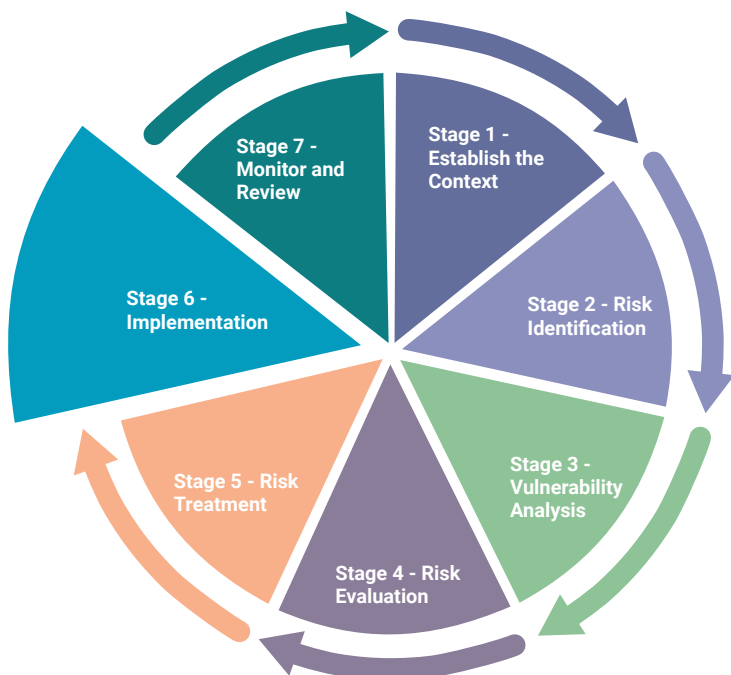


## Introduction to CHRMAP Implementation

The implementation stage of developing a Coastal Hazard Risk Management and Adaptation Plan (CHRMAP), establishes the short, medium and long term implementation plan for each asset, groups of assets or sector, in accordance with the CHRMAP Guidelines.

The reporting component of this stage (the Implementation Plan) focuses on risk management measures identified in Stage 5 of CHRMAP preparation (Risk Treatment) for the coming 5-25 years, whilst setting up flexible approaches to planning more substantial action over a 100-year timeframe.



The recommendations or actions in this section of the report are used by coastal managers to implement the CHRMAP, as well as by other users including water based organisations and clubs, developers, designers and the broader community who may be operating within the coastal hazard zone.

As such, it is likely to be the primary reference section for most users. For this reason, it is worth considering the Implementation Plan from the perspective of these wide and varied user groups as the audience. Implementation will benefit from this section being simply written and very clear.

### Where can I find the guidance to develop the implementation plan of a CHRMAP?

[State Planning Policy 2.6 - State Coastal Planning Policy](#) (SPP 2.6) provides the legislative powers for CHRMAP development.

SPP 2.6 is supported by the [State Coastal Planning Policy Guidelines](#) (2020) and the [WA Coastal Zone Strategy](#) (2017).

The [Coastal Hazard Risk Management and Adaptation Planning Guidelines](#) (2019) (the CHRMAP Guidelines) detail how to develop a CHRMAP.

A [consultant scope of works](#) is also available, and the [Coastal Planning and Management Manual](#) (2003) provides useful information about matters that are often a challenge in developing CHRMAPs.

The CHRMAP Guidelines provide the direction for this stage of a CHRMAP and is referenced in this Fact Sheet.

### Previous Stages

It is important to recognise that the implementation stage of a CHRMAP is the logical conclusion to extensive technical reporting, that includes complex analysis of the existing coastal context, modelling and assessment of options.

Previous stages unpack the detail of the coastal hazards we are planning for and the many options that are available to respond to them. The implementation plan can be written in a way that assumes the reader has read these report sections, and in particular the previous Stage 5.

### What should a CHRMAP Implementation Plan Include?

The implementation stage is Stage 6, and includes a 25-year implementation plan for each asset, groups of assets or management unit, in accordance with the CHRMAP Guidelines.

It will include:

- A description of the proposed risk management measures
- A short term implementation plan
- A medium and long term implementation plan
- Land use planning instruments used to support implementation
- Funding to support implementation

The Implementation Plan section also often includes the recommendations for Stage 7 - Monitor and Review, as monitoring and review are also implementation actions. Both Stage 6 and Stage 7 are covered by this Fact Sheet.

# CHRMAP Implementation Requirements

## Short Term Implementation

### What options are selected and why

The CHRMAP Guidelines require an explanation of the option/s recommended and the measure/s to implement the risk treatment option/s. Benefits, risks and challenges should be considered and discussed, following on from the Stage 5 reporting.

It should also reflect the adaptation hierarchy of Avoid, Retreat, Accommodate and Protect, and the additional pathways of No Regrets and Do Nothing.

**Avoid** - Identify future no build areas and use planning controls to prevent new development in areas at risk now or in the future



**Retreat** - Withdraw, relocate or abandon assets that are at risk; ecosystems are allowed to retreat landward as sea levels rise



**Accommodate** - Continue to use the land but accommodate changes by building on piles, converting land uses or growing flood or salt-tolerant plants



**Protect** - Use hard structures (e.g. seawalls) or soft solutions (e.g. dunes and vegetation) to protect land from the sea. May be prohibitively expensive, especially in the long term



## Resources to implement

This requires consideration of the steps that need to be taken to deliver each recommended action, and is often presented as the first 5-10 years worth of tasks, including when, how much it will cost, how to fund it, and the approvals required.

This section should recognise the human resources required for implementation. It is worth recognising that there are often 20-30 actions recommended as part of a CHRMAP, each of which have project management, collaboration within and external to the organisation, more research and investigation, and further community and stakeholder engagement.

This is true whether the coastal manager (e.g. a Local Government) represents a small spatial area (e.g. the Town of Cottesloe) or a large part of the State (e.g. the Shire of Ashburton).

## Responsibility

This requires a clear identification of who will be responsible for the implementation of an action; who will be the risk management owner.

Stakeholders have indicated that a clear delineation of the team within the organisation that is responsible (director or particular role) is essential to ensuring implementation is taken ownership of, and is also clearer for the entire organisation during business or budget planning.

It is preferred that actions are not identified that are the responsibility of external stakeholders. Actions should be within the scope and responsibility of the coastal manager to implement i.e. the Local Governments' role may only be to liaise, support, advocate etc.

## Approval agencies

The CHRMAP Guidelines require a description of the planning instruments required to implement the recommendations and any amendments to existing planning frameworks. Approval processes and requirements can be extremely varied depending on the adaptation option recommended.

Some actions require no external approval, such as notifying landowners by letter of their property being within the coastal hazard area. Typically, more expensive protect options may require a significant number of steps, including multiple cycles of monitoring, detailed design, funding applications, raising of monies, environmental and planning approvals, heritage approvals and delivery.

The WA Coastal Zone Strategy (in appendix) further expands on agencies that may be involved in approving implementation actions, and provides information about the relevant Acts and legislation.

## Trigger

This requires identification of trigger points for implementing risk management actions, which can include a monitoring framework to determine if a trigger has occurred or is becoming imminent.

The majority of CHRMAP Implementation Sections refer to triggers by either an approximate timeframe (e.g. short, medium or long term), or by a physically observable event (e.g. a long term change in the location of the shoreline).

It is appropriate to avoid being too specific about a date or time as the triggers may well be passed by the time that the action can feasibly be implemented.

## CHRMAP Implementation Requirements

In recent years, a number of organisations have included a more detailed monitoring recommendation per management unit, followed with a detailed description of the monitoring types, where they would be completed, a definition of scope, frequency, responsibility and review schedules.

This level of detail has been highly desirable for users, but given the specific nature of the monitoring program, is best placed in the section of the CHRMAP for 'Stage 7 - Monitoring, or to be provided as a separate standalone working document for the coastal manager.

Working through the triggers for decision making is an excellent way to understand the actions which are a priority, and potentially actions which are a predecessor to other dependent actions. This will support the development of a Gantt Chart or similar; which is suggested by the CHRMAP Guidelines.

Whether through a table or Gantt chart format, the process of stepping through the sub-tasks required to deliver an option will help users to get into the mindset of how many resources, over how long, will be needed for each action.

### Cost

The CHRMAP Guidelines require discussion of the costs associated with implementing selected risk management measures (capital and recurrent costs).

Most CHRMAPs include an approximate cost of each option based on recent local knowledge where available (especially for construction costs). These costs can be subject to change, especially in periods of significant cost variability in the construction sector, and appropriate disclaimers should be applied.

In addition, at the CHRMAP preparation stage, it is likely that the costs associated with protection options may still require investigation and detailed design.

The CHRMAP Guidelines further suggest the CHRMAP include a detailed funding proposal, based on a Benefit Distribution Analysis (BDA), for implementation of protection options.

For this reason, there are some challenges to providing a detailed distribution allocation, and users should exercise a level of pragmatism with regard to the costs included and specific amounts that may be allocated to private parties as part of a user-pays model.

As implementation of user-pays models become more commonplace, more case studies can be drawn upon and examples presented to communities about the procedures for actioning this funding approach.

Where possible in this section, it is desirable to include both the cost estimate and the likely funding source (e.g. grants, rates, user-pays).

### Performance Indicators

This requires consideration of performance review timelines, demonstrating progress of implementation and effectiveness of the risk treatment options.

All CHRMAP should include an action for progress reviews and for overall review of the CHRMAP. Typically, progress reviews are shown as occurring annually (e.g. during business planning or at budget cycles), and CHRMAP review is consistently recommended at ten year intervals with the exception of locations that have imminent at-risk assets where earlier review may be practical.

Monitoring and protection structure audits are common recommendations that also help to measure performance of the CHRMAP and its recommended actions.

In addition, most CHRMAP recognise that conditions may change at any time (e.g. as a result of changes in planning, governance or laws or a substantial storm event that exposes new information). Any of these externalities would also trigger a review of the CHRMAP.

### Communication and Monitoring

This requires the coastal manager to consider who will need to be informed during and at completion of implementation of the risk treatment options. Typically this includes direct communication for those within the coastal hazard area and ongoing commitments to engagement.

Any project plan for major works such as large sand nourishment programs or protection structures should include communications to those most likely to be affected.

This element of the CHRMAP Guidelines also includes monitoring, including how the implementation of the action will be monitored and how frequently. This is included under 'performance indicators' and then further in Stage 7.



## CHRMAP Implementation Requirements

### Medium and Long term Implementation

Whilst the short term actions of a CHRMAP typically represent a number of planning, investigation and project management tasks, the actions recommended beyond the 0-25 year short term timeframe are often more substantial or structural.

The adaptation options or strategies recommended in the medium (25-50 years) to long term (50-100 years) may still require further investigation before they can be confirmed. However, the implementation plan does need to include enough detail of the currently preferred medium and long term strategy in order for users to understand the context for some of the short term actions (e.g. modelling or protection structure audits).

Medium and long term options should be described as current preferred options rather than a certainty. Their description should include a discussion about triggers, and also note the possibility of the options being changed or reconsidered at a later time subject to emerging knowledge, CHRMAP review, or a change in social, environmental or economic circumstances.

Notwithstanding, the description of medium and long term options should not avoid discussion of complex and challenging strategies, including managed retreat, if these are realistic options. In part, the Implementation section of the CHRMAP should be a tool to communicate these potentially difficult decisions in the future, and to manage expectations.

### Land Use Planning Instruments

Stage 6 also requires identification of land use planning instruments that can be implemented as part of risk treatment, and to provide detail on proposed wording, implementation method/s, when to apply, relevant trigger points, and any other supporting information.

A detailed list of the types of planning instruments commonly recommended, along with the type of benefit gained from each, can be found on page 5 of this Fact Sheet.

The City of Albany, Shire of Broome, Shire of Dandaragan and Town of Port Hedland have all introduced the majority of the instruments listed.

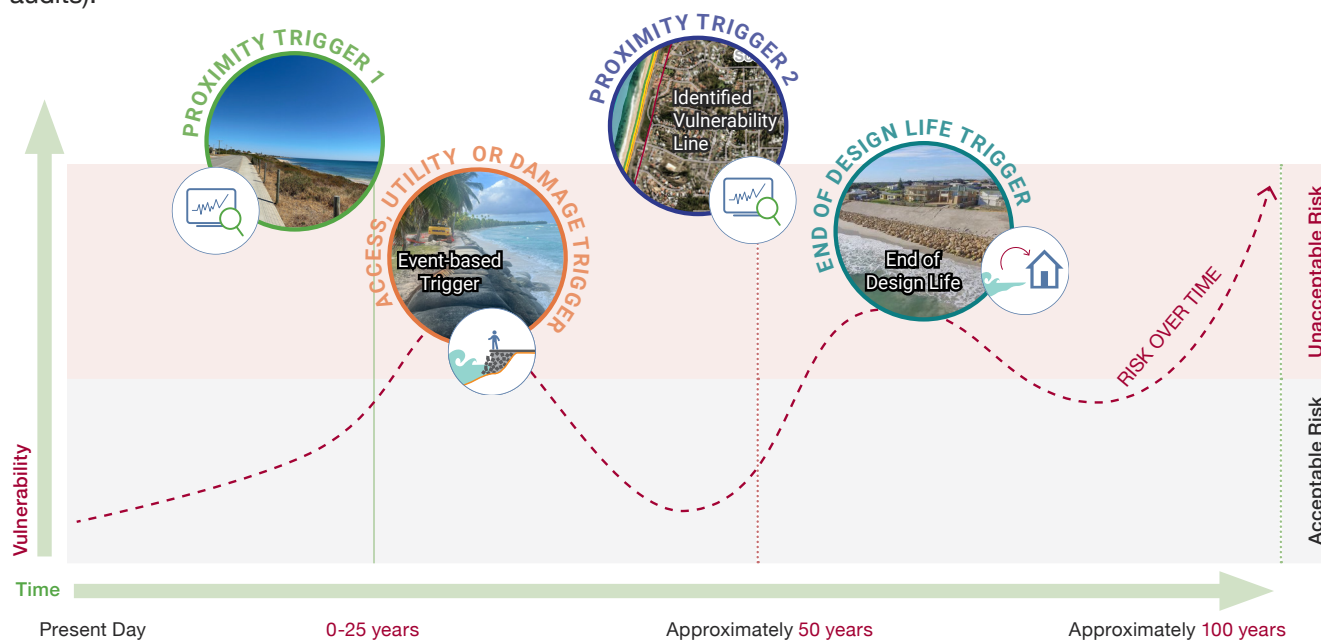
### How to Prioritise Actions

As suggested in the previous section under 'triggers', stepping through the sub-tasks required to deliver an option will help to understand the actions which are a priority, and potentially actions which are a predecessor to other dependent actions.

Land use planning actions take a long time to implement and will often need to be identified 3-5 years before they are implemented. The coastal manager should be prepared as soon as practical.

Communications should be consistent and ongoing, and can be implemented in the normal course of business, as can asset management tasks.

Beyond this, prioritisation will preference actions associated with localities most at risk, especially if the risk is imminent. Following the obvious immediate actions, it would be prudent to prioritise actions according to the next soonest at risk and so on.



## CHRMAP Implementation Requirements

### Funding Implementation

Although this can change from time to time, implementation plans should identify the currently available funding sources (e.g. State and Federal grants, beneficiaries etc) and local government mechanisms for raising funds (e.g. special area rates).

Funding is one of the most significant challenges of coastal hazard planning. The cost for coastal management can be very high and the competition for grants is also very high.

Beneficiaries may not understand the total cost imposed to the taxpayers of WA and overestimate the reality of the State to support adaptation. The WA Coastal Zone Strategy is very clear that individual owners are obliged to contribute where they benefit, rather than expecting others to pay.

### Current available funding sources

- State Grants;
  - Royalties for Regions (DPIRD).
  - Riverbank Grants Scheme (DBCA) (for works on the Swan & Canning Estuary).
- Lotterywest Grants.
- State Natural Resource Management Grants (NRM).
- Growing Regions Program (for works in regional and rural areas).
- CoastWA Grants;
  - Coastal Adaptation and Protection (CAP) grant (for design, monitoring, data collection & construction).

- Hotspot Coastal Adaptation and Protection (H-CAP) (for relevant identified coastal hotspots).
- Coastwest grants (can fund softer works, but not capital construction).
- Coastal Management Plan Assistance Program (CMPAP) (for planning related projects, including options assessment, but not construction).

WALGA can also assist local governments with facilitating CoastWA grant applications.

- Federal Grants – Disaster Ready Fund.
- Coastal Manager Operational Funding (predominantly Local Government organisations);
  - Operating Budget and General Rates (Busselton has been utilising this for many years successfully).
  - Specified Area Rates.
- One-off levies for residents/ratepayers.
- User pays as an outcomes of a Benefit Distribution Analysis (BDA - see Module 3 of the CoastWA training program)
- Levies for visitors
- Developer contributions at time of subdivision where the subdivision has long term coastal management requirements

Examples of funding sections of CHRMAP that present this information clearly are included in the CHRMAP Guidelines, the WA Coastal Zone Strategy, and CHRMAPs from the City of Bunbury, the Shire of Gingin and the Shire of Murray.

### Challenges

CHRMAP implementation requires both significant funding and a commitment to progressing action. One of the main challenges identified is a lack of progress against actions. Feedback suggests this is best overcome by being more clear about who is responsible for delivering actions, and as noted in this Fact Sheet, being specific to teams or directorates who can be tied to business plans or budgets.

Other challenges continue to be felt in community support for the CHRMAP recommendations. Long term education and change will improve as coastal managers move from their first CHRMAP to their second and third reviews and more evidence is apparent and visible. However, there will continue to be challenges of implementation due to the nature of the trade-offs required from coastal hazard management. In most cases, every stakeholder will have to compromise in some way.

In general, the following recommendations appear to be the most controversial:

- Identification of private property within a Special Control Area.
- Notifications on Certificate of Title when development or subdivision is proposed.
- Protect options, in particular groynes, which are considered to have an aesthetic impact.
- Management of beach access, particularly four-wheel driving and fishing access to the beach.

In each case, early engagement with the affected community may help reduce concern.

## Common Implementation Actions

### Common actions in a CHRMAP Implementation Plan

This section breaks down common actions seen across many CHRMAP across the State. The exact actions should reflect the Stage 1-5 outcomes and the needs of the coastal manager. Timing and triggers will need to be directly related to the risk assessment and vulnerability analysis completed for each CHRMAP.

#### Land Use Planning Actions

##### Notifications on Certificate of Title

Often a prioritised action. Recommends the provision of a Section 70A notification to be placed on the Certificate of Title as a condition of any planning approval to alert landowners of the potential coastal hazard impacts on the lot.

Notifications can only be applied where triggered by a subdivision (under Section 165 of the Planning and Development Act 2005) or development application (Section 70A of the Transfer of Land Act 1893).

This is empowered by SPP 2.6, and does not require any other planning action in order to progress it.

The City of Joondalup, Shire of Gingin and City of Albany have implemented this action already.

##### Limited Planning Consent

Limited planning consent can be tied to an event (proximity trigger) or timeframe. Event limited consents have been tested legally and have been successfully implemented in a number of local government areas.

##### Local Planning Strategy review

A recommendation to update the strategy to identify the hazards indicated by the CHRMAP.

##### Local Planning Scheme Amendment - Special Control Area (SCA)

This action establishes legislative management of development within coastal hazard areas, superseding typical deemed to comply provisions and ensuring that all development in the coastal hazard zone goes through a planning approval process.

The SCA is the most prominent and visible signal that land may be impacted and has a higher level of control than Notifications or limited planning consents, which rely on the owner triggering the action.

The City of Albany and Shire of Broome have recently introduced and SCA in newly gazetted schemes.

##### Local Planning Policy (LPP)

A Local Planning Policy supporting an SCA to help with retreat planning, accommodate options and beneficiary pays information. May include recommended design requirements such as finished floor levels, siting of development or preference relocatable assets.

##### Planning Scheme Amendment - Reservation of land

A recommendation to reserve land as 'Foreshore' in the local planning scheme. This is particularly the case for public assets such as public parks, to support improved asset management and planning of the foreshore.

##### Structure Plans

A recommendation to review existing structure plans and any new structure plans to respond to the CHRMAP.

Some structure plans have their own site specific CHRMAP, which may have had more detailed modelling. Care should be taken where this overlap exists to ensure consistency.

##### Foreshore Management Plans

Review of existing foreshore management plans or preparation of new plans to provide more conscious management of foreshore areas to address the findings of the CHRMAP.

##### Asset Management Plans

A recommendation to include an asset audit and/or preparation of an Asset Management Plan to identify existing infrastructure and recreational facilities in the coastal hazard zone.

It provides direction about how to manage and care for the assets over long periods, including where to retreat minor infrastructure and if planning for major infrastructure retreat is possible. This may include everything from progressively relocating park benches, to relocating coastal roads.

##### Emergency Evacuation Plans

A recommendation to review emergency evacuation plans to assess if the evacuation plans are suitable for managing the projected coastal hazards, or if there is a need to establish one.

## Common Implementation Actions

### Managed retreat planning

Recommendations to investigate opportunities for land swap schemes, purchase and lease back of land, and compulsory acquisition may be recommended. This is complex and is tied to BDA processes, and legal agreement may be required where substantial costs are allocated to a small number of properties.

This may be recommended when no other planning instrument has been able to suitably set aside land for coastal processes and when hazards exceed tolerable risk thresholds and funding is not available for any other treatment.

As a minimum, a CHRMAP should recommend that any existing leasehold facilities located within the hazard zone be reviewed, lessees notified of risks and future leases include managed retreat clauses and the likely removal of assets.

Managed retreat planning is supported by SCAs, Notifications, limited planning consents and other more strategic planning instruments.

### Investigation Actions

These recommendations are often technical in nature and support other actions which are proposed, including medium and long term actions. Many of these recommendations are required in order to confirm the CHRMAP approximate costs.

### Sand Source Investigations

A recommendation to determine the capacity and cost of local sand supplies.

### Rock Source Investigation

A recommendation to determine the capacity and cost of suitable armour rock for marine works.

### Terrestrial Flood and Groundwater Investigations

A recommendation to investigate terrestrial flood and high groundwater levels to determine if these factors may exacerbate coastal hazards or impact the effectiveness of protect options.

### Geotechnical

A recommendation to detect presence of rock that may provide some natural resistance to erosion and help inform the refinement and design of protect options.

### Survey (LiDAR, DEM)

Long-term beach and foreshore topographic survey data collection to set baseline conditions that can help with identifying when triggers are reached.

### Bathymetric Survey

Collection of additional nearshore water depths to support future coastal investigations and protect option design.

### Metocean Data

Collection of additional nearshore data (ocean waves, currents, and water levels) for protect option design.



Wave Buoy

### Monitoring Actions

These recommendations are often designed to support other actions which are proposed, including medium and long term actions. Many of these recommendations are required in order to confirm the CHRMAP approximate costs.

### Protection Structure Audit

A recommendation to audit existing coastal protection structures to better understand when triggers may be reached.

### Routine Beach and Dune Surveys

A recommendation to collect beach and foredune monitoring photos, best done at the same time as other beach and foreshore surveys. Community can be involved through citizen science programs.

### Storm Impact Monitoring

A recommendation to prepare for, and undertake, storm impact monitoring during and immediately after severe storm events to help understand the significance of the event and how quickly the coastline adapts/returns to pre-storm conditions (if ever).

### Protect Actions

#### Feasibility Studies, Detailed Design and Costing

A recommendation tied to currently preferred protect options. It may include more detailed study of results from monitoring and investigations, detailed options assessment, site investigations, preliminary design, detailed design, cost estimation, procurement, approvals (environment, heritage, planning), construction, monitoring and maintenance, removal conditions etc

## Common Implementation Actions

This action would tie in closely with funding actions, as the obligation once protect is implemented is far greater over a longer time for the coastal manager. At any point in time, the coastal manager should be aware of the requirements of the various grants available, and how detailed the information will need to be in order to be eligible.

### **Construct or deliver protect options**

A recommendation in areas where the coastal manager has prepared detailed design already, and the protect option is proposed to be implemented.

### **Manage beach access**

A recommendation to assess the suitability of restricting access such as four-wheel drive access.

### **Dune Rehabilitation**

A recommendation for planting and rehabilitation to support organic dune stabilisation. This can be done in conjunction with many other actions.

### **Funding Actions**

All funding actions are essentially seeking to understand how many actions from the CHRMAP can realistically be implemented. They require the coastal manager to understand their own willingness to pay, and the willingness to pay of the entire community.

### **Rates levy / Specified Area Rate investigation**

A recommendation to investigate community support for a coastal management levy for coastal management, and/or the willingness to pay of specific beneficiaries (from a BDA).

The City of Busselton has had a long term rates levy and recently increased this with community support.

### **Further Cost Benefit or BDA**

A recommendation where preliminary cost benefit or BDA requires additional consideration or detail. This would foreshadow which action requires greater consideration of beneficiaries.

### **Developer contributions**

A recommendation to investigate the potential for developer contributions.

### **Grants and funding**

A recommendation to better understand and/or apply for specific grants or funding opportunities.

### **Communication Actions**

#### **Advice letter**

A recommendation to send advice to all properties and organisations that may be impacted by the CHRMAP.

#### **Advice to Real Estate and Settlement Agents**

A recommendation to advise local real estate and settlement agents of the coastal hazards identified. This would be done through a Land Purchase Inquiry.

#### **Information Sharing**

A recommendation for increased communication and educational information. May include the development of a CHRMAP web portal, fact sheets, educational signage citizen science photo monitoring.

#### **Coastal Reference Group**

A recommendation to convene reference group/s to work through detailed recommendations and medium to long term trade-offs.

### **Other ongoing engagement**

A recommendation to continue to engage with the community.

### **Review Actions**

#### **Progress Review**

A recommendation for a planned progress review at either a one or two year intervals from endorsement.

#### **CHRMAP review**

A recommendation for a full review of the CHRMAP typically at 10 year intervals, although may be five where impacts are potentially imminent.

### **Examples of CHRMAP Implementation Plans**

Although there are many good examples of implementation plans, each provides particular exemplar elements. The more recent CHRMAPs are the most reflective of the CHRMAP Guidelines and are included here as a reference. These include the City of Albany, Shire of Broome, City of Greater Geraldton, Shire of Gingin, Shire of Murray and City of Rockingham.

