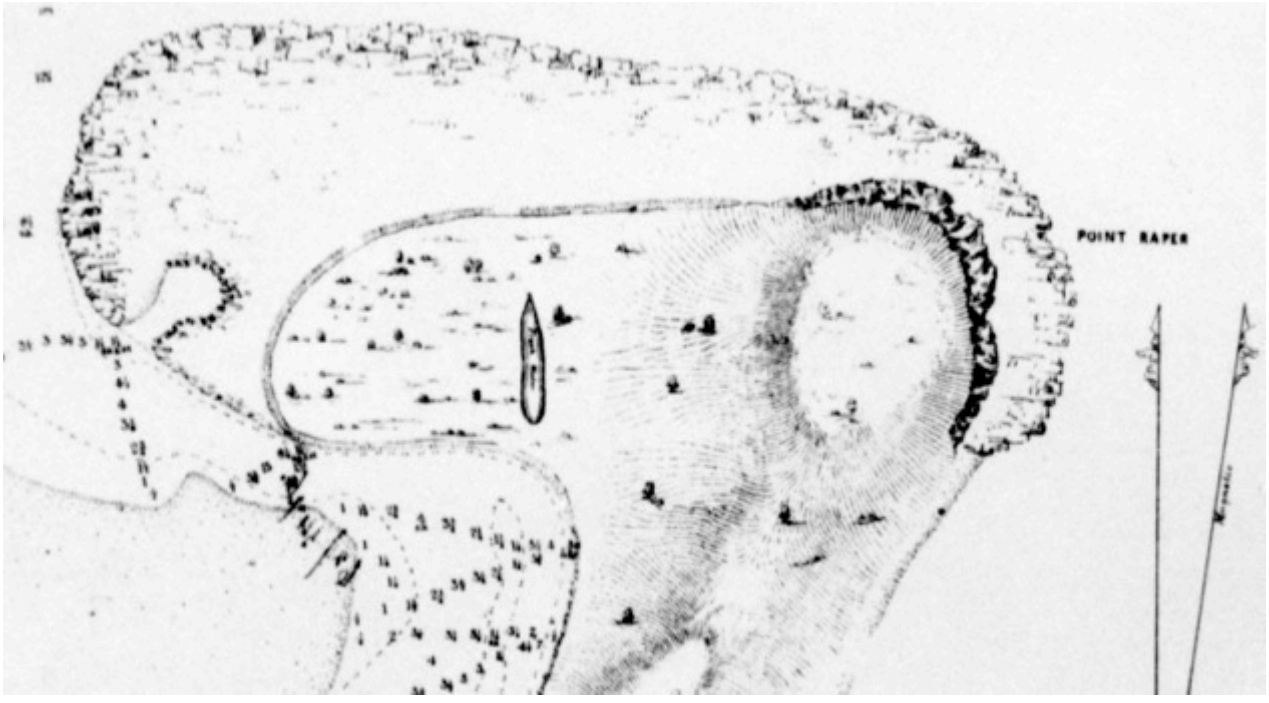
Lt Health Map of Point Cartwright (then Point Raper) in 1861. Note: Map acknowledges local Murrula People.

EARLY EUROPEAN & INDIGENOUS CONNECTIONS
(ON-SITE FRESH WATER LAGOON)

1845 – Burnett Map – Onsite Fresh Water Lagoon



1861 – Heath Map (close up) – Onsite Fresh Water Lagoon



"There is plenty of very good water close to the harbour at the foot of the hill forming Point Raper." Lt Heath Parliamentary Papers, April 1861.

1927 – Nambour Chronicle – Lamenting the Loss of the Fresh Water Lagoon

"In those days there was a lovely fresh-water lagoon at the Heads, which now is nothing more than a small swamp." Sugar Growing On Mooloolah River. Early Ventures. Nambour Chronicle And North Coast Advertiser. (Qld. : 1922 - 1954) Friday 4 March 1927 p 11

POINT CARTWRIGHT'S EARLY EUROPEAN HISTORY

Some significant timelines for early European activity and settlement include:

- Sunshine Coast noted by crew of the Endeavour in 1770
- Matthew Flinders explored the area in 1799
- Castaways Pamphlet, Parsons, Finnegan stayed several nights with Kabi Kabi at Point Cartwright in 1823
- Early mapping - Andrew Petrie – indigenous/European connections at Point Cartwright and Mooloolah River in 1841
- European settlement of the region commenced around 1842
- Andrew Petrie – regional influence Bunya reserve proclaimed in 1842
- Early timbergetters – Mooloolah River 1840s – 1900. unlimited supply of some of the finest cabinet timbers in the world including cedar, maple, mahogany, walnut and silky oak, together with excellent general utility pine including cypress, hoop, bunya and kauri. By the 1870s, most of the valuable timbers of the region, including Red Cedar, Beech and Bunyas were gone.
- Lt Heath surveyed the Mooloolah River in detail cir. 1861
- Shipping significant industry until roads.
- After timber, other industries became prevalent such as cattle, seafood, then other industries established (sugar, fruit, dairy and other primary industries)

William Pettigrew's sugar shed flanked by holiday huts on the Mooloolaba River bank, Mooloolaba, ca 1914. (Pictures Sunshine Coast)

1920 – Aerial Photo of Point Cartwright

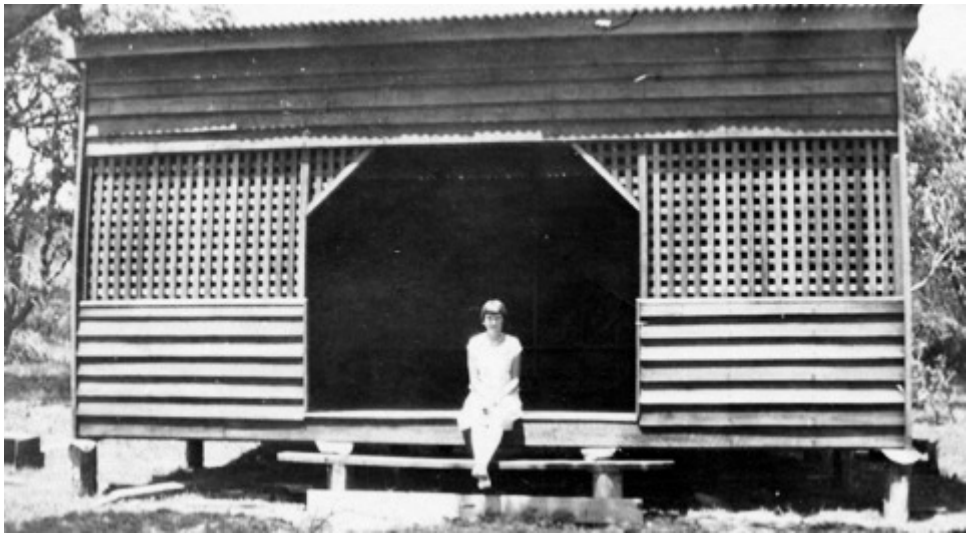
1920 - Photo of Half Moon Bay

POINT CARTWRIGHT'S EUROPEAN HISTORY

1920s – Progress Association's Nature-Based Destination
Excerpts from newspaper articles of the time attest to the fondness people attributed to Point Cartwright.

> *Nambour Chronicle - Excerpt from 1926 Article "Mooloolah Heads"*
> *This spot is a delightful visit which is not soon forgotten. The scenery comprises both seascape and landscape. The Headland is edged at its base with an assortment of rocks, which, at low tide, afford splendid opportunity for the interesting study of conchology, and the many varieties of sea-life which abound in the pretty little rock pools. Thickly-foliaged trees tempt one to recline in their delightful shade and meditate on the natural scenic beauty at the surroundings. In the tree-tops the birds chatter and chirp for the joy of the sunlit day, while in the ocean great fish can be seen besporting themselves. On a calm day the porpoise, mackerel, and bonita show great activity, and huge whales come to the surface to blow, and occasionally a few turtles supply part of the programme. This spot is full of interest and life, yet a more restful place would be difficult to find.*

In the 1920s and 30s the local progress association promoted the area as a place of natural and scenic value for locals and visitors to experience with ferry tours. Fund raising activities were held to construct a picnic shelter. The association also lobbied for 10 acres to be dedicate as a formal reserve.



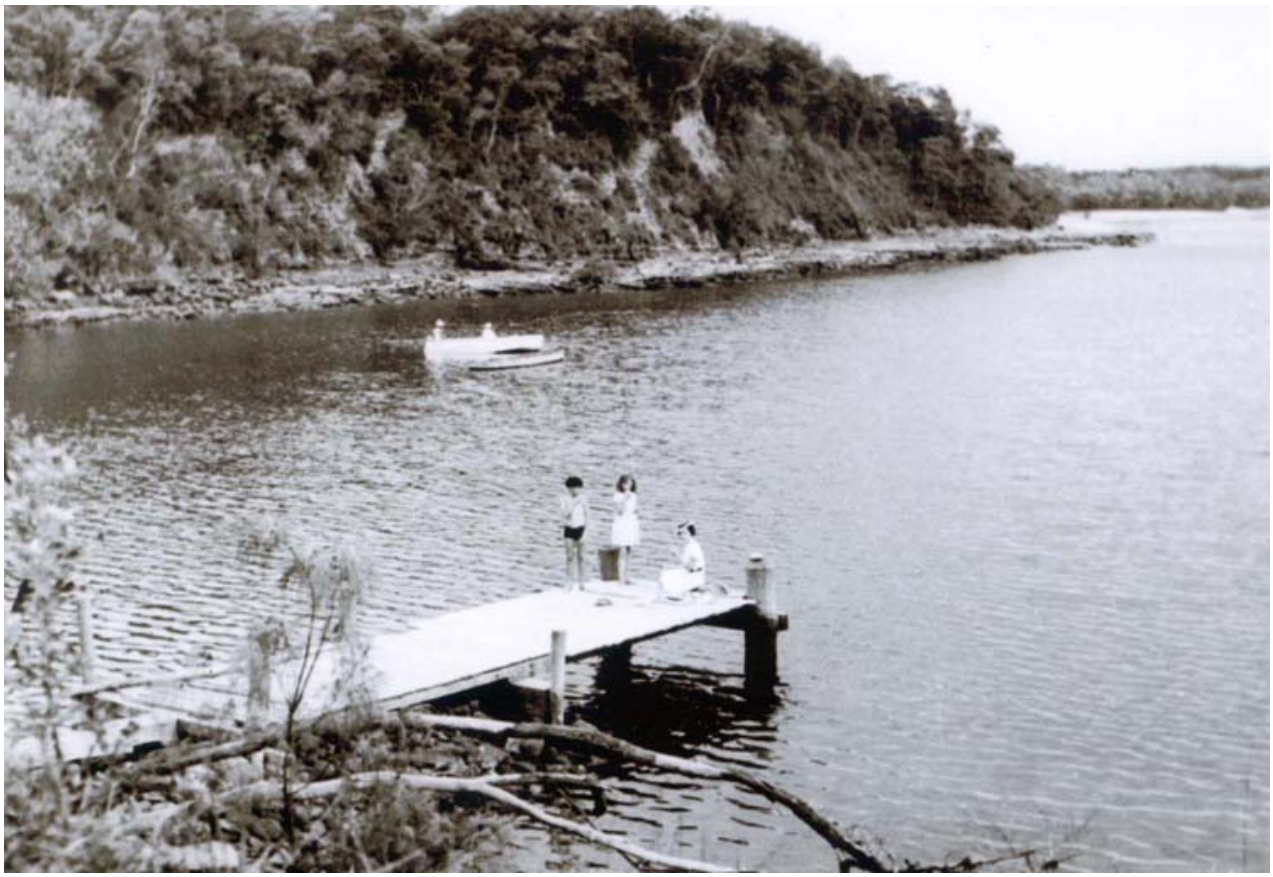
Progress Association Shelter cir. 1930

1933 – Proclamation of Reserve

In 1933 the site was dedicated by the Queensland Minister for Lands as a reserve.
Hon. P. Pease, Minister for Lands, has advised Mr. B. F. R. Nicklin, M.L.A: "With reference to the Mooloolah Progress Association, which requests that an area of about ten acres at Point Cartwright, Mooloolah Heads, be reserved, I inform you that it has been approved to set the land apart as a Reserve …under the control of the Maroochy Shire Council. The action of the Minister will be appreciated by all those who enjoy visits to this picturesque spot, and now it is proclaimed a Reserve."

1940s and 50s

During the 1940s and 50s Point Cartwright became a popular day-visit area for families and tourists alike. Access was by ferry or boat. Commercial ferries and jetty to take people across the Mooloolah River.



1960

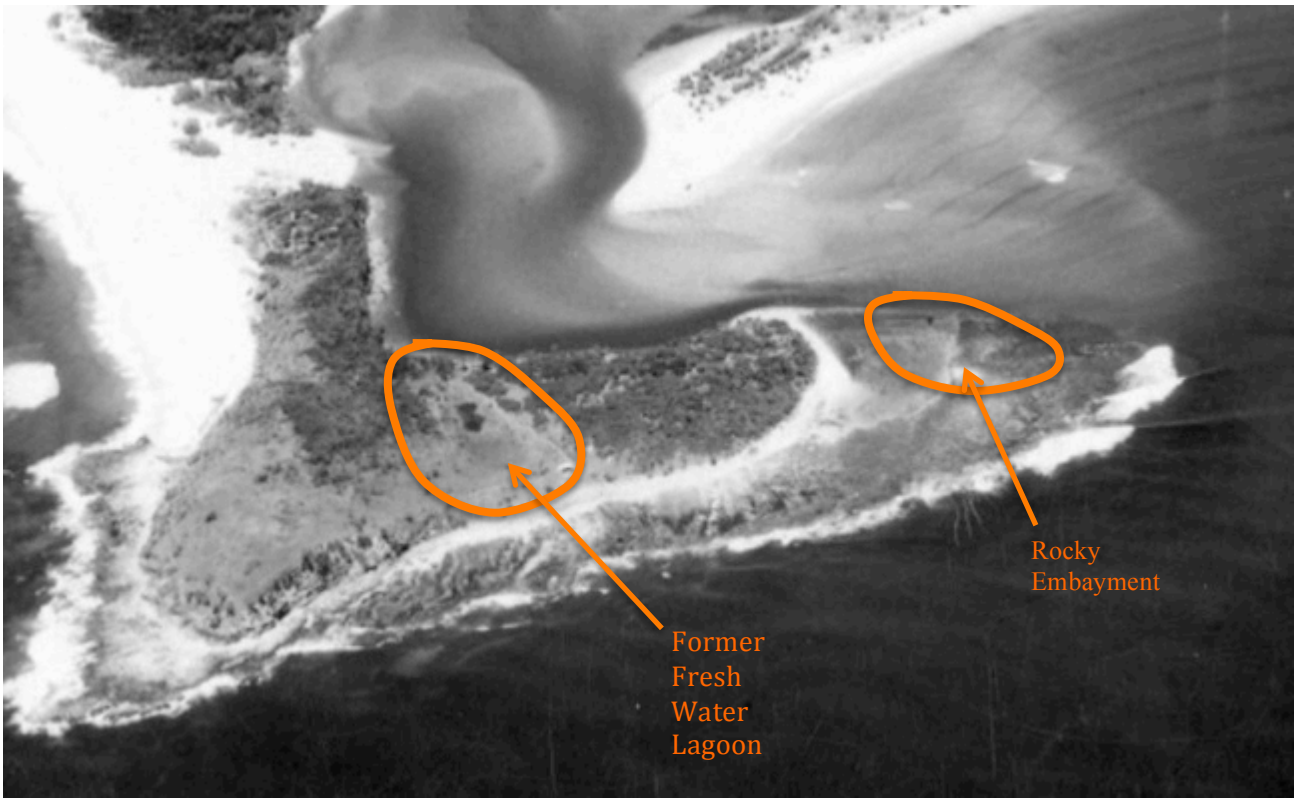
Wildflowers - Kawana was named after the Aboriginal word for wild flower.

1960

Just Prior To Commencement Of Kawana Waters Development

1960

Location and Remnants of Former Fresh Water Lagoon (Outline of Dried Up Waterhole Visible)
General Location of Rocky Embayment (former Kabi Kabi fish trap) shown on Lt Heath's 1861 Map



1964

Levelling of Dunes, Filling of Wetlands, Clear Felling of Hilltop Littoral Forest

1968

Canal Development

1970

Mining, Reclamation of Rocky Shores, Dredging, Revetment Walls, Rock Walls Groynes
Some Untouched Remnant Vegetation Survived on Lower Reaches

1968-1973

Dredging and Spoil Dumping to Reclaim Riverine Foreshores within Revetment Walls.

1968

Remnant Forested Stands Prior to Mining. River Mouth showing NewlyInstalled Rock Wall Groynes and Depp Water Channel Access. Former Large Fresh Water Lagoon Still Visible with Some Water.

1973

Post Sand Mining and Reclamation of Rocky Shores. Disturbed Areas Start to Regenerate.

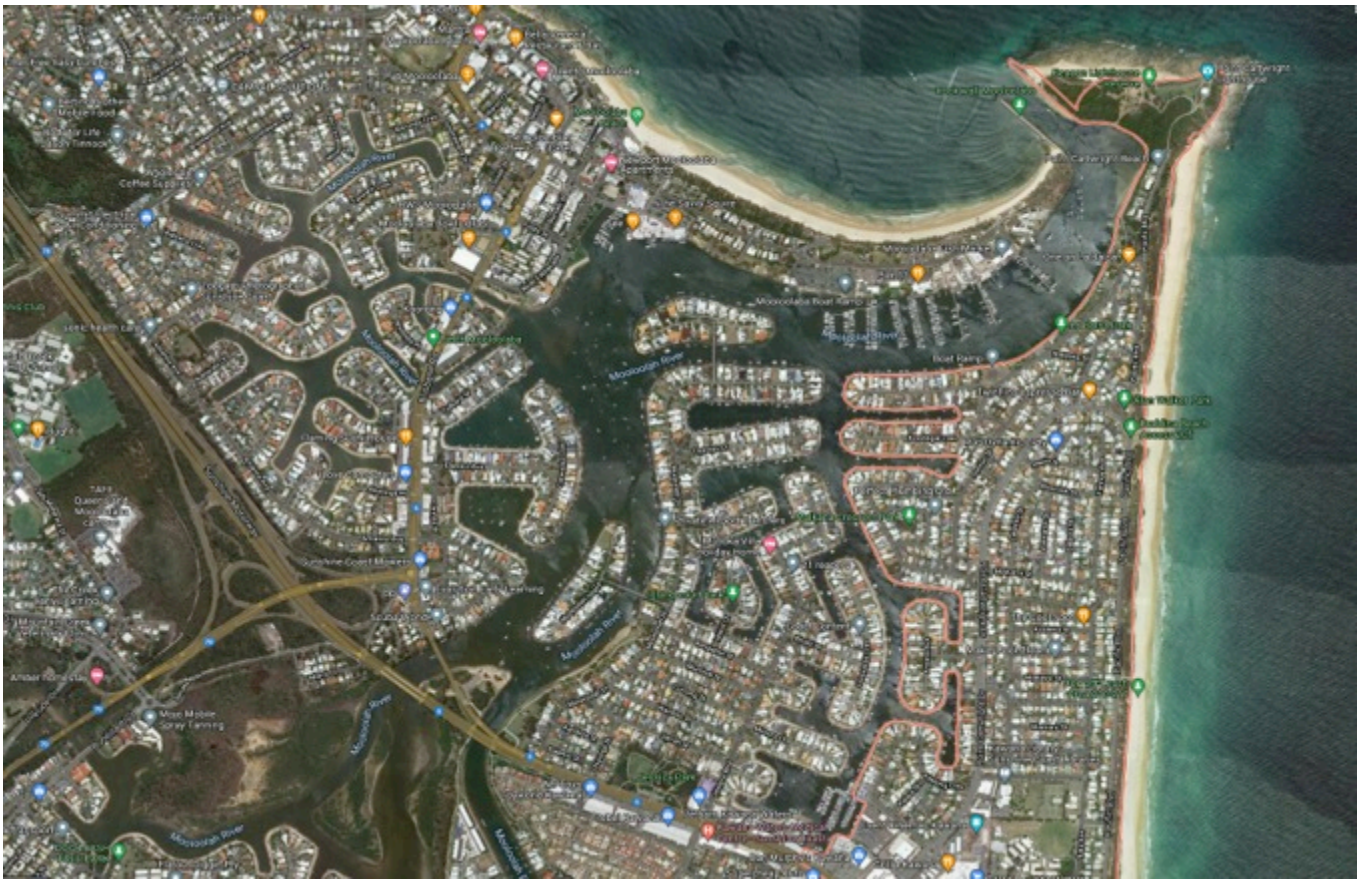
1985

Site Starts to Recover Naturally Across Hill and Lower Reaches in the 1980s. These areas later cleared and maintained as grass.

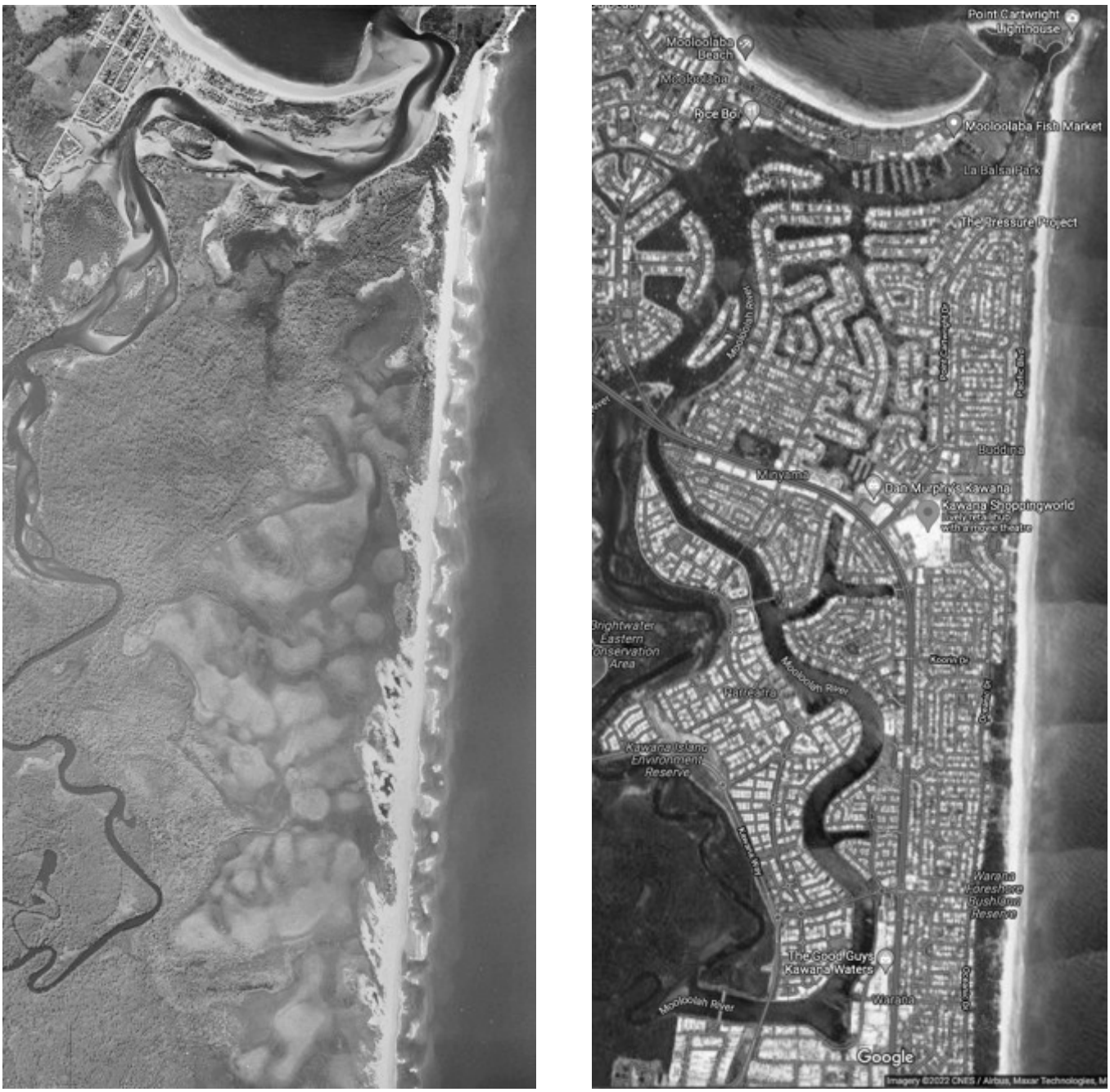
Courtesy of Picture Sunshine Coast

Today

Expansive Urbanised Metropolis



KAWANA - Then and Now



Then and Now Comparison (QImagery 1958 and Google Maps 2020)

Today – What's left

Today
Sand Mining Quarry Site Referred to as Natural Auditorium

LOSS OF HERITAGE AND PLACE IDENTITY

Recent publications from Council to support the new 2021 Master Planning process conjoin the areas known as Point Cartwright Reserve and La Balsa Park into one study area. This approach would appear to be inconsistent with the Kawana Waters Local Plan which clearly distinguishes between Point Cartwright Reserve and La Balsa Park. This sign is erected next to the car park and amenities block at the La Balsa Park rotunda.

The above sign represents:

- Loss of Indigenous Heritage
- Loss of Historical Significance
- Loss of Natural Values – Flora, Fauna & Habitat
- Loss of Experiential Opportunities
- Loss of Place Identity

The primary message with the above sign is that Point Cartwright Reserve is a “Dog Park”. This is the only sign that currently mentions the Kabi Kabi people on the entire reserve.

There needs to be a clear delineation between La Balsa Park and Point Cartwright Reserve to acknowledge the reserve is a unique space distinct from La Balsa Park. Distinctive entrance features are required at entry points. Interpretative signage needs to champion the values of the reserve and instructive signage is required to help protect its habitat and wildlife inhabitants.

An approach that doesn’t recognise the intrinsic differences between these areas would directly contravene and undermine the efforts of the community to distinguish these areas better. To ignore the unique identity and heritage of the reserve would strike at the heart of what concerned residents have been trying to address, being apparent unilateral attempts by Council’s town planners to ascribe lesser and lesser intrinsic value to Point Cartwright Reserve by lumping it in the same frame as neighbourhood parks which are mostly grass with BBQ areas and child playgrounds. This is simply not an acceptable approach to the Master Planning of the Point Cartwright Reserve.

The following diagram shows the bounds of the Master Planning Area. From an ecological perspective, the exclusion of the rocky shores from these bounds markedly limits the quality of outcomes achievable within the master planning process. A single boundary that encompasses both the reserve and La Balsa Park risks losing the unique identity, heritage and natural values of Point Cartwright in favour of homogenised parkland recreational outcomes. Clear delineation is essential to ensure policy and programs retain a sense of place. Under the Open Space zone, there is a temptation for administrators to treat these two areas in a similar way. It is essential that the reserve be rezoned to Environmental Management and Conservation to ensure the Point Cartwright Reserve is always treated separately from La Balsa Park.

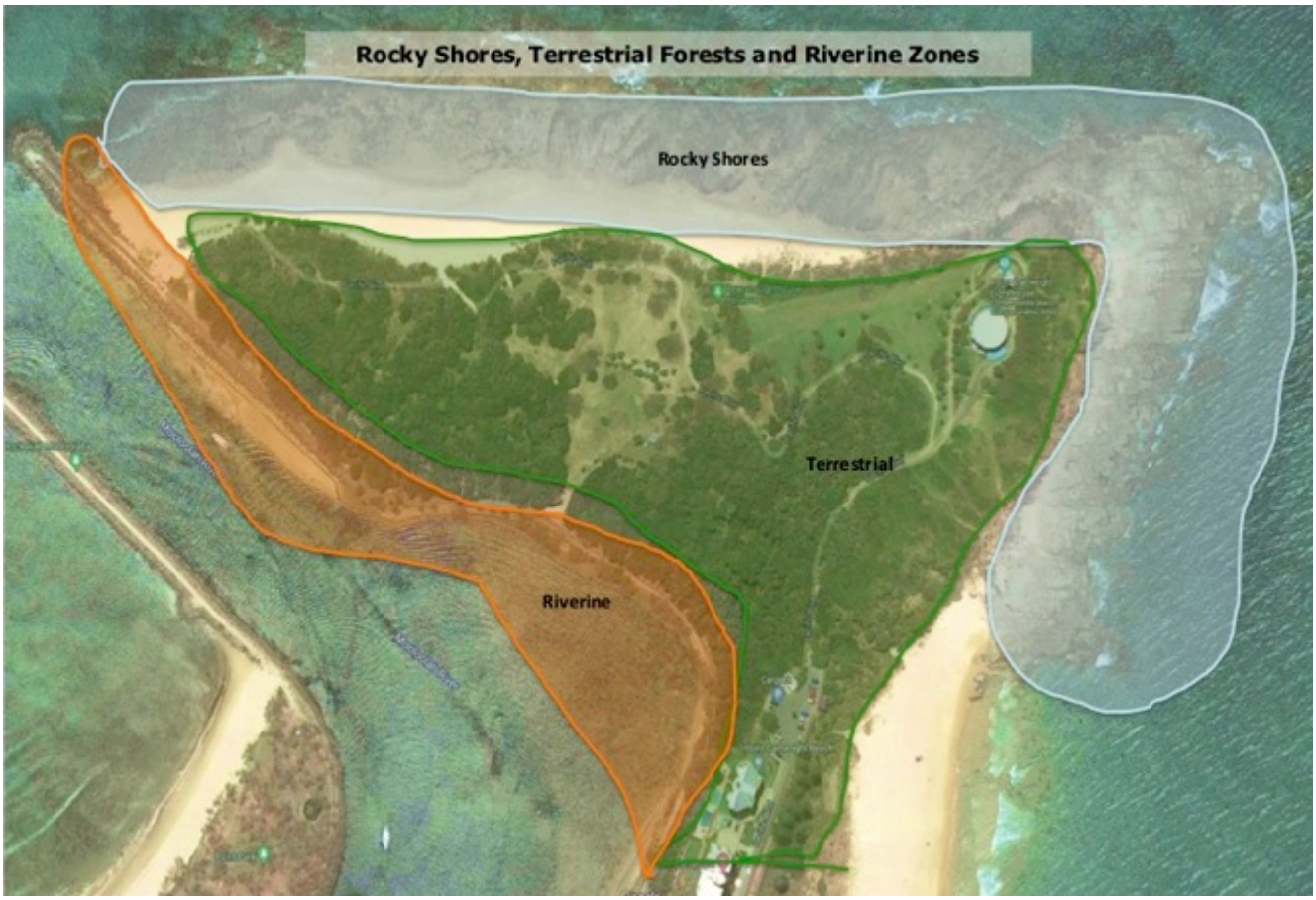
THE NATURAL ENVIRONMENT OF POINT CARTWRIGHT RESERVE

Biota of the Sunshine Coast

Over the last 200 years, large amounts of vegetation have been cleared across the Sunshine Coast to make way for agriculture, forestry, urban and industrial development. As a result the region has lost almost 60% of its natural vegetation cover. Ten percent of the plant and fungi (160 individual species) are now identified as significant species. These species are either listed as rare or endangered under state or federal legislation, are unique to the Sunshine Coast (endemic species) or have the northern or southern boundary of their distribution on the Sunshine Coast (SCEC Website 2021). Point Cartwright Reserve is no exception, with some vegetation stands captured under EPBC Act.

The Bunya Pine is one of the most characteristic plants of the region. This stately tree is native to South East Queensland and can be seen dotted in the landscape throughout the Sunshine Coast. The Bunya Pine is one of the oldest living plants in the world having appeared in the Jurassic age some 165 million years ago and is of great cultural significance to the Aboriginal peoples of this region. Some of the other unique plants endemic to the region include the swamp stringybark, the Mount Beerwah mallee and the Buderim holly. Just over 40% of the region is still covered by remnant vegetation, however any further loss or fragmentation of these areas would significantly undermine the resilience of those communities and could see the number of endangered species rise rapidly (SCEC Website 2021).

Biota of Point Cartwright Reserve – Three Biotopes



Since the development of Kawana in the 1960s, activity on Point Cartwright Reserve has progressively increased, without commensurate measures to protect and maintain natural features, leading to significant degradation in vegetation, compaction and erosion of soils, significant edge degradation around forested areas, and general overuse of the site. Nevertheless, the species that are present today are those that have been able to survive these drastic changes and share the space with human activity, on and around the site.

They have been resilient enough to cope with the damage and progressive degradation to habitats of the reserve. Any studies should dedicate resources to uncovering greater insights on the likely pre-disturbance composition and distribution of plants and animals and consequently the resulting changes that have occurred over time.

There are three primary biotopes present at the Point Cartwright Reserve today: terrestrial and forest habitats, foreshore (rocky shore and beach) habitats and the riverine habitats. To preserve the natural values within the Point Cartwright Reserve and avoid continued degradation from overuse in coming years, leadership from Council is essential to restrict the type and intensity of activities permitted within the reserve to those that do not deplete the site's natural heritage any further and can be sustainably accommodated by the site into the future.

The following sections provide a brief overview of some notable aspects of the biota of the reserve. The discussion includes the likely causal factors leading to its present-day health and composition. It is not intended to be a professional appraisal or advice. Qualified professional botanists, ecologists and marine scientists should be commissioned to assess nature and type of flora and fauna communities in these biotopes as well as the current state of diversity and populations. Any such assessment should also examine the factors that have contributed to the existing state including the likely vectors of disturbance affecting habitat and species composition, distribution and health. Such information is essential to help formulate strategies for identifying meaningful options for the restoration of the reserve's unique natural heritage. Recommendations should be aimed at restoration to a pre-disturbance state, and stipulate strategies to restore degraded areas and minimise on-going stressors on all biotopes.

The three primary biotopes present at the Point Cartwright Reserve are:

1. Terrestrial - Nationally Significant Littoral Rainforest

- Many years of assaults on the natural values since 1840s timbergetters and then later in the 1960s with mining, reclamation and revetment/ groyne walls.
- EPBC Act critically endangered littoral rainforest ecosystem that is severely degraded.
- Human and dogs free roaming through critically endangered ecosystem.
- Edge effects are severe.
- 24 hour a day dog off-leash area.
- Impacts on ground dwelling birds.
- Loss vegetation, loss of a natural fresh water body.

2. Riverine – Estuarine Habitats

- Seagrasses essential to marine ecosystems and success of juvenile fish stocks – smothered by continued dredging and dumping of spoil on or in water table.
- Flow on effects to macro organisms such as turtles.
- River shores and banks used by birds and crustaceans.
- Numerous species of benthic organisms in the sedimentary and intertidal zones (Nudibranchs)
- Dumping of dredge spoil is toxic and turbid - smothers these habitats.

3. Rocky Shores, Beaches and Shorebirds

- International migrating Shorebirds and Resident Shorebirds use the rocky shores. Many other egrets, herons and cormorants use the rocky shores.
- Intertidal harvesting is routinely carried out for commercial shell sales & consumption of snails.
- 24 hour a day dog off-leash area .
- The rocky shores are known for their rich biodiversity.
- Shorebird diversity and abundance has likely been impacted by human disturbance.
- Shorebirds affected by constant helicopter noise – low flying helicopters many times a day.
- Largest Endangered Turtle Hatching Site on Sunshine Coast on Point Cartwright beaches.

Terrestrial Biotope

Ecosystems are generally recognised by the trees, shrubs and groundcover plants that live there. According to the Anembo Report 2002, there are five broad categories of vegetation that have persisted on Point Cartwright Reserve: Tress, Shrubs, Epiphytes, Vines/Scramblers and Herbs. The vegetation today in 2021 is habitat for animals and birds that rely on the reserve for hunting, foraging and nesting. Despite the site's designation as a reserve in 1933, it was the subject to timber removal in the 40s and 50s. Point Cartwright was most likely the subject of timber logging as early as the mid-1800s when timber-getting was a significant economic resource.

It is understood that the reserve may have hosted some high quality commercial species within its forests. In the 1960s and 70s further damage to the natural features of the reserve occurred. This damage has remained as permanent altered forms, including: the construction of the rock wall groynes at the entrance of the harbour, sand mining, river dredging and the construction of the water tower and lighthouse. Forested areas atop the southern hills were cleared to make way for residential towers.

The remaining densely vegetated forested strands along the reserve's hilled areas are remnant strands from before colonisation. These areas may fall under the littoral rainforest classification of the EPBC Act for preservation as a critically endangered vegetation community, albeit in a degraded state. These stands have endured as remnant strands from before colonisation but no longer support the wet understorey they once did as a result of poor protection and management regimes. Nevertheless, in accordance with the EPBC Act, these vegetation communities should be given protection and priority restoration measures should be implemented.

Estimates are that the reserve was subjected to clearing of 70% of its remnant vegetation from the commencement of Kawana Waters development (Anebo 2002). Key onsite disturbances have also included mining of alluvials, the construction of a rock seawalls, the building of a lighthouse and concrete water reservoir. In the 2002 Anembo Master Planning Report, it was stated: "*These developments, and the past management regime, has resulted in the degradation of significant tracks of the reserve. … Changing community attitudes to environment and recreation, as well as the increase in population pressure from urban development has brought the reserve and its attributes into the spotlight."* This was 20 years ago. The Anembo Master Plan was never formally adopted. Importantly, these observations are as relevant today as they were twenty years ago, the main distinction being that the site has been allowed to degrade even further over this time to a new low point.

Rocky Shores Biotope

The changes in the foreshore marine habitats around Point Cartwright can also be inferred by examination of historical accounts of the abundance of marine species as compared with today. Numerous early publications from the 1800s and early 1900s allude to the abundance of fish and marine species in the ocean, river system and the foreshore areas around Point Cartwright. The decline in marine life is apparent from records that indicate rock conchology was vibrant, that fish stocks were so abundant that waters around the headland would turn black with dense schools. Indigenous locals would readily catch and supply early Europeans and government surveyors with large quantities of fish, crabs and oysters caught around Point Cartwright. Reports from early newspapers describe the waters around Point Cartwright full of porpoises, turtles and dugongs. These reports attest not only to the richness of populations of marine wildlife, but also the health of the waters, foreshores and breeding habitats.

Riverine Biotope

Waterways are a vital part of the Sunshine Coast's identity, prosperity and lifestyle. They continue to provide many environmental, social and economic benefits to our region as our population grows and tourism increases. The decline in marine health and habitat in the Mooloolah River system would have begun with the smothering of large tracts of underwater rock habitats and sandy mud flats. These original estuarine habitats were lost to the construction of rock revetment walls along the banks of Mooloolah

River. Continual dredging to this day has resulted in the loss vital mangroves, inter-tidal substrate and seagrass habitats throughout the estuary. These areas support the nurturing of juvenile fish, crabs, prawns, dugongs and turtles.

The construction of the rock walls and continual dredging to this day will have had a drastic effect on seagrasses. If the Mooloolah River had not been decimated by these changes, which facilitated today's canal living and direct river access housing, Mooloolah River with its upstream rainforest habitats would be well regarded as a fisheries valuable aquatic environment potentially more prised than Maroochy River. Vital mangroves, inter-tidal and seagrass habitats would be thriving along the lengths of the lower reaches of the estuary with Juvenile fish, crabs, prawns, dugongs and turtles. Many more migratory birds would utilise the areas around the reserve and river than do today during the summer months. Despite the changes that have occurred, some organisms have managed to thrive in the altered habitats offered by today's highly modified river system. The lower reaches adjacent to the reserve support one of the most diverse species of soft-bodied marine gastropod molluscs anywhere in the world (called Nudibranchs). Organisations have been recording species of Nudibranch between Noosa and Redcliffe. To date 1094 species have been found and recorded, with 600 species of Nudibranchs having been recorded in the Mooloolah River alone (Cobb 2022). This compares with 3000 known species worldwide.

Decline in Point Cartwright Reserve's Biotopes

The Sunshine Coast region has experienced rapid urban expansion resulting in significant pressure on remaining patches of remnant forest, wallum and marshlands. Urban development around remnant strands is reducing the integrity of existing stands and depleting forest edges. The authors can attest that nature and character of vegetation stands on the reserve were previously akin to wet sclerophyll.

Heathlands once common across southeast Queensland are experiencing pressures from urbanisation and fragmentation, and species occupying those habitats are now under threat. As these areas were once considered useless lands, the expansive wallum habitats and marshlands prevalent along the coastal strip prior to Kawana's development have disappeared without the preservation of example remnant portions and their inherent ecosystems. Significant risks to the viability of wallum dependent species such as the wallum rocketfrog, wallum sedgefrog and wallum froglet have arisen from the clearing of these habitats and in the case of Kawana it has been cleared for residential development. (wildlife.org.au)

Without detailed site-specific records from the earliest colonisation periods, the nature and extent of species prevalent on the Point Cartwright Reserve prior to colonisation would need to be inferred from botanical records and wildlife sightings for surrounding and similar geological and geographic areas in the region. We know for example that the reserve used to host a notable lagoon of drinking quality fresh water prior to colonisation as Royal Navy records from mid-1800s attest to its size and quality. Later publications in 1920s refer to the decline of this lovely water body, eventually describing it as a muddy swamp. Today unfortunately there is no recognisable feature due to the substantial changes that have occurred on site such as sand mining. Areas within the reserve damaged from the early days of timber-getting in the 1800s through to the days of the Kawana Waters Estates development in the 1960s have still not been proactively re-vegetated, rehabilitated or conserved in a deliberate way.

Today, despite the decades of decline, the terrestrial vegetation surviving within the reserve is still habitat for many animals and birds that rely on the reserve for hunting, foraging and nesting. Some one hundred and fifteen species of birds have been known to utilise the reserve including some scheduled bird species. Numerous species of reptiles inhabit the reserve. The reserve has been an important breeding site in the past for the scheduled vulnerable Richmond Birdwing Butterfly. There are numerous marine and amphibious species that utilise the marine habitats of the reserve such as the riverine areas, the adjacent beaches and rocky seascapes for seasonal nesting, including Nudibranchs, Green Turtles and the endangered Loggerhead Turtle. The ecological systems, biodiversity traits and unique combination of specialised and migratory species that use Point Cartwright Reserve mean that these values are not, and cannot be, easily replicated anywhere else on the Sunshine Coast.

Impacts from Recent Nearby Enhancements and Intensification Actions

Local residents have seen the inherent natural values of the reserve were not being properly protected or managed as surrounding neighbourhood parks had been developed, upgraded and intensified. Facilities, structures and adjacent car parks in the neighbouring La Balsa Park have been expanded to encourage increased traffic and tourists. This intensification of activity has not been accompanied by actions to protect the consequential effects on the natural values of the reserve. Point Cartwright is a unique coastal space and concerned residents feel Council should be doing a lot more to protect the area's unique natural values and iconic scenic significance to the Sunshine Coast. Some on-the-ground changes that have contributed to the reserve's decline can be summarised as:

- Massive Intensification of Adjacent Community Parklands – Expanded Car parking, Enhanced BBQ areas, Playgrounds, Walkways, Commercialisation
- Establishment of Dog Off-Leash Area and enhanced amenities and recreational opportunities within the Reserve and promotion of the reserve as a dog park
- Expanded grassed areas, walkways, seating and coincident promotion of the reserve as a dog park, permitted uses expanded to include commercial active recreation such as boot camps and events with deleterious consequences
- Marked increase in tourism based promotions that included Point cartwright and comparative increase in visitations without commensurate infrastructure to manage and protect sensitive areas
- Land management weeding and planting programs directly at odds with other desirable outcomes. In some cases weed spraying has led to a decline in key species such as the vine necessary for the endangered Bird Wing butterfly. Dog off leash areas affecting nesting and contributing to degradation. Land dwelling fauna more exposed to risks as a result of decline in understory. Even different Council departments programs sometimes at odds with each other.
- Poor interface management. Marked reduction in undergrowth and overstorey canopy density, management of site like a recreation park - without clear vision - leading to significant decline.
- Permitted uses expanded to include commercial active recreation and events with deleterious consequences
- Increase in visitations without commensurate infrastructure to protect sensitive areas
- Marked reduction in undergrowth and overstorey canopy density

As a minimum, to ensure the unique mix of values present on the site are preserved for future generations to enjoy, a range of programs should be prioritised in accordance with the Council's Environmental Reserves Network Management Plan 2017-2027.

Looking Forward

Without the creation of new green spaces to service what is likely to be up to five times as many people within the coastal strip, the proposed population and density changes across Kawana will place extreme pressure on all existing green spaces. This will be a significant challenge in an 'infill' planning paradigm without greenfield options anywhere proximate to the proposed density increases, meaning it will be very difficult for Council to provide new green space areas for this new population. Existing green spaces and neighbourhood parks will not be able to service the growing needs of these population densities, nor be able to provide the outdoor natural experiences close to home that are so popular in our climate. If not properly managed within a formal protective policy framework, there exists a real risk that Point Cartwright will fall victim to these pressures as an easy fix. The reserve's natural value will certainly succumb to the pressures of being "loved to death", become overrun and be reduced to a mere dog park. It will lose its unique values and heritage if appropriate controls and management measures are not instigated.

LITTORAL RAINFORESTS

EPBC Act Littoral Rainforest Classification

The vegetation of the reserve was assessed by a qualified botanist Ann Moran in 1993 (Moran 1993). Although the reserve has degraded over time, the reserve's vegetation community can be characterised as Littoral Rainforest as prescribed under the EPBC Act classification system for Littoral Rainforest and Coastal Vine Thickets of Eastern Australia. This is an ecological community along the eastern seaboard of Australia that is rated as nationally significant and Critically Endangered.

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC) Policy Statement 3.9 describes the Littoral Rainforest ecological community as occurring on coastal headlands, dunes, sea-cliffs or other places influenced by the ocean and sea spray. An ecological community is an assemblage of species that can include flora, fauna and other living organisms that occur together in a particular area. Patches of the Littoral Rainforest ecological community typically occur within one to two kilometres (1-2km) of the coast, where they are subject to maritime influences. Given the small area of this ecological community remaining in Australia, all sites that meet the EPBC Act criteria should be considered as habitat critical to the survival of the ecological community. To satisfy the criteria for classification under the EPBC Act, the size of the strand only need be 0.1hectare in size. This is indicative of how seriously the conservation and restoration efforts are taken.

National listing of an ecological community recognises that its long-term survival is under threat. Littoral Rainforests have been listed under the EPBC Act based on a number of factors including that it is fragmented, has small patch sizes coupled with demonstrable threats, and the reduction in the integrity of the ecological community make it critically endangered. The listing aims to prevent any further decline and to promote and assist recovery through government, landholder and community efforts. The structure typically includes a closed canopy of trees, but the canopy can be patchy when in exposed situations, after storm events or due to anthropogenic influences. The canopy protects less tolerant species underneath it from salt-laden winds. However, where there is extreme exposure to salt laden winds, these distinct layers demonstrate a height continuum. Moreover, wind sheared canopy can be present on the frontal section (closest to the sea). (Dept. of Environment 2019)

According to Floyd (1990), Littoral Rainforest comprises five maritime influenced ecological communities (known as suballiances) of the Subtropical Rainforest subformation. Each of these five suballiances are considered to be distinct forms of this ecological community based on characteristic species present, landscape position and climatic factors.

- Suballiance 16: Small-leaved Lilly Pilly, Broad-leaved Lilly Pilly (Syzgium leuhmannii Acmena hemilampra)
- Suballiance 17: Tuckeroo (Cupaniopsis anacardioides)
- Suballiance 18: Brush-Box (Lophostemon confertus)
- Suballiance 19: Yellow Tulipwood, Yellow Aspen, Red Olive Berry, Brown Pine (Drypetes deplanchei-Sarcomelicope simplicifolia, Elaeodendron australis, Podocarpus elatus)
- Suballiance 20: Lilly Pilly , Fig tree, Cabbage-tree Palm, Brown Pine (Acmena smithii – Ficus spp. – Livistona australis, Podocarpus elatus)

The Botanical List for Point Cartwright (Ann Moran 1993), shows that Suballiance 17 and Suballiance 20 were distinct compositions in 1993. Any new Flora and Fauna study commissioned for the site must provide an updated vegetation survey of the site and an assessment against the EPBC Act criteria giving consideration to Floyd (1990).

National Recovery Plan for Littoral Rainforests

In 2019, the Australian government published a National Recovery Plan for Littoral Rainforests and Coastal Vine Thickets of Eastern Australia. This plan states that significant areas of littoral rainforest existed at the time of European settlement but have been cleared or converted to other land uses. Remaining remnants of the ecological community are now highly fragmented and isolated across the natural distribution range; many remnants are degraded and in lower condition states. From an ecological perspective, derived native vegetation structures (or patches on the pathway of succession towards Littoral Rainforest) may also be habitat critical to survival of the ecological community, if they adjoin, buffer or connect high integrity remnants, provide habitat critical for functionally important or threatened species, expand the potential habitat available to some species, or have good potential for restoration. (Dept. Environment 2019)

EPBC Act Nationally Recognised Threats include:

- Recreational activity
- Land clearance
- Weed invasion
- Fire and natural disturbances
- Animal impacts

Examples of Littoral Rainforest stands at Point Cartwright Reserve.

Point Cartwright Reserve's Littoral Rainforest

The Point Cartwright Reserve has degraded over the past two decades through a lack of maintenance resourcing, poor management of conflicting uses and simple neglect. This approach has led the reserve to decline into a space that resembles a neighbourhood park rather than a natural area reserve. A number of activities permitted in the area directly conflict with objectives for retention of natural values. The designation of part of the reserve for dog off-leash activities is a clear example of this. Inaction and neglect by Council has ensured that vandalism of infrastructure and degradation of habitat have not been addressed. Visitors to the area are not informed of the intrinsic natural values and have unwittingly damaged or eroded natural features and habitat. Council's hands-off approach has led to under resourcing of key infrastructure that would control movement of people to avoid ongoing degradation, and lost opportunities to engage meaningfully with visitors about the natural values of the area through interpretative features.

The reserve is under the tenure of state authorities, however, the management and maintenance of the land parcel is the responsibility of the Sunshine Coast Council. It is for this reason community members are seeking action from Council to secure the reserve's future and preserve its value as a unique place of scenic nature-based enjoyment. It has been almost 20 years since a plan for the area was last attempted, so it is an appropriate time to reignite a formal process to manage the reserve's natural assets commensurate with its importance to the community. Some notable characteristics of the forest are:

- Home to 115+ Bird Species
- Home to Reptiles, Marsupials and Mammals
- Habitat for the Richmond Birdwing Butterfly
- Unique combination of Plant Species

National Recovery Plan for Littoral Rainforests

In 2019, the Australian government published a National Recovery Plan for Littoral Rainforests and Coastal Vine Thickets of Eastern Australia. According to this plan, significant areas of littoral rainforest existed at the time of European settlement but have been cleared or converted to other land uses. Remaining remnants of the ecological community are now highly fragmented and isolated across the natural distribution range; many remnants are degraded and in lower condition states. From an ecological perspective, derived native vegetation structures (or patches on the pathway of succession towards Littoral Rainforest) may also be habitat critical to survival of the ecological community, if they adjoin, buffer or connect high integrity remnants, provide habitat critical for functionally important or threatened species, expand the potential habitat available to some species, or have good potential for restoration. (Dept. Environment 2019)

The national recovery program's objective is to: *Provide for the management and research actions necessary to stop the decline, and support the recovery, of Littoral Rainforest so that its chances of long-term survival are maximised.* The national recovery strategies aim to (Dept. of Environment 2019):

- Protect – actions that prevent further decline in the conservation status of Littoral Rainforest, principally its size, condition and functional integrity.
- Manage and restore– actions that improve the quality of patches or increase the extent of Littoral Rainforest, thus increasing the resilience of the ecological community and maximising its chances of long term survival in nature.
- Communicate – actions that tell the story about what is happening to Littoral Rainforest, and increase knowledge of its biodiversity and socio-economic values, conservation status, actual and potential changes, management and information needs.
- Research – actions that fill any gaps in our knowledge of Littoral Rainforest, including increasing understanding of its biodiversity values and socio-economic values, the relevant impact of threatening processes and the effectiveness of various management interventions.
- Monitor / report – actions that measure the condition of Littoral Rainforest, and any changes to its conservation trajectory, and report outcomes to relevant management agencies / organisations

Threats to Littoral Ecosystems

According to the National Recovery Plan for littoral rainforests, there are numerous threats currently impacting upon Littoral Rainforest, or which may potentially impact the ecological community in the future. The majority of these threats can be considered to be human-mediated as they are either a direct result of human activity or an indirect consequence of human actions. These human-mediated threats interact with natural perturbations to Littoral Rainforest and can result in alterations to the healthy functioning of the ecological community. Development related activities such as vegetation clearing, excavation and earthworks within and adjacent to Littoral Rainforest are highly likely to adversely affect the ecological community, if not directly then indirectly through impacts to individual sites and the subsequent accumulated losses across the ecological community as a whole. These activities reduce the size of patches and the extent of Littoral Rainforest by directly affecting small clumps or indirectly destroying or degrading the quality of habitat. This further disrupts connectivity and effective functionality of Littoral Rainforest and its component parts, including species prevalence and habitat structure. (Dept. Environment 2019)

The National Recovery Plan states that the principal threat to the biodiversity of Littoral Rainforest is the further loss and fragmentation of habitat likely to result from ongoing coastal development, with urban development recognised as a key pressure on Australia's coastal environment (Beeton et al. 2006). The coastal areas of eastern Australia support the majority of the region's population (60-70 percent) (BAAM 2013). Coastal development is likely to intensify over time due to the predicted increase of the population, particularly along the east coast of Australia (Beeton et al. 2006). In addition to the direct impacts of land clearing, coastal development can also result in a wide range of other indirect impacts to Littoral Rainforest, such as increased weed invasion, dumping of garden waste and other rubbish, pollution and disturbance to native fauna from domestic pets (BAAM 2013). What was once a semi-continuous archipelago of patches of Littoral Rainforest along the eastern coast of Australia, has been reduced and fragmented, primarily by coastal development, sand mining and agriculture (Bradley & Merrilyn 1992). As Littoral Rainforest is located on, or in close proximity to, the coastline, which is a focal point for human settlement and urbanisation in Australia, coastal development is a key historic and ongoing threat to the ecological community (Lavorel et al. 2015). (Dept. Environment 2019)

According to the National Recovery Plan, tourism and visitor disturbance within Littoral Rainforest pose an ongoing threat. Visitor disturbance in conservation areas includes soil compaction and disturbance, erosion from foot, cycle, trail bike and four wheel drive tracks, the introduction of pests and the creation of new planned and unplanned tracks. According to the Bureau of Tourism Research (DISR 2001), 50 percent of international visits and 42 percent of domestic visits are to coastal areas. Due to the ongoing demand for tourism and recreational facilities to cater for users of coastal and marine ecosystems (Ward & Butler 2006), this trend is likely to increase over time. Such pressure is likely to result in more development on coastal land and a rise in visitor numbers in conservation areas where Littoral Rainforest occurs (TSSC 2008). (Dept. Environment 2019)

Increased visitation results in increased demand for and use of visitor facilities, such as walking tracks, viewing platforms, toilet blocks and picnic areas, many of which are located in Littoral Rainforest patches because of their attractive landscape features (shade, open understorey and proximity to the sea). These impacts hinder the recruitment of key canopy species, slowing regeneration rates and facilitating establishment of weeds. Other impacts include the dumping of cars; rubbish; and garden waste, which has the potential to cause weed infestation (NSW Scientific Committee 2004). (Dept. Environment 2019)

Minimising Impacts

According to the National Recovery Plan, the primary way to prevent the decline of Littoral Rainforest is to protect remnant patches that meet the condition thresholds in the Listing Advice. This includes not undertaking activities within close proximity that could impact on the extent, quality and functionality of Littoral Rainforest. The primary goal should be to avoid all impacts to patches of Littoral Rainforest. Restoration and revegetation activities are valuable options for patches lost or degraded by significant impacts. This requires an understanding of the value of the patch to be lost, based on the condition thresholds specified in the Listing Advice (i.e. its size, species composition and structure, and the prevalence of transformer weeds). Any proposals to restore or revegetate habitat to offset the loss of an existing patch need to consider carefully how and where best to implement the action and must include monitoring to ensure its success. (Dept. Environment 2019)

Maximising the structural and floristic heterogeneity of patches and revegetation plantings will enhance the number of component species likely to benefit, although such active revegetation can be expensive and labour intensive, and opportunities for passive revegetation (e.g. fencing or restricting access) need to be explored as a way of augmenting this activity (SERA 2015). Protecting remnants from encroaching developments and building resilience into patches will be critical to the survival of Littoral Rainforest. Retaining or restoring the ecological community structure to include structural layer species, provides the best opportunity for natural resilience and patch survival. Fauna are another essential component of a functioning ecosystem that needs to be included in any restoration process or activity; it is important to ensure restoration activities take a holistic approach to the restoration of key ecosystem components (Doerr et al. 2010; SERA 2015). (Dept. Environment 2019)

Richmond Birdwing Butterfly (Photo: G.Smith)

Ground Nesting Birds at Risk (from Dogs & People Traversing Forests)

Pheasant Coucals and Brush Turkeys Nest on Ground in Littoral Rainforest at Point Cartwright (Photos: Q.Brown)

RIVERINE HABITATS

The lower reaches of the Mooloolah River have something like 2.6% of riparian vegetation which in combination with the loss of shell banks and corals, mean that the river system stability is poorly buffered against extreme events.

Routine Dredging and Spoil Dumping

Routine dredging causes impacts on benthic organisms and estuary fish-breeding ecology. Stability of river system is compromised causing extreme sediment dumps during high rainfall events. When combined with plumes from dredging, the indirect consequences of poor stability and increased flow regimes can affect the rocky shores and seagrasses surrounding the reserve. The changes in river mouth structures would have had a direct impact on marine health and habitat commencing in the 1960s with:

- the smothering of a large tracts of productive rock and shell fish structures
- replacement of natural bank structures with rock revetment walls
- continual dredging triggering turbidity events that would drastically affect seagrasses.

State agencies such as MSQ have been routinely conducting dredging and spoil dumping within the Mooloolah River and Point Cartwright Reserve. These actions have been regularly exposing acid sulphate soil to oxygen thereby generating significant impacts on the water column and dumping areas. Most recently in 2020, dredge spoil from acid sulphate soil laden sediments from the bottom of Mooloolah River were dredged to improve navigational safety, only to be dumped directly into the tidal zone at Half Moon Bay. Dumping of ASS laden dredge spoil into Half Moon Bay would generate toxic plumes with a potential for release of metals and acidity, and deoxygenation of the water column. Metals can accumulate in the food chain leading to knock-on effects to higher order organisms. Some known adverse impacts of ASS (ozcoasts.org.au):

- poor water quality (e.g. dissolved metal contaminants, low pH levels and anoxic and hypoxic events);
- fish kills and pathogens in fish assemblages ;
- loss of critical habitat areas, aquaculture production, fish stocks, wetland biodiversity and amenity;
- acid erosion of infrastructure; and
- the need for rehabilitation of disturbed areas.

Artificial Beach Created from Dredge Spoil Dumping into Half Moon Bay

Nudibranchs

The undersea world contains thousands of beautiful creatures and plants. Perhaps the most stunning of all of them is the humble Nudibranch which means 'naked gill'. Nudibranchs are a group of soft-bodied, marine gastropod molluscs which shed their shells after their larval stage. Currently, about 3,000 valid species of nudibranchs are known worldwide. Nudibranch.com.au cites 1040 species found in their Sunshine Coast survey area, 600 of which have been found in the Mooloolah River, Point Cartwright and La Balsa Park areas (Cobb 2022). In stream dredging and spoil dumping has a direct impact on these creatures.

(Flabellina angelvaldesi Sighted Point Cartwright Mooloolah River - Courtesy of nudibranch.com.au Gary Cobb)

(Goniobranchus collingwoodi sighted Point Cartwright Mooloolah River - Courtesy of nudibranch.com.au Gary Cobb)

ROCKY SHORES

The following passages are taken from the Queensland Department of Environment website .

Rocky shores are found where the sea meets the land. They support a diverse mix of plants and animals that have adapted to survive this habitat's unique conditions. Along the exposed coast of Queensland, constant wave action and the rise and fall of tides can make these shores tough places to live. As well as supporting lots of unusual plants and animals, rocky shores are important fish nurseries and roosting and feeding grounds for birds. Along with their commonly associated algal beds, they also help stabilise inshore sediments. There are many places for animals to live among the rocks, platforms, depressions, cobbles, pebbles and boulders. As well as providing homes for many animals, rocky shores are a productive food source and an important nursery area for many fish and crustacean species. This habitat also provides lots of food for fish. Many commercially important fish can be found around rocky shores. (Dept. Env. Qld. 2021)

Point Cartwright Reserve – Rocky Shores

Of the many factors that influence habitats, plants and animals on the intertidal rocky shores, energy forces (mainly as wave energy) and tidal inundation are very significant. Another factor or attribute influencing rocky shores includes the composition of the rock, which can determine how the rock breaks up into smaller components (e.g. boulders, cobbles, pebbles, gravel etc.).Waves break over rocky shores and plants and animals living on these places have adapted to being pounded by waves. Where waves splash higher on the rocky shore, animals take advantage of this splash zone. The tide's rise and fall is one of the main factors affecting life on rocky shores. When the tide falls, plants and animals on rocks are exposed to air. They must develop special adaptations to survive until the tide comes in again. (Dept. Env. Qld. 2021)

Rocky shores as ecosystems

Tidal zonation has a very strong influence on species composition at Point Cartwright, with most species found in the low-intertidal zone (Meager et al 2010). Each stratum is characterised by unique species. Several distinct microhabitats exist within rocky shore habitats, each with its own survival challenges for plants and animals living there. Some of these microhabitats have distinct shapes which influence how biota will survive there. Yet other microhabitats have high roughness where the terrain goes up and down, providing plenty of places for animals and plants (and water). The rocky microhabitats may have a different composition. (Dept. Env. Qld. 2021)

Conchology & Crustaceans

A rich variety of marine life can be found along the rocky shores between Caloundra and Double Island Point. Overlapping ocean currents, from north and south, allow tropical and temperate species to live here in abundance. All foreshore species are interlinked so the removal of any species, or even a decline in its population, has a domino effect, bringing the whole intricate structure of the foreshore ecosystem crashing down. If everyone takes their own little bit of it home the variety of marine life we see today, along the rocky shores, will disappear. You can help to preserve this diverse treasure.

Council should be protecting rocky shores like Point Cartwright Reserve on the grounds they are essential to migratory birds, especially intertidal zones. As responsible agents for biodiversity preservation, Council should be ensuring habitats essential to the survival of migratory species are protected from interference by human activities including beachcombing and dog free roaming, which interfere with foraging, feeding and breeding of migratory birds.

Rock shores are little worlds of their own. These complex and diverse ecosystems are so unlike anything else but are found almost everywhere on Earth. These shallow eroded pools can be found in the intertidal zone - an area that is underwater at high tide and above water at low tide. Rockpools are very important to the coastlines, acting as refuge and nurseries for a host of species which in turn can be a source of food for coastal communities.

Dredging is a major stressor to these environments. Dredge spoil exposure to air and recurring interval of submersion and disturbance from tides – means acidic spoil will continue to drain through the mouth of the river for many months. Acidity will weaken hard-shelled organisms who rely on calcification.

The following information is taken from the Queensland Government webpage on Rocky Shores (https://www.qld.gov.au/environment/coasts-waterways/marine-habitats/rocky-shore):

> Many animals and plants live on rocky shores in the area between high and low tide called the intertidal zone. These organisms must be able to cope with problems of not one environment, but two. They are pounded by waves, exposed to extremes of temperature and salinity, and flooded by sea water and exposed to drying air twice every 24 hours. They may be exposed to freshwater during rainfall or flood events. They also have to avoid being eaten by birds, molluscs and crabs at low tide, and by fish and other marine life at high tide.
>
> Several distinct microhabitats exist within rocky shore habitats, each with its own survival challenges for plants and animals living there. Some of these microhabitats have distinct shapes which influence how biota will survive there. Yet other microhabitats have high roughness where the terrain goes up and down, providing plenty of places for animals and plants (and water). The rocky microhabitats may have a different composition – for example, either land-based rock or carbonate.
>
> Platforms are flat (planar) platforms that were formed when waves, wind and rain carved into rock. Often, the back of the rock (the bit which hasn't been eroded yet), forms a cliff, while the ocean edge of the platform steps down into the water. This means one rock platform can support many different kinds of plants and animals, because some sections are almost always under water, while other parts are usually dry.
>
> The type of rock (lithology) will influence the degree to which a platform is created. Platforms were formed through long term processes over geological time including previous exposure to wave action and the rise and fall of sea levels.
>
> Rock pools are depressions usually formed when a boulder lodges in a depression in the rock and grinds a hollow as it rolls around in the waves. After some time, the depression becomes deep

enough to hold water during low tide. If the boulder stays in the pool it will gradually grind it deeper, but sometimes, a big wave washes the boulder out and the rock pool stays shallow.

Because pools trap grit, stones and boulders, only certain plants and animals can survive in them. The grit smothers some organisms, while stones and boulders rolling around in storms can smash delicate creatures.

Rocky shores may include particles of rock, which vary in grain size. Largest of all are boulders, forming boulder fields. Next in size are cobbles, able to be flung up by waves. Smallest are pebbles. All provide spaces for animals and plants to hide, and for seawater to be retained.
On offshore coral reefs and inshore coral fringing reefs, the pebbles cobbles and boulders may be composed of carbonate created by coral animals.

During storms, the boulders roll around and flip over, smashing any animals living on their underside or the rock bottom. Animals and plants which were on top of the boulder may find themselves having to cope on the bottom, in the dark and permanently under water. And anything which lived on the bottom will be exposed to air, sunlight and heat. Since sand gathers inside boulder fields, abrasion increases, smothering some plants and grinding others.

Most plants found on rocky shores are seaweeds. They're algae, which means they can live on hard surfaces where plants with roots wouldn't be able to survive. Instead of roots, they have special suckers called 'holdfasts' which cling to rock, even in big waves. They don't have flowers, or normal stems or leaves. The bit that looks like a stem on some seaweeds is called a 'stipe'. This joins the holdfast to the 'frond', the leaf-like part. Seaweeds are mainly green, red or brown, depending on which wavelength of sunlight they're trying to trap. Not all seaweeds have long, floaty fronds. The fronds can be tiny, so the seaweed looks like velvet covering the rocks. Other may look like tiny cabbage leaves. The kinds of seaweeds that grow on high energy rocky shores of southern Queensland may differ from those of the low energy shores of bays and estuaries and further north within the Great Barrier Reef lagoon

Lichens are black, orange, yellow or grey plants that are actually made up of a fungus and a microscopic algae living together and sharing food and energy to grow. They live at the top of the shore where the tide doesn't rise and are the only plants on a rocky shore which are not algae.

Some rocks along the shore look bare. But that doesn't mean there are no plants living on them. If you look carefully at rocks in mid- to high tidal level, you'll notice they're often yellowish or pinkish. This is because they're covered with microscopic plants, many of which are diatoms, tiny, single-celled plants with hard silica shells. These plants are the main food for many grazing animals on rocky shores. Cyanobacteria, previously known as blue-green algae, can also grow, showing up as dark shadowy colours on the rocks.

Many species of these animals live on rocky shores. They eat microscopic plants, lichen or seaweed, depending on which part of the shore they inhabit. Limpets are snails which have a cup-shaped shell instead of a coiled one. They use a large, flat foot to tightly clamp the rock. Snails and limpets of high energy shores may differ from those of low energy shores where they do not need to hang on so tightly. On low energy shores, oysters or mussels can form large reefs of their own in the intertidal and subtidal areas, full of nooks and crannies for animals to live.

Barnacles attach themselves to one spot on the rocky shore and never move, not even to feed. Using specialised legs, they catch food as it floats by in the waves. Barnacles' shells are made of several plates. Their size, shape and position on the shore depends on whether they're exposed to big waves and whether they are splashed by spray from the waves. Barnacles can be present in large numbers, occupying distinct zones on high energy rocky shores.

Also known as cunjevoi, sea squirts are similar to barnacles in that they're both filter feeders which stay in one spot. Cunjevoi are usually found on high energy rocky shores. These animals pump large amounts of water through their bodies while under water, and then filter the food out. Since they store a lot of water during low tide, they squirt when you step on them.

Sea squirts are an important food source and habitat, so if you destroy cunjevoi to use them as bait for fishing, you're also wrecking the lives of many other creatures.

The scientific name for anemones and corals is Anthozoa - Greek for 'flower animals'. Although they are animals, anemones grow in forms which resemble plants. An anemone is a single animal with a sack-like body and tentacles around a single opening. Some are capable of sliding about very slowly. In rock pools and on reefs just off shore, there are many species of anemone.

Hard and soft corals can occur in rock pools or in the lowest tidal areas in the warmer waters of the Great Barrier Reef lagoon as well as on the sheltered lee side of exposed rocky shores and platforms. These may include subtropical species that cover parts of the rocks, taking the shape of the rock; or they may be mainly tropical corals that form significant limestone structures of their own. Some hard corals look obviously stony, yet others have soft polyps which come out in the day, hiding their stony skeleton. Soft corals also come in similar leathery or feathery forms which hide the basic polyp structure.

(Dept. Env. Qld. 2021)

INTERTIDAL HARVESTING

Problem:

- Removing and/or disturbing organisms
- Intertidal Areas at Low Tide
- Professional shell collectors
- Harvesting of snails

Solution:

- Prohibit Disturbance to Habitats
- Prohibit Removal of Anything

Disturbance to Intertidal Zone (Shellcade Video Extract (youtube.com)

MARINE TURTLES – HABITAT, NESTING AND CONSERVATION

Since marine turtles took their first evolutionary step into the oceans, sea turtles have been returning to the land to lay their eggs on beaches around the world (sunshinecoast.qld.gov.au). While this strategy has served them well for over 100 million years, today all sea turtle species are experiencing a range of human-induced impacts that are threatening their continued survival (awe.gov.au).

Loggerhead Turtle Coming Ashore to Lay Eggs (sunshinecoastnews.com.au)

The main threats are pollution and changes to important turtle habitats, especially coral reefs, seagrass beds, mangrove forests and nesting beaches. Other threats include accidental drowning in fishing gear, over-harvesting of turtles and eggs, and predation of eggs and hatchlings by foxes, feral pigs, dogs and goannas. Of the seven species of marine turtles in the world, six occur in Australian waters: In Australia, all six species of marine turtles that occur in our waters are protected under the Australian Government's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and various State and Northern Territory legislation. (MESA 2021)

Loggerhead sea turtles are classified as vulnerable by the International Union for Conservation of Nature (iucn.org) and are listed under Appendix I of the Convention on International Trade in Endangered Species (cites.org), making international trade illegal. In the United States, the Fish and Wildlife Service and National Marine Fisheries Service classify them as a threatened species under the Endangered Species Act. Loggerheads are listed as endangered under both Australia's Environment Protection and Biodiversity Conservation Act 1999 and Queensland's Nature Conservation Act 1992.

The Recovery Plan for Marine Turtles in Australia aims to aid in the recovery of six of the world's seven species of marine turtles. These species are the: loggerhead (Caretta caretta), olive ridley (Lepidochelys olivacea), leatherback (Dermochelys coriacea), green (Chelonia mydas), flatback (Natator depressus) and hawksbill (Eretmochelys imbricata) turtles. (awe.gov.au)

The plan sets out the research and management actions necessary to stop the decline, and support the recovery of marine turtles in Australia. The overarching objective of the plan is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the Environment Protection and Biodiversity Conservation Act 1999 threatened species list. (awe.gov.au)

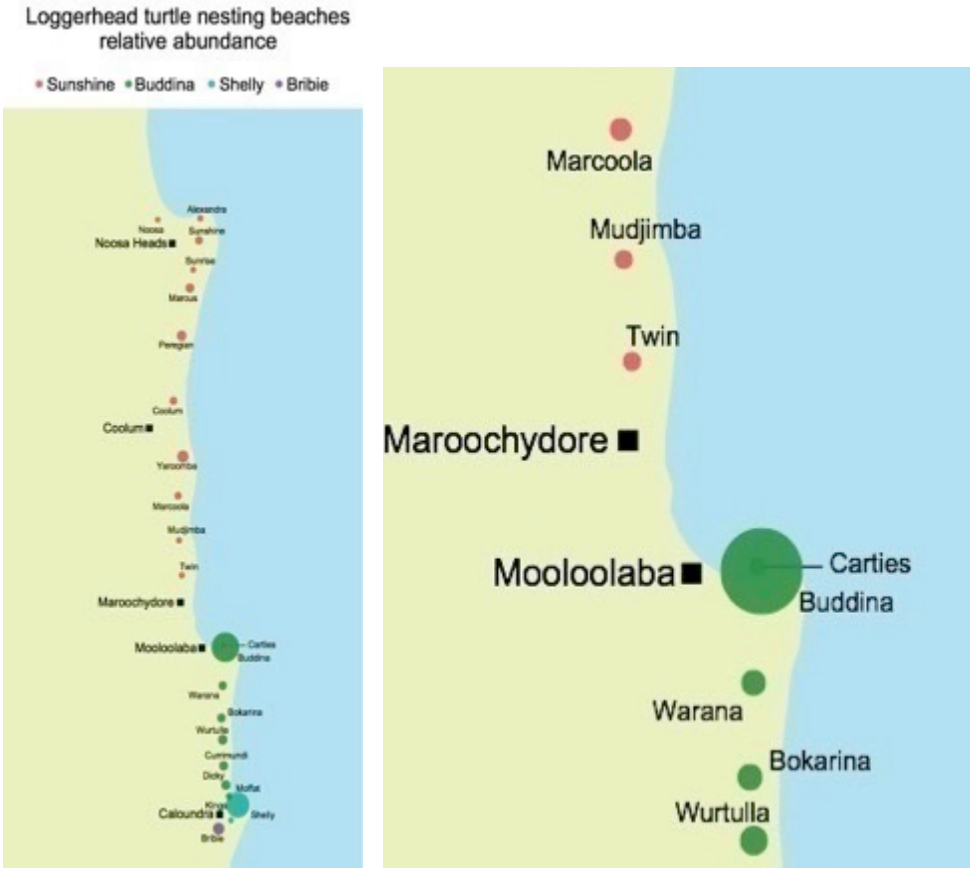
Mature Loggerhead Turtle (strobilomyces wiki commons)

TurtleCare Sunshine Coast is a voluntary organisation formed in 2005 in response to an identified need to protect the nests of marine turtles nesting on Sunshine Coast beaches (sunshinecoast.gov.au). TurtleCare volunteers are responsible for the implementation of an ongoing turtle monitoring program for nesting activity on beaches. Volunteers identify and record species, nesting locations and frequency, protect nests from fox predation and monitor the hatching and emergence success of nests. Due to the work of Turtlecare volunteers, key risks and stressors to turtle nesting and survival are under control. Removal of wild foxes and reductions in night lighting along with protective cages over nests are ensuring very high survival rates. (turtlecare.org.au)

Clutch of Newly Hatched Loggerhead Turtles, Buddina Beach (SC News)

Newly Hatched Loggerhead Turtle Makes a Dash for the Ocean at Point Cartwright Reserve. Photo: Q.Brown.

The beaches around Point Cartwright Reserve are important turtle nesting and hatching sites. The main species of turtle that nests on the beaches around the reserve is the Loggerhead turtle and, less frequently, the Green turtle. According to Council's records, a total of 1135 marine turtle nesting crawls were recorded over 12 years to 2016 on the Sunshine Coast, of which almost 25% of all nesting crawls occurred on beaches proximate to Point Cartwright in the suburb of Buddina. (Hofmeister et al. 2017) The area has the highest egg laying success rate for the region. Improved outcomes would be achievable under a "Dark Sky" policy for Point Cartwright Reserve.



Relative Abundance of Turtle Nesting on Beaches of the Sunshine Coast (Source: Sunshine Coast Council)
Map from Turtle report (relative abundance) from K. Hofmeister, H. Twaddle, J. O'Connor, C.J. Limpus, Bribie Island Turtle Trackers, TurtleCare Sunshine Coast Volunteers and Coolum and North Shore Coast Care Volunteers (2019).

RESIDENT AND MIGRATORY SHOREBIRDS

Australia is a signatory to several agreements concerning migratory species, including shorebirds (e.g. Bonn Convention, Ramsar Convention, JAMBA, CAMBA, ROKAMBA). As a signatory to these aforementioned agreements, Australia has an obligation to conserve migratory shorebirds and their habitats. The combination of these international and bilateral agreements provides for the protection and conservation of migratory birds and their important habitats given that their distribution is not confined to any single nation.

In Australia, migratory shorebirds are recognised as a matter of national environmental significance under the Environmental Protection and Biodiversity Conservation Act 1999. Consequently, for migratory species currently listed in the Wildlife Conservation Plan for Migratory Shorebirds, Australia has a strategy in place to protect, conserve and manage these species. A small number of species specifically listed as threatened do not fall under the Wildlife Conservation Plan but have their own provisions under the EPBC Act. Nationally, therefore, shorebirds require ongoing conservation and management, for example through habitat protection. Shorebirds may also act as indicators of ecosystem health and monitoring long-term population trends is important.

Migratory shorebirds are considered to be one of the most threatened groups of birds. Australia is geographically and ecologically an important location for migratory shorebirds within the East Asian–Australasian flyway (the flyway). Thirty-six of the 37 Australian migratory shorebird species breed in the northern hemisphere and migrate annually to southern nonbreeding areas including Australia. Double-banded plovers migrate between Australia and breeding grounds in New Zealand, rather than north-south through the flyway. The flyway stretches from Siberia and Alaska, southwards through east and south-east Asia, to Australia and New Zealand. (Dept. Env Cmlth 2015b)

Migratory shorebirds can travel 20,000 – 30,000 km each year to spend the summer on the Sunshine Coast. Here, they feed and rest before flying back to their breeding grounds in the northern hemisphere. The Sunshine Coast Council has recognised that shorebird resting and feeding areas often overlap with recreational use areas and that it is important to give them space and avoid disturbing them to ensure they have enough energy for their long journey back to the northern hemisphere. Any disturbance to the birds during this time limits their ability to gain essential weight and energy. Even short disturbances add up and impact on their return journey and breeding success. (sunshinecoast.qld.gov.au)

Migrating from North America for Summer, The Wandering Tattler Feeds at Low Tide on the Rocky Shores of Point Cartwright (Photo: Q.Brown)

Shorebirds utilise a variety of habitats that are typically associated with aquatic environments. Many resident and migratory shorebirds have specialised feeding techniques that enable them to feed on specific prey within particular foraging areas depending on the distribution of prey species, generally invertebrates, crustaceans and small fishes. As such, shorebirds will be found on rocky shores and in coastal areas with extensive intertidal sand and mudflats as well as mangroves as these areas can provide a diverse range of habitats used by shorebirds. These habitats are used at different times of the year (e.g. when birds are either arriving or departing on annual migrations) and for different purposes (e.g. foraging, roosting, nesting). Shorebird persistence is therefore reliant on the conservation and protection of a full range of habitats available to them. (Steven et al. 2017)

Wandering Tattlers (Tringa incana) has been a regular annual visitor to Point Cartwright with citizen sightings dating back to the 1970s. It is a medium-sized wading bird similar in appearance to the closely related Gray-tailed Tattler. The tattlers are unique among the species of Tringa for having unpatterned, greyish wings and backs, and a scaly breast pattern extending more or less onto the belly in breeding plumage, in which both also have a rather prominent supercilium (line above eye). They have short dark yellow legs and a dark grey bill. Adults in breeding plumage are heavily barred underneath. Locally the Tattler will show only non-breeding plumage as breeding occurs in Alaska. They feed on aquatic invertebrates such as crustaceans, barnacles and marine worms. During breeding season, they also eat insects. While wading, they forage actively, making jerky bobbing movements.

EPBC Act

The following passages are taken from EPBC Act Shorebird Guidelines (Dept. Env Cmlth 2015b).

The EPBC guidelines stipulate that loss of any important habitat is highly likely to result in a significant impact. Loss of areas that support large numbers of migratory shorebirds can cause disproportionate declines in shorebird populations, as displaced birds are unable to find suitable replacement habitat. Similarly, and importantly for sites like Point Cartwright, incremental loss of smaller areas affects the broader conservation of habitat availability. In Australia, loss of important habitat reduces availability of foraging and roosting areas, affecting the ability of birds to build up energy stores necessary for successful migration and breeding. Some areas are also important year-round for juvenile birds, with loss of these habitats affecting future breeding populations of these species.

Migratory shorebirds are also sensitive to changes to their habitat. In particular, many have specialised feeding techniques making them susceptible to slight changes in prey availability or to their foraging environments. Any activity that reduces the ability of shorebirds to use an area for roosting or foraging, or reduces the availability of food, degrades habitat and is highly likely to have a significant impact. Efforts should be made to avoid degradation of migratory shorebird habitat that may occur through the introduction of exotic species, changes to hydrology or water quality (including toxic inflows), fragmentation of habitat or exposure to litter, pollutants and acid sulphate soils. (Dept. Env Cmlth 2015b)

Measures to mitigate against the impacts of disturbance include (Dept. Env Cmlth 2015b):

- the use of buffer zones around important areas for migratory shorebirds. As a guide, studies have recommended buffer zones with widths ranging from 165 metres to 255 metres
- the construction of appropriate barriers, such as fences around important habitat to restrict access. Ideally, there should be no public access by humans and/or domestic animals to areas identified as important to migratory shorebirds. Where this is not feasible, particular recreational activities may need to be excluded or it may be necessary to limit the number of people using an area at one time and/or limit activities during the period between October and March when the majority of shorebirds will be present.
- landscape and urban design measures, including sympathetic lighting strategies, vegetation screening and sound attenuation
- increased community education through mechanisms such as interpretive signs at access points to shorebird habitats.

Anthropogenic Disturbances

The following passages are taken from Steven et al. (2017), Review of Shorebird Habitats prepared for the Gold Coast Waterways Authority.

Globally, while shorebirds are threatened by natural processes such as stochastic natural extreme events (e.g. cyclones) and those with a more gradual effect (e.g. climate change, changes in sedimentation rates [accretion/erosion]), there are extensive anthropogenic pressures throughout their range which include habitat modification, pollution, changes to predator-prey relationships, hunting, invasive species and physical disturbance. Recent evidence from Australia suggests that population trends are worse than global averages. For example, in eastern Australia between 1983 and 2006, migratory shorebird populations declined by 73%. (Steven et al. 2017)

Locally, threats to shorebirds and their habitats in Australia include reductions in roosting and foraging habitats, physical disturbance, declining water quality and coastal development. In Moreton Bay, key threats have been identified as habitat loss and degradation, anthropogenic disturbance and a lack of awareness surrounding shorebird conservation issues. There may also be future threats facing shorebirds that are currently poorly understood, such as the effects of microplastics (i.e. plastic particles under 5 mm in length), new forms of recreation (e.g. kite boarding), changes in primary productivity at key migratory staging areas and pharmaceutical contamination of waterways. (Steven et al. 2017)

Sooty Oystercatcher on Rock Shores at Point Cartwright (Photo: Q.Brown)

Impacts on shorebirds such as habitat loss and degradation are often through urbanisation. Other disturbances include human disturbance at foraging and roosting sites, pollution, eutrophication, invasive species, and changes in habitat quality. Given the rapid loss of habitat, the importance of adequate rest and recovery in their Australian habitats remains critical. Ultimately, if shorebirds are exposed to excessive disturbance, they will be forced to leave an area and this may place additional energetic costs associated with the dispersal on the birds, while alternative habitats might also not be readily available. (Steven 2017)

Shorebirds are a highly threatened species due to their key habitats being those favoured by people for recreation and due to the overlap in the timing of the breeding season (typically spring and summer months) with the peak summer coastal holiday season. For resident species, their vulnerability is intensified by their highly camouflaged eggs and chicks, and susceptibility to disturbance. Among other threats are those of habitat loss such as coastal development and sea level rise, crushing of the nests and chicks, predators and disturbance leading to lethal exposure of eggs or chicks, starvation of chicks, or undefended eggs or chicks being predated. (Maguire, G. 2018)

Birdlife Australia published a paper by Dr G Maguire in November 2018 outlining the key impacts from humans and dogs (Maguire, G. 2018). The following passages are largely taken from this paper.

Dogs have been identified as a major threat to shorebirds. Interruption to Foraging/ Feeding, Disturbance to Nesting, Egg Predation & Crushing, and Chick Predation were cited as primary concerns. Domestic dogs are known to chase adult beach-nesting birds which can lead to prolonged absences from the nest or brood. Chasing and the unpredictable movement, proximity and speed of unrestrained dogs are traits that do not promote 'habituation', the process of wildlife learning to reduce response intensities or frequencies with increasing exposure to the stimulus. Rather, these attributes promote 'sensitization', or enhanced response frequencies or intensities with increasing exposure to stimuli. (Maguire et al. 2018)

As the human population and their companion dogs increase in number, so does the demand for dog access to shared open spaces. Compliance with dog management regulations in sensitive areas is varied. When comparing sites under differing prevailing dog management, compliance with regulations was highest at 'no dog' sites with 82% compliance on average, and the lowest rates of compliance occurred at year-round on-leash areas with only 21% compliance on average. Regardless of dog management regulations, unleashed dogs were more common than leashed dogs on beaches (overall, 23.8% were leashed of 2,698 dogs observed during the study). Thus, leashing regulations in place to mitigate impacts on threatened beach-nesting birds don't appear to effectively minimize dog impacts. (Maguire et al. 2018)

Disturbance from recreational activities pose a significant threat to resident and migratory shorebirds. Substantial research examining the various recreational activities and subsequent responses by birds exists (see Burger 1998; Rodgers and Schwikert 2002; Milton et al. 2011; Weston et al. 2012a; Koch and Paton 2014). Disturbance created by people on foot and people with dogs (especially off leash) are a management concern for shorebirds, since these activities can result in birds vacating roosting, foraging and nesting sites (Blumstein et al. 2005; Banks and Bryant 2007; Williams et al. 2009; Kyne 2010; Glover et al. 2011). Recreational activities can impact shorebirds by reducing time spent foraging and roosting (all species) resulting in predation on eggs and chicks (resident species). For migratory shorebirds, human disturbance can also result in additional expenditure of the energy required for them to complete their northward migration. (Maguire et al. 2018)

Studies assessing the effects of disturbance on shorebirds typically use the flight initiation distance (Steven et al 2017). Flight initiation distances may vary according to the disturbance or activity the bird is exposed to and the species being disturbed. Generally, there is a positive relationship between bird body size and the distance at which flight initiation occurs (i.e. bigger birds flush at greater distances). For migratory as well as resident species listed as threatened in the EPBC Act such disturbance could compromise the survival of these birds. Beach Stone-curlews are especially vulnerable during the breeding season of September to February.

Measures for managing dogs have varying outcomes. Policy change to exclude dogs from sensitive areas or control dog behaviour leads to improved outcomes. However, where domestic dogs are a part of human recreation activities, the threat perception among the birds is higher still (Banks and Bryant 2007; Glover et al. 2011) (Steven et al 2017). Despite claims by some owners that their dogs are harmless, in reality their mere presence can substantially increase the probability of shorebirds not occupying habitats (Stigner et al. 2016). In fact, birds have been found to avoid areas that are frequented by dogs, leading to localised population declines. Importantly, research has found shorebirds express greater responses to walkers with leashed dogs, compared to walkers alone. Unrestrained dogs pose an even greater source of disturbance to shorebirds than leashed dogs. Taylor et al. (2005) suggest that it is likely that dogs are seen by ground-dwelling birds as much more of a threat than people.

Under Part 9 of the Environment Protection and Biodiversity Conservation Act, where there is action that may result in impacts to shorebird activity resulting in modification, destruction, removal or decrease in the availability or quality of habitat for listed species of shorebirds and migratory shorebirds, it may trigger a referral of the action. The designation of a 24hour a day dog off leash area on the eastern rocky shores may pose a breach of the intent and provisions of the EPBC Act. It is essential that foreshore feeding areas be protected to provide a safe refuge with long term conservation benefits, not just for shorebirds, but also osprey, terns and seabirds that rely on the rocky shores for feeding.

Council's Shorebird Program

The Sunshine Coast Council recognises that the coastline of the Sunshine Coast provides some important habitat for migratory and resident shorebirds. Council has established a Shore Bird Protection Program. Council's websites and promotional material recognise that about two-thirds of the local shorebirds are migratory species. An estimated two million shorebirds migrate annually to Australia from their arctic breeding grounds in Asia and Alaska. More than half of the migratory shorebird species that visit Australia are experiencing a drop in population numbers. Some species fly for days without rest or food and travel tens of thousands of kilometres to reach Australia. (sunshinecoast.qld.gov.au) Migrating wader birds are dependent on the food supply in rocky shores, mud flats and sand banks in the intertidal zones. Beachcombing at low tide must be stopped.

Currently, Council's shorebird program does not include notable rocky shores such as Point Cartwright known to be used by numerous scheduled migratory bird species. Shorebirds select resting areas that are conveniently close to their feeding sites, generally at or above the high tide mark. The intertidal environs and rocky habitats of Point Cartwright Reserve are feeding ground at low tide. The rocky cliffs would attract many more migratory and local shore birds if the state of the environs were to be improved. Point Cartwright is great opportunity for Council to host research programs with university sector to compare before and after the prohibition of dogs.

Stressors & Impacts at Point Cartwright

Shorebirds such as the Sooty Oystercatcher struggle to forage at low tide at Point Cartwright due to the extraordinary number of people and their dogs roaming freely across the rocks chasing these birds from their feeding activities (which can only occur across the low tide period), while people fill their bags with the shells from their own foraging (live and dead shells presumably for collections, fish tanks and bait). This goes on every day in the very areas that these birds rely on to survive. Simple measures such as a regulatory policy adopted by Council that prohibits the removal of anything from these feeding zones and prohibits dogs would go a long way to preserving and promoting populations of these birds. The breeding cycles of some of the resident species are also limited as a result of free roaming dogs around the cliffs, as their eggs are laid in open crevices of cliff areas. The immediate provision of clear signage would also go some way to constraining the roaming of humans. Based on the research into disturbance on shore birds, it would be preferable to prohibit dogs on rocky shores at all.

Pied Oystercatcher on Rocky Shores at Point Cartwright (Photo: C.Murray)

Council has officially recognised stressors for shorebirds. The website are easily disturbed by people, dogs, vehicles and watercrafts. Getting too close to the birds and causing them to fly away and disturb their feeding. The following impact mitigation measures are recommended (sunshinecoast.qld.gov.au):

- Observing from a distance using binoculars
- Not running at flocks of shorebirds
- Choosing a location away from the birds for your activities
- Keeping your dogs under control
- Taking your rubbish home

Sooty Oystercatcher Eggs are Laid in Rock Crevices (Photo: T.Hudson)

Of concern at Point Cartwright Reserve:

- Lays eggs in rocky cliffs where dogs and people roam, particularly accessible east facing cliffs.
- Foraging in rock pools interrupted by dogs chasing the birds on the rocks, people are beach-combing everyday (collecting bags of molluscs and other potential food sources) to take home.

Given the prevalence of significant bird species at Point Cartwright, and the very high incidence of disturbance witnessed on a daily basis from dogs off-leash and beach combing activities, it is essential that the approach by Council be immediately reversed with the establishment of a local law limiting access to rocky shores to people only and prohibiting the disturbance or removal of anything from the site (rocks, shells or organisms). Signage should be placed at entry points. A conservation status for the reserve would automatically provide these restrictions.

APPENDIX 2

POINT CARTWRIGHT RESERVE

LOCATIONS OF INTEREST

APPENDIX 2 - LOCATIONS OF INTEREST

Location 1 – Beach at Half Moon Bay.

- Half Moon Bay – Dog off leash high trafficked area
- Artificial Beach – Not the natural form (refer 1920 picture). Beach created from dumping of dredge spoil which contains acid sulphate soil and other contaminated substrate and waste materials from under moored boats in the river. May also contain accumulated petrochemical materials and other pollutants.
- Dumping Permit - Maritime Safety Queensland has a standing dumping permit for the area. Alternative dump sites must be found.
- Riverine and Benthic ecology – Substantial change in the riverine habitats from dredging and spoil dumping.
- Location of globally recognised populations and diversity of nudibranchs

Location 2 - Pathway.

- Middens - Middens lined the Mooloolah River for thousands of years
- Roadway – Path was formerly a roadway constructed to allow for dump trucks and the construction of rock revetment wall along river bank. Road destroyed middens and oyster beds.
- Mining site. Access point to sand mining quarry – mining cleared forests and fragmented hill stands from lower reaches. Substantially altered topography and removed natural fresh water lagoon. (More info at Location 7)

Location 3 – Extent of Remnant Forest and Former Dune.

- Reclamation of Rocky Shores (refer pictures) - Start of reclaimed rocky shores with vast areas of oysters, shellfish and fish trap.
- Littoral Forest - Location of remnant littoral forest on lower reaches (not destroyed by mining)
- Indigenous heritage – stories of vast number of fish that would turn the water black around the headland and up the river
- Indigenous heritage – Murrula people's totem animal the river dolphin – Kabi Kabi stories of interactions between people and dolphins to round up fish in large numbers (observed by European published accounts as well)

Location 4A – Rock Wall.

- Rock Wall - Original Rock Wall construction in 1960s - Loss of Indigenous Heritage – Rock wall on top of Fish Trap and Oyster Beds
- Reclamation Works – Vast amounts of sand dumped to reshape and extend the footprint of the land mass. Smothering of vast areas of oyster beds and a fish trap.
- Turtle Laying Beach – Green turtles and Loggerhead Turtles
- Important Surfing Break – one of only a few headlands with protection from southerly winds

Location 4B – Rock Wall - Proposed 60m Extension.

- Proposed New Extension of Rock Wall – Proposed 60m extension of rock wall may comprise concrete composite materials in order that it is capable of withstanding large storm events and currents.
- Impacts – Sand build-up proposed will smother rock shores and habitats, concrete rock wall will drastically alter currents and backwash from composite wall may cause substantial backwash & ruin surfing heritage of the area.
- View to Headland Cliffs – Headland cliffs reveal Jurassic period fossilised landscapes. (Refer attached pictures)

Location 5A – North-western Forest - Regenerated.

- Reclamation in 1960s - dumping of vast amounts of sand smothered rocky foreshores & extended the land mass
- Forest naturally generated across the sand fill
- Line of Original Beach and Dunes can still be seen and runs along edge of remnant forest stands

Location 5B – North-western Forest - Remnant

- Remnant forest - East of former dune line there is area of remnant littoral forest not affected by the mining or reclamation works
- Remnant Forest - This stand should be viewed as fragmented piece of the EPBC stand on the hilled areas. Active programs to rehabilitate and reconnect these stands need to be investigated with a view to creating one contiguous littoral rainforest stand.

Location 6 – Site Centre.

- Former Fresh Water Lagoon (pre-1960) - Location of former fresh water lagoon – Primary water source for Kabi Kabi village. Noted as an excellent fresh water source Barnes's Moreton Bay Map 1845 and Lt Heath of Royal Navy survey map in 1861.
- Potential Reinstatement of Lagoon – The feasibility of reinstating a fresh water lagoon on the site should be investigated. A fresh water lagoon would contribute to overall health of littoral forest system and promote birdlife on the site.
- Sand Mine - Area mined in 1960s – Significantly altered topography and destroyed fresh water lagoon. Unrestored / un-rehabilitated area.
- Supressed Natural Regeneration - With the exception of the 1980s when the area started to regenerate without intervention, the area has been intentionally maintained as grassed.
- Rehabilitation/ Restoration - Wonderful opportunity to return this area to forest and connect the hilled forest with the lower reaches.

Location 7 – Fossilised Landscapes and Indigenous Rock Art.

- Cliffs of the headland reveal 200 million year old sedimentary layers from the Jurassic Period.
- Fossilised landscapes are visible in the cliff layers.
- Quite unique on the east coast of Australia.
- Location of former Indigenous Rock Art

Location 8 – Grassed Hill & Northern Vista.

- Primary northern vantage point. Limited to northerly vista for whale watching as easterly vistas to whales travelling past headland blocked by vegetation. Lower terrace access dangerous.
- Excellent westerly vista for sunsets.
- Family of Ospreys hunt by soaring above this vantage. Ospreys eat their catches and rest on the lighthouse and water tower infrastructure.
- People and dogs traverse beyond fenced barrier across cliffs. Have been numerous deaths.
- Grassed hill makes lovely picnic area.
- 24 hour dog off-leash area.
- Grassed hill gets used for a number of incompatible uses eg. bootcamps, A-Grade footy teams, School athletics, etc which degrade grass and compact soils.
- Periodic slip and slide parties, some with alcohol held on weekends usually (wet or dry conditions). Mud slides occur in wet conditions.

Location 9 – South Facing Vantage Point.

- Highly eroded area, compacted soils. Location Council issues permits for a range of incompatible uses such as hang gliding, weddings, paragliding, remote controlled aeroplanes.
- Most Popular Vantage Point – many tourists use this location - it is the most popular vantage point for tourists to take photos.
- Great easterly vista for watching whales travel past headland.
- Location not maximised as a tourist destination and vantage point. Could be great location for interpretative structures and seating.
- Previously had four chairs removed after vandalism and never replaced. These were the only shaded seats.
- Primary surveillance location for hovering Osprey when hunting for fish. Osprey feed three times a day, fishing in waters around the headland.
- Same location is shared by remote control airplane enthusiasts. Remote control aeroplanes interfere with Osprey hunting.
- Same location is shared by para-gliders, and hang-gliders as a take-off and landing site. Gliders interfere with Osprey hunting.
- Existing permits are not sustainable ,nor compatible with tourism uses.

Location 10 – EPBC Littoral Rainforest Stand.

- EPBC Littoral rainforest Stand – the forest stand that traverses across the headland from the beach and rocky shores on the eastern side to the river on the western side of regarded as a nationally significant critically endangered ecological community requiring protection and restoration measures to be implemented and stressors removed.
- Ground dwelling Bird Nesting - Brush turkeys and Pheasant Coucals use these forested areas for nesting.
- Dog Off Leash Designated Area - A 24hr a day dog off leash area is designated across this sensitive forest stand.
- Degradation by People and Dogs - People and dogs traverse across these forested areas all the time leading to damage to lower stands & ground covers & compaction of soils –leading to nutrient & erosion problems.
- Barriers to entry do not exist
- Edge treatments and buffer distances do not exist.

Location 11.

- Eastern Rocky Shores – locations favoured by foraging shorebirds - the resident Sooty Oystercatcher and the migratory Wandering Tattler
- Low Tide Feeding – Low tide the favoured time for shorebirds to forage for food.
- 24hr Dog Off-Leash Area – Eastern rocky shores favoured by shorebirds is designated as 24hr a day Dog Off-Leash Area
- Intertidal Harvesting – The eastern rocky shores are favoured by commercial shell dealers and bait collectors. Harvesting occurs at low tide in wet intertidal areas across the feeding period for shorebirds.
- Escarpment ‘Goat Tracks’ - Looking back westward at the escarpment you can see numerous ‘goat tracks’ to the top of the headland. These are used by many people to traverse from the top to the rocks and vice-versa. Formalised stairs could be installed to remove the erosion and degradation to these escarpments and provide safe passage to rocks. Several options exist, including a lower whale viewing terrace.
- Measures need to be taken to discourage general access across rocky escarpment. These areas are used by ground dwelling birds as habitat and nesting, and suitable landscape for laying of eggs by oystercatchers – very vulnerable.
- Signage – Advisory and interpretative signage is needed to discourage people from intertidal harvesting and disturbance to shorebirds

Location 12.

- Primary Loggerhead Turtle Nursery – Largest turtle hatching site on the Sunshine Coast
- 24 Hour Dog Off-Leash Area
- Turtlecare management program ensures risks are managed.

APPENDIX 3

POINT CARTWRIGHT RESERVE

BIRD POPULATIONS

APPENDIX 3 - POINT CARTWRIGHT BIRD LIST

Migratory Shorebirds

1. Wandering Tattler (Sightings 1970s - 2022)
2. Grey-Tailed Tattler (Sightings 2005 - 2014)
3. Greater Sand-Plover (Sightings in the 1980s and 2014)
4. Lesser Sand-Plover (Sightings in 1980s)
5. Pacific Golden Plover (Sightings in 1980s)
6. Eastern Curlew (Sighting 2015)

Resident Shorebirds

1. Sooty Oystercatcher
2. Pied Oystercatcher

Other Birds Frequenting Rocky Shores

1. Intermediate Egret
2. Reef Egret
3. White faced heron

List Of EPBC Listed Birds

(Conventions: EAAF, BONN JAMBA CAMBA ROKAMBA)

1. Eastern Osprey
2. Lesser Frigatebird
3. Greater Frigatebird
4. Brown Booby
5. Arctic Jaeger
6. Fork-tailed Swift
7. Flesh-Footed Shearwater
8. White throated Needletail
9. Wandering Tattler
10. Grey-Tailed Tattler
11. Greater Sand Plover
12. Lesser Sand Plover
13. Pacific Golden Plover
14. Eastern Curlew
15. Crested Terns
16. Common Terns
17. Caspian Tern
18. White Winged Black Tern
19. Little Tern
20. Australian Gull Billed Tern
21. Wedge Tailed Shearwater
22. Rufus Fantail
23. Short Tailed Shearwater
24. Common Noddy
25. Northern Giant Petrel
26. Black Faced Monarch

Whole Of Site Compiled Bird List (DRAFT)

Arctic Jaeger
Australasian Figbird
Australasian Gannet
Australian Brushturkey
Australian Hobby
Australian Magpie
Australian Pelican
Australian White Ibis
Bar-shouldered Dove
Black-faced Cuckooshrike
Black-faced Monarch
Blue-faced Honeyeater
Boobook Owl
Brahminy Kite
Brown Booby
Brown Honeyeater
Caspian Tern
Collared Sparrowhawk
Common Myna
Common Noddy
Common Tern
Crested Pigeon
Crested Tern
Dollarbird
Double-barred Finch
Eastern Curlew
Eastern Osprey
Eastern Reef Egret
Eastern Whipbird
Eastern Yellow Robin
Fairy Gerygone
Fairy Martin
Flesh-footed Shearwater
Fluttering Shearwater
Forest Kingfisher
Fork Tailed Swift
Galah
Glossy Black-Cockatoo
Great Cormorant
Great Frigatebird
Greater Sand-Plover
Grey Butcherbird
Grey Fantail
Grey Shrikethrush
Grey-tailed Tattler
Gull-billed Tern
House Sparrow
Hutton's Shearwater
Intermediate Egret
Laughing Kookaburra
Lesser Frigatebird
Lesser Sand-Plover
Lewin's Honeyeater
Little Black Cormorant
Little Friarbird
Little Pied Cormorant
Little Tern
Little Wattlebird
Magpie-lark
Mangrove Gerygone
Mistletoebird
Noisy Friarbird
Noisy Miner
Noisy Pitta
Northern Giant-Petrel
Olive-backed Oriole
Pacific Golden-Plover
Pacific Koel
Pale-headed Rosella
Peregrine Falcon
Pheasant Coucal
Pied Butcherbird
Pied Cormorant
Pied Currawong
Pied Oystercatcher
Rainbow Bee-eater
Rainbow Lorikeet
Red-backed Fairywren
Rock Pigeon
Rufous Fantail
Rufous Shrikethrush
Sacred Kingfisher
Scaly-breasted Lorikeet
Short-tailed Shearwater
Silver Gull
Silvereye
Sooty Oystercatcher
Sooty Tern
Spangled Drongo
Spotted Dove
Square-tailed Kite
Striated Heron
Striated Pardalote
Striated Thornbill
Sulphur-crested Cockatoo
Tawny Frogmouth
Torresian Crow
Torresian Kingfisher
Tree Martin
Varied Triller
Variegated Fairywren
Wandering Tattler
Wedge-tailed Shearwater
Welcome Swallow
Whistling Kite
White-bellied Sea-Eagle
White-breasted Woodswallow
White-browed Scrubwren
White-cheeked Honeyeater
White-faced Heron
White-fronted Tern
White-throated Gerygone
White-throated Needletail
White-winged Black Tern
Willie Wagtail
Yellow-tailed Black-Cockatoo

Sources: eBird.com, Birdata.birdlife.or.au, 2002 Anembo Report