



Snapshot

Progressing the Barwon South West's Coastal Hazard Assessment

Summary

In 2017, Warrnambool City Council sought climate change coastal assessment services to support council decision making for planning decisions. The climate services were to produce a Barwon South West (BSW) Local Coastal Hazard Assessment: Phase 1 Scoping Paper to build a detailed picture of the BSW's existing and future coastal hazards and to prioritise high risk sites for further modelling.

The Council used the CoastAdapt resource *Working with consultants* to select and appoint a consultant to undertake the work as reported in the earlier snapshot, *Barwon South West: Testing the application of CoastAdapt's: Working with consultants information*. In this snapshot we detail how the BSW has progressed in its climate change action.

Background

In 2017, Warrnambool City Council led a process to procure climate change coastal assessment services to support council decision making for planning for the Barwon South West (BSW) Region.

The Council understood that any decisions would have to factor in:

- planning for future use of private and public coastal land
- managing existing assets (e.g. roads, foreshore amenities, stormwater, etc.) and the construction of new assets including coastal protection structures
- conserving environmentally sensitive areas
- respecting Aboriginal cultural values
- climate change
- managing areas for social and other public use
- emergency management during disaster events such as storms and inundation

and would need to involve the community in adaptation planning.

Keywords

Coastal hazard assessment, Barwon South West, stakeholders, scoping study

Completion of a scoping study

The BSW has undertaken the first phase of a multi-stage process to implement the Victorian Coastal Hazard Planning process.

- Phase 1 was the scoping study
- Phase 2 is a third-pass risk assessment
- Phase 3 is a review of the process.

A consultant was selected to undertake Phase 1 as reported in the snapshot, [Barwon South West: Testing the application of CoastAdapt's: Working with consultants information](#). This was a scoping study to identify the areas of the coast for which a third-pass (detailed) risk assessment should be undertaken (Phase 2).

Phase 1 identified the specific coastal issues for each council within the BSW Region. It included a comprehensive assessment of coastal processes and the potential for risks in the future. It also detailed the data requirements to prepare for the next stage and to identify the skills and indicative costs required. Figure 1 illustrates the deliverables of Phase 1.

Part A. Identification and mapping of coastal communities

Part A of the scoping study resulted in a detailed understanding of local coastal processes and dynamics along with the distinctive coastal geomorphology of the BSW Region. Specific coastal geomorphic compartments were reviewed and defined in order to better identify the requirements for subsequent coastal hazard assessments and to make recommendations for modelling approaches. The results were made available through an online mapping tool (see Figure 2).

A total of 177 geomorphic compartments were identified for the entire study area. For each compartment a qualitative assessment has been made of susceptibility to inundation (due to sea-level rise) and erosion/recession due to removal of backshore materials (see Figure 3).

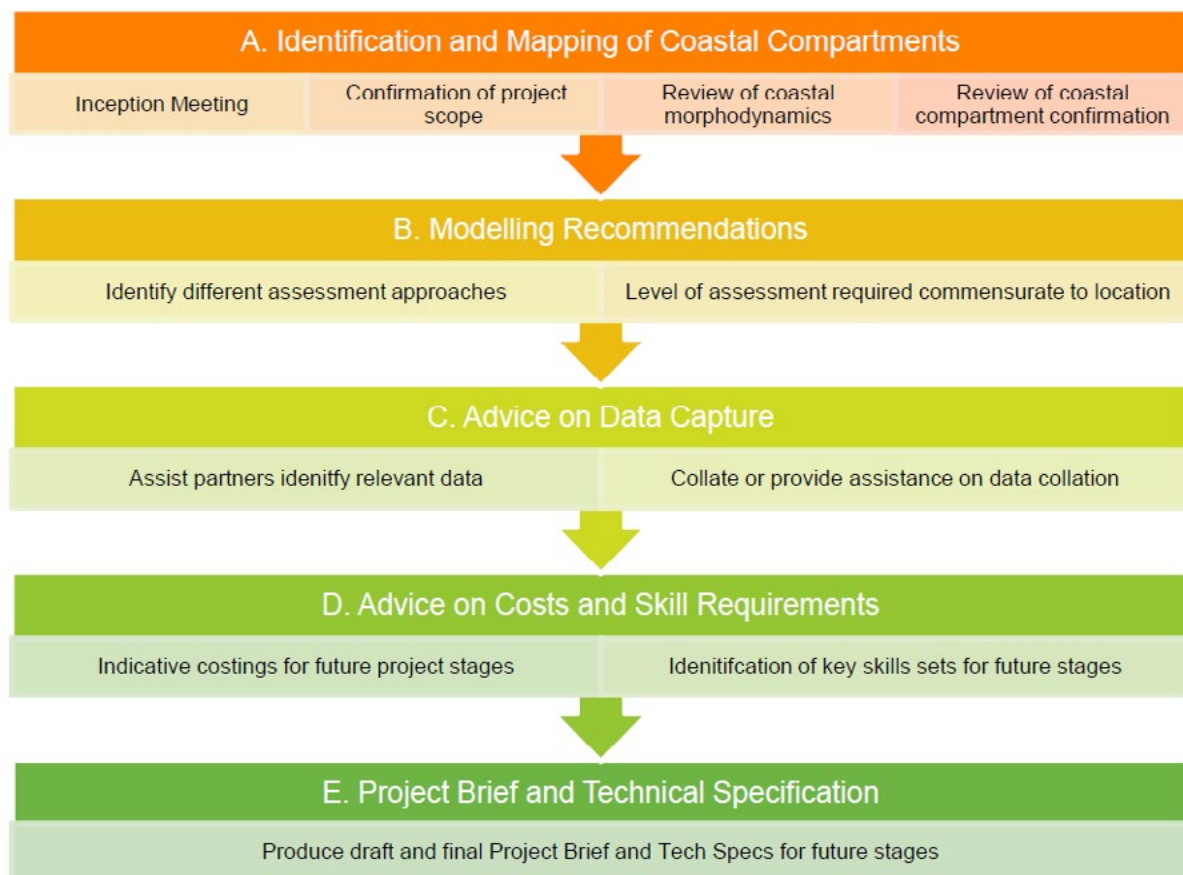


Figure 1: Phase 1 scoping study deliverables. © Barwon South West.

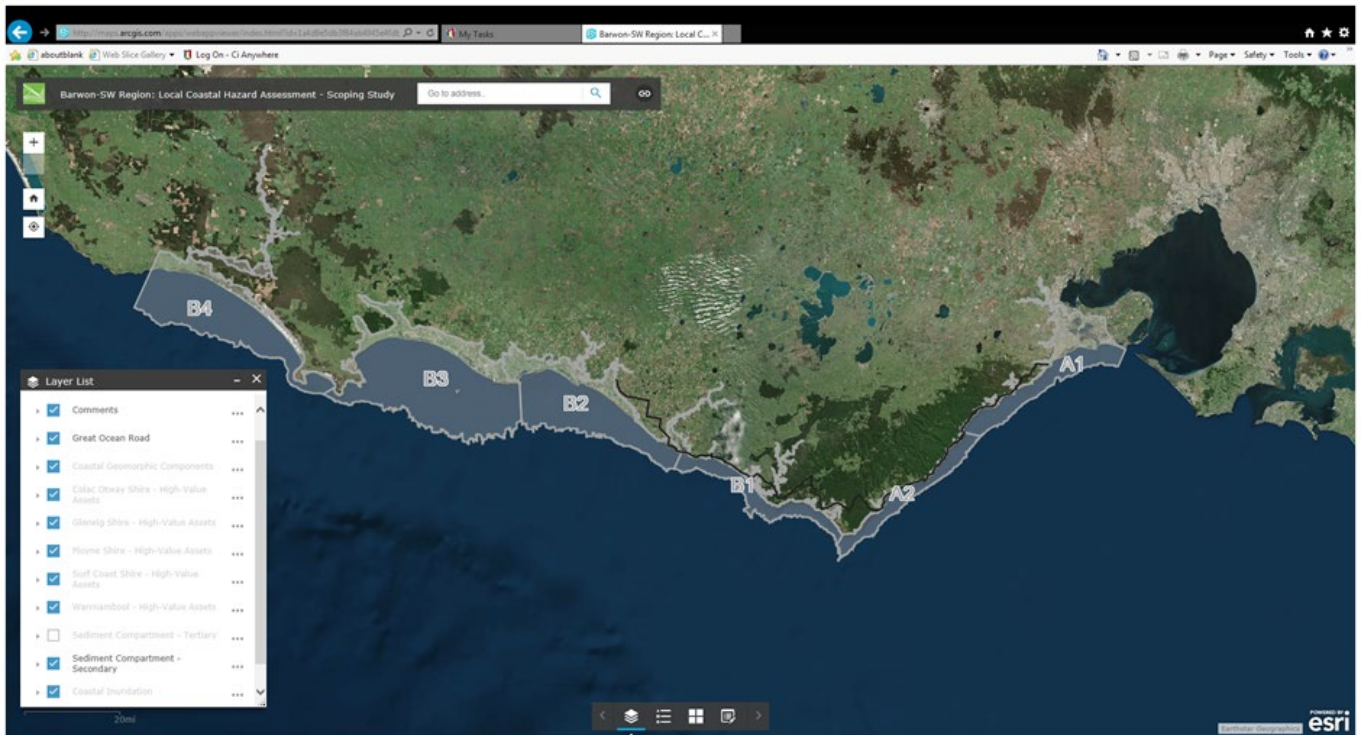


Figure 2: Image showing the study area. © Barwon South West.

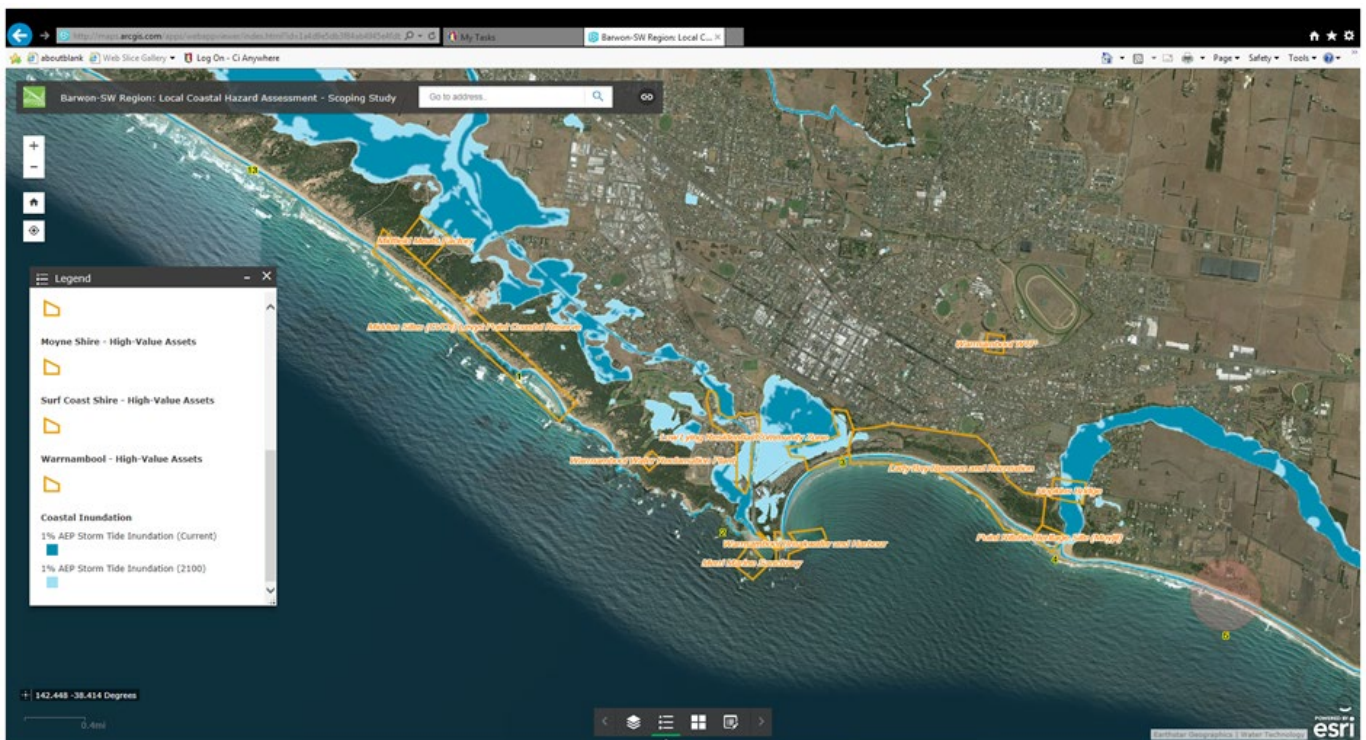


Figure 3: Image showing an example of inundation, high risk erosion sites (circled) and high value assets. © Barwon South West.

Part B. Modelling and analysis

In order to understand the susceptibility of the coast to inundation and erosion it was important to identify the different forms these hazards may take and the impacts they may have. The report provided an overview of the short- and long-term hazards that may affect the South West Victorian coastline. Each hazard was described in terms of the hazard source and how the impacts of the hazard may be felt.

Different coastal landforms and coastal processes require different modelling or assessment approaches to quantify the hazards. A framework for project partners to undertake future assessment using a risk-based approach was developed and adopted (see Figure 4).

The assessment approach adopted for a given location took into account natural values, the significance of assets and whether the risk was perceived as high by either the community or the land managers.

Four stakeholder workshops were held to discuss stakeholder values and how these could be taken into account in the risk assessment. The sessions were based on local government areas and the coastal compartments being considered. The outcome of the workshops was the identification of critical assets and understanding of the consequences of coastal hazards on the function or value of those assets (see Figure 5). Both regional and local government priorities were also discussed.

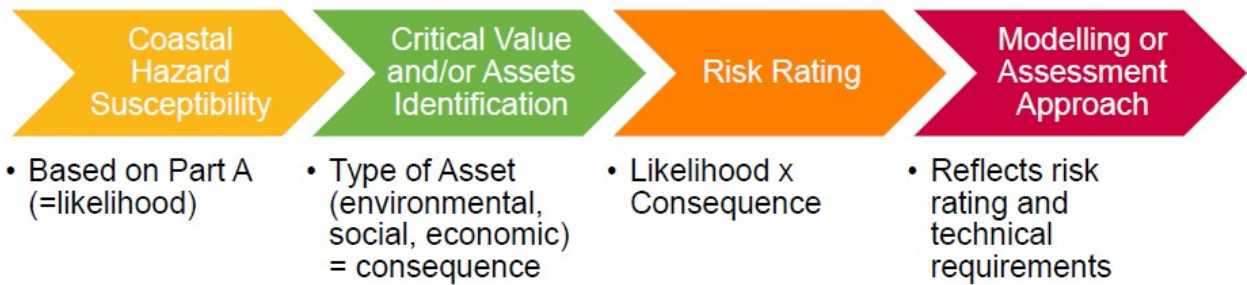


Figure 4: The framework developed for the risk analysis. © Barwon South West.

| LGA | Coastal Geomorphic Component | Shore Zone | Location | Hazard Assessment Requirements | Hazard Susceptibility | Risk Rating (H, M, L) |
|------------------|------------------------------|------------|------------------------|--------------------------------|-----------------------|-----------------------|
| Warrnambool City | 2 | | Merri River entrance | Inundation | High | High |
| | | | | Erosion | Low | |
| | 5 | 13 | Logans Beach | Inundation | Low | Medium |
| | | | | Erosion | High | |
| | 6a, 6b | 2 | Active cliff | Inundation | Low | Medium |
| | | | | Erosion | High | |
| | 3 | | Lady's Bay | Inundation | Low | Medium |
| | | | | Erosion | Medium | |
| | 1 | | | Both | Low | Low |
| | 4 | 21 | Hopkins River entrance | Inundation | Medium | Medium |
| | | | | Erosion | Medium | |

Figure 5: Example output from the risk assessment process. © Barwon South West.

These activities identified that there are approximately 22 areas, which may consist of several compartments, with a High-Risk rating.

Part C. Data capture and advice

The stakeholder workshops also developed a list identifying and collating internally held information and data collected through other projects, and available external datasets. This list will be developed further as part of the next phase.

Current data include previous flood studies, other coastal vulnerability assessments, wave-climate monitoring and coastal process studies.

From this review, some clear gaps were identified, particularly around the need for further topographic and bathymetric data.

Part D. Costs and skill sets

Technical skill sets were identified for each type of hazard and level of assessment required. This included coastal engineering and process analysis such as wave modelling, hydrology, geology, spatial analysis and risk assessment. Indicative costs were provided based on the level of assessment determined for each compartment in each Local Government Area (LGA). Costs were provided for both inundation and erosion assessments. Costs were estimated to be in the vicinity of \$4.7 million to undertake all modelling; however it is more likely that the future steps will focus on high-risk areas only.

Part E. Project specification/briefs

In the final part of the project, project specifications were developed. The original scoping only included the development of one brief that would be adapted for each LGA or project as needed. This was ultimately considered to be too generic and it was decided that a brief would be created for each LGA. Briefs have been developed for:

- Angelsea (see Figure 6)
- Mounts Bay/Apollo Bay
- Lady Bay/Merri River, Warrnambool
- Glenelg River and Portland Bay, Portland.

Lessons learned

An important lesson for this case study is that guidance from CoastAdapt provided a sound basis from which to design the project specification, select the appropriate consultant and set up the project for success. The project has run smoothly because the guidance ensured that the specification and contracting processes were thorough, well-articulated and the right consultant was selected. It proves the case for well thought through procurement processes.

The project came in well under budget, and so additional funds were available to extend the work into the next phase of delivery. As a result, Warrnambool City Council has also engaged a consultant to undertake a data availability/gap analysis. An efficiently designed and delivered project has provided the Council with the capacity to rapidly progress to the next stage.

Barriers and next steps

The project identified that the roles and responsibilities for coastal hazard assessments were not clearly defined between state and local government. As the project managers were operating from a clear project specification, they were able to move quickly to identify this issue and work with the state government to start negotiations to close this gap in understanding.

Through the scoping paper and subsequent data assimilation and gap analysis, it became clear that there was a data gap around the erosion modelling methodology. The main dataset used for this was the Victorian Coastal 1 m contours – which were completed in 2009. There is an expectation that quite a bit of erosion will have taken place since this was recorded. The project managers can now work with state government to get access to the modelling and ensure that future delivery of the erosion methodology will focus on priority areas important to the region as identified through the scoping paper.

Innovation in action

The Victorian Government *Guidelines for Developing a Coastal Hazard Assessment* stress that consultation with the community should be undertaken during Phase 1 of the process. However, for Phase 1 the project managers decided that this was not useful until they had an understanding of the issues and opportunities in their coastal zone. They believed it would be better to engage on a more factual basis and with a clear process in place so that each community member understood the impacts of the assessments. Project managers have developed a communications and engagement plan that more fully structures key stakeholders, their needs, likely issues etc. In this stage it was considered far more effective to engage at the institutional and service level, rather than with the community. Community consultation will be undertaken in the next stage of project. Time will tell whether this was a correct decision.

Further information

The Victorian State Government's Guidelines for Developing a Coastal Hazard Assessment. Accessed on 20 June 2018. [Available online at: <https://www.coastsandmarine.vic.gov.au/coastal-management/guidelines-for-developing-a-coastal-hazard-assessment>].

This case study was prepared by Rohan Hamden from Rohan Hamden and Associates and Kristyn McCaskill of Warrnambool City Council. Please cite as: Hamden, R. and K. McCaskill, 2018: Where are they now? Barwon South West's Coastal Hazard Assessment. Snapshot for CoastAdapt, National Climate Change Adaptation Research Facility.

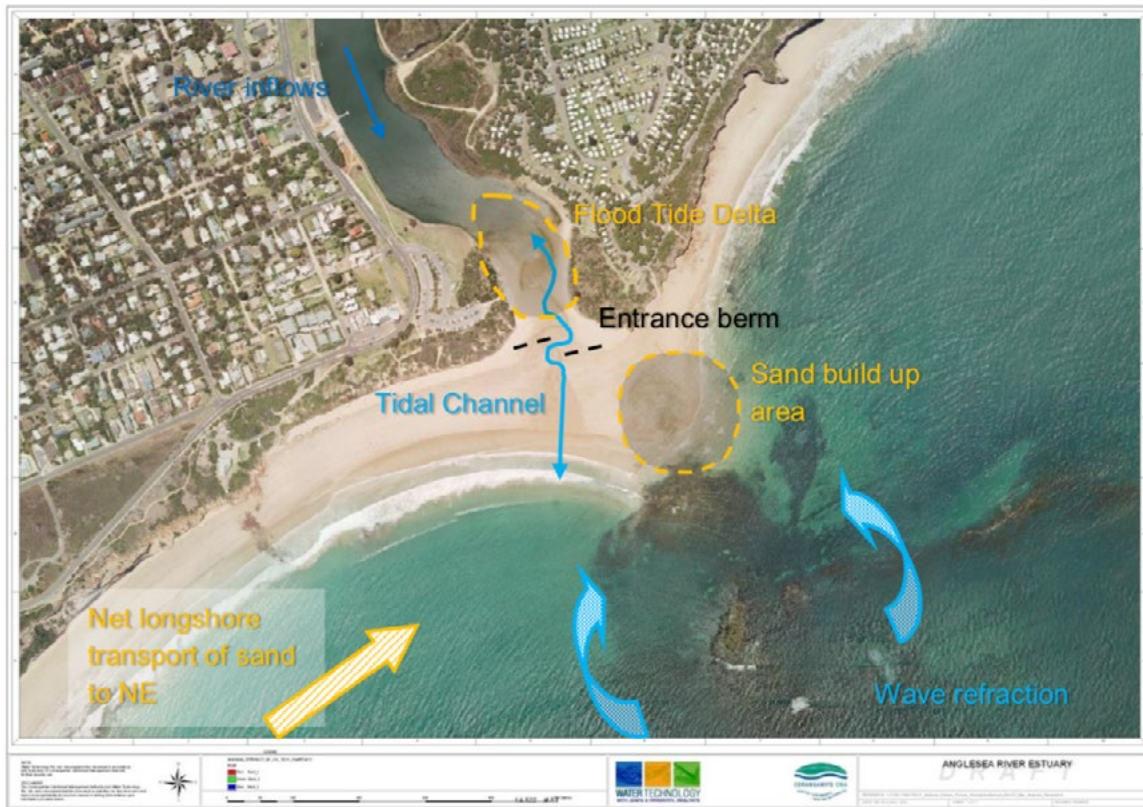


Figure 6: Coastal processes at the Anglesea Estuary Entrance. © Water Technology Pty Ltd.



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