COASTAL HAZARDS ADAPTATION STRATEGY

Phases 1 to 5

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Queensland Government

QCoast2100
COUNCILS LEADING COASTAL ADAPTATION

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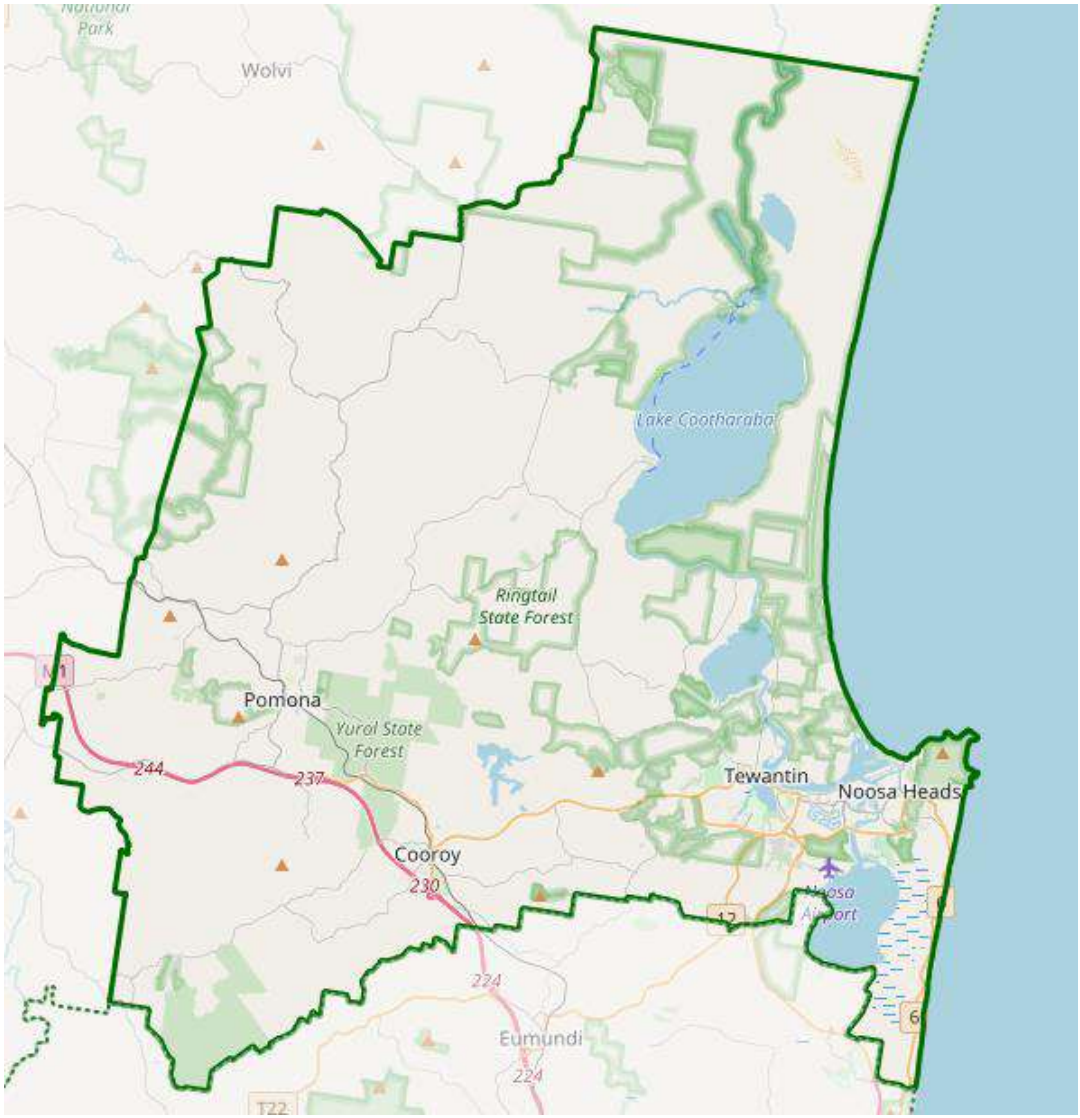
Outline

- Overview of Noosa
- Why do a CHAS?
- CHAS context
- Story so far (phase by phase)
- Lessons learnt
- What’s next

Noosa – the place



Noosa – the place

Source: Noosa Council

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Noosa – the place

Noosa – coastal area

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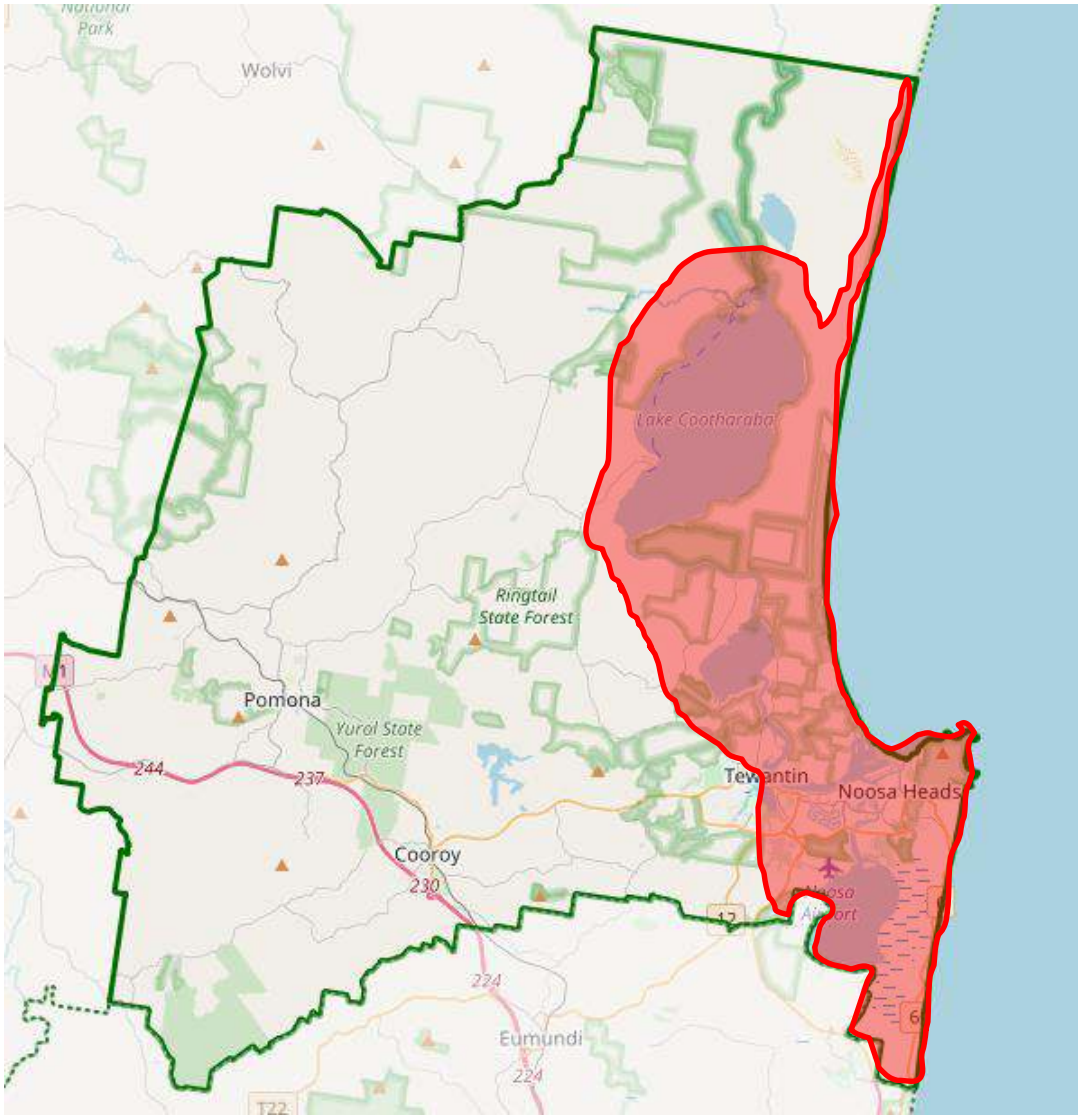
Noosa – indicative CHAS study area



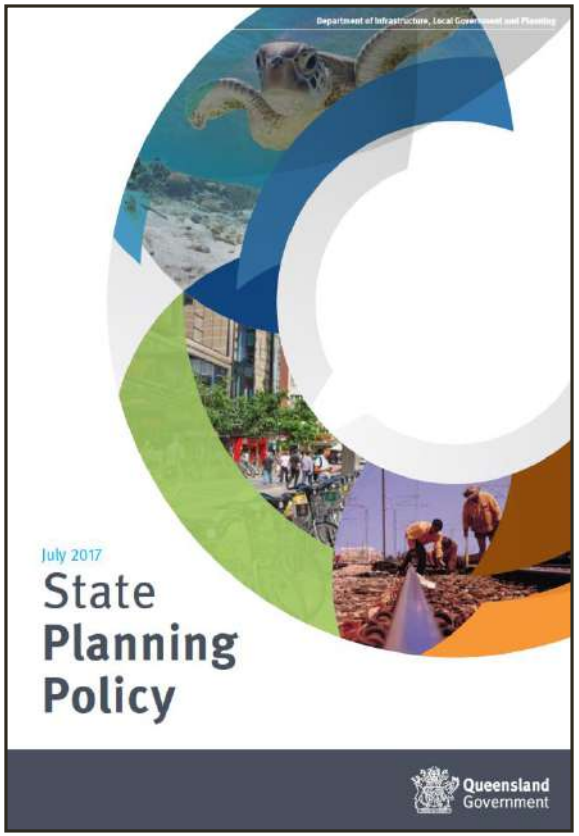
Why a CHAS?

- To improve Noosa Council and the community's understanding of current and future risks from coastal hazards and how they might change through time as a result of climate change;
- To consult with the community clearly and sensitively throughout key stages of the project so the community understands the implications and contributes to the decision making;
- To identify what actions are required to avoid, reduce or adapt to these risks to people, property, assets and the environment;
- To provide mapping and visual products and deliverables that are useful for a range of purposes across Council departments and functions and within the community (e.g. planning scheme, asset management, community awareness, disaster management and financial planning; and
- To provide direction for a coordinated approach for council and the community to adapt to climate change and coastal hazards.

What does the SPP July 2017 say?

State interest – natural hazards, risk and resilience states:

The risks associated with natural hazards, including the projected impacts of climate change, are avoided or mitigated to protect people and property and enhance the community's resilience to natural hazards



A history of coastal hazards in Noosa

Source: Noosa Library

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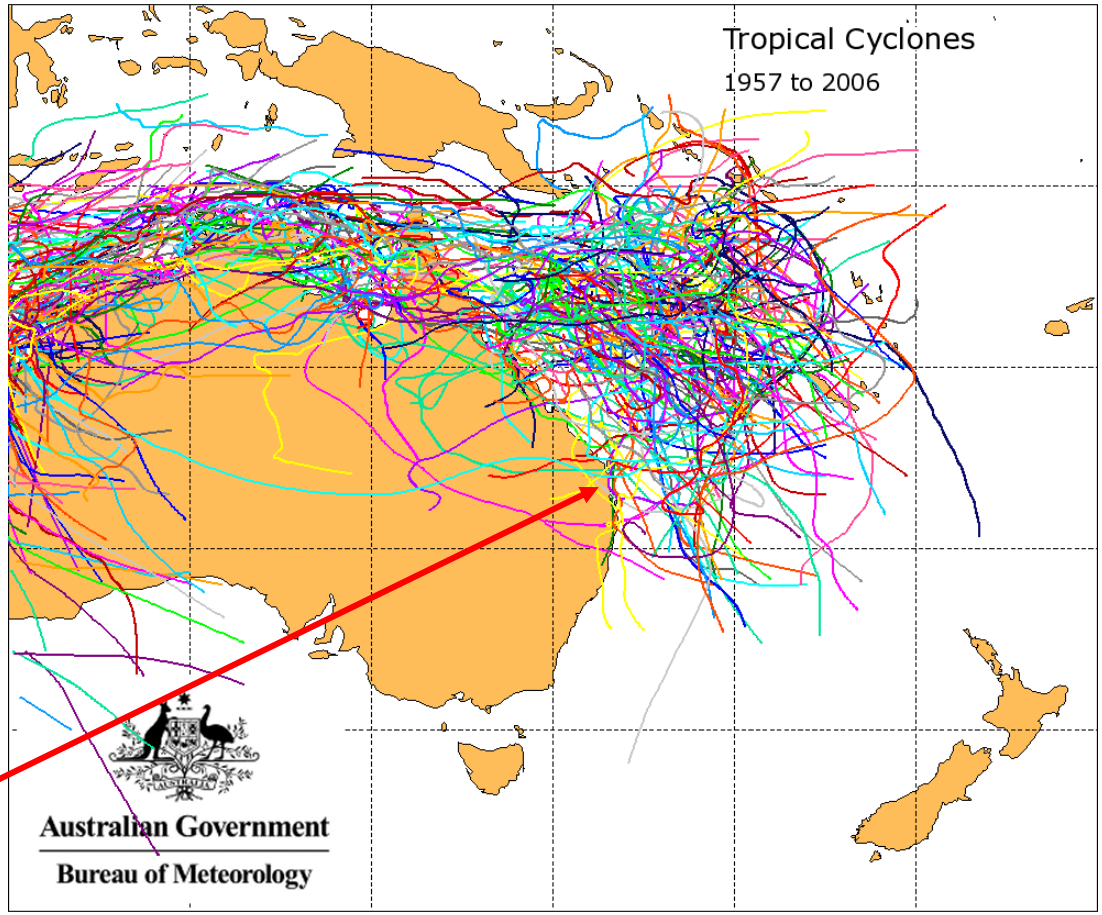


Noosa

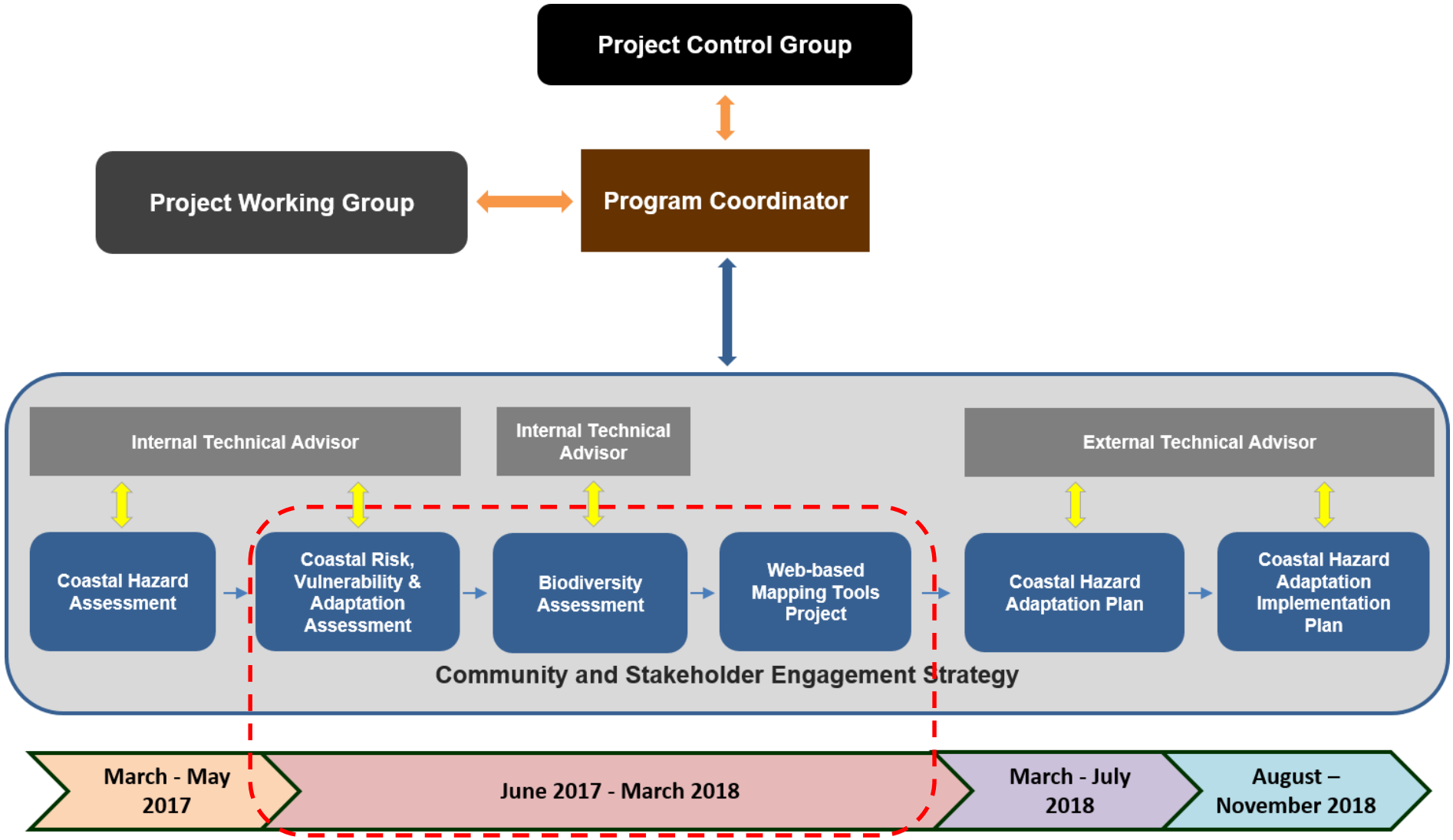
Source: Bureau of Meteorology

A history of change

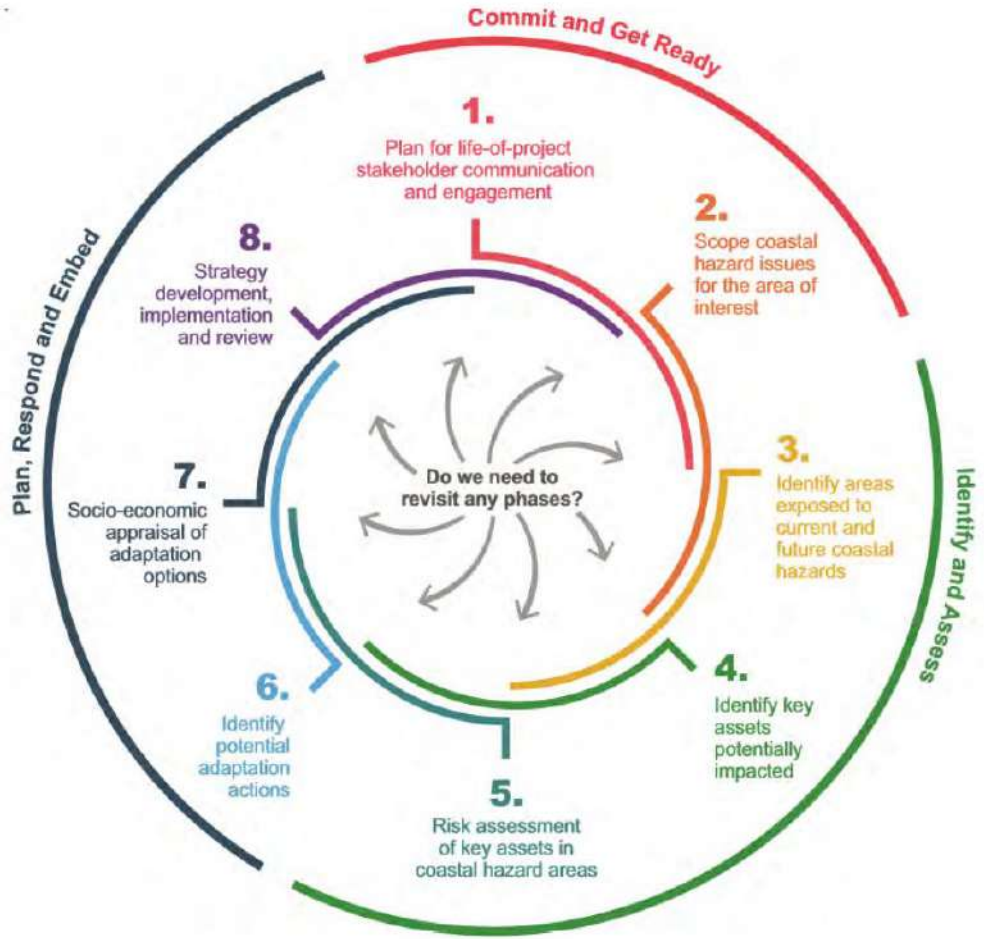
Source: Noosa Library

Source: Noosa Library

CHAS: Governance & Timeline



CHAS – Project Timeline



Phase 1 – Stakeholder Engagement

Source: Noosa Council

Source: Noosa Council

CHAP Stakeholder Engagement Strategy - Objectives

- Build awareness and educate stakeholders regarding coastal dynamics and hazards
- Understand community values (re. assets) and the tolerance for coastal hazard risks
- Empower all stakeholders to make informed decisions by providing information and mapping of expected hazard location and risks.
- Broaden community awareness of possible adaptation responses and understand their appetite for these
- Clarify roles and responsibilities
- Create a collaborative vision and action plan

The ‘Why’..

We need to understand how coastal hazard risks Noosa is already subject to will likely change in the decades to come, and then decide, together, how we ensure that Council and the community are appropriately prepared and that the values we associate with Noosa today are maintained into the future.

The ‘Why’…

- It’s about good governance and *proactive* risk management. This requires ensuring Council and the community are appropriately informed and have a plan.

- *Potential* economic imperatives
  - Costly damage to Council assets due to insufficient planning by Council
  - Reduced economic activity due to damage (real or perceived) to local businesses and Noosa’s iconic values (e.g. desirable tourism destination, investment attractiveness and place to live status)

- *Potential* ecological imperatives:
  - Damage to local biodiversity values by promoting adaptive capacity of key habitats
  - Diminishment of Noosa’s ecologically sustainable reputation (e.g. UN Biosphere Reserve status)

- *Potential* social imperatives
  - Threats to physical health and safety of local community
  - Mental anguish associated with damage to assets or loss of income
  - Undermining of social fabric in enclaves heavily affected

Phase 2 – Scoping Study

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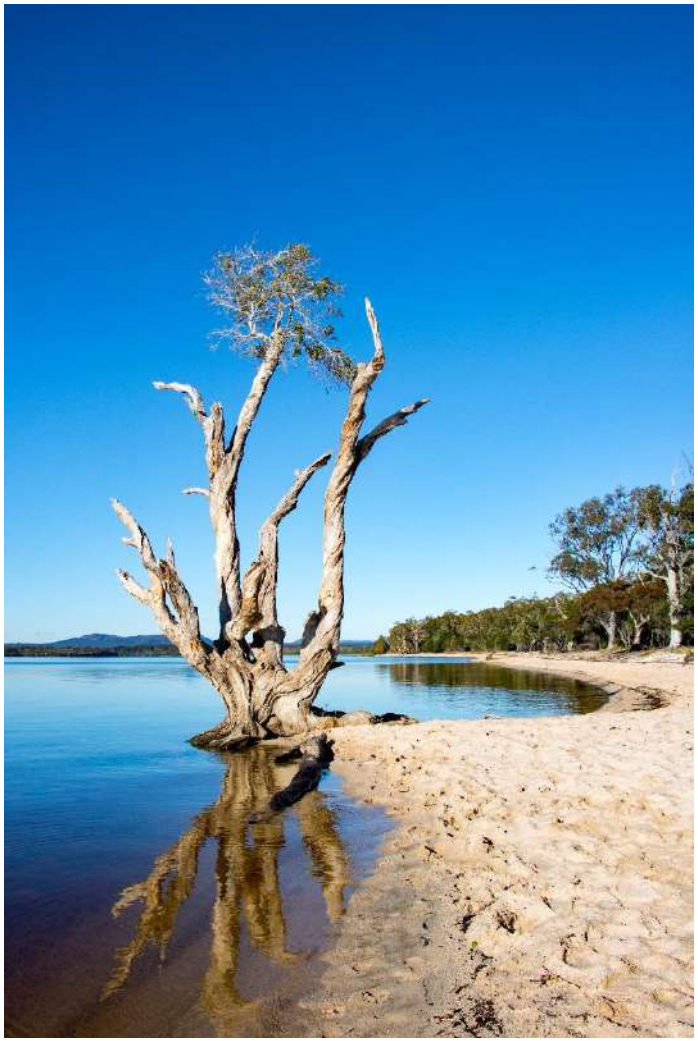
- Review of existing information relevant to Noosa
- Identify knowledge gaps
- Planning horizons of 2040, 2070, 2100
- Limitations of previous State mapping
- Previous 2100 work by Aurecon

Phase 3 – Coastal Hazards Assessment

Source: Australian Broadcasting Commission(2016)

Phase 3 – Coastal Hazards Assessment

- Model for 2040, 2070 and 2100
- Permanent inundation from SLR
- Temporary inundation from Stormtide
- Storm erosion and shoreline recession
- 1% AEP events used
- 0.8m SLR applied (2100)



Source: Noosa Council

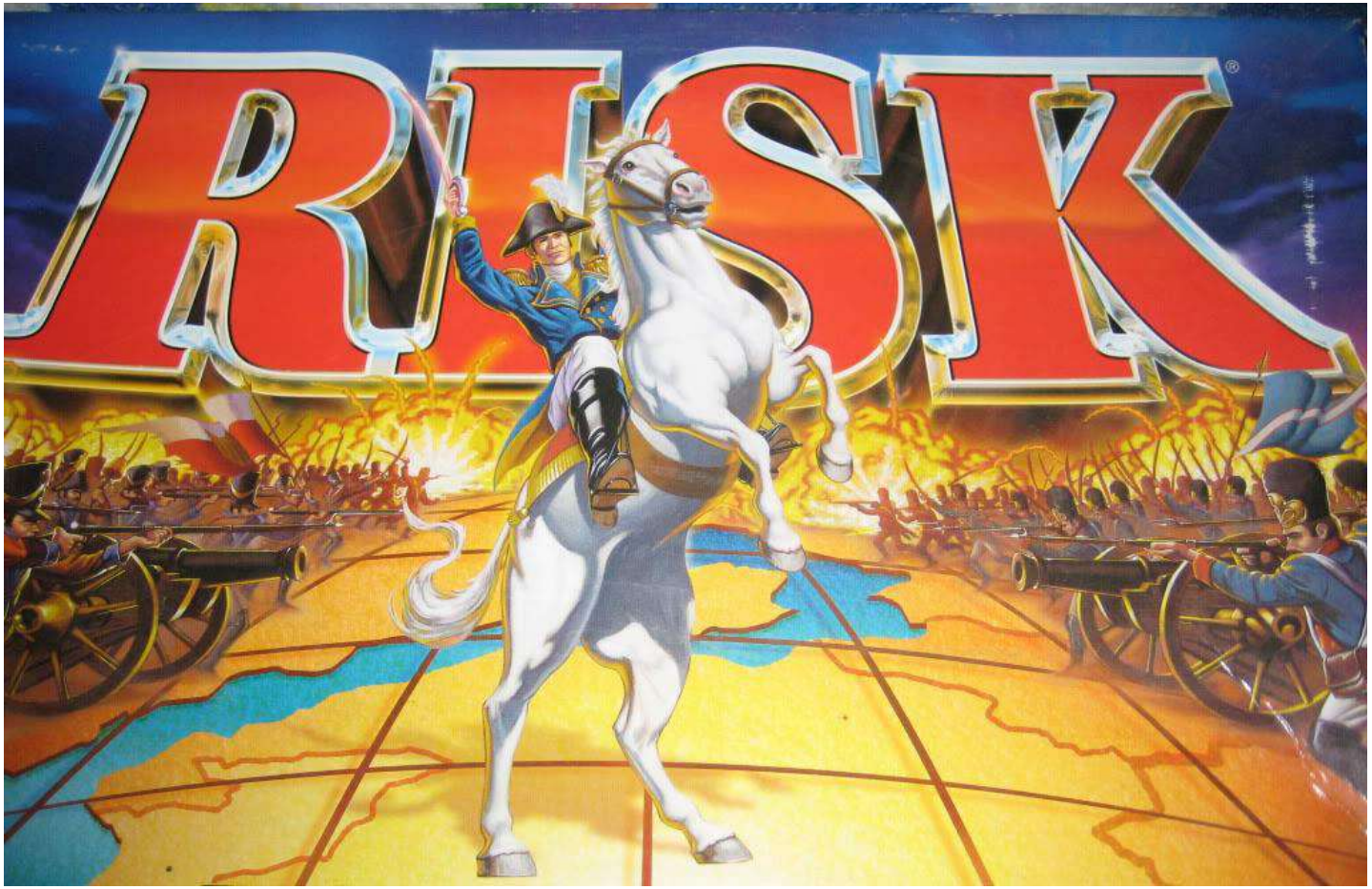
Phase 4 – Asset Prioritisation

Source: Noosa Council

Example Assets Potentially Affected

Asset Class	Example Assets
Private Commercial	Marine access assets; tourist hotspots; food and retail buildings.
Private Residential (detached)	Multiple localities
Public Recreation	Noosa Main Beach
	Quota Park Foreshore Parkland
	Gympie Terrace
Essential Services	Stormwater network, energy networks
Council	Noosa Administration Building

Phase 5 – Risk Analysis



Phase 5 – Risk Analysis

- Workshop 1 (PWG)
- Workshop 2 (PWG)

Source: Noosa Council

Phase 5 – Risk Workshop #1

- Goal: use assets/locations representative of the broader coastal area to provide indicative impact determination
- Participants: Project Working Group
- Timeframe of the CHAS: Present Day to 2100
- Likelihood: scored by planning horizon
- Consequence: indicative scoring by participants
- Coincident flooding impacts unlikely. ‘Gut feeling’ but no statistical evidence.
- This is a starting point - will need to be reviewed over time noting the risk of impact will change with increased certainty of likelihood and trajectory

Phase 5 – Consequence Scale (example)

Consequence	Society/Community	Environment	Economy (including Council Assets)
Catastrophic	Widespread permanent impact to community's services wellbeing, or culture (e.g. >50% of community affected) or national loss, with no suitable alternative sites that exist	Widespread devastating/permanent impact to ecological character (e.g. entire habitat destruction) Or Loss of all local representation of nationally important species with recovery unlikely	Damage to property, infrastructure or local economy > $ 20 million Asset(s) completely damaged and/or large scale engineering works required for reinstating. Significant disruption in business operation (virtually dysfunctional)
Major	Major permanent or widespread medium term (somewhat reversible) disruption to community's services, wellbeing, or culture (e.g. up to 50% of community affected) or regional loss, with only a few suitable alternative sites that exist	Widespread semi-permanent impact to ecological character Or Loss of local representation of a national or regionally important species with recovery over years – decades	Damage to property, infrastructure or local economy > $ 5 million - 20 million Extensive structural damage to the asset(s) requiring significant engineering stabilisation work. Major disruption in the asset's service Major disruption in business operation with significant loss of revenue and market reputation
Moderate	Minor long term or major short term (mostly reversible) disruption to community's services, wellbeing, or culture (e.g. up to 25% of community affected) or sub-regional loss, with some suitable alternative sites available	Local environmental impacts or localised changes to ecological character Or Widespread impacts of a temporary nature to regionally or locally important species but with recovery likely over the short term	Damage to property, infrastructure or local economy > $ 500,000 – $5 million Moderate damage to some part of the structure of the asset(s) and require large engineering stabilisation work. Moderate disruption in the asset's service Considerable impact in business operation with loss of revenue
Minor	Small to medium term (reversible) disruption to community's services, wellbeing, finances or culture (e.g. up to 10% of community affected) or local loss, with many suitable alternative sites available	Temporary environmental impacts at a local scale of a magnitude consistent with seasonal variation Or Impacts not affecting species of conservation significance or otherwise affecting local species with rapid recovery	Damage to property, infrastructure or local economy > $ 50,000 to $ 500,000 Limited damage to some part of the asset(s) and require some small scale stabilisation work resulting in minor service disruption Minor impact in business operation as disruption mostly can be managed through standby or alternate options. However, some loss of revenue or cost involved
Insignificant	Very small short term disruption to community's services, wellbeing, finances or culture (e.g. up to 5% of community affected) or neighbourhood level loss, with numerous alternative sites available	Minimal very short term, temporary effects on habitat or species with recovery assured.	Damage to property, infrastructure or local economy > $ 50,000 Little disruption in service but no structural damage to the asset(s) Little to no impact in business operation.

Phase 5 – Workshop #2

- Objective: work through some potential risk mitigation options to assist consultants thinking
- Validate and illuminate what will fit with Noosa
- “The Noosa Way”
- Participants from PWG, split into groups
- Included discussion on what we’ve done in the past to mitigate risks

Phase 5 – Existing defensive systems

Source: Noosa Council

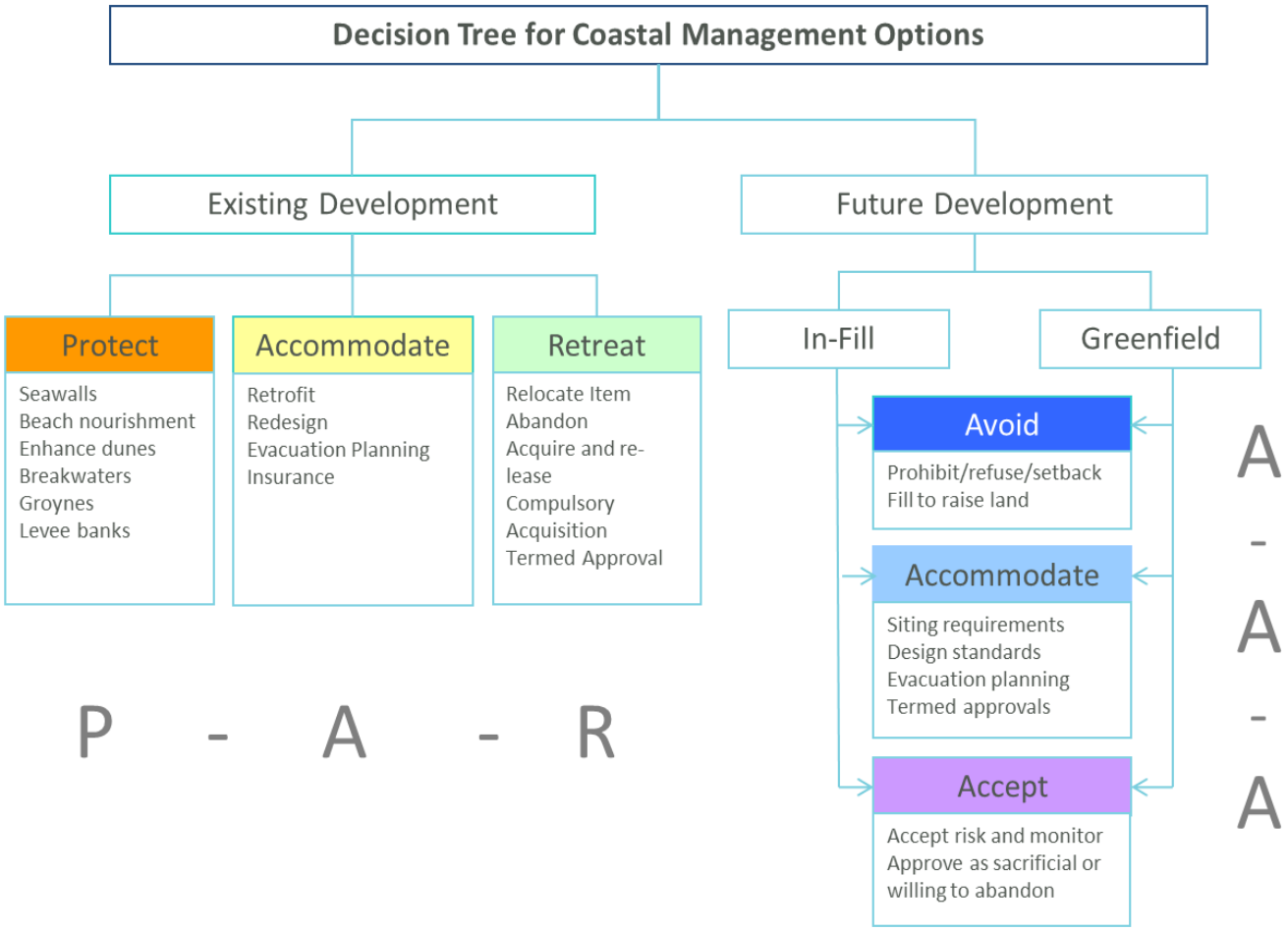
Biodiversity Assessment

- Impacts to Broad Vegetation Groups and Key/Iconic Species (flora and fauna)
- Assess adaptive capacity within:
  - CSIRO climate projections
  - Adjacent land use constraints
- Assess gaps in existing management & plans
- Recommendations

Source: Noosa Council

Source: Noosa Council

Phase 6 - Options Analysis

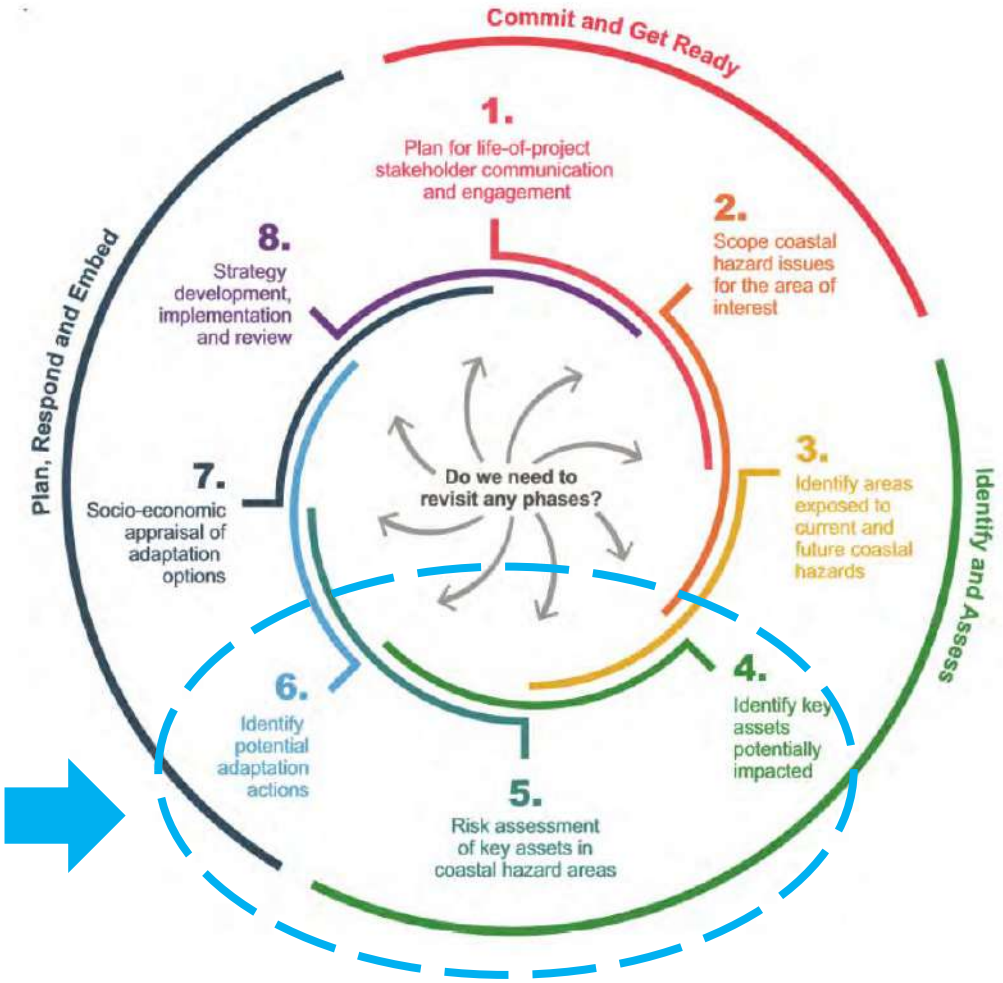


Phase 6 - Aiming to end up with something like this…

Option	Option Type	Treats Erosion	Treats Recession	Treats Oceanic Inundation	Maintains Beach Amenity	Maintains Foreshore Habitat	Capital Cost	Recurrent Costs	Environmental or Social Impact	Community Acceptability	Reversible / Adaptable	Effectiveness over time	Legal / Approval Risk	Technical Viability	Score (Go = 1, Slow = 0, Stop = -1)	Recommended Asset Type &/or Other Comments
Planned Retreat Options																
Accept Impacts	Accept loss of land or assets affected by a hazard event (i.e. once affected, the assets or land is not replaced). Allows beach to translocate landward, retaining a sandy beach over time, where geology allows for retreat.	✓	✓		✓		Go	Go	Slow	Slow	Stop	Slow	Slow	Go	2	Only appropriate for undeveloped land. Costs and benefits of loss of habitat against maintaining beach amenity need to be considered.
Land Acquisition	High risk private properties are bought at market prices then demolished to become public land.	✓	✓	✓	✓	✓	Stop	Go	Go	Stop	Slow	Go	Stop	Go	1	If the option of retreat is to be considered broadly as part of the CHAS and long term adaptation planning, this option could be further investigated for Holloways Beach.
Buy Back / Lease Back	High risk private properties are bought at market prices, and then rented out until hazard impacts are imminent (years). When hazard is imminent, the property is demolished and land returned to the public.	✓	✓	✓	✓	✓	Stop	Go	Go	Stop	Slow	Go	Stop	Go	3	As above.

Project status

We're here at the moment



Lesson Learning Time

What Now..

- Engagement campaign
  - Build awareness and support
  - Data re. tolerance and appetite
  - Collaboration on CHAS drafting
- Inform Phases 5 - 8

Source: Noosa Council

Next Steps…

NOV	• Biodiversity risk assessment workshop with PWG • Finalisation of Key Asset Register • Concept design and drafting of web-tool • Develop stakeholder engagement plan & procure contract for implementing engagement plan
DEC	• Community awareness raising campaign • User-testing and finalisation of web-tool
JAN – FEB	• Launch of web-tool • Community workshops • Finalisation of risk mapping • Adaptation options shortlisting
MAR-APR	• Socio-economic analysis • Final technical report (Phases 2 – 7)

In Future…

- To be informed by CHAS
  - Noosa River Management Plan
  - Biodiversity/Environmental Management Plans
  - Coastal management plan
  - New planning scheme
  - Disaster mgmt. planning
  - Asset planning and maintenance program (Infra and community facilities)
  - Financial planning

THANK YOU