



# Shire of Gingin Coastal Management on the Gingin Coastline **A SUMMARY** June 2023



# OUR COAST IS CHANGING

Coastal zones are vulnerable to adverse impacts from nature – specifically - erosion (the loss of beach and vegetation) and inundation (flood from sea water).

The risk to people and property is assessed against how well prepared a community is for storm events and the capacity to recover after events.

The Shire of Gingin's (the Shire's) coastal towns of Lancelin, Ledge Point, Seabird and Guilderton are subject to erosion and inundation risks in different ways at each coastal settlement. This has already had significant impact on its communities, and these impacts are predicted to become more significant over the coming 50-100 years.

The Shire is being forced to make difficult decisions for the safety of the community in response; to manage those risks by being prepared; and by thinking strategically about what to do, when to do it, and how to pay for it.

This plan for action has been established through a process of scientific research, testing and modelling, community and stakeholder engagement, and follows the most up-to-date policy framework available. This includes preparation of a **Coastal Hazard Risk Management Adaptation Plan** (CHRMAP) and a **Coastal Management Strategy** (CMS).

This Summary comprises an easy-to-read summary of the technical elements of the CHRMAP and CMS with clear implementation actions for the Shire, other decision makers and the local community.

These actions will see many changes over the coming years, including:

- Substantial changes to the local planning framework to limit certain development and better warn the community about the likely changes to be expected;
- Working with service providers like real estate agents and settlement agents to help build awareness about the long term strategy;
- Advocating to Government Agencies and Services Authorities (like Water Corporation) for support with managing their facilities and assets, and support for coastal adaptation funding;
- Establishing a program of coastal management actions such as coastal planting and revegetation which aim to improve the ability of the natural environment to recover after storm events; and
- Making sure there are opportunities for everyone to get involved in managing the coast, so that we can continue to enjoy the coastline well into the future.

In this Summary, you will find some frequently asked questions about coastal hazard planning and a simple explanation of proposed coastal management actions for each town and along the coastline in between. For more detail, the full CHRMAP and CMS can be accessed [here](#).

# SOME BACKGROUND DETAIL

This CHRMAP is the final stage in a detailed assessment of the study area. The assessment considered the existing structures and landscapes within the area, and then considered the impact that inundation, erosion and a rise in sea levels would have on them.

The coastal towns of Gingin have experienced historic storm erosion and are vulnerable to future erosion and inundation due to storm events and predicted sea level rise. This is significant in the context of the study area, as the community has identified the coastal area and assets (building, amenities, natural environment) within it as strongly valued.

The Shire has prepared a number of coastal management plans to respond to these risks and has now consolidated its research to enable implementation of management actions. These plans have been prepared following the Western Australian Planning Commission CHRMAP Guidelines and other relevant guidance. The relationship between documents is illustrated in Figure 1.

These documents are available for anyone interested in the detailed information that underpins the recommendations described in this Summary;

- Coastal Hazard Risk Management Adpatation Plan 2019 by Cardno (now Stantec) (Cardno 2019). Erosion assessment at Lancelin, Ledge Point and Seabird townsites.
- Coastal Inundation Study 2020 by Baird (Baird 2020). Inundation assessment for Lancelin, Ledge Point, Seabird and Guilderton townsites.
- CHRMAP Gap Assessment Technical Report 2023 (Shape Urban 2023a). Erosion and inundation assessment for the Guilderton townsite. Integration of Cardno 2019 and Baird 2020, to consider inundation for Lancelin, Ledge Point and Seabird townsites.
- Coastal Hazard Risk Management Adpatation Plan 2023 (Shape Urban 2023b). Consolidation of all of the technical reports to provide for planning and management recommendations for all townsites that are *long term* actions.
- Coastal Management Strategy 2023 (Shape Urban 2023c). Analysis of opportunities to better manage the coastal zone, to provide for *short term* planning and management recommendations for all townsites

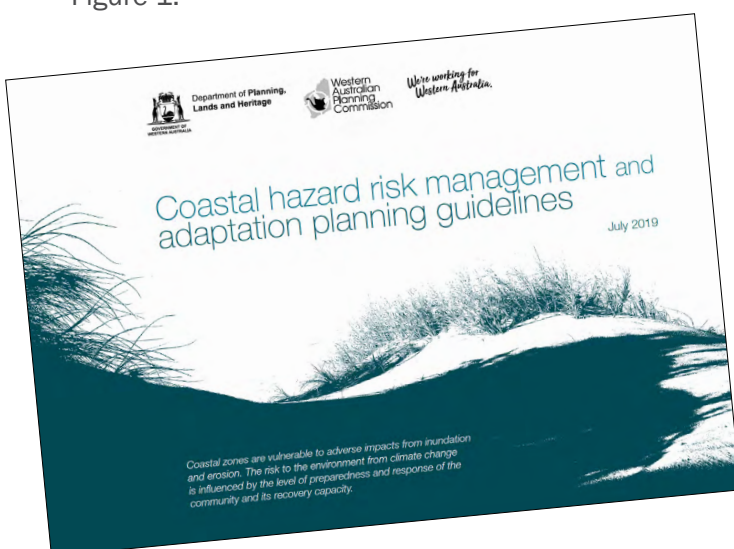




FIGURE 1 COASTAL PLANNING FOR SHIRE OF GINGIN



# AT A GLANCE

# FREQUENTLY ASKED QUESTIONS

## What is a CHRMAP?

CHRMAP is the acronym for a 'Coastal Hazard Risk Management and Adaptation Plan'. It is a study prepared to communicate information about future coastal planning. It includes a technical assessment to understand the existing and predicted coastal processes, includes a social assessment to understand the community values associated with the coastline being studied, and considers financial and environmental implications.

The WA State Government's Coastal Hazard Risk Management and Adaptation Planning Guidelines, established under the Western Australian Planning Commission's *State Planning Policy No. 2.6 - State Coastal Planning Policy*, provides guidance for decision makers to develop and implement effective CHRMAPs.

The CHRMAP will estimate where the coastline is likely to 'move to' in the short, medium and long-term future. By understanding where the coastline is likely to be in the future, it allows us to understand what infrastructure may be impacted by coastal processes and investigate which options for managing these impacts might be appropriate in particular areas.

## What are coastal hazards?

The two main coastal processes that are considered hazards are:

- erosion – the loss of beach and vegetation
- inundation – flood from sea water

A CHRMAP identifies areas that could potentially be impacted by these hazards over the next 100 years, relative to storm events and projected sea level rise. CHRMAP uses 'vulnerability' as a way of identifying impact, which includes an analysis of how likely the impact is to occur, the consequence of the impact, and how easy it is to adapt after the impact.

## What is a CMS?

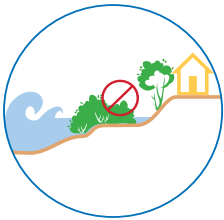
A CMS, or Coastal Management Strategy, is a document prepared to deliver short term action for coastal management. It responds to the recommendations of a CHRMAP, whilst providing more detailed actions for coastal managers to implement, like moderating and managing beach access, replanting vegetation to provide more stable shorelines, and best practice public asset management.



## What are the options for adapting to coastal hazards?

The WA State Government's State Planning Policy 2.6 – State Coastal Planning Policy (SPP 2.6) identifies a hierarchy of four options for adapting to coastal hazards:

### Avoid



Identify future 'no build' areas and use planning controls to prevent new development in vulnerable areas now or in the future.

This can mean that there is a large setback or distance between development and the ocean; which is a good thing, because it gives the coast and rivers room to move naturally. But, it can also mean that the walk to the beach can be a little long sometimes!

### Retreat



Withdraw, relocate or abandon assets that are vulnerable so that the natural environment can move landward as sea levels rise.

This can mean that people with property on the coast may be impacted. It also means that some things like access paths, parks and beach front car parks need to be moved.

### Accommodate



Continue to use the land but adapt to changes by building on piles, converting land uses or growing food or salt-tolerant plants. Typically this requires individual land owners to contribute financially to their own property upgrades over time.

Accommodate can work for flood prone land for a time, however, it also means that power and water and sewer lines need to be lifted which can be expensive. Places that have implemented an accommodate plan do give themselves extra time to make big changes. Accommodate doesn't work as well for erosion issues.

### Protect



Use hard structures (e.g. seawalls) or soft solutions (e.g. revegetation) to protect land from the sea, which may be prohibitively expensive, especially in the long term, and there are limited options for funding that do not require individuals to contribute.

This means fighting against nature, and can result in the loss of a sandy beach, limits to beach access and expensive ongoing maintenance costs. It does mean that ocean fronting properties can remain in place for the time being. Protect is much less effective for inundation, with limited options available in response.

## What is the purpose of the CHRMAP and CMS?

A CHRMAP and CMS provide guidance on what actions need to be taken and in approximately what time frame to best adapt to the changing environment without loss of valued assets or risk to life or property.

The CHRMAP refers to approximate timeframes of short, medium or long term based on estimated timing of impacts, but more accurately uses defined events (big storms) or physical impacts (a specific loss of coastal foreshore) to indicate when a decision must be made.

A CHRMAP and CMS will help to:



Ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical elements



Guide 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 on the coast and access to them



Protect, conserve and enhance coastal zone values, particularly in areas of landscape, biodiversity and ecosystem integrity, indigenous and cultural significance



Establish decision making triggers and planning horizons to respond to the impact of coastal hazards on the community



## How will this affect me?

Coastal vulnerability will affect different people in different ways depending on where they live and how they access, use and enjoy the coastline.

### I am a [Private property owner in a coastal hazard area](#)

**Planning Controls** - Use of planning controls to allow continued use of current infrastructure until such time that impacts arise but that restrict further or new development will be introduced to indicate to relevant owners that an asset is vulnerable. This will help all landowners to make informed decisions about the level of risk they are willing to accept, and inform the community that risk management and adaptation is likely to be required, and that the landowner may share the responsibility for that adaptation.

Controls will include new minimum finished floor levels in some areas, which will result in significant changes to the style of development that may be observed over the coming decades, noting that it may be some two-to-three years before these controls are implemented.

**Notification on your Certificate of Title** - If a planning or development application is submitted for a lot located in a coastal hazard area, then SPP 2.6 requires a notification to be placed on the certificate of title as a condition of approval, identifying that the lot may be vulnerable to coastal hazards.

**Note to Real Estate and Settlement Agents** - Local estate agents will be advised on the risks that are predicted, so that prospective purchasers are not surprised by the information in the CHRMAP and CMS.

When property reports are sought from the Shire during the settlement process, a notification in the Shire's database for the property will be communicated to settlement agents.

### I am a [User of the coastline](#)

Some areas of the Shire's coastline will become vulnerable over the next 100 years. This includes beaches, access ways, footpaths, carparks, toilets, roads and public open space areas.

This document provides a summary of the short-term management actions to be undertaken. These are largely focused on 'behind the scenes' actions to better prepare the Shire for future coastal hazard management

Long term, adaptation strategies such as protection or managed retreat will be required when coastal hazards occur.

In areas identified for potential future protection, the construction of structures such as seawalls will mean that the natural sandy beach will eventually be lost in these locations and that access to those stretches of coastline might be affected.

In areas identified for future managed retreat, existing infrastructure may gradually be permanently removed or relocated if coastal hazards cause damage during storm events. The natural sandy beach and dunes will be retained in these areas.

## Am I responsible if my property is affected?

This is complex, but the short answer is yes, you are responsible for management of your own property. There is no legal obligation on the State or local governments to protect private assets within coastal hazard areas, or to compensate for any losses incurred due to coastal hazards. Should damaged assets pose a risk to public safety, removal may be required.

State or local Government are also not obliged to protect public assets, although they would need to ensure public safety and so might need to remove assets that would be of danger to the community, if maintaining the asset is not an option.

SPP 2.6 requires that local governments prepare a CHRMAP to identify coastal hazard areas, outline potential adaptation pathways and share this information with the community, so we can all plan together.

Groups of landowners may be willing and have the capacity to fund protection works privately, that the Shire cannot afford or seek funding for via other means. In this case, detailed planning and engineering works will still be required and funding for both capital and maintenance expenses will need to be committed by the landowners. Engineering design would need to prove that the works would not have a negative impact on adjacent coastlines, areas or valued natural assets.

The Shire will prepare a fact sheet for landowners to explain these obligations and describe the approach required to take this pathway.

## Who will pay for adaptation?

There is no current committed funding by state and federal governments to assist local governments in paying for coastal adaptation. A range of grants are available to support local governments to plan and implement sustainable adaptation options and partner with community groups to undertake on-ground management activities, however there is a very limited funding pool across all Western Australian coastal local governments.

The Coastwest, Coastal Management Plan Assistance Program (CMPAP), Coastal Adaptation and Protection (CAP) and Hotspot Coastal Adaptation and Protection (H-CAP) grants are managed by the Department of Planning, Lands and Heritage and the Department of Transport's coastal sections. There is no emergency funding and funding is not guaranteed anywhere.

Funding can be sourced locally via rates and levies, where the community accepts that the adaptation measure will benefit all ratepayers.

The State planning policy has defined a pathway for 'User Pays'. This establishes a principle that the beneficiaries of adaptation options should pay, as they stand to gain. Where adaptation options are designed to protect specific sections of coastal land and assets that are primarily to benefit private property, an assessment determines who should contribute and how much.

Knowing that any type of coastal adaptation will be expensive, the Shire will use the CHRMAP recommendations to commence planning and budgeting in conjunction with State Government agencies and the affected community, to ensure it is well placed to undertake works as necessary, when the time comes.



# LANCERIN

# WHAT DO I NEED TO KNOW ABOUT LANCELIN?

The Lancelin community are strongly aligned on how much the coast is valued for recreation, its natural ruggedness, and the economic benefits it brings to the town.

When the initial assessments began, erosion was a major concern, because the community could see the day-to-day impacts on some of the most highly valued locations, including Grace Darling Park and the Volunteer Sea Rescue facility.

Cardno 2019 preferenced a retreat option, but did allow for investigating seawalls and/or groynes to manage this impact. The Baird 2020 study identified more clearly a different and, realistically, more significant impact; which is flooding.

The likelihood of inundation in large parts of the town - from flood waters coming from the sea - results in most of the town becoming vulnerable at High or Very High levels within 50 years (2070).

The locations and their level of predicted vulnerability at 2040, 2070 and 2110 are illustrated in Figure 2, Figure 3 and Figure 4 respectively.

Combined with increasing groundwater levels (normal surface water that might be seen on the land) the two studies indicate that Lancelin will be difficult to protect in the long term, for the following reasons:

- Seawalls can be quite effective as an erosion mitigation option, but can have the effect of creating outflow barriers and essentially 'trapping' any flood water that comes onto land; and also stopping any over land flooding (from rain) or rising stormwater, from escaping. Seawalls will also have a negative impact on useable beach over time, which the community has identified as highly valued.

- Groynes can be quite effective as an erosion mitigation option, but will not be able to stop flood waters from coming on to the land.
- Flooding can be managed through building and development controls, but underground services will require upgrades over time to remain safe, and in the event of rising groundwater may become unsafe. Service providers would need to commit to maintaining the infrastructure, and their own risk based assessment may mean that the significant funding required from the State may not be forthcoming.
- High groundwater makes building more challenging and can present a public health risk.

An offshore reef, requested by the community as an option, has also been discounted due to the likely costs associated and lack of certainty for erosion management, as well as the fact that it will not be effective against flooding and rising groundwater, especially with long term sea level rise.

A possible alternatives to seawalls, groynes, building and development controls and a reef is the removal of all assets, filling the underlying land with sand, and rebuilding the town site. Such an action would be prohibitively expensive, is unlikely to be funded, and the disruption would impact the town significantly. Once all assets are removed, it simply makes more sense to find a less vulnerable location.

Consequently, the 2023 CHRMAP makes a strong recommendation that a retreat pathway is adopted for Lancelin.

FIGURE 2

# LANCELIN COASTAL VULNERABILITY BY 2040

**Vulnerability by 2040**

Erosion	High	Very High
Inundation	High	Very High

- Coastal dune/vegetation
- Residential
- Tourism and economic activity
- Public assets (Grace Darling Park, roads, schools)



FIGURE 3

# LANCELIN COASTAL VULNERABILITY BY 2070

**Vulnerability by 2070**

Erosion	High	Very High
Inundation	High	Very High

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- 1 Coastal dune/vegetation
- 2 Residential
- 3 Tourism and economic activity
- 4 Public assets (roads, schools)

FIGURE 4

# LANCELIN COASTAL VULNERABILITY BY 2110

**Vulnerability by 2110**

Erosion	High	Very High
Inundation	High	Very High

- 1 Coastal dune/vegetation
- 2 Residential
- 3 Tourism and economic activity
- 4 Public assets (roads, schools)

## What will the Shire do to deliver this recommendation?

The following actions will be progressed by the Shire to ensure a long term sustainable pathway for Lancelin.

### Public Assets (Shire and Government owned)

The Shire will avoid all further development of major and minor infrastructure in the affected area. Some infrastructure such as coastal seating, shelter and access could continue to be installed, provided it is recognised as sacrificial and there is a plan to remove it if damaged by coastal hazards.

### Private assets

The Shire will immediately commence the process to introduce planning controls for private development so that private landowners can continue to enjoy the coastline for as long as possible whilst reducing stress on the natural environment and risk to public safety.

These controls will include Notifications on Title and some development restrictions in the most vulnerable locations.

### Whole of townsite

The Shire will commence investigations to determine options for appropriate longer-term relocation/town scale retreat. This will occur in conjunction with State Government Agencies, given the significance of the proposal.

The process will consider nearby or alternative locations that may be suitable for a new town settlement, that might still enjoy the Lancelin environment, and the Shire will work closely with the community to progress this option.

By 2050 the Shire will be prepared with appropriately zoned land available for relocation of properties/assets. This will remove hazard risk entirely and provide the community with a level of certainty about their coastal lifestyles.

The Shire will carefully monitor changes in the coastal environment, to see if changes are happening faster, slower, or not at all. The Shire will also work closely with service authorities to make sure underground services are managed appropriately in the short term.

An emergency management plan will be established, to ensure community safety is managed in the unlikely event that a severe storm and overland flooding event occur simultaneously. This also recognises the limitations of road access to the town from Indian Ocean Drive.

In the short term, the Shire will complete a detailed investigation on groundwater and stormwater, which may result in a network of new vegetated swales that better manage existing groundwater levels.

Alongside this, the Shire will either deliver or advocate for a number of immediate and short term management actions that delay coastal hazard impacts, as follows:

- Revegetation and bolstering of the dunes to allow natural vegetation to work harder for managing erosion, and encourage the community to get involved in this.
- Reduction in four-wheel-driving access, especially in proximity to the primary dunes of the townsite so that erosion is not exacerbated.
- Reduction in pathways along the primary dune to reduce the 'breaks' in the dune and enable better vegetation growth.
- Improved signage, including interpretive information about the area.

The Shire will investigate sand nourishment and dune bolstering, noting that it can be ineffective at times, and that suitable sand for this task is also scarce, making it expensive.

Figure 5 illustrates some of the proposals being actioned for Lancelin.



FIGURE 5

# LANCELIN RECOMMENDED COASTAL MANAGEMENT ACTIONS

## Management Actions

- 1 Revegetate dunes
- 2 Restricted 4WD access
- 3 Consolidate and reduce beach paths
- 4 Modify caravan parks to light camping
- 5 Encourage windsurfing rigging here (or outside of townsite)
- 6 Investigate groundwater
- 7 Create a network of vegetated swales for drainage
- 8 Trial dune bolstering





# LEDGGE POINT

# WHAT DO I NEED TO KNOW ABOUT LEDGE POINT?

The Ledge Point community have a strong connection to the coastline for both the experience of the natural environment and for beach access and use.

Ledge Point is currently impacted by erosion, and the loss of previous groyne is a more recent reminder of past practices; and what happens when adequate funding for maintenance and repair is not available.

The vast majority of the townsite is not directly impacted by either erosion or inundation. Properties on De Burgh Street are a notable exception, as are some of the beach access points. These are all subject to erosion effects and requiring some adaptation response.

Cardno 2019 preferred a retreat option over the long term, but did allow for investigating seawalls and/or groynes in the short term, and particularly for the area south of the jetty suggested groynes to manage this impact.

Shape Urban 2023b did not recommend to alter this pathway; with the exception that the consolidated CHRMAP recognises that the primary beneficiaries of any protect measure will be private property owners - more than 96% of the benefit of protection works would be experienced by private landowners only.

This implies that any protection works would need to be predominantly funded by those beneficiaries, should protection works be progressed. Funding would also need to include the cost of completing detailed design and long term maintenance (25-50 years depending on the adaptation option). These costs could be in the order of \$1.2 million - \$20 million; spread across the small number of beneficiary's this may exceed the appetite of the impacted land owners.

The locations vulnerable and their level of predicted vulnerability only exceeds Moderate prior to 2070 for the De Burgh Street properties, which are vulnerable at Very High levels at 2030 (imminent).

As such, for this townsite the summary illustrates only the 2070 timeframe, with the De Burgh Street properties noted as being earlier (see Figure 6).

The 2023 CHRMAP continues to recommend a retreat pathway is adopted for Ledge Point, whilst recognising that there are opportunities for private entities to work together and agree alternative pathways if predominantly self funded.

FIGURE 6

# LEDGE POINT COASTAL VULNERABILITY BY 2070



## Vulnerability by 2070

Erosion      ● High      ● Very High

Inundation   ● High      ● Very High

- 1 Coastal dune/vegetation
- 2 Residential (De Burgh from 2030)
- 3 Tourism and economic activity
- 4 Public assets (roads, schools)

## What will the Shire do to deliver this recommendation?

The following actions will be progressed by the Shire to ensure a long term sustainable pathway for Ledge Point.

### **Public Assets (Shire and Government owned)**

The Shire will avoid all further development of major and minor infrastructure in the affected area. Some infrastructure such as coastal seating, shelter and access could continue to be installed, provided it is recognised as sacrificial and there is a plan to remove it if damaged by coastal hazards.

Importantly, the Shire will progress plans to relocate the boat launching area from its current location. The existing activity at the site exacerbates coastal erosion in an area where it would be better avoided. A reconfigured car park in the existing boat launching access location will create a cul-de-sac in the northern end of De Burgh Street to retain beach access parking for walking access.

Access to properties at 10-16 De Burgh Street will need to be managed via a local only road, which will enable substantial reduction of the road width and revegetation/rehabilitation of the dune in this location.

A suitable location for the new boat launching area is just north of the townsite off Robertson Drive and is already partially set up to deliver this outcome.

This will impact a number of property owners who currently have ready access to the beach front; however, the rehabilitation of this area will extend the life cycle of those same properties, as well as benefiting other residents of Ledge Point such that they many continue to enjoy a sandy beach.

### **Private assets**

The Shire will immediately commence the process to introduce planning controls for private development so that private landowners can continue to enjoy the coastline for as long as possible whilst reducing stress on the natural environment and risk to public safety.

These controls will include Notifications on Title and some development restrictions in the most vulnerable locations.

As noted, private landowners may choose to work together and agree alternative pathways such as seawalls and groynes. However, the cost of this would need to be predominantly self funded, and there is a risk that the balance funding will not be available if the rest of the community does not support the associated on-costs through rates or levies.

In this case, detailed planning and engineering works will still be required and funding for both capital and maintenance expenses will need to be committed by the landowners. Engineering design would need to prove that the works would not have a negative impact on adjacent coastlines, areas or valued natural assets.

## Whole of townsite

The Shire will commence investigations to determine options for appropriate longer-term retreat of properties that are affected by erosion, with the aim to have a suitable pathway and planning mechanisms in place by 2070 when it is predicted that risk will become intolerable.

The process will consider whether nearby land is available for lot-by-lot relocation, and the Shire will work closely with the community affected to determine suitability.

The Shire will also carefully monitor changes in the coastal environment, to see if changes are happening faster, slower, or not at all.

The Shire will work closely with service authorities to make sure underground services are managed appropriately in the short term, and relocated away from the coastal edge where possible.

An emergency management plan will also be established, to ensure community safety is managed in the unlikely event of a severe storm impacting ocean front property.

Along side this, the Shire will either deliver or advocate for a number of immediate and short term management actions that delay coastal hazard impacts, as follows:

- Revegetation of the dunes to allow natural vegetation to work harder for managing erosion, and encourage the community to get involved in this.
- Reduction in four-wheel-driving access, especially in proximity to the primary dunes of the townsite so that erosion is not exacerbated.
- Reduction in pathways along the primary dune to reduce the 'breaks' in the dune and enable better vegetation growth.
- Improved signage, including interpretive information about the area.

The Shire will review the Jones Street road access to the beach and a number of quite substantial 4WD access tracks to the south of Ledge Point to determine if these can be consolidated to enhance the ability of coastal vegetation to manage erosion. The Shire will engage with the community to understand ways to better manage these access roads.

Figure 7 illustrates some of the proposals being actioned for Ledge Point.

FIGURE 7

# LEDGE POINT RECOMMENDED COASTAL MANAGEMENT ACTIONS

## Management Actions

- 1 Revegetate dunes
- 2 Restricted 4WD access
- 3 Consolidate and reduce beach paths, including vehicle access
- 4 Remove existing boat launch area and reconfigure and rehabilitate beach access parking area
- 5 Introduce new boat launch area with 4WD access going north



# SEABIRDS



# WHAT DO I NEED TO KNOW ABOUT SEABIRD?

The Seabird community have a unique relationship with coastal management and are very familiar with coastal decision making, and how this impacts the coastline.

Seabird is currently impacted by erosion, and the establishment of a temporary seawall in recent years has illustrated both the benefits and challenges of hard protection structures.

Funding for maintenance remains an issue, and there are some concerns that the seawall is exacerbating erosion to the northern location and impacting properties there.

The vast majority of the townsite is not directly impacted by either erosion or inundation. Properties on Turner and McCormick Streets are a notable exception, as are some of the beach access points. These are all subject to erosion effects and requiring some adaptation response.

Cardno 2019 preferenced a retreat option over the long term, but did allow for investigating seawalls and/or groynes to manage this impact.

Shape Urban 2023b did not recommend to alter this pathway; with the exception that the consolidated CHRMAP recognises that the primary beneficiaries of any protect measure will be private property owners - more than 81% of the benefit of protection works would be experienced by private landowners only.

This implies that any protection works would need to be predominantly funded by those beneficiaries, should protect works be progressed, and all landowners in the affected area would need to support this approach.

Raising of funds would need to include the cost of completing detailed design and engineering investigations and long term maintenance (25-50 years depending on the adaptation option). These costs could be in the order of \$4 million - \$28 million; spread across the small number of beneficiaries. This may exceed the appetite of the impacted land owners.

There are several locations experiencing High levels of vulnerability at the current timeframe. This includes the beach, coastal and dune vegetation, and car parks and roads. Residential properties on Turner and McCormick Street are at Very High vulnerability levels at current day, and adaptation planning is urgently required.

Assets vulnerable at 2040 are illustrated in Figure 8 and assets vulnerable by 2070 are illustrated in Figure 9.

The 2023 CHRMAP continues to recommend a retreat pathway is adopted for Seabird, whilst recognising that there are opportunities for private entities to work together and agree alternative pathways if predominantly self funded.

FIGURE 8

# SEABIRD COASTAL VULNERABILITY BY 2040

**Vulnerability by 2040**

Erosion	High	Very High
Inundation	High	Very High

- 1 Coastal dune/vegetation
- 2 Residential
- 3 Tourism and economic activity
- 4 Public assets (roads, schools)

FIGURE 9

# SEABIRD COASTAL VULNERABILITY BY 2070



## Vulnerability by 2070

Erosion      ● High      ● Very High

Inundation   ● High      ● Very High

1 Coastal dune/vegetation

2 Residential

3 Tourism and economic activity

4 Public assets (roads, schools)

## What will the Shire do to deliver this recommendation?

The following actions will be progressed by the Shire to ensure a long term sustainable pathway for Seabird.

### **Public Assets (Shire and Government owned)**

The Shire will avoid all further development of major and minor infrastructure in the affected area. Some infrastructure such as coastal seating, shelter and access could continue to be installed, provided it is recognised as sacrificial and there is a plan to remove it if damaged by coastal hazards.

Importantly, the Shire will progress plans to relocate the publicly managed beach boat launching area from its current central townsite location. The existing activity at the site exacerbates coastal erosion in an area where it would be better avoided.

In the existing location, a reconfigured car park and new light weight board walk is suggested to retain beach access. The reduction of length of Edwards Street will enable revegetation/ rehabilitation of the dune in this location and enhancement of the nearby park.

A suitable location for the new boat launching area is just north of the townsite where tracks already exist.

This will impact a number of property owners who currently have ready access with their boats to the beach; however, the rehabilitation of this area will extend the time available to effect good coastal adaptation outcomes, will benefit the whole community and extend the ability to continue to enjoy a sandy beach.

The Shire will also investigate the removal of the seawall in conjunction with adjacent landowners, recognising the recommendation for long term retreat from the Seabird coastline.

### **Private assets**

The Shire will immediately commence the process to introduce planning controls for private development so that private landowners can continue to enjoy the coastline for as long as possible whilst reducing stress on the natural environment and risk to public safety.

These controls will include Notifications on Title and some development restrictions in the most vulnerable locations.

As noted, private landowners may choose to work together and agree alternative pathways such as seawalls and groynes. However, the cost of this would need to be predominantly self funded, and there is a risk that the additional funding contribution will not be available if the rest of the community does not support the associated on-costs through rates or levies. The additional funding contribution would constitute a significant rates or levy impost on the community at large.

In this case, detailed planning and engineering works will still be required and funding for both capital and maintenance expenses will need to be committed by the landowners. Engineering design would need to prove that the works would not have a negative impact on adjacent coastlines, areas or valued natural assets.

## Whole of townsite

The Shire will commence investigations to determine options for appropriate longer-term retreat of properties that are affected by erosion, with the aim to have a suitable pathway and planning mechanisms as soon as possible (within 10 years).

The process will consider whether nearby land is available for lot-by-lot relocation, and the Shire will work closely with the community affected to determine suitability.

The privately owned ex-caravan park can be considered in a slightly more unique way, where possible relocation within the boundary or within immediately adjacent land or as part of acquired road reserves may be possible. The Shire will engage directly with this group of landowners.

The Shire will also carefully monitor changes in the coastal environment, to see if changes are happening faster, slower, or not at all. This is particularly the case in front of the existing seawall; where severe storms may speed up the degradation of the existing infrastructure.

The Shire will investigate ways to stabilise the seawall edge that could be implemented locally and with community support.

The Shire will also work closely with service authorities to make sure underground services are managed appropriately in the short term, and relocated away from the active coastal hazard zone where possible.

An emergency management plan will also be established, to ensure community safety is managed in the unlikely event of a severe storm impacting ocean front property.

Alongside this, the Shire will either deliver or advocate for a number of immediate and short term management actions that delay coastal hazard impacts, as follows:

- Revegetation of the dunes to allow natural vegetation to work harder for managing erosion, and encourage the community to get involved in this.
- Reduction in four-wheel-driving access, especially in proximity to the primary dunes of the townsite so that erosion is not exacerbated.
- Reduction in pathways along the primary dune to reduce the 'breaks' in the dune and enable better vegetation growth.
- Improved signage, including interpretive information about the area.

With regard to degraded dune areas, the Shire will review Turner Street, the end of McCormick Street and the numerous 4WD access tracks that run very close to the coastline both north and south of the town site. It is intended that these be relocated away from the active coastal hazard edge where at all possible, and that beach access tracks run generally perpendicular to the coast, albeit much more consolidated.

Access directly in front of the privately owned ex-caravan park and along Williams Way will also be reviewed, recognising this also exacerbates coastal erosion. In lieu of this access point a board walk is suggested in this location.

This will enhance the ability of coastal vegetation to manage erosion. The Shire will engage with the community to understand ways to better manage these access roads.

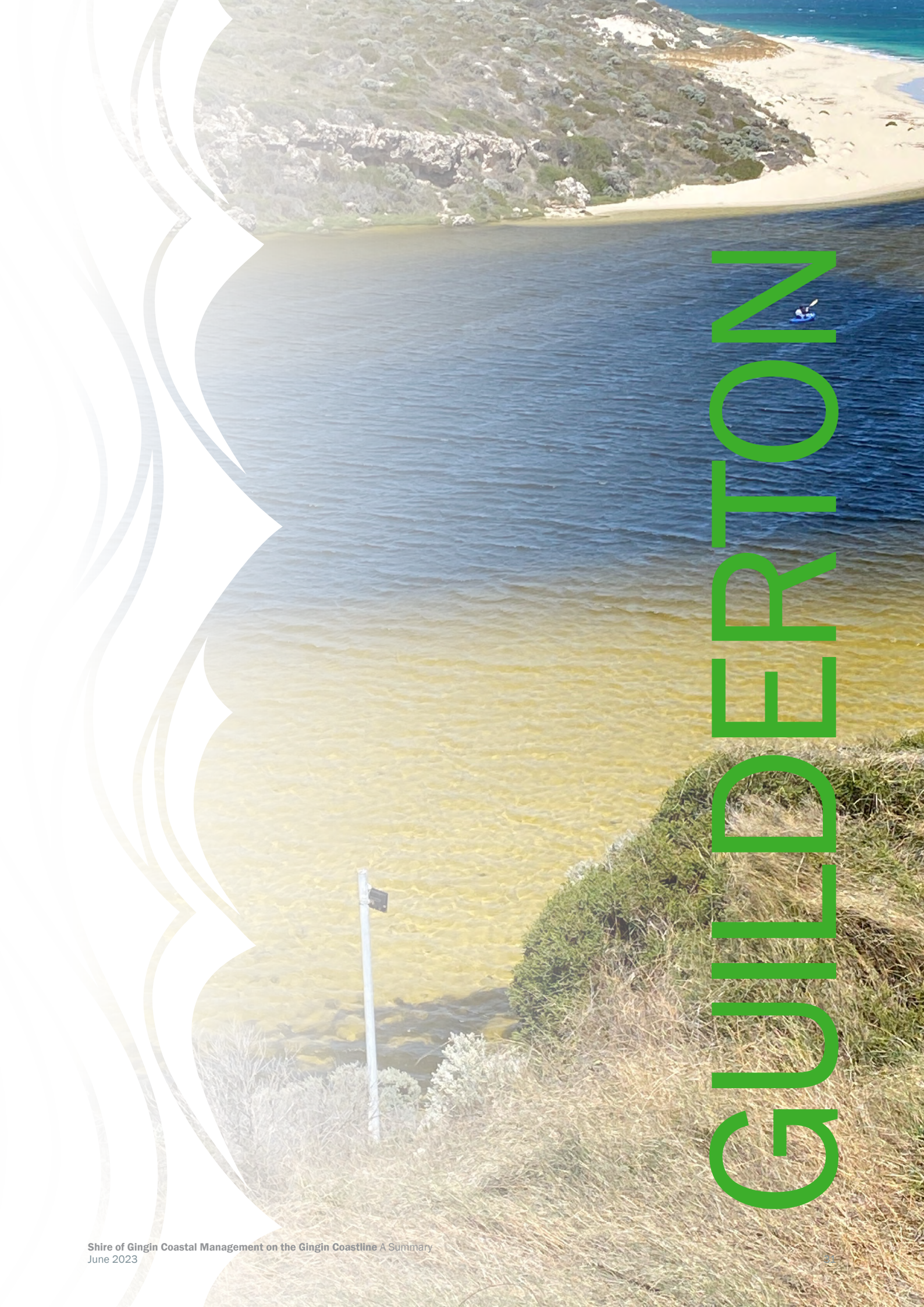
Figure 10 illustrates some of the proposals being actioned for Seabird.

FIGURE 10

# SEABIRD RECOMMENDED COASTAL MANAGEMENT ACTIONS

## Management Actions

- 1 Revegetate dunes
- 2 Restricted 4WD access
- 3 Consolidate and reduce beach paths, including vehicle access
- 4 Remove existing boat launch area and reconfigure and rehabilitate beach access parking area
- 5 Introduce new boat launch area with 4WD access going north
- 6 Boardwalk access to the beach



# GUILDFERTON

# WHAT DO I NEED TO KNOW ABOUT GUILDERTON?

Guilderton stands alone in the Shire as a community enjoying both ocean and river frontage. Historical management of the river foreshore supports a highly valued waterfront space.

Guilderton is a relatively stable coastal environment and despite multiple water interfaces is fortunate in not having substantial assets affected by coastal hazards.

The vast majority of the townsite is not directly impacted by either erosion or inundation. Properties at the intersection of Gordon and Fraser Street and the Gordon Street car park are a notable exception, and will be subject to erosion effects over the longer term, requiring some adaptation response.

Shape Urban 2023b recommends avoiding substantial development and progressively retreating from the hazard zone over the 100 year timeframe. No private asset is predicted to be affected until the end of the century. All works proposed benefit the broader community equally.

There are several locations experiencing High or Very High levels of vulnerability at the current timeframe. Whilst inundation is a factor, the capacity of most assets to adapt if impacted is high.

Roads and recreation areas will experience impacts in the short term, but can be progressively relocated or removed at end of design life for little impact.

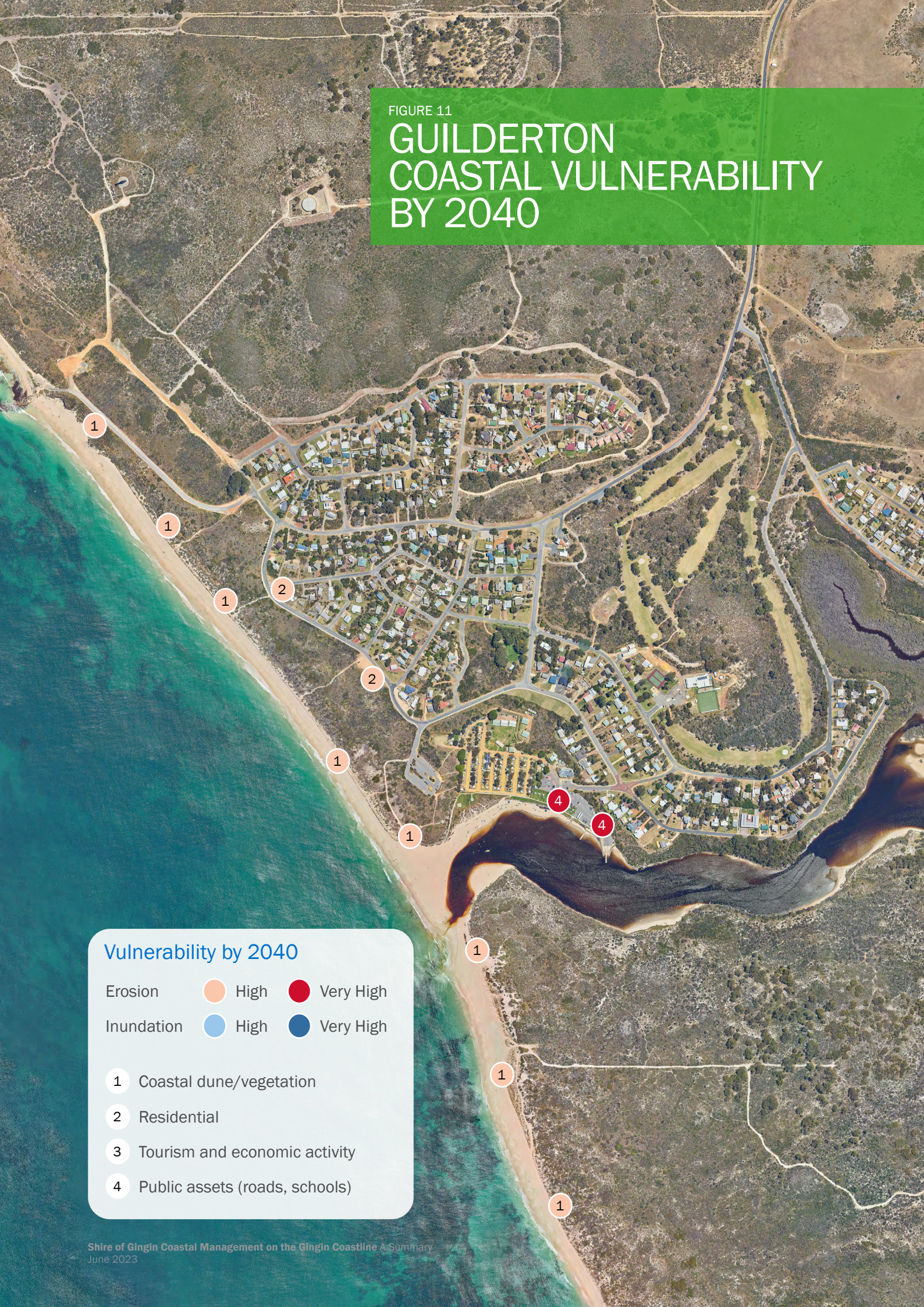
Assets vulnerable at 2040 are illustrated in Figure 11. There is no illustration of Guilderton at 2070 as there is no change. Residential properties at Gordon Street become vulnerable at Very High levels by 2110.

The CHRMAP recommends an accommodate and retreat pathway is adopted for Guilderton.



FIGURE 11

# GUILDERTON COASTAL VULNERABILITY BY 2040



## Vulnerability by 2040

Erosion      ● High      ● Very High  
Inundation   ● High      ● Very High

- 1 Coastal dune/vegetation
- 2 Residential
- 3 Tourism and economic activity
- 4 Public assets (roads, schools)

## What will the Shire do to deliver this recommendation?

The following actions will be progressed by the Shire to ensure a long term sustainable pathway for Guilderton.

### **Public Assets (Shire and Government owned)**

The Shire will avoid all further development of major and minor infrastructure in the affected area. Some infrastructure such as coastal seating, shelter and access will continue to be installed, provided it is recognised as sacrificial and there is a plan to remove it if damaged by coastal hazards.

Importantly, the Shire will progress plans to formalise access to the beach for 4WD access north of the townsite, by closing the current section of Mortimer Road this is close to and within active coastal hazard zone, and consolidate the existing Forrester Road track.

This will provide a suitably wide, managed foreshore zone, whilst providing direct 4WD access to the beach north of the existing (degraded) groyne. 4WDing would only be permitted north of that access point.

An assessment of road design along Gordon Street at the T-junction of Fraser Street and along Guilderton Road at the edge of Silver Creek will be undertaken to enable planning for the eventual relocation of these two assets away from the active coastal hazard zone. Both locations appear to comprise adequate space for relocation entirely within, or very close to, the existing road reserve boundaries.

Gordon Street may need to be closed at this location by the end of the century, however, retreat planning for this location will also be well advanced at that time.

In the short term the Shire will work with the caravan park lessee to ensure all new infrastructure is lightweight and can withstand minor coastal hazard impacts, including flooding.

### **Private assets**

The Shire will immediately commence the process to introduce planning controls for private development on Gordon Street so that private landowners can continue to enjoy the coastline for as long as possible whilst reducing stress on the natural environment and risk to public safety.

These controls will include Notifications on Title and some development restrictions in the most vulnerable locations.

### **Whole of townsite**

The Shire will commence investigations to determine options for appropriate longer-term retreat of properties that are affected by erosion, with the aim to have a suitable pathway and planning mechanisms established by 2070.

The Shire will work closely with the community affected to determine suitability.

The Shire will undertake ongoing coastal monitoring, to see if changes are happening faster, slower, or not at all, and will continue to undertake rivers edge stabilisation as required. The Shire will also work closely with service authorities to make sure underground services are managed appropriately in the short term.

An emergency management plan will also be established, to ensure community safety is managed in the unlikely event of a severe storm impacting ocean front property.

Alongside this, the Shire will either deliver or advocate for a number of immediate and short term management actions that delay coastal hazard impacts, as follows:

- Revegetation of the dunes to allow natural vegetation to work harder for managing erosion, and encourage the community to get involved in this.
- Reduction in four-wheel-driving access, especially in proximity to the primary dunes of the townsite so that erosion is not exacerbated.
- Reduction in pathways along the primary dune to reduce the 'breaks' in the dune and enable better vegetation growth.
- Improved signage, including interpretive information about the area.

### **Aboriginal History**

Guilderton has a rich and complex Indigenous history, impacted by colonisation. Local people were removed and many Aboriginal people from outside the location as far north as the Pilbara and the Kimberley were housed in a group camp at the nearby Moore River settlement; representing many people of the Stolen Generation and others.

There is limited understanding of the complex stories of the area, which presents a unique opportunity for Guilderton.

The Shire will work closely with the local Yued Elders of the Noongar nation to establish a program of storytelling through signage, wayfinding and art in the townsite reflecting the intent of the Shire of Gingin Cultural Heritage Management Plan 2016. Dual naming of sites and locations will be progressed.

Figure 12 illustrates some of the proposals being actioned for Guilderton.

FIGURE 12

# GUILDERTON RECOMMENDED COASTAL MANAGEMENT ACTIONS

## Management Actions

- 1 Revegetate dunes
- 2 Restricted 4WD access
- 3 Consolidate and reduce beach paths, including vehicle access
- 4 Introduce more formal beach access area
- 5 Formalise beach access
- 6 Manage future development of foreshore and caravan sites
- 7 Remove lookout when affected by coastal hazards
- 8 Redesign and realign roads within reserve

# WHAT HAPPENS NOW?

The Shire has a lot of work to do to action these and the more detailed recommendations that can be found in the CHRMAP and CMS. Many of these actions will take 5-10 years to progress; some will take decades to deliver.

## To our community,

Thank you so much for your involvement in preparing the documents that support our coastal journey. We could not have done the work without the commitment of our many community members, short and long term, permanent or visitor alike.

If you belong to one of these towns, and you believe you are affected by any of the recommendations and proposals, make sure your stay in contact with the Shire.

Coastal Planning along the Gingin Coastline is going to be a whole-of-community process, and we will not be able to do it in isolation. A project website exists and will continue to be updated as planning gets underway.

Stakeholder groups will be convened for various action items, particularly related to coastal planting and revegetation, pathway consolidation, closure of tracks and roads, and where any private properties are directly impacted. Register to be involved in a relevant group [here](#).

We also understand how complex all the information is, and will continue to prepare fact sheets and share information with you in as many ways as we can.

If you need any help reading, reviewing, sharing or understanding the information, please contact the Shire staff.

## This is Our Coast, and Our Journey.

Warmest Regards,

*Councillor Wayne Fewster*

**Shire President**

Shire of Gingin

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# GINGIN COAST