

Bundaberg Region

Coastal Hazard Adaptation Strategy



A Journey...

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Townsville - Knowledge & Information Sharing Forum
9th November 2017



Overview

- Background
- Climate Challenges & Initiatives
- Progress & Lessons – Phase 1 & 2
- Where are we headed?



LIVE

Background



Geographical Area: **6,500 km²**

Coastline: **~115km**



Climate Challenges

“More than **80% of Australians live on the coast**, and climate change is driving sea-level rise, increasing the risk of flooding our coastal towns and cities. Sydney, Melbourne, **Bundaberg** and Darwin for example, are likely to experience very large increases in the frequency of coastal flooding events...”

Climate Council of Australia, 2017

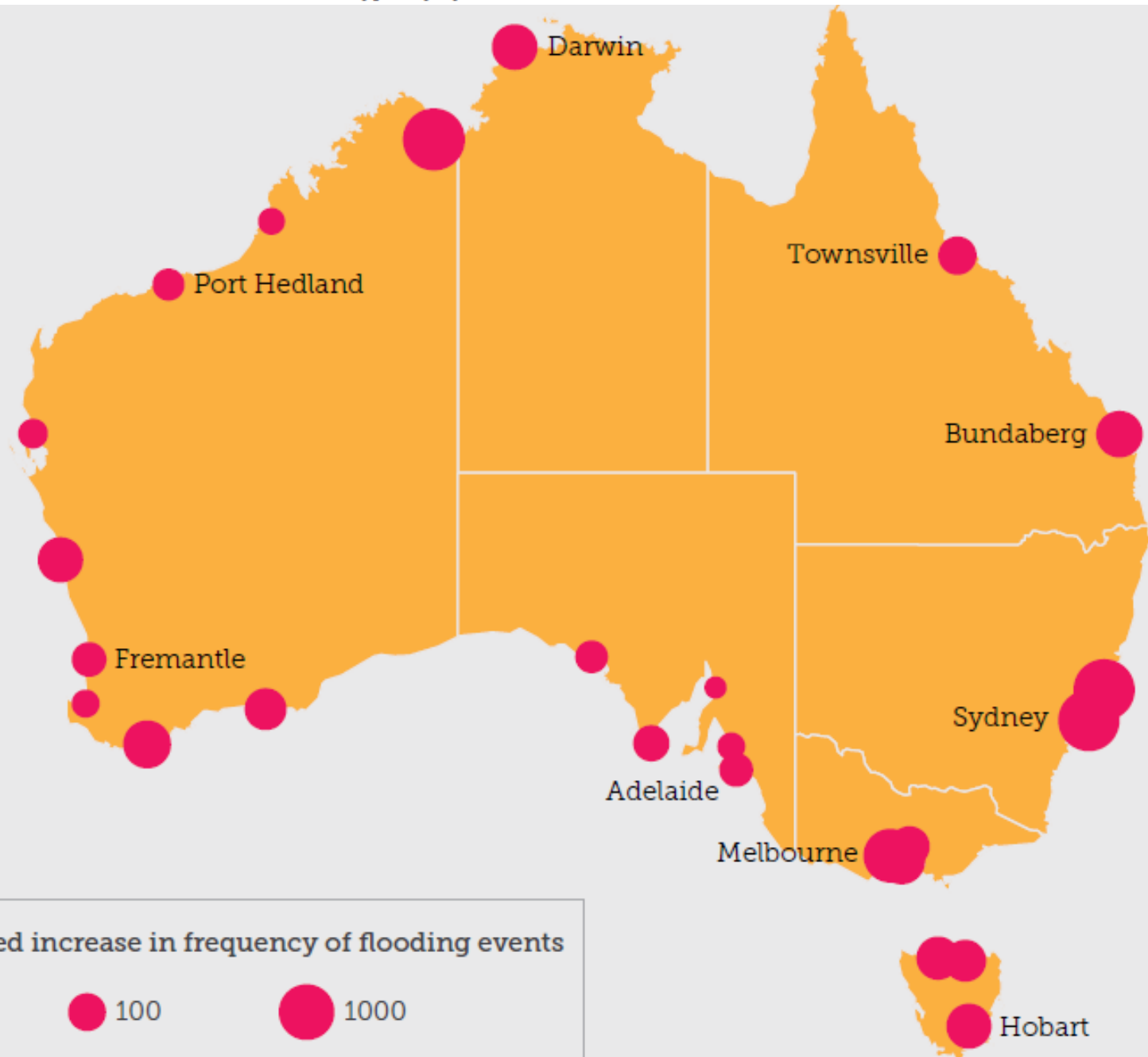


Australian Climate Council's Cities Power Partnership (CPP) Program

LIVE



Figure 7: A sea-level rise of only 0.5m would lead to very large increases in the incidence of extreme coastal flooding events in Australian coastal towns and cities, typically by a factor of several hundred (Hunter 2012).





Cyclone removes beach protection

20th Mar 2009 7:52 AM

NewsMail
CONNECTING OUR COMMUNITY



0



Darryl Hampson has watched Moore Park Beach slowly disappear into the ocean as the erosion gets worse every year.

NEWS

Surf club to be demolished

30th Jun 2010 2:25 AM



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8 COMMENTS



Mal Drews sits with two of the club's youngest members, Chloe and Ellisa Harris.

NEWS

Caravan park danger

3rd Nov 2011 2:00 AM



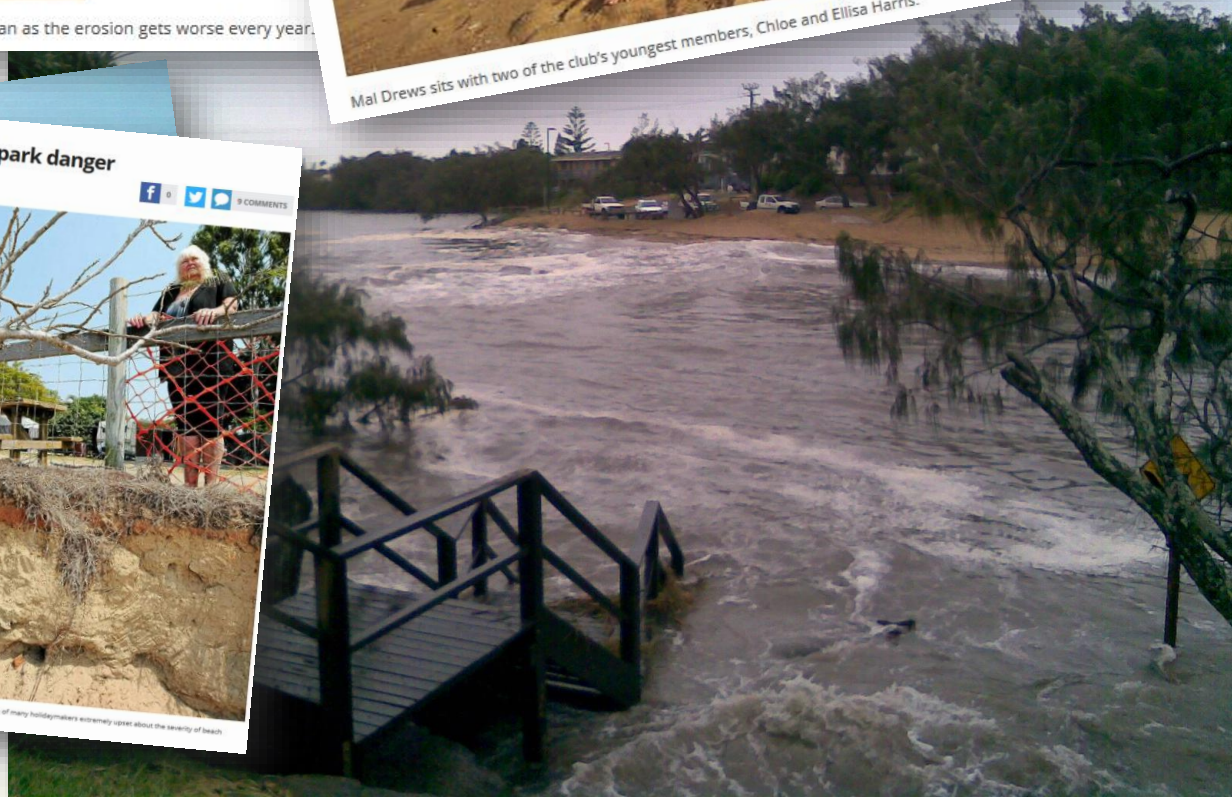
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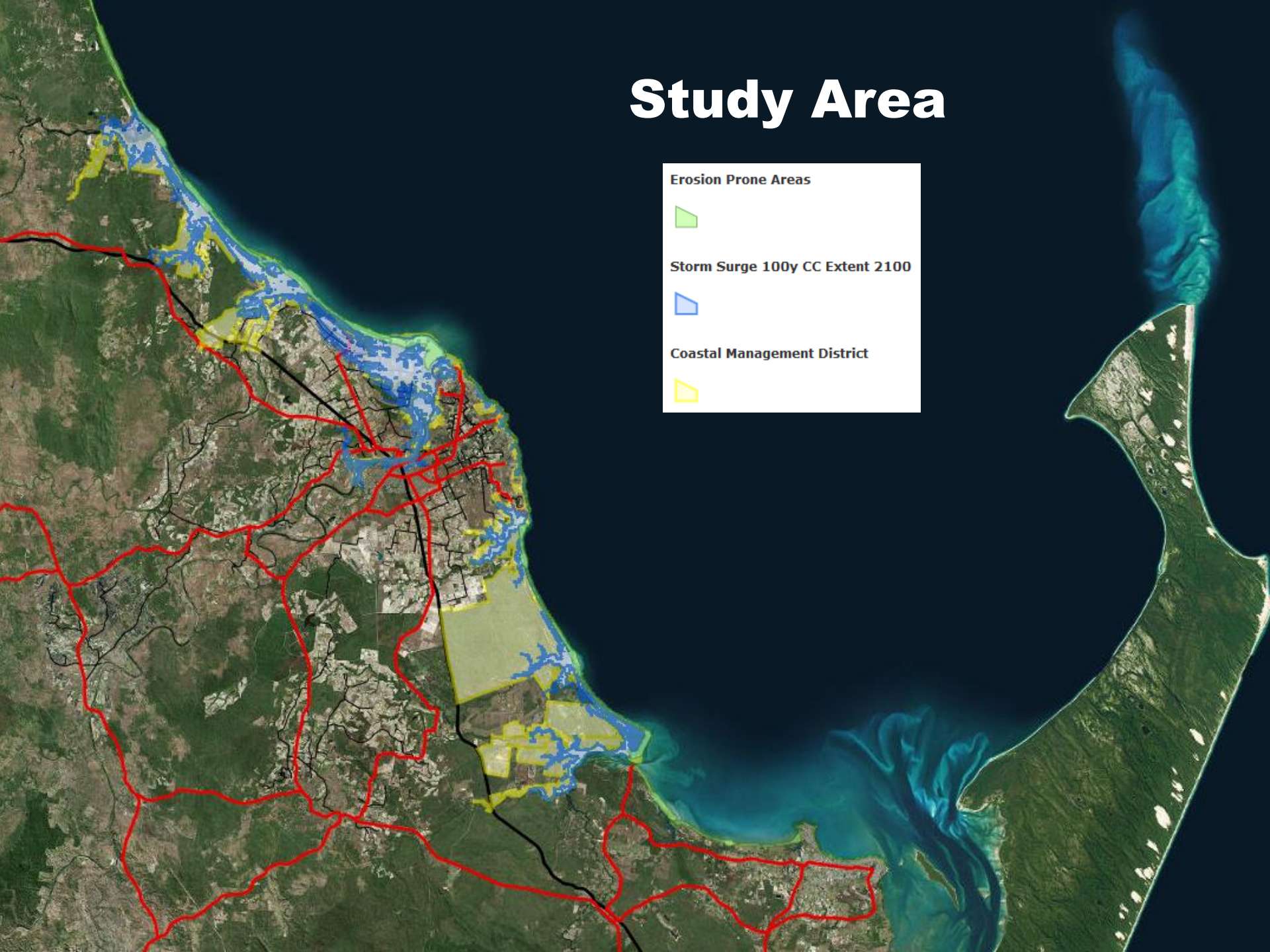
9 COMMENTS



Moore Park regular Kay Watts is one of many holidaymakers extremely upset about the severity of beach erosion.



Study Area



Progress to Date



QCoast 2100 program funding of \$48,227 (excl. GST)

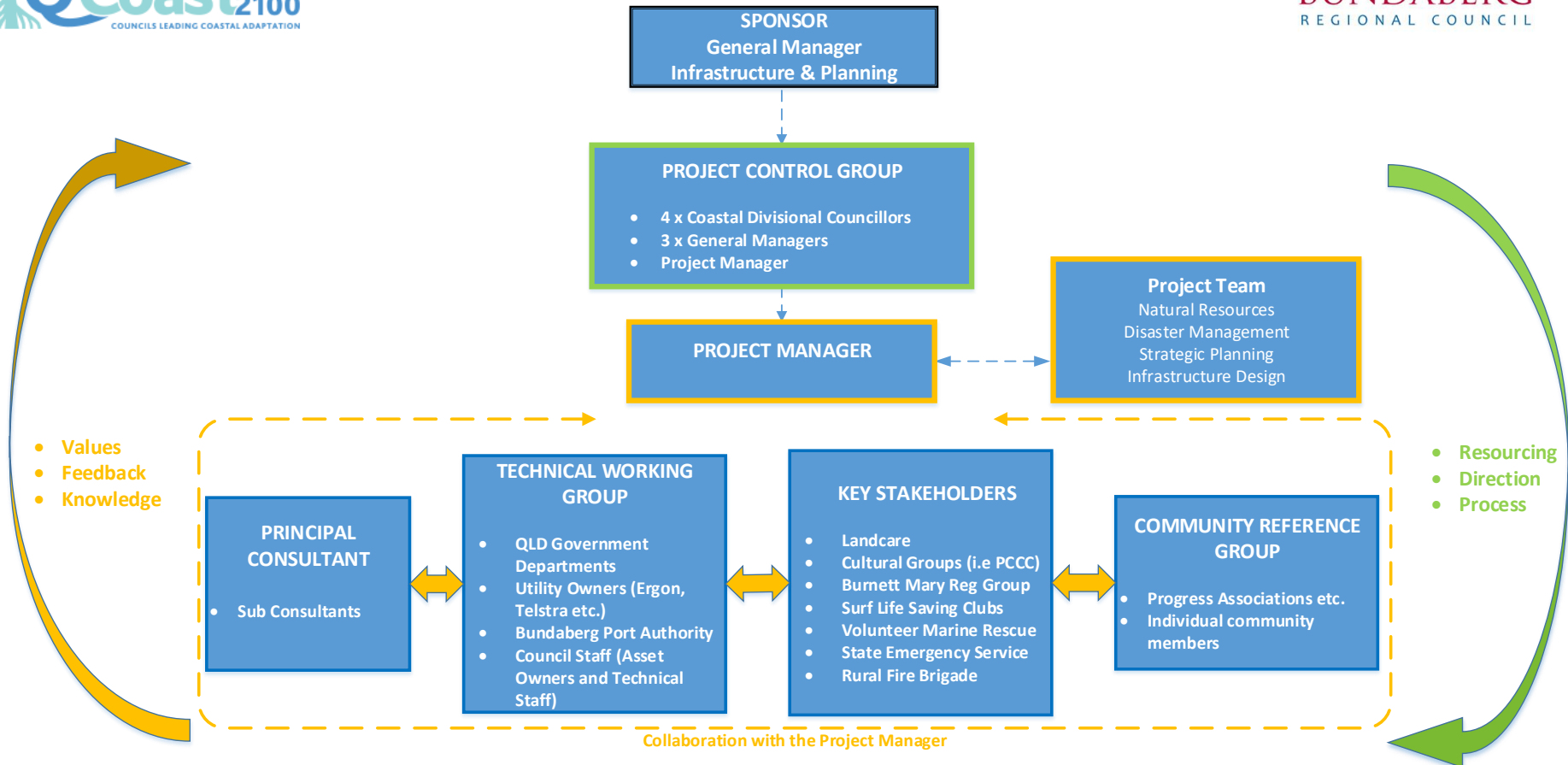
Project Start Date: 29th March 2017

- **PHASE 1:** Plan for life-of-project stakeholder communication and engagement – *Completed 28th July 2017*
- **PHASE 2:** Scope coastal hazard issues for the area of interest – *Completed 8th September 2017*
- **PHASE 3 TO 8:** *Currently Assessing Tenders and compiling Funding Application*



WORK

Governance



Phase 1 – Key Outcomes

Engagement

- 1. Values Based - The community is brought along on the project journey with the Council and ‘validate’ hazard data through their own experience;**
- 2. Community liaison officers or community champions are used;**
- 3. Council is aware of ‘high concern’ localities to target specific engagement activities;**
- 4. A broad range of effective communication methods is used for the dissemination of information for community discussion.**
- 5. Collaboration with stakeholders will ensure an informed process; clarity and transparency with regard to how this project may be utilised.**



WORK

Phase 1 – Learnings

Engagement

- **Combine Phase 1 & 2** - Strategically important to understand the scale of potential issues.
- **Workshop Based** - Important to determining relevant stakeholders. Diversity of group was valuable.
- **Involve Councillors** - imperative given their significant networks, local understanding of issues, education on process and ownership of outcomes.
- **Internal Only** - Allowed broad discussion on the scale and appropriate means of engaging the community. Reduces uncertainty for future phases.
- **Visioning and Branding Workshops** – Would have been beneficial



Phase 2 – Key Outcomes

Scoping

- To provide a high level understanding of:
 - Coastal hazard areas and issues/concerns; and
 - Assets in the erosion prone and storm tide inundation areas and their relative value or importance.
- To understand capability and resources available (internally & externally) to undertake a CHAS.
- Undertake a data gap analysis and determine whether existing datasets are fit for purpose.
- To understand the constraints of delivering a CHAS.



Phase 2 – Learnings

Scoping



- Early review of information gaps required
- Balancing modelling demands vs community conversation and education

Knowledge Area	Gap Identified	Relative Importance / Consequences	Scope Required to Fill Gap	Overall Knowledge Gap Rating
Shoreline Erosion	The extent of potential shoreline erosion has not been determined for a range of future climate change scenarios. Only a 0.8 metre sea level rise (predicted for year 2100) has been considered in EHP determination / mapping of Erosion Prone Areas.	The availability of a single climate change scenario, specifically only one sea level rise increment, limits the ability to assess potential trigger levels or thresholds for adaptation responses. This applies to both technical as well as economic assessments.	Expand available analysis to include a range of sea level rise increments up to and beyond the +0.8metre scenario.	High
	The extent of potential shoreline erosion has not been determined for a range of Average Recurrence Intervals. Only the implication of a 100 year ARI event has been determined.	As noted in the <i>Learnings Report – Coastal Hazard Adaptation Strategy for Townsville (Pilot Project)</i> , the CHAS must consider a full range of ARI events and the relationship between the vulnerability and the hazard level (i.e. the topographic distribution of assets).	Expand available analysis to include a range of storm events (more frequent and rarer) than the nominal 100 year ARI.	High
Storm Tide Inundation	Coincidence of coastal and fluvial flooding. As noted in the Griffith University (2016) review, the storm tide study did undertake a joint probability assessment for the Burnett River but this does not appear to be considered in the parametric model used to determine AEP water levels. Various other flood studies have been undertaken for creeks and rivers within the region but none of them address the coincidence of coastal and fluvial flooding. Most have applied conservative downstream boundary conditions.	The available information indicates that flooding on the Burnett River around Bundaberg is dominated by riverine events rather than storm tides, however this may vary closer to the coast and a combination of riverine and storm tide flooding may produce elevated water levels. Several the other flood studies for creeks and rivers within the region do mention the susceptibility of the downstream reaches to coastal water levels but the impact is not quantified.	The 2017 Hazard Evaluation Report by BRC provides a reference for riverine studies and notes where they have considered climate change. A more detailed summary of the modelled flood scenarios including climate change is required to confirm if/where any knowledge gaps existing. This review should also include consideration of where data for a range of AEP events is available and any consideration of climate change (specifically sea level rise increments). For the available flood studies the impact of coastal water levels on flooding should be quantified. This could be done as a mapping exercise or where significant infrastructure is affected a joint probability assessment would be appropriate.	Medium

Phase 3 – 5

Exposure, Identification, Risk

- Assess critical systems that support coastal communities (both life and livelihood)
- Reveal their interconnected nature and measure the potential for cascading loss of these systems as a result of climate change
- Periods to be assessed include event based (such as storm tide from tropical cyclones) along with short, medium, long term durations of climate change



Assets Strategic

Financial sustainability
LT management and MT sustainability
Difficult for Council to fund hard infrastructure
Focus on non asset solutions

Open Space and Parks

Managing community expectations on embellishments on foreshores
Resilient BBQ solutions in place

Land Use Planning

Disbelief over mapping
Concerns over property value and insurance
Individuals undertaking own works to mitigate risks
Limited development pressure in Moore Park and Woodgate, more in central coast area
Design responses to stormtide vs riverine flooding

Plumbing

LT high water tables
Groundwater mistaken for sewerage
Some local awareness
Groundwater monitoring/ warning system
Change the 3.6m design level?

Asset Management

BoM warning systems
Rehearsals/exercises
Access to critical infrastructure
Storage of works vehicles and items
Focus on quick recovery
Redundancy built in IT and comms – paper copies of information

Community Development

Need to turn negatives into positives
Council cannot fix everything
Intergenerational change – doing the right thing over time

Water

Water table issues
Need to quick resume services
More resilient design
Contingency planning

Environment / NRM

Impacts in liveability
Mangrove loss leads to flying fox displacement
Salt marsh change to mangrove, more midge
Migratory seabirds need mudflats
4WD access to beaches
Pedestrian access lost after storms
Erosion and marine debris affects turtles nesting and tourism issues
Fox control
Fish kills at Moore Park
Lagoon pollution at Bargara
Aquatic weeds and nutrients

Roads

Problem areas identified
Need refuge area with good connections
Road closed during intense rainfall events
Better drainage needed for low lying roads
Infiltration v groundwater surcharge

GIS

Data availability and speed of response
Storyboarding of services to simplify interpolation and understanding

Disaster Management

Psychology of resilient residents
Phone black spots exist
NBN / Internet operability

Sewerage

Ground water
Smart solutions
Construction costs

Media

Approaches need to be targeted and personalised

Asset Maintenance / Management

Ongoing costs and preplanning
Spares, maintenance etc

PLAY



Questions?

