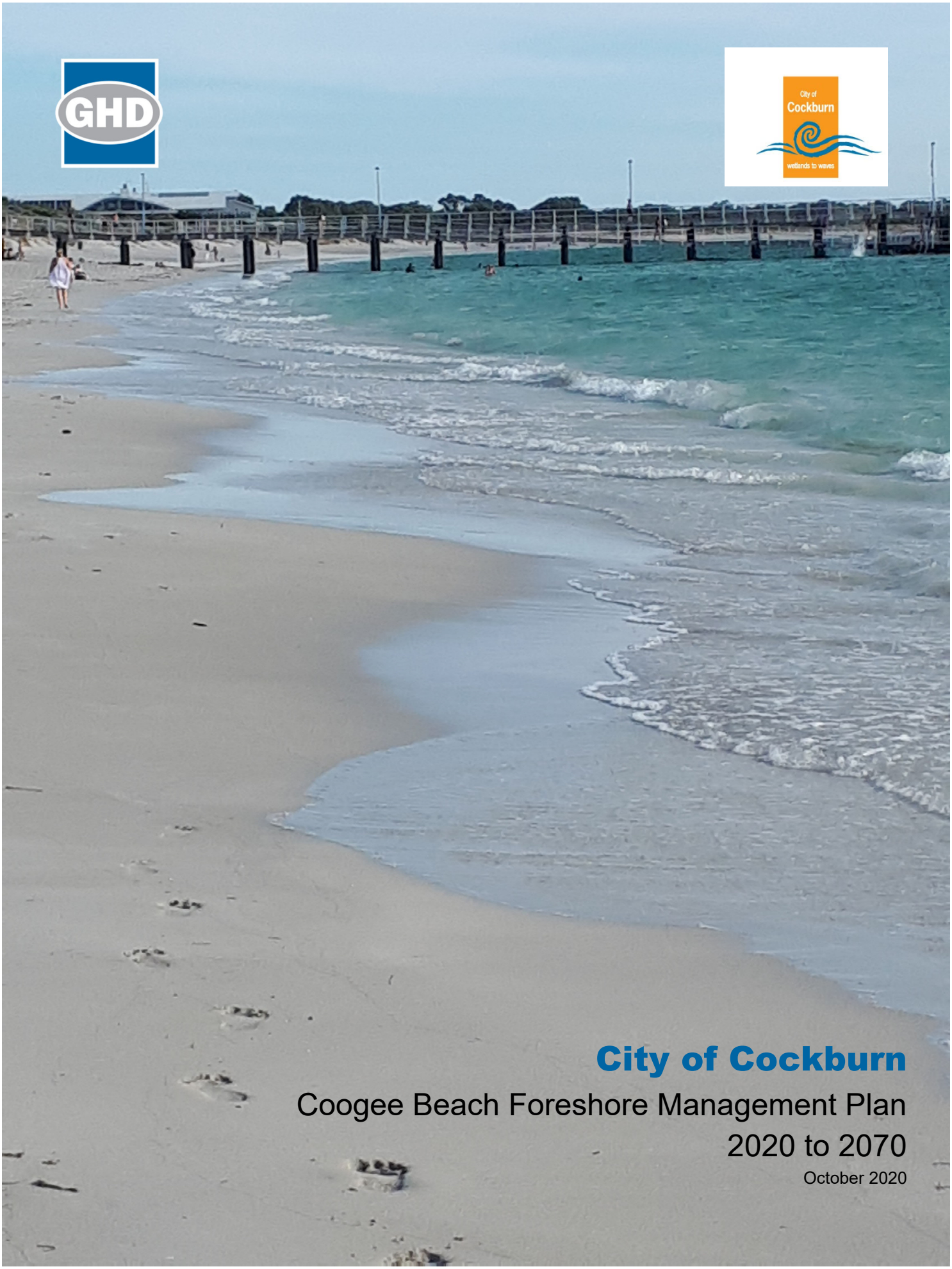

City of Cockburn

Coogee Beach Foreshore Management Plan 2020 to 2070

October 2020

Executive Summary

The Coogee Beach Foreshore area (the Foreshore) is an area of high community use that has significant and sometimes competing social, environmental and economic values. The Foreshore is predicted to experience coastal inundation and erosion in the longer term, based on current projected sea level rise estimates, placing further pressures on some assets and the natural environment

This Foreshore Management Plan has been developed consistent with State Planning Policy 2.6 to manage the continued recreational, tourism and commercial use of the Foreshore.

The Foreshore Management Plan aims to guide management of the coastal reserve over the coming 50 years to 2070, in a manner that ensures the preservation of ecological, cultural and social values of the area, whilst enabling use of the Foreshore in a sustainable manner in the short to medium term.

This Foreshore Management Plan is not a master planning document. Planning for capital works and redevelopment of the Foreshore should be undertaken separately, but should be consistent with and guided by the recommended actions and controls specified within this report.

An overview of the features and extent of the Foreshore covered by this Foreshore Management Plan is shown in Figure 1 below. The study area is bound by Perlinte View and Cockburn Road to the east and the ocean to the west. The southern extent is just south of Poore Grove and the southern carparks associated with the Coogee Surf Life Saving Club and the northern boundary is the return of the of the Coogee seawall and Socrates Parade.

Several existing management plans cover aspects the Foreshore, which this Foreshore Management Plan aims to be consistent with and build upon. Specifically, these key plans are:

- Woodman Point Regional Park Management Plan (2010 – DBCA)
- Coogee Beach (Environmental) Management Plan (2009 – City of Cockburn)
- Coastal Adaptation Plan (2016 – City of Cockburn)

Some key recommendations of the existing Coastal Adaptation Plan relevant to the Coogee Beach Foreshore include:

- A strategy of managed retreat of assets is employed in response to expected shoreline recession due to erosion, likely to become critical mid or later this century.
- Interim measures should be considered to support continued use of existing assets until they are no longer viable, and
- The preparation of a Foreshore Management Plan to provide an implementation framework for adaptation and long term retreat, and include immediate-term adaptation measures (this Foreshore Management Plan)

The recreational values of the Coogee Beach area are of key importance for the residents, locals and tourists. The major activities that are undertaken at the site are water activities, sports and social activities ranging from family picnics through to major community events. Other important features of the area include the Holiday Park, Coogee Beach Integrated Community Facility and associated businesses and the Coogee Beach Café.

Environmental values of the area include several flora communities as well as numerous fauna varieties that are unique or of significance.

Stakeholder engagement was undertaken from the 9th February to the 4th March 2020 to better understand the values associated with the Coogee Beach area. The engagement campaign involved publicly advertised general community consultation as well as direct liaison with key organisational stakeholders such as relevant community organisations, state agencies and major lessees within the Foreshore. In total 222 responses were received.

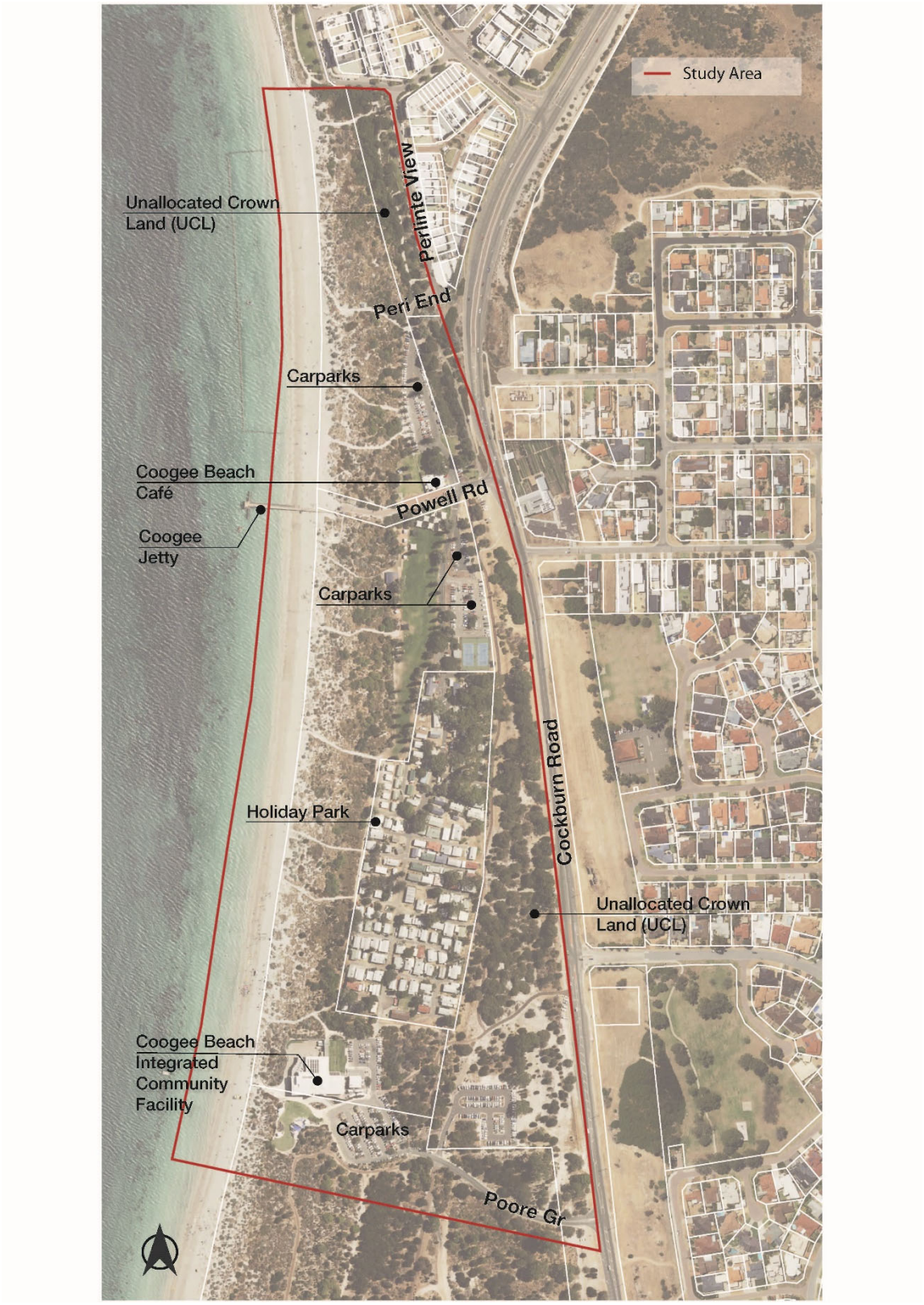

Figure 1 Foreshore Area Site Plan

Key themes identified from community engagement included a desire to maintain a sandy, amenable beach and the retention of both natural (dune vegetation and bush) and built environment (paths, carparks, playgrounds, toilets and supporting infrastructure). There was general support from stakeholders for the managed retreat of assets where required in the longer term in response to coastal hazards, so as to maintain beach and coastline similar in nature to that of the current day.

In review of existing management plans, existing studies and reports relating to the Foreshore, site visits and community consultation a number of key risks and management issues have been identified:

- Poor connectivity along Foreshore for coastal path users and management within the reserve.
- Dune access tracks requiring excessive maintenance and their potential to limit dune rehabilitation.
- Need for maintaining healthy dune habitat to assist in mitigating impacts of erosion and ensure ecosystem and environmental values are maintained.
- Potential for loss of amenity and social values associated with infrastructure (Surf Life Saving Club, toilet and shower facilities, playgrounds etc.) as a result of erosion risks.
- Potential loss of the sandy beach impacting recreation, environmental, socio-cultural and associated economic values.
- Erosion hazard impacts to existing Port Coogee development south of the existing seawall (Perlinte View residences, road and landscaping opposite residences).
- Pressures on the foreshore reserve to be able to provide both environmental and built services despite forecast loss of reserve areas from coastal erosion.
- Managing existing lease agreements within the Foreshore in the context of coastal erosion risks.
- Planning for new developments without increasing management risks and costs.
- Continuing existing monitoring and management measures.
- Addressing peak period parking pressures, particularly in the northern areas of the Foreshore.

The management strategies have been addressed using indicative long and short term timeframes as well as trigger points. The trigger points are part of providing a flexible adaptation pathway to allow for changing risk over time at a different rate than expected in the original coastal adaptation plan. Many longer term actions should be viewed as high level guidance only, and it is expected that future final decisions on these issues may vary taking in to account changes in conditions, constraints and community values that can occur with time.

The proposed strategic action plan is provided below.

It should be noted that, while management strategies aim to preserve and enhance the natural character and level of amenity presently provided by the Foreshore for as long as possible, the character and carrying capacity of the Foreshore may diminish in the longer term as the severity and impacts of coastal hazards occur. A trigger point framework for responding to coastal risk has been developed in response to the uncertainty of sea level rise and when erosion and inundation hazards will be realised GHD (2016). The trigger levels and local government level options are summarised:

- Trigger 1 – Risks are tolerable – Continue to monitor

- Trigger 2 - Increasing likelihood of intolerable risk. Accommodate + begin planning
- Trigger 3 - Intolerable. Interim protection may be viable. Protect + accommodate or retreat
- Trigger 3A - Intolerable. End of design life of interim protection. Further interim protection may be feasible. Protect + accommodate or retreat
- Trigger 4 - Intolerable. Protection is not viable. Retreat.

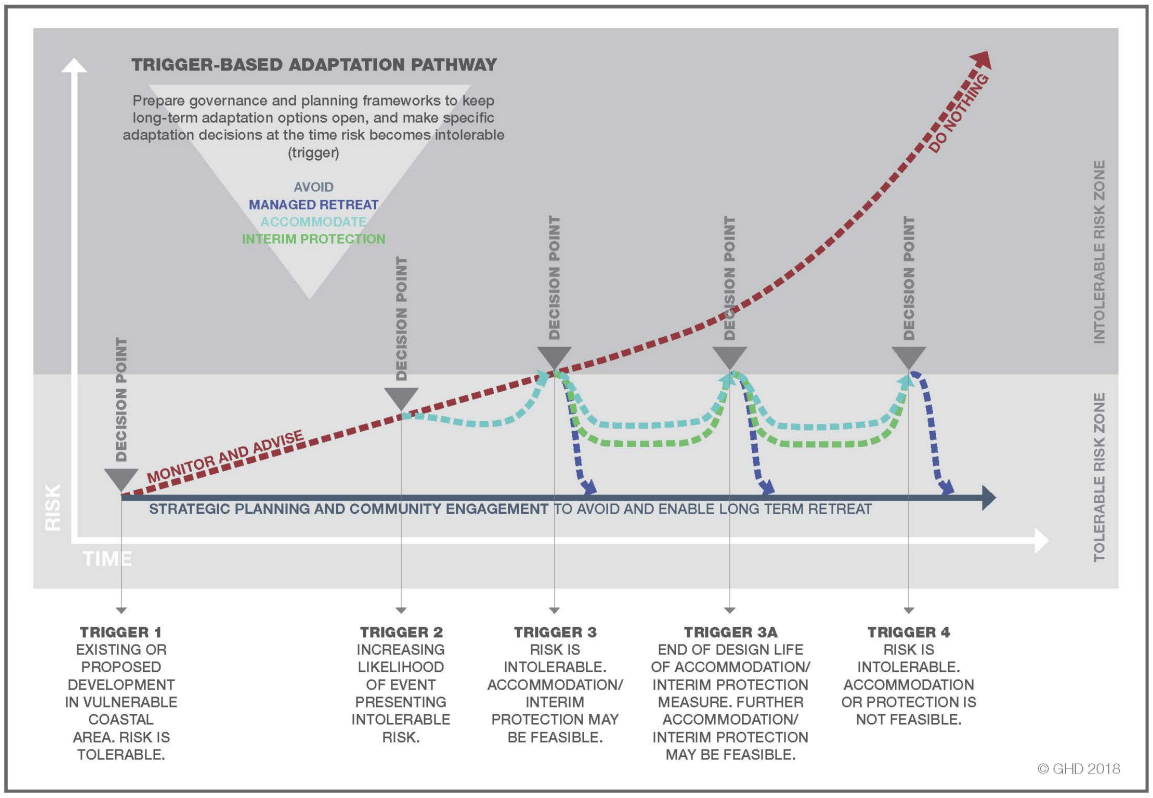

Figure 2 Trigger Based Adaption Pathway (Grace and Thompson, 2020)

As well as identifying ongoing strategic planning, there are several general management principles In order to maintain the Coogee Beach Foreshore in its current state:

- Retain the natural character of the Foreshore area going forward, including preserving a sandy beach and healthy vegetated foredune buffer to the extent possible.
- Maintain and adapt the level of public amenity provided by infrastructure within the Foreshore area, with a view to achieving this more efficiently and on a smaller footprint moving forward.
- Uphold the present balance of natural and developed areas, and strategically rebalance to maintain similar proportions (and not just accept loss of the natural foredune areas which are impacted first) if and when Foreshore land is lost in the future due to shoreline movements.

Actions are separated in to two broad time categories, as summaries below.

Immediate term: The current planning period out to approximately 2030. Immediate term actions identified in the management plan that require implementation now or over the next 10 years before the next scheduled review of this Plan.

Longer term: The 50 year planning period, being actions or events expected between 2030 and 2070 (at the time of writing). Long term actions were identified in the management plan in

response to predicted coastal hazards identified from the +0.5 m SLR erosion line anticipated to occur by 2070.

A summary of the proposed implementation plan is provided below. Further resourcing and planning requirements and cost details are listed in section 7. Refer to Appendix D for graphical representations of the major action plan measures. This report is subject to, and must be read in conjunction with, the limitations set out in section 1.4 and the assumptions and qualifications contained throughout the Report.

Summary Sheet

Coogee Beach Foreshore Management Plan

Parts of the Coogee Beach foreshore are identified as increasingly vulnerable to coastal hazards. As a result, the foreshore's assets and natural environment may come under pressure in the future. The draft Foreshore Management Plan is a 50 year guide on how we will adapt to coastal challenges to maintain the environmental, recreational, social and commercial values of the foreshore.

The Foreshore Management Plan covers the area between Poore Grove (to the south), Cockburn Road (to the east) and Perlinte View (to the north). Actions recommended within the immediate term (10 year period) are more detailed and have greater certainty, whilst a flexible approach is taken to longer term actions so decisions can be made at the appropriate time in the future.

Aims:

Retain the natural character of the Foreshore area including a sandy beach and healthy vegetated foredune buffer to the extent possible.

Maintain and adapt public amenity provided by foreshore infrastructure, with a view to achieving this more efficiently to support coastal retreat.

Uphold the present balance of natural and built environments. Strategically rebalance to maintain similar natural and built proportions if and when foreshore land is lost in the future due to shoreline movements.

Short Term Actions < 10 years

Longer Term Actions > 10 years

Actions:

Consolidate Access Tracks

- Continue monitoring condition and health of dunes.
- Maintain and install fencing to protect dunes.
- Construct timber stairs/boardwalks to access track 3 and 4.
- If degradation is observed beyond 2025, consider consolidation of dune tracks.
- Construct link path to western boundary of Holiday Park to improve access and connect to existing paved path.
- Upgrade paths to equal access paths.

Flora / Weed Management

- Continue implementation of Weed Management Plan.
- Continue implementation of Vegetation Rehabilitation Plan.
- Maintain a sufficient dune vegetation zone width and monitor the health of dunes and the stability of the back boundary of the dune area. Consider reclaiming landscaped areas to move the dune extents eastward as necessary in future if windblown sand becomes problematic due to diminishing dune width.

Fauna Management

- Continue fauna management in accordance with Environmental Management Plan.

Managing Social Behaviour

- Continue Beach Bin Trial initiative on permanent basis to reduce littering and adapt locations and collection schedules as required to respond to erosion and seasonal usage.
- Increase passive surveillance and swimmer safety by facilitating a movable observation tower in coordination with Coogee Beach Surf Life Saving Club. Adjust location as required.
- Maintain and expand CCTV network at Coogee Beach in accordance with Community Safety & CCTV Strategy.

Infrastructure Management - Coogee Beach Jetty

- Monitor stability of Coogee Jetty abutment via coastal monitoring program.
- Design and implement an access ramp towards the shore from the exiting jetty to improve accessibility and enable closure of unviable existing wheelchair ramp.
- Plan any upgrades or major works to the jetty with consideration to increasing future coastal risks and the remaining useful life of the structure.
- Maintain and adapt the location and height of the jetty as may be required to match the receding shoreline and increasing water levels, via either modification of the existing jetty and abutment, or rebuilding the structure higher and further eastward at the end of its useful life.

Infrastructure Management - Coogee Beach Integrated Community Facility

- Monitor the width of the dune buffer in front of the building and replenish the beach as required to prevent erosion of more than 5m from 2012 survey.
- Complete a cost-benefit analysis of interim protection vs early retreat and if determined the preferred pathway, complete detailed design of the recommended interim protection measure.
- Install hard protection or retreat (relocate the facility further landward) at such time that erosion risks to the facility can no longer be viably managed by sand replenishment.

Infrastructure Management - Holiday Park Infrastructure

- Progressive redevelopment of Holiday Park with permanent development (ablutions, offices, major services, etc.) behind the Holiday Park Buffer Line as assets reach the end of useful life.
- Only transportable accommodation, removable infrastructure and minor services to be established on the ocean side of the Holiday Park Buffer Line.
- Ensure leasing arrangement reflects risks and hazards present for the property and controls in place.
- Monitor shoreline movements and the width of the vegetated foreshore reserve in front of the Holiday Park as part of the City's annual coastal monitoring program.
- Implement managed retreat of Holiday Park infrastructure eastward to maintain a 40m public foreshore reserve width and rehabilitate dunes as necessary to respond to future erosion and shoreline recession.

Infrastructure management - Perlinte View

- Continue monitoring the beach and dune width as part of the broader coastal monitoring program. A dune width of 60m or less from Perlinte View represents a higher risk and should trigger planning for further actions.
- Investigate and assess funding mechanisms, sources and contribution models for erosion adaptation measures (e.g. a seawall) for Perlinte View, and consider establishing a reserve fund for this purpose.
- Planning and feasibility studies: Conduct a detailed assessment of costs and benefits to confirm if the construction of protection structures is still the preferred strategy to manage Perlinte View erosion risks. Following this it is recommended that the refinement of protection option and identification of the preferred alignment is determined from comprehensive community engagement, coastal engineering and environmental assessments.
- Conduct a detailed assessment of costs and benefits to confirm if the construction of protection structures is still the preferred strategy to manage Perlinte View erosion risks.

Short Term Actions < 10 years **Longer Term Actions > 10 years**

- Implement adaptation measures (e.g. a buried seawall to the immediate west of Perlinte View road reserve) when the appropriate trigger point is reached.

Infrastructure Management - Coogee Beach Café

- Maintain or improve the current premises.
- Position any extensions or redevelopment of the café appropriately for the expected coastal erosion risks, preferably any high value improvements behind the 0.9 m SLR Hazard Line.

Infrastructure Management - Shark Barrier & Swimming Pontoons

- Maintain the Shark Barrier and swimming pontoons.
- Continue monitoring shoreline movements in this area as part of the coastal monitoring program, check depths at pontoon locations prior to each year's deployment.
- Adapt and reconfigure the Barrier and swimming pontoon moorings as may be required in response to future shoreline movements, and at the time of any major renewal works to the barrier, take the opportunity to review and potentially reconfigure boundaries if required.

Infrastructure Management - Car Parks and Site Access

- Monitor retreat of coastline and hazard zones, and check that at least 60m dune width remains.
- Advocate for improved public transport and pedestrian access links.
- Develop a long term masterplan to assess suitable locations for assets requiring retreat (northern and southern car parks, café, parklands and Surf Lifesaving Club) including potential locations nearby but outside the Foreshore Area.

Infrastructure Management - Minor Structures

- Maintain existing minor structures until such time that they become unviable due to erosion risk.
- Decommission the unviable wheelchair ramp and associated shade structure immediately south of the Coogee Beach Jetty once the replacement ramp at the Jetty is operational.
- Design and implementation of a realignment of the existing main asphalt access link to the Jetty.
- Remove the shade shelter along access track 3 near Peri End at such time that ongoing removal of windblown sand becomes unviable. Replace it with a shade shelter elsewhere in the landscaped areas.
- Replace structures at the end of their design life with lightweight/ relocatable structures, or if possible retreat (shift or replace) minor structures to alternative landward locations at such time that they become unviable in present locations due to increasing erosion risk.
- Rebuild the main toilet block at Coogee Beach Reserve at a safer setback distance when erosion risk becomes intolerable, or when the building reaches the end of its current useful life, whichever is first.

Coastal Protection

- Carefully consider and assess the costs and benefits of coastal protection structures, or instigate measures for a managed retreat including how this may limit future adaptation options, before committing to any such works.

Lease Agreements

- Refer to Draft Foreshore Management Plan for information on specific leases.

Sand Replenishment

- Continue monitoring beach, with particular attention to maintaining at least 30m dune width to the CBICF site.
- Continue triennial Port Coogee Sand Bypassing works, with target bypassing quantities as necessary to prevent shoreline recession south of Port Coogee as determined by the annual coastal monitoring program.
- Reactive sand replenishment and dune rehabilitation in front of the CBICF if or when required by coastal monitoring trigger point.
- Investigate additional sand sources for interim sand replenishment at Coogee Beach (with consideration to nourishment requirements at other Cockburn beaches) including feasibility and approvals pathways.
- Implement sand replenishment to other areas as necessary to provide interim protection to assets in response to changing erosion impacts and risks.

Additional Reserve Areas

- Continue negotiations to transfer the Unallocated Crown Land adjacent to Cockburn Road to Reserve under the City's management
- Use undeveloped areas of land strategically and develop sparingly, in view of the predicted future diminishing size of the foreshore area and scarcity of land.

Planning for Development

Limit new assets to sustainable setback locations

- All new development (buildings, carparks, hardscaping, services, boardwalks, etc.) within the Foreshore, including the Holiday Park, should be located at a setback distance suitable to the asset's intended useful design life.
- Minor development (e.g. footpaths, fencing etc.) or that which necessarily links to the beach and must by nature be beyond the appropriate hazard line, should be built to withstand or be easily adapted (removable or upgradeable) to the expected coastal hazard scenario.

Focusing Activity Areas

- Priority should be given to spreading new or renewed amenities southward where appropriate, and intensification of development should be avoided in the northern half of the Foreshore Area where practical.

Development Approvals

- Where a development requires planning approval, the application should demonstrate how future coastal hazard impacts will be addressed.

Master Planning

- Develop a long term coordinated plan for the Foreshore and adjacent land parcels that builds on existing master planning, and considers the measures and likely future changes to the Foreshore as presented in this FMP.

Monitor Beach and Dunes

- Update Coastal Monitoring Program to include specific monitoring actions specified in section 6.11 to incorporate new trigger points and distances.
- Maintain a 60m wide dune vegetation buffer zone where possible.

Periodic Review

- Review City's CHRMAP (e.g. the studies completed through the Cockburn Sound Coastal Alliance) Coastal Vulnerability & Flexible Adaptation Pathways Project) and this Foreshore Management Plan every 10 years to update risk information and hazard lines.

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Abbreviations

Abbreviation	Name	Abbreviation	Name
AHD	Australian Height Datum	**DPLH**	Department of Planning Lands and Heritage
AHIS	Aboriginal Heritage Inquiry System	**EPBC**	Environmental Protection and Biodiversity Conservation Act 1999
ARI	Annual Recurrence Interval	**FCT**	Floristic Community Type
BC Act	Biodiversity Conservation Act	**GoWA**	Government of Western Australia
BoM	Bureau of Meteorology	**PMST**	Protected Matters Search Tool
CBICF	Coogee Beach Integrated Community Facility (the surf club building)	**SCP**	Swan Coastal Plain
CHRMAP	Coastal Hazard Risk Management and Adaptation Plan	**SLR**	Sea Level Rise
CoC	City of Cockburn	**SLSC**	Surf Life Saving Club
CVFAPP	Coastal Vulnerability and Flexible Adaptation Pathways Project	**TEC**	Threatened Ecological Community
DBCA	Department of Biodiversity, Conservation and Attractions	**The City**	City of Cockburn
DLGSC	Department of Local Government, Sport and Cultural Industries	**The Foreshore**	Coogee Beach Foreshore Area
DoT	Department of Transport	**UCL**	Unallocated Crown Land

1. Introduction and Objectives

Coogee Beach is a popular beach located within the City of Cockburn (the City). The beach's southern boundary abuts the Woodman Point Regional Park and stretches along the coast to the rock seawall of the Port Coogee development at the northern extent. For the purposes of this Foreshore Management Plan, the study area (the Foreshore) extends from the rock seawall of the Port Coogee development (Socrates Parade) in the north, down to the southern side of the Surf Life Saving Club carpark and Poore Grove – refer to Figure 3

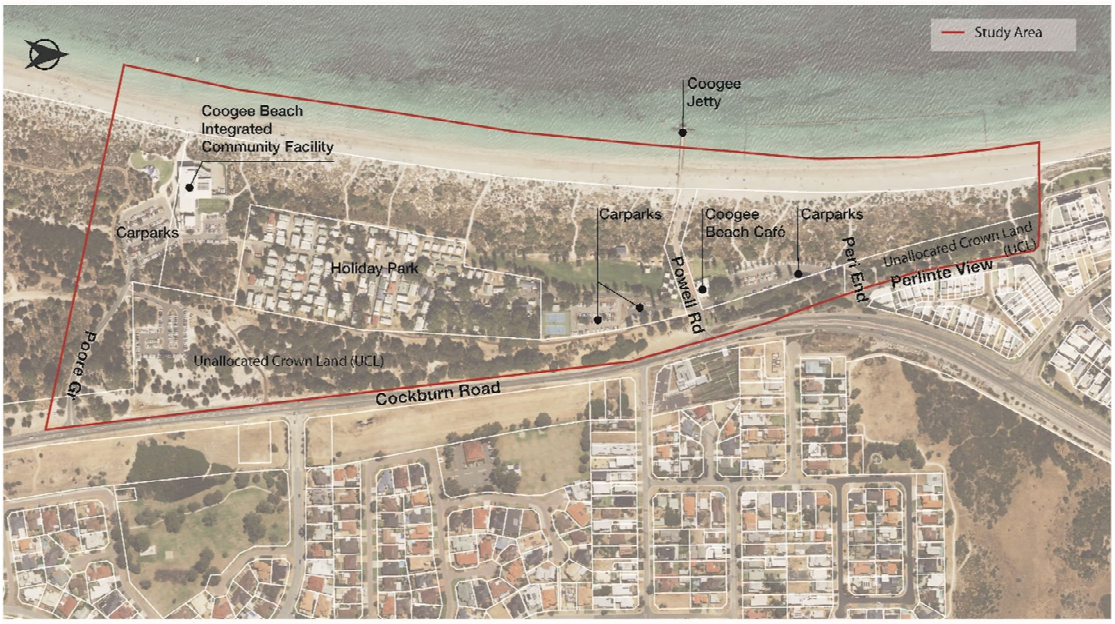


Figure 3 The study area (Foreshore) subject to the Foreshore Management Plan.

The Foreshore is a popular coastal destination with high recreational, commercial and environmental value. The foreshore reserve at Coogee Beach is narrow and includes a sandy beach, natural dune system backed by a mixture of bushlands and grassed recreational areas alongside some development (café, parking, playgrounds, tennis courts, Coogee Beach Holiday Park, and Surf Life Saving Club building).

The Foreshore in the long term is predicted to experience coastal inundation and erosion identified in the Cockburn Sound Coastal Vulnerability Study (Coastal Zone Management et al. 2013), based on current projected sea level rise estimates. Coastal hazards of erosion and inundation will place increasing pressures on some assets and the natural environment.

1.1 Purpose of This Report

The purpose of this Foreshore Management Plan is to manage the continued recreational and commercial use of the Foreshore at Coogee Beach over the coming 50 year planning horizon. The production of a Foreshore Management Plan for Coogee Beach is a key recommendation of the City's Coastal Adaptation Plan (GHD 2016) and this Foreshore Management Plan has been developed pursuant to this document.

The Foreshore Management Plan will address the requirements listed in the State Planning Policy 2.6 (SPP 2.6). This includes taking into account coastal processes/hazards, landform and current natural environment, social and community expectations and cultural and historical significance.

This Foreshore Management Plan is not a master planning document. Planning for capital works and redevelopment of the Foreshore should be undertaken separately, but should be consistent with and guided by the recommended actions and controls specified within this report.

The Foreshore Management Plan has been developed in collaboration with the City and is consistent with the State Coastal Planning Policy, local plans and policies. Several existing management plans cover the Foreshore (refer Section 3) and this document aims to be consistent with and tie together these existing plans.

The Foreshore Management Plan provides guidance for the management of the coastal reserve out to 2070, in a manner that ensures the preservation of ecological, cultural and social values of the area, whilst enabling use of the Foreshore in a sustainable manner in the short to medium term. The Foreshore Management Plan will also specifically address:

- Consideration of the retention of key built infrastructure such as the Coogee Beach Integrated Community Facility (surf club building) and Coogee Beach Jetty out to useful asset life timeframes, via accommodation or protection measures if necessary, whilst retaining a useable foreshore reserve.
- Consideration of the expected impacts of erosion and shoreline recession on the Coogee Beach Holiday Park and Coogee Beach Café sites, and planning for interim protection or staged retreat/relocation of particular areas and structures/services therein plus devising recommendations for planning and development controls to facilitate this.
- Identification of all assets (structures, services, pavements, etc.) reasonably vulnerable to coastal risks within the study area over the planning timeframe, and the determining those that should be relocated, removed or abandoned in future with consideration to amenity, environmental protection and financial viability.
- Identification of suitable alternative locations for assets and spaces that are to be retreated

Greater detail and certainty of planning is presented for the coming 10 – 20 years when the effects of coastal change are more certain. Beyond this timeframe, when there is less certainty a higher level strategy and framework is provided further out in to the planning horizon.

1.2 Guiding Principles

1.2.1 State Coastal Planning Policy and Guidelines

State Planning Policy 2.6 (WAPC, 2013) outlines a number of objectives that are relevant to this Foreshore Management Plan:

- Ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical criteria
- Ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities
- Provide for public coastal foreshore reserves and access to them on the coast
- Protect, conserve and enhance coastal zone values, particularly in areas of landscape, biodiversity and ecosystem integrity, indigenous and cultural significance

Allowances for variations to the guidelines do exist for specific infrastructure such as low value public infrastructure with finite lifespan such as toilets and picnic shelters, coastally dependent

infrastructure such as dune fencing and necessary coastal community infrastructure such as surf lifesaving club facilities.

Furthermore, the SPP 2.6 guidelines provide a high level guidance and direction for all aspects of coastal planning. The relevant guidelines that impact on the Foreshore Management Plan are as follows:

- **3.4 Visual landscape** – provision of visual assessment techniques for incorporating landscape factors into planning processes
- **4.1 Coastal hazard risk management and adaptation planning process** – guidelines on how coastal risk management and adaptation plans should be set out and managed
- **4.2 Vulnerability assessment** – highlights the importance of vulnerability assessment and the part they play in determining how beaches are managed
- **4.3 Assessing risk adaptation potions** – provides guidance on how to compare risk management options and determining which option is most effective for the beach
- **4.4 Adaptation** – Highlights the four key adaptation methods that need to be taken into consideration when developing a coastal management plan
- **4.5 Ongoing risk management and adaptation planning** – emphasises the importance of constantly reviewing a management plan to ensure it is up to date with current issues
- **4.6 Communicate and consult** – addresses the needs to undertake community consultation for any sort of plan to ensure community values are maintained
- **7.1 Community engagement** – similar to 4.6, this guideline emphasises the need for community engagement however this section is used to help determine what level of community consultation will be most effective
- **8.1 Ecological values** – states that the coastal foreshore reserve should be planned to maintain the ecological processes of the coastal location, including the functionality of the physical, hydrological and biological attributes of the area
- **8.3 Cultural heritage** – states that any identified culturally significant coastal heritage sites should be incorporated into the coastal foreshore reserve with practical buffers and management to ensure protection of their values
- **9.1 Coastal plan requirements** – outlines all relevant information that should be included as part of any coastal management plan

Schedule 1 of SPP 2.6 provides detailed guidance on how allowances for coastal erosion and inundation should be assessed depending on beach type and region of Western Australia. It recommends a risk based approach to assessing coastal hazards in developed areas. The aim of this section of the document is to ensure that adequate allowance is considered when planning coastal areas to allow for the absorption of the physical processes (erosion or accretion, sea level rise, tides, storm events etc.) and facilitate non-physical factors (public access and conflicts of interest) over a 100 year planning period.

1.2.2 Coastal Hazard Risk Management Hierarchy

Figure 4 Hierarchy of risk management and adaptation options (WAPC)

Clause 4.4 of SPP 2.6 highlights the hierarchy of key adaptation options as shown in Figure 4. The pyramid is used to demonstrate that as you go down the hierarchy, is the more you diminish future risk management options. The four general adaptation options are:

- **Avoid –** This option means effectively avoiding the site to begin with and finding another, potentially safer site for development.
- **Planned or Managed Retreat –** This involves measures that mitigate development potential along the coastline and can involve measures such as notifications on title, prevention of further development or the removal of development and infrastructure in anticipation for the loss of coastline.
- **Accommodate –** develop the land with coastal hazards in mind, this could involve raising buildings further above ground, preparation of emergency evacuation plans or applying easements or planning zones to allow for changes as the coastline changes.
- **Protect –** This is the most costly option and involves the implementation measures that mitigate coastal hazards such as dune management, groynes, beach nourishment etc.

1.2.3 Flexible Adaptation Pathway and Trigger Point Approach

As climate change impacts and coastal hazard events unfold in the future, the adaptation options available in any specific location depend on the likelihood and consequence of the risk at that time. The decision made will be informed by values of the coast, coastal assets and community. Values will change over time – as they have in Cockburn over the last 100 years – therefore it is important that decisions are made at the time of the trigger point.

The City's existing Coastal Adaptation Plan (GHD 2016) adopts a flexible adaptation pathway approach using trigger points to manage and react to changing coastal risks. This same approach is adopted for the Foreshore Management Plan.

The flexible adaptation pathway approach combines decision-making at trigger points on specific adaptation measures (avoid, retreat, accommodate, interim protection) with an ongoing strategic planning process that plans for, and therefore maintains, all adaptation options (including avoid and retreat) for subsequent trigger points over time. In this way, by choosing to accommodate or protect in early horizons, future communities are not likely to be bound to the long-term cost of that decision beyond the design life of the infrastructure or asset.

The flexible pathway provides a roadmap to enable retreat from the most vulnerable coastal land in the long-term. The pathway also facilitates responsible interim adaptation measures that continue land uses where those measures are justified on social, economic and environmental grounds. Accommodating or defending against coastal hazards may be viable as an interim measure, with a likely ultimate long term retreat outcome.

The trigger point method is a mechanism to allow for a flexible adaption pathway to be implemented over varying timeframes. By associating the adaption measure with the current risk rather than specific timeframe it allows for the management plan to be adopted as needed. Refer to Table 1-1 for details on the Decision Triggers adopted in the City's Coastal Adaptation Plan.

Table 1-1 Decision Triggers from Coastal Adaptation Plan (GHD 2016)

Trigger	Risk Level	Location of most seaward asset:	Government options	Landowner / asset manager options
Trigger 1	Tolerable	Landward of the 500 year ARI inundation event/acute erosion line*	Advise of increasing risk	Do nothing or Retreat
Trigger 2	Increasing likelihood of intolerable risk.	Landward of the 100 year ARI inundation event/acute erosion line* but seaward of 500 year ARI inundation line.	Accommodate	Accommodate or Retreat
Trigger 3	Intolerable. Interim protection may be viable.	Landward of the 50 year ARI inundation event/acute erosion line* but seaward of 100 year ARI inundation line.	Protect + accommodate or Retreat	Accommodate or Retreat
Trigger 3A	Intolerable. End of design life of interim protection. Further interim protection may be feasible	Landward of the 50 year ARI inundation event/acute erosion line* but seaward of 100 year ARI inundation line.	Protect + accommodate or Retreat	Accommodate or Retreat
Trigger 4	Intolerable. Protection is not viable.	Seaward of the 50 year ARI inundation event/acute erosion line*	Retreat	Retreat

Figure 5 represents the trigger point method as a graphical approach showing how increased risk over time will require decision points to decide on how to best manage the risk. This can be managed by accommodating, protecting or retreating depending on the management strategies available.

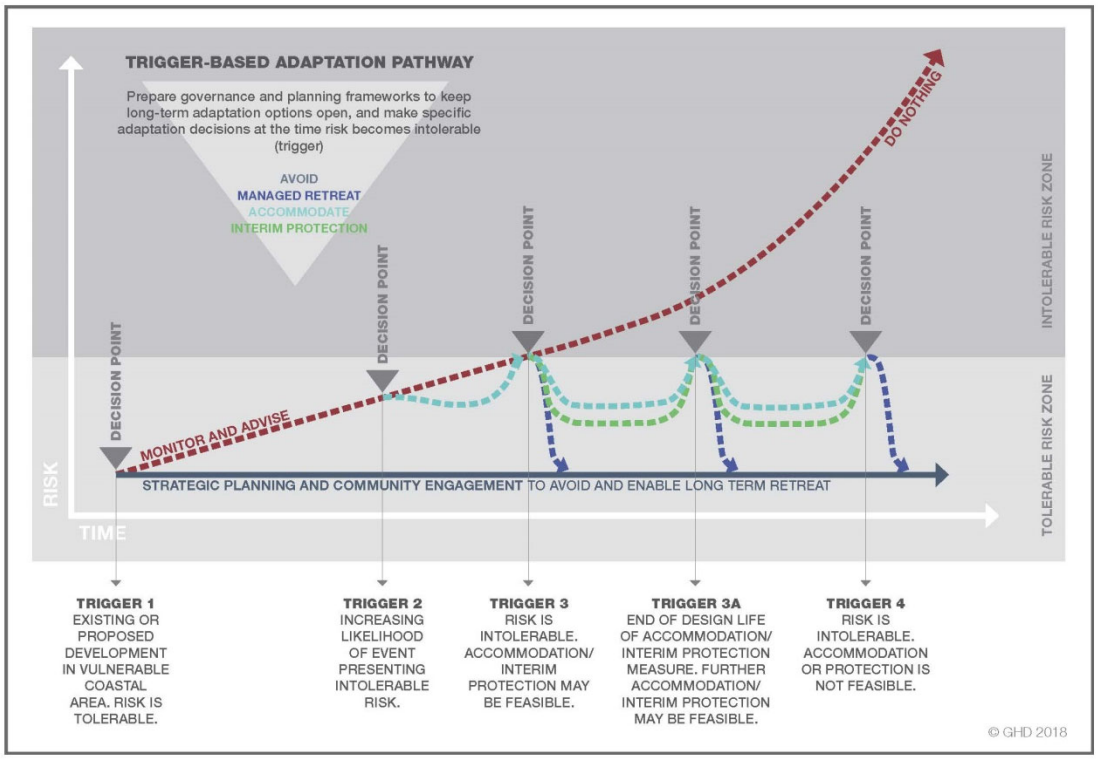


Figure 5 Flexible Adaptation Pathway (Grace and Thompson, 2020)

1.3 Foreshore Management Objectives

The City's key objectives for management of the Foreshore over the 50 year planning horizon are listed below. This Foreshore Management Plan aims to achieve these aims, with consideration to the input from key stakeholders and the broader community received through the stakeholder engagement process outlined in Section 5 .

- Sustainable development of the Foreshore to cater for increasing population, a developing tourist precinct and usage demands whilst balancing preservation of natural areas and coastal vulnerability risks
- Maintaining a foreshore reserve and public access to the beach and adjoining reserves
- Maintain and improve public facilities within the Coogee Beach Reserve, including grassed areas, BBQ/picnic facilities, playgrounds, ablution blocks, parking, pathways etc. albeit with provision to adapt and relocate facilities as may be required in future in response to coastal processes.
- Conservation of existing natural dune systems and bushland within the Foreshore
- Maintain commercial premises and major built structures being the Coogee Beach Holiday Park, Coogee Beach Café, Coogee Beach Jetty, Car Parks and the Coogee Beach Integrated Community Facility (CBICF), including surf club, recreational and café premises within) for as long as is practical, with consideration to defending, adapting or relocating in the longer term.

- For the Coogee Beach Holiday Park specifically, retain its current footprint with a suitable foreshore reserve buffer for as long as practical, preferably to at the 50 year planning horizon, with consideration to interim protection or modification to site boundaries (partial relocation/retreat of assets) if required in response to coastal processes.
- Maintain and improve accessibility to beach and public foreshore amenities in general

1.4 Assumptions and Limitations

This report has been prepared by GHD for City of Cockburn and may only be used and relied on by City of Cockburn for the purpose agreed between GHD and the City of Cockburn.

GHD otherwise disclaims responsibility to any person other than City of Cockburn arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by City of Cockburn and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in the information.

GHD has prepared the preliminary costs set out in section 6 of this report (Management Plan) using information reasonably available to the GHD employee(s) who prepared this report; and based on assumptions and judgments made by GHD.

The cost estimates have been prepared for the purpose of high level management planning and must not be used for any other purpose.

The cost estimates are a preliminary estimate only. Actual prices, costs and other variables may be different to those used to prepare cost estimates and may change. Unless as otherwise specified in this report, no detailed quotation has been obtained for actions identified in this report. GHD does not represent, warrant or guarantee that the works can or will be undertaken at a cost which is the same or less than the estimates provided.

Where estimates of potential costs are provided with an indicated level of confidence, notwithstanding the conservatism of the level of confidence selected as the planning level, there remains a chance that the cost will be greater than the planning estimate, and any funding would not be adequate. The confidence level considered to be most appropriate for planning purposes will vary depending on the conservatism of the user and the nature of the project. The user should therefore select appropriate confidence levels to suit their particular risk profile.

2. Existing Natural and Cultural Environment

2.1 Location Description

2.1.1 Land Use

The Coogee Beach area has many different land uses and values associated with the location, including:

- Recreation
- Tourism
- Commercial

The Foreshore is part of the Woodman Point Regional Park. Contained within the study area are multiple different stakeholders, infrastructure and environmentally significant areas. Figure 6 below, identifies key features of the study area.

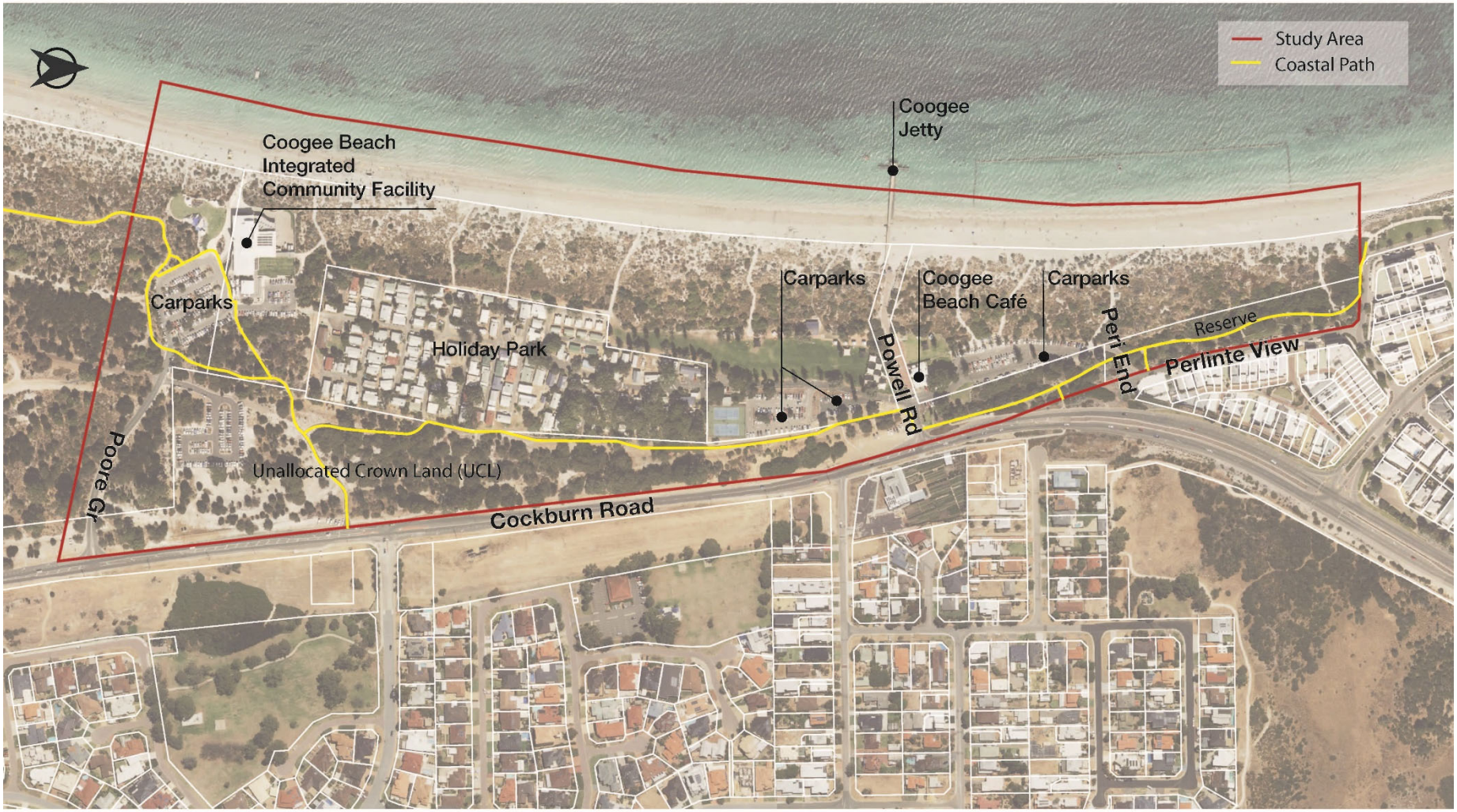


Figure 6 Coogee Beach Foreshore Management Plan study area

2.1.2 Land Tenure

Major land tenure within the area includes:

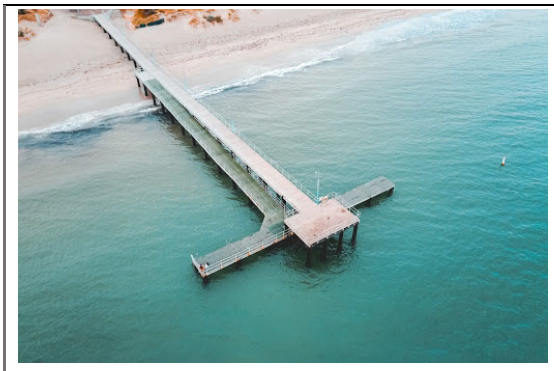
- Lot 171: Reserves under management of the City (including commercial leasehold premises at the Coogee Beach Integrated Community Facility (CBICF) and Coogee Beach Café buildings)
- Lot 173: Reserve under management of the City, which is let by the City leasehold land (the Holiday Park),
- Northern portion of Lot 304: Reserve under management of DBCA
- Former rail reserve parcels adjoining Cockburn Road: Unallocated Crown Land (DPLH)
- Powell Rd: Road reserve (CoC))
- Cockburn Rd: Road reserve (Main Roads)

2.1.3 Existing Facilities and Infrastructure

Table 2-1 identifies major infrastructure and facilities within the Foreshore.

Table 2-1 Major infrastructure and facilities.

	**Coogee Beach Integrated Community Facility (CBICF)** The CBICF houses the Coogee Beach Surf Life Saving Club and is situated at the southern end of the study area. The club was formed in 2002 after community interest sparked a petition for the formation of a new surf life saving club for the Coogee Beach area. The club now has 1,200 members and runs programmes and courses for several different age groups. The current building was built in 2010 and also houses the Coogee Beach Fitness Club, the Surfing Lizard Café and is capable of hosting events and functions. (CBSLSC, 2020). The City installs a pontoon with slide at the beach adjacent to the Surf Life Saving Club during the summer months. The Surf Life Saving Club leases the facility from the City, with the Coogee Beach Fitness Club and Surfing Lizard Café being sub-lessees.
	**Coogee Beach Holiday Park** The Discovery Parks Holiday Park (formerly Coogee Beach Holiday Park) is operated by Discovery Parks and is situated in the centre of the study area. The park is popular with tourists year round due its location close to metropolitan Perth and also houses residents through leases governed by the *Residential Parks (Long-stay Tenants) Act 2006*



Coogee Jetty

The Coogee Jetty was built in the early 1960's. The bituminised ramp and access track was opened in 1994 and the jetty was rebuilt in 1999. As the jetty is only maintained for recreational use, it offers the public the opportunity to explore the beach from a different perspective. (inHerit, 2020).

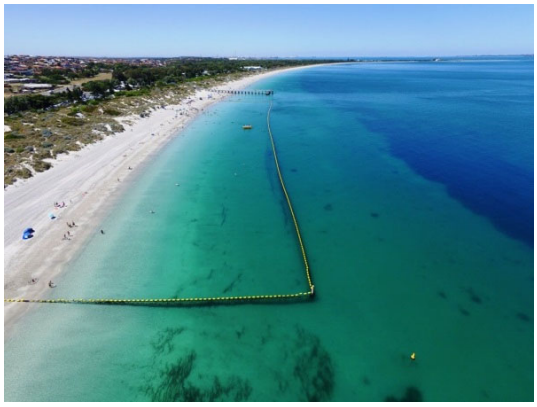
The City installs a pontoon with slide adjacent to the jetty during summer months.

Coogee Beach Reserve

The Coogee Beach Reserve is situated in the same precinct as the Coogee jetty and Café. Offering BBQ's, picnic tables, shelter, playground, tennis courts and grassed areas, it is popular for recreational users.

Coogee Beach Café

The Coogee Beach Café is leased from the City located in the break out area close to the jetty. The café provides recreational users the chance to come dine and spend more time in the area. The café also services the holiday park.



Shark Barrier

The shark barrier was installed in 2014 and is an 'eco-shark barrier'. The barrier is expected to have a lifetime of at least 10 years and be recyclable at the end of the lifetime. The presence of the shark barrier has led to more swimmers and groups using the beach. In summer time the City also installs a pontoon with a slide in the enclosure. (City of Cockburn, 2020)

Swimming Pontoons

The City installs three swimming pontoons along Coogee Beach during the warmer months (November to April). Pontoons are heavily used and are typically moored at the Shark Barrier, beside the Coogee Jetty and in front of the Surf Life Saving Club.

2.1.4 Climate

The City of Cockburn experiences a Mediterranean climate, with mild wet winters and hot dry summers.

During spring and summer, easterly winds are typically experienced in the morning which weaken and are usually reversed around midday by strong south westerly sea breezes.

Wind patterns in winter are more variable and during ambient conditions winds are typically not as strong as during summer. The exception to this is during the passage of cold fronts or winter storms which typically cause strong winds to blow from the north west, turning to the south west once the event has passed.

2.1.5 Metocean

A summary of metocean data is provided below for the Coogee Beach area.

Tidal Planes

Coogee Beach is in close proximity to Port Coogee and Fremantle. The tidal planes for Fremantle are listed below for use in further studies or designs required by management options.

Table 2-2 Fremantle tidal planes (mFLWM) (Department of Transport, 2016)

Place	HAT	MHHW	MLHW	MSL	MHLW	MLLW	LAT
Fremantle	1.40	1.15	1.04	0.81	0.57	0.47	0.26

Waves

Due to the open sea location, the beach experiences waves of different magnitude and direction throughout the year. The height and period of locally generated wind waves are dependent upon wind speed, duration of wind, water depth and fetch length (the length of water that the wind can act on).

Storm Tide

Due to the location of the study area, it is exposed to storm surges from weather systems. These weather systems can produce storm surges due to the variations in pressure in the atmosphere. These have been taken into account during coastal modelling undertaken for the site during the Coastal Adaptation Plan (Section 3.6.2).

The area around the Jetty and Shark Barrier are closed waters to motorised vessels, with an 8 knot limit enforced for the remainder of the immediate coastal water area.

2.2 Environmental Values

2.2.1 Landscape

The coastline is defined as a sandy coast along this particular coastal node. The low frontal dune extends along the shoreline from Port Coogee to the north out to Woodman Point in the south. Behind the dune, the coastal foreshore reserve has been maintained and offers a protective buffer for the holiday park. The reserve is well vegetated and hosts many different species of flora and fauna.

2.2.2 Geology and Geomorphology

The Coogee Beach Foreshore exists predominantly within the Quindalup dune system (DEC 2010). The Spearwood ridge appears as cliffs along the coastline between Woodman Point and

CY O'Connor beach (CZM et al, 2013). Rock platforms also underlie beaches in the area, typically present to -3 mAHD off shore, resulting in the formation of perched beaches within much of Cockburn Sound (CZM et al, 2013).

Coogee Beach forms part of a foredune plain (landform) which is relatively modern feature composed of new material, making sediments susceptible to erosion (by either wind or water processes) and therefore susceptible to modification of the greater landform.

In 2013 CZM reported from beach profile monitoring (undertaken by Cockburn Cements Ltd) that the foredune of Coogee Beach was relatively stable due to existing management measures, and South Coogee Beach had experienced foredune growth. However this was counteracted by a steepening of the submerged beach profile at South Coogee Beach and an erosion trend of the submerged portion of the beach profile at Coogee Beach. Erosion of the offshore portion of the profiles however is controlled by the presence of the rock platforms in the area, emergent at around -5 mAHD.

For further detailed analysis on the Geological Framework and its impacts to coastal processes refer to Coastal Zone Management et al (2013).

2.2.3 Vegetation and Flora

Vegetation

Regional vegetation mapped for the Coogee Beach and its surroundings by Heddle et al. (1980) based on major geomorphic units on the Swan Coastal Plain (SCP) identifies the following vegetation complex:

- Cottesloe – Central and South: a mosaic of woodland of *Eucalyptus gomphocephala* (Tuart) and open forest of *E. gomphocephala - Eucalyptus marginata* (Jarrah) – *Corymbia calophylla* (Marri) with closed heath on the limestone outcrops.

Since Coogee Beach is located within an area that is part of Bush Forever Site No. 341 (Woodman Point, Coogee/Munster), the recommended implementation for this area is "*The care, control and management of this site (including Reserve 42469) for conservation purposes within Woodman Point is endorsed*." as per Bush Forever Volume 1 (GoWA, 2000).

Four dominant as well as common native species were identified to be present in the Coogee Beach surroundings. This study area is dominated by one or more of the following vegetation community types as described in accordance with Keighery (1994):

- The foredunes contained an Open Low Heath over Spinifex longifolia Grassland.
- The secondary dunes contained two communities:
- An Acacia Open Heath community (The Acacia cyclops and *Olearia axillaris* Open Heath over *Scaevola crassifolia* Low Shrubland over Spinifex longifolia Open Grassland) along the northern and southern lengths of the secondary dunes.
- The centre varies in species composition and becomes a Quandong Shrubland (*Santalum acuminatum* Shrubland over *Lepidosperma gladiatum* Sedgeland over *Rhagodia baccata subsp. baccata* Low Shrubland).
- Further inland at the southern end of the study area contained a Rottnest Island Pine Low Open Forrest (*Callitris preissii* and *Melaleuca huegelii subsp. huegelii* Low Open Forrest over *Spyridium globulosum* Open Shrubland over *Rhagodia baccata subsp. baccata* and *Threlkeldia diffusa* Low Shrubland over *Hardenbergia comptoniana* Very Open Vineland).

A report subsequently completed by Coffey in 2008 indicated that there are possibly five Floristic Community Types occurring within the study area:

- FCT 24 – Northern Spearwood shrublands and woodlands.
- FCT 29a – Coastal shrublands on shallow sands.
- FCT 29b – Acacia shrublands on taller dunes.
- FCT 30a – Callitris preissii (or Melaleuca lanceolata) forest and woodlands.
- S14 – Spinifex longifolius grassland and low shrubland.

The potential TECs and vegetation communities identified and listed above were assessed to find if any of them represented a Floristic Community Type (FCT) as identified by Gibson et al (1994) for the Coogee Beach study area. The Rottnest Island Pine Low Open Forrest community was found to have 33.2% species similarity and 7 species in common with the TEC SCP30a. However, it is not considered significant since the Low Open Forest community only consists of a few trees and the understorey is highly overrun with weeds. Threatened ecological community (TEC) SCP30a (*Callitris preissii (or Melaleuca lanceolata*) forests and woodlands) has been identified to occur in the area of Woodman point (GoWA, 2000). But, there is not sufficient evidence to support that TEC SCP30a also occurs within the study area of Coogee Beach. This TEC has been listed as Vulnerable under the *Biodiversity Conservation Act 2016* (BC Act) by the Minister for Environment. It is not listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A desktop search of the EPBC Act Protected Matters Search Tool (PMST) indicated that the Banksia Woodlands of the Swan Coastal Plain ecological community may occur within the area (listed as Endangered under the EPBC Act). It is not considered likely that this ecological community is present in the study area given the coastal location and the species recorded by the 2007 Ecoscape study.

The PMST search also indicated that the Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community is likely to occur in the area. It is also not considered likely that this ecological community is present in the study area given the coastal location and the species recorded by the 2007 Ecoscape study.

Flora

A formal flora assessment was not conducted as part of this report.

The PMST indicated flora species listed as Endangered and Vulnerable may occur within the area, however, a desktop search of the DBCA NatureMap does not indicate the presence of any rare, threatened or priority flora species. Search results are provided in Appendix A.

A site assessment conducted by Ecoscape in October 2007 on native flora species recorded 32 species in total including dominant as well as other common native flora species. None of the recorded flora species were found to be state or federally declared protected, rare or priority as listed under the BC Act or EPBC Act.

One locally significant species was observed throughout the southern side of the study area, particular in the secondary dunes and inland area, which is Rottnest Island Pine (*Callitris preissii*). The Coogee Beach population has a non-glaucous (green) form which is characteristic of natural but not cultivated populations (Keighery, Gibson & Keighery 1997). It is therefore assumed that the *Callitris preissii* in Coogee Beach is a natural population.

2.2.4 Fauna

A formal fauna assessment was not conducted as part of this report. Southern Brown Bandicoots or quenda *(Isoodon obesulus fusciventer) are* common in the area as well as numerous bird and marine species.

Desktop searches of the EPBC Act Protected Matters Search Tool (PMST), DBCA NatureMap and the list of significant Birds of the Swan Coastal Plain portion of the Swan Coastal Plain (GoWA, 2000) identified fauna species that may potentially occur in the study area. Conservation significant species are presented in Table 9-1 along with search results in Appendix A. Further fauna information is available in Section 17 of the Woodman Point Management Plan (DBCA 2010) including a summary of present and past notable fauna of the Woodman Point Regional Park.

Even though no pest fauna were recorded to be in the Coogee Beach surroundings, there is potential for introduced fauna including mice, rats, cats, foxes and rabbits to inhabit the study area since they are known to be pest fauna in the Woodman Point Regional Park regions.

Anecdotally, community stakeholders mentioned feral cats during the consultation period. The City carries out extensive feral cat and fox control in the area in conjunction with DBCA, in accordance with the existing 2009 Management Plan.

Southern Brown Bandicoot – known to occur in the dunes of Coogee Beach

2.3 Cultural Heritage

2.3.1 Aboriginal Heritage

The Department of Planning, Lands & Heritage (DPLH 2020) *Aboriginal Heritage Inquiry System (AHIS)* was searched for any registered heritage values that may occur in the local area of the study site. The DPLH AHIS database has returned two heritage entries nearby the Foreshore, both of which are declared as mythological sites and have open access with no restrictions:

- Cockburn Road (ID 15840) which is a registered Aboriginal heritage site. This site lies adjacent to but entirely outside the Foreshore.
- The Indian Ocean (ID 3776) which is listed as a heritage place. This broad site borders the beach and covers the water area, but does not extend onshore (though would be expected to move westward commensurate with any shoreline recession).

2.3.2 Non-Indigenous Heritage

Most of the historic landmarks in and around Coogee Beach as a result of its local history no longer exist (Berson 1978), including:

- Tea Rooms (1934 to 1959)
- The Boatsheds (1900s to 1966)
- Market Gardens, fruit growers and flower growers
- Coogee Beach Shop (1959 to 2005).

Some of the other historic landmark locations that still remain nearby the study area (Berson 1978) include:

- The Coogee Hotel, built in 1901, transferred to the State in 1971, sold in to private ownership in 2017 and used for hospitality business purposes at present.
- The Coogee Post Office, built around 1901, transferred to the State in 1971 and sold to private ownership with the Coogee Hotel in 2017.

The Coogee Beach and Coogee Beach Jetty are listed in the City of Cockburn's Municipal Inventory due to its history as a popular tourist destination since the 1930s and as the jetty has been used for recreation since its construction in the 1960s (inHerit database search, Government of Western Australia, 11th March 2020). The Jetty was rebuilt in 1999 over the same footprint and in a similar style to the previous structure.

2.4 Recreational Values

2.4.1 Access

There are currently three vehicle access points that allow entrance to the Foreshore (two from Cockburn Road, one from Perlinte View). Powell Rd which is the main access to the area occurs just north of the terminus of Beach Road onto Cockburn Road. The road allows vehicle access to the car parks and throughout the Holiday Village. Authorised vehicles may also enter the beach from this entry point. A firebreak occurs along the western border of the Holiday Village which allows access to the southern length of dunal vegetation.

There are numerous pedestrian linkages throughout the site. A total of 13 paths traverse the dunal vegetation to access the beach.

There is significant fencing present on the site to restrict access to the dunes. Wire fencing occurs along the paths and behind the stable dunes, bordering on the grassed areas, car parks, Holiday Park and along the north-south pedestrian link.

2.4.2 Boating and Access

The waters off Coogee Beach are utilised for recreational boating, particularly for sail and paddle craft. Landing of power vessels is typically only undertaken by the Surf Life Saving Club within the Foreshore. Figure 7 below is an extract from Nautical Chart WA001 of the Coogee Beach Area, available from the Department of Transport WA website.

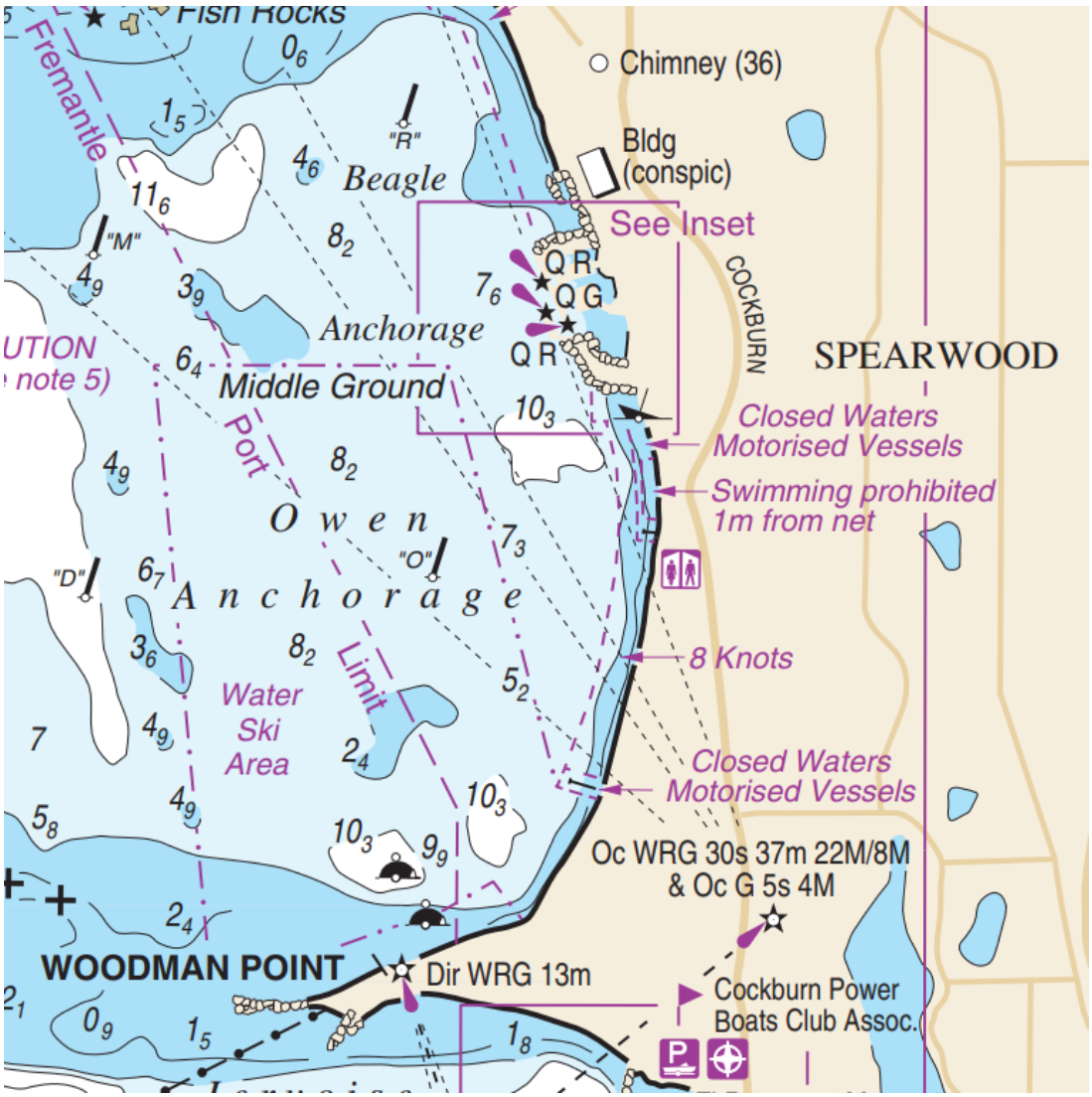


Figure 7 Nautical chart for Coogee Beach area (Department of Transport, 2020)

2.4.3 Recreation Activities

The City of Cockburn *Coastal Activities Guide* outlines designated areas and exclusion areas for a variety of land and water based activities can occur as shown in Figure 8:

Table 2-3 provides a more specific analysis of these activities in regards to the facilities required to support these activities and the specific areas that have been provided for them.

2.4.4 Community Event Space

The parkland areas within the Foreshore presently serve as the City's premier outdoor event space. Major annual public festivals such as Coogee Live and the Australia Day Coogee Beach Festival are attended by thousands of community members, and the Foreshore and its existing infrastructure therefore plays an important role in facilitating these events.

Table 2-3 Summary of recreational activities, facilities and areas

Recreational activity	Recreational facility	Specific areas with established recreational facilities
Walking and Running	Walking trails, beach areas and access	Walking trails existing along foreshore continuing into Woodman Point Recreational Park. Beach access at several locations
Cycling	Cycling trails	Cycling trails existing along foreshore continuing into Woodman Point Recreational Park
Scenic driving/viewing	Roads and parking areas	Two carparks at the Coogee Jetty and two carparks at the CBICF.
Bird watching	Walking trails	Several walking trails onto the beach and entering the Woodman Point Regional Park.
Picnicking	Picnic benches, barbeques and grassed areas	Facilities around the Coogee Jetty break out area behind the front dune.
Holiday/Camping	Caravan and camping park	Discovery Parks Coogee Beach
Dining	Cafes, Restaurants, Bars	Coogee Beach Café, Surfing Lizard Café, SLSC
Fishing	Jetty, Beach areas	Coogee Jetty, Beach and carparks
Windsurfing/kite surfing	Beach areas	Beach areas and carpark
Kayaking	Beach areas	Beach areas and carpark
Diving/Snorkelling	Beach Areas, Jetty	Beach Areas, Shark barrier, Omeo Wreck (Not in study area but in close proximity to the north)
Sailing/boating	Minimal (restricted area)	Beach Areas
Swimming	Car parks and beach access areas, shark barrier	Shark barrier to the north of Coogee Jetty, CBICF in the south of the study area.
Surf Life Saving Sporting	Open areas, shelters	Open area at Jetty breakout area with grassy areas and shelters

Kayakers at Coogee Beach (view from the CBICF)

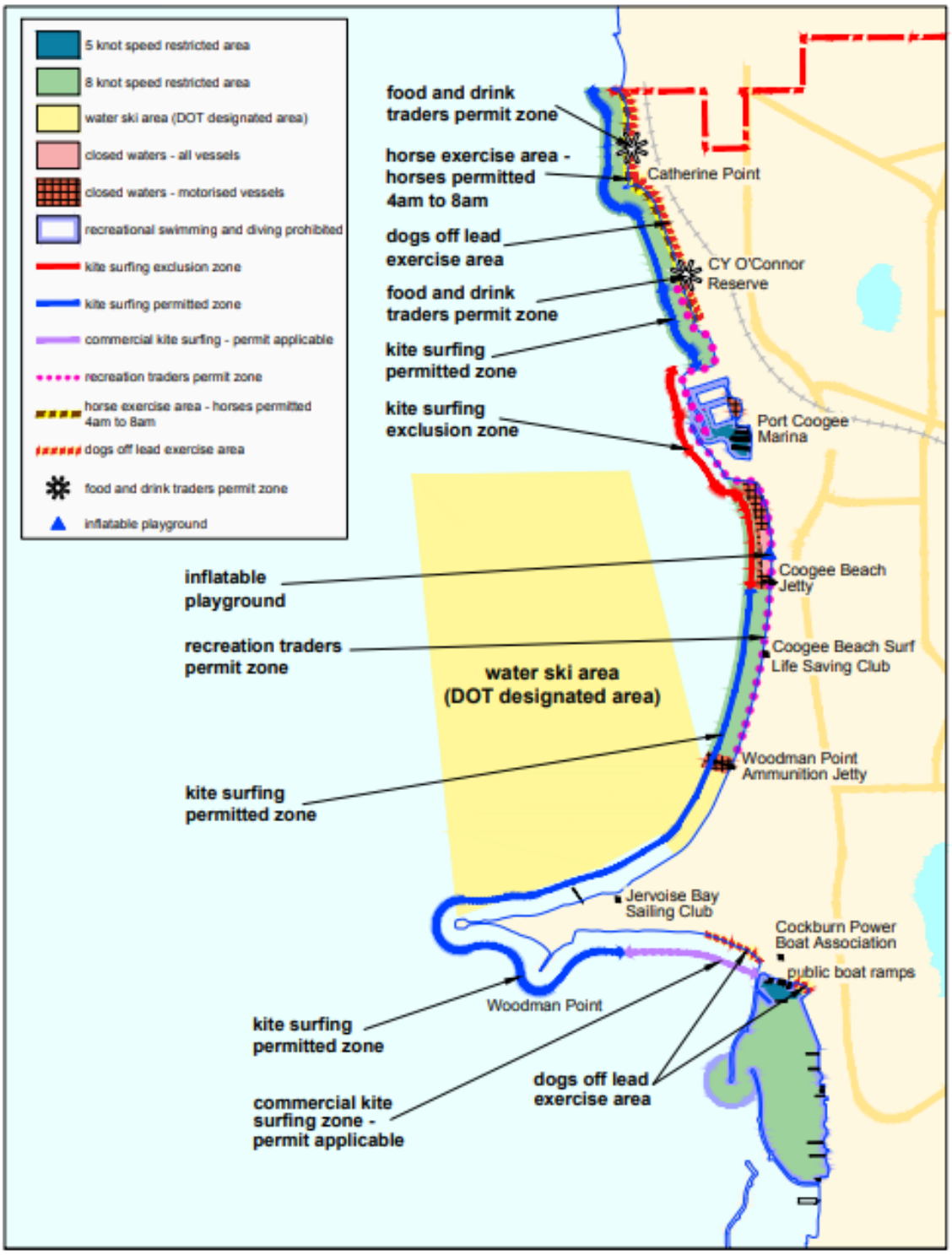


Figure 8 Extract from the Coastal Activities Guide (City of Cockburn)

3. Strategic Alignment

This section outlines key existing plans and studies relevant to the Coogee Beach Foreshore and to which this Foreshore Management Plan seeks alignment with.

3.1 Strategic Community Plan 2020-2030

Council's vision is to build on the solid foundations that their history has provided to ensure that Cockburn of the future will be the most attractive place to live, work, visit and invest in, within the Perth Metropolitan area. To enable this, five strategic objectives have been established. Providing and management of the Coogee Beach Foreshore falls under the following objective goals:

- 4.1 Plan to provide residents with great places to live, activated social connections and high quality open spaces.
- 4.7 Continue to complete the coverage of accessible cycleways, footpaths, parking and end of trip facilities, and trail networks across the City.
- 2.1 Sustainably manage our environment by protecting and enhancing our unique natural areas, coast, bushland, wetlands and native wildlife.
- 2.6 Reduce adverse outcomes arising from climate change through planning, adaptation, mitigation, infrastructure and ecological management.
- 2.3 Provide accessible high-quality open spaces and parks for community benefit.
- 5.2 Deliver value for money through sustainable financial management, planning and asset management
- 3.6 Provide community, sport, recreational, and cultural facilities and infrastructure to meet community needs.
- 5.1 Ensure good governance through transparent and accountable planning, processes, reporting, policy and decision making.
- 5.3 Listen to, communicate, consult and engage with our residents, businesses and community in a timely, open and collaborative manner.

3.2 Coogee Beach Master Plan

The Coogee Beach Master Plan was developed by the City to uplift the Coogee Beach recreational area to improve the amenity and functionality of the site. The master plan has been broken into six stages to allow for the area to continue to be used with minimum disruption. The six stage plan is broken down below:

Stage 1 - Demolish old surf club & underground power lines

Stage 2 - Upgrades to Poore Grove & overflow parking

Stage 3 - Upgrades to cafe hub area & northern car park

Stage 4 - Upgrades to central car park, tennis courts & new holiday park entry road

Stage 5 - Revegetation & upgrades to public open space

Stage 6 - Upgrades to holiday park site, artworks / signage & new / extended commercial premises

Stages 1 and 2 are complete with planning for stage 3 underway.

3.3 Land Use and Zoning

The Coogee Beach study area falls under the Metropolitan Region Scheme (MRS) which defines the future use of land and provides the legal basis for planning in the Perth metropolitan region, dividing it into broad zones and reservations including bush forever areas.

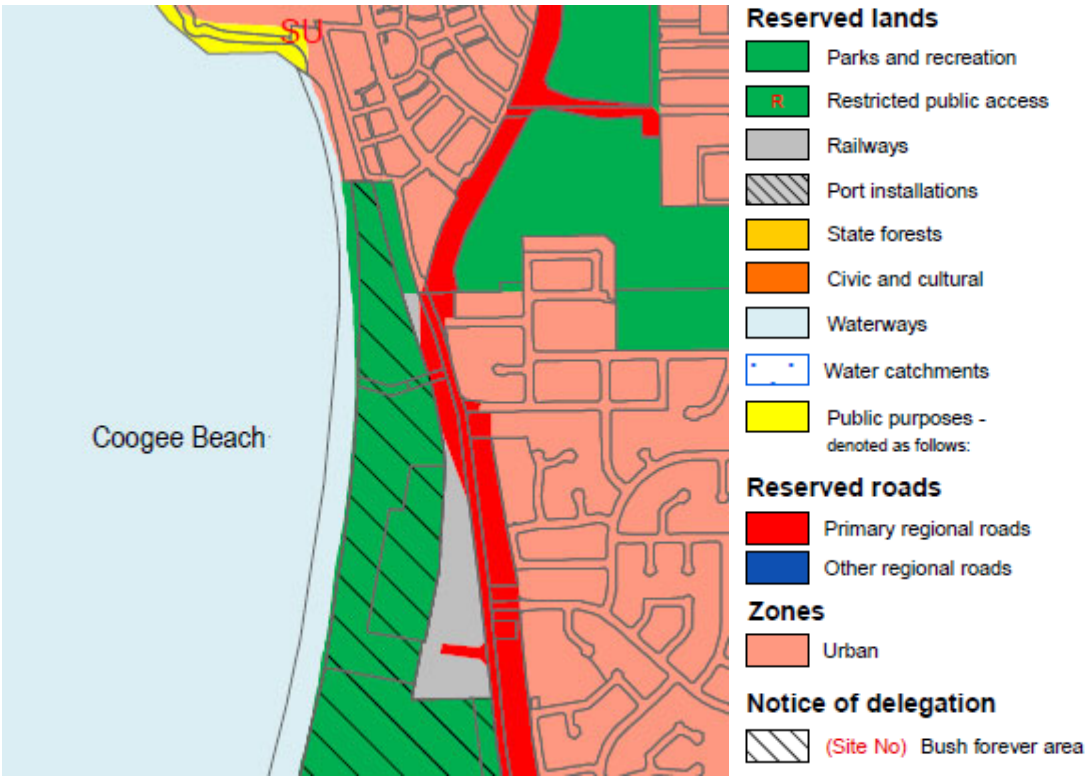


Figure 9 Metropolitan Region Scheme (WAPC)

Applicable zoning and reserve categories that apply to land within or immediately adjacent to the Foreshore include:

- **Urban**: Areas in which a range of activities are undertaken, including residential, commercial recreational and light industry
- **Parks and recreation**: Land of regional significance for ecological, recreation or landscape purposes.
- **Railways**: Provides for public transit routes, freight rail lines and associated facilities such as park'n'ride stations, maintenance depots and marshalling yards.
- **Public purposes**: Land for public facilities such as hospitals, high schools, universities, car parks, and prisons, utilities for electricity and water, commonwealth government and other special uses.
- **Primary regional roads**: These are the most important of the roads of regional significance in the planned road network, and are currently or proposed to be declared under the Main Roads Act 1930.
- **Bush forever area**: Areas identified as Bush Forever are subject to the planning requirements of “State Planning Policy 2.8 - Bushland Policy for the Perth Metropolitan Region”.

Zoning policy allows for Department of Planning, Lands and Heritage to effectively plan and guide development in different scheme areas to ensure that land use is most effective for the wider planning scheme region. Where this does not align with the City’s objectives and plans, there is a formal process to follow to rezone lots and areas.

3.4 Woodman Point Regional Park Management Plan (DBCA 2010)

The study area is addressed in the Woodman Point Regional Park Management Plan as Areas 1, 2 and 3. Area 1 being the recreation and fire break area adjacent to the holiday park. Area 2 is the area of the café and associated infrastructure and Area 3 is the holiday park and surrounds.

The management emphasis, acceptable use and facilities for each area is provided below.

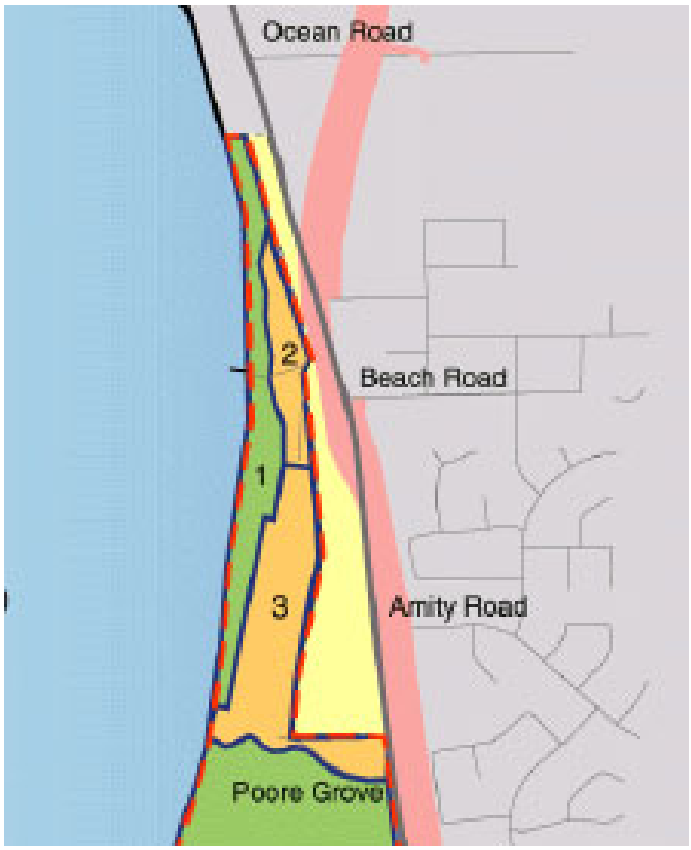


Figure 10 Woodman Park Management Areas (DBCA 2010)

Area 1 – Foredune Area

Management Emphasis - The management emphasis is to provide for appropriate uses that do not adversely affect the natural environment. Areas will be managed jointly for public use, conservation and enhancement of flora and fauna, and improvement of landscape qualities. Public use must be compatible with the assigned purpose of the relevant reserve. Visible evidence of management may be moderate to high. Management will encourage uses and develop facilities that promote conservation and education.

Acceptable Use and Facilities - Public access primarily by walking trails and cycle paths. Through access by vehicles along established roads is allowed. Some development of facilities may be necessary. These may include facilities associated with education and visitor services. The provision of facilities will depend on the values of an area. Rehabilitation and habitat protection may be necessary.

Area 2 and 3 – Café Area and Holiday Park

Management Emphasis - The prime emphasis of management will be to provide a variety of recreation opportunities. The type and scale of facilities provided will depend on the values of any given area, community demand for recreation and the appropriate management of the

Holiday Park. Management involves minimising the impact of visitor activities through the sensitive placement and provision of access and facilities as well as through the provision of information and interpretive material. Visible evidence of management may be high.

Acceptable Use and Facilities - Public use may be high in these areas. Predominantly passive recreation pursuits, allowing for the Holiday Park service and picnic facility development. Commercial concessions are considered appropriate within this management zone. Rehabilitation, landscaping and reticulation of areas may be necessary. Access to Area 6 – the Department of Local Government, Sport and Cultural Industries (DLGSC) Recreation Camp is by expressed approval of DLGSC.

3.5 Coogee Beach (Environmental) Management Plan (2009)

This management plan details the existing flora and fauna and provides guidance for conservation of the existing natural dune system. The proposed rehabilitation (Ecoscape 2009) plan consisted of the recommendations including the development of a number of plans as outlined below:

Weed Management

Establishment of a Weed Management Plan providing details of the weed management strategy, application of treatments, treatments program and monitoring recommendations.

Pest Fauna Management

Establishment of a Pest Fauna Management Plan coordinated across adjacent sites and the Foreshore and prepared by a qualified expert to develop strategies.

Rehabilitation Plan

Undertake a rehabilitation plan including details of planting, selection of species, fauna habitat as well as recommendations on monitoring and maintenance works.

Fire Management Plan

Prepare a Fire Management Plan identify risks (including from rehabilitation), recommended monitoring, consultation and communications and management actions.

Infrastructure and Landscape Plan

Guidelines for infrastructure and landscaping in relation to dunes and pedestrian risks were outlined and recommendations to undertake the installation and maintenance a number of new and existing features including: vegetation, pedestrian crossing lights, entrance lighting, car park lighting, fencing and standardised signage were detailed.

3.6 Coastal Adaptation Planning

3.6.1 Coastal Vulnerability and Flexible Adaptation Pathways Project– Cockburn Sound Coastal Alliance

The City of Cockburn, along with the Cities of Fremantle, Kwinana and Rockingham is part of the Cockburn Sound Coastal Alliance, which has delivered the Cockburn Sound Coastal Vulnerability & Flexible Adaptation Pathways Project (CVFAPP). The Project aimed to assess the current and future coastal vulnerability associated with the Cockburn Sound coastline, and devise sustainable adaptation measures to adequately manage these risks. The CVFAPP was undertaken in four stages:

Stage 1 – Coastal Vulnerability Assessment (CZM et al, 2013)

- Improve the understanding of the coastal features, processes and hazards of the study area (coastal landforms, geological features, sediment supplies, sediment distribution and meteo-ocean processes);
- Identify the degree of exposure and sensitivity of the various sections of coastline to the potential impacts of future weather events and sea level rise associated with both natural variability and climate change.
- Develop an understanding of the vulnerability of the coast within each coastal compartment based on an understanding of current and future physical changes (output from Stage 1);
- Identify significant vulnerability trigger points and respective timeframes for each sediment cell to mark the need for immediate or medium term adaptation action;

Stage 2 – Values and Risk Assessment (BMT, 2014)

- Facilitate the understanding of climate science, coastal hazards and risk management amongst key stakeholders (not including community);
- Identify what assets are situated along the coast and what services and functions those assets provide;
- Identify the 'value at risk' of coastal assets potentially affected by coastal processes and climate change under different timeframes and climate change scenarios
- Identify and evaluate potential adaptation options for vulnerable areas;
- Quantify the risks in terms of consequence and likelihood of those hazards identified.

Stage 3 – Coastal Adaptation Plan (GHD, 2016)

- In consultation with the key stakeholder groups and community, verify the intrinsic current and anticipated economic, socio-economic and ecologic values of assets at risk;
- In consultation with the key stakeholder groups and community, assess and verify the most effective and feasible adaptation options which can include coastal protections, planning instruments and market interventions;
- Share best practices, lessons learnt and identify critical data gaps; and
- Prepare a Coastal Adaptation Plan document for each Local Government

Stage 4 – Implementation and monitoring (ongoing)

- Each local government implements its Coastal Adaptation Plan by way of ongoing monitoring, further detailed planning and site works as required

3.6.2 City of Cockburn Coastal Adaptation Plan (GHD, 2016)

The City's Coastal Adaptation Plan was developed using relevant state coastal planning policy guidelines to guide the City in managing coastal risks and adapting to coastal changes in a sustainable and flexible manner.

The Coastal Adaptation Plan identifies that, over time, the City's coast is predicted to become increasingly vulnerable to the impacts of sea level rise, storm surges and changes in sediment regimes. The Coastal Adaptation Plan also identifies that sections of the City's coast are exposed and vulnerable to erosion in particular, including Coogee Beach.

Vulnerability and risk mapping shows that over time, risks to coastal land and assets will increase from tolerable, to intolerable. It is recognised that this will require government and the community to make decisions about how the coast is used in the future.

The Coastal Adaptation Plan adopts a flexible adaptation pathway approach, which aims to implement management actions using risk-based triggers whilst prioritising measures that address the coastal risk without limiting future adaptation strategy options. Refer to Section 1.2.3 for further details.

The adaptation pathway adopted in the Coastal Adaption Plan for Coogee Beach (designated as Coastal Management Unit 5) is one of retreat from the most vulnerable coastal land in the long term. This pathway also supports responsible interim adaptation measures that continue land uses where these measures are justified and viable in the short to medium term.

As the coastline erodes and risk levels increase it is noted that particular assets may need to be temporally protected and/or relocated.

Key recommendations arising from the Coastal Adaptation Plan for the Coogee Beach Foreshore (Coastal Management Unit 5) are outlined below.

Decisions for the Coogee Beach Foreshore in the Immediate Term (to 2030)

Areas within Coogee Beach are currently vulnerable to inundation and erosion. However, an intolerable risk level (representing a trigger point 3 or 4) is not expected to be reached in the immediate planning horizon (10 years).

Actions recommended in the Coastal Adaptation Plan for the Coogee Beach in the immediate planning horizon relate to trigger points 1 and 2 as follows:

Trigger point 1 (development in vulnerable coastal area; risk is tolerable)

- Monitor values and risk
- Advise land and asset owners of increasing risk over time
- Deliver the strategic planning framework (outlined in Section 4 of the CAP)

Trigger point 2 (increasing likelihood of event presenting intolerable risk)

- Responsive beach nourishment to erosion events
- Dune management and revegetation
- Advising land owners and uses of current and future likelihoods of inundation and possible building retrofitting, inundation resilient design options
- Other accommodation options listed in section 6

Long-term Planning Horizon (post-2030)

Risk mapping suggests that trigger point 3 (risk is intolerable, interim protection may be viable), for this area will not occur until well into the future. At some point a decision is required to either implement interim protection or to retreat, a decision best made closer to the time of the trigger point, in line with the flexible, trigger based adaptation approach.

Provisional Adaptation Measure

Multi criteria decision analysis results undertaken as part of this study suggest that retreat may be an appropriate decision over interim protection, based on assumed values (criteria weightings) for the current planning horizon. The recommended adaptation decision is therefore accommodate and if required retreat.

Adaptation measures recommended in the CAP to deliver the 'accommodate' and 'retreat' decision for Coogee Beach include:

- Accommodate impacts where possible, for example, through dune management and revegetation
- Retreat from short-term risks
- Prepare foreshore management plan to guide relocation and decommissioning of assets at immediate risk (this document)
- Plan for strategic, long-term retreat
- Whole of government approach to retreat private and public assets from risk, and maintain a viable, public foreshore that meets the requirements of State Planning Policy 2.6.

This Foreshore Management Plan aims to address many of these recommendations.

Refer to Section 4.4 for further detail regarding the coastal risks to particular assets and associated timeframes.

3.7 City of Cockburn Coastal Monitoring (Cardno, 2020)

The City of Cockburn implemented a coastal monitoring program in 2012 to build on the studies already being undertaken as part of the Port Coogee Marina Coastal Monitoring program (Port Catherine Developments, 2005-2016) and the Shoreline Monitoring at Owen Anchorage (Cockburn Cement Ltd, since 1988). The study area for the program extends the entire length of the City's shoreline; south of the Naval Base Holiday Park to Island Street Groyne.

The monitoring program has been undertaken by three different consultants over its lifetime:

- MP Rogers and Associates (2012-2016)
- EvoCoast (2017)
- Cardno (2018-2021)

Program Activities

When the program first began in 2012 the program included beach profile monitoring

- Beach profile monitoring at 20 predefined survey transects along the Cockburn coastline. The profiles are taken from behind the primary dune to several hundred metres off shore using a combination of RTK GPS, total station and hydrographic surveys.
- Beach photo monitoring at 18 different locations along the Cockburn coastline. The photo monitoring facilitates the regular tracking and recording of changes and events along different sections of the coastline. The monitoring is undertaken following a guideline made by the City of Cockburn and is shown as Appendix A of the document. The monitoring begun as biannual records and has moved to quarterly records since October 2017 where 3 additional sites were added to bring the total to 18 as it is today.

Figure 11 Coastal monitoring program beach profile locations (Left) and photo monitoring locations (Right)

Historical Coastal Management

The Cockburn coastline has several different structures along its length offering protection from coastal hazards. These structures also have an important influence on the local sediment patterns and nearshore hydrodynamics through different time periods and seasonal changes.

Methods of coastal management in the past have included:

- Groynes and training walls
- Breakwaters
- Sand replenishment either through dredging programs or sand bypassing

The introduction of the Port Coogee Marina in 2007 caused disruption to the north south long shore sediment transport process, important for distributing sediment along the City's coast... A sand replenishment program is in place to move accumulated sediment at Power Station Beach (the excavation site) to the northern end of Coogee Beach (the dump site). This replenishment program occurs approximately every three years moving between 15,000-20,000 m^3.

Another nourishment program exists from Power Station Beach to the north to infill the eroding area to the south of Catherine Groyne.

Beach Change

A trigger point method is applied to the data collected during the beach profile surveys to identify areas that are vulnerable to ongoing erosion or accretion. The two scenarios that have been considered are a short term movement from year to year and the introduction of a long term trend analysis began in 2020 as it is approaching a ten year cycle of movement.

The trigger limits are set out below:

1. 5 m recession of the Mean Sea Level (MSL) contour, approximated as 0 mAHD contour
2. 5 m recession of vegetation line, approximated as +2.0 m (Profiles 16 to 19) or +2.5 m (all other profiles) AHD contour. The position of the vegetation line has been picked up by the surveyor during collection of the 2018 monitoring data and has been used for analysis in this report

A traffic light system was then used throughout the analysis to easily identify beaches with movement.

Specific Change in Foreshore Management Plan area

Figure 12 and Figure 13 above indicate the net change in profile between the indicated years at progressive survey profiles along the beach.

The section of beach between Port Coogee Marina and Coogee Jetty is monitored by 3 survey profiles (Profiles 8, 9 and 10) and 2 manual imagery sites (Sites C47.0S and C46.5N). The northern portion of this section of beach is anchored by the Port Coogee Marina and adjacent seawall which extends below the MSL contour. The offshore profile seaward of the MSL contour has also remained relatively stable since the baseline survey in 2012.

The section of beach between Coogee Jetty and Explosives Jetty is currently monitored by 3 survey profiles (Profiles 11, 12 and 13) and 2 manual imagery sites (Sites C46.5S and C45.1N). All profiles in this section of coastline experienced gradual advancement of the MSL contour relative to 2017 while movement relative to 2012 varied, with isolated sections of accretion and erosion. No trigger exceedances were observed along this sector and a healthy beach width exists.

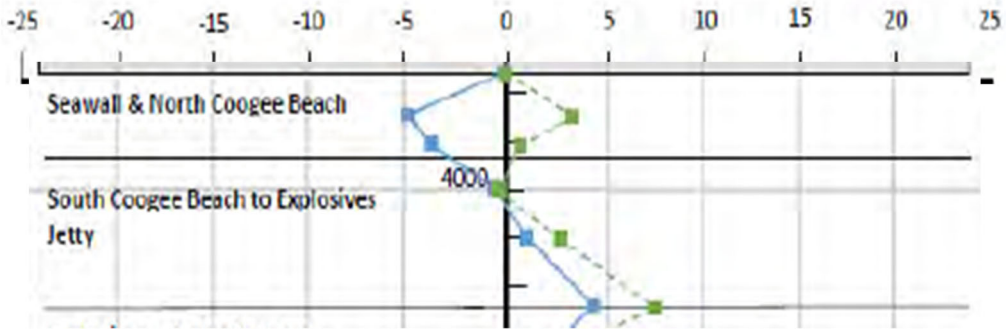


Figure 12 Coogee Beach 2018 shoreline movement relative to 2017 (Blue - MSL contour, Green - Vegetation line contour)

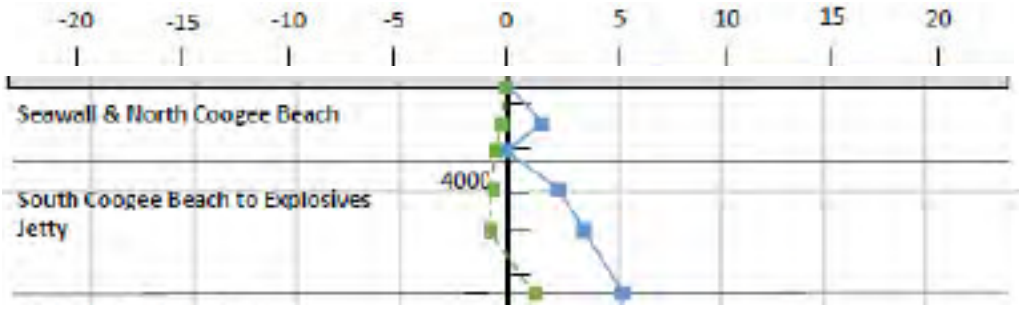


Figure 13 Coogee Beach 2018 shoreline movement relative to 2012 (Blue - MSL contour, Green - Vegetation line contour)

Management Actions and Program Optimisation for the Coastal Monitoring Program

From the most recent study completed at the time of this Foreshore Management Plan being written, the management actions for the ongoing coastal monitoring program include:

- Continuation of the monitoring program to eventually be able reasonably assess medium and long term trends
- Introduce a summary report every five years to address any changes over the period. Ideally this will then be used to feed into a CHRMAP study.
- Areas of natural rock should be surveyed when exposed to adequately be able to show their resistance to erosion
- Move shoreline profiling to a biannual survey
- Introduce digital engineering methods into the monitoring program with the use of:
  - LiDAR and Aerial imagery to undertake surveying and frequent aerial imagery
  - Remote imaging technology to create a greater spatial database of images (suggested 1 hour intervals)
- Sediment sampling
- Storm monitoring – pre and post event to ascertain the affect that storms have on the coastline
- Condition inspection of coastal structures

4. Management Issues and Risks

4.1 Known Management Issues

Several known issues are present at the Foreshore. Namely, the key issues are listed below:

- Littering
- Car break-ins – Anecdotal evidence of car vandalism and break-ins
- Informal access tracks –along the beach and through the dune system can diminish vegetation and damage the dunes ability to protect against erosion.
- Illegal camping
- Antisocial behaviours such as vandalism and graffiti
- Feral animals, such as cats, rats and foxes are known to be present in the area
- Walking of dogs on the beach, contrary to local law
- Poor beach access for mobility impaired persons
- Ongoing sand infilling and consequential maintenance issues for the existing wheelchair ramp beside the Coogee Jetty as well as the main sealed access path to the Jetty
- Shortage of car parking in peak periods, particularly in the northern half of the Foreshore Area.
- Potential further reduction of the Foreshore Area by encroachment of Cockburn Road widening.

Current management responses to littering

4.2 Gap Analysis

A gap analysis has been undertaken to identify missing information or lack of guidelines for the development of the Foreshore Management Plan. An analysis of available site information, studies and relevant planning legislation has been undertaken and compared to the Foreshore Management Plan objectives (refer to Section 1.3) to identify any gaps in knowledge.

4.2.1 Legislation

SPP 2.6 provides for the long-term sustainability of the Western Australian coast. SPP 2.6 is supported by the Coastal Planning Policy Guidelines and provide decision-makers with increased guidance when planning in coastal areas. These documents form the coastal planning framework and have been assessed to identify the key gaps.

Duration and Periodic Review

The only specification as to the length of foreshore management plans in SPP 2.6 and the guidelines, is the requirement for implementation works to be monitored and maintained for no less than 5 years in duration. This limited guidance could potentially create issues such as not planning for long enough or planning for too far ahead where there is more uncertainty. At Coogee Beach, the risks are predicted to eventuate in the longer term rather than in the immediate term, it is important that planning decisions today do not impact on the ability of decision makers to mitigate against future risks, which is why a 50 year management plan has been developed.

The guidelines make reference to a periodic review of the foreshore management plans, although do not specify a frequency of review. Given the long term nature of this Foreshore Management Plan and as the coastline and associated values are constantly changing and could be drastically different within the span off five years, it is recommended that review periods are specified in this case.

Triggers for Adaptation Measures

SPP2.6 and the guidelines do not identify triggers for using each type of adaptation measure. As mentioned previously, each of the adaptation measures is a follow on from the previous one and should only be used if necessary and when the previous measure is ineffective. The Coastal Hazard Risk Management Adaptation Planning Guidelines recommend a risk and vulnerability based approach to determining whether mitigation is required and requires consideration of the impacts of adaptation options on coastal values.

Existing Developments

There isn't necessarily any provisions in place specifically catered towards existing developments. Clause 5.5 (i) of SPP 2.6 makes reference to planning for and assessing existing development, however, unlike new development which has specific examples of how to assess and mitigate against risks , there are no specific guidelines relating to protection of existing development. This leaves significant uncertainty in regards to how existing development should be managed. Coastal Hazard Risk Management Adaptation Planning has been undertaken for this section of coastline which fills some of the gaps at a high level. Implementation of the Foreshore Management Plan will address this gap.

4.2.2 Coastal and Met-Ocean Monitoring

The City of Cockburn Coastal Monitoring Program is being undertaken to fill current gaps in knowledge relating to local coastal processes to inform future studies. This document already makes recommendations on coastal and met-ocean monitoring and data management and no further actions beyond these recommendations are required.

4.3 Community Values

Whilst a community drop in session and a values survey have been undertaken, this has focused on the community within the City and is specific to the local community's values, with over 90% of respondents coming from the City. Visitors and tourists who live further afield were not well represented. Given the risks are most likely to impact the nearby residents and most of

the beach users are likely to come from the City this is considered appropriate. There was a good survey response which captured a variety of values.

4.4 Key Risks

4.4.1 Bushfire Threat

Due to the extensive vegetation present and the areas proximity to the Woodman Point Regional Park study area has risk of bushfire. Measures outlined in the Regional Park Management Plan (DBCA 2010) and Coogee Beach (Environmental) Management Plan address this risk in some detail.

4.4.2 Coastal Erosion

Erosion hazard is present along the Coogee Beach with erosion and acute erosion encroaching past the dune area in 2070, threatening some existing assets.

In the absence of coastal protection works (or other obstacles), as sea levels rise, the shore line, beaches and dune systems will gradually move landwards. Accordingly, the risk to nearshore coastal assets will increase, initially leading to loss of land through erosion.

The 2016 Coastal Adaptation Plan (GHD) considers several different Sea Level Rise (SLR) scenarios in its assessment of erosion hazards:

- Present day (no sea level rise)
- 0.5 m SLR (expected around 2070)
- 0.9 m SLR (expected around 2110)
- 1.5 m SLR (high end scenario possible from 2110)

Time estimates for the above allowances of sea level rise are for guidance purposes only, and the given sea level rise thresholds may be met considerably sooner or later than the timings provided, owing to the fact that there is still uncertainty around the timing and magnitude of future sea level rise. Uncertainty is greater for the latter half of the century, as this is most sensitive to the future trajectory of carbon emissions and complex global climatic systems, hence two SLR scenarios (+0.9 m and +1.5 m) are considered for circa 2110.

With regard to coastal erosion risk and sea level rise scenarios, two “lines” are important for each scenario, being:

- Steady Shoreline – the expected approximate ‘permanent’ alignment of the waterline under this scenario, which may oscillate and vary with seasons and storm events but return to this similar approximate location
- Hazard Line –The extent beyond the relevant Steady Shoreline, which the waterline may reasonably be expected to temporarily reach due to acute events such as seasonal changes and major storms. Erosion could occasionally reach this extent, but the shoreline would likely recover back to the Steady Shoreline alignment over time.

It should be noted that, on top of the uncertainty associated with sea level rise predictions, there is uncertainty with regard to predicted coastal processes and expected shoreline movements that may result from SLR and other complex coastal process factors. The erosion lines developed through the modelling and analysis of the Coastal Vulnerability and Flexible Adaptation Pathways Project (CVFAPP) and used in the City’s coastal planning represent best reasonable estimates, but should be considered approximate and a degree of conservatism applied when using for detailed planning.

Risk Profile

The Coastal Adaptation Plan (GHD 2016) indicates that the Coogee Beach (CMU 5) is not an area which is currently or in the future expected to be significantly vulnerable to purely inundation events. However, the area has been identified as currently and becoming increasingly vulnerable to erosion and a loss of beach area from coastal actions and sea level rise. Coastal vulnerability and risk assessment mapping shows that the risk associated with erosion will likely become intolerable before 2040 for some assets, reflecting a trigger point 3.

This will require a decision between retreat and appropriate interim protection options in planning horizon leading up to 2040, or as risk becomes intolerable.

This Foreshore Management Plan addresses the hazards and trigger points addressed in the above report.

4.4.3 Hazard Scenarios Relevant to this Foreshore Management Plan

This Foreshore Management Plan document focuses on the SLR and erosion scenarios that are likely to impact the Foreshore and development planning within it, over the 50 year horizon to 2070, being the

- **Present day scenario (no SLR)** considers the 2013 shoreline and the areas at risk from acute coastal erosion events (Hazard Line) even without any increase in sea level.
- **0.5 m SLR scenario** (assumed to occur by around 2070) and likely to directly impact some areas and assets of the Foreshore within the 50 year timescale of this Foreshore Management Plan. Both the Steady Shoreline and Hazard Line are relevant.
- **0.9 m SLR scenario**, assumed to occur by around 2110 and therefore relevant to the planning and design of major new developments occurring in the Foreshore within the timescale of this Foreshore Management Plan (as developments may have a design life well beyond the 50 year timescale of the Foreshore Management Plan). The Hazard Line for this scenario is relevant.

The 1.5 m SLR scenario is not factored in to this Foreshore Management Plan, however this may change with future reviews of the document and as scientific understanding improves with regard to SLR.

The distance between the Steady Shoreline and Hazard Line varies from approximately 45 m at the southern end of the Foreshore to 60 m at the northern end of the Foreshore.

Refer to Figure 14 for the applicable erosion lines indicating applicable scenarios and hazards.

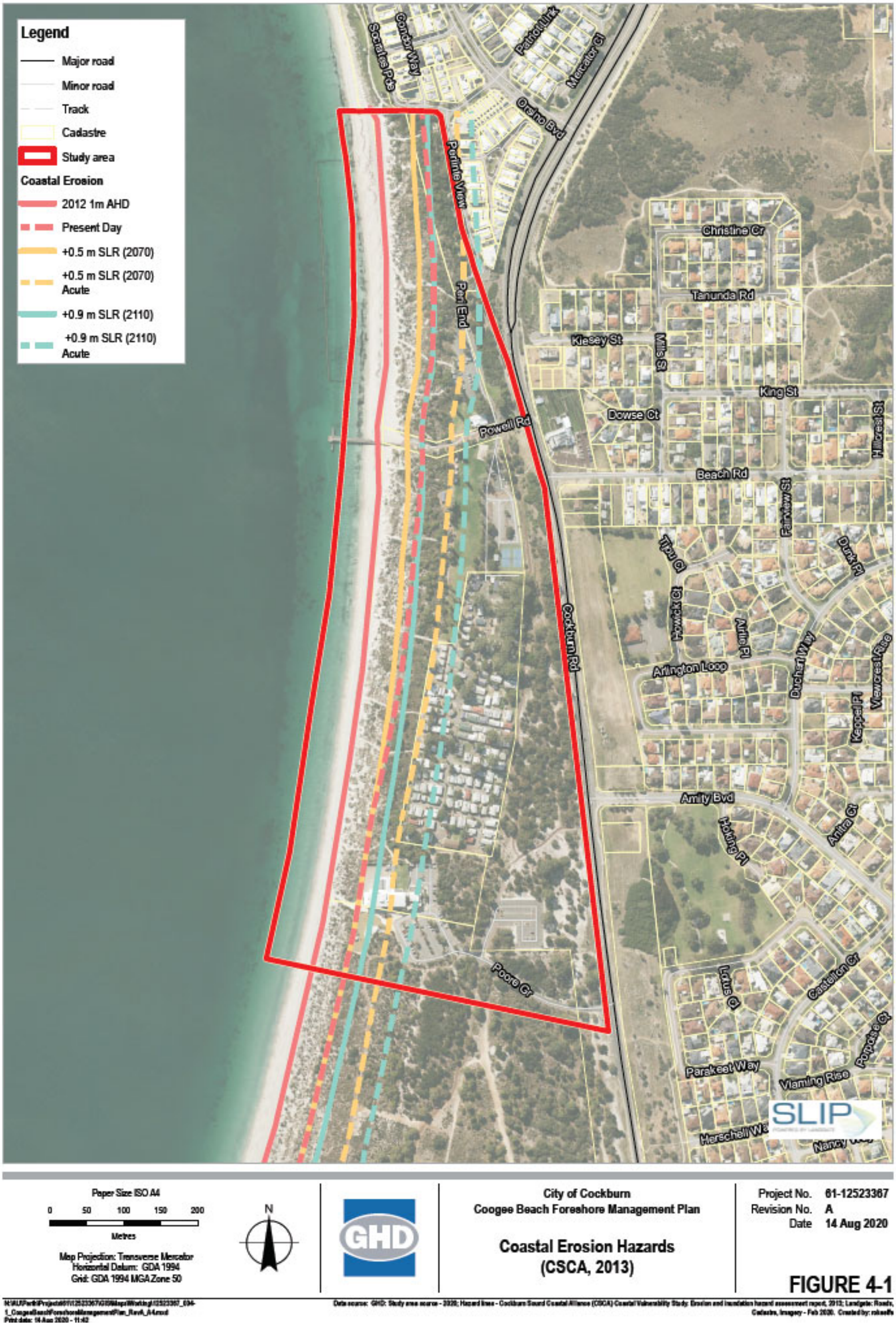


Figure 14 Erosion hazards to 2070 (CZM Pty Ltd et al 2013)

Areas and Assets at Risk from Erosion

As shown in Figure 14, the following key assets and areas within the Foreshore have been identified as at risk of direct impact by erosion within the timescale of this Foreshore Management Plan:

- Dunes and dune vegetation – Under the 0.5 m SLR scenario (2070) 15 to 40 m of dune vegetation north of the CBICF and 35 to 40 m of dune vegetation south of the CBICF is at risk of being lost as the Steady Shoreline retreats. Nearly all dune and dune vegetation areas north of the CBICF and 80 to 90 m of the dune vegetation south of the CBICF are seaward of the hazard line under 0.5 m SLR. The majority of the dune and dune vegetation has reached Trigger 2, with some areas such as in the vicinity of the CBICF having reached Trigger 3 where the width of dune vegetation is completely seaward of the 0.5 m SLR hazard line.
- Coogee Beach Jetty – Whilst the Jetty has been designed to withstand the impacts of coastal process, the abutment that connects the structure to the land is the most vulnerable section to processes of erosion. The abutment is seaward of the +0.5 m SLR Steady Shoreline and is therefore likely to become at risk from 2040-2060. This asset has reached Trigger 3A and is at intolerable risk. Management of this risk is considered in Section 6.5.1
- The CBICF – The building and site are likely to be impacted (damaged or destroyed) before 2070 (under the 0.5 m SLR scenario), if not protected or relocated elsewhere. Whilst the possibility is rare, the western edge of the site boundary is impacted by the present day Hazard Line and this Hazard Line, will progress towards the building and its foundations if the 1.0 m AHD contour or dune retreats. The Steady Shoreline is expected to be approximately at the boundary of the site under the 0.5 m SLR scenario, with the acute hazard line well into the footprint of the building, putting it at significant risk of damage or loss. This asset has therefore reached Trigger 3 – risk is intolerable, interim protection and relocation are considered in Section 6.5.2.
- Holiday Park Infrastructure–Erosion impacts from the 0.5 m SLR Hazard Line (2070) could extend to the boundary of the existing holiday park resulting in potential impacts to structures along this boundary and the encroaching shoreline could see loss of adequate public foreshore reserve buffer. Areas further in to the Holiday Park are at risk with greater SLR (likely beyond 2070), which is a consideration for new developments occurring in this area within the life of the Foreshore Management Plan. This asset has reached Trigger 2 - Current risks can be accommodated, but planning should consider longer term risks.
- Perlinte View road, services, landscaping and private properties – Assets, including a portion of Perlinte View road, landscaping opposite premises on Perlinte View and some premises are seaward of the+ 0.5 SLR Hazard Line (2070) and the present day acute hazard line is approaching this area at the northern end. This area is at Trigger 3 (intolerable risk), and may be impacted by 2040-2060. Management actions to address this risk are considered in Section 6.5.4.
- Northern Carpark – a portion of the carpark is seaward of the +0.5 SLR Acute Hazard Line (2070) but landward of the present day Acute Hazard Line. It is anticipated that this asset will begin to be at risk between 2040 and 2060. This asset has reached Trigger 2 and is likely to reach Trigger 3 (intolerable risk) between 2040 and 2060. Management actions to address this risk are considered in Section 6.5.7.
- Southern Carpark – all of the carpark is landward of the +0.5 SLR Acute Hazard Line (2070), and a significant majority is beyond the +0.9 SLR Acute Hazard Line (2110). This

asset has reached Trigger 2 - Current risks can be accommodated, but planning should consider longer term risks (impacts expected beyond 2070).

- Coogee Beach Café is located just landward of the +0.9 SLR Acute Hazard Line (2110). This asset is at Trigger 1, with impacts expected beyond 2110, however consideration of the assets design life should be considered in future decision making (further consideration of this is provided in Section 6.5.5).
- Minor Structures – Minor structures in the Foreshore such as the toilet block (just south of the jetty), and picnic shelters (along the path and near the carpark) have varying exposure to coastal hazards due to spatial distribution. The risk to minor structures is typically lower than major infrastructure above as a result of their lower costs and shorter design life. Trigger points indicate the location in relation to hazards, and not necessarily the risk tolerance to these assets.
    - Coogee Beach toilet block (near jetty) –seaward of the +0.5 SLR Acute Hazard Line (2070), at risk 2040 and 2060 Trigger 3 (intolerable).
    - Northern access path Picnic shelter - landward of the +0.5 m SLR Steady Shoreline but seaward of present day Acute Hazard Line, Trigger 4 (intolerable – relocate as part of a retreat strategy).
    - Southern playground and landscaping – just landward of the present day erosion Hazard Line, Trigger 4 (intolerable – relocate as part of a retreat strategy).

5. Community and Stakeholder Consultation

5.1 Consultation Overview

When considering future management of Coogee Beach, it is important to consider how the community values this area. Community values will influence how the area should be managed to ensure the area can continue to be enjoyed and management strategies do not negatively impact on factors most valued by the residents and visitors to the area.

Community engagement was undertaken from the 9th February to the 4th March 2020 to understand the values associated with the Coogee Beach area. Appendix B provides information about the consultation and detailed findings. The full results from the coastal values survey, that asked about use and values associated with particular locations in the study area, are provided in Appendix C. Coogee Beach is used and valued for a diversity of purposes and reasons. The overall value of the Coogee Beach is summarised in the following value statements:

- for recreation opportunities
- a social space to meet and interact
- for its cultural value
- for its character, sense of place and scenic landscape
- as an ecosystem and place of biodiversity
- for education, science and learning
- as a commercial economic resource
- as a personal economic resource

Community consultation activity

5.2 Stakeholder Values

Engagement with key stakeholders within the Foreshore, the Surf Life Saving Club, Discovery Parks and Coogee Beach Café was undertaken in the form of semi-structured interviews and discussions. All of these stakeholders identified a clear passion and interest in maintaining the beach area and the importance of the natural environment and the amenity of the Foreshore as to their businesses. The Surf Living Club identified that there were issues within the area such as overnight camping in the carpark but also suggested various improvements for the Foreshore such as increased access via public transport. Discovery Parks also emphasised the importance of the area as their main source of income is tourism and as such the beach needs to be retained but also acknowledged that should an imminent threat to their business occur, they are willing to adapt to overcome it. Finally the Coogee Beach Café identified the beach as

the key economic driver for their business as people tend to visit the café either before or after going to the beach and would therefore be heavily impacted by the loss of the sandy beach.

5.3 Community Values and Ongoing Management

A community values survey was used to investigate how community values may be impacted by potential management strategies. The key questions and summaries identified are as follows:

Which parts of Coogee Beach do you usually go to?

Results

A lot of participants utilise the whole foreshore or portions of the foreshore with popular areas identified including the Omeo wreck, Coogee Beach Jetty, the Shark Barrier Swimming Area and the Surf Life Saving Club. A few people identified they used the whole reserve, visited the grassed areas and playgrounds.

Interpretation of Results

The key learning is that people are visiting the beach primarily for recreational, social and cultural reasons associated with the sandy beach. This supports the idea that recreation, social and cultural use are the key drivers in which determine the overall significance of Coogee Beach and heighten the importance of maintaining a sandy beach into the future.

What do you do at Coogee Beach?

Results

The most popular activities identified by over 40% of respondents were: swimming, enjoying the sandy beach, walking/cycling on coastal paths, enjoying the views, socialising with friends, exercise and sports, using grassed parkland areas/playground and visiting cafes.

Interpretation of Results

Recreational activities supported by the natural and built environment are very popular as are opportunities to socialise and use local cafes.

How important are the following things at Coogee Beach?

Results

This question involved determining the importance of the following nine identified values to the community:

- Recreation;
- Socialising;
- Culture;
- Character;
- Ecosystem;
- Educational opportunities;
- Economic opportunities;
- Personal financial benefits;
- Enjoying food and drink; and

Approximately 94% of respondents identified recreational, social, cultural and ecosystem values as either very important or somewhat important. Over 75% of respondents identified personal financial benefits as either very important or somewhat important. The remaining values were identified as either very important or somewhat important by 50% of respondents or more.

Interpretation of Results

All the values identified above are important to the community, however, recreational and socio-cultural and ecosystem values were the predominant reasons people value the Foreshore.

Is there anything else special or important about Coogee Beach?

Results

This question was used to identify any other aspects of the beach that may have been missed by this survey and the most relevant items that were bought up included the fact that this beach remains relatively untouched by development which people want to ensure stays that way, furthermore the amenity and environmental aspects of the beach were further identified as being important to the area.

Interpretation of Results

The answers provided in this section further supported the value of environmental aspects of the beach and further that the visitors of Coogee Beach don't come to the beach to enjoy being in nature. Another key item to take away from the responses is the level of contention around the shark barrier with both significant support and objection against the structure.

Over the next 50 years, the Surf Life Saving Club may be at risk of erosion as a result of major, rare storms. Potential options to reduce erosion risk to this building include an offshore breakwater or a multipurpose, offshore artificial reef (a constructed reef that encourages public interaction with developing marine ecosystems, whilst reducing wave energy that causes erosion). Which options do you support?

Results

The purpose of this question was to identify the most amicable coastal erosion mitigation option to protect the Surf Life Saving Club. There was a large amount of support (approximately 66% of respondents) for either an artificial reef or an offshore breakwater. Only a small proportion identified that the club should be relocated.

Interpretation of Results

From what is identified in these results it is clear that the preferential option for the Surf Life Saving Club is to implement coastal protection.

The future predicted shoreline recession at Coogee Beach will likely result in the gradual reduction in the size of the public reserve whilst public usage demands of the foreshore is expected to increase. In view of these challenges, please rank the following options (1 best, 3 worst)

Results

This question was used to assess the preferred approach between: loss of natural areas, loss of built areas or equal parts of both areas. The option to equally reduce both was clearly the most preferential as people don't want to sacrifice one for the other.

Interpretation of Results

The results show that while the environmental values of the beach and dune habitat is important, people still need that built aspect of the beach for the amenity's such as showers, shelter, parking or the café. People would rather lose a bit of both as they are of the opinion that a significant loss in either would severely impact the beach and beach functions.

5.4 Community Survey Interpretation

As identified in the surveys recreation is a huge part of what makes Coogee Beach so popular to visitors and it's why they frequently visit the area. Multiple participants identified that the passive recreation aspect of the beach is what makes it most enjoyable, this involves either walking or running and utilising the scenery and the atmosphere the beach generates. Furthermore due the geographic location of the beach, wave conditions are relatively calm which allows for making it easier for families with younger children to use. While these are your more general and broader activities people come to the beach to experience, there is also opportunity for more specialised activities such as fishing and diving as well as in some locations, boating.

Along with these recreational activities there is also a capacity to socialise and meet people. The barbeque and picnic facilities on site provide for a more than ideal place for families and friends to meet up and relax while they enjoy the beach or watch and participate in the events that the Surf Life Saving Club holds every so often.

Throughout the beach there are identified places of both Indigenous and European heritage value. The history of this area is highly valued and one of the core reasons as to why people enjoy it so much. Since the 1930's people have enjoyed the beach and the Coogee Beach Jetty, while having undergone improvement and maintenance works still remains iconic to the area and is expected to remain for the foreseeable future.

As identified in the surveys people feel a sense of place when they visit this area, identified in most by descriptions of the Foreshore as beautiful or iconic. The survey also identified the importance of the scenery as well as the local flora and fauna found within the area for providing a pleasant experience.

Beyond the amenity values of the area participants also identified the importance of commercial and educational opportunities in the area. Tourism and educational walking trails are heavily present in the area and as such should not be discounted when assessing the Foreshore as they provide an opportunity some other beaches either don't have or are unable to provide. Furthermore many people identified the importance of the foreshore reserve towards their own personal economic values in the way of property values. While coastal erosion and inundation are increasingly present issues facing these properties a lot of survey participants identified that the property values the beach brings are of high importance to them.

5.5 Findings of Preliminary Engagement

Some conflicts in points of view were identified in the survey, relating to support for the caravan park, the shark barrier or coastal erosion protection with sea walls.

The results of the survey highlighted the importance of maintaining the provision of a sandy beach, the natural environment and the built infrastructure such as paths, toilets, car parking and cafes within the reserve to support the key recreational, socio-cultural and environmental values of the area.

5.6 Consultation on Draft Foreshore Management Plan

The draft FMP was available for public comment from 3 September 2020 to 29 September 2020. Methods of advertising the public comment period and consultation events included print media, signage within the Foreshore, online including through the Comment on Cockburn website and via the City's social media channels and through direct email to targeted stakeholders.

During the public comment period, a number of public and targeted consultation events were held by the City. GHD project staff attended and supported a public 'Pop-up" event on site on Saturday 19 September from 10.30 am to 2.30pm and a specific "drop-in" session for residents of the Perlinte View area was held on Tuesday 22 September from 5 to 8 pm. The City also undertook further targeted engagement with specific State Government departments, commercial tenants and community groups including the Port Coogee Community Association and Coogee Beach Progress Association.

Feedback on the draft FMP was gathered by an online survey, during on-site workshop and consultation events, and via email. Survey responses indicated broad support for all recommended management actions suggesting the FMP is well supported by those who responded to the survey.

Results of the survey undertaken during public comment period are included in Appendix C.

5.7 Aboriginal Engagement

Although the City reached out to local Aboriginal community groups and sent information to the City's Aboriginal Reference Group, no specific comments or feedback was received from representatives of the Aboriginal community during either phase of stakeholder engagement. Prior to major works being undertaken within the Foreshore pursuant to this Plan, consideration should be given to engaging a heritage consultant to identify appropriate knowledge holders from the Whadjuk Noongar who can provide comment on stakeholder consultation matters. This information and these contacts can be used to inform future stakeholder engagement activities at the Foreshore.

6. Management Plan

Recommended foreshore management strategies are presented in the sections below. These strategies have been developed with considerations to the key objectives and guiding principles outlined in Section 1.

The management strategies have been tested during stakeholder engagement sessions and community consultation referred to in Section 5 to understand how the community values different options of managing the Coogee Beach Foreshore.

Following consideration of stakeholder engagement results and the assessment of management issues, the following guiding principles are recommended for management of the Foreshore in general:

- Retain the natural character of the Foreshore going forward, including preserving a sandy beach and healthy vegetated foredune buffer to the extent possible.
- Maintain and adapt the level of public amenity provided by infrastructure within the Foreshore, with a view to achieving this more efficiently and on a smaller footprint moving forward.
- Uphold the present balance of natural and developed areas, and strategically rebalance to maintain similar proportions (and not just accept loss of the natural foredune areas which are impacted first) if and when Foreshore land is lost in the future due to shoreline movements.

Timing of actions is separated in to two broad categories:

- Immediate Actions: Those likely to be warranted within the next 10 years
- Longer Term Actions: Those likely to be warranted between 2030 and 2070

Any estimates provided for the timing of future events are high level guidance only and represent a best estimate interpretation of the CVFAPP studies. Timing of future events will be highly sensitive to a number of unknown factors, and predicted horizons could be reached sooner or later than the estimated timeframes. All cost estimates presented are high level indicative estimates only and exclude GST. All estimates of time and cost should be regularly reviewed and refined as information and scientific understanding changes. Costs have only been provided for actions recommended to be implemented in the immediate term as many actions beyond this time frame are highly uncertain and to be added to subsequent revisions of this document.

6.1 Access Tracks

The beach dunes provides critical protection against long and short term erosion. Currently the number of access tracks is partitioning the dune into several distinct areas. By reducing the number of access tracks, revegetation and rehabilitation of the dune can be undertaken to improve the dune habitat. The City reports that there are not presently any management issues posed by the existing track network, however this should be monitored and track consolidation implemented if degradation is observed. If track conditions degrade, there is an increase in people ignoring designated tracks resulting in dune damage or if tracks are identified as limiting the recovery of dune rehabilitation then the City should consider whether consolidation of tracks could reduce the impacts and costs associated with maintaining them.

Where tracks are to be closed, fences or barriers can be added to protect the dune from traffic and revegetation should be undertaken.

The balance between closing tracks and the location of retained tracks needs to be carefully considered, as if tracks are closed where people like to access, then informal tracks may be created. This could potentially be more detrimental to the overall condition of the dune than managed access of existing paths.

As can be seen in Table 6-1, there are 14 access tracks currently along the study area providing access from the land side to the dune. The distance between some of these tracks is as low as 50 m Careful selection of access tracks for closure would result in minimal impact to beach access.

Figure 15 Restricting access points will help stabilize the dune

It is recommended that if there is closure of any access tracks west of the Holiday Park (tracks 9 to 12) that a new link path should be built parallel and along the Holiday Park's western boundary as indicated on Table 6-1 to encourage use of all available access tracks and improve management access. The link path should be constructed of crushed limestone (or similar). With suitable directional signage this will allow people to know how to access the beach without damaging the dune and the revegetation efforts that will be occurring. All beach access paths the landward side of dunes shall be fenced to designate areas of restricted access and prevent further damage to dune habitats.

Access tracks 3 and 4 (in Table 6-1) are known to promote sand ingress into the northern carpark which impacts on access and requires ongoing management to remove accumulated sand. Installation of elevated access stairways/boardwalks to replace the portion of these tracks that link to the car park will assist to reduce migration of sand, improve access and minimise degradation.

Recommended Actions

Immediate Term:

- Continue monitoring the condition and health of dunes (ongoing)
- Maintain and install fencing to protect dunes (ongoing)
- Construct elevated beach access, timber stairs / boardwalks to replace sand tracks for access tracks 3 and 4.

  Potential timeframe – by 2025
- If degradation is observed beyond 2025, consider implementing track closures as presented in Table 6-1. Consider undertaking track user survey to inform user behaviour and decision making.
  Potential timeframe – beyond 2025
- If tracks west of Holiday park are closed, construct link path to western boundary of Holiday Park (within the site boundary) to improve access and connect to existing paved path (north).

  Potential timeframe – by 2030

Longer Term:

- Upgrade paths to equal access paths.

Costs

Immediate Term:

- Monitoring nil (covered by dune flora/ weed management)
- Construct timber stairs and boardwalk: Anticipated total budget is $125,000 including 25% for construction overheads.
- Construct crushed limestone path parallel to Holiday Park (2 m wide by 400 m long, excluding edge finish treatments) approximately $40,000.

Longer Term:

- Costs are dependent upon choice of preferred path treatment and length to be upgraded.

Table 6-1 Track identification and recommendations

	Track ID	Access To	Entry/Exit (Built or Natural)	Recommendation
	1	Northern residential area	Built/Natural	Open
	2	Northern residential area	Built/Natural	Open
	3	Northern end of carpark (Hut positioned in middle of track) Vehicular access	Built/Natural	Open. Install timber stairway/ boardwalk
	4	Centre of carpark	Built/Natural	Open Install timber stairway/ boardwalk
	5	Centre of Carpark	Built/Natural	Close
	6	Main entrance to Coogee Jetty	Built/Built	Open
	7	Access to beach from recreational area	Built/Natural	Close
	8	Access to Beach from recreational area	Built/Natural	Open
	9	Discovery Parks Coogee Beach (North)	Natural/Natural	Open
	10	Discovery Parks Coogee Beach (Centre)	Natural/Natural	Close
	11	Discovery Parks Coogee Beach (Centre)	Natural/Natural	Open
	12	Discovery Parks Coogee Beach (South)	Built/Natural	Open
	13	Small walking track from CBICF	Natural/Natural	Close
	14	Main CBICF entrance	Built/Built	Open
	15	Entrance from CBICF playground area	Natural/Natural	Open

6.2 Flora/ Weed Management

Flora and weed management should continue as recommended in existing Management Plans by implementing programs such as:

- A Weed Management Plan that has a clear strategy to control or eradicate dangerous weeds from the area focusing on extreme infestation areas first. The Plan should outline a continuous monitoring and improvement schedule to ensure that the strategy is working effectively.
- A Vegetation Rehabilitation Plan encompassing works already undertaken and further works required to revegetate and rehabilitate the dune along the majority of the beach should be implemented immediately as the dune is one of the first lines of protection against erosion processes. The area in particular need of revegetation has been identified as part of the 15 year plan figure shown in Section 7 This area is in critical need of rehabilitation to maintain the beaches protection. There is an opportunity to encourage the local community to assist in rehabilitation efforts due to the public profile of the beach. The plan should include items such as:
- Revegetation of the dune using seed or tubestock native to the area during an appropriate season such as after winter rainfall. The revegetation should be undertaken with native species identified in section 2.2.
- Fencing and signage to protect the dune area from further access from people accessing the beach through self-made tracks. Protection will need to be implemented particularly near closed tracks to ensure access is stopped
- Ensure that there is sufficient logs/materials present within the dune to form habitats for fauna to encourage breeding.
- Monitor the health of the dune using techniques such as aerial imagery spectral coverage surveys or field surveys. This should be undertaken approximately every 3 months to identify additional; revegetation efforts required
- Encourage community education and engagement with assisting in rehabilitation through education programs or signage to prevent further degradation of the dune

Recommended Actions

Immediate Term:

- Continue implementation of existing Weed Management Plan from the (Environmental) Management Plan (EcoScape 2009)
- Continue implementation of existing Vegetation Rehabilitation Plan from the (Environmental) Management Plan (EcoScape 2009)

Longer Term:

- Maintain a sufficient dune vegetation zone width and monitor the health of dunes and the stability of the back boundary of the dune area. Consider reclaiming landscaped areas to move the dune extents eastward as necessary in future if windblown sand becomes problematic due to diminishing dune width.

  Potential timeframe: as required, likely after 2030

Costs

No additional costs beyond recurrent expenditure by the Parks and Environments Services is anticipated.

6.3 Fauna Management

Comprehensive fauna management has been outlined in past reports listed in Section 2. The area is known to have several pest fauna species. The City undertakes control programs in this area, in particular for foxes. This current management should continue as well as extensions to this program including feral cats to improve the conditions for known native wildlife, such as bandicoots and birds.

Recommended Actions

- Continue managing fauna in accordance with the (Environmental) Management Plan (EcoScape 2009)

Costs

No additional costs beyond recurrent expenditure.

6.4 Community Safety and Amenity

Recommended Actions

Immediate Term:

- Continue the Beach Bin Trial initiative on a permanent basis so as to reduce littering on the beach, and adapt locations and collection schedules as required to respond to erosion and seasonal usage.
- Increase passive surveillance and swimmer safety by facilitating a removable patrol observation tower in coordination the Coogee Beach Surf Life Saving Club, to be located high on the beach adjacent north of the Coogee Jetty. Monitor shoreline movements, ensure adequate structural capacity to withstand erosion events and adjust the location from time to time as may be required to maintain the tower.
- Maintain and expand the CCTV network at Coogee Beach in accordance with the City's Community Safety & CCTV Strategy 2017-2022

Costs

No additional costs are attributable to these management actions. The action should be implemented by the Coogee Beach Surf Life Saving Club. Actions may be eligible for funding through the City's Community Grants program.

6.5 Infrastructure Management

The current built infrastructure in the Foreshore includes several large buildings and structures identified in Section 2.1.3. Some of these assets are at risk of coastal erosion impacts as identified in Section 4.4.2, and may require adaptation actions to manage risks over the life of this Foreshore Management Plan. Adaptation may include either retreating or defending at different stages and trigger points through the 50 year planning horizon. Strategies that can be used to guide these decisions are outlined in Section 1.2 and presented in detail within the Coastal Adaptation Plan (summarised in Section 3.6.2).

The general infrastructure management strategy adopted for this plan is long term managed retreat from vulnerable areas when erosion risks become intolerable, with interim protection measures where appropriate to continue use of areas and assets in the meantime. Recommendations for the management of key built infrastructure within the Foreshore is outlined below.

6.5.1 Coogee Beach Jetty

The Coogee Beach Jetty is a popular and iconic community asset which should remain a focal point of Coogee Beach. However, as the shoreline and frontal dune recedes due to erosion, the jetty abutment will likely become more exposed and disconnected from it's tie-in to land. Furthermore, sea level rise will progressively limit the useability of the jetty's lower landings via increasing incidence of submergence and wave overtopping.

Reactive sand replenishment is recommended maintain abutment integrity following major erosion events, however there will eventually be a requirement to protect and bolster the toe of the abutment, or to relocate it back further landward with a commensurate eastward extension of the jetty.

The lower landings will eventually require the deck level increased to manage increasing water levels.

The current jetty structure may reach the end of its functional life during the life of this Foreshore Management Plan, and it is at this point of major renewal or replacement works that consideration should be given to adapting the location and levels of a reconfigured structure to suit the water levels and coastal risks expected at the time.

Poor beach access for mobility impaired people has also been identified as an issue at Coogee Beach. The establishment of an access ramp down to the beach via an extension to the existing jetty will improve access and allow for the closure of the existing wheelchair ramp nearby the abutment which is continuously infilling with windblown sand.

Recommended Actions

Immediate Term:

- Monitor the stability of the jetty abutment via the City's coastal monitoring program
- Design and implement an access ramp running back toward the shore from the existing jetty, so as to improve accessibility and enable closure of the unviable existing wheelchair ramp.

  Potential timeframe by 2030
- Plan any upgrades or major works to the jetty with consideration to increasing future coastal risks and the remaining useful life of the structure

  Potential timeframe by 2030

Longer Term:

- Maintain & adapt the location and height of the jetty as may be required to match the receding shoreline and increasing water levels, via either modification of the existing jetty and abutment, or rebuilding the structure higher and further eastward at the end of its useful life.
  Potential timeframe: 2040 - 2060

Costs

Immediate Term:

- Construct access ramp extension to jetty and decommission old wheelchair ramp - $290,000

Longer Term:

- Adapt jetty and abutment in response to future water level increases and shoreline recession - $500,000 (Cost supplied by City)

6.5.2 Coogee Beach Integrated Community Facility (CBICF)

Between 2012 and 2018 the dune vegetation line at monitoring profile 12 (in the vicinity of the CBICF) retreated in the order of 1 to 2 m and the MSL contour accreted in the order of 3 to 4 m. It is therefore considered that since the CVFAPP study was undertaken, there has not been significant coastal change in this area and the present day Hazard Line is still applicable today.

The CBICF has reached Trigger 3 - risk is intolerable because the site boundary is impacted by the present day Hazard Line. This Hazard Line, will progress towards the building and its foundations if the 1.0 m AHD contour or dune vegetation line retreats.

The present day dune width to the boundary of the CBICF is between 32 and 38 m from the compound walls and is widest where the building is closest to the ocean. Reactive beach sand replenishment will likely be required initially during years of significant erosion, to maintain this dune buffer. Retreat of the beach (MSL and dune vegetation line) of 5m or more could place the building and its foundations at risk of an acute event. Refer to sand replenishment recommendations in Section 6.6

As erosion severity and sand replenishment requirements increase, there will likely be a point that sand replenishment becomes unviable to manage the risk to the asset. At this point, a decision will need to be made to either install hard protection (e.g. a seawall) in front of the site or relocate the building elsewhere at a safer setback distance. Consultation with the Surf Life Saving Club indicates that the hard structures on or in front of the beach (such as groynes or artificial reef) is not supported due to the fundamental way this would change the beach, and a buried seawall is likely preferable but this decision will need to be made at the time with consideration to the capital costs and remaining service life of the building.

It is recommended that a review of the form and function of the CBICF is undertaken before increasing coastal risks require it to be retreated or it reaches the end of its useful life.

When the building reaches the end of its useful life, it should preferably be rebuilt at a further setback distance, in line with the coastal risk assessment undertaken at the time or otherwise rebuilt in a way that can be removed/relocated if required. Potential alternative sites should be considered in future strategic planning of the Foreshore; existing car parking areas could provide suitably set-back relocation sites that avoid disturbance to natural areas, provided that parking capacity can be retained (e.g. under croft parking) with the new facility.

Recommended Actions

Immediate Term:

- Monitor the width of the dune buffer of profile 12 from the City's Coastal Monitoring program, and replenish the beach in front of the building as required to prevent the MSL or dune vegetation line retreating more than 5 m from 2012 location. Refer to sand replenishment recommendations in Section 6.6

  Potential timeframe: Immediately

- Complete a cost-benefit analysis of interim protection vs early retreat and if determined the preferred pathway, complete detailed design of the recommended interim protection measure (e.g. buried seawall or sand nourishment) .

  Potential timeframe: before 2025

- Review the form and function of the CBICF

  Potential timeframe: before 2030

Longer Term:

- Install hard protection or retreat (relocate the facility further landward) at such time that erosion risks to the facility can no longer be viably managed by sand replenishment *Potential timeframe: 2030-40 but may be earlier if erosion trends change.*

Costs

Immediate Term:

- Study to consider cost-benefits and provide engineering design for protection/retreat $60,000
- Sand nourishment costs are considered in Section 6.6

Longer Term:

- Cost of installation of hard protection infrastructure or relocating building (current building cost approximately $6.5 million)
- Buried Seawall and sand nourishment: Estimated Capex in the order of $2.5 M.

6.5.3 Holiday Park Infrastructure

Western most areas of the Holiday Park are at risk of erosion impacts under a 0.5 m SLR acute scenario, and the receding shoreline may also reduce the remaining foreshore reserve width in front of the site to an unacceptable width.

A minimum 40 m width vegetated public foreshore reserve should be maintained at all times in front of the Holiday Park, and infrastructure (cabins, services, etc.) should be progressively removed and dunes revegetated if or when required to maintain this minimum reserve width.

A Holiday Park Buffer Line offset 20 m inland from the 0.5 m SLR Hazard Line should be established, in front of which only transportable structures or minor infrastructure should be permitted. This is a sufficient setback to ensure adequate dune width over the life of the Foreshore Management Plan; refer Section 6.8.1 for further details regarding recommended management of the Holiday Park site and lease.

Recommended Actions

Immediate Term:

- Progressive redevelopment of Holiday Park with permanent development (ablutions, offices, major services, etc.) behind the Holiday Park Buffer Line as assets reach the end of useful life.
- Only transportable accommodation, removable infrastructure and minor services to be established on the ocean side of the Holiday Park Buffer Line.
- Ensure leasing arrangement reflects risks and hazards present for the property and controls in place.
- Monitor shoreline movements and the width of the vegetated foreshore reserve in front of the Holiday Park as part of the City's annual coastal monitoring program.

Longer Term:

- Implement managed retreat of Holiday Park infrastructure to maintain a 40 m public foreshore reserve width and rehabilitate dunes as necessary to respond to future erosion and shoreline recession

  Potential timeframe: 2040 - 2060

Costs

It is understood that relocation costs for transportable accommodation and other minor infrastructure will likely be borne by the lessee, however costs are to be determined between the parties.

6.5.4 Perlinte View public & private assets

The triennial Port Coogee sand bypassing works undertaken by the City keeps this this area of beach well nourished, and this will likely be sufficient for several more decades. Erosion is however expected to increase beyond the capacity of sand bypassing nourishment, and the landscaping, services and road assets as well as some northern properties of Perlinte View are expected to be vulnerable to acute erosion events by 2070 under the 0.5 m SLR scenario.

All properties are expected to be at direct threat toward the end of the century under the 0.9 m SLR scenario, so action will likely be required during the life of this Foreshore Management Plan.

Although Perlinte View properties could be accessed from the rear lane only as an interim measure, retreat and closure of this road would see a loss of the landscaped pedestrian link which is of high public amenity. Furthermore, private properties may eventually need to be purchased and reclaimed so as to retain sufficient public foreshore reserve width (if a retreat strategy was pursued), at considerable cost.

Defence of the public and private assets of Perlinte View via hard coastal protection is considered the most suitable adaptation strategy for the foreseeable planning horizon, however this decision will be subject to more detailed analysis and assessment closer to the time of it being required. This is consistent with the hard coastal protection strategy employed further north along the Port Coogee coastline.

A buried seawall installed slightly seaward of the existing western Perlinte pathway should be considered so as to enable a sandy beach and vegetated dune to be maintained in front of the wall most of the time but provide protection to assets during rare extreme erosion events. Ultimately (beyond the timeframe of this Foreshore Management Plan) a wall would likely become occasionally exposed on rare storm events, and later permanently exposed as erosion further progresses and the vegetated dune and beach are mostly lost. The location of the proposed seawall shown in Figure 19 is indicative only. The seawall could be located further westward. Selection of its final location should be in response to community consultation and coastal engineering study.

Prioritisation should be given to retaining the health and extent of native vegetation in this area as much and for as long as possible, and to promptly reinstate any vegetation cleared following construction of structures. Retaining the mass and height of the vegetation in this area is important to avoid any impression that it could be permanently diminished for the benefit of better coastal views from nearby properties. Considering this adaptation measure benefits both public (foreshore users) and private (owners of at-risk properties) stakeholders, consideration should be given to an appropriate funding mechanism well in advance of actions being required, including the consultation with and future contribution from directly affected landholders. Even if the suggested protection strategy is not ultimately pursued long term, there will be considerable cost associated with any alternative adaptation strategies (such as managed retreat of assets), especially if private property is to be purchased.

Recommended Actions

Immediate Term:

- Continue monitoring the beach and dune width as part of the broader coastal monitoring program. A dune width of 60 m or less from Perlinte View represents a higher risk and should trigger planning for further actions.
- Investigate and assess funding mechanisms, sources and contribution models for erosion adaptation measures (e.g. a seawall) for Perlinte View, and consider establishing a reserve fund for this purpose.

  Potential timeframe: by 2025
- Planning and feasibility studies: Conduct a detailed assessment of costs and benefits to confirm if the construction of protection structures is still the preferred strategy to manage Perlinte View erosion risks. Following this it is recommended that the refinement of protection option and identification of the preferred alignment is determined from comprehensive community engagement, coastal engineering and environmental assessments.
  Potential timeframe: by 2030

Longer Term:

- Implement adaptation measures (e.g. a buried seawall to the immediate west of Perlinte View road reserve) when the appropriate trigger point is reached.
  Potential timeframe: 2030 to 2050

Costs

Immediate Term:

- Planning and feasibility studies $150,000 to $200,000

Longer Term:

- Buried Seawall and sand nourishment: Estimated Capex in the order of $2.5 M.

6.5.5 Coogee Beach Cafe

The Coogee Beach Café is well supported by the community. The building is not expected to be directly impacted until the 0.9 m SLR scenario (expected by 2110). This primarily impacts planning for modification or redevelopment of the café that may occur during the life of the Foreshore Management Plan. .The building is expected to reach the end of its useful life during the timeframe of this Foreshore Management Plan, so any replacement will likely need to be built behind the 0.9 m SLR (2110) Hazard Line, which will at least require some minor adjustment to the current building footprint should the same site be used.

Recommended Actions

Immediate Term:

- Maintain or improve the current premises

Longer Term:

- Position any extensions or redevelopment of the café appropriately for the expected coastal erosion risks, preferably any high value improvements behind the 0.9 m SLR Hazard Line.
  Potential timeframe: When building redeveloped

Costs

No additional direct costs attributable to these management actions.

6.5.6 Shark Barrier & Swimming Pontoons

The Shark Barrier and swimming pontoons are heavily used and strongly supported by the community as borne out in the consultation process. The Shark Barrier should be maintained and adapted as required in response to future shoreline movements.

Major elements of the barrier are progressively replaced every 5 – 10 years, which provides an opportunity to reconfigure the barrier boundaries to suit the shoreline as it moves over time (most likely landward via erosion) at lesser cost. Similarly, pontoon moorings are occasional renewed, which provides opportunities to adjust mooring locations to suit seabed and shoreline movements. Consideration may even be given to relocating the Shark Barrier to the south side of the jetty at the time of major renewal or replacement works, to encourage patronage further south in the Foreshore Area, where greater parking and land for relocated infrastructure is likely to be available. This would need to be determined in consultation with stakeholders and with consideration to erosion progression at the time.

Recommended Actions

Immediate Term:

- Maintain the Shark Barrier and swimming pontoons
- Continue monitoring shoreline movements in this area as part of the coastal monitoring program, check depths at pontoon locations prior to each year's deployment.

Longer Term:

- Adapt and reconfigure the Barrier and swimming pontoon moorings as may be required in response to future shoreline movements, and at the time of any major renewal works to the barrier, take the opportunity to review and potentially reconfigure boundaries if required.
  Potential timeframe: 2030 onward, to be reviewed on an annual basis

Costs

- No additional costs beyond current Shark Barrier & swimming pontoon operational expenditure is expected to be attributable to the recommended management actions.

6.5.7 Car Parks and Site Access

Continuation of car parking in the long term will be important to enable access to the Foreshore, however its location should not impinge on the dune buffer zone and the ability for the vegetated dune area to retreat in response to coastal erosion.

A portion of the northern carpark between Peri End and Powell Road is within the hazard risk area by approximately 2040 to 2060 and portions may need to be retreated sooner to maintain adequate vegetate foredune width. The Southern carpark adjacent the Coogee Beach Surf Life Saving Club is only likely to be impacted after 2070.

Locations for relocating car parking should be considered and earmarked, including sites nearby but outside the Foreshore (such as east of Cockburn Road) considering the limited foreshore land available. Prioritisation should also be given to improving public transport links, to alleviate the increasing demand for parking space at the Foreshore. Improving pedestrian links along the Foreshore and spreading development to the south over the longer term should help improve the accessibility and utilisation of overflow and bus parking that available in the southern car parks.

Recommended Actions

Immediate Term:

- Monitor retreat of coastline and hazard zones, and check that at least 60 m dune width remains where possible.
- Advocate for improved public transport and pedestrian access links.
- Refer to master planning in section 6.10

Longer Term:

- Develop a long term masterplan to assess suitable locations for assets requiring retreat (northern and southern car parks, café, parklands and Surf Life Saving Club) including potential locations nearby but outside the Foreshore Area.

  Potential Timeframe – before 2040

Costs

Costs will be dependent upon whether partial or full relocation is required. Costs should be provided once a strategy for car parking relocation is developed or in response to development of a Foreshore Masterplan. No direct costs are expected within the immediate term horizon.

6.5.8 Minor Structures

Several minor structures such as shade shelters, beach showers, access ramps/boardwalks through the dunes and the Coogee Beach toilet block are located within areas that are vulnerable under the 0.5 m SLR scenario. They will likely be impacted by erosion during the life of this Foreshore Management Plan.

Furthermore, windblown sand drifts smothering structures is an ongoing issue at some locations such as the northern beach hut (halfway down the sand access track near Peri End) and the wheelchair ramp and shade structure to the south of the Coogee Beach Jetty entrance. These structures may soon become unviable to maintain at current locations.

Instead of decommissioning structures once they are considered to be within hazard risk zones, lightweight structures (eg picnic tables, shade structures, toilet blocks, cafes) can be relocated. This will allow lightweight minor structures to remain in place until risks are realised and relocation is the only option. It is recommended that any future light weight structures reaching the end of their functional life be replaced with easily relocatable or demountable options. This approach provides an alternative option to providing costly hard protection to structures that are generally required to be close to the coast.

A realignment of the existing main asphalt access link to the Jetty would fix these amenity issues in most cases and ensure the ongoing maintenance of the area is reduced.

Recommended Actions

Immediate Term:

- Maintain existing minor structures until such time that they become unviable due to erosion risk.
- Decommission the unviable wheelchair ramp and associated shade structure immediately south of the Coogee Beach Jetty once the replacement ramp at the Jetty is operational (refer Section 6.5.1)
  Timeframe: as soon as possible

- Relocate showers to high-use track and install more directional signage
  Potential timeframe: By 2025
- Design and implementation of a realignment of the existing main asphalt access link to the Jetty.
  Potential Timeframe: By 2030

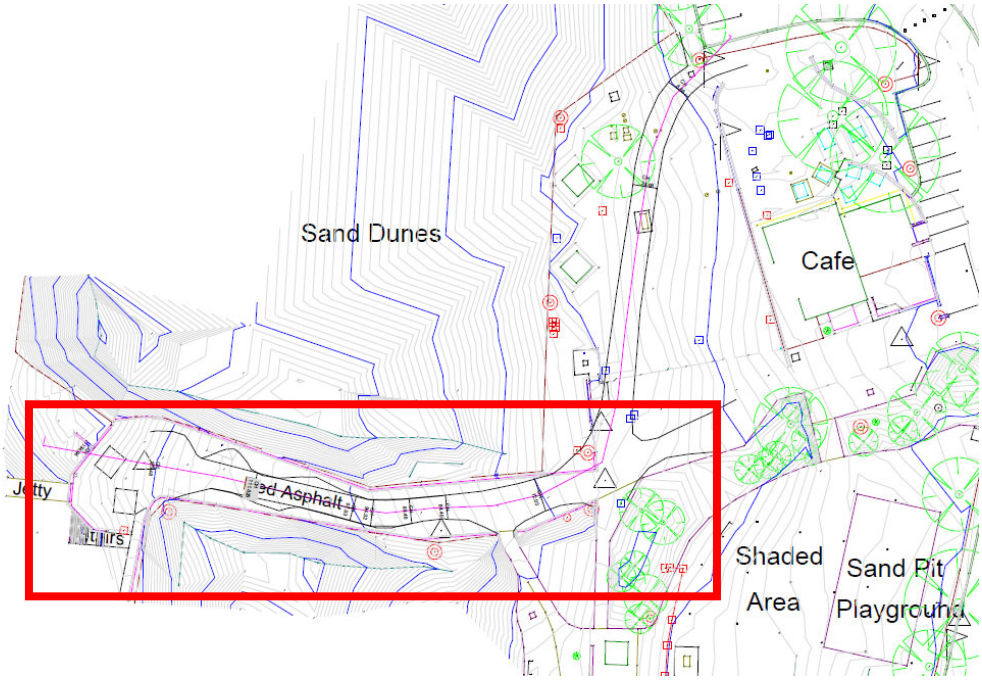


Figure 16 Concept layout of jetty access path (Supplied by CoC, 2020)

- Remove the shade shelter along access track 3 near Peri End at such time that ongoing removal of windblown sand becomes unviable. Replace it with a shade shelter elsewhere in the landscaped areas
  Potential timeframe: to be monitored and reviewed by Environmental Services, in response to coastal monitoring and sand accumulation.

Longer Term:

- Rebuild the main toilet block at Coogee Beach Reserve at a safer setback distance when erosion risk becomes intolerable, or when the building reaches the end of its current useful life, whichever is first.
  Potential timeframe: 2040-2060
- Replace structures at the end of their design life with lightweight/relocatable structures, or if possible retreat (shift or replace) minor structures to alternative landward locations at such time that they become unviable in present locations due to increasing erosion risk.

Costs

Immediate Term:

- Showers & signage: $40,000
- Shade shelter retreat: $50,000
- Jetty access way realignment: $120,000

Longer Term:

- Remove and rebuild toilet block: Costs to be estimated by a quantity surveyor.

6.6 Sand Replenishment

Sand replenishment (also known as sand nourishment) provides the beach with an increased 'sediment budget' that allows the beach to respond to long term cross shore erosion processes. Sand replenishment is not a permanent solution as the extra sand is lost over time as continuing coastal processes redistribute the sand and returns to equilibrium, in response to the current metocean (wind, wave, tide influences) climate.

Example of sand nourishment at north Coogee Beach (2018 sand bypassing)

Sand bypassing is currently undertaken by the City every three years in response to the accumulation of sand on the northern side of the Port Coogee Development. This activity maintains the net longshore sediment transport pattern across Port Coogee and prevents the undue erosion of Coogee Beach. It is an ongoing management measure, but the volume of material available for placement on Coogee Beach will continue to be dependent upon the amount that accumulates on the north side of Port Coogee and how much of this is required for nourishment (back-passing) north to C Y O'Connor Beach.

Other than sand bypassing, the City does not yet employ sand replenishment on Coogee Beach. Sand replenishment could be implemented in the short term along the Coogee Beach area as to maintain the recreational use of beach for residents, tourists and to protect fixed assets such as the CBICF. Sand would likely ultimately need to be obtained from an alternative sand source (beyond that available via bypassing) and viability will depend on the availability and cost of a suitable local sand source. Alternative sand sources (either terrestrial or marine) should be investigated ahead of major additional sand replenishment being required.

Currently the CBICF sits approximately 35 m from the seaward toe of the frontal dune measured to the retaining wall around the building site, and sand replenishment is likely to be required at this location first.

If the dune was to retreat by more than 5 m due to erosion processes the City would need to consider sand replenishment in front of the CBICF. If the dune was to continue to retreat after sand replenishment attempts the City would need to consider hard protection options or retreat.

Recommended Actions

Immediate Term:

- Continue monitoring beach, with particular attention to maintaining at least 30 m dune width to the CBICF site
- Continue triennial Port Coogee Sand Bypassing works, with target bypassing quantities as necessary to prevent shoreline recession south of Port Coogee as determined by the annual coastal monitoring program
- Reactive sand replenishment and dune rehabilitation in front of the CBICF if or when required by coastal monitoring trigger point
  Potential timeframe: from 2020 on an as needed basis
- Investigate additional sand sources for interim sand replenishment at Coogee Beach (with consideration to nourishment requirements at other Cockburn beaches) including feasibility and approvals pathways
  Potential timeframe: By 2030

Longer Term:

- Implement sand replenishment to other areas as necessary to provide interim protection to assets in response to changing erosion impacts and risks
  Potential timeframe: As required over the life of this Foreshore Management Plan

Costs

Sand replenishment costs will be dependent upon the required length of coast requiring further protection and the frequency of campaigns required. To protect the CBICF nourishment in response to a severe erosion event could require 15 m width of sand to be placed along a length of up to 300 m or more because sediment is likely to redistribute along the beach south towards Woodman's Point. Costs could be as high as $1.2 M, depending on the source for initial nourishment round. An indicative cost of 10% of the initial fee for yearly maintenance then on. This rate has been provided as an estimate from recent projects undertaken by GHD. Rates for sand nourishment per cubic metre are difficult to determine due to the rate changing dependent on the source of the sand, method of placement and quantity required. It is recommended that a further study be undertaken to determine the sand type and colour along the beach to determine the source of the nourishment. Potential sources include:

- aligning with a dredging campaign in the area
  - moving sand from a high accretion area, for example, Point Peron has been used in the past as a borrow ground for sand nourishment
- sourcing the sand from local quarries

As a reasonable central scenario for high level financial planning purposes, the following budget allowance could be made for one nourishment campaign within the 10 year planning horizon:

- 18,000 m^3 sand placement at a supply cost of $30/$m^3$,
- A 10% allowance preliminaries and overheads,
- A total project cost of $600,000 would apply. (Note: Preliminary cost supplied by the City for discussion purposes – to be refined further)

6.7 Coastal Protection

Continuous sand replenishment is not a long term solution to provide protection to the infrastructure. Possible permanent solutions may include breakwaters, groynes or offshore reefs. Each of these hard options have positives and negatives and may be applied on a case by case basis for different sections of the study area. Protection structures can significantly change the coastline and also limit future adaptation pathways. Careful planning and

consideration should be undertaken prior to committing to coastal protection structures at any location.

It is noted that while artificial reefs or offshore groynes had support during consultation, these are expensive solutions that would significantly change the form, conditions and appearance of the beach. Long term managed retreat is therefore the preferred strategy at this stage for most of the study area (with the below exceptions) because land buffers are generally available to facilitate this strategy, but these alternatives should still be considered at each stage of planning or review.

Key locations identified in the Section 6.5 as possibly requiring and suitable for protection structures include:

- A buried seawall to protect the existing CBICF from erosion when required, likely as an interim adaptation measure prior to an eventual retreat pathway
- A buried seawall to the west of Perlinte View to protect public assets and private properties

Recommended Actions

Longer Term:

- Carefully consider and assess the costs and benefits of coastal protection structures, or instigate measures for a managed retreat including how this may limit future adaptation options, before committing to any such works.

Costs

Refer Section 6.5 for costs associated with particular sites.

6.8 Lease Agreements

It is important that the City incorporate adaptation requirements into the lease agreements in this area.

6.8.1 Holiday Park

The western boundary of the Holiday Park could be impacted directly by erosion by 2070 under a 0.5 m SLR scenario, and the Steady Shoreline will move closer reducing foreshore reserve width in front of the site to a potentially intolerable width. Increasing usage of the reserve may also put pressure on the dune system, and there may be a requirement to modify access track(s) nearby the Holiday Park in future to assist dune management.

The holiday park should generally remain within its current footprint, and should not expand westward at the expense of natural areas.

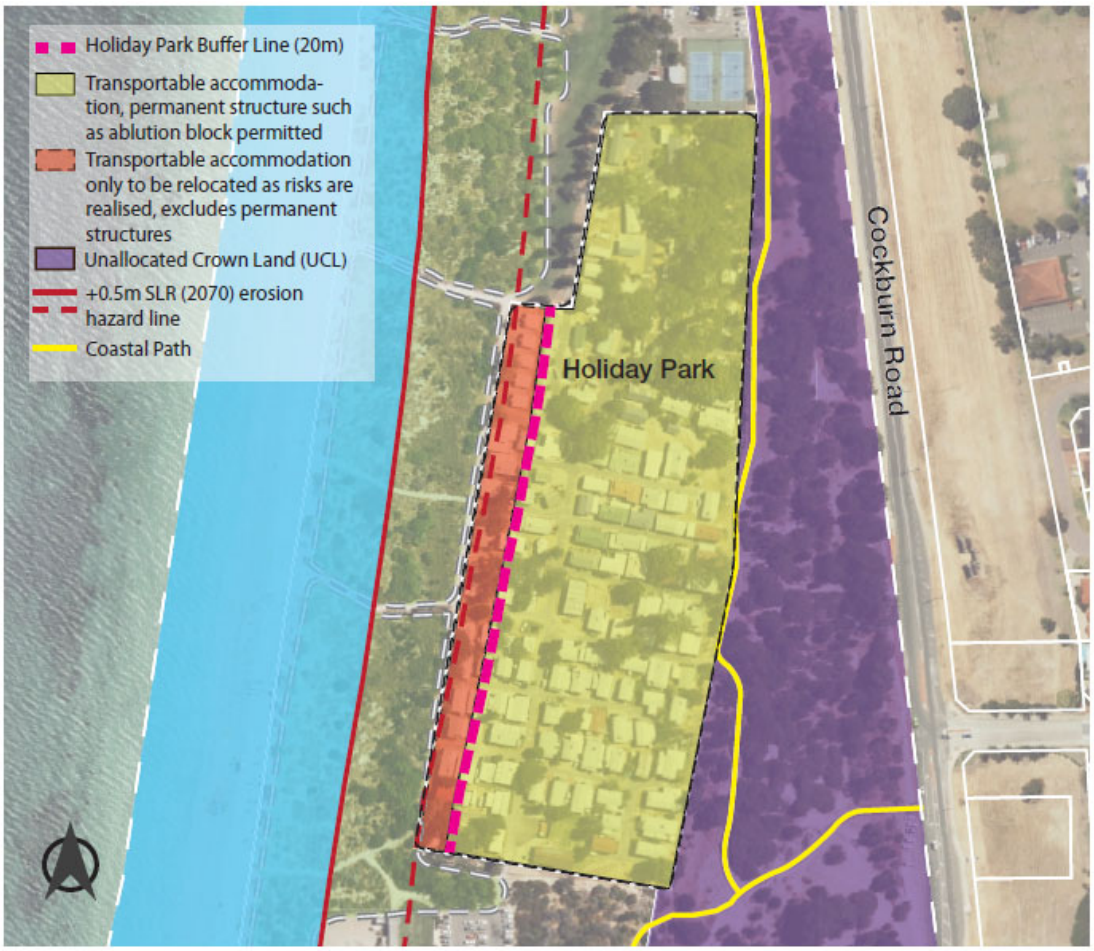


Figure 17 Plan showing Holiday Park Buffer.

It is recommended that the following measures be incorporated into any lease agreement that have a tenure extending beyond 20 years:

1. Flag the potential future realignment, closure or revegetation of some access tracks adjacent to the Holiday Park, should it become necessary for dune management.
2. Secure agreement to upgrade the existing informal track running along (and within) the Holiday Park's western boundary to facilitate easier Holiday Park user access to designated beach paths and better management access to dunes. Agreement for this should be obtained, even if the works are undertaken by the City.
3. Establishment of a Holiday Park Buffer Line, offset 20 m landward of the 0.5 m SLR Hazard Line (refer to Figure 17). This Buffer Line aims to allow for adequate foreshore reserve width between the shoreline and the Holiday Park over the life of the lease. This line may be updated and refined in future to reflect new information and advances in coastal science.

Table 6-2 Holiday Park buffer line set out points

Set Out Point	Latitude	Longitude
SOP1	383326.8118	6445961.9047
SOP2	383341.4639	6446032.5642
SOP3	383355.2835	6446103.4123
SOP4	383369.3675	6446174.2048
SOP5	383378.9284	6446245.7465
Set out points are given in Latitude/Longitude in GDA94 MGA50. Setout points are reliant on a buffer of the 2012 1 mAHD shoreline datum.		

4. Prohibit the construction of new permanent development (ablutions, buildings, major services, etc.) west of the Holiday Park Buffer Line. This minimises the scale of assets that may need to be removed in future to maintain adequate foreshore reserve.

5. Limit development west of the Holiday Park Buffer Line to that of transportable accommodation and removable infrastructure, to facilitate easier removal/relocation of assets in this area should retreat due to erosion be required during the life of the lease.

6. Only such services (power, water, sewer and communications) may be installed beyond the Holiday Park Buffer Line as necessary to support transportable accommodation and removable infrastructure within this area. These services shall not include any main or trunk lines, and shall be designed and installed in a way that they can be progressively removed as necessary from west to east, without interrupting supply to other areas or assets.

7. Maintain a separation of at least 40 m between the high water mark (Highest Astronomical Tide level contour) and the western boundary of the Holiday Park site at all times, (considered adequate foreshore reserve width). This can be monitored annually via the City's coastal monitoring surveys and program.

8. Secure agreement from the lessee to adjust the site's western boundary as necessary, and to remove all structures and services outside of the adjusted boundary, if requested by the City to maintain the required 40 m minimum separation.

9. The lease shall include the relevant roles and responsibilities for key stakeholders including the lessee, CoC and DPLH.

Recommended Actions

Immediate Term actions recommended to be undertaken by the City

- Incorporate clauses in any future Holiday Park lease agreement to adequately address the above requirements
- Upgrade the access track along the western boundary of the site and undertake revegetation and dune stabilisation activities to increase resilience of the dune to withstand impacts of storm events and reduce likelihood of significant erosion
- Monitor the beach profile to ensure a 40 m foreshore reserve is retained and to allow for timely response to risks as, or if, they are realised, via the coastal monitoring program

Costs

No additional costs to the City are expected to be directly attributable to managing lease agreements (refer Section 6.5 for infrastructure management costs).

6.8.2 Coogee Beach Café

The Coogee Beach Café is not modelled to be at risk within the life of this management plan. However, it is modelled to be at risk in the acute event under 0.9 m SLR scenario (expected by 2110). Future lease agreements and major capital works planning should consider this risk, and make clear that any new building work should be located landward of the appropriate Hazard Line for the intended life of the asset. Preferably no further westward extension of the building should be undertaken, unless it is clearly understood that any such works are non-permanent and may require removal in future as erosion progresses.

Recommended Actions

Incorporate consideration of erosion risks into new lease agreements and capital works planning as required – Major building upgrades (if required) should be located landward.

Costs

No additional costs to the City are expected to be directly attributable to managing lease agreements (refer Section 6.5 for infrastructure management costs).

6.8.3 Coogee Beach Integrated Community Facility (CBICF)

Whilst currently low risk, risk will increase and the CBICF is modelled to be at direct threat from erosion extreme events within the life of this Foreshore Management Plan, even before the 0.5 m SLR scenario is reached. The building will likely require either protection (e.g. a seawall) or relocation prior to 2070 to manage this risk, unless the building is demolished and rebuilt further back sooner.

Agreement should be sought from lessees to adapt usage of the site and/or relocate to an alternative site at such time this becomes necessary to enact adaptation actions.

Adaptation measures may significantly alter use of the facility; interim protection (such as installation of protection seawall) to extend the life of the building can change use and form of the beach, whilst relocation may place the building further from the beach.

Recommended Actions

Update lease agreement at the next available time to reflect adaptation requirements (to be determined based on monitoring results).

Costs

No additional costs to the City are expected to be directly attributable to managing lease agreements (refer Section 6.5 for infrastructure management costs)

6.9 Additional Reserve Areas

As predicted if erosion progresses and a long term strategy of managed retreat is employed, the shoreline will move east and land will be lost without any intervention. Community usage of the Foreshore is expected to simultaneously increase with the growing local population and there will be increasing pressure for amenities on a shrinking footprint of land. It is therefore imperative that the limited undeveloped land remaining within the Foreshore area be preserved, and developed sparingly and only if well justified.

Sufficiently set-back sites for new infrastructure must be identified and secured, to both cater for increased capacity and also to replace infrastructure which must be retreated due to erosion. Access to land further eastward of vulnerable areas will be critical to the success of a long term retreat strategy that sees a similar level of public amenity retained at Coogee Beach. It also provides options to reclaim and relocate some developed areas and expand vegetated dune areas eastward to compensate for the dunes lost to erosion.

Securing the largely undeveloped land alongside Cockburn Road (former rail reserve) can provide greater flexibility for managing the Foreshore as it changes over time. Such land should be used strategically with a mind to how valuable it may be for future requirements of relocating vulnerable Foreshore assets and preserving native vegetation buffers. Usage of this land for non-essential purposes such as access roads or the widening of Cockburn Road should be avoided or minimised, considering the increasing scarcity of land that is foreseen for this Foreshore. Notwithstanding, the constrained site, expected shoreline recession and competing

usage pressures mean that both developed and natural areas are expected to be reduced in aggregate over the long term.

Recommended Actions

Immediate Term:

- Continue negotiations to transfer the Unallocated Crown Land adjacent to Cockburn Road to Reserve under the City's management.

Longer Term

- Use undeveloped areas of land strategically and develop sparingly, in view of the predicted future diminishing size of the Foreshore and scarcity of land.

Costs

No costs are applicable for the above actions

6.10 Planning for Development

Limit New Assets to Sustainable Setback Locations

All new development (buildings, carparks, hardscaping, services, boardwalks, etc.) within the Foreshore, including the Holiday Park, should be located at a setback distance suitable to the asset's intended useful design life. For example, a development with a 50 year design life should be located behind the 0.5 m SLR Hazard Line (estimated 2070 scenario), unless it is easily removable before the end of its useful life. An asset with a 25 year design life might be positioned halfway between the present day Hazard Line and the 0.5 m SLR Hazard Line, and so on.

Minor development (e.g. footpaths, fencing etc.) or that which necessarily links to the beach and must by nature be seaward of the appropriate Hazard Line or Steady Shoreline, should be built to withstand or be easily adapted (lightweight and removable or upgradeable) to the expected coastal hazard scenario.

Focusing Activity Areas

Land in the northern half of the Foreshore is narrowest and at risk of being 'squeezed' from the west (coastal erosion) and east (Cockburn Road widening) in future. Demand for parking is also highest in this area, despite greater parking capacity being available to the south end of the Foreshore. Priority should therefore be given to spreading new or renewed amenities southward where appropriate, and intensification of development should be avoided in the northern half of the Foreshore Area where practical.

Development Approvals

The majority of the Foreshore area is reserved under the Metropolitan Region Scheme for Parks and Recreation. Applications for planning approval will therefore be determined by the Western Australian Planning Commission following a recommended decision being forwarded from the Local government. Where development triggers a requirement for planning approval, a management plan should be prepared to address the future impact of coastal hazards. This shall be lodged upfront at the planning application stage to the satisfaction of the City. The management plan shall have regard to the following:

- Timeframe of development
- Installation
- Management/upkeep

- Removal of development and re-instatement of the site to its original state
- Trigger points
- Monitoring/recordkeeping
- Where appropriate, approval will be granted temporarily to allow a mechanism for future re-assessment.

Master Planning

Significant and well considered planning has been undertaken for areas of the Foreshore to date, however it would be beneficial to develop a coordinated high level plan for the entire Foreshore and relevant adjacent land areas that recognises existing master planning and aligns with expected coastal changes identified in this FMP. The intent here is to not replace existing relevant masterplans but to review and build upon as necessary. This will be particularly beneficial considering the changes anticipated over the long term.

Recommended Actions

Immediate Term

- Develop a long term coordinated plan for the Foreshore and adjacent land parcels that builds on existing master planning, and considers the measures and likely future changes to the Foreshore as presented in this FMP.

  Potential Timeframe – by 2030

Longer Term

- If the Unallocated Crown Land (referred to in 6.9) is successfully transferred to a reserve for the City to manage with the power to lease the reserve, master planning for the entire reserve should be reviewed.
- A review of the uses of the various reserve land parcels within the Foreshore should to be undertaken prior to 2070 to determine the best uses going forward. Consideration should be given to future community consultation and the outcomes of the management actions undertaken pursuant to this FMP.

  Potential Timeframe – by 2040

Costs

Immediate term costing for master planning including community consultation in the future may vary from $75-150 k indicatively, depending on the extent and scope of the document.

6.11 Monitor Beach and Dunes

The study area is already a part of the ongoing City of Cockburn Coastal Monitoring program described in Section 3.7 of this document. The monitoring program broadly encompasses the entirety of the City of Cockburn shoreline but has certain hotspots where more targeted monitoring takes place such as Coogee Beach. As Coogee Beach is put in deficit at its northern end by the Port Coogee Marina it is important to closely monitor the shoreline and use sand nourishment where necessary.

Management strategies have been suggested by the 2018 Monitoring Report to be implemented in further years of the program.

Coogee Beach Foreshore Management Plan Monitoring Actions

The Foreshore is part of the wider City of Cockburn Coastal Monitoring program and will be into the future.

Recommended management actions relevant to this study area:

- Continual beach profile monitoring as part of the wider program – this area has multiple transects throughout the study area that is sufficient for maintaining an accurate representation of the shoreline
- Continual beach photo monitoring as part of the wider program – this area has two monitoring sites that are spaced along the study area
- Support digital engineering solutions in line with the Coastal Monitoring Program
- Regular sediment sampling
- Storm monitoring – As the Coogee Beach area has a significant vegetation buffer that is relied upon to protect the infrastructure along the shoreline area, storm monitoring is crucial to ensuring that action can be taken if trigger points are met

Condition inspection of coastal structures – In particular this will include the Coogee Beach Jetty in the study area By implementing coastal monitoring, management strategies for assets and values within the Foreshore can be linked to measureable triggers. Table 6-3 presents key monitoring metrics, including specific trigger distances (linked to current coastal monitoring practices) on specific monitoring profiles, and the management action within this document to which they relate. A general metric is also included for the vegetated dune. The aim of the table is for annual coastal monitoring to check the various trigger distances for each profile and report progress / clearly identify if any actions are required.

Dune Vegetation

Beyond visual amenity, ecosystem and habitat values, the dune vegetation is also valued for strengthening sand dunes against actions from the ocean and in capturing windblown sand that otherwise can migrate impacting access and requiring management to remove.

Ongoing future management measures and master planning should allow for retaining adequate dune widths as the shoreline recedes, for the purposes of dune health and stability against windblown sand actions. A minimum dune width of 60 m is likely to be required over the long term for this purpose, however this will be better refined and understood as changes occur.

Table 6-3 Coastal monitoring trigger distances

Monitoring Point	Trigger Point	Management Action
Profile specific (Profiles as indicated as part of the ongoing City of Cockburn Coastal Monitoring Program (refer section 3.7))		
Profile 8	Erosion of the MSL contour by more than 5 m from the MSL contour of the 2012 baseline monitoring profiles.	Carefully consider and assess the costs and benefits of coastal protection structures, or instigate measures for a managed retreat. (Refer Section 6.7)
Profile 9		
Profile 10		
Profile 11		
Profile 12		
Profile 13		
Asset Specific		
Perlinte View	Dune width of less than 40 m.	Refer Section 6.5.4
Northern carpark	Refer Profile 9 trigger	Refer Section 6.5.7
Coogee Beach café	Refer Profile 10 trigger.	Refer Section 6.5.5
Holiday Park	Dune width of less than 35 m.	Refer Section 6.5.3
Southern Carpark	Refer Profile 12 trigger.	Refer Section 6.5.7
Coogee Beach Integrated Community Facility	Dune width of less than 25 m.	Refer Section 6.5.2
Frontal Dune		
Where the vegetated dune is reduced to less than 60 m, engage with Environmental Services and closely monitor dune stability and review the risk for assets and land in the nearby vicinity.		

Recommended Action

Immediate Term:

- Update Coastal Monitoring Program to include specific monitoring actions specified in Table 6-3

  Timeframe: Immediately

Long Term:

- Maintain a 60 m wide dune vegetation buffer zone where possible. Consider implications in master planning (see section 6.10).

Costs

The above monitoring actions should be incorporated directly into the City's Coastal Monitoring program. No additional costs are attributable to the immediate or long term actions.

6.12 Periodic Review

This Foreshore Management Plan should be a live document that is reviewed approximately every 10 years. The review period may need to be adjusted in response to significant events that significantly threatens a key value of the Foreshore e.g. a coastal bushfire resulting in significant loss of dune vegetation, habitat and increasing dune instability or a 1 to 5% Annual Exceedance Probability erosion event resulting in significant loss of beach and dunes.

The City's CHRMAP (the Coastal Adaptation Plan and underpinning studies) should also be reviewed every 10 years, which would next be due around 2023.

Recommended Actions

Immediate actions:

- Review CHRMAP in 2023
- Review Coogee Beach Foreshore Management Plan in 2030 or sooner if required

Costs

- CHRMAP review: $100,000
- FMP Review: $50,000

7. Implementation Plan

Table 7-1 below summarises key management actions, including trigger points, indicative timeframes, cost estimates and the Business Unit responsible for implementation. For specific details regarding the implementation, such as source of costs, refer to the relevant section of the Management Plan in Section 6 Given the Foreshore Management Plan is to be reviewed in 10 years' time, only cost measures for immediate actions have been included. Timeframes have been identified for all management actions, and where actions are recommended in response to coastal hazards, trigger points have been identified in line with Figure 5.

Management actions have been identified for the following planning periods:

Immediate Term: The current planning period out to approximately 2030. Immediate term actions identified in the management plan that require implementation now or over the next few years and should be implemented prior to the next review of the Foreshore Management Plan (in 10 years) unless reasonably justified otherwise by the City.

Longer Term: The 50 year planning period, being actions or events expected between 2030 and 2070 (at the time of writing). Long term actions were identified in the management plan in response to predicted coastal hazards identified from the +0.5 m SLR erosion line anticipated to occur by 2070.

There are six different business units within the City responsible for the implementation of different actions in the Implementation Plan:

- Infrastructure Services
- Parks & Environment Services
- Statutory Planning Services
- Engineering Services
- Waste Services
- Recreation & Community Safety Services
- Strategic Planning

The Immediate Term and Longer Term management actions are graphically represented in t Figure 18 and Figure 19 below and as A3 plans included in Appendix D.

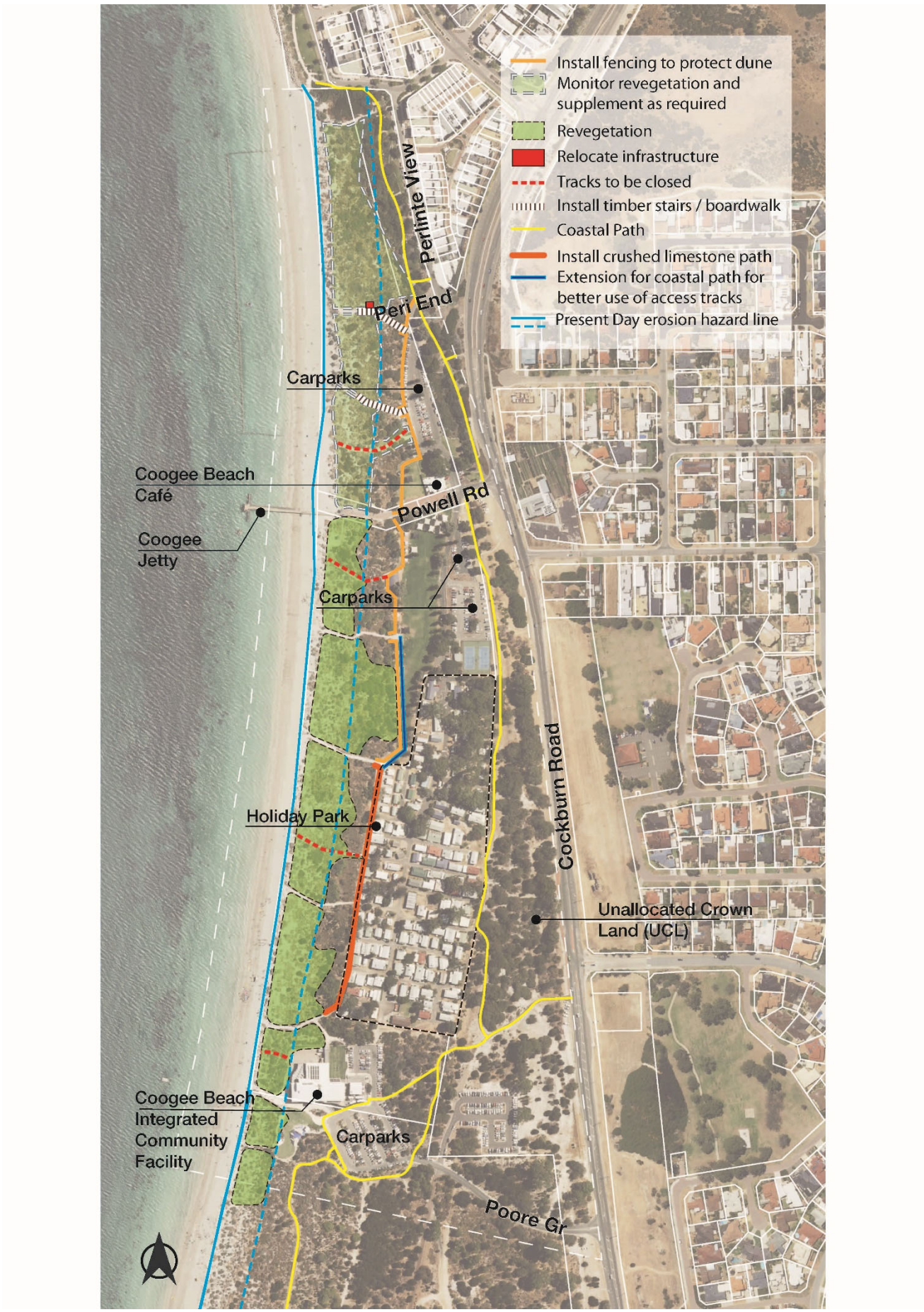


Figure 18 Immediate Term Actions (10 year horizon)

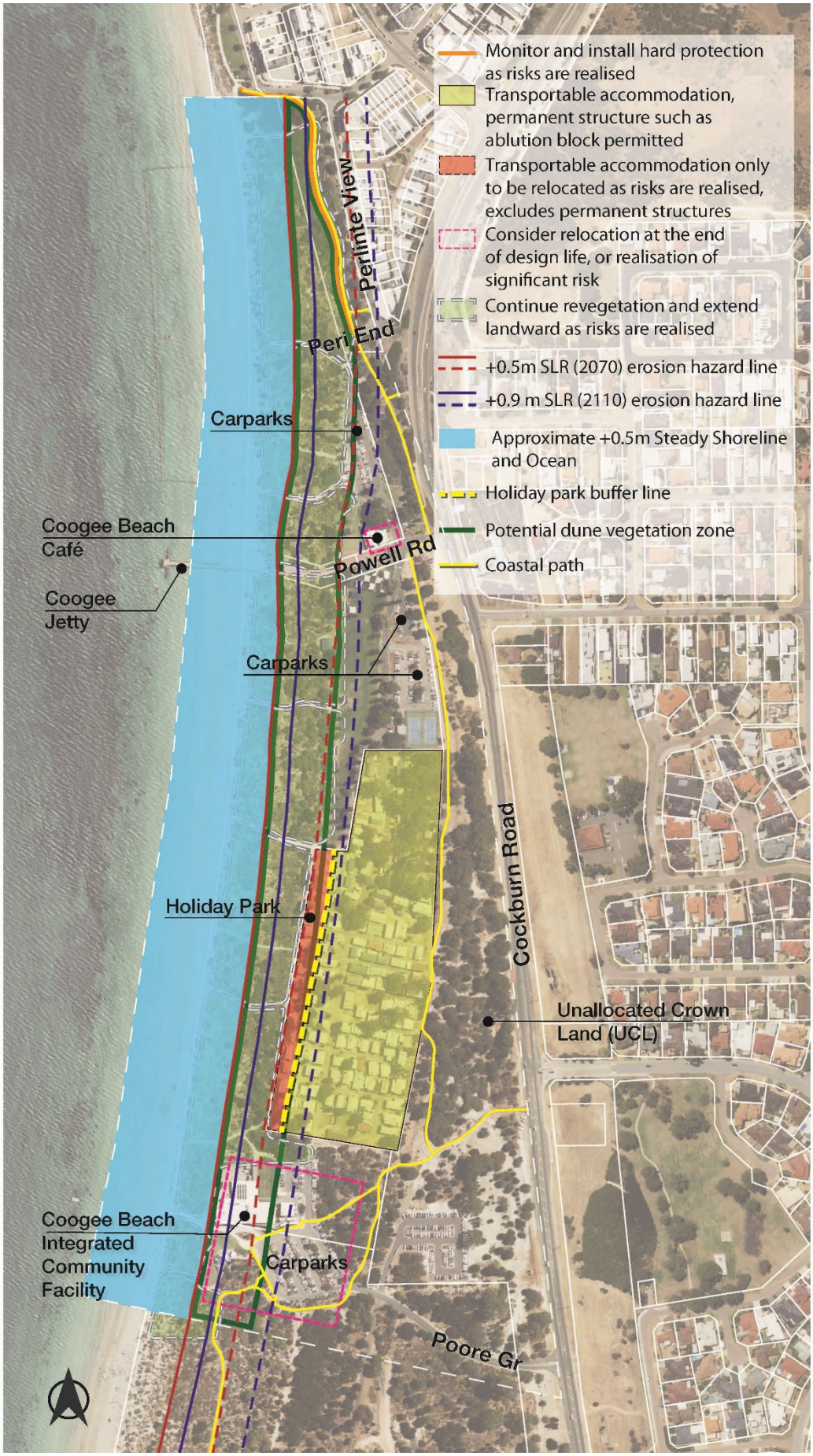


Figure 19 Longer Term Actions (2030 – 2070)

Table 7-1 Recommended implementation plan [1].

Item	Action	Timeframe and Trigger Point	Method	Immediate term costs (10 yr horizon) *Longer Term costs shown in italics*	Lead Responsibility	Measure of Success
6.1	Improve access and reduce sand drift	Immediate By 2025 N/A	Construct timber stairs / boardwalks to access tracks 3 and 4.	$125,000	Parks and Environmental Services	Reduction in sand management costs to northern carpark.
	Review of beach access paths	Immediate Term 2025 - 2030 N/A	If degradation is observed beyond 2025, consider implementing track closures as presented in Table 6-1. Consider undertaking track user survey to inform user behaviour and decision making.	To be determined if required	Parks & Environment Services	Increased dune health leading to increased protection during acute storm events Increased cover of vegetation (%)
	Improve linkages between beach access paths	Immediate Term 2025 - 2030 N/A	If tracks west of Holiday park are closed, construct link path to western boundary of Holiday Park (within the site boundary) to improve access.	$40,000	Parks and Environmental Services	Connection of coastal paths allowing continuous access along the Foreshore
6.2 & 6.3	Continue to undertake dune habitat revegetation and management.	Immediate Term N/A	• Dune habitat revegetation and monitoring • Weed management • Continue fox control and if possible increase to include other species such as feral cats. • Upgrade landside fencing to reduce unwanted access (guided by revegetation and rehabilitation plan)	No additional costs beyond recurrent expenditure *.	Parks & Environment Services	Increased dune health leading to increased protection during acute storm events Increased cover of vegetation (%)
		Longer Term After 2030	• Maintain a sufficient dune vegetation zone width and monitor the health of dunes and			

Note: Item numbers are references to Section 6 (Management Plan) headings.

Item	Action	Timeframe and Trigger Point	Method	Immediate term costs (10 yr horizon) *Longer Term costs shown in italics*	Lead Responsibility	Measure of Success
		Trigger Point 2 (Monitor and advise or accommodate)	the stability of the back boundary of the dune area. Consider reclaiming landscaped areas to move the dune extents eastward as necessary in future if windblown sand becomes problematic due to diminishing dune width			
6.4	Community safety & amenity	Immediate Term N/A	• Continue the Beach Bin Trial on a permanent basis to reduce litter • Facilitate semi-permanent surf club observation tower on beach adjacent jetty to improve passive surveillance and swimmer safety • Maintain and expand the CCTV network at Coogee beach in accordance with the City's Community Safety & CCTV Strategy	No additional costs directly attributable to these management actions	Waste Services	Beach bins maintained in place through summer months
					Recreation & Community Safety Services	Improved safety and security within the Foreshore
6.5.1	Coogee Beach Jetty	Immediate Term Trigger Point 2 (Monitor and advise or accommodate)	Monitor beach and structure via coastal monitoring program	Ongoing	Infrastructure Services	Provide equal beach access opportunities for all users
			Design and implement equal access ramp down to beach via jetty	$290,000		
		Longer Term Trigger Point 3A 2040-2060	Maintain jetty and adapt the location & height of the structure as required in response to shoreline changes and increasing sea levels.	*To be determined in future – in the order of $500,000.*		Maintain the function and amenity of the jetty.
6.5.2	Coogee Beach Integrated	Immediate Term By 2030 Trigger Point 3	Design study for interim protection measures	$60,000*		Successful relocation of

Item	Action	Timeframe and Trigger Point	Method	Immediate term costs (10 yr horizon) *Longer Term costs shown in italics*	Lead Responsibility	Measure of Success
	Community Facility managed retreat	(Accommodate & planning)	Monitor and undertake reactive sand nourishment if required as guided by coastal monitoring.	Nourishment costs refer Item 6.6	Infrastructure Services	CBICF at end of design life
		Longer Term 2035-2045 Trigger Point 3 (Retreat)	Interim protection leading to eventual managed retreat of building at end of design life (50 years), or at a point when the costs to maintain the asset over its remaining design life exceed the cost of relocation.	*To be determined, costs will be highly variable depending on retreat options – in the order of at least $2.5 M for interim protection.*	Infrastructure Services	
6.5.3 & 6.8.1	Holiday Park Infrastructure managed retreat	Immediate Term Trigger Point 2 (Monitor and advise or accommodate)	Progressive redevelopment of holiday park with permanent development (ablutions, offices, major services, etc.) behind the Holiday Park Buffer Line as assets reach the end of useful life.	No direct costs for managing coastal hazards identified within 10 year horizon	Strategic Planning Services	Lease agreements include suitable terms and conditions.
			Only transportable accommodation, minor removable infrastructure and minor services to be established on the ocean side of the Holiday Park Buffer Line.			
			Ensure leasing arrangement reflects risks and hazards present for the property and controls in place.			
			Incorporate annual review of triggers in to coastal monitoring program	N/A	Infrastructure Services	Trigger points are reviewed each year.
		Longer Term (2040-2060) Trigger Point 3 & 3A (Retreat, Protection and Accommodation)	Managed retreat of assets and adjustment of boundary to maintain 40 m dune vegetation buffer zone, as required if shoreline recession breaches trigger point.	To be determined in future.	Strategic Planning Services	Relocation of assets and land uses with the Holiday Park when required in

Item	Action	Timeframe and Trigger Point	Method	Immediate term costs (10 yr horizon) *Longer Term costs shown in italics*	Lead Responsibility	Measure of Success
						accordance with a managed retreat plan prepared by the asset owner.
6.5.4	Erosion protection at northern end of beach to Perlinte View area	Immediate Term Trigger Point 3 (Retreat, Protect and Accommodate)	Assess funding mechanisms (by 2025)	N/A	Infrastructure Services	Successful protection in significant storm events whilst maintain beach & dunes as long as possible.
			Planning and feasibility studies: (by 2030)	$150,000 to $200,000*		
		Longer Term Trigger Point 3 2030-2050 (Protect and Accommodate)	Install hard beach protection (buried seawall and nourishment) beside shared path at Perlinte View	*Order of $2.5 M*		
6.5.5	Coogee Beach Café managed retreat	Immediate Term Trigger Point 1	Ensure leasing arrangement reflects risks and hazards present for the property and controls in place.	No additional direct costs attributable to these management actions.	Strategic Planning Services	Successful maintenance of a Café premises without erosion impacts.
		Trigger Point 3 (Retreat, Protect and Accommodate)	Redevelopment of Coogee Beach Café precinct behind 2110 Hazard Line at end of current building's useful life.		Infrastructure Services	
6.5.6	Maintain shark barrier & Swimming Pontoons	As Needed Trigger Point 1 (Monitor and Reassess)	Maintain and possibly extend inland the shark barrier including maintenance and upkeep to encourage tourism and use of the beach	No additional costs beyond recurrent expenditure anticipated in immediate term.	Infrastructure Services	Maintained use of the beach facilities
			Maintain and reconfigure swimming pontoons as necessary			

Item	Action	Timeframe and Trigger Point	Method	Immediate term costs (10 yr horizon) *Longer Term costs shown in italics*	Lead Responsibility	Measure of Success
6.5.7	Maintain and reconfigure carparks	Longer Term Trigger Point 2 (Accommodate) 2040-2060 (northern) Beyond 2070 (southern)	Maintain carparks and reconfigure as needed to outside of relevant hazard area but not at the expense of native vegetation.	No additional direct costs attributable to these management actions.	Engineering Services	Allow for access to the recreational areas to be continued and have close access to facilities as the area evolves
6.5.8	Relocate and install beach infrastructure to better service recreation areas	Immediate Trigger Point 1 (Accommodate)	Relocate showers to high use tracks & improve directional signage.	$40,000*	Parks & Environment Services	Dune revegetation program is successful due to people not attempting to access beach through unmade tracks.
			Move hut from northern car park access track to high use area when windblown sand issues become unmanageable. (	$50,000*		
			Reconfigure asphalt access way to jetty to improve access and maintenance costs.	$120,000*		
		Longer Term Trigger Point 4 2040 - 2060	Relocate main toilet block Retreat (shift or replace with light weight /relocatable) minor structures landward as required.	To be determined		
6.6	Sand Replenishment	As Needed Trigger Point 2 (Accommodate)	Complete study to identify suitable sand source(s) for nourishment of Cockburn beaches. Undertake beach nourishment as required to maintain beachscape and provide buffer for acute storms while no hard protection measures are in place. Refer Section 6.6 for further detail.	As needed basis, allow for one $600,000* within 10 year timeframe. Total longer term costs of up to $1.2 M initial cost plus 10% for yearly maintenance then on.	Infrastructure Services	Maintain useable beach space for as long as possible into planning horizon

Item	Action	Timeframe and Trigger Point	Method	Immediate term costs (10 yr horizon) *Longer Term costs shown in italics*	Lead Responsibility	Measure of Success
6.9	Expand reserve eastward to include UCL strip along Cockburn Road	Trigger Point 1 Immediate Avoid & Accommodate	Continue negotiations to transfer the Unallocated Crown Land adjacent to Cockburn Road to Reserve under the City's management.	N/A	Strategic Planning Services	UCL strip to be created as a Reserve under the City's management with the power to lease in next five years.
6.10	Master planning	Immediate- by 2030 Trigger Point 3	Develop a long term, coordinated plan for the Foreshore and adjacent land parcels that builds on existing master planning, and considers the measures and likely future changes to the Foreshore as presented in this FMP.	$75,000 to $150,000 depending on the extent and scope of the document. (Including community consultation)	Parks & Environmental Services in collaboration with Strategic Planning and Infrastructure Services	Development within the Foreshore aligns with Master Plan and avoids at risk land uses or assets.
	General planning & setback of all new development within study area	Immediate & Longer Term Trigger Point 1 (Avoid & Accommodate)	All permanent new development occurring in the study area (buildings, carparks, hardscaping, services, footpaths, etc.) must be located at a setback distance suitable to the design life. Development that links to the beach and must by nature be beyond the appropriate Hazard Line or Steady Shoreline shall be built to withstand or be easily adapted to the expected coastal hazard scenario.	No additional direct costs attributable to these management actions.	All Business Units conducting development within the Foreshore	No erosion impacts to new assets within their useful design life

Item	Action	Timeframe and Trigger Point	Method	Immediate term costs (10 yr horizon) *Longer Term costs shown in italics*	Lead Responsibility	Measure of Success
			Concentrating new development to the southern end of the Foreshore where possible to mitigate the coastal 'squeeze' that is likely to begin occurring in the north section.			
			Ensure applicants for development approval provide a suitable management plan to address future coastal hazards, addressing matters such as timeframe, installation, management/upkeep, removal and reinstatement, trigger points and monitoring/recordkeeping. Where appropriate, approval should be granted temporarily to allow for future reassessment.	No additional direct costs attributable to these management actions.	Statutory Planning Services	No erosion impacts to new assets within their useful design life
		By 2040	A review of the uses of the various reserve land parcels within the Foreshore should to be undertaken prior to 2070 to determine the best uses going forward. Consideration should be given to future community consultation and the outcomes of the management actions undertaken pursuant to this FMP.	*To be determined*	Strategic Planning Services	Retention of desired land uses in response to community consultation.
6.11 & 6.12	Monitor coastline	Immediate (ongoing monitoring)	Continue City's annual Coastal Monitoring program and incorporate annual review of trigger points established in this Foreshore Management Plan	No additional costs beyond recurrent expenditure.	Infrastructure Services	FMP trigger points reviewed, identified and acted upon as required in a timely manner.
6.12	Review FMP and CHRMAP periodically	Review CHRMAP every 10 years	Review City's CHRMAP (e.g. the studies completed through the CSCA Coastal Vulnerability & Flexible Adaptation Pathways Project) and this FMP every 10 years to	N/A	Infrastructure Services	CHRMAP reviewed and

Item	Action	Timeframe and Trigger Point	Method	Immediate term costs (10 yr horizon) *Longer Term costs shown in italics*	Lead Responsibility	Measure of Success
			update risk information and hazard mapping. Next review of CHRMAP due 2023, FMP due 2030.			updated around 2023.

*Preliminary costs supplied by the City for discussion purposes – to be refined prior to implementation

8. References

Berson, M (1978) *Cockburn: The Making of a Community*

BMT Oceanica Pty Ltd in conjunction with BMT WBM Pty Ltd, Coastal Zone Management Pty Ltd, SGS Economics and Planning Pty Ltd and Damara WA Pty Ltd (2014) *Cockburn Sound Coastal Vulnerability Values and Risk Assessment Study.*

Coastal Zone Management Pty Ltd, the UWA School of Environmental Systems Engineering, Damara WA Pty Ltd and Oceanica Consulting Pty Ltd (2013) *Cockburn Sound Coastal Alliance – Coastal Vulnerability Study. Erosion and Inundation Hazard Assessment Report.*

Coffey Environmental (2007) *Proposed Coogee Beach Surf Club Life Saving Club and Community Facilities at Poore Grove, Coogee Environmental Management Plan.* Prepared for City of Cockburn.

City of Cockburn (2018) *Coastal Activities Guide*, Available from: https://www.cockburn.wa.gov.au/getattachment/4e1ae6ad-fd66-41b3-bc40-2fb421c39c50/attachment.aspx

Department of Environment and Energy DEE. (2020). *Protected Matters Search Tool.* Retrieved March 2020, from HYPERLINK "https://www.environment.gov.au/epbc/protected-matters-search-tool" https://www.environment.gov.au/epbc/protected-matters-search-tool

Department of Environment and Conservation (now DBCA) (2010) *Woodman Point Regional Park.*

Department of Planning, Lands and Heritage (DPLH). (2019). *Aboriginal Heritage Inquiry System.* Retrieved March 2020, from HYPERLINK "https://maps.daa.wa.gov.au/AHIS/" https://maps.daa.wa.gov.au/AHIS/

Ecoscape (Australia) Pty Ltd (2009). *Coogee Beach Management Plan.* Prepared for City of Cockburn.

GHD (2016) *Cockburn Sound Coastal Vulnerability & Flexible Adaptation Pathways Project* – Stage 3 Report Coastal Adaptation Plan

GHD (2016) *City of Cockburn Coastal Adaptation Plan: Prepared as part of the Cockburn Sound Coastal Vulnerability & Flexible Adaptation Pathways Project*. Prepared for the City of Cockburn.

Gibson, N, Keighery, B, Burbidge, A and Lyons, M (1994) *A Floristic Survey of the Southern Swan Coastal Plain.* Department of Conservation and Land Management.

Government of Western Australia (2000) *Bush Forever - Keeping the Bush in the City. Volume 1: Policies, Principles and Processes*. Perth, Western Australia.

Grace and Thompson (2020), *All roads lead to retreat* in Australian Planner July Ed.

Heddle, E, Longeragan, O and Havel, J (1980) 'Vegetation complexes of the Darling System Western Australia', in M Mulcahy (ed.), *Atlas of Natural Resources, Darling*

How, RA, Harvey, MS, Bell, J and Waldock, JM (1996) *Ground Fauna of Urban Bushland Remnants in Perth*. Report to the Australian Heritage Commission, NEP Grant N 93/04.

Keighery, B (1994) *Bushland Plant Survey: A guide to plant community survey for the community*. Wildflower Society of WA (Inc.) Nedlands, Perth.

Keighery, B, Gibson, N and Keighery, G (1997) The regional significance of the flora and vegetation of Garden Island. In *Environment and Energy Conference: Submarine Training & Support Centre Auditorium, HMAS Stirling, Garden Island, W.A., 14 & 15 April, 1997* Royal Australian Navy, Perth. pp. 1-13.

Western Australian Planning Commission, 2013, *State Planning Policy No. 2.6: State Coastal Planning Policy*, Perth, Western Australia.

Western Australian Planning Commission & Department of Planning Lands, and Heritage (2019) *Coastal hazard risk management and adaptation planning guidelines*. , Perth, Western Australia.

9. Contact Us

City of Cockburn
9 Coleville Crescent, Spearwood WA 6193
PO Box 1215, Bibra Lake DC Western Australia 6965
Telephone: 08 9411 3444 Fax: 08 9411 3333
Email: name@cockburn.wa.gov.au
City of Cockburn website: cockburn.gov.wa.au

Appendices

Appendix A – Desktop Searches

EPBC Act Protected Matters Database

NatureMap Species Report and Statistics

Table 9-1 Significant fauna species that may potentially occur at Coogee Beach

Scientific name	Common Name	EPBC Act Status	BC Act Status
Actitus hypoleucos	Common Sandpiper	Migratory	Protected (Int.)
Anous stolidus	Common Noddy	Migratory	
Anous tenuirostris melanops	Australian Lesser Noddy	Vulnerable	
Apus pacificus	Fork-tailed Swift	Migratory	
Ardenna carneipes	Flesh-flooded Shearwater	Migratory	
Arenaria interpres	Ruddy Turnstone	Migratory	Protected (Int.)
Balaena glacialis australia	Southern Right Whale	Endangered	
Balaenoptera edeni	Bryde's Whale	Migratory	
Balaenoptera musculus	Blue Whale	Endangered	
Botaurus poiciloptilus	Australian Bittern	Endangered	-
Calidris acuminata	Sharp-tailed Sandpiper	Migratory	
Calidris alba	Sanderling	Migratory	
Calidris canutus	Red Knot	Endangered	Protected (Int.)
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	-
Calidris melanotos	Pectoral Sandpiper	Migratory	
Calidiris ruficollis	Red Necked Stint	Migratory	Protected (Int.)
Calidris tenuirostris	Great Knot	Critically Endangered	Rare or likely to become extinct
Calyptorhynchus banksii naso	Red-tailed Black Cockatoo	Vulnerable	Rare or likely to become extinct
Calyptorhynchus latirostris	Carnabys Cockatoo	Critically Endangered	Rare or likely to become extinct
Caperea marginata	Pygmy Right Whale	Migratory	
Carcharias taurus	Grey Nurse Shark	Vulnerable	
Carcharodon carcharias	Great White Shark	Vulnerable	Rare or likely to become extinct
Caretta caretta	Loggerhead Turtle	Endangered	Rare or likely to become extinct
Charadrius laschenaultii	Greater Sand Plover	Vulnerable	Rare or likely to become extinct
Charadrius mongolus	Lesser Sand Plover	Endangered	-
Chelonia mydas	Green Turtle	Vulnerable	
Dasyurus geoffroii	Western Quoll	Vulnerable	
Dermochelys coriacea	Leatherback Turtle	Endangered	Rare or likely to become extinct
Diomedea amsterdamensis	Amsterdam Albatross	Endangered	-
Diomedea dabbenena	Tristan Albatross	Endangered	-
Diomedea epomophora	Southern Royal Albatross	Vulnerable	
Diomedea exulans subsp. exulans	Snowy Albatross	-	Rare or likely to become extinct
Diomedea exulans	Wandering Albatross	Vulnerable	-
Diomedea sanfordi	Northern Royal Albatross	Endangered	-
Eubalaena australis	Southern Right Whale	Vulnerable	
Hydroprogne caspia	Caspian Tern	Migratory	Protected (Int.)

Scientific name	Common Name	EPBC Act Status	BC Act Status
Isoodon fusciventer	Southwestern Brown Bandicoot	-	Priority 4
Lamna nasus	Porbeagle, Mackerel Shark	Migratory	
Leipoa ocellata	Malleefowl	Vulnerable	-
Lerista lineata	Lined Skink	-	Priority 3
Limicola falcinellus	Broad-billed Sandpiper	Migratory	
Limosa lapponica	Bar-tailed Godwit	Migratory	
Limosa lapponica baueri	Western Alaskan Bar-tailed Godwit	Vulnerable	-
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	Critically Endangered	-
Macronectes giganteus	Southern Giant Petrel	Endangered	-
Macronectes halli	Northern Giant Petrel	Vulnerable	-
Manta alfredi	Reef Manta Ray	Migratory	
Manta birostris	Giant Manta Ray	Migratory	
Megaptera novaeangliae	Humpback Whale	Vulnerable	
Moracilla cinerea	Grey Wagtail	Migratory	
Natator depressus	Flatback Turtle	Vulnerable	
Neophoca cinerea	Australian Sea Lion	Vulnerable	
Numenius madagascariensis	Eastern Curlew	Critically Endangered	-
Numenius phaeopus	Whimbrel	Migratory	
Onychoprion anaethetus	Bridled Tern	Migratory	
Orcinus orca	Killer Whale	Migratory	
Pachyptila turtur subantarctica	Fairy Prion	Vulnerable	-
Pandion cristatus	Eastern Osprey	-	Protected (Int.)
Pandion haliaetus	Osprey	Migratory	
Pluvialis squatarola	Grey Plover	Migratory	Protected (Int.)
Pseudocheirus occidentalis	Western Ringtail Possum	Critically Endangered	
Rhincodon typus	Whale Shark	Vulnerable	
Rostratula australis	Australian Painted Snipe	Endangered	-
Sterna dougallii	Roseate Tern	Migratory	
Sternula nereis nereis	Australian Fairy Tern	Vulnerable	-
Sterna hirundo	Common Tern	-	Protected (Int.)
Thalasseus bergii	Crested Tern	-	Protected (Int.)
Thalassarche cauta	Shy Albatross	Vulnerable	
Thalassarche impavida	Campbell Albatross	Vulnerable	-
Thalassarche melanophris	Black-browed Albatross	Vulnerable	-
Thalassarche steadi	White capped Albatross	Vulnerable	
Tringa brevipes	Grey Tailed Tattler	Migratory	Priority 4
Tringa nebularia	Common Greenshank	Migratory	
Xenus cinereus	Terek Sandpiper	Migratory	
Hydroprogne Caspia	Caspian tern		
Sterna Bergii	Crested tern		

Scientific name	Common Name	EPBC Act Status	BC Act Status
Sterna nereis	Fairy tern	Vulnerable	Vulnerable
Sterna anaethetus	Bridled tern		Migratory
Pluvialis squatarola	Grey plover		Migratory
Calidris ruficollis	Red-necked stint		Migratory
Calidris alba	Sanderling		Migratory
Arenaria interpres	Ruddy turnstone		Migratory
Pachycephala pectoralis	Golden whistlers	Vulnerable	
Falco peregrinus	Peregrine falcon		Other specially protected
Isoodon obesulus fusciventer	Quenda		Priority 4
Macropus irma	Western brush wallaby		Priority 4
Lerista lineata	Lined skink		Priority 3
Pseudonaja affinis	dugite		Priority 4

Appendix B – Stakeholder Engagement Report

1 Community values

The below sections provide a detailed summary of information obtained against the key values of the study area identified from the site visit, survey results and stakeholder engagement interviews and discussions. Recreation Opportunities

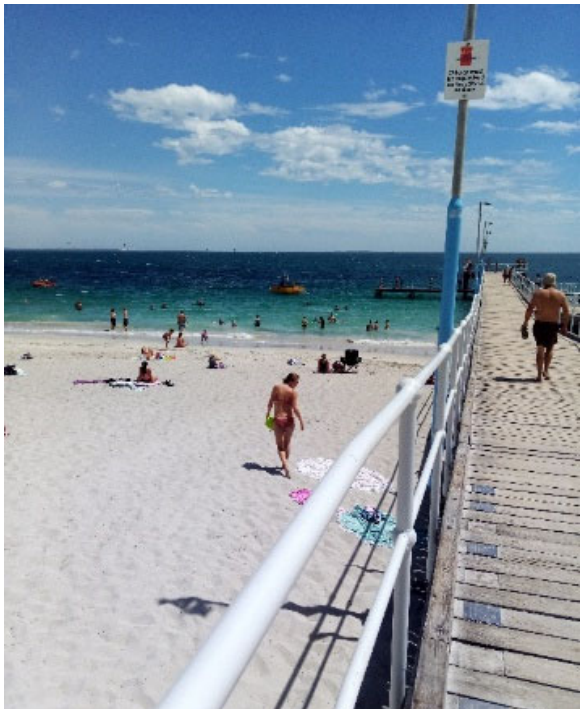
***"Beautiful beach to walk along with lovely compacted sand near water's edge."* - survey participant**

Recreation on the coast is one of the strongest social values associated with Coogee Beach. The water around Coogee Beach and the recreational opportunity it presents is central to the lifestyle of people in this locality and further afield.

Passive recreation – is the key recreational activity enjoyed by the community (based on survey participants and focus groups). People enjoy walking the length of the area, appreciating nature.

The wave conditions are generally calm and the beach is well protected. It is therefore a popular location for families to bring young children to swim in the shallow water, play in the sand and utilise the playgrounds.

Exercise and sports are another recreational opportunity enjoyed by community members, particularly in organised groups. The area is a popular location for paddle sports and the Surf Life Saving Club builds confidence in children swimming.



The jetty, beach and swimming pontoon are popular for recreation

There is an established dive trail associated with the Omeo wreck to the north of the study area, and the survey indicates that the area within the shark barrier is popular for snorkelling.

The jetty and pontoons are popular with older children for swimming and enjoying the water.

Fishing is a major coastal recreational activity, and the survey results indicate that shore fishing and fishing from the jetty takes place.

Whilst not indicated as a popular activity associated with the area, some survey respondents indicated that they come to the area for boating activities.

Social space to meet and interact

***"Meet friends at Surfin Lizard café for breakfasts, lunch or just for a coffee depending on what time of day."* - survey participant**

Coogee is a key area for social interactions. Social interactions and community participation are vital to a healthy community, and contribute to mental health and lifestyle.

The picnic/barbeque area, cafes and playgrounds were identified by the community as key places to socialise and interact. There are also known to be exercise and walking groups that meet and utilise the area. There is a gym located in the Surf Life Saving Club building.

Coogee Beach is also the location for Coogee Live a popular summer community festival.

The Surf Life Saving Club is also a place for parents and kids to meet and interact. The Club also holds events approximately ten times a year.

Cultural value

***"The Omeo wreck and the maritime trail built by the Cockburn council is a great landmark"* - survey participant**

The cultural value of Coogee Beach includes Aboriginal and European heritage, spiritual connections, and historical value.

The history of Coogee Beach and jetty is highly valued, and it is a key element of the character of the settlement area. This area has been recognised through its listing on the statutory Heritage List and listing on the Municipal Inventory.

Coogee Beach has been a popular destination for picnics since the 1930's. People came from as far as Midland by train to enjoy the beach, Coogee Hotel and Tearooms. Shacks and sheds were built during the 1930's eventually expanding the length of the beach. The Government removed these shacks when the area was declared an A Class Reserve, however the jetty remained for the recreational opportunities it afforded. The jetty has since undergone significant structural alteration (inHerit database search, Government of Western Australia, 11th March 2020).

The Coogee Beach Hotel and Coogee Beach Post Office are State Registered Places, also listed on the Heritage List and Municipal Inventory, however both are located outside the study area and are not expected to be impacted by coastal hazards in the 50 year life of the management plan.

There are no sites located within the study area registered as Aboriginal Sites of Significance under the *Aboriginal Heritage Act 1972*, however, the Indian Ocean is listed an Other Heritage Place that is of mythological significance. It is important to note, however, that other places of significance may not be registered, and there are additional areas valued and used by the Aboriginal community beyond formally protected sites.

Character, sense of place, and scenic landscape

***"It is such a beautiful local beach...we are blessed."* - Survey participant**

Coogee Beach is a very unique place. The character of the area is influenced by its coastal setting and history as a coastal destination for Perth residents.

Community engagement outcomes told numerous stories of how beautiful and unique people found this location. The beauty of the coastal environment, the scenic value, and the sense of place are the key attractors for Coogee Beach, and are valued by the community.

Ecosystem and place of biodiversity

***"Nowhere else in the world have I experienced such a plethora of amazing aquatic life. We regularly see pods of dolphins, occasionally see seals, there's always an abundance of fish, and a ridiculous amount of starfish."* - Survey participant**

The environmental values of Coogee Beach are a key attractor for beach users. Environment and ecosystem values were the third highest ranked value within the study area.

The study area supports a range of environmental values. The coastal foreshore, which is reserved for Parks and Recreation under City's local Planning Scheme No. 3, includes some stands of natural vegetation that provide habitat for coastal fauna, including bandicoots (pers. coms. resident associations, 4th March 2020).

The survey responses highlighted the value of the area for wildlife - comments included mention of dolphins, seals, pelicans and other bird life and many people mentioned the variety and number of fish especially within the shark barrier enclosure.

Education, science and learning

***"it has a nice family vibe and is great for kids learning to be confident in the ocean"* - survey participant**

Coogee Beach provides opportunity for education, science and learning. This is most obviously highlighted by the Surf Life Saving Club which teaches ocean knowledge and confidence in the ocean.

The Coogee Maritime Trail just to the north of the area covered by this Plan offers a unique opportunity for education building awareness of the local maritime heritage, maritime archaeology and history and the marine wildlife. The trail features both:

10. A dive and snorkel trail which includes the Omeo shipwreck, an underwater art gallery and an artificial reef
11. Land based trail which features maritime artefacts, two restored anchors from the Omeo and a viewing area overlooking the shipwreck. The trail includes signage offering information these features and local wildlife.

Coogee Beach Surf Life Saving Club

Commercial economic resource

***"Also, the long-term benefit of encouraging visitors, tourists, locals and families to stay in the park will bring in revenue by the money these visitors spend locally (shops as well as attractions)."* - survey participant**

Tourism has been associated with the area for 90 years, historically providing a coastal destination to those living further inland and continuing to provide tourism opportunities today. Opportunities include the caravan park and unique offerings such as the jetty and maritime trail that draw visitors from further afield.

The Discovery Parks Holiday Park, the Coogee Beach Café, the Surfing Lizard Café, the Surf Life Saving Club and the Coogee Beach Fitness Club are the key commercial ventures associated with the area. It is important that management strategies consider the commercial impacts to these ventures.

The Surfing Lizard Café is a popular café located in the CBICF

Personal economic resource

***"We live close to this beach area ourselves and it is fantastic to see young people and families enjoying what we have in our local area."* – survey participant**

Personal economic value is important to community members. The scenic landscape and proximity of the coast to coastal lands can often lead to increased property values in these locations, although coastal private land can be at risk of hazards of coastal erosion and inundation. As many of the survey respondents live in the area, it is understandable that many people rated personal economic resource as very important.

A number of people live in close proximity to Coogee Beach

2 Stakeholder values

9.1.1 Surf Life Saving Club

The Surf Life Saving Club were against infrastructure that would negatively impact on beach safety. Maintenance of current beach width and wave heights was of the most importance.

They were open to relocating the CBICF at the end of its life and temporary protection if required. Club members have witnessed beach visitation increasing over recent years – and suggested additional pontoons may be required.

Issues and concerns raised related to:

- Overnight camping in the carpark.
- Safety of crossing from overflow parking is an issue during events (approximately 10 per year).

Suggested improvements made by Club members included:

- Increased public transport to the area to help alleviate pressure on parking
- An amphitheatre.

Discovery Parks

Discovery Parks are committed to working with the City to create a successful commercial business. They are comfortable designing flexible upgrades that can adapt to risks if they are realised, such as utilisation of modular, transportable dwellings. The benefits of track closures were understood, however, the retention of a northern and southern access track was preferred.

Coogee Beach Café

The café representative indicated that the business is successful, although busier in the summer months. Patrons enjoy using the café when they utilise the area for other reasons, such as recreation and exercise. The shady surrounds and grassed area are popular.

The main concern raised related to parking. At popular times, such as very hot days, the current parking is inadequate. If risks are realised and parking is lost due to erosion, it would be expected that additional parking be provided elsewhere.

The Coogee Beach Café is a popular café

3 Community values and ongoing management

A community values survey was used to investigate how community values may be impacted by potential management strategies.

Surf Life Saving Club impacts

Most survey respondents (60 percent) indicated that they would not be impacted by sand replenishment to help protect the Surf Life Saving Club although (32 percent indicated they would need to know more).

Issues identified with beach nourishment included – beach closure, turbidity, temporary in nature, costly on an ongoing basis, supply may run out again increasing costs

People like that sand replenishment will allow the beach to continue to be used with minimal impact.

Revegetation and dune stabilisation

85 percent of people thought this would not affect their enjoyment of the beach. Most comments indicate a positive benefit of this.

Track closure

The highest response (49 percent) was that tracks should be properly assessed before any are closed but otherwise closure would not impact enjoyment of the area.

Shark barrier

87 percent of respondents were in favour of keeping the shark barrier. Those against it believe the risk is not great enough to require the barrier.

Relocation of infrastructure

Most survey respondents (68 percent) indicated that they would support relocation of infrastructure at the end of its design life.

If the Surf Life Saving Club needs to be defended before it is at the end of its life, artificial reef and offshore breakwater were the most popular option, second was artificial reef only. The surf lifesaving club members were accepting that the club may need to be relocated. It is City infrastructure and the financial implications of relocating infrastructure that may still be functional will need to be weighed against the cost of defending the infrastructure. Temporary protection to prolong life of the building may be considered.

Offshore breakwater and artificial reef

The most important values for the Surf Life Saving Club were maintaining the width of the beach and enough wave height to effectively teach surf lifesaving and surfing. Safety for beach users was also considered to be important, introducing infrastructure that makes the ocean unsafe would not be supported.

What to do with the areas as the Foreshore width decreases was ranked. The highest ranked option was to increase the space for built infrastructure at the expense of the natural, although it was fairly evenly split.

4 Conflicts

There are many conflicting views within a community, notable highlights from this consultation include:

- Some people suggested complete removal of the caravan park, some people thought it was important for attracting visitors to the area
- Some people (very few) thought putting a seawall/increasing development the entire length of the study area would be better – this was countered with many comments reflecting how the area should continue to be appreciated for its natural values.
- Most people feel more secure with the shark barrier, there is a minority think that it is an unnecessary, ugly piece of infrastructure.

Appendix C – Community Survey Summary Report

Survey Report

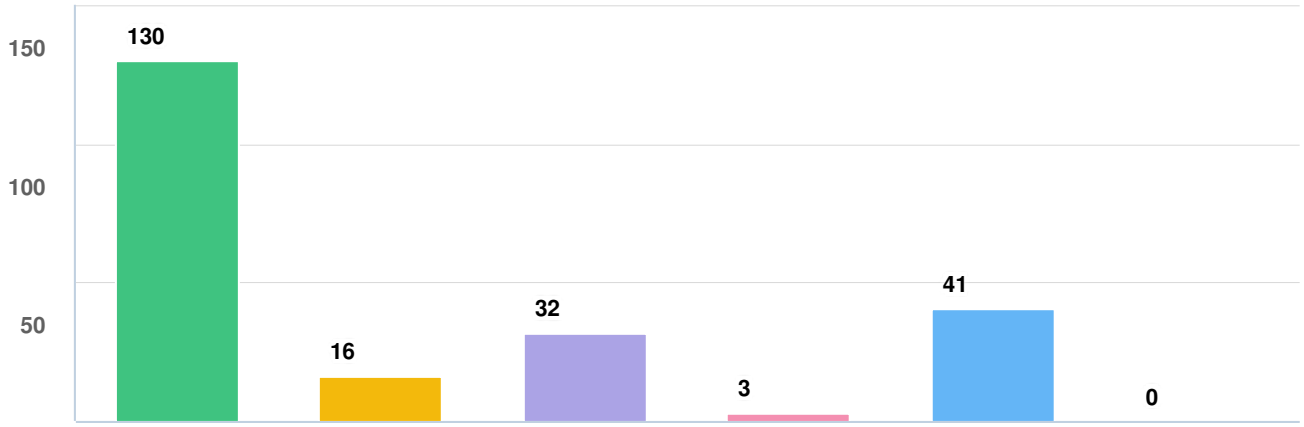
09 February 2020 - 06 March 2020

Community Values and Future Management Priorities

PROJECT: Managing the Coogee Coast

Comment on Cockburn

Q1 How often do you visit Coogee Beach?

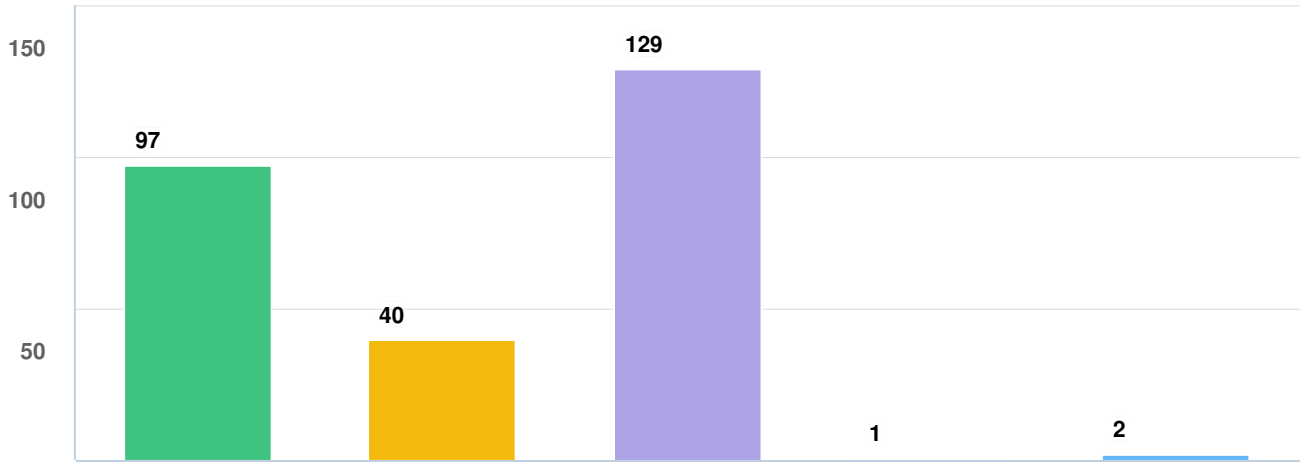


Question options

Weekly Monthly Seasonally (summer) Infrequently (a couple of times a year) Other (please specify) Seasonally (winter)

Optional question (222 responses, 0 skipped)

Q2 How do you usually get to Coogee Beach?



Question options

Walk Cycle Car (as driver or passenger) Public transport Other (please specify)

Optional question (222 responses, 0 skipped)

Q3 Which parts of Coogee Beach do you usually go to?

XXX 2/10/2020 03:36 PM	Omeo wreck
XXX 2/10/2020 03:39 PM	shark net area
XXX 2/10/2020 03:41 PM	Coogee Jetty and Shark Barrier
XXX 2/10/2020 03:43 PM	Omeo Wreck Trail and in front of the surf club.
XXX 2/10/2020 03:45 PM	Omeo wreck, shark barrier, jetty
XXX 2/10/2020 03:45 PM	Either drive to Coogee Beach carpark at the surf club or the beach either side of the Ammo Jetty.
XXX 2/10/2020 03:46 PM	North end
XXX 2/10/2020 03:47 PM	surf club and jetty
XXX 2/10/2020 03:49 PM	Coogee beach, toward Woodman point,
XXX 2/10/2020 03:52 PM	From cafe down to Woodman Point
XXX 2/10/2020 03:55 PM	O'Connor beach and Woodman Point mainly
XXX 2/10/2020 03:55 PM	All
XXX 2/10/2020 03:55 PM	From Shipwreck to Yaucht Club
XXX 2/10/2020 03:58 PM	Coogee Beach Jetty
XXX 2/10/2020 03:58 PM	Coogee Beach Jetty
XXX 2/10/2020 03:58 PM	Jetty to jetty, cafe, carpark, path into port Coogee
XXX	Omeo wreck, coogee jetty, the power station beach

2/10/2020 04:01 PM	
XXX 2/10/2020 04:06 PM	Beach, jetty
XXX 2/10/2020 04:09 PM	The jetty area to the yacht club/power boat club.
XXX 2/10/2020 04:11 PM	Coogee Beach, Poore Grove, Woodman Point
XXX 2/10/2020 04:12 PM	Shark nets and lifesaving club
XXX 2/10/2020 04:14 PM	Port Coogee marina and beach
XXX 2/10/2020 04:14 PM	Woodmans point Coogee beach Port Coogee beach
XXX 2/10/2020 04:16 PM	Coogee Jetty
XXX 2/10/2020 04:17 PM	The Surf Club, The Cafe. The netted swimming area and The Omeo wreck
XXX 2/10/2020 04:19 PM	Shark net, surf club area, jetty, omeo wreck
XXX 2/10/2020 04:20 PM	Omeo wreck shark net area
XXX 2/10/2020 04:21 PM	Near surf club
XXX 2/10/2020 04:23 PM	Behind cafe towards surf club & onto 2nd jetty
XXX 2/10/2020 04:24 PM	Coogee jetty and the shark enclosure area, and the Omeo wreck occasionally
XXX 2/10/2020 04:27 PM	Whole bay
XXX 2/10/2020 04:28 PM	Coogee beach surf club
XXX 2/10/2020 04:29 PM	The shark net swimming area , the coogee port beach and picnic area and the walk/run trail
XXX 2/10/2020 04:32 PM	Parkland area

XXX 2/10/2020 04:37 PM	CY Occonor beach
XXX 2/10/2020 04:38 PM	From the Dome in the Marina out to the point in jervous bay where Cockburn cement are and back
XXX 2/10/2020 04:43 PM	The whole coastline for walking. Swimming near the surf club and port coogee
XXX 2/10/2020 04:45 PM	Mainly to the Eco Barrier, but also walk along the beach up to the Surf Club.
XXX 2/10/2020 04:47 PM	Surf Lifesaving Port Coogee
XXX 2/10/2020 04:48 PM	Bike paths, Coogee beach(netted area) & Gym at surf lifesaving club
XXX 2/10/2020 04:53 PM	Area near shark net and dive trail
XXX 2/10/2020 04:53 PM	From main jetty to Ammo Jetty
XXX 2/10/2020 04:59 PM	Surf Club
XXX 2/10/2020 05:05 PM	Foreshore, from someone wreck to Magazine Jetty
XXX 2/10/2020 05:07 PM	Beach, plus jetti and pontoons for the kids.
XXX 2/10/2020 05:11 PM	Omeo and shark net area
XXX 2/10/2020 05:17 PM	Shark net area
XXX 2/10/2020 05:21 PM	All of it.
XXX 2/10/2020 05:23 PM	North end
XXX 2/10/2020 05:27 PM	Cafes and beach
XXX 2/10/2020 05:55 PM	Jetty area and shark net area and fish shop
XXX 2/10/2020 05:55 PM	Omeo wreck area

XXX 2/10/2020 06:09 PM	Shark net /John Graham park area/ woodman point
XXX 2/10/2020 06:17 PM	Nippers at Coogee surf club
XXX 2/10/2020 06:22 PM	Between the two jettys
XXX 2/10/2020 06:29 PM	Coogee jetty, grassed area, shark net, Port Coogee, Woodmans Point
XXX 2/10/2020 06:47 PM	Beach; Walking tracks
XXX 2/10/2020 06:59 PM	North of the shark net but south of the Omeo wreck
XXX 2/10/2020 07:00 PM	The man made beach near Dome. Woodman Point.
XXX 2/10/2020 07:02 PM	Surf Club Beach Coogee Beach Shark Net Marine Trail Marina
XXX 2/10/2020 07:22 PM	Surf club, shark net, Omeo wreck
XXX 2/10/2020 07:33 PM	All along beach
XXX 2/10/2020 07:35 PM	Dog beach, surf club area
XXX 2/10/2020 07:39 PM	Coogee Beach and Woodman point
XXX 2/10/2020 07:51 PM	Coogee beach entrance opp Coogee hotel
XXX 2/10/2020 07:56 PM	Close to the Omeo wreck and Surf / Fitness club beach
XXX 2/10/2020 08:05 PM	Jetty to woodman pt
XXX 2/10/2020 08:27 PM	Surf Life Saving Club area
XXX 2/10/2020 08:29 PM	Coogee Beach SLSC & Fitness Club
XXX 2/10/2020 08:29 PM	Shark net area and the coogee life saving club.

XXX 2/10/2020 08:32 PM	The playground, the jetty, the swim area (with shark nets)
XXX 2/10/2020 08:40 PM	The new Coogee Beach Gym and cafe beach.
XXX 2/10/2020 08:42 PM	Coogee beach by the shark nets
XXX 2/10/2020 08:43 PM	The wreck, the shark net, the jetty
XXX 2/10/2020 08:49 PM	From woodies point up to point coogee
XXX 2/10/2020 08:54 PM	Coogee Beach (Cafe), Jetty and Shark net
XXX 2/10/2020 08:56 PM	Walk from Omeo to surf club and back
XXX 2/10/2020 09:25 PM	Surf Club and near the shipwreck end
XXX 2/10/2020 09:26 PM	northern end and cafe / jetty area
XXX 2/10/2020 09:36 PM	Surf Club, beach jetty, wreck dive trail, net
XXX 2/10/2020 10:11 PM	Coogee surf club. Coogee jetty. Woodman point jetty. South of woodies jetty to sailing club.
XXX 2/10/2020 10:31 PM	Shark barrier, Jetty, Barbecues and Café
XXX 2/10/2020 10:33 PM	Near port coogee
XXX 2/10/2020 10:57 PM	Shark net to rock wall at Omeo
XXX 2/10/2020 11:06 PM	Surf Club
XXX 2/10/2020 11:58 PM	walk most of it
XXX 2/11/2020 06:31 AM	near surf club
XXX	Coogee Beach are for a walk up to Woodmans Point on the sand or walk

2/11/2020 08:01 AM	from the Dome to Woodmans Point and back again along the path.
XXX 2/11/2020 08:01 AM	Generally top end towards Omeo wreck parking in the streets at Port Coogee. Other car parks are usually too full especially in peak times.
XXX 2/11/2020 08:14 AM	Omeo wreck beach Surf life saving club
XXX 2/11/2020 08:39 AM	Shark net , omeo
XXX 2/11/2020 08:45 AM	We walk anywhere from ammo jetty to port coogee
XXX 2/11/2020 08:49 AM	All
XXX 2/11/2020 08:59 AM	Coogee Jetty area and SLSC
XXX 2/11/2020 09:15 AM	All! The kids jump off the jetty at least once or twice a week. I swim train in the shark net, and also between the jetty's. We lie on the beach. We have bbq's up on the grass area.
XXX 2/11/2020 09:20 AM	Beach to Woodman Point or cycle ways
XXX 2/11/2020 09:55 AM	Coogee Jetty
XXX 2/11/2020 10:00 AM	Woodman Point & Coogee beach
XXX 2/11/2020 10:03 AM	Down from the carpark
XXX 2/11/2020 10:37 AM	Shark Net, Play park and café, beach
XXX 2/11/2020 10:39 AM	Dog area
XXX 2/11/2020 11:06 AM	All three parts (shark barrier, jetty and life saving club).
XXX 2/11/2020 11:23 AM	north side of the shark net
XXX 2/11/2020 11:48 AM	Mostly near the Omeo wreck but also near coogee jetty
XXX 2/11/2020 12:21 PM	Northern end of Coogee beach

XXX 2/11/2020 01:15 PM	Near jetty
XXX 2/11/2020 01:18 PM	From Woodman Point Jetty to Marine Trail. Mostly around Surf Club area
XXX 2/11/2020 02:45 PM	Shark net and marina
XXX 2/11/2020 04:00 PM	All the way to Woodman Point
XXX 2/11/2020 04:24 PM	Between Port Coogee and the jetty
XXX 2/11/2020 04:26 PM	We walk along the beach from the wreck to woodman point beach. Also meet the grand children at the shark net section. Meet friends at surfin lizard cafe for breakfasts, lunch or just for a coffee depending on what time of day. We also cycle from Dome Cafe to Woodman Point and back.
XXX 2/11/2020 04:28 PM	beach near the jetty
XXX 2/11/2020 04:49 PM	Along all the beach from the shark net to the woodmans point jetty
XXX 2/11/2020 05:14 PM	Coogee Jetty
XXX 2/11/2020 05:23 PM	Northern pontoon
XXX 2/11/2020 05:31 PM	Around the club, shark barrier, and up to woody point.
XXX 2/11/2020 05:47 PM	Shark net
XXX 2/11/2020 06:27 PM	Beach, where the shark net is. The Cafe and Woolworths.
XXX 2/11/2020 07:55 PM	Part of our walking trail. Usually walk to jetty thru caravan park and on occasions for a swim.
XXX 2/11/2020 08:39 PM	Cafe, jetty, swimming area in the shark net
XXX 2/11/2020 09:38 PM	I walk from Port Coogee through to the Surf Club. Generally swim north of the jetty.
XXX 2/11/2020 11:27 PM	Main beach jetty, walk south
XXX	park at surf club and run ride or swim all parts of the beach and paths and

2/12/2020 06:49 AM	trails , also park at coogee beach and use the shark net and snorkel omeo, and take grandkids to beach in marina
XXX 2/12/2020 08:28 AM	North coogee
XXX 2/12/2020 09:31 AM	ammunition jetty through to coogee jetty
XXX 2/12/2020 09:41 AM	Cafe, beach, grassed area
XXX 2/12/2020 10:47 AM	I swim in the shark net or around the Omeo wreck when it is not too busy.
XXX 2/12/2020 10:48 AM	Shark net through to Woodmans Point
XXX 2/12/2020 12:52 PM	In front of Surf life saving club
XXX 2/12/2020 04:34 PM	Coogee Beach, Surf Club and Graham Reserve
XXX 2/12/2020 05:44 PM	Coogee Beach, Port Coogee Marina, Woodmans Point, Woodmans Point Ammo Jetty.
XXX 2/12/2020 09:12 PM	Mainly shark barrier
XXX 2/12/2020 09:31 PM	shark net dog exercise area between two jetties
XXX 2/12/2020 10:44 PM	Shark barrier
XXX 2/13/2020 06:11 AM	Shark net barrier
XXX 2/13/2020 09:45 AM	From Omeo to Woodman Pt - the walk.
XXX 2/13/2020 02:17 PM	Between the two jetties
XXX 2/13/2020 03:22 PM	Surf Club / Coogee Gym Coogee Beach Jetty Shark barrier but often more north into the Omeo shipwreck area
XXX 2/13/2020 03:55 PM	All parts. I walk from end to end.
XXX 2/13/2020 04:49 PM	Coogee beach café, on the beach and walk along orsino boulevard sometimes all the way to CBSLSC

XXX 2/13/2020 06:52 PM	Dog beach and by surf club
XXX 2/13/2020 09:45 PM	Shark Net and between the 2 jetties.
XXX 2/14/2020 10:18 AM	Swimming Designated Area, Cycle Path and Parks
XXX 2/14/2020 01:13 PM	Perlinte Way end of the beach.
XXX 2/14/2020 03:22 PM	near jetty
XXX 2/14/2020 03:56 PM	Walk from the Omeo wreck to Woodman Jetty
XXX 2/14/2020 09:18 PM	Coogee Jetty/Shark Barrier Surf-Lifesavers launch area Munition Jetty Area Windsurfing club beach area Woodman Point
XXX 2/15/2020 10:01 AM	surf live saving club area
XXX 2/16/2020 06:57 AM	We mix our visits up a bit but maily access the beach via the Woodman point Ammo Jetty or the surf club
XXX 2/16/2020 11:11 AM	Jetty or near the lifesaving club, kids beach or the shipwreck
XXX 2/16/2020 11:16 AM	We walk or swim between the Coogee Maritime Trail and the Ammo Jetty.
XXX 2/16/2020 07:59 PM	Near surf club
XXX 2/16/2020 08:20 PM	North End and Main jetty/cafe area
XXX 2/17/2020 09:06 AM	Port Coogee, surf club
XXX 2/17/2020 09:06 AM	Omeo, SLSC
XXX 2/17/2020 09:21 AM	Beach at shark net enclosure
XXX 2/17/2020 09:24 AM	Life saving Coogee beach/ Surfing Lizard cafe.
XXX 2/17/2020 09:43 AM	Northern section and cafe and surf life saving club

XXX 2/17/2020 09:50 AM	Shark barrier, the jetty, cycling path along the coast
XXX 2/17/2020 09:56 AM	The area closest to the Surf Club. My daughter does Surf Babies.
XXX 2/17/2020 10:43 AM	From napoleon street to life saving club and back
XXX 2/17/2020 05:12 PM	Omeo wreck, in and around shark net
XXX 2/17/2020 07:35 PM	Port Coogee
XXX 2/17/2020 08:49 PM	Shark net, jetties, Surf Club, dual use paths
XXX 2/17/2020 10:21 PM	All
XXX 2/18/2020 09:05 AM	the whole beach at different times, but mostly south of Woodman Point jetty.
XXX 2/18/2020 11:27 AM	omeo wreck and shark net
XXX 2/18/2020 11:59 AM	Near omeo
XXX 2/18/2020 12:33 PM	The beach from Nyerbup Circle and picnic grounds.
XXX2/18/2020 01:27 PM	Coogee Jetty, Coogee playground, Port Coogee beach, Grass area near shipwreck
XXX 2/19/2020 11:33 AM	The beach section from and including the netted area right up to the pier beyond the Surf Lifesaving Club.
XXX 2/19/2020 03:11 PM	I walk on the beach, swim the shark net, and walk on the bike track between Coogee Jetty and Woodmans Point. I also walk between Woodman Jetty to the South.
XXX 2/20/2020 12:12 PM	Surf club and both jetties
XXX 2/20/2020 12:53 PM	Beach between the two jetties
XXX 2/20/2020 05:22 PM	all
XXX	Beach area between the jetties.

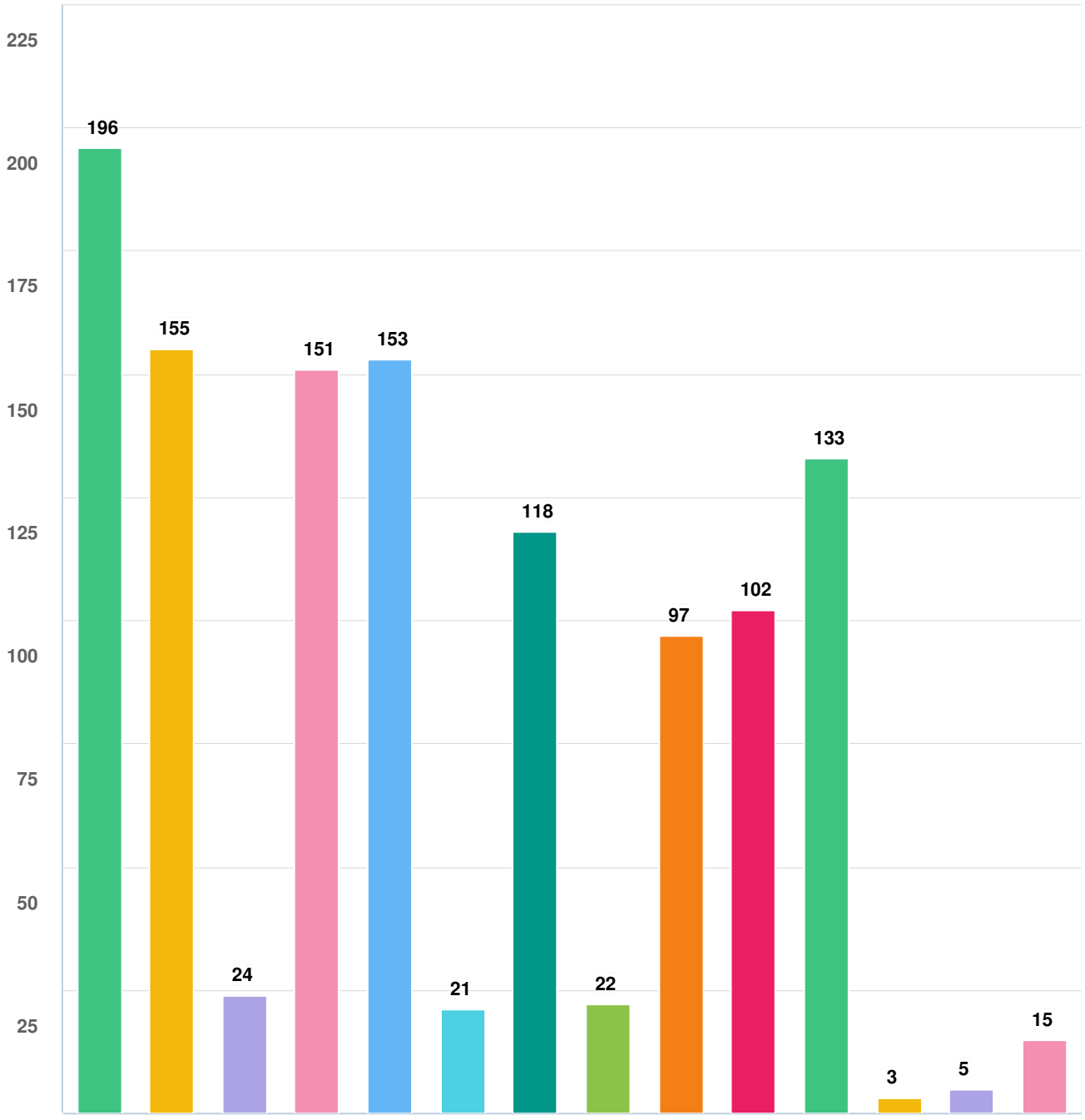
2/22/2020 07:50 AM	
XXX	Coogee eco barrier and to Omeo Wreck and Mariner
2/22/2020 09:36 AM	
XXX	Everywhere from the Surf Life Saving Club up to the Marina
2/22/2020 02:30 PM	
XXX	Beach. Woodman point reserve.
2/22/2020 02:35 PM	
XXX	Surf club and cafe adjoining North Coogee
2/22/2020 03:19 PM	
XXX	Surf club, both jetties, dog area south of jetty
2/22/2020 04:18 PM	
XXX	Omeo Wreco, shark net
2/22/2020 06:43 PM	
XXX	Everywhere in Porr Coogee locale
2/22/2020 09:39 PM	
XXX	Shark net for swimming and walk up to the big jetty towards woodmans point
2/22/2020 09:55 PM	
XXX	Surf club
2/23/2020 10:15 AM	
XXX	All areas
2/23/2020 10:33 AM	
XXX	All areas of reserve
2/23/2020 10:50 AM	
XXX	All areas
2/23/2020 11:03 AM	
XXX	John Graham Park. Coogee Surf club. Jetty and the beach. Woodman Pt and Sailing Club
2/23/2020 11:07 AM	
XXX	Surf club
2/23/2020 11:09 AM	
XXX	Clubhouse side
2/23/2020 11:17 AM	
XXX	Surf club area, shark barrier
2/23/2020 11:17 AM	
XXX	Swim
2/23/2020 11:23 AM	

XXX 2/23/2020 11:27 AM	Lifesaver building area
XXX 2/23/2020 11:32 AM	All
XXX 2/23/2020 12:19 PM	Surf club and Omeo wreck
XXX 2/23/2020 01:07 PM	Between Omeo and northern boundary of swimming enclosure.
XXX 2/23/2020 02:20 PM	Sit in the grassed area under the shade, but swim at jetty Kids swim shark net areas
XXX 2/23/2020 02:32 PM	Omeo wreck and the Coogee beach jetty
XXX 2/23/2020 03:02 PM	Shark barrier beach
XXX 2/24/2020 01:27 PM	Beach near Omeo, surfing lizard.
XXX 2/24/2020 03:18 PM	During the winter we walk or ride along the pathways to and along the beach and regularly walk out onto the coogee and munitions jetty. In summer we swim at the shark barrier at the northern end almost every day.
XXX 2/24/2020 05:58 PM	Winter we walk an cycle the cycle tracks in the area. In summer we swim in the shark barrier.
XXX 2/25/2020 08:20 AM	The beach and jetty south of the surf club
XXX 2/26/2020 07:25 PM	Dog beach and park near the jetty.
XXX 2/27/2020 01:00 PM	All
XXX 2/27/2020 05:27 PM	Surf Club Beach to jetty
XXX 2/28/2020 08:36 AM	Woodman Point to the Northern end of Shark barrier including CBSLSC
XXX 2/28/2020 02:54 PM	Surf Club
XXX 2/29/2020 12:22 AM	Jetty, shark barrier swim area, Surf Life Saving Club beach
XXX 2/29/2020 05:57 PM	Park at Coogee Beach Jetty

XXX 3/01/2020 03:25 PM	Northern area of beach for sunbathing and swimming, all areas for cycling and walking
XXX 3/02/2020 10:49 AM	Coogee Beach near lifesaver club
XXX 3/03/2020 02:14 PM	The shark berrier and along the whole beach
XXX 3/04/2020 12:08 AM	omeo ship wreck
XXX 3/04/2020 02:40 PM	Surf club
XXX 3/06/2020 11:35 AM	RSLC - Coogee and Coogee Caravan Park CY OConnor Beach Woodman Point Leaping Lizard
XXX 3/06/2020 11:40 AM	between surf club and woodman point

Optional question (218 responses, 4 skipped)

Q4 What do you do at Coogee Beach?



Question options

Swim
Enjoy the sandy beach
Surf lifesaving
Walking/cycling on coastal paths
Enjoy the views
Boating/ fishing from a boat
Socialise with friends
Fishing from the shore/jetty
Exercise and sports - alone or in a group
Use grassed parkland areas/playground
Visit cafes
I live at the caravan park permanently
Visit the caravan park temporarily
Other (please specify)

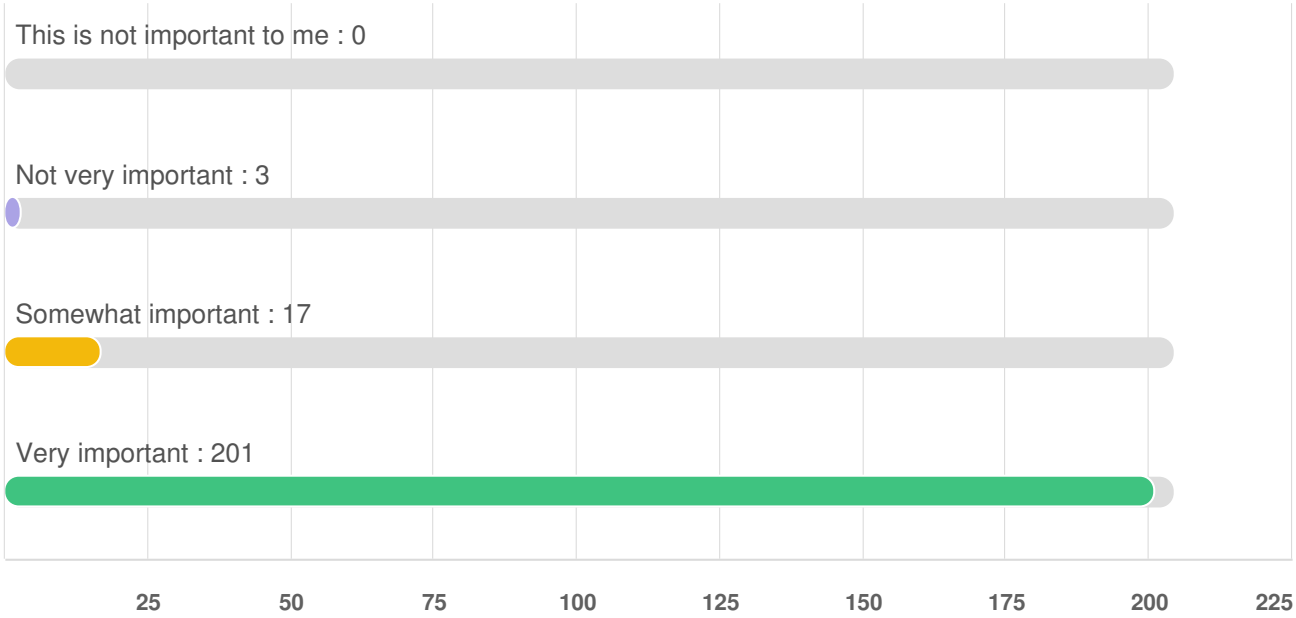
Optional question (222 responses, 0 skipped)

Q5 How important to you are the following things at Coogee Beach?

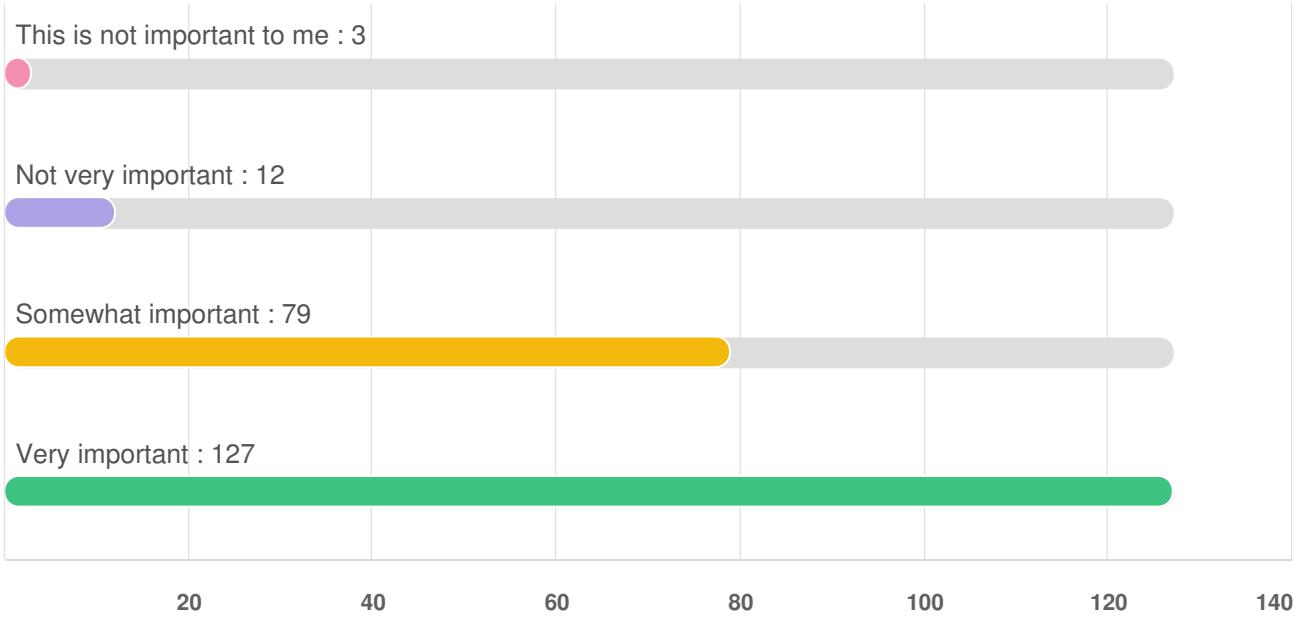
Optional question (222 responses, 0 skipped)

Q5 How important to you are the following things at Coogee Beach?

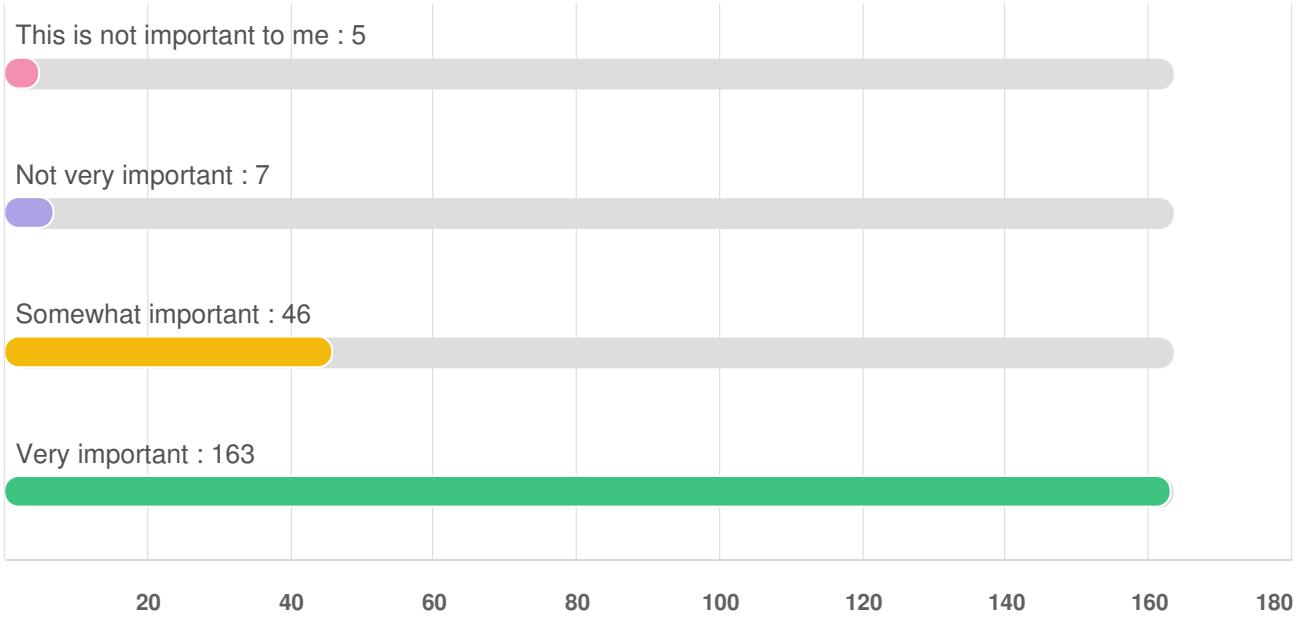
Recreation opportunities (swimming, exercise, play, etc)



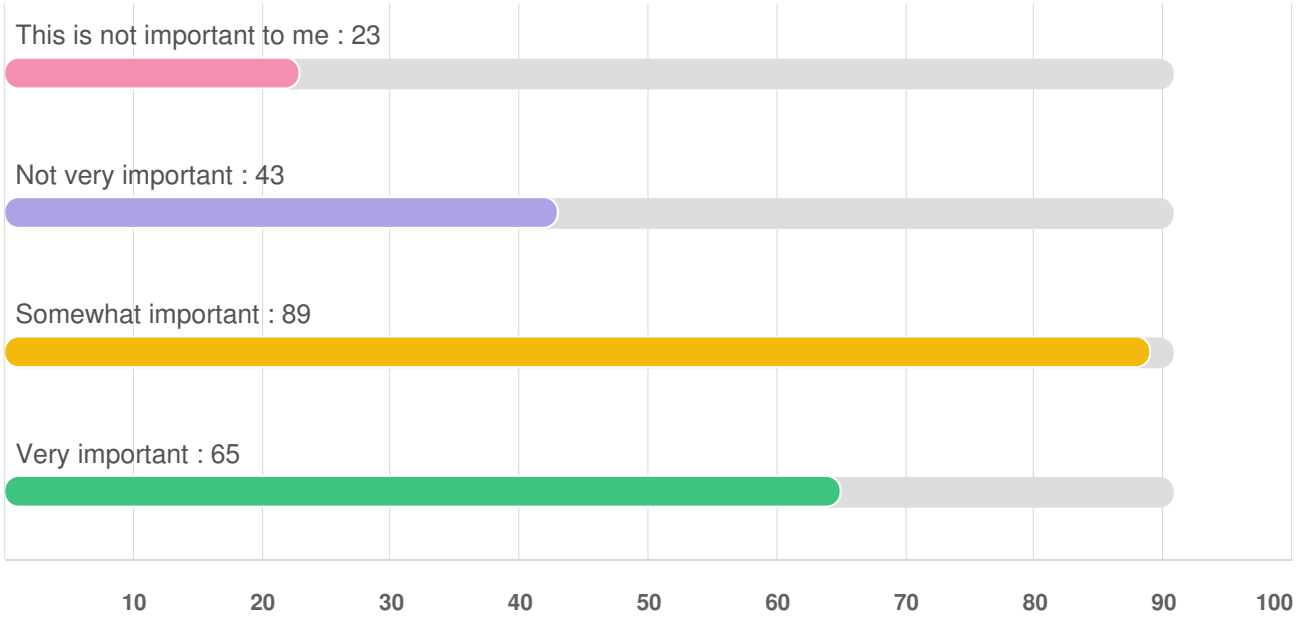
Social space to meet and interact



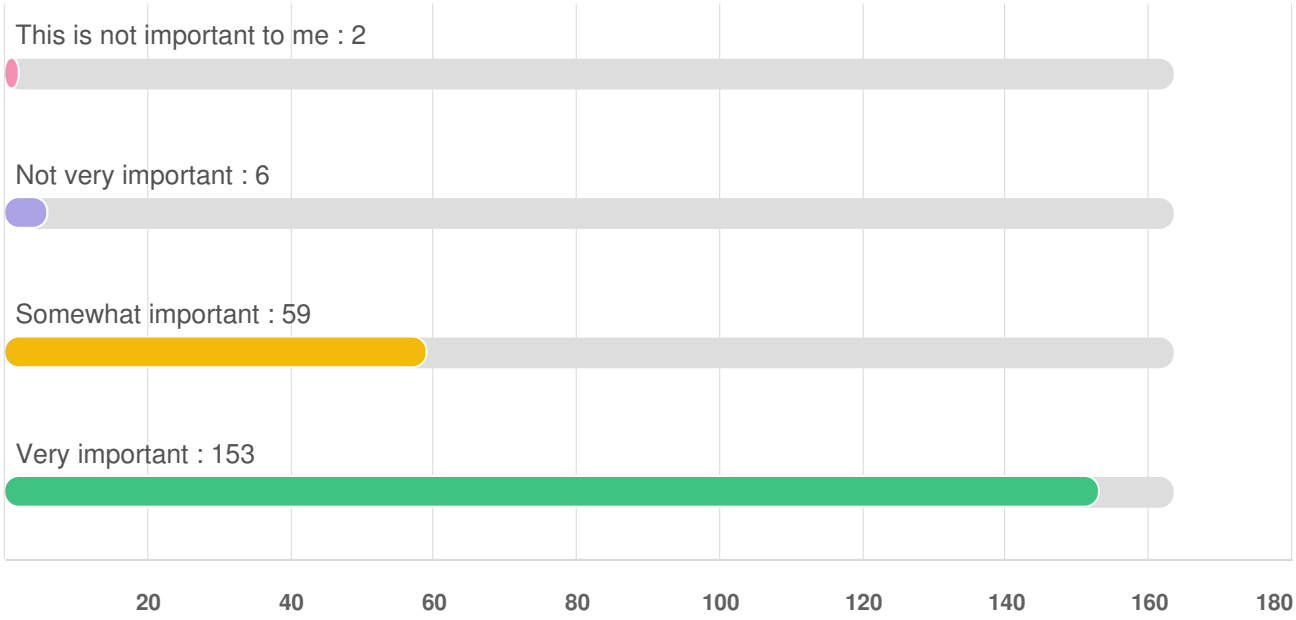
Ecosystem and biodiversity



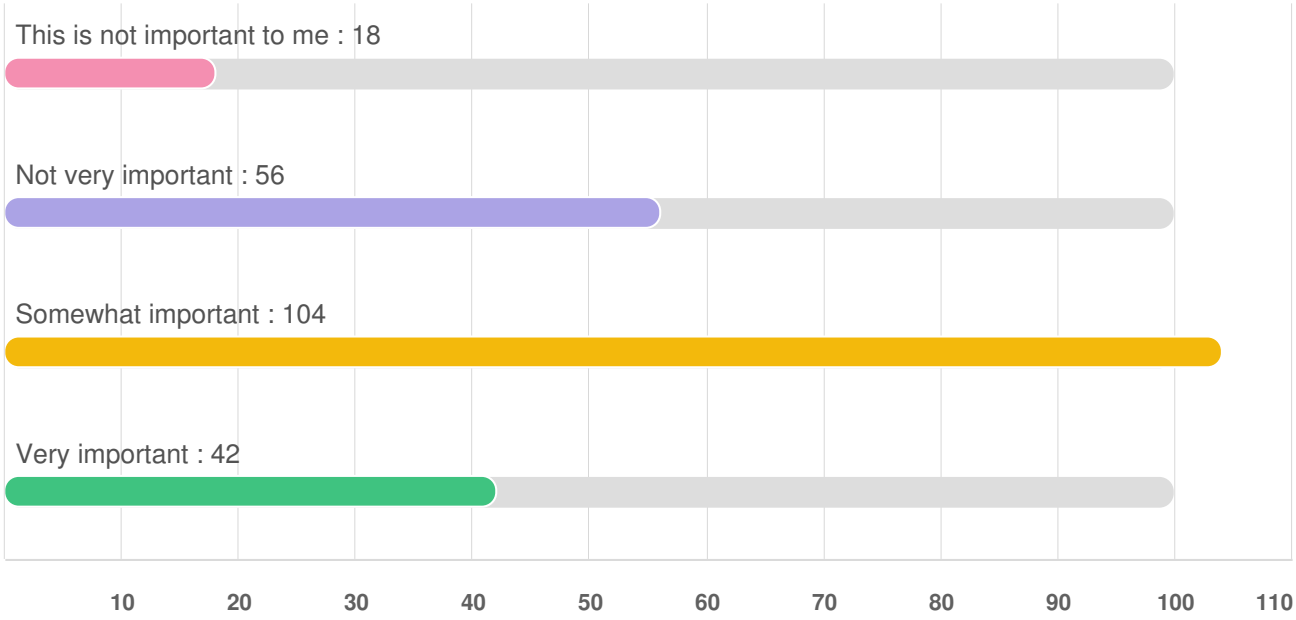
Cultural values



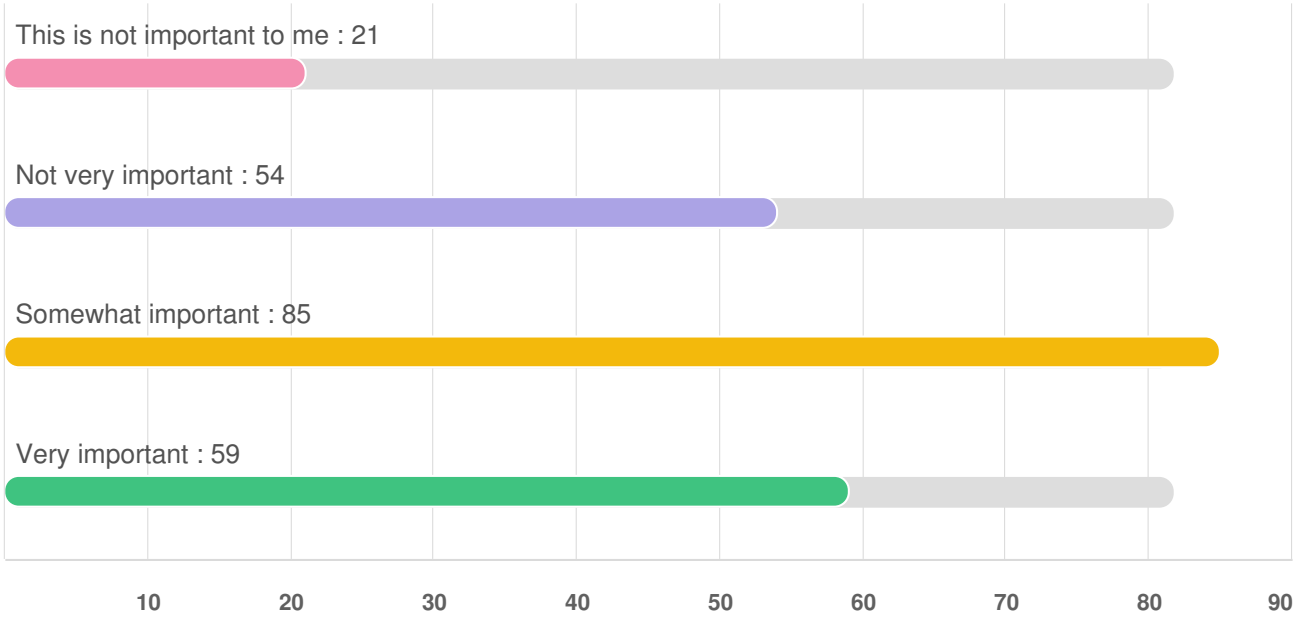
Character, sense of place and scenic landscape



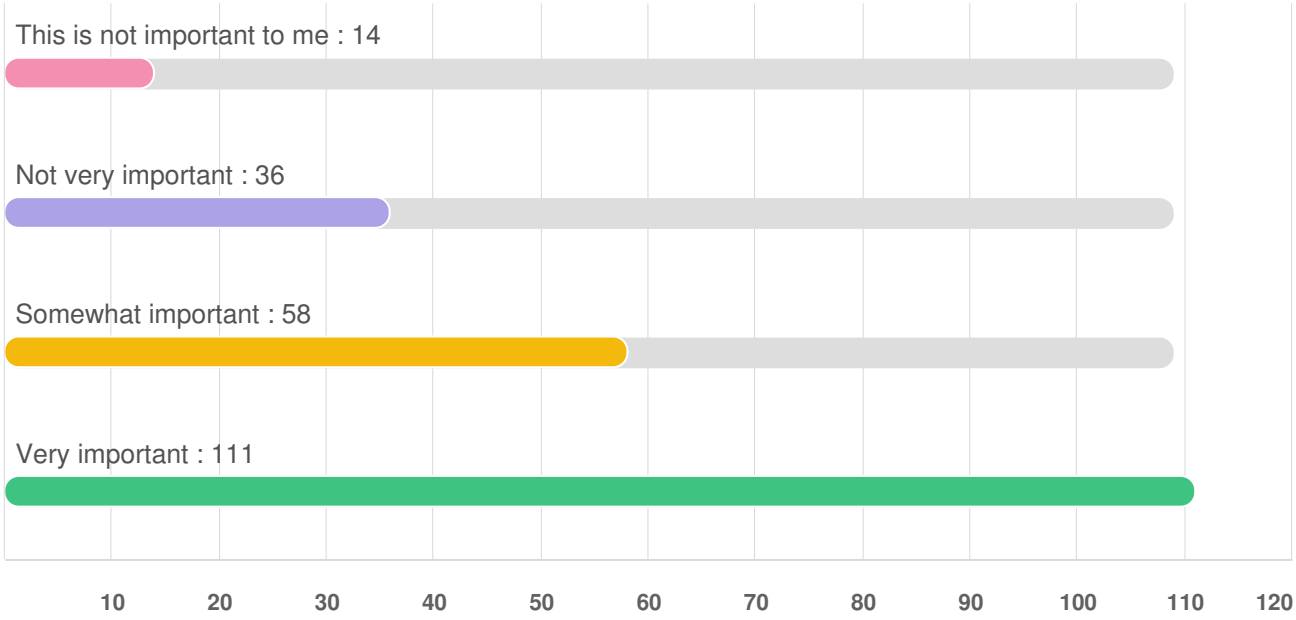
Opportunities for education, science and learning



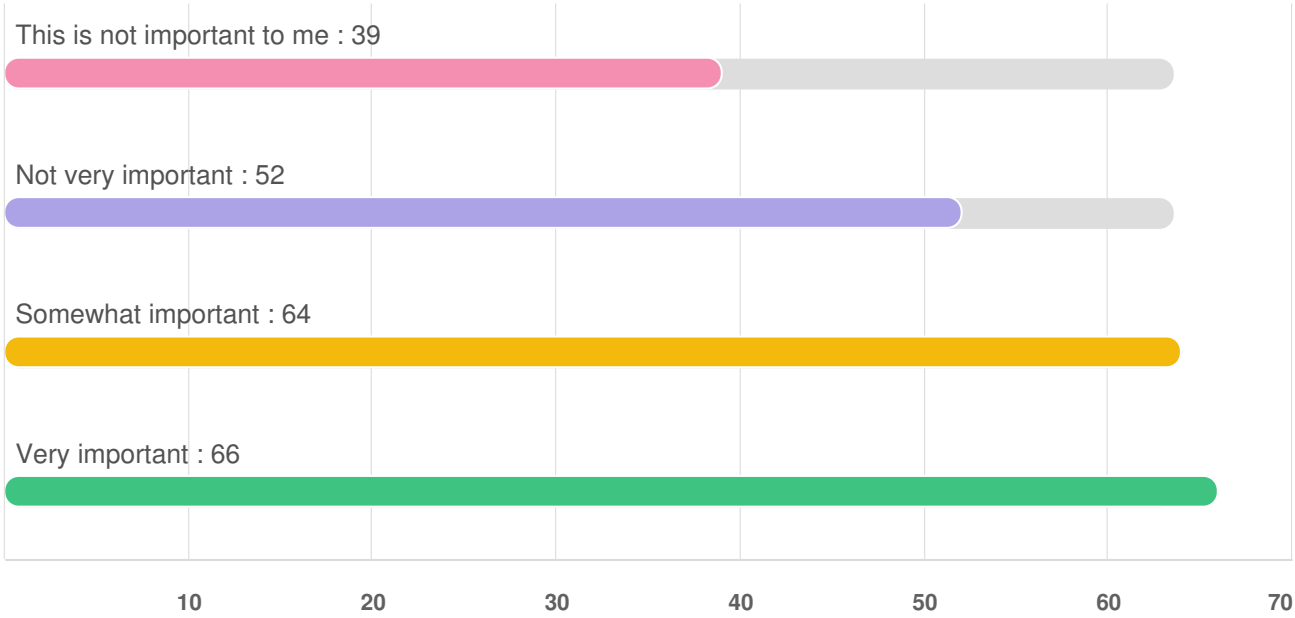
Economic and employment opportunities (e.g. tourism, local businesses)



Enjoying food and drink at beachside cafe's and restaurants



Personal financial benefits (e.g. property value benefits of living near the reserve)



Q6 Is there anything else special or important about Coogee Beach?

XXX 2/10/2020 03:41 PM	Maintaining the Shark Barrier and Jetty is important to Coogee Beach. There is a need for more and improved parking.
XXX 2/10/2020 03:43 PM	It's just a really beautiful spot and I will be living here for the foreseeable future so I'm very interested in maintaining and looking after this area.
XXX 2/10/2020 03:45 PM	Nowhere else in the world have I experienced such a plethora of amazing aquatic life. We regularly see pods of dolphins, occasionally see seals, there's always an abundance of fish, and a ridiculous amount of starfish. The views towards both Fremantle and Woodman Point are stunning, and the parkland around the Coogee beaches, especially at the Woodman Point Playground and BBQ Area, are second to none - completely world class.
XXX 2/10/2020 03:47 PM	Beautiful beach and port coogee marina is great but the marina needs to come to life more, like hillarys or mandurah - pubs and restaurants etc etc at the moment it is set up like retirement village.. dome and well retirement village...
XXX 2/10/2020 03:49 PM	The beach is accessible by bike. It is clean, safe.
XXX 2/10/2020 03:52 PM	Lovely sand, not often overcrowded Spacious beach
XXX 2/10/2020 03:55 PM	Management of the fishery , rubbish , sea grass , dredging off the beach all important to us
XXX 2/10/2020 03:55 PM	Protected water great for children
XXX 2/10/2020 03:58 PM	One of the safest beaches in Perth
XXX 2/10/2020 03:58 PM	It still remains somewhat untouched by major developments. Keep it that way!
XXX 2/10/2020 03:58 PM	Keeping it dog free
XXX 2/10/2020 04:11 PM	still relatively unspoiled, and I hope it stays that way!
XXX 2/10/2020 04:12 PM	I love it it’s home and am down the beach very regularly love the jetty the lifesaving club
XXX 2/10/2020 04:16 PM	Dog exercise areas
XXX 2/10/2020 04:17 PM	Its beautiful

XXX 2/10/2020 04:19 PM	Family friendly and safe beach
XXX 2/10/2020 04:20 PM	Shark net, Omeo wreck and easy access to the beach
XXX 2/10/2020 04:23 PM	Usually clean well kept beach. Choice of open sea or netted. Choice of track or beach walking
XXX 2/10/2020 04:24 PM	Very ethnically diverse crowd! Great views, casual. High quality water
XXX 2/10/2020 04:28 PM	It's a world class beach let's keep it way for generations to come
XXX 2/10/2020 04:32 PM	More parkland and grassed areas Get rid of the caravan park Dog exercise area
XXX 2/10/2020 04:38 PM	Parking, the area and environment is under huge pressure as more people would like to enjoy this area than the facilities allows or caters for
XXX 2/10/2020 04:45 PM	I want it to remain a friendly safe sociable place to visit. This past summer we have had issues with behaviour and vandalism etc from people who apparently do no live here.
XXX 2/10/2020 04:48 PM	It’s a relaxed family area. Its welcoming and comfortable for all body types and isn’t overrun with antisocial behaviour.
XXX 2/10/2020 04:53 PM	It's a beautiful spot. Thanks for a excellent maintenance and lighting. Having the shark net is a great asset and peace of mind for parents of young children. Bit off topic but I hope the Old Power Station project goes ahead to bring some vibrancy to the area generally
XXX 2/10/2020 04:59 PM	Need to protect the dunes. Restrict access with simple fences to some of the dunes near pathways, so people do not take shortcuts and expose the vegetation to damage.
XXX 2/10/2020 05:07 PM	Family environment, safety, accessibility.
XXX 2/10/2020 05:11 PM	The marine trail itself and the utmost importance of keeping out illegal fishermen. Also I have noticed due to its popularity in summer that people have been standing on the wreck and possibly damaging habitat but I guess that is a price to pay for marine education and proximity. I am also passionate about prevention of beach litter. The recent programs have been great but it is relentless and I really would like to see on the spot fines imposed for blatant litterers.
XXX 2/10/2020 05:21 PM	It's the best beach south of Fremantle that offers everything we like.
XXX 2/10/2020 05:27 PM	It’s a beautiful unspoilt stretch of beach with plenty of space except parking

XXX 2/10/2020 05:55 PM	Shark net
XXX 2/10/2020 06:09 PM	Bird life NB the area to the left of the fishing jetty was home to terms and pied oyster catchers until dogs were allowed
XXX 2/10/2020 06:29 PM	Safe beaches, protected grass area - less windy due to sand dunes. lots of parking, lots of different areas for different groups.
XXX 2/10/2020 06:47 PM	Clean water and wide expanse
XXX 2/10/2020 07:22 PM	This comment does not relate to the question however there is nowhere else to provide feedback. Fishing should be banned from Woodman Point jetty, there are people who are attracting sharks to the area which is a hazard. Along with the waste fishing line and hooks it is ruining the area. I've seen people throwing blood and burley and balloon fishing on a daily basis and it has to stop before something terrible happens.
XXX 2/10/2020 07:33 PM	The dolphins and other wildlife and fishes which visit and live in the area.
XXX 2/10/2020 07:35 PM	It's peaceful and a great place for families to enjoy the coast.
XXX 2/10/2020 07:51 PM	Lots are special regarding Coogee beach and all its entrances to the beach.
XXX 2/10/2020 07:56 PM	We appreciate Coogee Beach for it's natural environment /scenic landscape. It's very peaceful and we are happy that we can walk and cycle safely to the beach.
XXX 2/10/2020 08:29 PM	Scuba diving at the Ammo jetty is my favourite! But you can ask the friendly ranger to kindly visit more often and inform the balloon fishermen who frequent the area, that what they are doing (catching sharks) is illegal.
XXX 2/10/2020 08:29 PM	Cleanliness of the water and sand. Eradicating pollution.
XXX 2/10/2020 08:40 PM	I have been going here often for many years. I love the new sports centre facilities and BBQ area at my local beach
XXX 2/10/2020 08:43 PM	The marine life, the fish the dolphins, the blue colours and how calm it is, the large stretch of sand
XXX 2/10/2020 08:49 PM	The sense of community that all of the outdoor activities at the beach and surrounds bring to the area
XXX 2/10/2020 08:54 PM	No facilities, bars or cafe's. The one Cafe is often closed after 3pm This should not be, find another tenant. Beach bars ON the beach like Europe should be welcome. Free parking for Cockburn residents (we pay rates) only, other suburbs must pay to avoid parking overflow.
XXX 2/10/2020 08:56 PM	Would like to see facilities upgraded along the lines of Yallingup beach.

XXX 2/10/2020 09:25 PM	To keep the natural coastline without too much interference, we have lived in the area for over 15 years now and have seen it grow and grow from the natural sand dunes sadly going to the bringing in sand at the northern end of the beach, this to the beautiful parklands around the shipwreck and the surf club transformation and a couple of cafes open up and the shark barrier. I just hope that not too much more is done in relation to economy ie no more high rise no more builds going up so close to the beach, let all the public enjoy it. It has always been so family friendly.
XXX 2/10/2020 09:26 PM	- the associated historic elements such as the coogee hotel and perhaps jetty .... and how these interact and connect. - the paths that lead to the ocean with views ... but more view opportunities need to be included such as raised timber walkways over dune, multi-level cafes/restaurants/community facilities. - the landscaping near beachpoint cafe is great but should be consolidated (west and south). - the park area where Socrates Way meets Perlinte View and Condor Way should have limestone steps along the western edge to allow view opportunities to the ocean (and be engineered for storms / erosion) and the parkland opened up and made more usable.
XXX 2/10/2020 09:36 PM	Dog free beach
XXX 2/10/2020 10:11 PM	To be able to fish all along the beach beach obviously not in the barrier and at the wreck but to also have a right of being there in which people respect.
XXX 2/10/2020 10:31 PM	Safety of swimming with Shark Barrier
XXX 2/10/2020 10:57 PM	access
XXX 2/10/2020 11:06 PM	Cockburn Sound is a special place and needs to be protected.
XXX 2/10/2020 11:58 PM	it's free and easily accessible
XXX 2/11/2020 08:01 AM	Coogee beach is a great family area where we took our kids to a lot when they were younger, even having family and friends birthdays there. A safe swimming area is also important. Coogee is great because there are not big waves there and is easy to swim
XXX 2/11/2020 08:01 AM	Cleanliness
XXX 2/11/2020 08:39 AM	Great opportunity for Marine Education-
XXX 2/11/2020 08:45 AM	It is unique as the beach is edged by the wonderful nature reserve and bushland. Such a rarity anywhere in the world.
XXX 2/11/2020 08:49 AM	Nice to see shark net and development of snorkel area

XXX 2/11/2020 08:59 AM	Management of the waterways in and around Coogee beach and Cockburn Sound. There should definitely not be an inner harbour in Cockburn Sound and the Cockburn Cement dredging must definitely not impact the beach area anymore than it currently does. I would love to see more frequent beach sand conditioning / cleaning as this will only enhance the beach even further.
XXX 2/11/2020 09:15 AM	My husband and I met on the jetty many many years ago :) The jetty is an absolute 'must' on our kids weekend wish list! It is such a beautiful local beach...we are blessed.
XXX 2/11/2020 09:20 AM	Omeo wreck and dive trail at the northern end
XXX 2/11/2020 09:55 AM	It's a shame I can't take my dog on a leash there.
XXX 2/11/2020 10:37 AM	Close to home
XXX 2/11/2020 10:39 AM	Dog areas without leash
XXX 2/11/2020 11:23 AM	it has a nice family vibe and is great for kids learning to be confident in the ocean
XXX 2/11/2020 11:48 AM	Cleanliness and a 'safe' beach to go to for families with young children, the elderly and everyone in between
XXX 2/11/2020 02:45 PM	preservation of the dune area
XXX 2/11/2020 04:24 PM	There are no high rise developments
XXX 2/11/2020 04:26 PM	Parking opposite boat wreck / snorkeling area.
XXX 2/11/2020 04:28 PM	such a beautiful beach
XXX 2/11/2020 04:49 PM	The way the council have placed bin this allows for the atea to remain clean and tidy
XXX 2/11/2020 05:14 PM	No
XXX 2/11/2020 05:31 PM	Bush walking/cycling paths so close to the ocean. Lack of encroaching urban development results in a more natural landscape looking back from the beach. Not many beaches like this in Perth/Fremantle region.
XXX 2/11/2020 05:47 PM	It is important to me that the existing dunes and natural reserve areas along the length of the beach, remain undeveloped for residential or commercial purposes.
XXX	How beautiful it is.

2/11/2020 06:27 PM	
XXX 2/11/2020 07:55 PM	We live close to this beach area ourselves and it is fantastic to see young people and families enjoying what we have in our local area.
XXX 2/11/2020 08:39 PM	It's a beautiful, clean, stunning beach with great facilities, easy parking and a cafe.
XXX 2/11/2020 11:27 PM	Yes the fact that there is bush around and its NOT DEVELOPED
XXX 2/12/2020 05:55 AM	It is one of the last remaining green spaces in the area and forms a significant part of our ecosystem. please preserve this natural space and do not replace it with 'development' or 'infill'.
XXX 2/12/2020 09:41 AM	It is not too commercialized or structured landscaping, maintains a family feel
XXX 2/12/2020 10:47 AM	I love to snorkel & check out the Marine life. I am volunteering with Regis as a Trishaw pilot.
XXX 2/12/2020 10:48 AM	Its a clean well managed area
XXX 2/12/2020 12:52 PM	it is nice that its not flooded by tourist's but mostly locals. I like the community feel.
XXX 2/12/2020 04:34 PM	To me Coogee Beach is very special as to my knowledge, a sheltered beach like it does not exist in the Perth metro area. I am concerned that it has become shallower since the Coogee Marina was created, if there is 'sand bypassing' it is not working. It used to be that 'blue water' or deep water was at the end of the jetty, it is now green and hence shallower. It is essential that 'all' of Coogee remain dog free and personally I would like to see the dog area removed south of the jetty at Graham Reserve. Dog owners do not pick up the droppings and there is a strong smell of urine near the entrance to the beach and jetty where children shower off. There is plenty of dog area already at Woodmans Point and South Beach, north of the old power station.
XXX 2/12/2020 05:44 PM	The views and the beautiful clear water.
XXX 2/13/2020 02:17 PM	Very family friendly with protected waters and shark net. Beautiful beach to walk along with lovely compacted sand near waters edge. Great wildlife eg dolphins, pelicans
XXX 2/13/2020 03:22 PM	Love the unique beach it provides yes we love waves but the serenity that comes from Coogee is great. Plus the area around is great for fitness, friendships and enjoyment.
XXX 2/13/2020 04:49 PM	The Omeo wreck and the maritime trail built by the cockburn council is a great landmark and friends from other inland suburbs come here for walks and recreation. They all love this area and if they had the money they would buy property here.
XXX	The shark net is a magnet for fish. I love swimming along it to look at the

2/14/2020 01:13 PM	abundance of marine life.
XXX 2/14/2020 03:22 PM	the wreck area is good for recreation. I prefer less activity and no more development.
XXX 2/14/2020 03:56 PM	that it is a safe and clean place to visit for everyone
XXX 2/14/2020 09:18 PM	I have lived less than five minutes walk from Coogee Jetty since 1993 and have so far supported cafes kiosks etc and attended gymnasium at Surf lifesaving club, also eaten at the social club. I tend to avoid the family fun days as it is noisy, crowded and less enjoyable than the plain and simple beauty of Coogee Beach I have loved and enjoyed without jostling crowds.
XXX 2/16/2020 06:57 AM	The open lawn picnic areas and parkland with paths
XXX 2/16/2020 11:11 AM	Love the clear calm water there
XXX 2/16/2020 11:16 AM	Coastal Reserve provides habitat for flora and fauna including bandicoots.
XXX 2/16/2020 04:53 PM	I am very happy that this is a dog free beach, one of the few in the area.
XXX 2/16/2020 07:59 PM	Brings the community together. A vibrant active area that gives people a reason to get our and about.
XXX 2/16/2020 08:20 PM	1. The trees, especially the Rottnest cypresses. 2. The large trees at the caravan park (but the private caravan park should be removed at end of lease for enjoyment by greater public)
XXX 2/17/2020 09:21 AM	The shark net is a major drawcard
XXX 2/17/2020 09:50 AM	The shark barrier - the only place in Perth where I feel safe while swimming. I also like running or cycling on the path along the coast, it has the most beautiful views
XXX 2/17/2020 09:56 AM	I like that there is a beach wheelchair that can be booked. I would prefer to see other ways to make the beach for inclusive (whether a boardwalk with wheelchair access matting on to the beach like the baby beach in Port Coogee)
XXX 2/17/2020 10:43 AM	I would like to see the coastal area from Napoleon street to life saving club develop the area like Cottesloe and Rockingham ... a walk way (that has a rock or cement wall) along the edge so that you can see the water and you can walk along , car parks to cater for visitors below that and trees and children's playgrounds and lawn at the top of the dunes for family . There can be a few cafes also along the way. We need to cater for ocean lovers .. You have catered for a Bush land lovers from the life saving club to Woodman point which is a waste of beautiful ocean scenery hidden by Bush...put the bush inland bush land and let the ocean lovers enjoy the ocean view and

	swimming facilities. Don't close off our ocean views for a few environmental lovers....you have catered for them in Bibra lake areas but allow the ocean lovers to have some priority. Coogee can be the next Scarborough or Cottesloe or Rockingham if designed properly. Please allow for ocean views along the beach walk way. Thank you Lorraine
XXX 2/17/2020 07:35 PM	The coastal waters are the jewel of Cockburn, not the barren, mosquito infested swamps!
XXX 2/17/2020 08:49 PM	Its the most protected long swimming beach in Perth and attracts swimmers from all across Perth. Best shark net too.
XXX 2/18/2020 09:05 AM	That it still has a remnant of "wilder ness" about the area.
XXX 2/18/2020 11:27 AM	peacefulness due to no through roads
XXX 2/18/2020 12:33 PM	Specially important are shaded recreation areas adjacent to beach front with ample trees and space.
XXX 2/19/2020 11:33 AM	Coogee Beach must be maintained as a Reserve. Dogs must not be permitted to spoil the area with their poo or chasing the wildlife (Quendas and skinks for example live in the band of scrubland by the ocean). It is important to permit people of all income brackets to enjoy the ocean, therefore it is vital that the Caravan/Camping area be retained to enable holiday makers, families and tourists to enjoy staying by the ocean as well as those who've chosen to live in the small cabins at Coogee Beach Park and Woodman's Point. All things in life should not be financially driven. While it would clearly be of financial benefit in the short term if the land at Coogee Beach were to be developed, it would be hugely damaging environmentally and culturally for both the land and the ocean. Long-term planning needs to take into account the long-term benefit for the land being allowed to regenerate, the wildlife to return and the ocean to be kept clean and alive. Also, the long-term benefit of encouraging visitors, tourists, locals and families to stay in the park will bring in revenue by the money these visitors spend locally (shops as well as attractions). The coast of WA is an irreplaceable asset; it is not ours to harm. We are the caretakers of our country and we must do what is right for the country. Doing right for the country is not mutually exclusive with doing well for our economy. We all need to take great care of our environment - building on it further is not viable or excusable. The gradual spread of housing all the way from Perth to Fremantle is now continuing to swallow up the coast from Fremantle all the way to Coogee. When will it end? And why are we encouraging the despoliation of our beautiful country? I do hope that the team listens to the voice of so many people in wanting the environment to be carefully and wisely managed. Kind regards, Shannan
XXX 2/19/2020 03:11 PM	I have lived in Coogee for 30 years and am a regular beach user along with my family and friends. Myself & my family regularly swim lengths inside the Shark Barrier. Coogee is a beautiful clean & safe beach that is becoming increasingly popular. I also regularly have family and friends stay at the

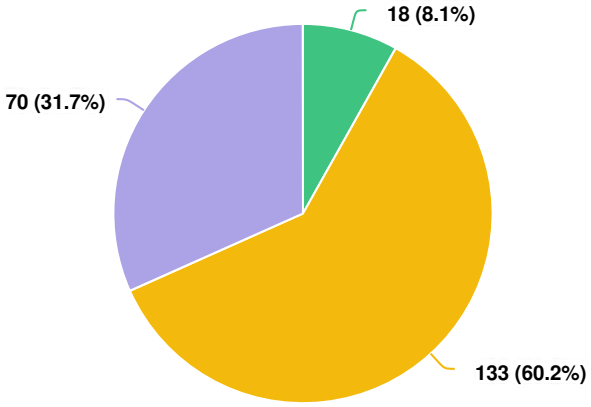
	Coogee Caravan Park and they enjoy the ease of access to the beach (especially the mobility impaired). The caravan park is well used and nicely established with trees. I also very much enjoy the natural areas along the beach, dune systems, the reserve and natural bush and bird & wildlife. The natural areas need to be maintained as they are increasingly rare along the coast & a real draw card for Coogee & vital to wildlife welfare and retention of a natural environment.
XXX 2/20/2020 12:53 PM	Coogee Surf Lifesaving Club is of immense value to the community. Coogee Fitness Club is brilliant facility Beach is always clean, the bins provided is added bonus
XXX 2/22/2020 07:50 AM	It's a fairly quiet beach that's safe for families with younger children yet can be enjoyed by teenagers and older members of the community. Also the ban on dogs ensures that most of the time there is no dog faeces on the beach, although there are some members of the community that consider the no dog rule does not apply to them. Likewise at the park on Powell Road I would like the no dog policy enforced a bit more.
XXX 2/22/2020 09:36 AM	Ablution amenities needed Omeo Park
XXX 2/22/2020 02:30 PM	It's all pretty special, best beach in Perth
XXX 2/22/2020 02:35 PM	Woodman point reserve adjacent.
XXX 2/22/2020 03:19 PM	One of the most pristine beaches in the Perth metro area
XXX 2/22/2020 04:18 PM	The most impressive part of Coogee beach is the nature strip. Please do not allow it to be sold off and developed like northern beaches. The value of the nature strip will only continue to increase in value over time where as short term sell offs will wreck the unique nature of coogee. The impressive distance in walk ways is also a draw card for many.
XXX 2/22/2020 04:52 PM	It's beautiful thats why I moved there but PLEASE GIVE US SOME TOILETS GOING IN THE SEA IS NOT ACCEPTABLE. Thank you
XXX 2/22/2020 06:43 PM	Clean water, relatively protected. Good family beach.
XXX 2/23/2020 10:33 AM	Community, clean water
XXX 2/23/2020 10:50 AM	Security is good, lighting etc
XXX 2/23/2020 11:03 AM	Good balance of development - don't increase.
XXX 2/23/2020 11:07 AM	The open spaces and parkland.

XXX 2/23/2020 11:09 AM	Value is people interaction
XXX 2/23/2020 11:17 AM	Pontoons
XXX 2/23/2020 11:17 AM	
XXX 2/23/2020 11:23 AM	Develop develop
XXX 2/23/2020 11:27 AM	Lucky to live here
XXX 2/23/2020 11:32 AM	No paid parking
XXX 2/23/2020 01:07 PM	Better management of parking. Better protection against vehicle and foot traffic damage for rate-payer funded gardens and foreshore plantings. Adherence by Council of height management of unsightly foreshore trees, as per Council recommendation and rate-payer agreement. Better response and control over antisocial behaviour.
XXX 2/23/2020 02:20 PM	We love the jetty. The pontoons. The park. The cafe it has everything. Would not neccesssarily come here if the jetty wasn't there
XXX 2/23/2020 02:32 PM	Snorkeling
XXX 2/23/2020 03:02 PM	Maintain the landscape so the value properties stay the same or go up in value.
XXX 2/24/2020 01:27 PM	Provides access to excellent and unique fishing opportunities. One of the few places that regularly allows Spanish mackerel to be targeted from shore.
XXX 2/24/2020 03:18 PM	It is vitally important that the beach is maintained in a clean and environmently sustainable state for walking swimming and where appropriate shore and jetty fishing.
XXX 2/25/2020 08:20 AM	Children's playgrounds
XXX 2/26/2020 07:25 PM	It's great that dogs are allowed in the park and not just on the dog beach.
XXX 2/27/2020 05:27 PM	Only have WA planting... Get rid of all palms that don't look right in the area.
XXX 2/28/2020 08:36 AM	Clean waters and clean beach, pristine and safe conditions for swimming. The calm sheltered and shallow beach makes this attractive for families and this should be protected.
XXX 2/29/2020 12:22 AM	This sort of sand dune scrubland system is unique to the the South West coast of WA, and is rapidly disappearing all around us due to ever increasing

	coastal urban sprawl and development. By saving our beach in as much its natural state as possible we would retain not only a local public good, but we would stand out against the rest of the Greater Perth Region as one of the few communities that was able to grow but to also preserve an irreplaceable natural heritage and treasure.
XXX 2/29/2020 05:57 PM	Accessibility, the Quiet & peaceful ambience, the preservation of local flora & fauna , no dog rule.
XXX 3/02/2020 10:49 AM	Great young family beach due to small waves
XXX 3/03/2020 02:14 PM	Because I and many people swim the two jetties I would like to see this area become a fishing free zone. They can still m fish off the jetties.
XXX 3/06/2020 11:35 AM	the parking and green spaces at all areas along the beach. Amenities at most of beach sites are great.
XXX 3/06/2020 11:40 AM	natural coast line

Optional question (145 responses, 77 skipped)

Q7 Over the next 50 years, some assets in the northern section of Coogee Beach and the Surf Lifesaving Club may be at risk of ...



Question options

I'm not sure/ I would need to know more
No
Yes

Optional question (221 responses, 1 skipped)

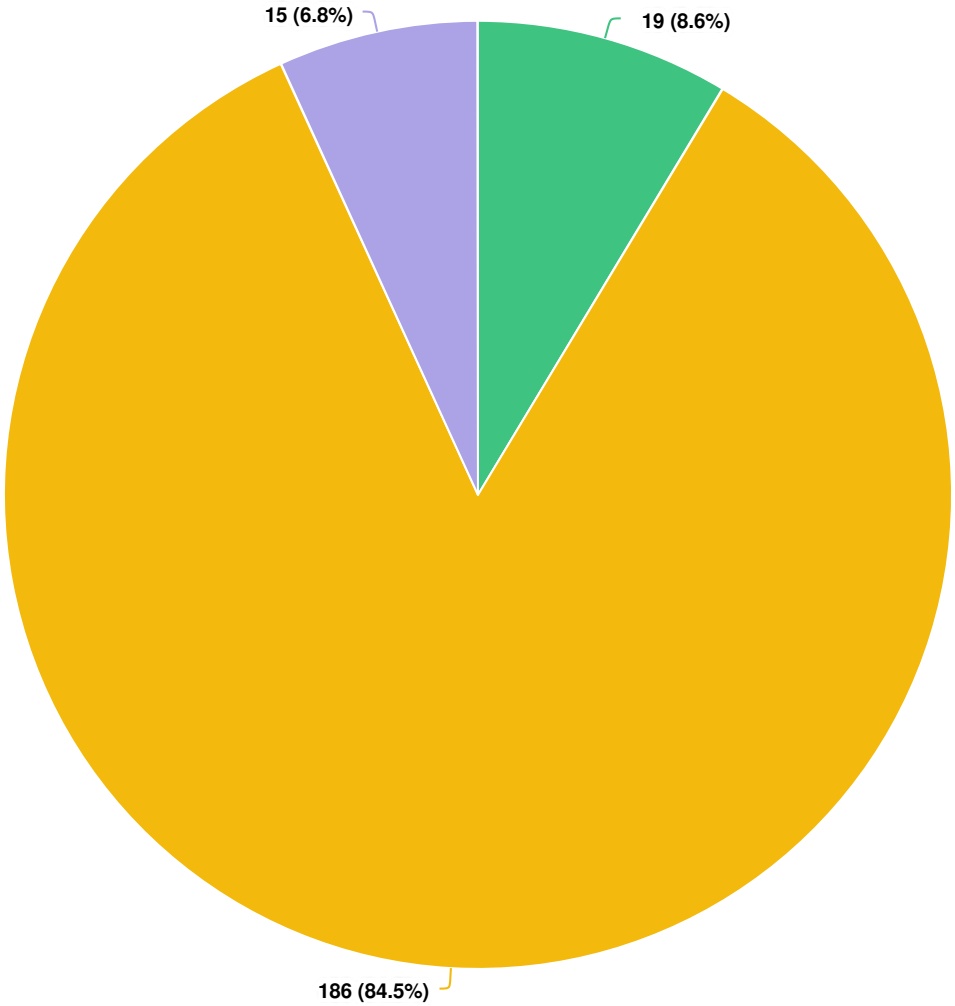
Q8 How would sand nourishment effect your enjoyment of Coogee Beach?

XXX 2/10/2020 03:52 PM	Beach gets closed for lengthy periods
XXX 2/10/2020 04:11 PM	It will change the wave action and slope of the beach, possibly increasing the strength of rips, especially for small children.
XXX 2/10/2020 04:24 PM	Turbidity I suspect. Pipes, pumps etc. I am familiar with Pyramids (Mandurah) sand replenishment
XXX 2/10/2020 04:59 PM	It is a temporary measure that will need to repeated often if storms occur. It is very costly to bring in sand.
XXX 2/10/2020 07:02 PM	Additional beach space, so not as crowded.
XXX 2/10/2020 11:58 PM	I enjoy walking the beach. If nourishment means I can continue to walk the beach I would prefer that to sea walls. I understand cost may be a factor
XXX 2/11/2020 10:03 AM	Is it effective as along term solution and cost
XXX 2/11/2020 01:18 PM	Larger amount of sand and beach to use as currently when tide is in there is not a lot of beach for activities
XXX 2/11/2020 04:49 PM	Keep the beach an enjoyable place to visit and relax at
XXX 2/18/2020 11:59 AM	Continual usage of flat areas of the beach
XXX 2/23/2020 11:23 AM	Would protect the rock wall along Socrates Parade and other further future development
XXX 2/23/2020 02:32 PM	The sand becomes dirty and gross
XXX 2/23/2020 03:02 PM	Na
XXX 2/29/2020 12:22 AM	Ensure the beach is there for future generations
	It would increase the enjoyment
	If required to restore the beach against ongoing erosion, then it should be done. It must be done in a way that does not adversely affect adjacent systems, such as nearby dredging that causes sedimentation, turbidity, possible water chemistry change

Administrator 3/06/2020 11:40 AM	after more than 40 years using this beach there has been no change int he sand movement

Optional question (17 responses, 205 skipped)

Q9 **Increasing vegetation on the dunes can improve stability and ability of dunes to recover from events such as storms. Would revegetation of the dunes affect your enjoyment of Coogee Beach?**



Question options

I'm not sure/ I would need to know more No Yes

Optional question (220 responses, 2 skipped)

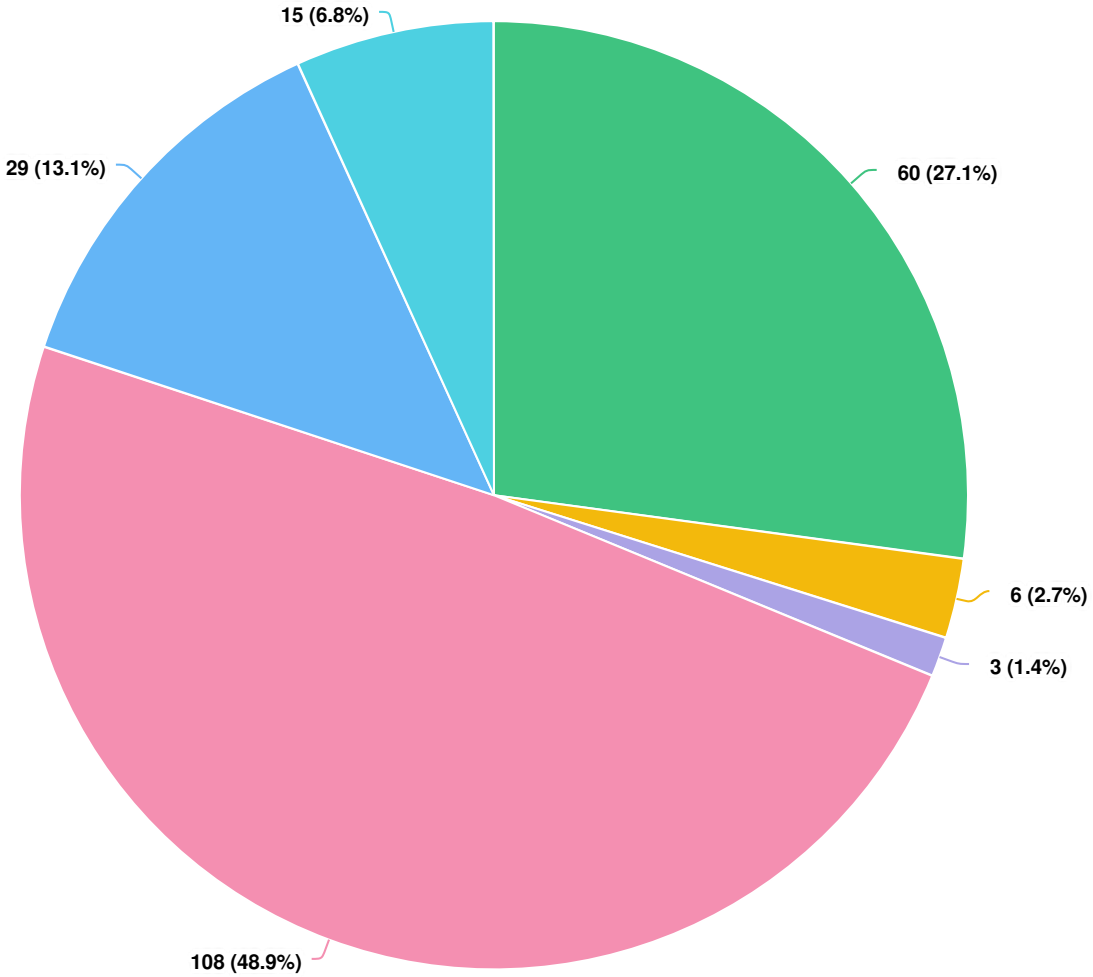
Q10 How would revegetation effect your enjoyment of Coogee Beach?

XXX 2/10/2020 03:55 PM	Not at all
XXX 2/10/2020 04:14 PM	Positively
XXX 2/10/2020 04:28 PM	Keeping as much native coastal plantaion as possible to retain its natural beauty
XXX 2/10/2020 06:59 PM	revegetation of dunes would have a positive effect on enjoyment
XXX 2/10/2020 10:57 PM	It would be more pleasant. less sand drift
XXX 2/10/2020 11:58 PM	in a good way - preservation of remnant vegetation is important to me
XXX 2/11/2020 04:49 PM	This would stop erosion
XXX 2/12/2020 09:41 AM	Better landscape
XXX 2/12/2020 12:52 PM	its already quite bushy with snakes often seem. I would be worries about my kids wondering into the bush and being bitten. also most of coogee is loosing there ocean views. it would be nice to see and enjoy the beach from a distance.
XXX 2/18/2020 09:05 AM	Adding to the health and biodiversity of the dunes, would make the region look more asthetically beautiful and increase native animal habitats.
XXX 2/22/2020 04:18 PM	Personally this wouldn't affect my enjoyment. However, when thinking of revegetation you should also consider frequent and high level look outs along the foreshore. People will walk all over reveg if they can't see the view
XXX 2/23/2020 11:23 AM	Be good
XXX 2/27/2020 01:00 PM	It would have a positive effect
XXX 2/27/2020 05:27 PM	Only native plants
XXX 2/28/2020 02:54 PM	The vegetation should be removed and the area developed with sea walls if necessary.
XXX 2/29/2020 12:22 AM	I strongly support revegetation of the dune system at Coogee Beach. Council should employ native plant ecologists to restore the dunes to an optimal state

	to support resilience and biodiversity
XXX 2/29/2020 05:57 PM	I'd appreciate it and would environmentally suit reptiles, agendas & other native fauna.
XXX 3/03/2020 02:14 PM	Stop the wind blowing around an d look more attractive and give more habatate to the local animals.

Optional question (18 responses, 204 skipped)

Q11 Closing access tracks can improve dune stability. Do you support the rationalization and closure of some access tracks?

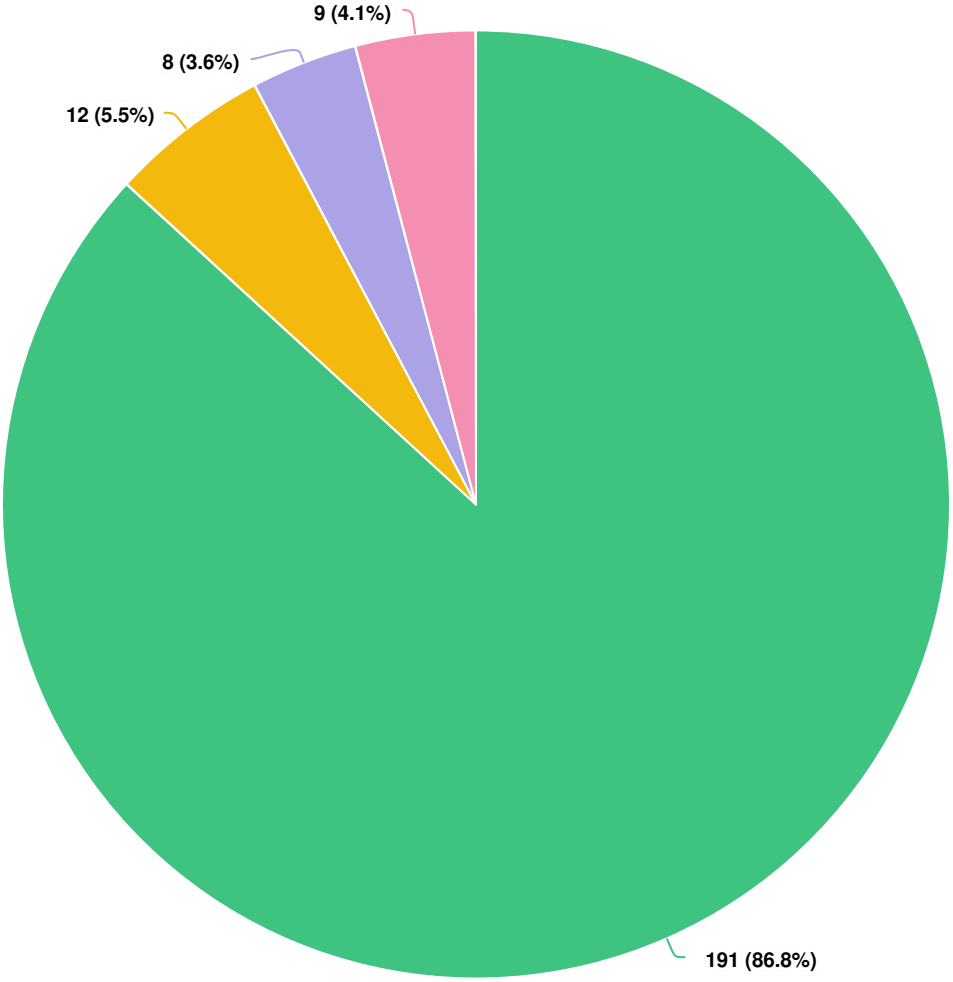


Question options

- I need more information to answer this question
- No, I am happy with the number of access tracks and they should not be reduced
- Yes, but all the tracks should be properly assessed to ensure well used tracks remain open
- Yes, outside the caravan park only
- Yes, within the caravan park only
- Yes, across entire study area

Optional question (221 responses, 1 skipped)

Q12 Do you support maintaining the current shark barrier enclosure?



Question options

Other (please specify) I would need to know more No Yes

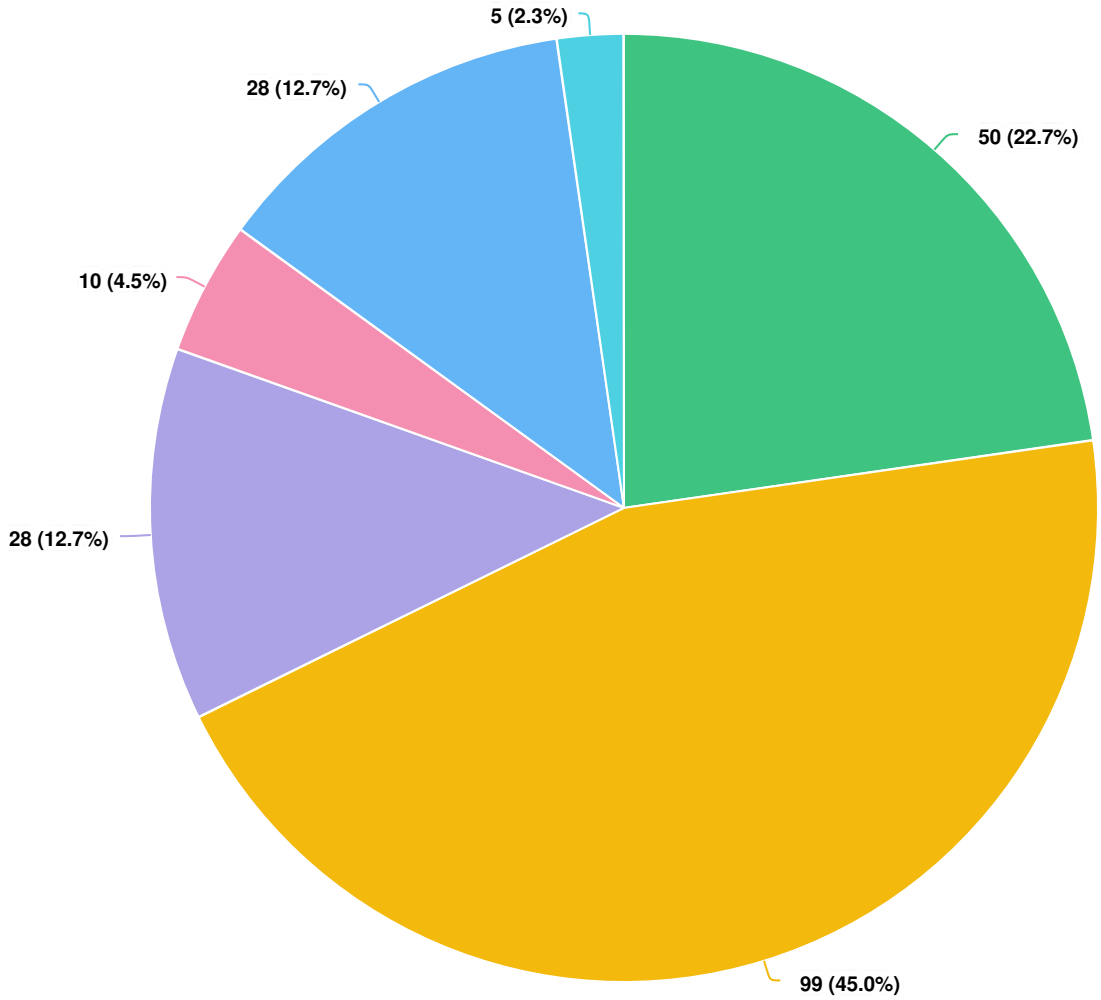
Optional question (220 responses, 2 skipped)

Q13 Why don't you support the current shark barrier enclosure?

XXX 2/10/2020 03:58 PM	Because there has never been a shark attack.
XXX 2/10/2020 03:58 PM	Not necessary and never was. I cant recall ever hearing of a shark coming in that beach
XXX 2/10/2020 04:11 PM	have been swimming at Coogee Beach since the 80s and have never seen or heard of any shark interactions in the area.
XXX 2/10/2020 06:47 PM	It is a waste of money, which could be better used erecting a stinger net from jetty to jetty. Stingers are the biggest danger at Coogee not sharks. Ask the surf club how many people are treated - re: stingers. I wont swim there in Summer, Sth Bch instead
XXX 2/10/2020 08:05 PM	Useless in a sound
XXX 2/10/2020 08:40 PM	I dont think it is needed, but hey if some people having a fear of watching jaws and it lets them enjoy the water then why not, i just wont be swimming in or around it and it takes away from the natural beauty and impacts large marine life
XXX 2/11/2020 06:31 AM	Never seen a shark at coogee beach and i have swum there daily for 35 years
XXX 2/11/2020 08:14 AM	No need to have it
XXX 2/11/2020 04:00 PM	Common sense when and when not to go into water
XXX 2/23/2020 10:33 AM	Never been an attack
XXX 2/24/2020 01:27 PM	Extremely low risk. Barrier impacts coastal processes. Unnecessary expense better focussed elsewhere
XXX 3/06/2020 11:40 AM	there have been no shark attacks there in my lifetime. great over reaction and expense and its ugly

Optional question (12 responses, 210 skipped)

Q14 **Coastal hazard modelling indicates that some infrastructure, including part of the northern carpark, a toilet block and a beach hut in the northern part of the reserve, will be at risk of erosion by 2070. Do you support the relocation of this infrastructure to parts of the Coogee Beach reserve that are not at risk of erosion?**

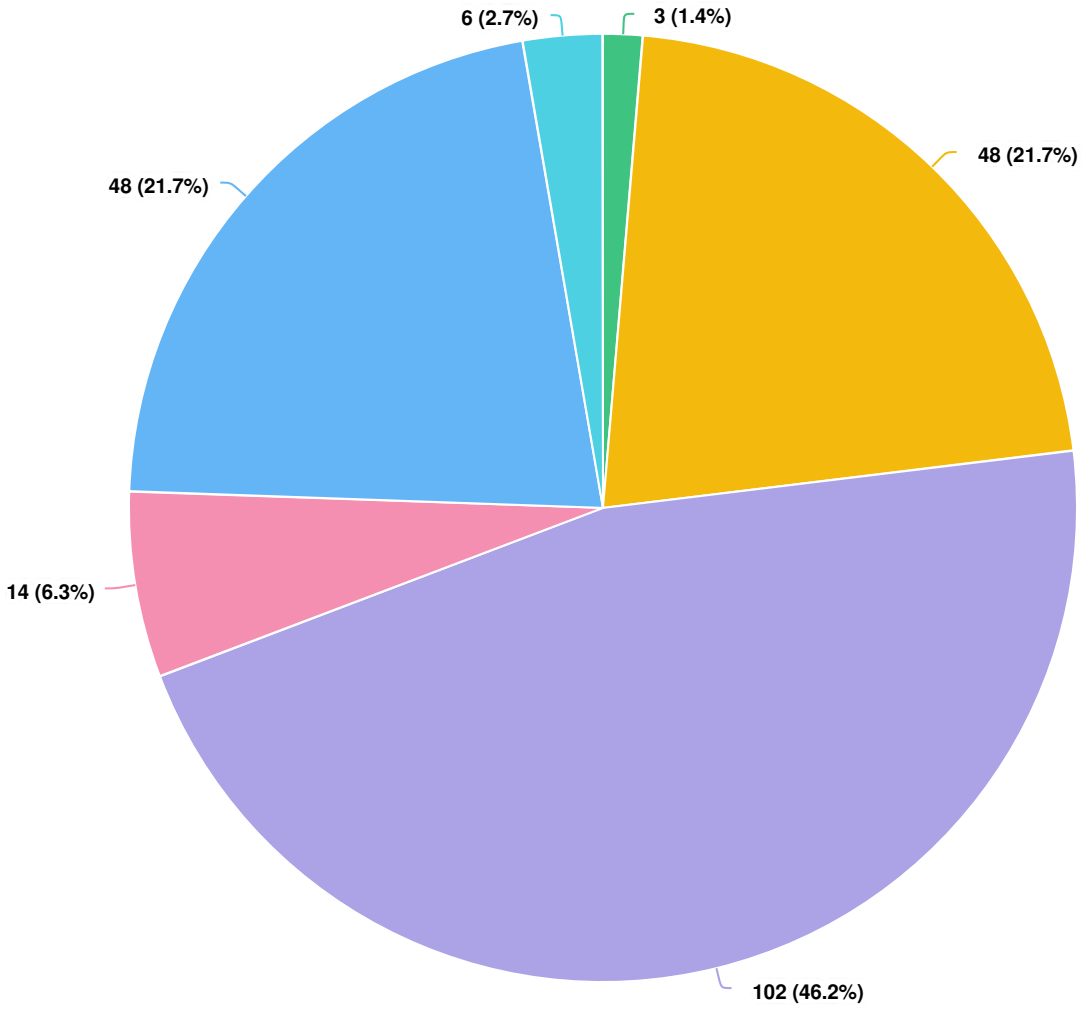


Question options

- Other (please specify)
- I would need more information
- No, we should not be putting infrastructure on the coast
- No, infrastructure such as car parks is important and should be defended instead of relocated
- Yes, as facilities reach the end of their functional life or are damaged, they should be relocated
- Yes

Optional question (220 responses, 2 skipped)

Q15 **Over the next 50 years, the Surf Lifesaving Club may be at risk of erosion as a result of major, rare storms. Potential options to reduce erosion risk to this building include an offshore breakwater or a multipurpose, offshore artificial reef (a constructed reef that encourages public interaction with developing marine ecosystems, whilst reducing wave energy that causes erosion). Which options do you support?**



Question options

- Neither, for reasons specified below
- I would need further information
- Neither, the club should be relocated away from risk areas
- Artificial reef or an offshore breakwater
- Artificial reef only
- Offshore breakwater only

Optional question (221 responses, 1 skipped)

Q16 **The future predicted shoreline recession at Coogee Beach will likely result in the gradual reduction in the size of the public reserve whilst public usage demands of the foreshore is expected to increase. In view of these challenges, please rank the following options (1 best, 3 worst)**

OPTIONS	AVG. RANK
Managing the reserve to reduce natural and built areas in equal proportion	1.44
Remove existing built infrastructure space (landscaping, buildings, parking, etc) for natural areas, to replace those areas of dune lost through erosion	2.09
Retaining or increasing the amount of space for built infrastructure at the expense of natural areas	2.44

Optional question (213 responses, 9 skipped)

Q17 Any further comments:

XXX 2/11/2020 09:20 AM	Question 8 is ambiguous. Yes, extra vegetation would increase my enjoyment of the beach area, and no, extra vegetation would not decrease my enjoyment of it. Caravan park dwellers should have no say in this process. I would like to know why coastal sand is no longer being replenished from both the Success Bank to Catherine Point, and this beach the subject of this survey from the Parmelia Bank. Is it purely predicted sea level rise, or does dredging also play a part?
XXX 2/11/2020 09:55 AM	I would like to be able to take my dog on a leash onto the beach
XXX 2/11/2020 11:48 AM	Coogee beach is so beautiful. I appreciate having so close to my doorstep.
XXX 2/11/2020 02:45 PM	There needs to be better control of people congregating in the dunes and destroying the vegetation holding the sand together.
XXX 2/11/2020 04:24 PM	The foreshore at city Beach and Cottesloe with the grassed area overlooking the beach is lovely. Some dunes can be left but a retaining wall has been at City beach and Cottesloe and has lasted for years.
XXX 2/11/2020 04:26 PM	N/A
XXX 2/11/2020 05:14 PM	No
XXX 2/11/2020 05:23 PM	Stop cockburn cement dredging the sand and you won't have to replace it. It's criminal what they are doing. I can see it from my house all night just sucking up everything and spitting out what they don't want. Where do you think the sand is going to keep coming from.
XXX 2/11/2020 05:47 PM	Question 13 is poorly punctuated and could be difficult to understand.
XXX 2/11/2020 06:27 PM	I would like you to work to increase the dining facilities available at the beach so families can enjoy dining experiences on the coast line.
XXX 2/11/2020 07:55 PM	I have seen many storm fronts hit this coastline and it is amazing how the sandy beach and dune area recovers itself. I always thought sand erosion was an expected consequence of the Port Coogee planning development, so wasn't sand pumping an expected projection for the beach area south of the marina anyway?
XXX 2/12/2020 09:41 AM	The cycling network along Coogee beach is convoluted, windy and not intuitive for cyclists. There needs to be a better north south main route that is more direct. The shark net is a great asset that should remain.
XXX 2/12/2020 10:47 AM	I feel that the over promotion of the Omeo wreck site is degrading the wreck.

XXX 2/12/2020 04:34 PM	The entrance to Coogee Beach at Powell Road is profoundly unsafe. On the weekends it is a bottle neck with people trying to enter and leave. Cars wanting to turn right or South out of Powell Road need to deal with cars traveling at a minimum of 60km with only a short line of site both North and South. Looking to the North in particular, all types of vehicles heading South appear around the bend. I have been amazed at the closing time of vehicles that show aggression because I wanted to enter Cockburn Road and I am not a overly cautious driver. I feel that the entrance to all the Coogee carpark area, AND the caravan park should be from a new entrance just South of Beach Road and North of the tennis courts, with a roundabout on Cockburn Road and Powell Road to be closed. Once off Cockburn Road the traffic can travel along a similar path to the current bike path and enter the carpark or directly into the caravan park in a safer manner. It would mean that the current road that runs along the grassed area to the caravan park becomes parking and eliminate the heavy traffic of caravan and service vehicle into the caravan park. I have been concerned about this for many years with children and older people dodging vehicles moving at fast pace to get to carparks and the caravan park. I would be happy to submit my ideas if anybody thought it had any merit.
XXX 2/12/2020 05:44 PM	Would love to have a foreshore like at Rockingham Beach. Lawn, swings and more picnic areas.
XXX 2/13/2020 03:22 PM	Love the Coogee area and both the natural and built infrastructure.
XXX 2/13/2020 04:49 PM	Cost for management of the coastline from erosion should be tabled to the public and can be included in the shire rates. I am happy to pay for extra
XXX 2/14/2020 01:13 PM	I love Coogee Beach more than any other beach on our coast. Let’s keep it as pristine as possible.
XXX 2/14/2020 03:22 PM	i prefer no changes except dealing with erosion.
XXX 2/16/2020 11:11 AM	I would like to see the marine ecosystem be a priority while we are still able to enjoy the area and facilities if possible. Perhaps protect what we have but not to build too much more if it’s going to be detrimental to the marine life
XXX 2/16/2020 11:16 AM	Infrastructure design in the future should allow for relocation as required by environmental conditions.
XXX 2/16/2020 04:53 PM	This is going to be a challenge to protect natural and manmade assets and balance access with conservation. The surf club building is magnificent, but probably doesn't need to be so ostentatious. If rebuilt, it could be humbler.
XXX 2/16/2020 08:20 PM	1. The private caravan park should be removed at end of lease for enjoyment by greater public ... and potentially redeveloped into something far more interesting and inclusive such as art garden, with small business pavilions and community buildings and other infrastructure. 2. beach near caravan park should allow dogs, as there are no beaches within easy walking distance for coogee and port coogee residents. 3. The north end of the study

	area should be developed to be more publically accessible and open with greater uses and improved view opportunities, potentially adding auditorium-style steps facing beach (similar to Scarborough Beach) that can also be designed to protect the land against climate change.
XXX 2/17/2020 09:43 AM	Would also like to see the possibility of adding dog exercise areas during off peak times of day (early mornings) or during winter months. There is no beach provision or dedicated dog exercise area for those living in the Port Coogee estate
XXX 2/17/2020 09:56 AM	I would like to see an upgraded playground so that people in wheelchairs can access the playground. It is currently on top of sand which makes it impossible for wheelchairs to access the playground. (Whether it is a child in a wheelchair who can't access it with their friends/siblings; or if it is a parent in a wheelchair who cannot access it in order to safely supervise their children)
XXX 2/17/2020 10:43 AM	Yes we do need trees but please allow for ocean lovers to enjoy as well. Building a rock wall as what Port Beach is currently doing is both sensible and practical satisfying all beach goers and council future headaches.
XXX 2/18/2020 09:05 AM	the natural environment is more important to me. There is a lot of land on the east side of the road that can be used carparking and other planned infrastructure.
XXX 2/18/2020 12:33 PM	With increasingly hotter summers I would like to see permanent beach shelters erected on the beach front - similar to those erected on Silver Sands Beach in Mandurah. This would provide much needed shade and subsequent sun protection.
XXX 2/19/2020 11:33 AM	It is vital not to pre-empt possible environmental hazards/changes. I have not been privy to the reports suggesting the loss of the dune areas, but it is vital not to act rashly. There are generally many possible explanations or theories for possible change. It is therefore important that all expert opinions are sought and all given equal opportunities to voice their findings and concerns/suggestions. It may be that an artificial reef could resolve the problems of not only the surfclub building, but also the dunes along that area.... These issues are never simple and opening one's eyes to all solutions is imperative to avoid making irremediable mistakes.
XXX 2/22/2020 07:50 AM	Question 13 is biased in the options it offers. There should have been a box whereby citizens, especially those residing in Cockburn, could have put their comments in. What does " Managing the reserve to reduce natural and built areas in equal proportion" actually mean? Does it mean reduction of what is here now or in the future? Please explain!
XXX 2/22/2020 02:30 PM	Get rid of the caravan park Don't increase car parking - increase public transport options
XXX 2/22/2020 02:35 PM	Need to end lease for caravan park. Create area for dogs to be allowed on beach.
XXX 2/22/2020 04:18 PM	Nature strip is a must to keep. Locals are extremely passionate about this remaining as such. Increasing the usage areas at the reserve could increase the overall usage and help with erosion if thought through properly
XXX	Ensure the contiguos nature of tgis area, port coogee and future

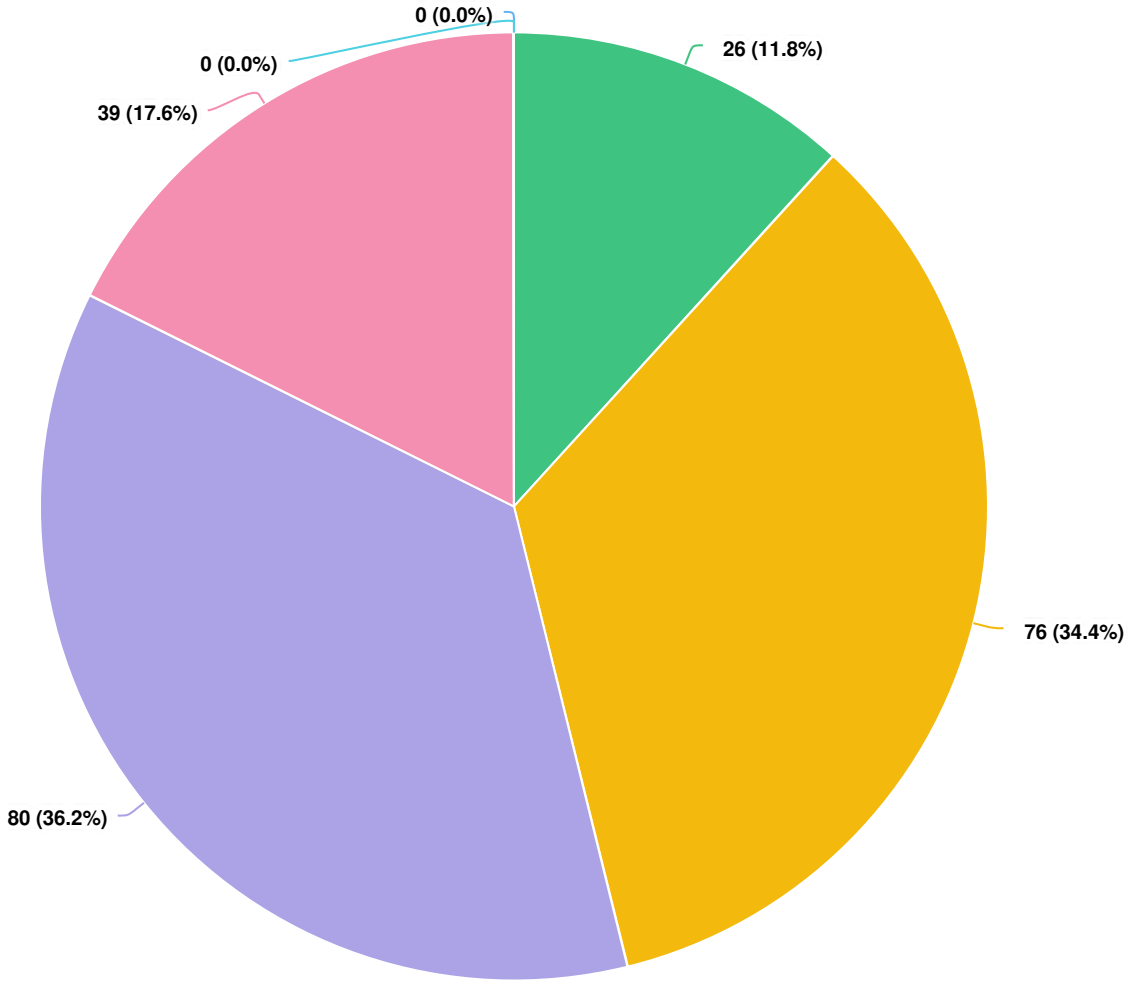
2/22/2020 09:39 PM	improvements to power station foreshore.
XXX 2/23/2020 10:33 AM	No development in foreshore, community is most important, need to restrict dogs and enforce
XXX 2/23/2020 10:50 AM	Cheaper rates
XXX 2/23/2020 11:03 AM	Keep communicating to the public regarding the plan
XXX 2/23/2020 11:07 AM	Access for personal water craft is important to me. I.e kayaks, windsurfers
XXX 2/23/2020 11:09 AM	Keep natural as possible
XXX 2/23/2020 11:23 AM	Develop and build facilities
XXX 2/23/2020 11:27 AM	Like to see more open grass in balance with natural landscape
XXX 2/23/2020 11:32 AM	Build a sea walls,
XXX 2/23/2020 01:07 PM	Q7 and Q8 are poorly written and ambiguous. By “affect your enjoyment” do you mean improve it, or reduce it? Revegetation of the dunes would, most likely, improve the quality of the overall environment, but could mean that people will need to stay with purpose-built access ways and walk some additional distance to do so. Pumping sand brings the benefit of wider swathes of beach, but likely suffocates benthic flora and fauna and so counteracts some of the benefits of the as yet poorly enforced marine reserve. More beach also attracts more visitors, in vehicles for which there is already grossly underdeveloped parking.
XXX 2/23/2020 03:02 PM	Keep shark barrier and regular maintenance of shark barrier. More community safe security to reduce vandalism.
XXX 2/24/2020 01:27 PM	Do not underestimate the value of enabling and supporting recreational fishing access and enrichment. Ammo jetty is significant to the rev fishing community. Also note the huge snapper guardians turnout at jervoise bay.
XXX 2/24/2020 03:18 PM	What evidence is there that storms are more frequent or that the sea is rising, the anchor steel pole at the northern end of the shark barrier is now only half a metre high when is was installed it was 1.5 meters high the sand is acre-ting. If sand is required it should be replenished by dredging the shipping channel in cockburn sound. Cockburn Cement dredging needs to be monitored to ensure that it is not destroying sea grass and thereby causing sand movement which affects the Coogee Beach Shoreline
XXX 2/24/2020 05:58 PM	I feel that the beach is increasing, the pole at the end of the shark barrier is now only half a meter high it was much higher when first placed there.

XXX 2/25/2020 08:20 AM	Any future commercial development to be well away from beach
XXX 2/26/2020 07:25 PM	In questions 7 and 8, where you asked if something would affect my enjoyment of Coogee Beach, I assumed you meant affect it negatively.
XXX 2/27/2020 01:00 PM	I strongly oppose using ratepayer money to support the surf club. The building serves a limited group and is already the source of negative environmental impacts.
XXX 2/28/2020 08:36 AM	Many swimming clubs and regular exercisers use the section between the two jetties all year round for regular (daily/weekly swims). I regularly swim and walk along the beach in the water (as do many others) and I believe there should be a total beach all year fishing ban in this area between the two jetties because: 1. The fishers generally do not bring in their lines as I/we walk in the water or swim past 2. This area should be a conservation area (marine park)....jetty fishing on woodman point could remain. 3. To reduce litter - I have picked up lots of fishing waste (lines, bait bags etc) 4. This activity attracts sharks to our premier swimming beach, especially during April - May when the fishers are trying to catch migrating salmon. If a marine sanctuary is not an option then perhaps a daylight hour ban could be an option to prevent lines entangling swimmers and walkers.
XXX 2/28/2020 02:54 PM	Development here is necessary and the bush is very unattractive.
XXX 2/29/2020 12:22 AM	I believe that the natural environment that currently exists in the area should be preserved, and the natural coastal dune scrubland of the area should be restored as much as possible. Any reef and/or seagrass beds in the adjacent water will also be affected by any action or inaction taken on the beach and dunes. As both the marine and terrestrial ecosystems contribute to the qualities of Coogee Beach and influence each other, they must both be considered in the management plan. Conserving and restoring the natural ecosystems at Coogee Beach will have immediate and long standing benefits, particularly in economic, health/safety, and social terms. Protecting the dunes and restoring those already damaged provides the best and most cost effective defence against coastal erosion from future climatic and weather extremes.
XXX 2/29/2020 05:57 PM	I think the general users of Coogee Beach appreciate the simple unadorned environment which enables bird and animal life to co-exist. (Dolphins, night herons, seabirds, Oyster catchers etc.) and neither disturbing the other. Ongoing revegetation of native flora to continue and upgrading designated pathways to be ongoing to prevent damage to dune & surrounding flora. Dogs definitely to be kept off the beach and away from non designated areas as this is an ongoing problem.
XXX 3/03/2020 02:14 PM	You guys are doing a great job . I would like to see adult exercise equipment remain at the park near Coogee jetty as I and many others use it regularly.
XXX 3/04/2020 02:40 PM	Restrict fishing to the jetty’s only. Beach fishing does not mix with beach use of swimming walking and other recreational beach activities. Marine

	sanctuary between Woodmans point jetty and the shark net would be preferable.
XXX 3/06/2020 11:35 AM	concerned there would be no small breaking waves as a result of erosion mitigation structures (q12)

Optional question (57 responses, 165 skipped)

Q18 How old are you

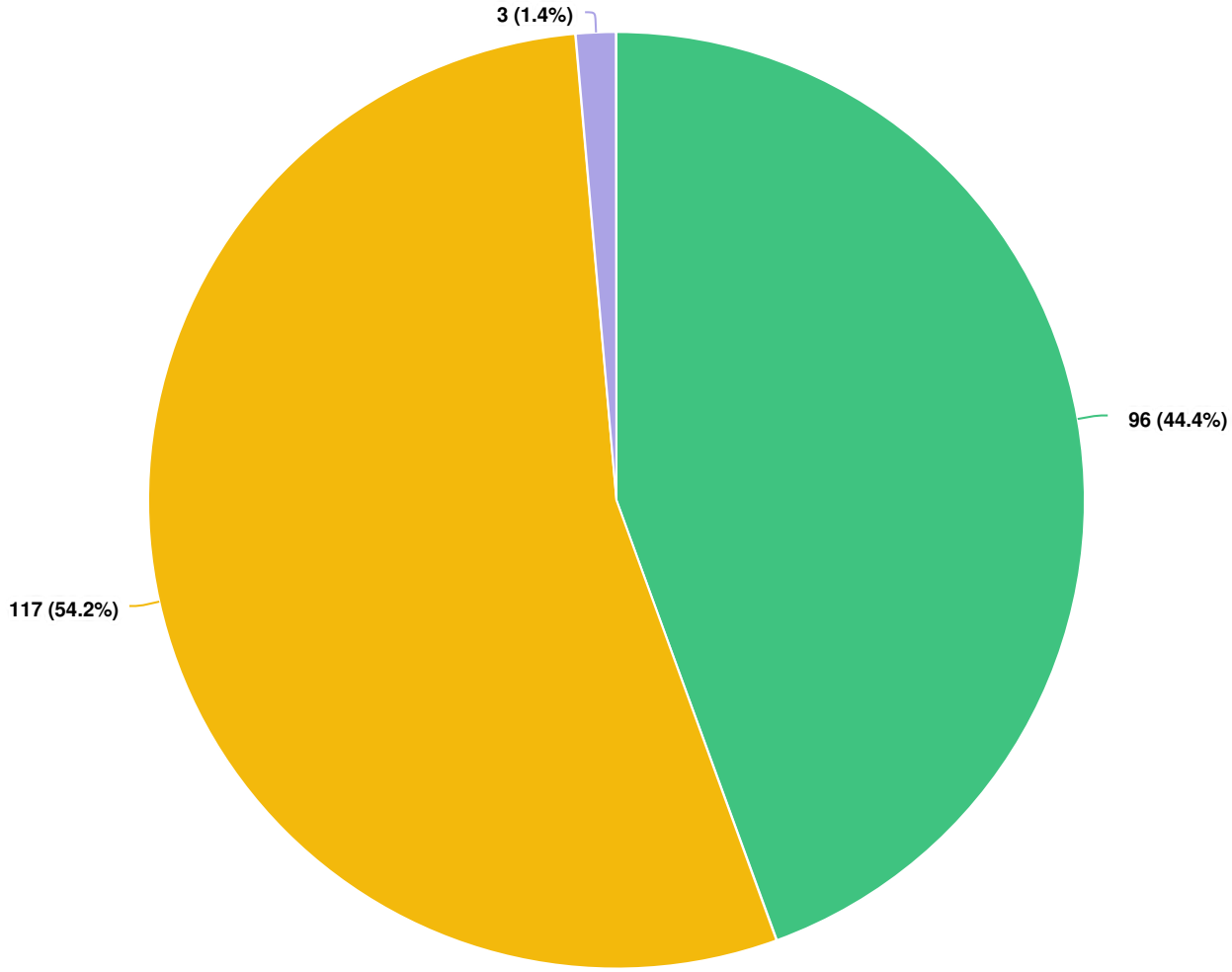


Question options

Under 18 80+ 65-79 50-64 35-49 18-34

Optional question (221 responses, 1 skipped)

Q19 What gender are you?

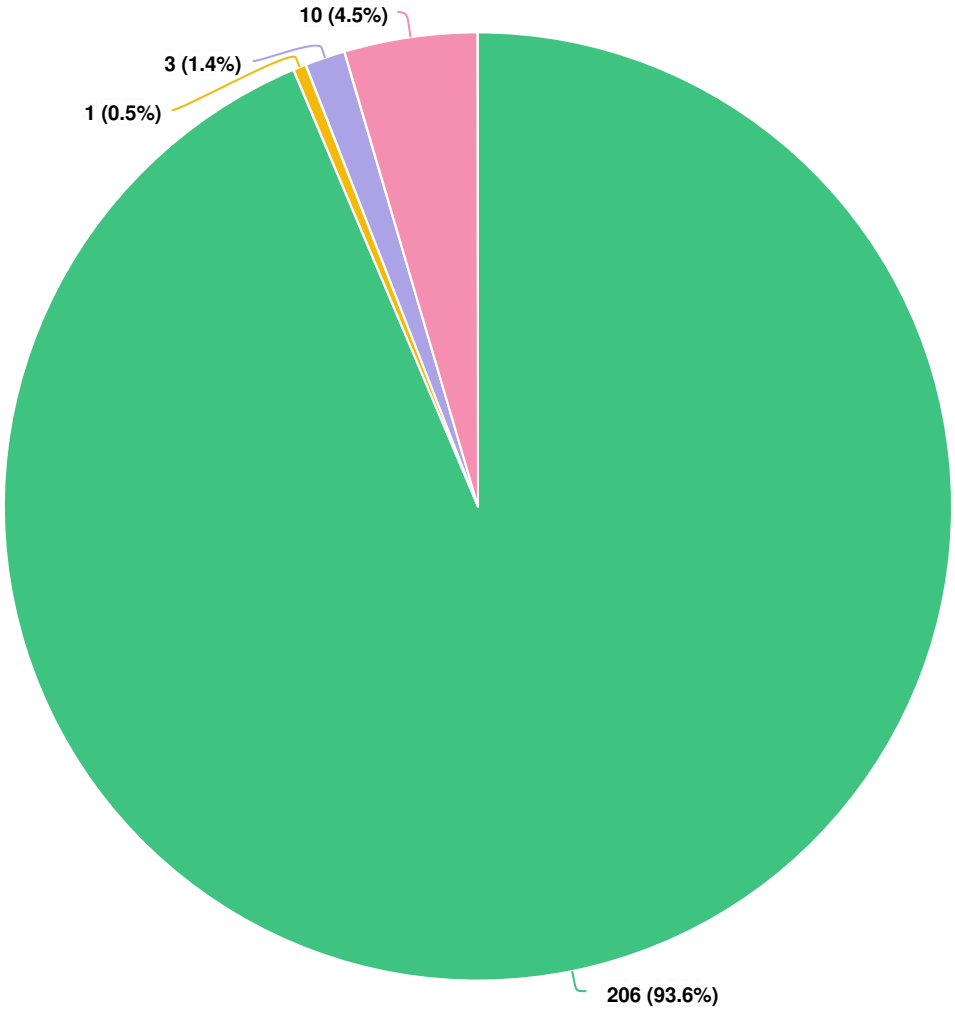


Question options

Prefer not to say Female Male

Optional question (216 responses, 6 skipped)

Q20 Where do you live?

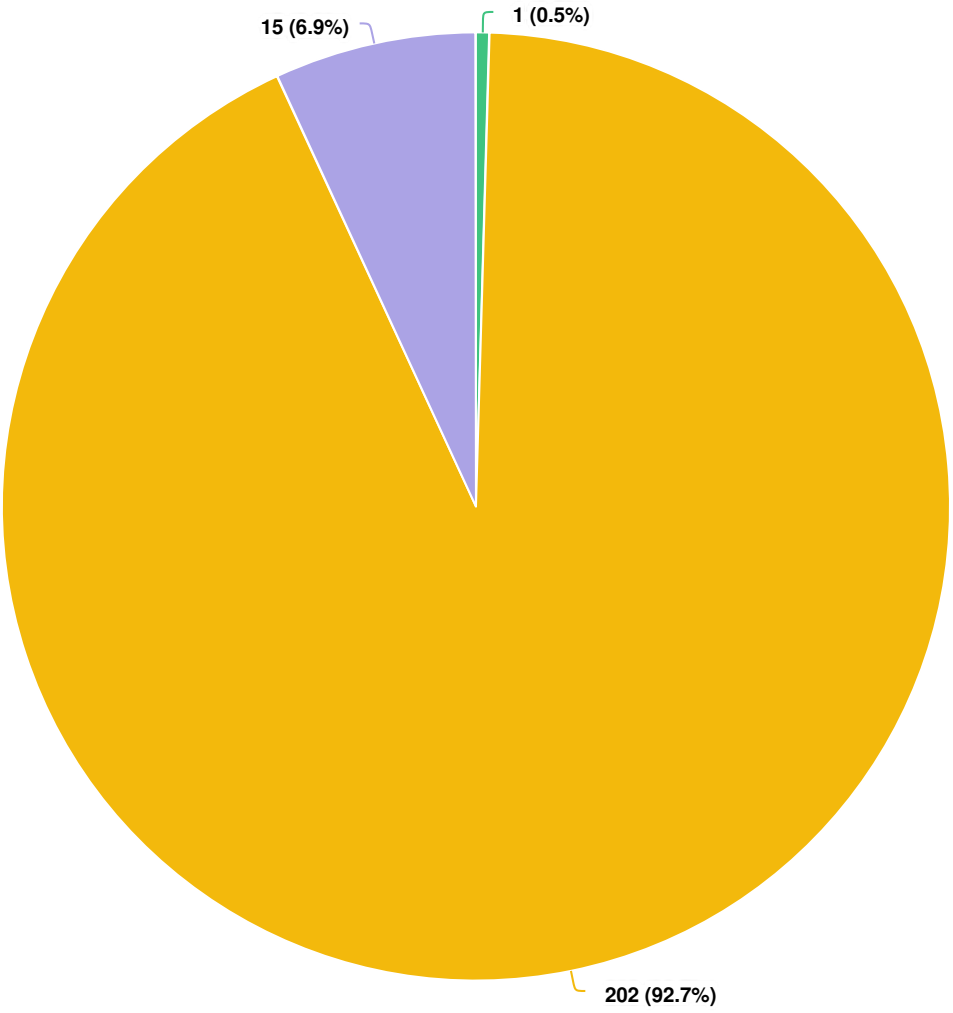


Question options

Other (please specify) City of Fremantle Town of Kwinana City of Cockburn

Optional question (220 responses, 2 skipped)

Q21 Are you an Aboriginal or a Torres Strait Islander?



Question options

Prefer not to say No Yes

Optional question (218 responses, 4 skipped)

September 2020: Comment on Draft Plan

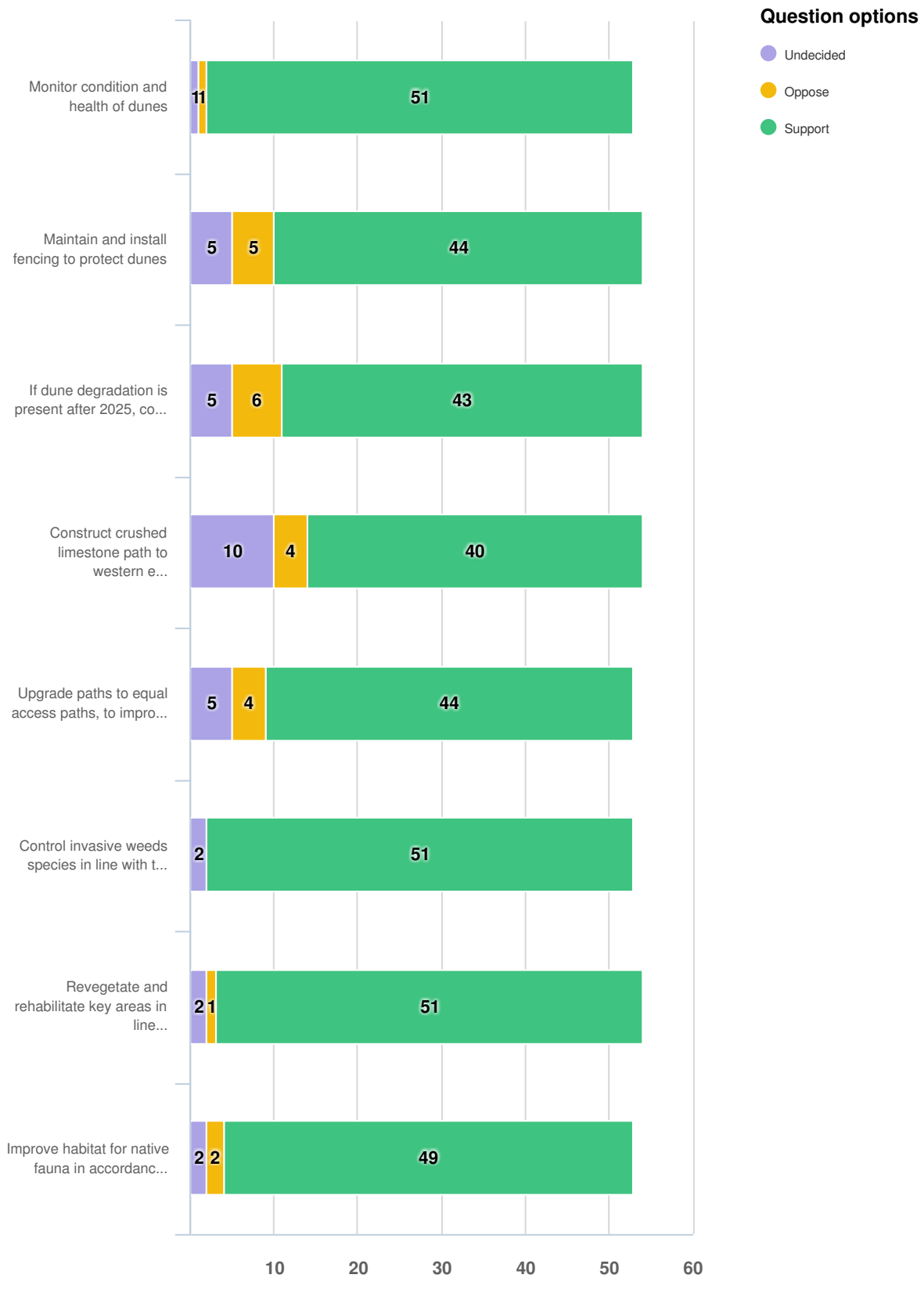
SURVEY RESPONSE REPORT
03 September 2020 - 29 September 2020

PROJECT NAME:
Managing the Coogee Coast

BANG THE TABLE engagementHQ

SURVEY QUESTIONS

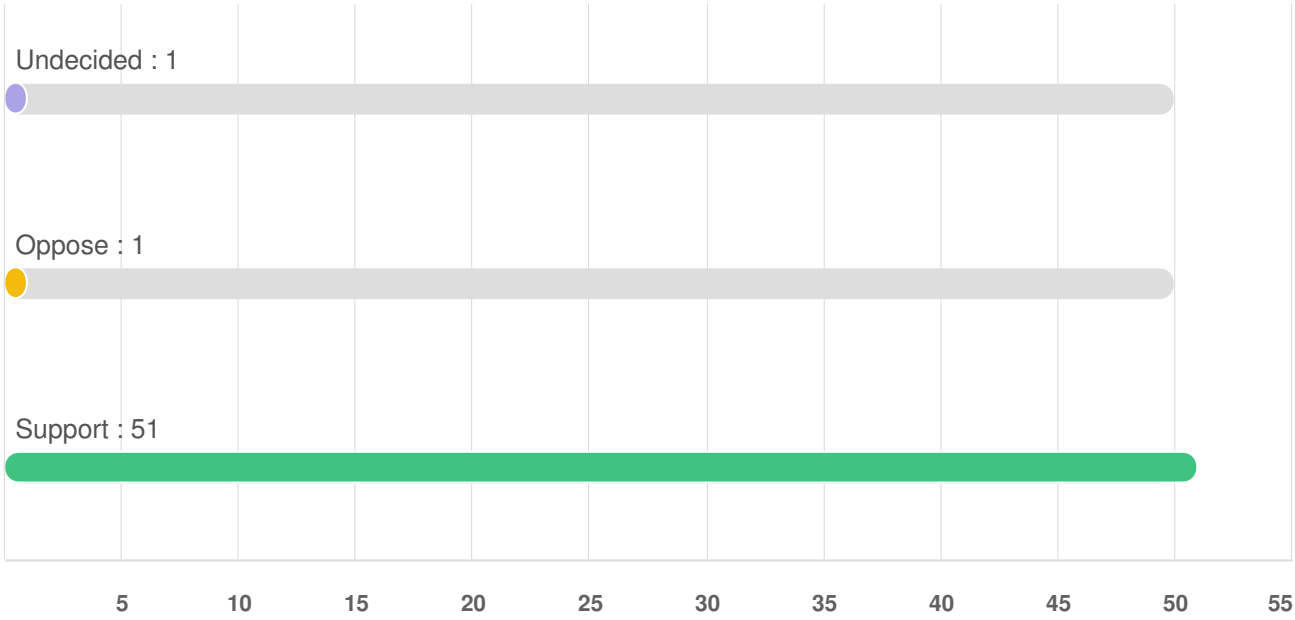
Q1 Beach dunes provide critical protection against long and short term erosion. The following actions relate to dune preservat...



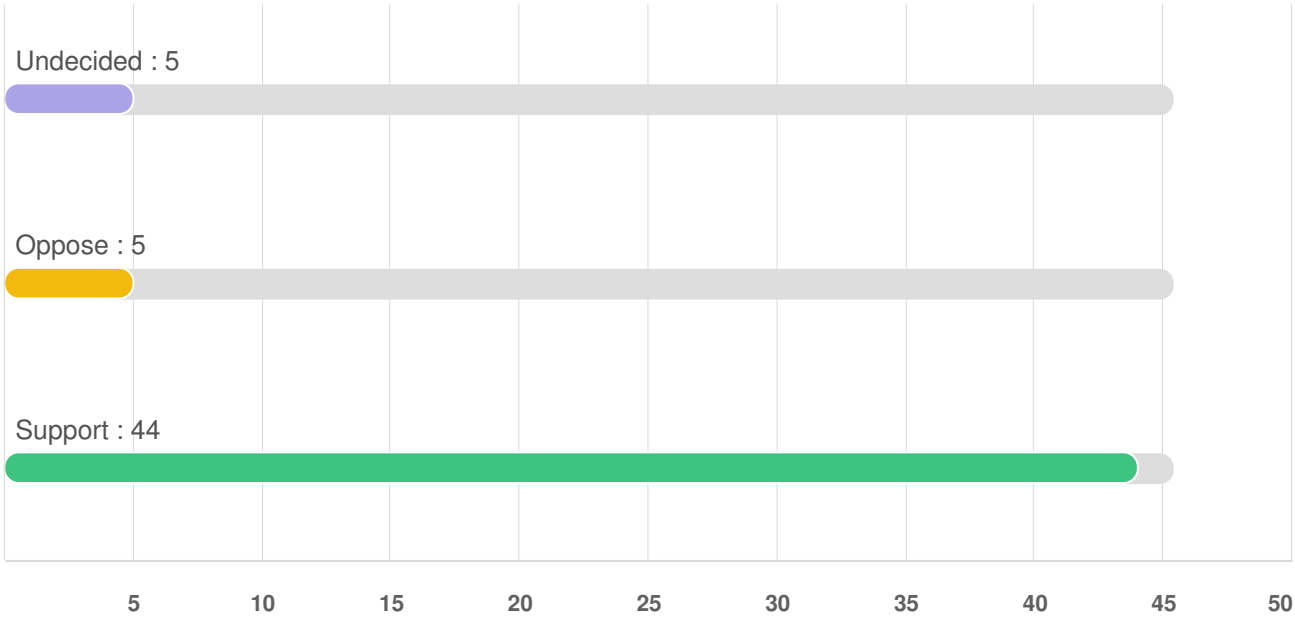
Optional question (54 response(s), 0 skipped)
Question type: Likert Question

Q1 Beach dunes provide critical protection against long and short term erosion. The following actions relate to dune preservat...

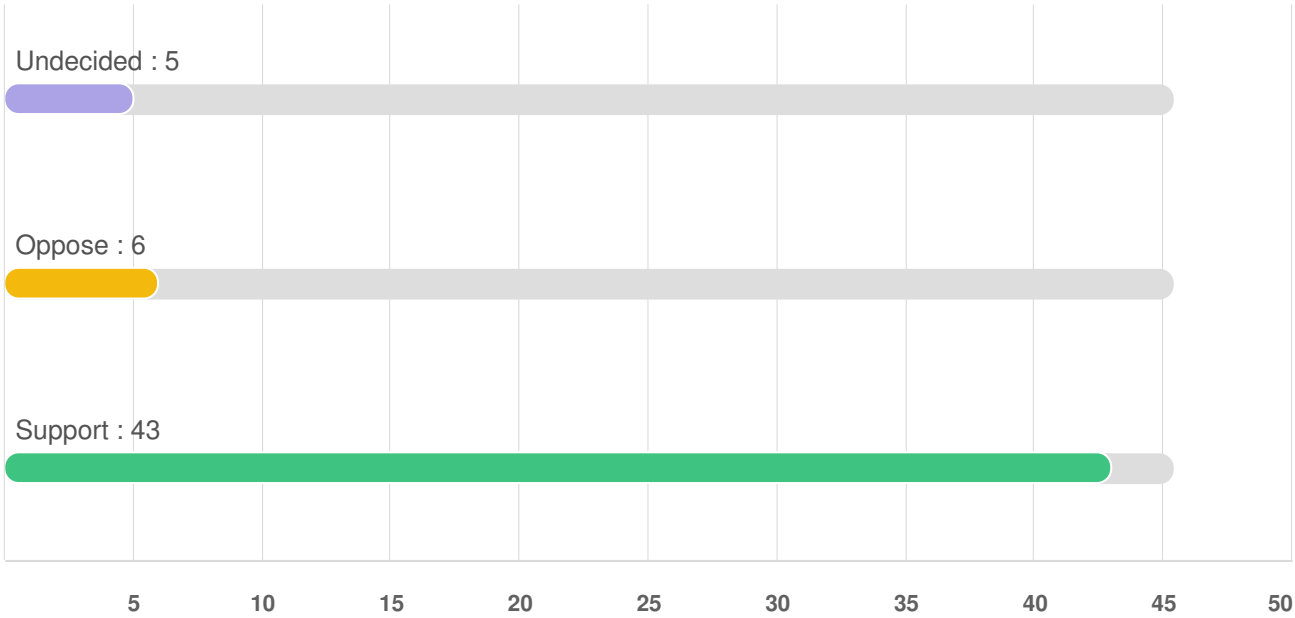
Monitor condition and health of dunes



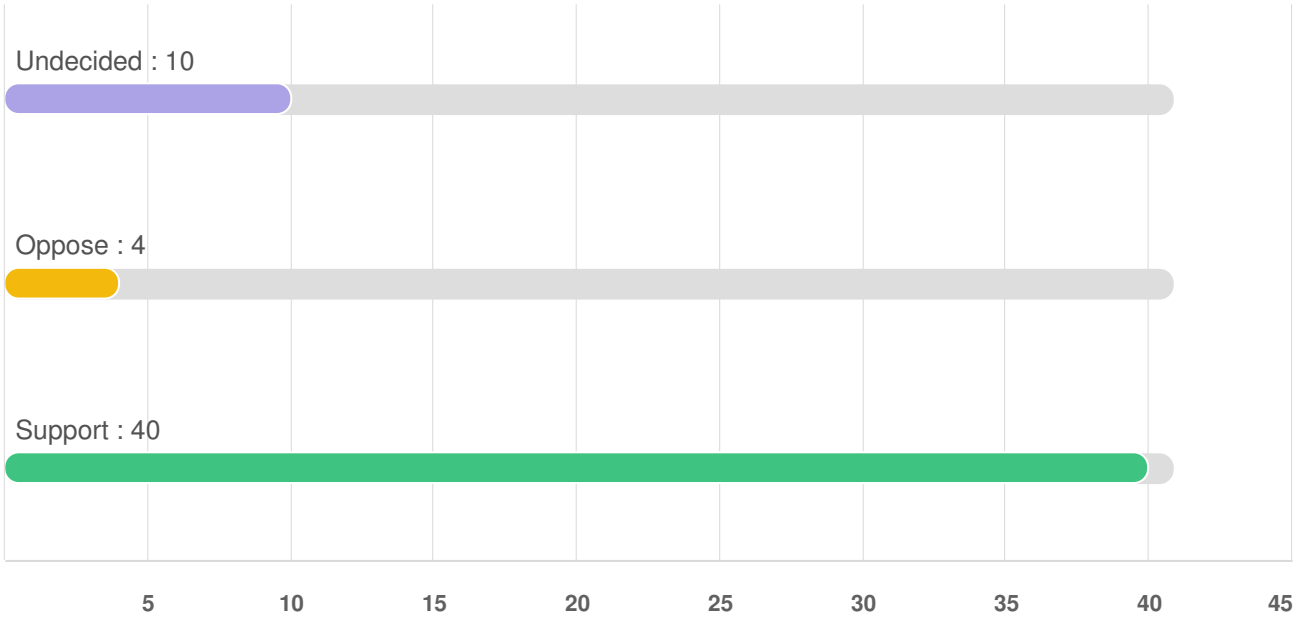
Maintain and install fencing to protect dunes

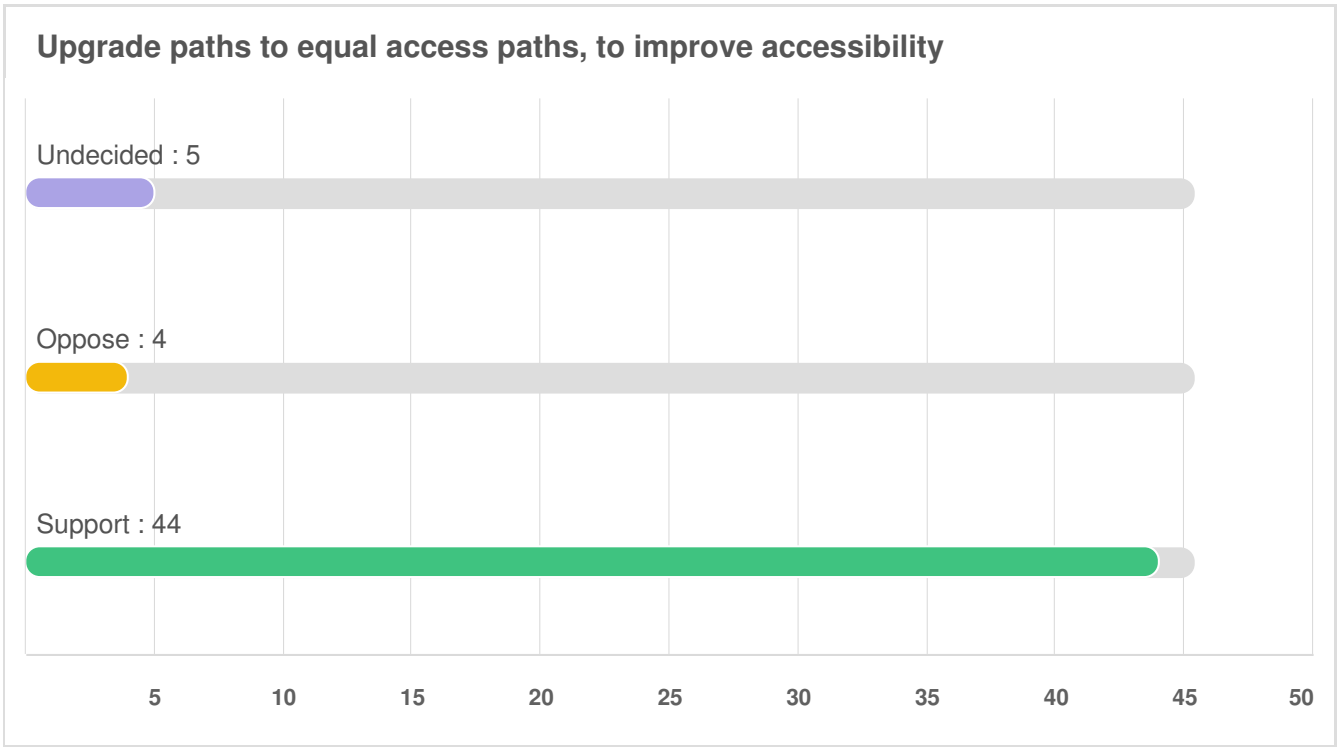


If dune degradation is present after 2025, consider reducing the number of informal access trails in the dunes

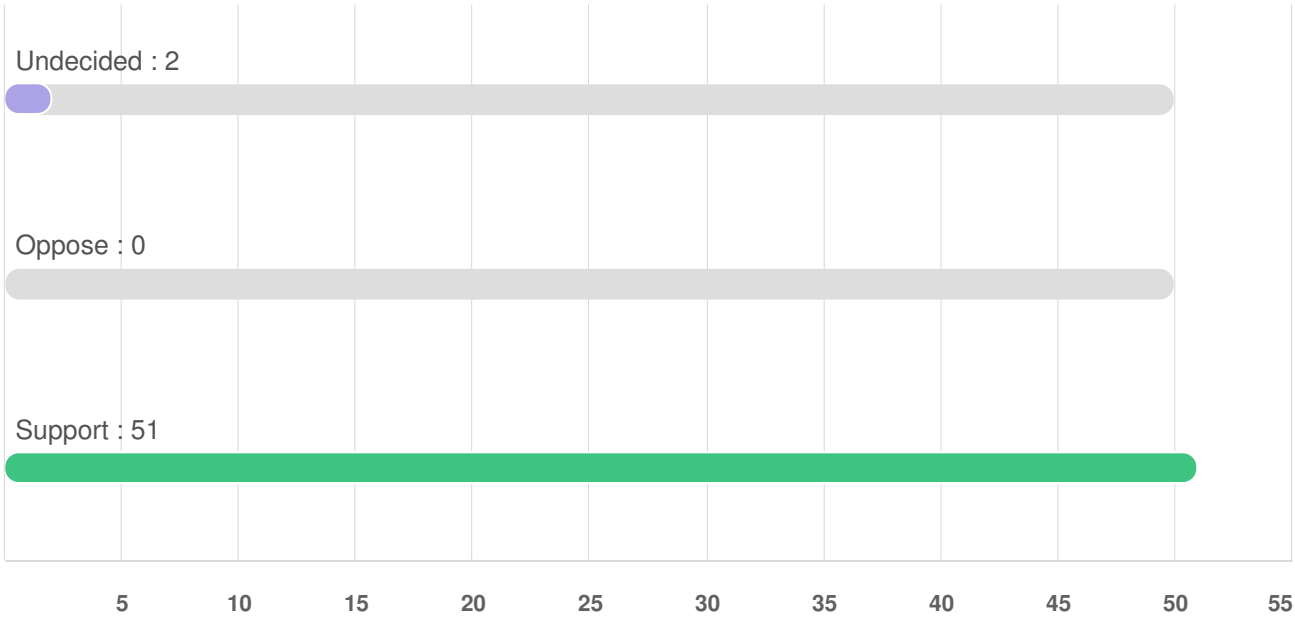


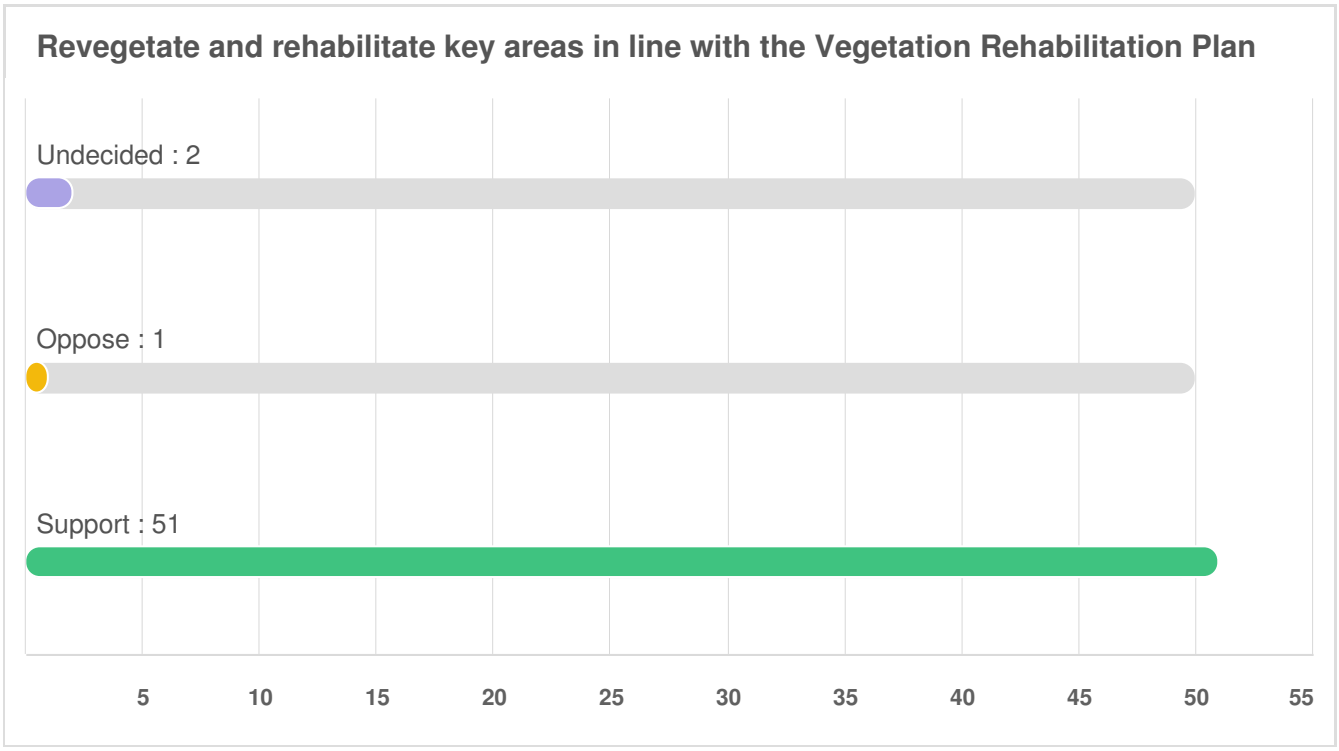
Construct crushed limestone path to western edge of Holiday Park to improve access and connect crushed limestone path to existing paved path



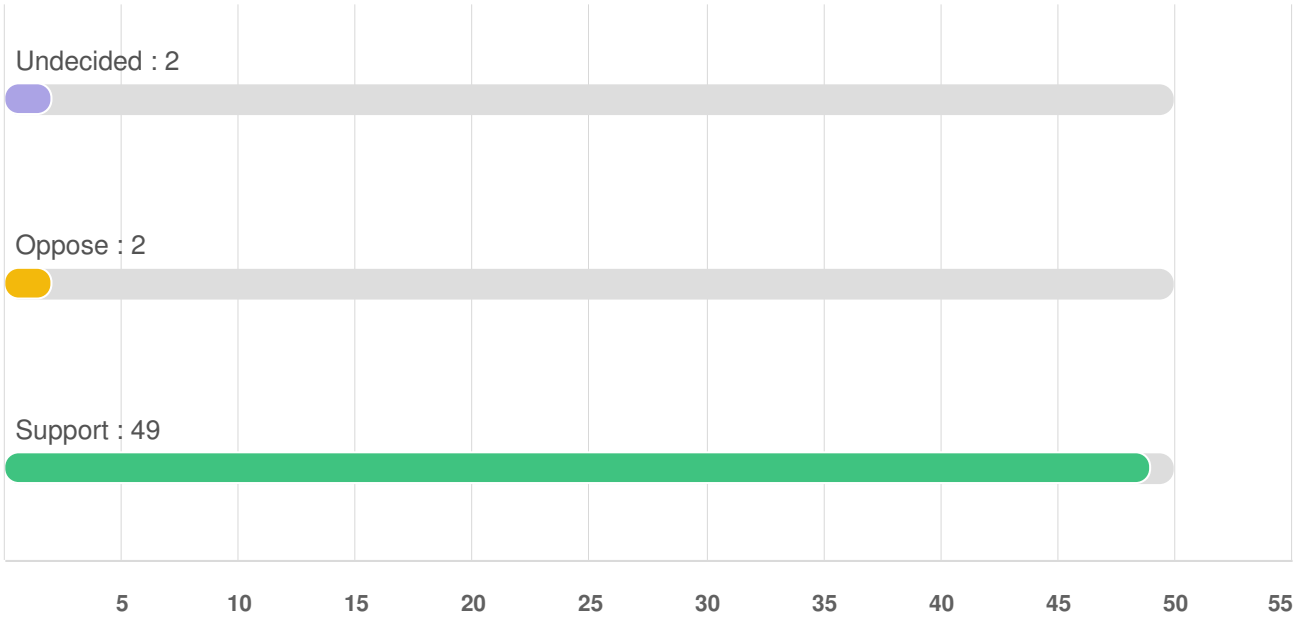


Control invasive weeds species in line with the Weed Management Plan

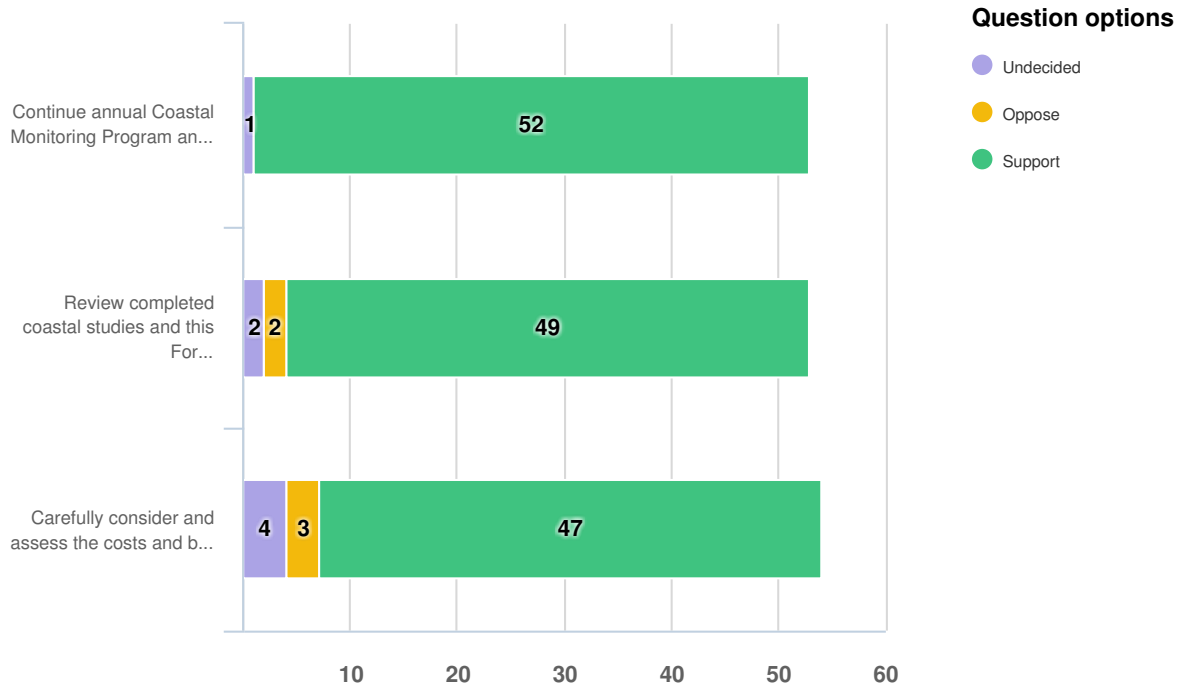




Improve habitat for native fauna in accordance with the Environmental Management Plan



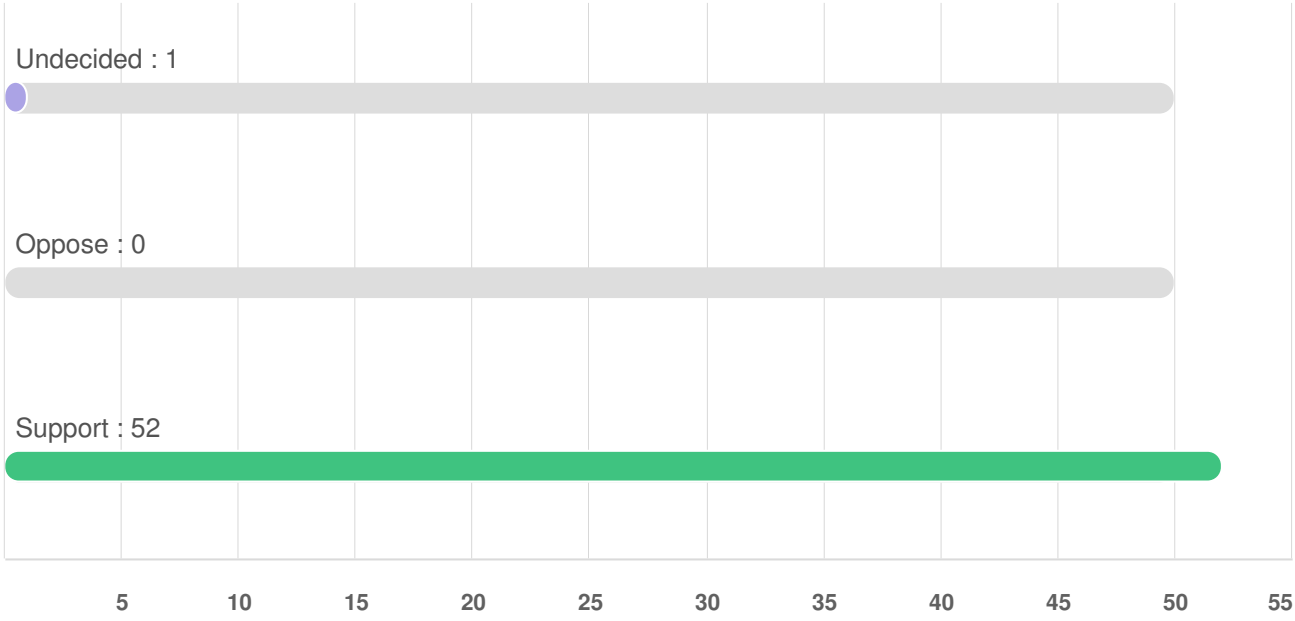
Q2 Scenarios may change over time, so some actions in the Plan are meant to be flexible. This allows final decisions to be mad...



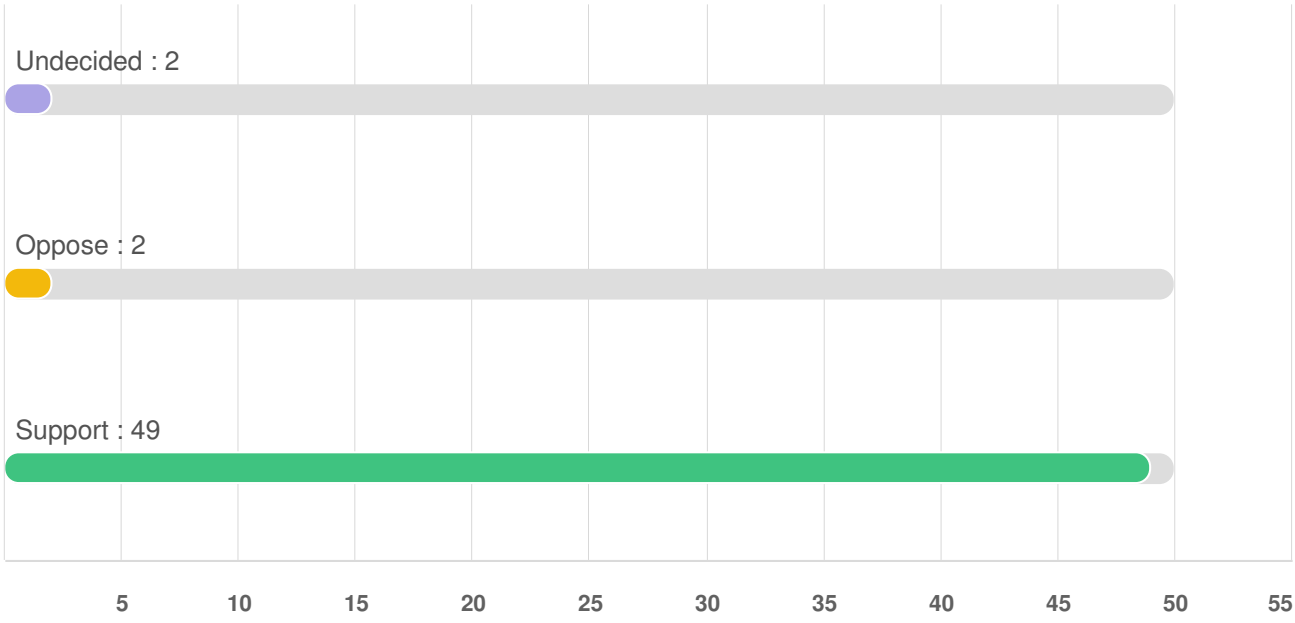
Optional question (54 response(s), 0 skipped)
Question type: Likert Question

Q2 Scenarios may change over time, so some actions in the Plan are meant to be flexible. This allows final decisions to be mad...

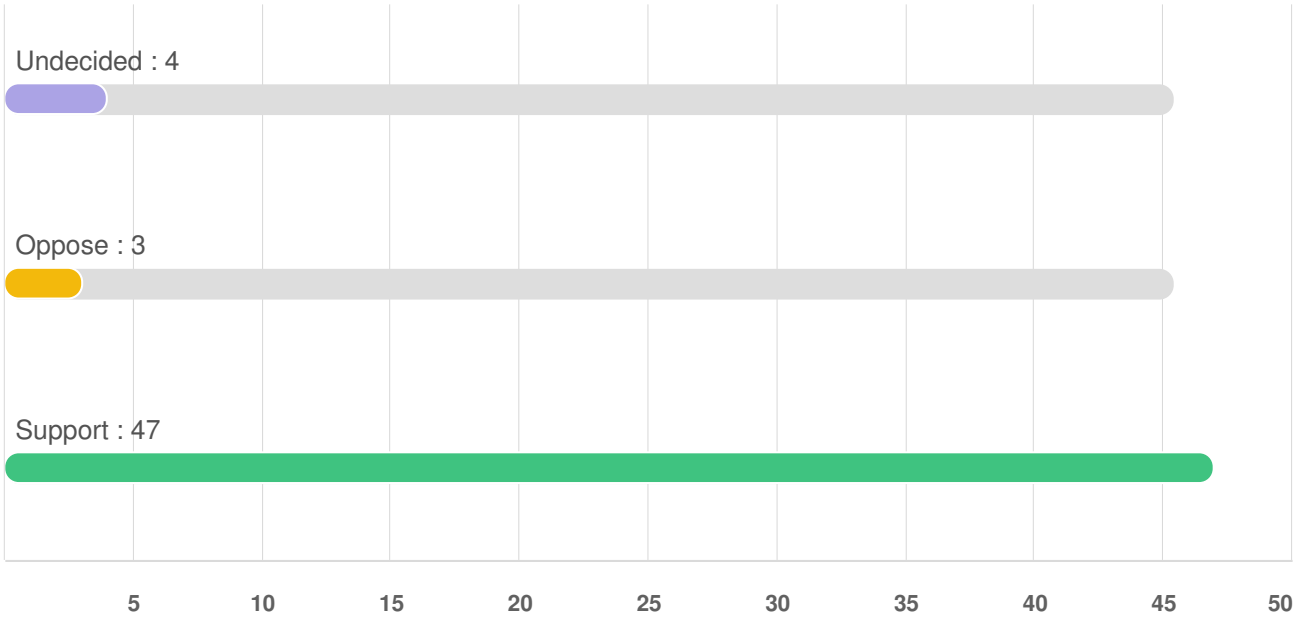
Continue annual Coastal Monitoring Program and incorporate annual review of trigger points



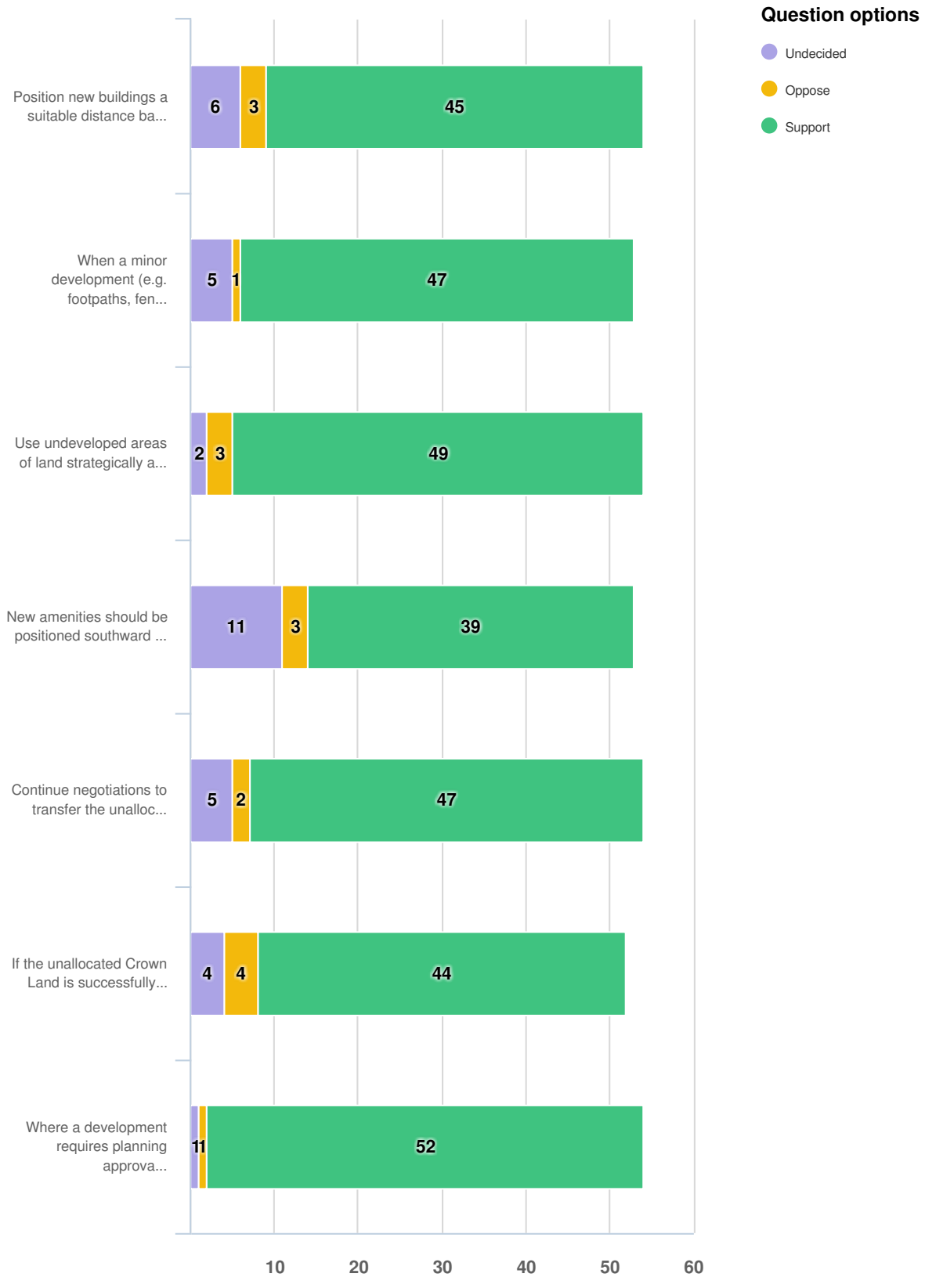
Review completed coastal studies and this Foreshore Management Plan every 10 years to update risk information and hazard lines



Carefully consider and assess the costs and benefits of coastal protection structures, or investigate measures for a managed retreat, before committing to such works



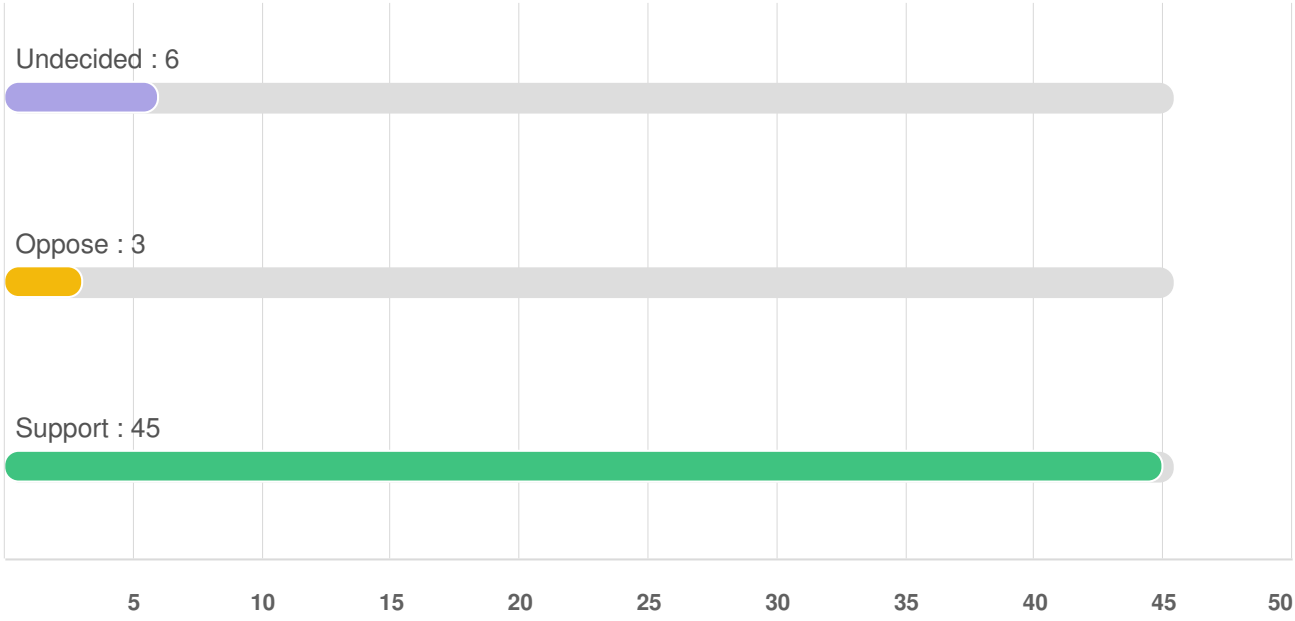
Q3 The Plan provides guidance on how new buildings or developments on the foreshore should be considered, given the potential ...



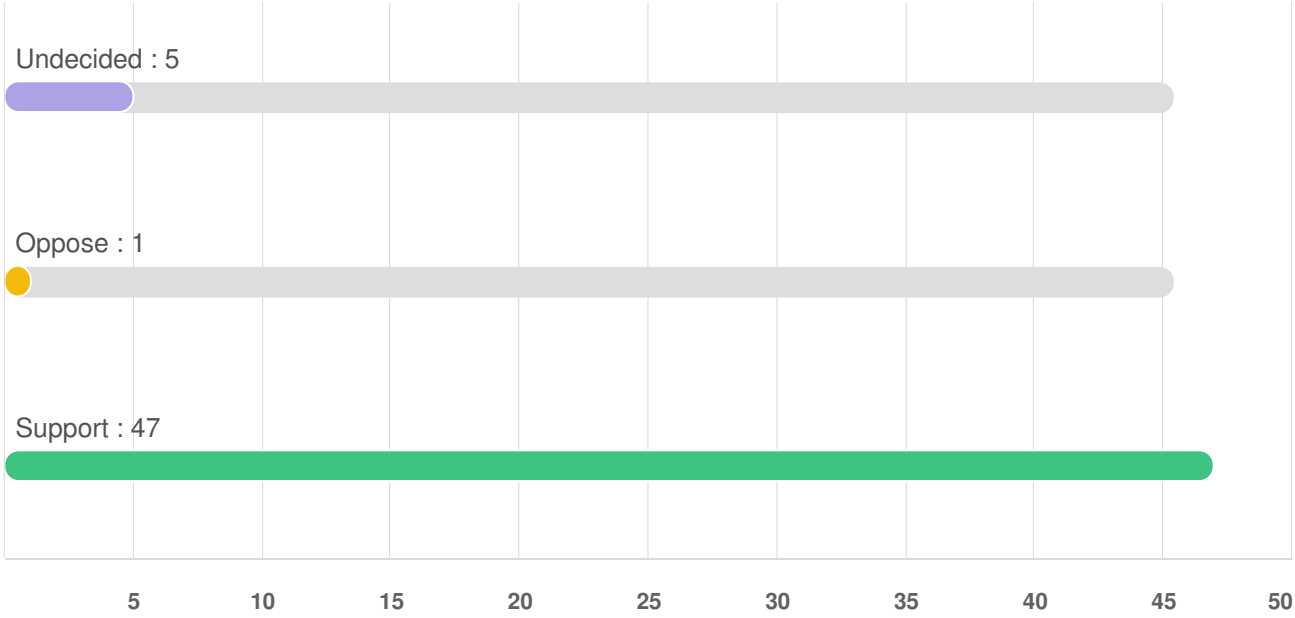
Optional question (54 response(s), 0 skipped)
Question type: Likert Question

Q3 The Plan provides guidance on how new buildings or developments on the foreshore should be considered, given the potential ...

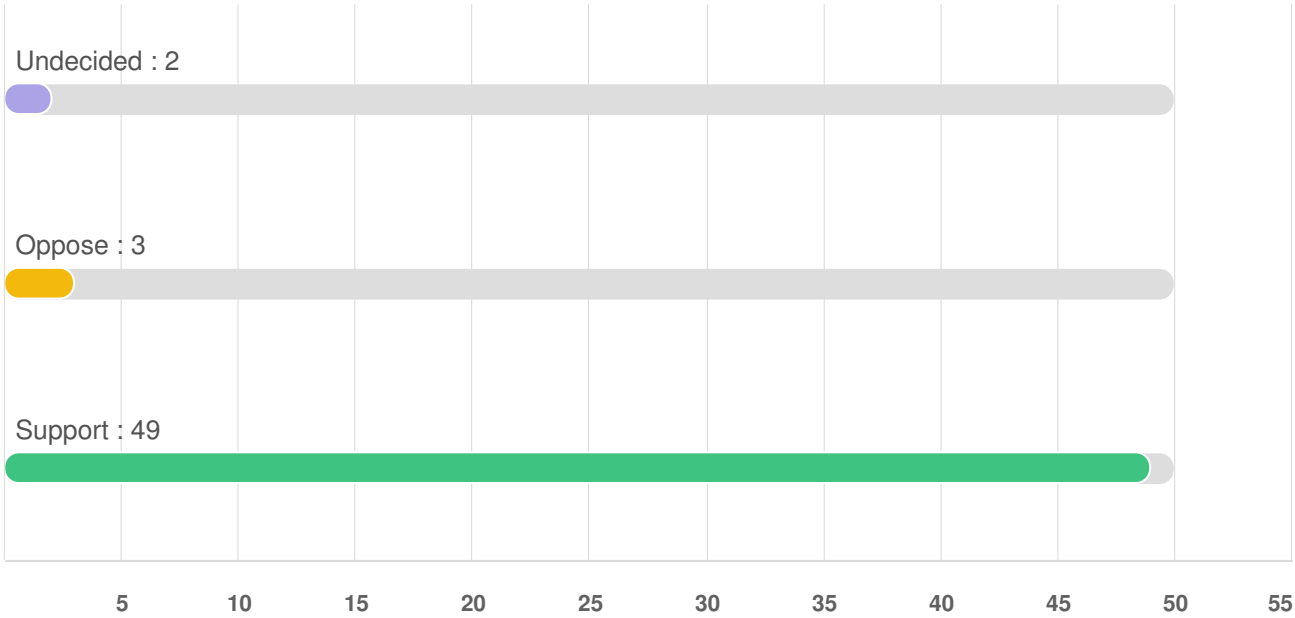
Position new buildings a suitable distance back from the coastline, considering their intended lifespan



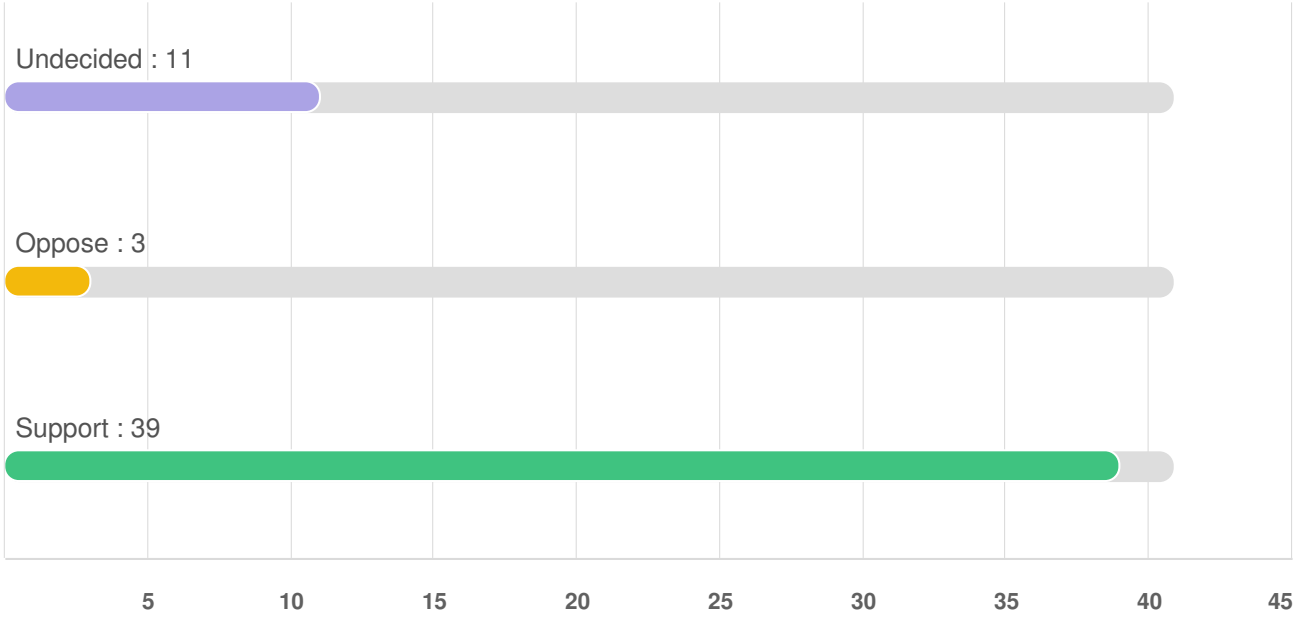
When a minor development (e.g. footpaths, fencing, etc) must be beyond the appropriate hazard line, it should be built to withstand or easily adapt to the expected coastal hazard scenario



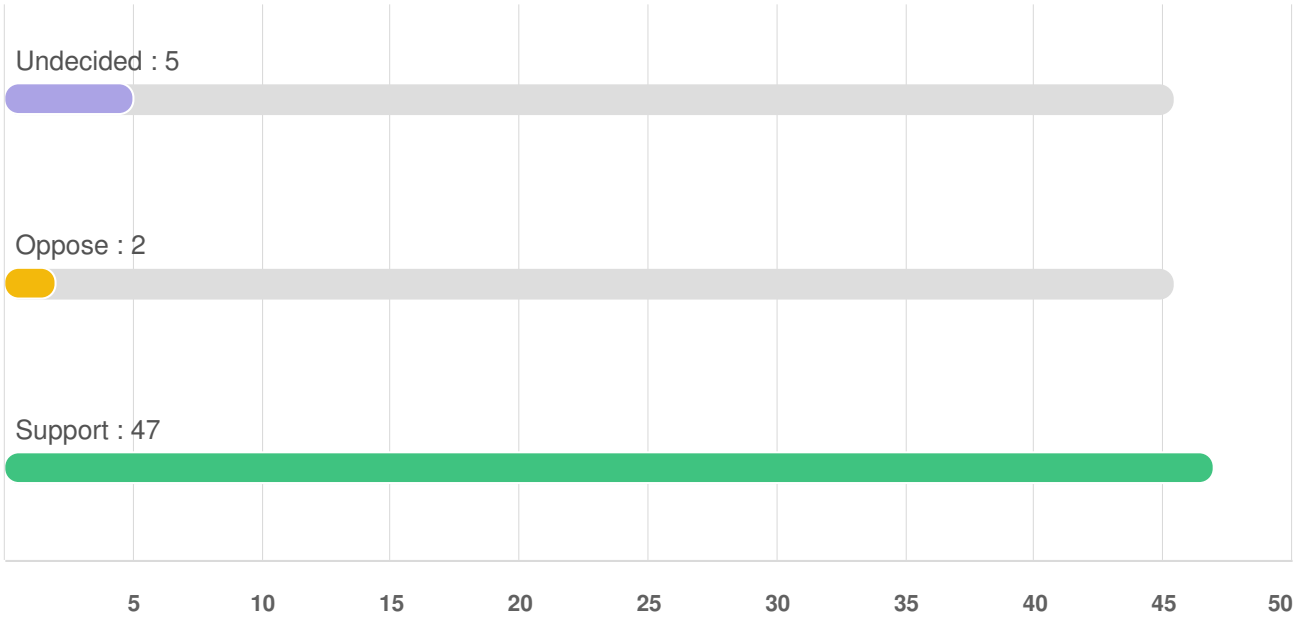
Use undeveloped areas of land strategically and develop them sparingly (given the foreshore area is expected to diminish in size)



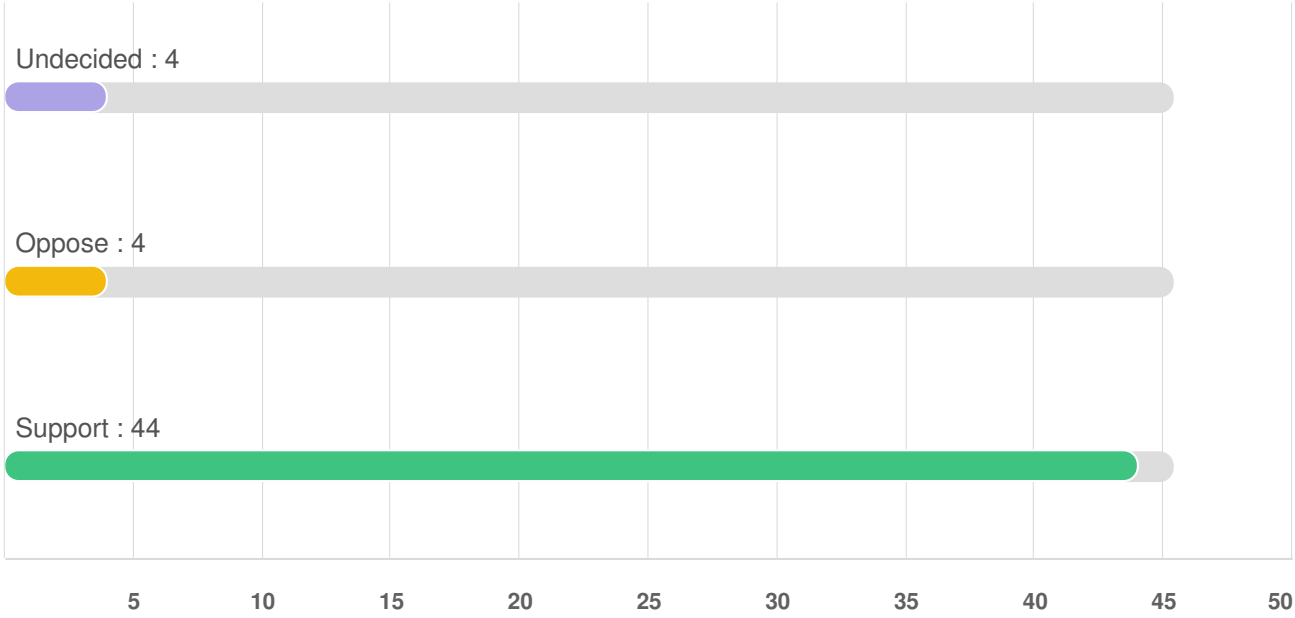
New amenities should be positioned southward and intensification of development should be avoided in the northern half of the foreshore area where possible due to anticipated coastal impacts



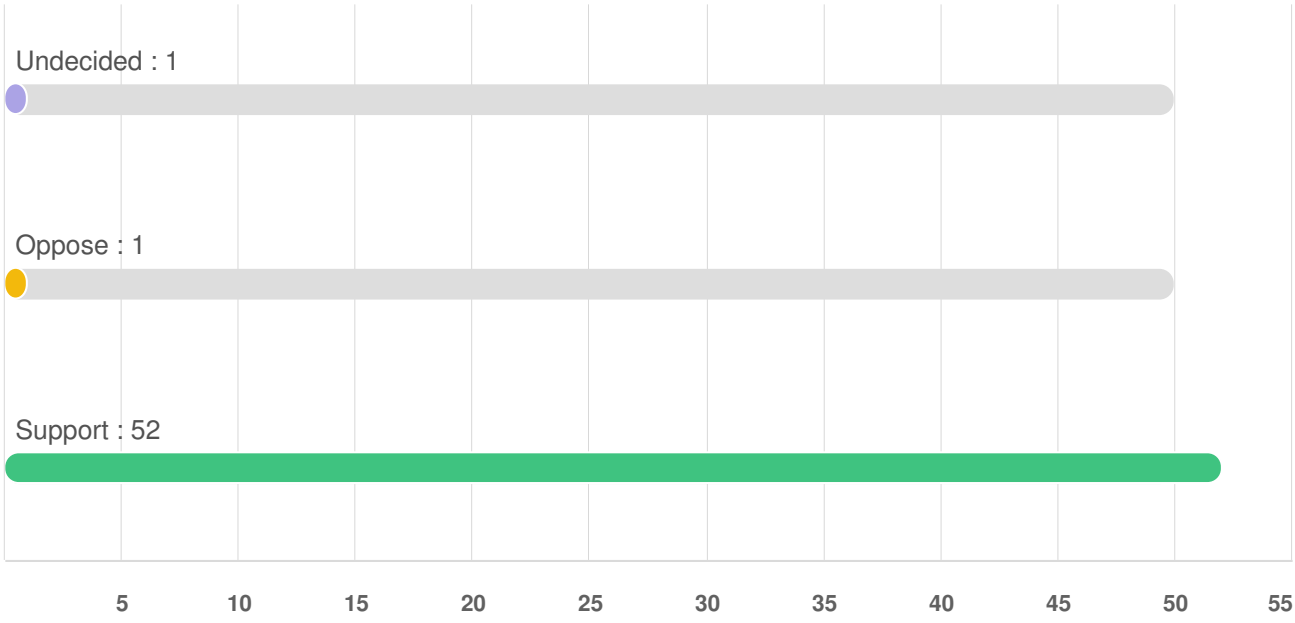
Continue negotiations to transfer the unallocated Crown Land (adjacent to Cockburn Road) to a reserve under the City's management



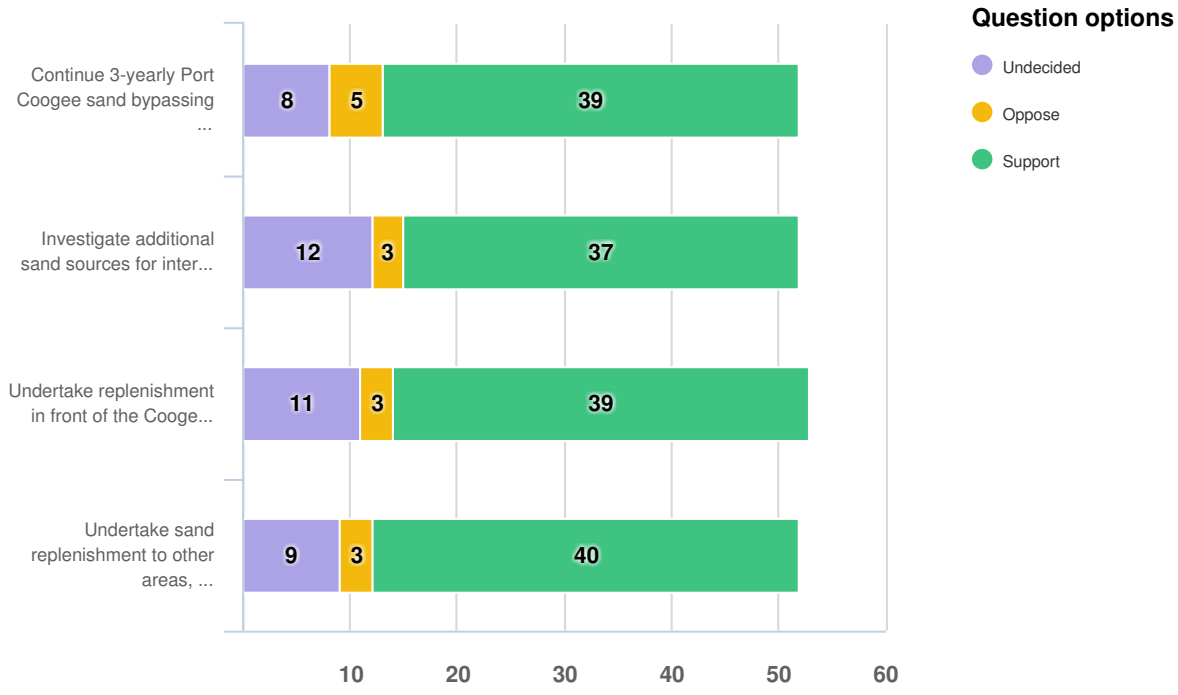
If the unallocated Crown Land is successfully transferred to a reserve for the City to manage with the power to lease the reserve, master planning for the entire reserve should be reviewed



Where a development requires planning approval, the application should demonstrate how future coastal hazard impacts will be addressed.



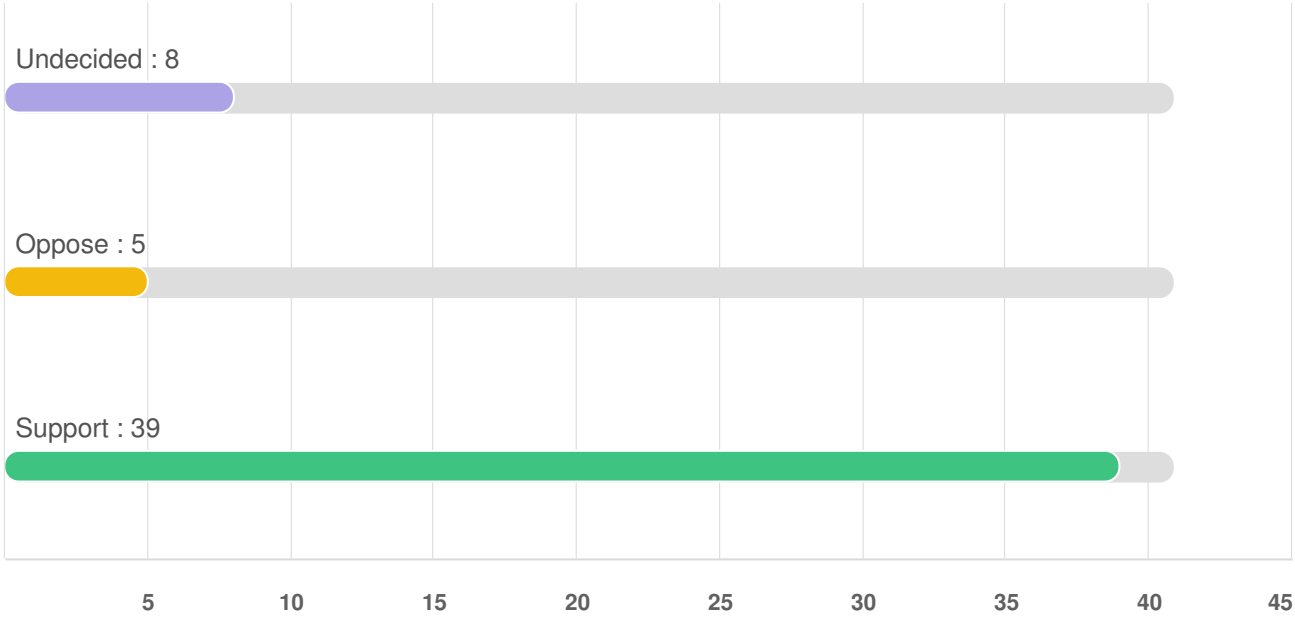
Q4 **At Port Coogee and C.Y. O'Connor Beach, the City occasionally sources and transports sand to replace what is lost through e...**



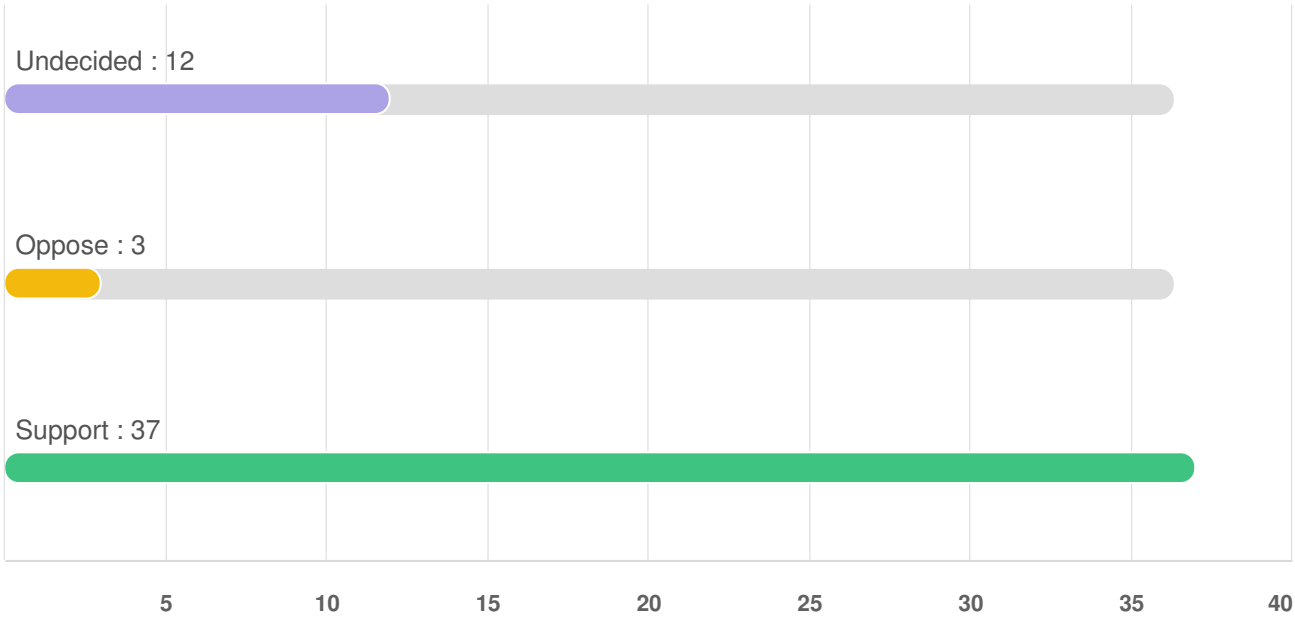
Optional question (53 response(s), 1 skipped)
Question type: Likert Question

Q4 At Port Coogee and C.Y. O'Connor Beach, the City occasionally sources and transports sand to replace what is lost through e...

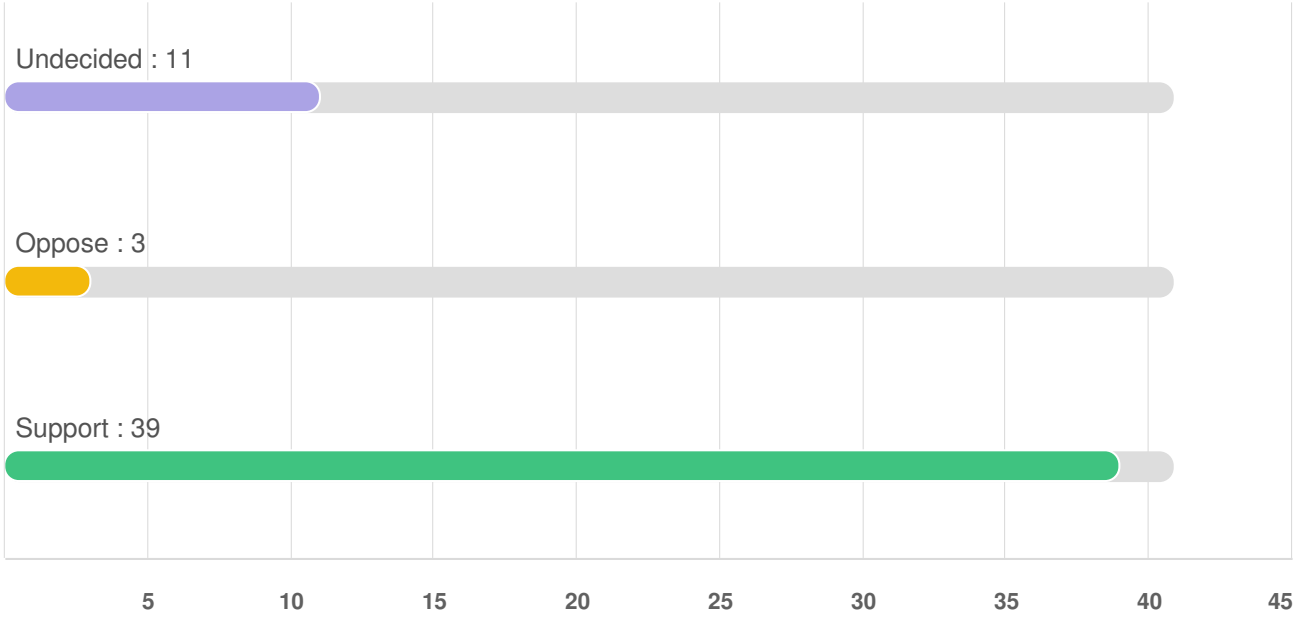
Continue 3-yearly Port Coogee sand bypassing works with necessary target quantities to prevent shoreline recession south of Port Coogee



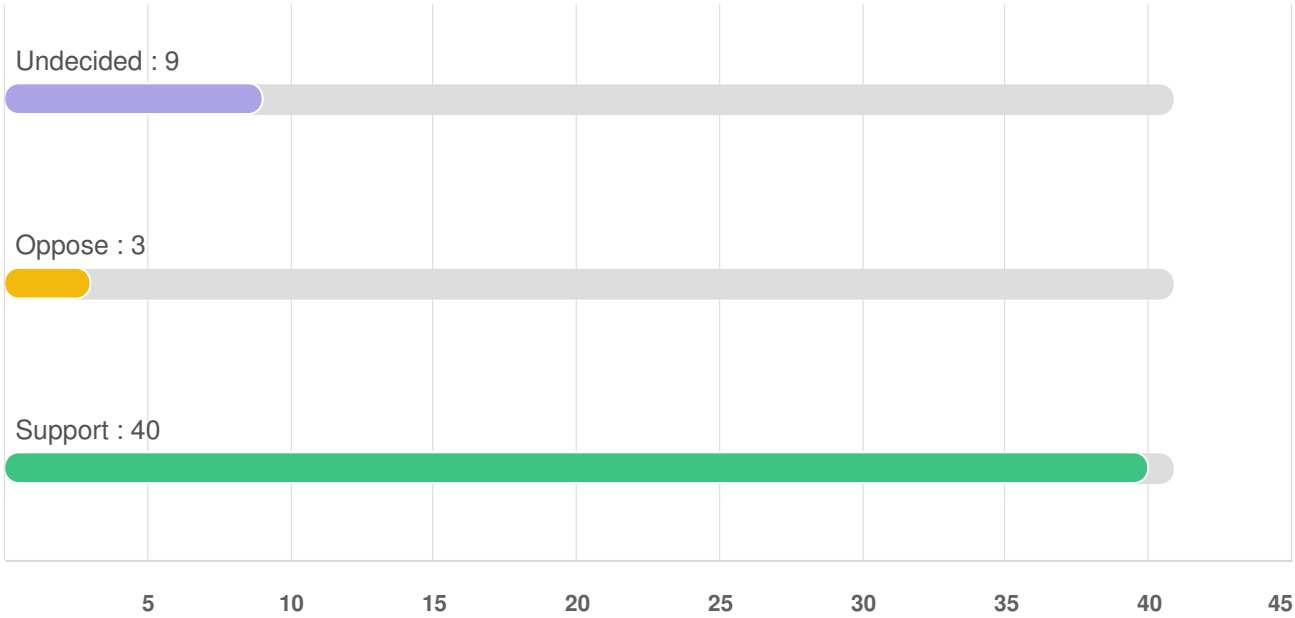
Investigate additional sand sources for interim sand replenishment at Coogee Beach (including feasibility and approvals)



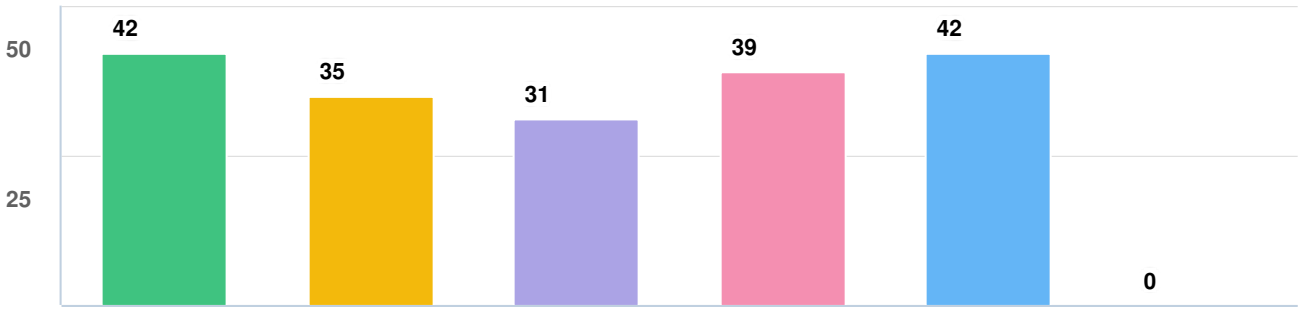
Undertake replenishment in front of the Coogee Beach Integrated Community Facility site (Coogee Surf Life Saving Club building) if or when required by the coastal monitoring trigger point



Undertake sand replenishment to other areas, as necessary, to protect assets in the interim from changing coastal conditions



Q5 Coogee Beach Jetty(please select any actions you support)

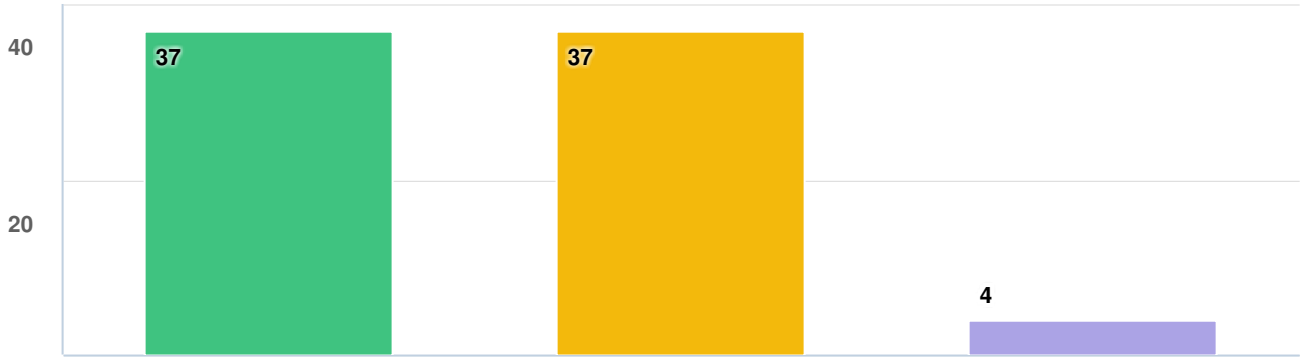


Question options

- I do not support any of the above actions
- Adapt the jetty design to coastal changes over the long term or rebuild it at end of it's useful life in accordance with coastal changes
- Upgrades need to consider the jetty's useful lifespan
- Reconfigure the asphalt access way to the jetty to improve access and maintenance costs
- Install accessibility ramp and close the unviable ramp currently there
- Monitor usability of the jetty

Optional question (54 response(s), 0 skipped)
Question type: Checkbox Question

Q6 Coogee Beach Integrated Community Facility (the surf club building)(please select any actions you support)

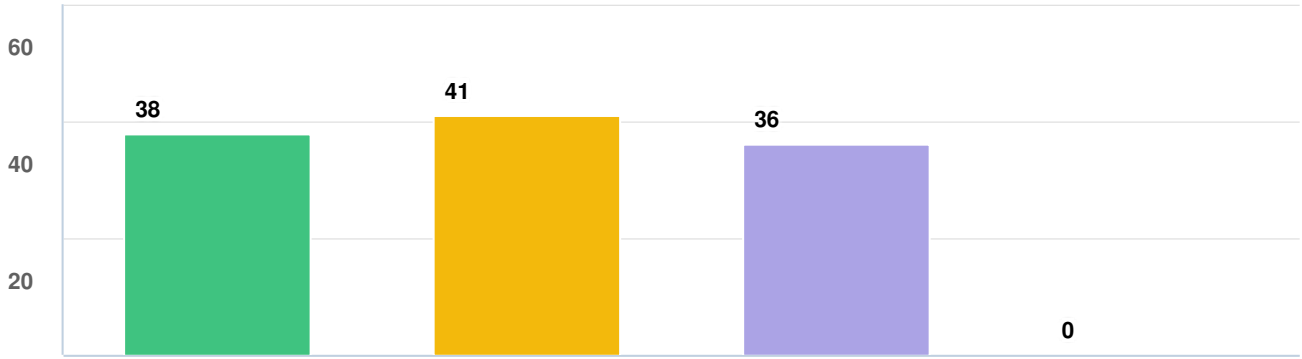


Question options

- I do not support any of the above actions
- When erosion risks can no longer be viably managed through sand replenishment, install hard protection (e.g. sea wall) or rebuild at alternative site at end of useful life
- Protect with a 30m dune buffer maintained via sand replenishment as necessary

Optional question (52 response(s), 2 skipped)
Question type: Checkbox Question

Q7 Car Parks and Site Access(please select any actions you support)

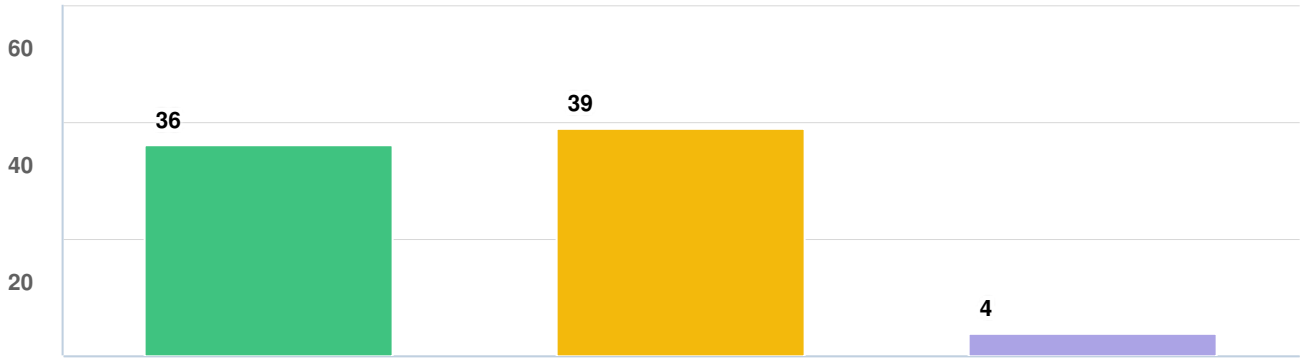


Question options

- I do not support any of the above actions
- Develop a long term master plan to assess suitable locations for assets requiring retreat including possible locations nearby but outside the foreshore area
- Advocate for improved public transport and pedestrian links
- Monitor and maintain a 40m dune width

Optional question (53 response(s), 1 skipped)
Question type: Checkbox Question

Q8 Minor Structures(please select any actions you support)

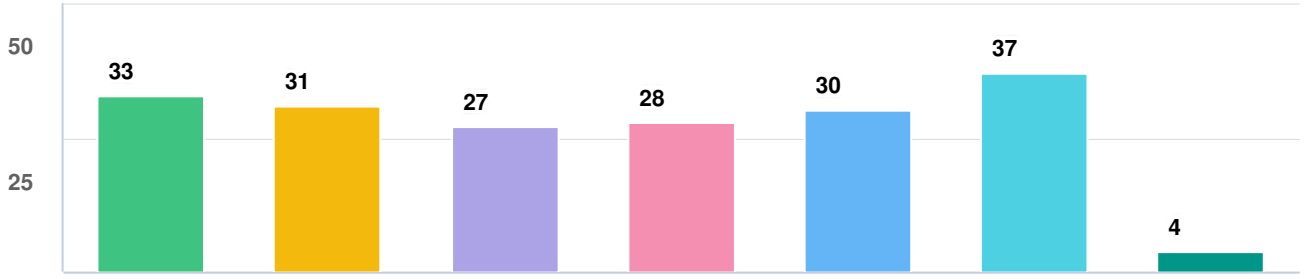


Question options

- I do not support any of the above actions
- Facilitate a movable observation tower in coordination with Coogee Beach Surf Life Saving Club and adjust as required
- Move structures further inland when they become unviable in their current locations due to increasing erosion, or at their end of useful life (whichever is first)

Optional question (54 response(s), 0 skipped)
Question type: Checkbox Question

Q9 Holiday Park Infrastructure(please select any actions you support)



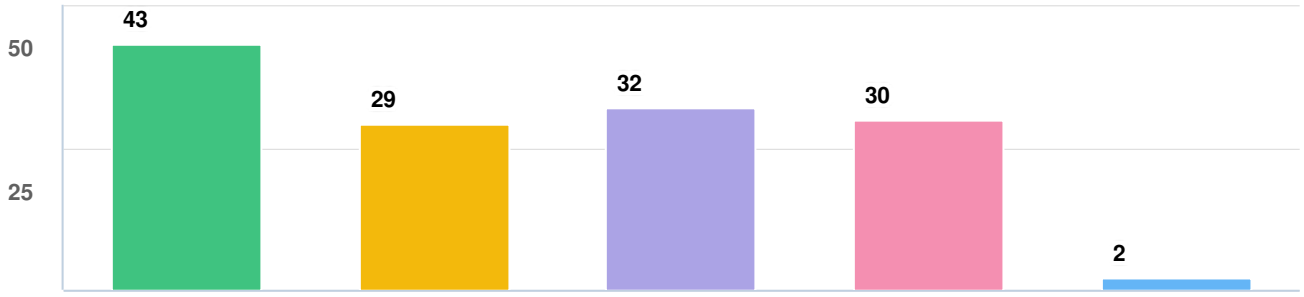
Question options

- I do not support any of the above actions
- Monitor shoreline movements in coastal monitoring program
- Ensure leasing arrangements reflect risks and hazards present for the property and controls in place
- Plan a managed retreat for the future (repositioning of assets) to maintain a 40m public foreshore reserve width and undertake any necessary rehabilitation to dunes
- Staged repositioning (to behind the buffer line) as existing permanent assets reach end of useful life

1/2

Optional question (51 response(s), 3 skipped)
Question type: Checkbox Question

Q10 Perlinte View (please select any actions you support)

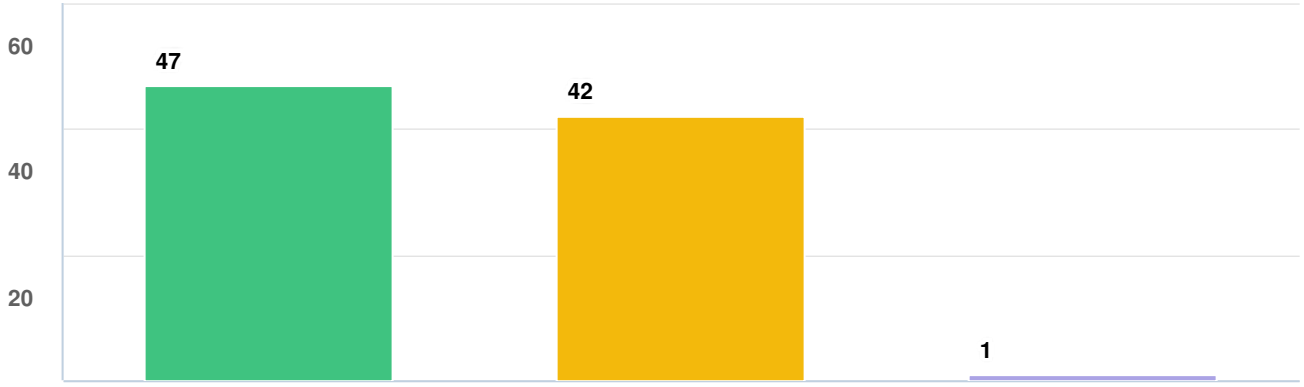


Question options

- I do not support any of the above actions
- Implement adaptation measures when the appropriate trigger point is reached
- Conduct a detailed assessment of costs and benefits to confirm if construction of protection structures is still preferred strategy to manage erosion risks at this location
- Investigate and assess funding options for erosion adaptation measures for Perlinte View and consider establishing a reserve fund for this purpose
- Monitor beach and dune width as part of coastal monitoring program

Optional question (52 response(s), 2 skipped)
Question type: Checkbox Question

Q11 Waste Collection (please select any actions you support)

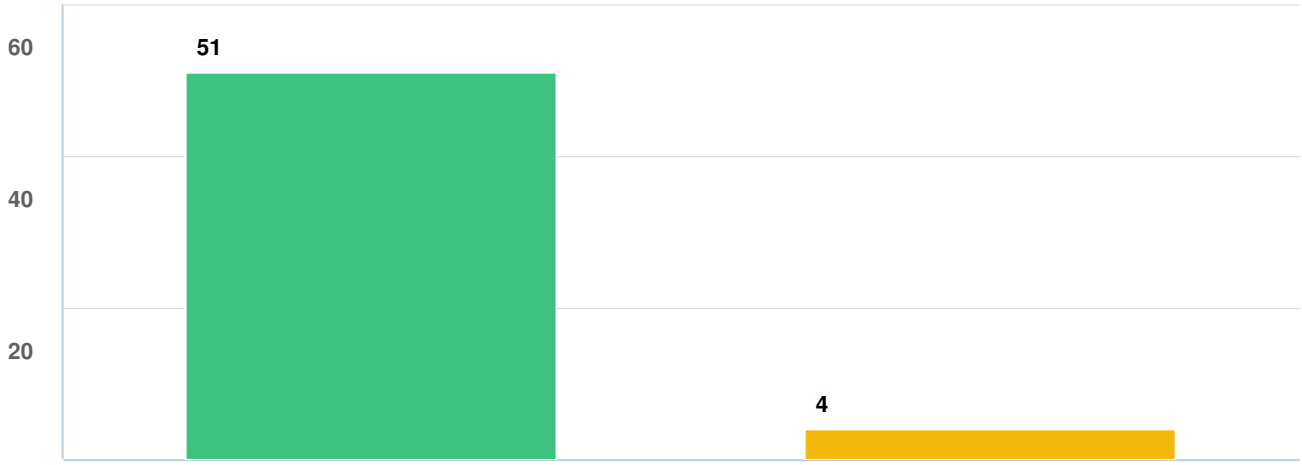


Question options

- I do not support any of the above actions
- Adapt bin locations and collection schedules as required to respond to erosion and seasonal use
- Continue beach bin trial on permanent basis

Optional question (54 response(s), 0 skipped)
Question type: Checkbox Question

Q12 CCTV(please confirm if you support the following action):Maintain and expand CCTV network at Coogee Beach in accordance wit...

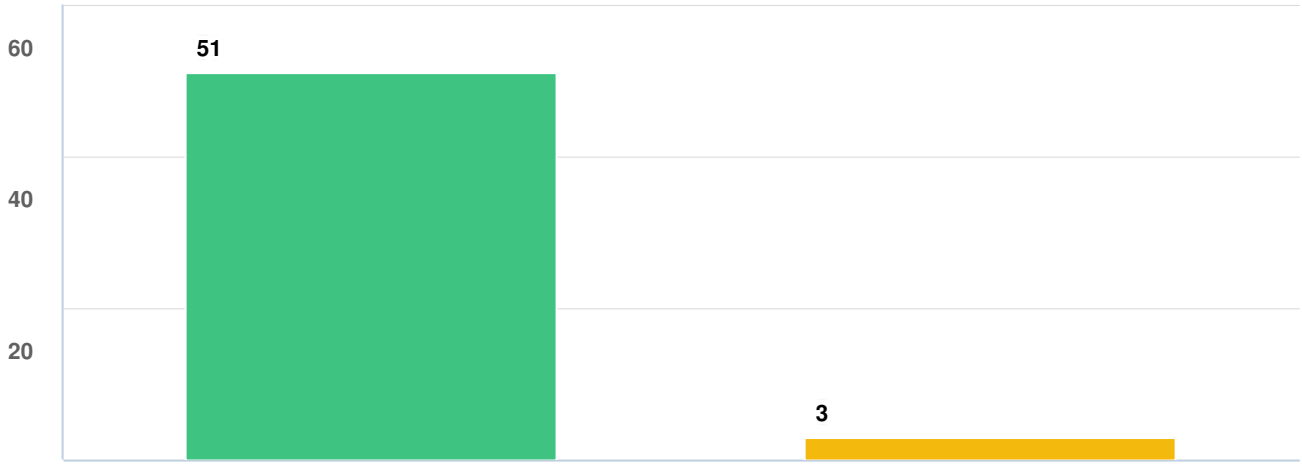


Question options

No Yes

Optional question (54 response(s), 0 skipped)
Question type: Checkbox Question

Q13 Coogee Beach Cafe Building(please confirm if you support the following action):Maintain and position any extensions or rede...

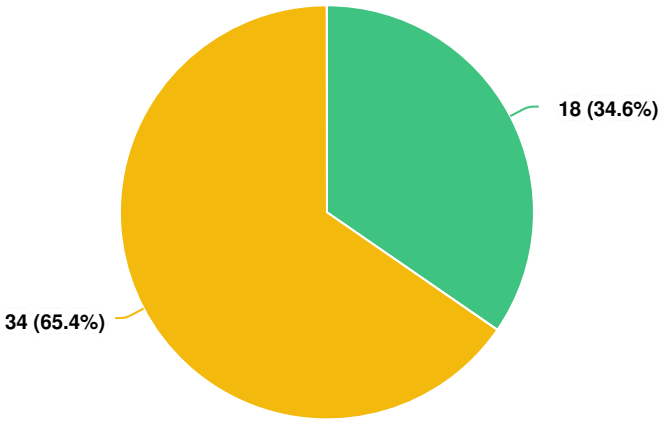


Question options

No Yes

Optional question (54 response(s), 0 skipped)
Question type: Checkbox Question

Q14 Is there anything missing from the Plan that requires consideration?

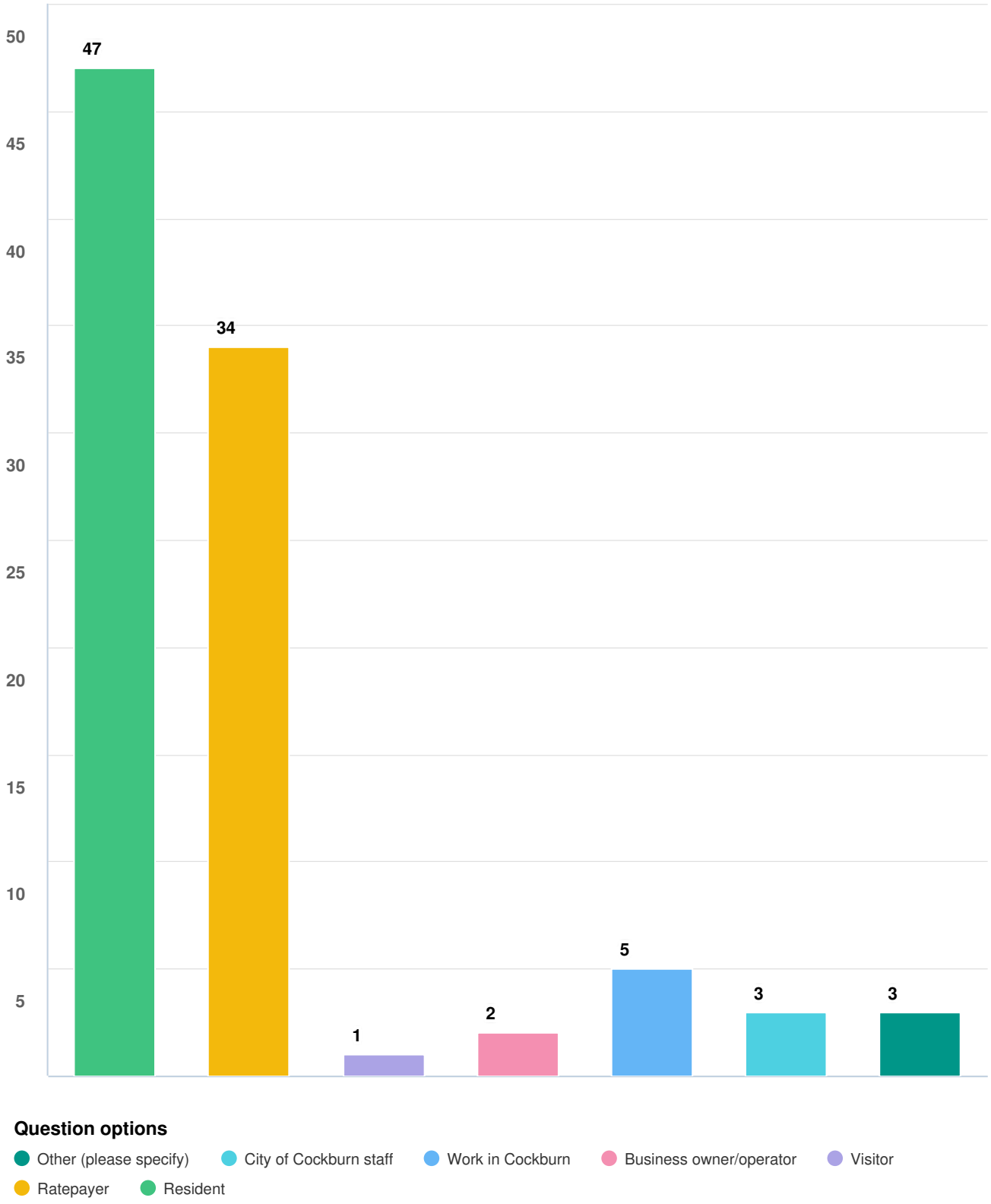


Question options

No Yes

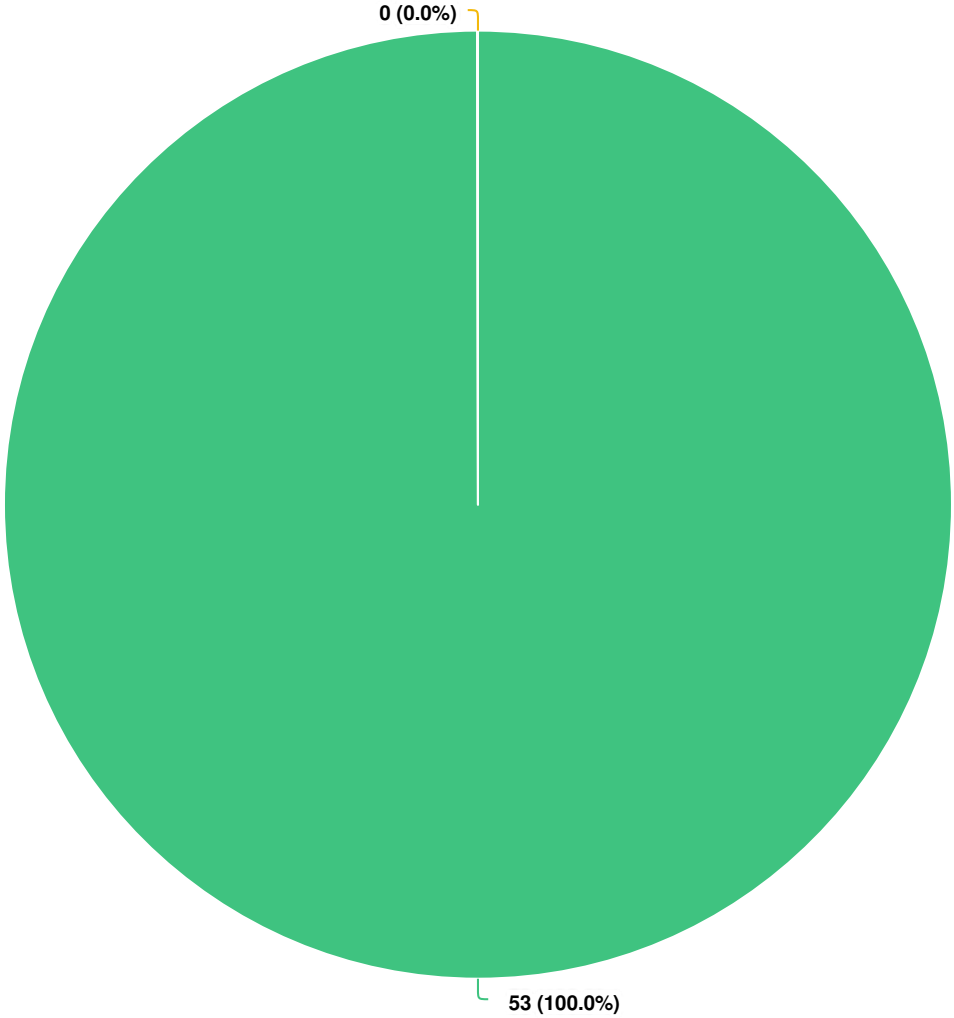
Optional question (52 response(s), 2 skipped)
Question type: Radio Button Question

Q15 What is your relationship to Cockburn?



Optional question (54 response(s), 0 skipped)
Question type: Checkbox Question

Q16 Are you completing this survey on behalf of a business, group, government body or organisation?

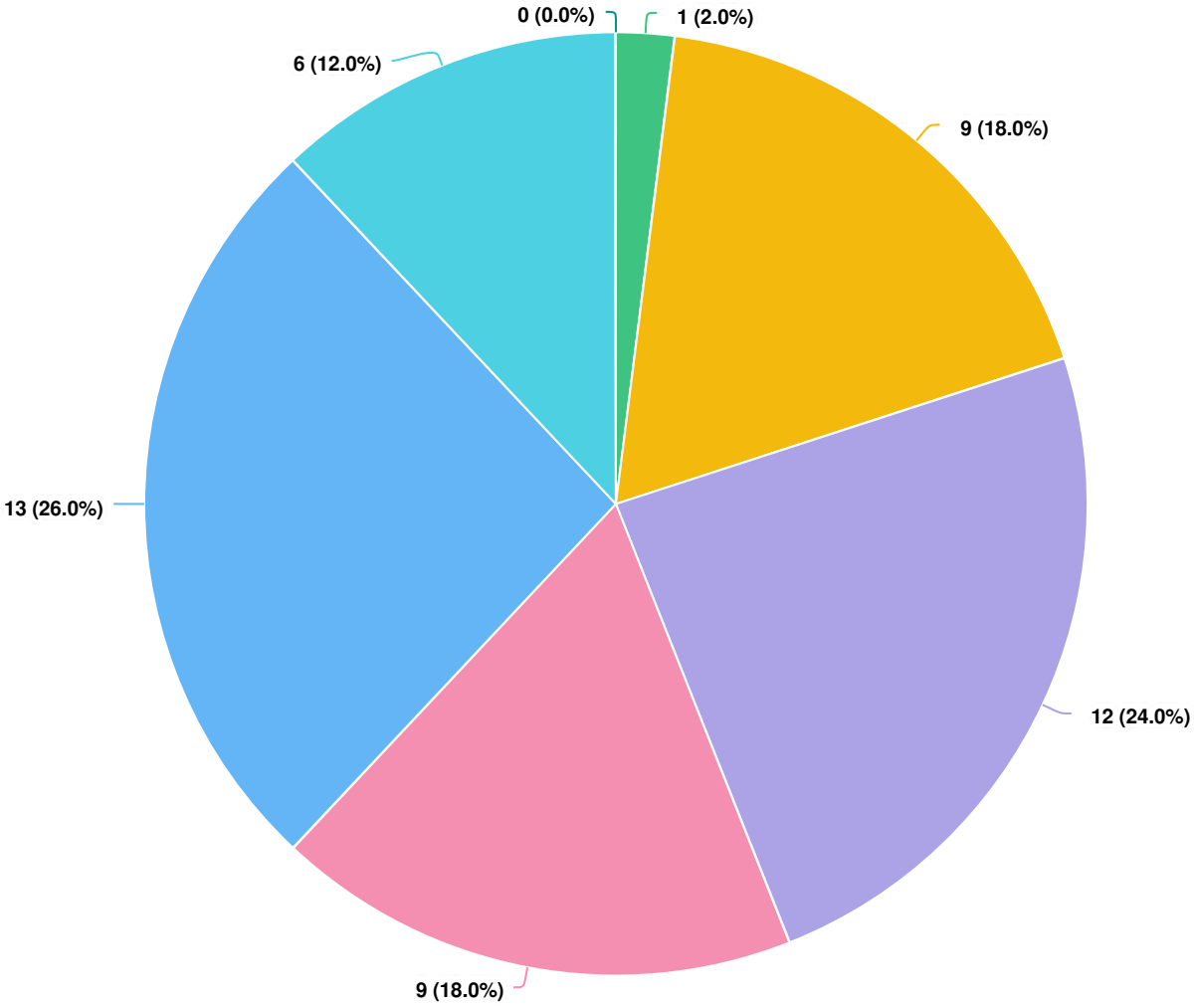


Question options

Yes No

Optional question (53 response(s), 1 skipped)
Question type: Radio Button Question

Q17 Age:

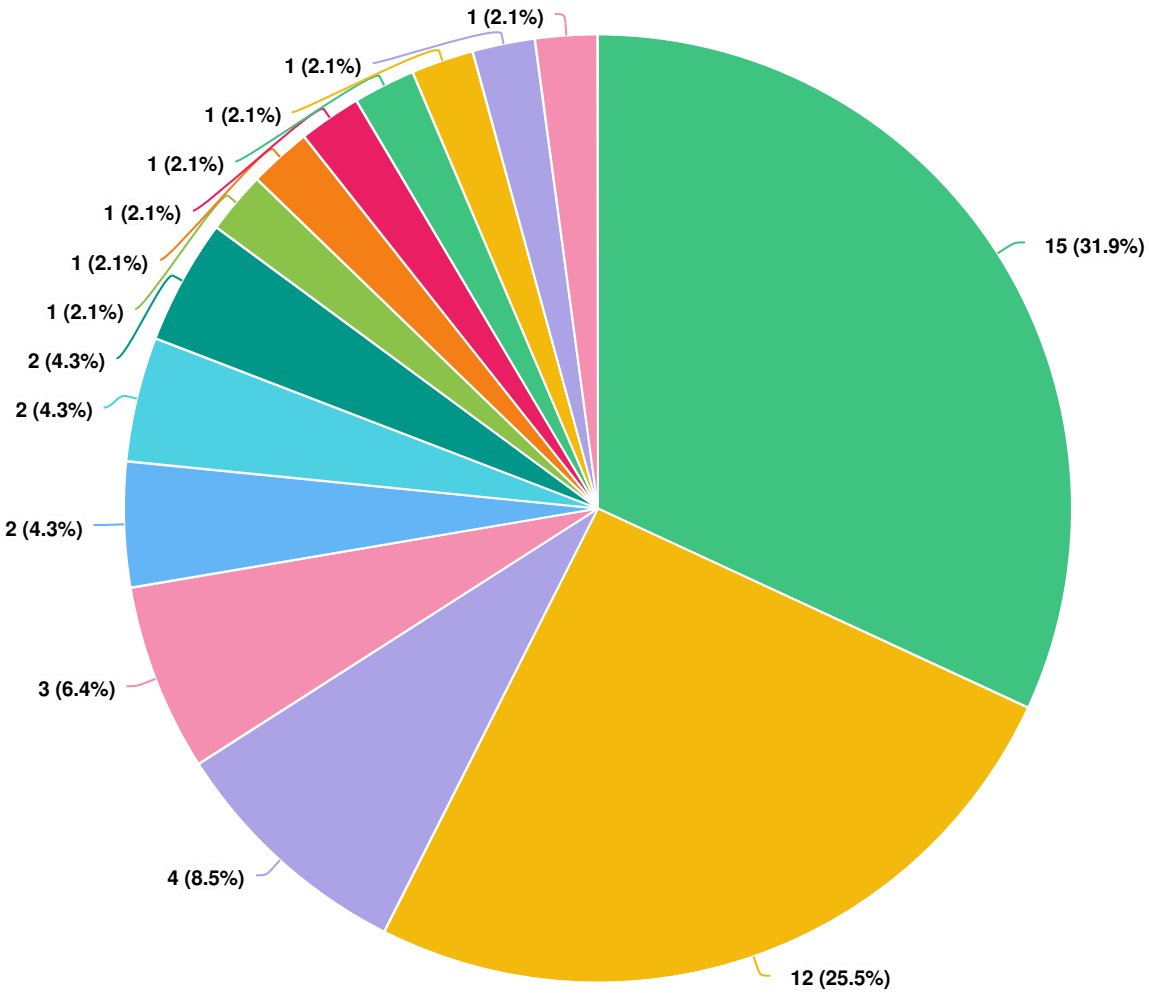


Question options

Under 18 | 66 + | 56 - 65 | 46 - 55 | 36 - 45 | 26 - 35 | 18 - 25

Optional question (50 response(s), 4 skipped)
Question type: Dropdown Question

Q18 Suburb:

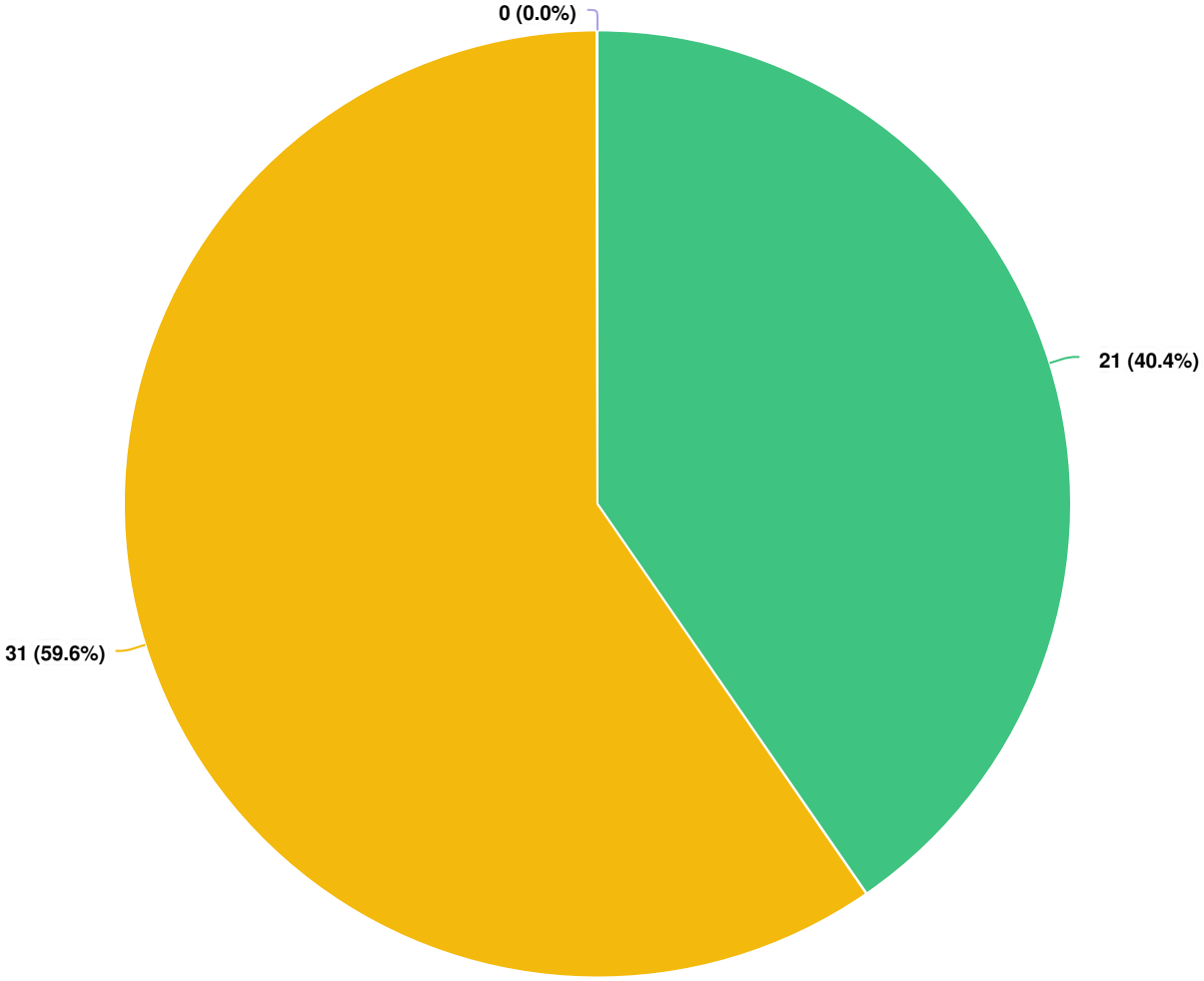


Question options

LAKE COOGEE, WA
COCKBURN CENTRAL, WA
BEELIAR, WA
HAMMOND PARK, WA
HILTON, WA
AUBIN GROVE, WA
SUCCESS, WA
TREEBY, WA
HAMILTON HILL, WA
YANGEBUP, WA
ATWELL, WA
SPEARWOOD, WA
NORTH COOGEE, WA
COOGEE, WA

Optional question (47 response(s), 7 skipped)
Question type: Region Question

Q19 Gender:



Question options

Other Female Male

Optional question (52 response(s), 2 skipped)
Question type: Radio Button Question

Appendix D – Implementation Plans

Immediate Term Action Plan
10-Year Horizon

Install fencing to protect dune
Monitor revegetation and supplement as required
Revegetation
Relocate infrastructure
Tracks to be closed
Install timber stairs / boardwalk
Coastal Path
Install crushed limestone path
Extension for coastal path for better use of access tracks
Present Day erosion hazard line

Perlinte View
Peri End
Carparks
Coogee Beach Café
Coogee Jetty
Powell Rd
Carparks
Holiday Park
Cockburn Road
Unallocated Crown Land (UCL)
Coogee Beach Integrated Community Facility
Carparks
Poore Gr

Longer Term Action Plan
50-Year Horizon

Monitor and install hard protection as risks are realised

Transportable accommodation, permanent structure such as ablution block permitted

Transportable accommodation only to be relocated as risks are realised, excludes permanent structures

Consider relocation at the end of design life, or realisation of significant risk

Continue revegetation and extend landward as risks are realised

+0.5m SLR (2070) erosion hazard line

+0.9 m SLR (2110) erosion hazard line

Approximate +0.5m Steady Shoreline and Ocean

Holiday park buffer line

Potential dune vegetation zone

Coastal path

Perlinte View

Peri End

Carparks

Coogee Beach Café

Coogee Jetty

Powell Rd

Carparks

Holiday Park

Cockburn Road

Unallocated Crown Land (UCL)

Coogee Beach Integrated Community Facility

Carparks

Poore Gr

GHD
Level 10
999 Hay Street
T: 61 8 6222 8222 F: 61 8 9463 6012 E: permail@ghd.com

12523367-8267-21/https://projectsportal.ghd.com/sites/pp18_04/cityofcockburncoogee/ProjectDocs/12523367-REP-2_City of Cockburn Coogee Beach FMP.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	N Hoey R O'Keeffe	D Horn	On file	D Horn	On file	09.04.2020
B	G Bertrand X Byrne R O'Keeffe	D Horn	On file	D Horn	On file	18.06.2020
0	G Bertrand X Byrne R O'Keeffe	D Horn	On file	D Horn	On file	14/08/2020
1	R O'Keeffe	D Horn	On file	D Horn	On file	26/08/2020
2	G Bertrand	D Horn	On file	D Horn	On file	16/10/2020
3	G Bertrand	D Horn		D Horn		28/10/2020

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