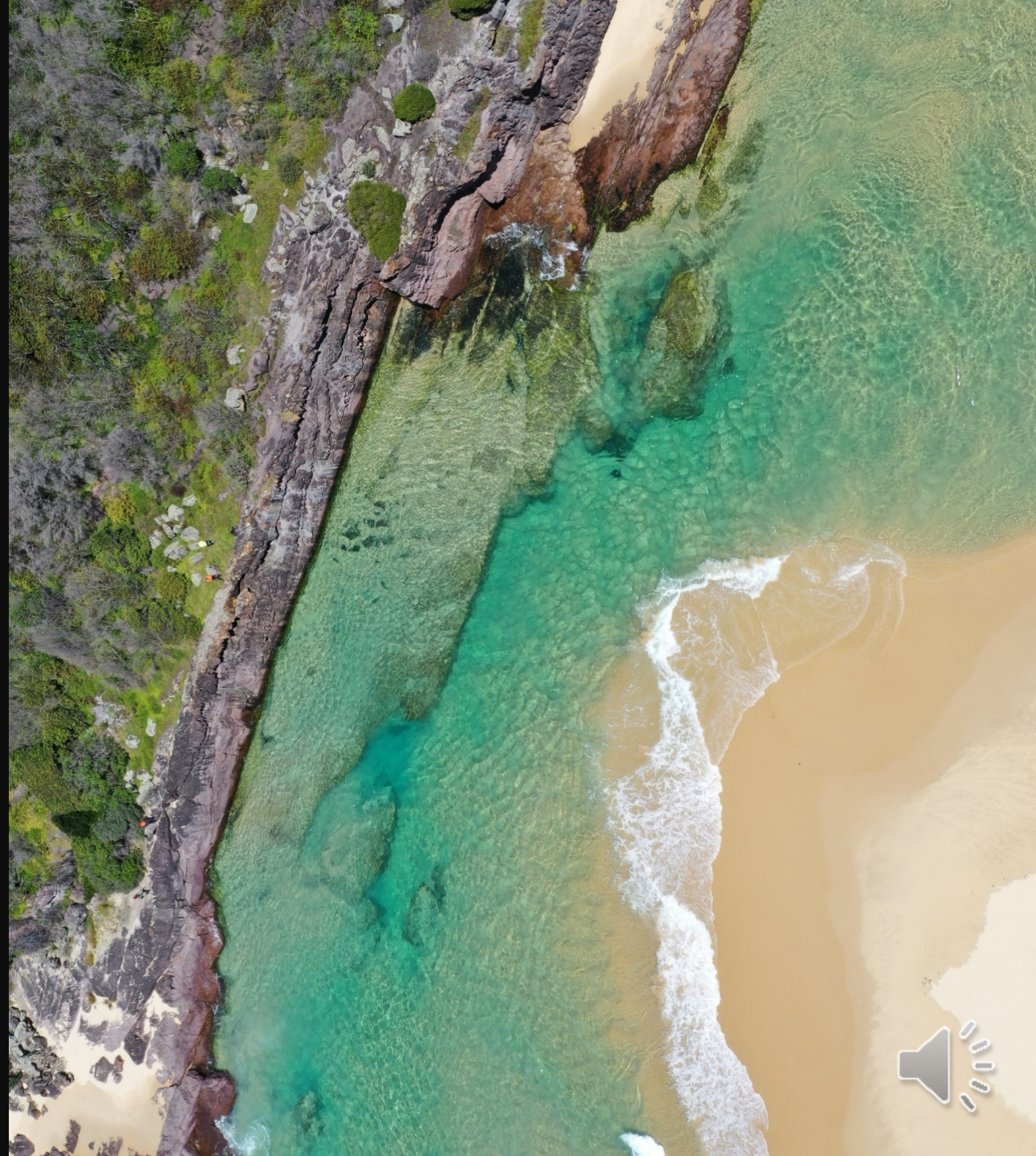
South East Catchments and Waterways Bushfire Recovery Plan

FINAL PLAN OVERVIEW

November 2021

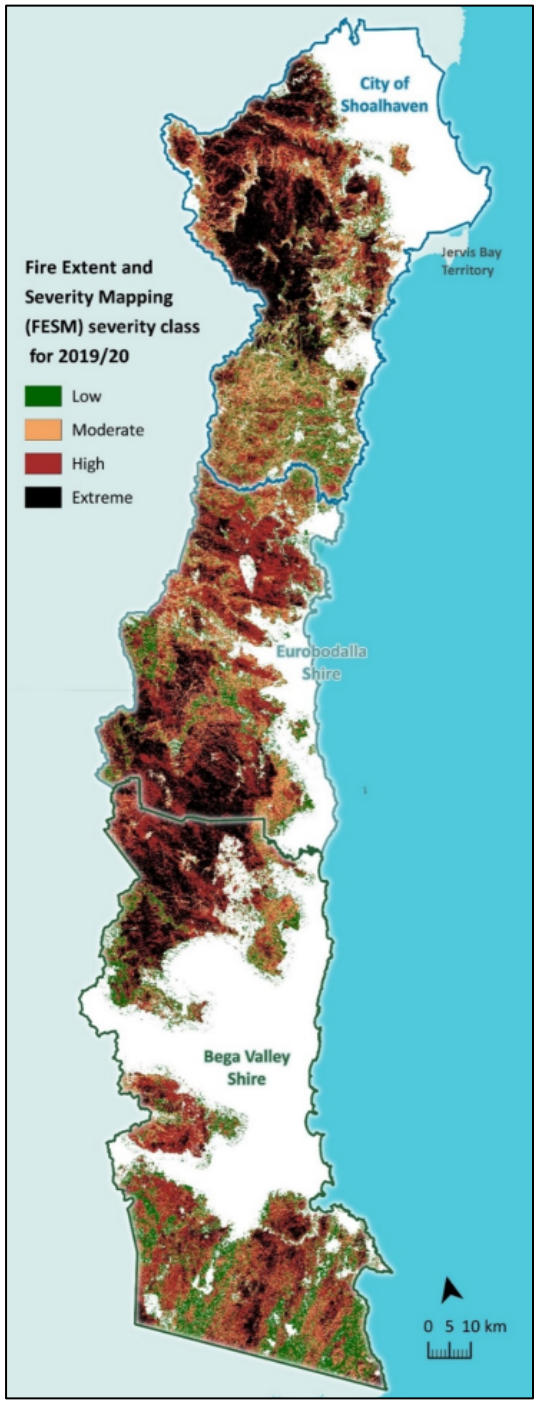


Alluvium recognises and acknowledges the unique relationship and deep connection to Country shared by Aboriginal and Torres Strait Islander people, as First Peoples and Traditional Owners of Australia. We pay our respects to their Cultures, Country and Elders past and present.

Artwork by Vicki Golding. This piece was commissioned by Alluvium and has told our story of water across Country, from catchment to coast, with people from all cultures learning, understanding, sharing stories, walking to and talking at the meeting places as one nation.

Fire impacts

- One million hectares of land and approximately 47 estuaries and coastal catchments burnt
- 31% of the burned area in the South East region experienced **extreme** fire severity
- 37% was burned at **high** severity
- 18% and 11% was burned at **moderate** and **low** severity.



Purpose of the plan

The purpose of the Recovery Plan is to guide medium- and long-term management priorities for recovery of bushfire affected waterways and estuaries, and to provide consistency and efficiency in management across the three LGAs.

Methods

- Recovery framework
- Risk assessment
- Field observations
- Identify priority sites and management actions

Recovery Framework

Bushfire

Threats

- Increased soil erosion
- Water quality impacts from ash, debris and/or use of fire retardants
- Loss of vegetation, habitat and biodiversity
- Loss of ecosystem services
- Increased pest plants and animals
- Dune and estuarine foreshore instability

Focus of risk assessment

Values

Environmental

- Coastal wetlands and littoral rainforests
- Estuaries including seagrass beds and mangroves
- High ecological value (HEV) waterways

Social, cultural and economic

- Cultural heritage
- Essential infrastructure (water supply)
- Tourism and recreation
- Primary industries
- Community resilience

Recovery objectives

For coastal wetlands and littoral rainforests:
Protect in their natural state
Promote rehabilitation and restoration of degraded areas

For estuaries:
Maintain and improve water quality and estuary health
Protect and enhance coastal environmental values and maintain natural processes
Reduce threats and improve resilience
Enhance natural character, scenic value, biological diversity and ecosystem integrity
Conserve estuarine habitats and biotic assemblages, and ensure their ecologically sustainable use
Conserve listed threatened and protected estuarine species

For high ecological value (HEV) estuaries:
Maintain water quality
Protect, preserve, maintain and enhance important river-flow dependent ecosystems
Adaptively manage waterways

For cultural heritage:
Protect, preserve, maintain and enhance Aboriginal cultural and heritage values

For essential infrastructure:
Ensure public safety and prevent risks to human life
Prioritise actions that support the continued functionality of essential infrastructure

For tourism and recreation:
Provide for economic values, uses and opportunities
Provide for recreational, cultural and social uses
Maintain and, where practicable, improve public access and amenity

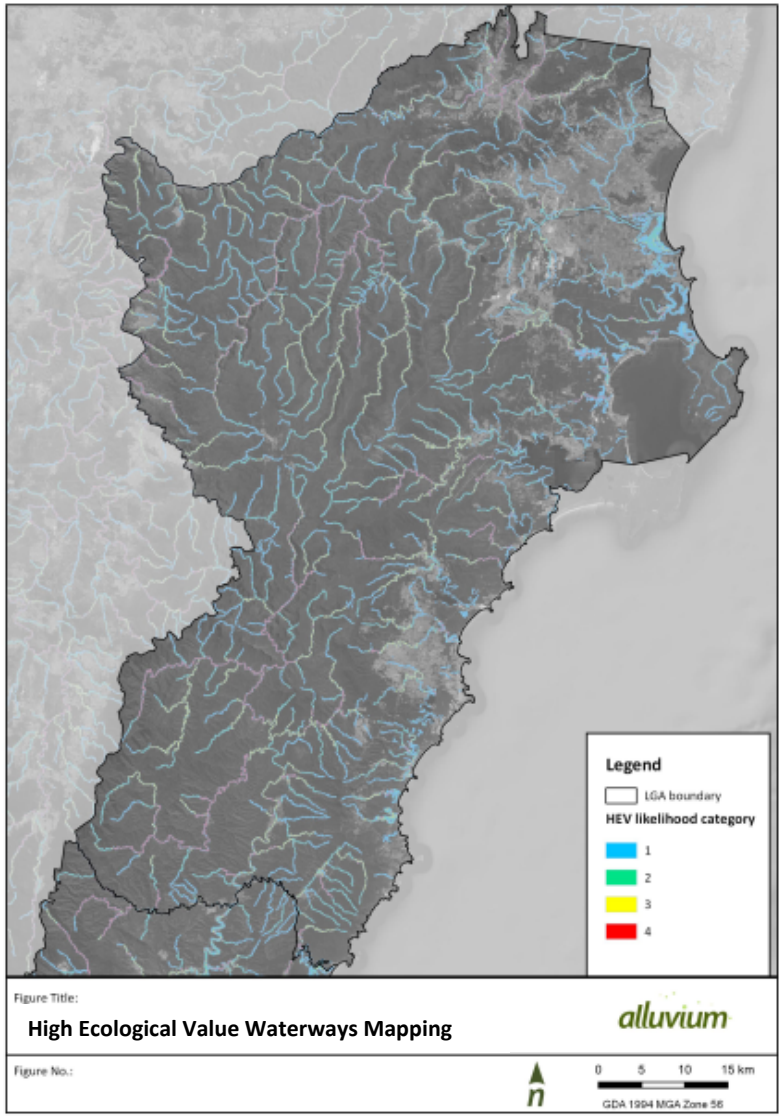
For primary industries:
Provide for economic values, uses and opportunities

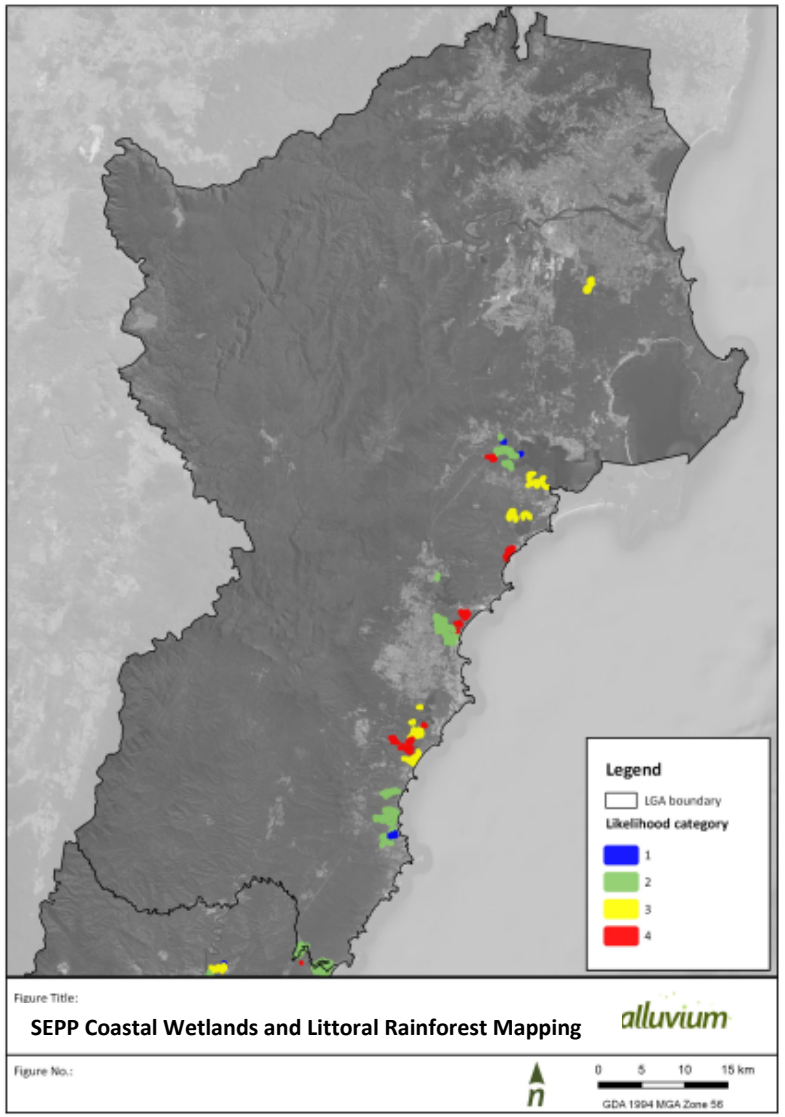
For community resilience
Improve the resilience of communities by improving adaptive capacity

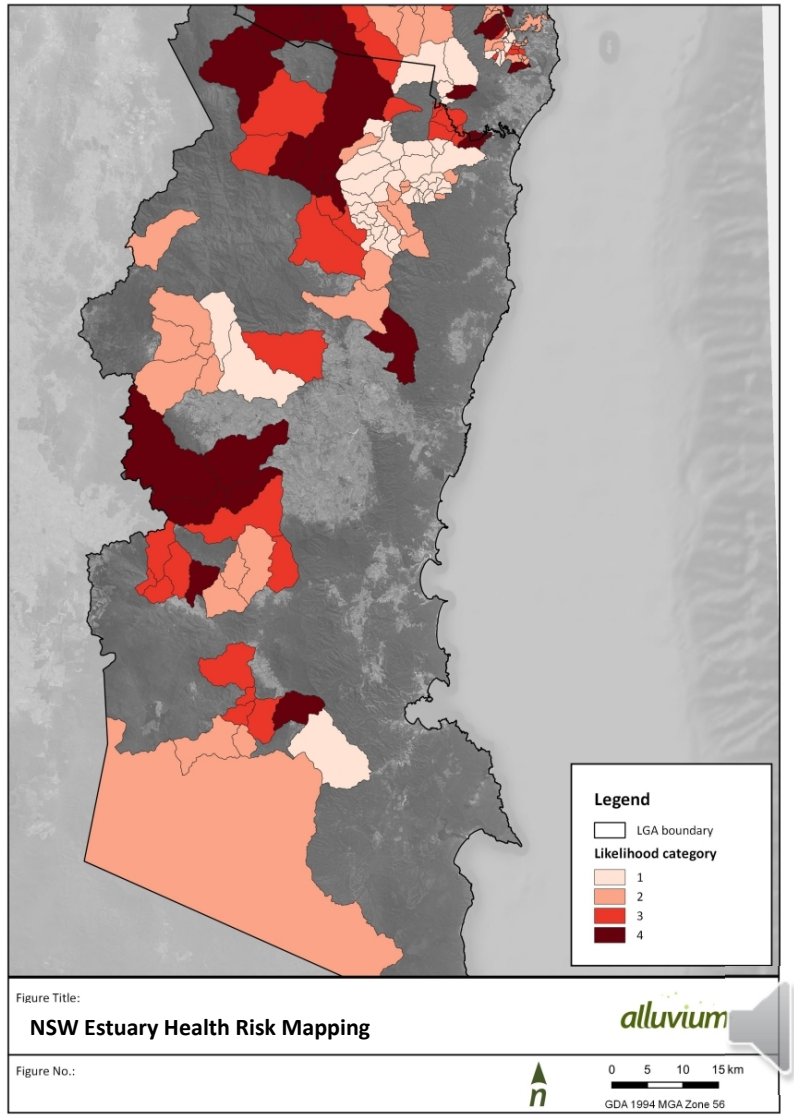
Recovery actions

Note: Recovery objectives are adapted from management objectives in the Coastal Management Act 2016, Marine Estate TARA, and relevant water sharing plans

Risk Assessment – Environmental Map Layers







Example – Estuary Risk Assessment

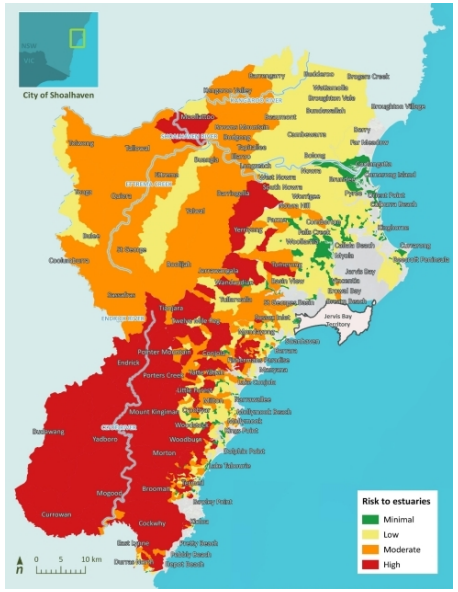
Likelihood/Impact		
Indicator: **RUSLE modelling and the contribution of subcatchments towards sediment**. Calculated as: • Total sediment load from subcatchment [t] = RUSLE [t/ha] * SDR • Then the 25th,50th and 75th percentile of that total sediment load, to determine the likelihood groupings (Rare to Likely)		
1	Rare	Year 1 Cat1: <= xx t/ha Year 2 Cat1: <= xx t/ha
2	Unlikely	Year 1 Cat2: <= xx t/ha Year 2 Cat2: <= xx t/ha
3	Possible	Year 1 Cat3: <= xx t/ha Year 2 Cat3: <= xx t/ha
4	Likely	Year 1 Cat4: <= xx t/ha Year 2 Cat4: <= xx t/ha

Consequence		
Indicator: **NSW Estuary Health Risk Dataset**. This dataset identifies land-use pressures and consequent risks of impacts on the ecological health of estuaries. It includes consequence scores that define the magnitude/extent of impact on estuary health. In particular, consequence scores represent either the ecological response (chlorophyll a, turbidity) or sensitivity (based on hydrodynamics) of the estuary to TN loads from each subcatchment, and proximity to environmental assets. In our consequence ratings, it is assumed that an estuary more susceptible to land use pressures is also more susceptible to bushfire impacts. Where the dataset is incomplete, we take a conservative approach and assume the consequence is high.		
1	Insignificant	Little to no impact on estuary health.
2	Minor/Low	TN and Chl a concentrations, water clarity, base exceedance and/or extent of potential impact metrics are in the >25th and ≤50th percentile of the datasets. This represents a small, short-term impact on estuary health, with full recovery on a timescale of weeks to months.
3	Moderate	TN and Chl a concentrations, water clarity, base exceedance and/or extent of potential impact metrics are in the >50th and ≤75th percentile of the datasets. This represents a substantial impact on estuary health, with full recovery on a timescale of months to years.
4	Major/High	TN and Chl a concentrations, water clarity, base exceedance and/or extent of potential impact metrics are in the >75th percentile of the datasets. This represents a severe and semi-permanent impact on estuary health, with full recovery – if at all – on a timescale of years to decades.

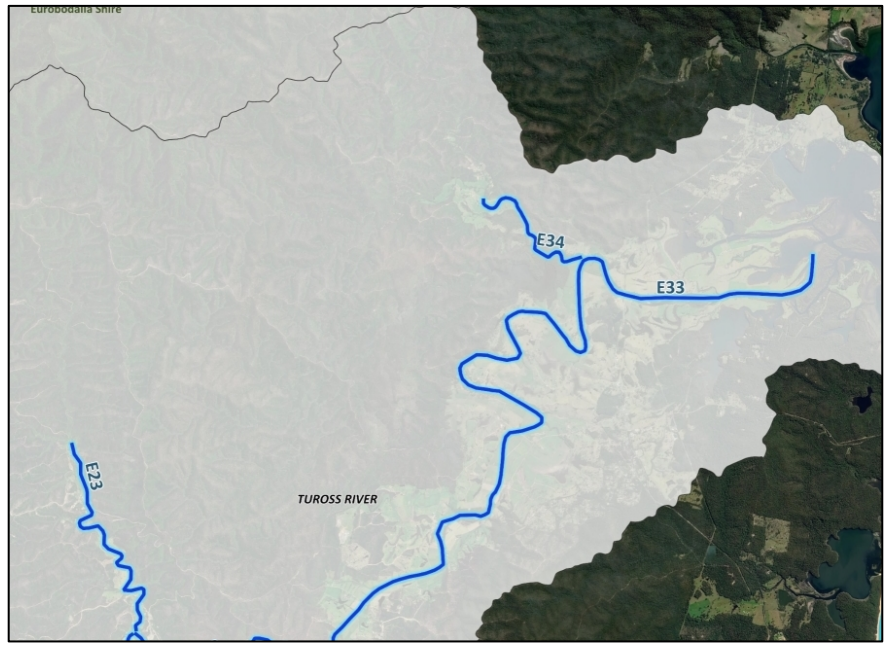
Risk Assessment

For Each LGA

Environmental
Cultural
Social
Economic



Catchment	ID	Priority type	Description	Land tenure	Reasoning	Issue	Recommend	LGA	Bank	Length (m)	Environmental risk (4 = High risk)		Cumulative risk	
										Estuaries	Freshwater	Wetlands	Environmental	All values
CLYDE RIVER	E01	1	Clyde River at Currowan and Benandarah (1)	FREEHOLD	Stakeholder workshops; Field assessments; Risk assessment (high risk for estuaries and wetlands)	Bank erosion; degraded riparian vegetation; burnt habitat; stock access; weeds	Stock exclusion fencing; riparian revegetation	Eurobodalla Shire	Left	2111	4	2	4	10	20
	E03	1	Clyde River at Currowan and Benandarah (3)	FREEHOLD	Stakeholder workshops; Field assessments; Risk assessment (high risk for estuaries and wetlands)	Bank erosion; degraded riparian vegetation; burnt habitat; stock access; weeds	Stock exclusion fencing; riparian revegetation	Eurobodalla Shire	Right	1624	4	2	4	10	20
	E06	1	Clyde River at Currowan and Benandarah (6)	FREEHOLD	Stakeholder workshops; Field assessments; Risk assessment (high risk for estuaries and wetlands)	Bank erosion; degraded riparian vegetation; burnt habitat; stock access; weeds	Stock exclusion fencing; riparian revegetation	Eurobodalla Shire	Right	510	4	2	4	10	20
	E07	1	Clyde River at Currowan and Benandarah (7)	FREEHOLD	Stakeholder workshops; Field assessments; Risk assessment (high risk for estuaries and wetlands)	Bank erosion; degraded riparian vegetation; burnt habitat; stock access; weeds	Stock exclusion fencing; riparian revegetation	Eurobodalla Shire	Left	2088	4	2	4	10	20
	E08	1	Clyde River at Currowan and Benandarah (8)	FREEHOLD	Stakeholder workshops; Field assessments; Risk assessment (high risk for estuaries and wetlands)	Bank erosion; degraded riparian vegetation; burnt habitat; stock access; weeds	Stock exclusion fencing; riparian revegetation	Eurobodalla Shire	Right	1474	4	2	4	10	20

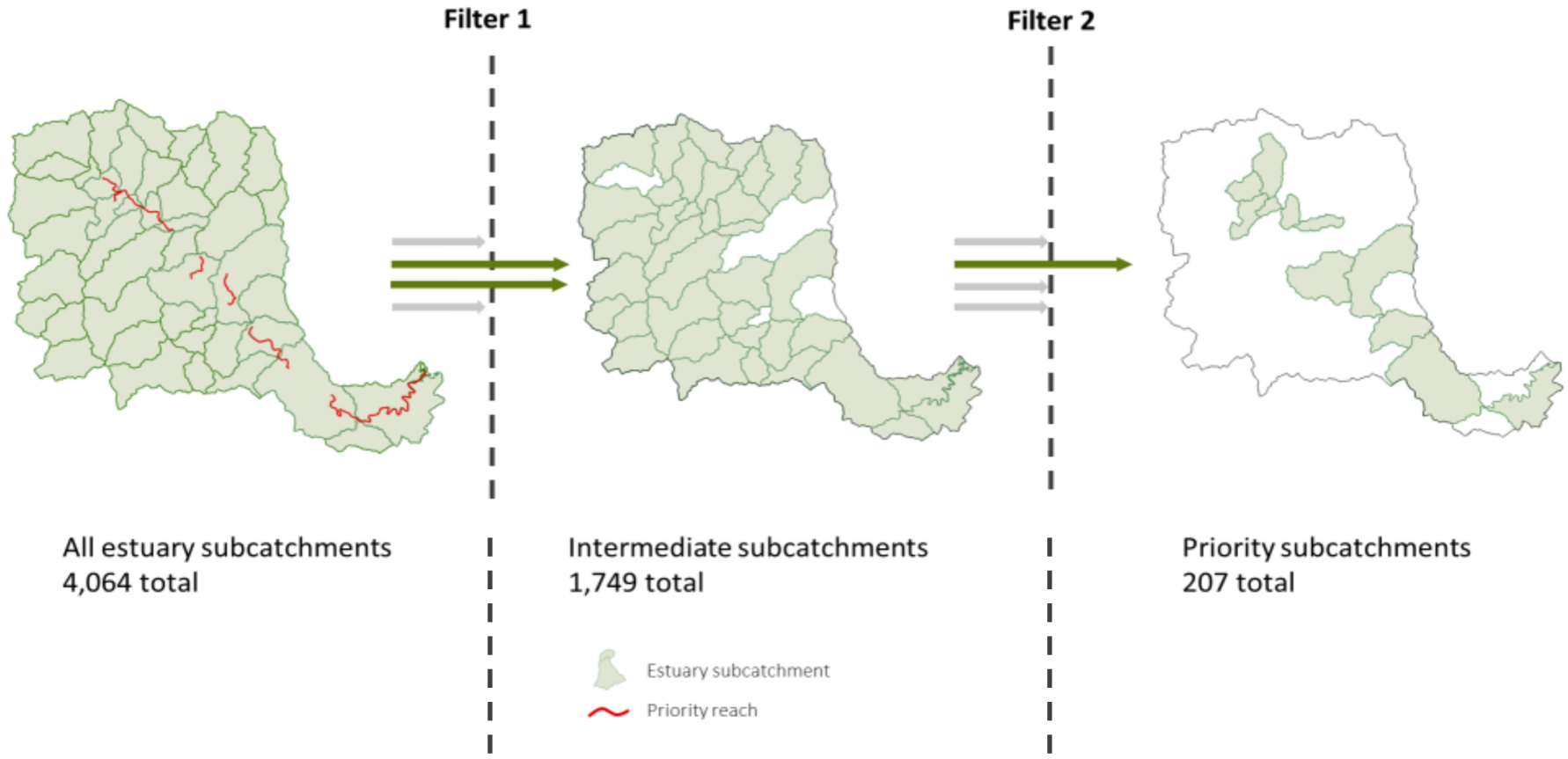


Priority Reaches

Multiple values at risk
Field observations
Agricultural land

Sparse riparian vegetation
Meandering sections in valleys
Stream Order - sediment storage

Sub-catchment filtering

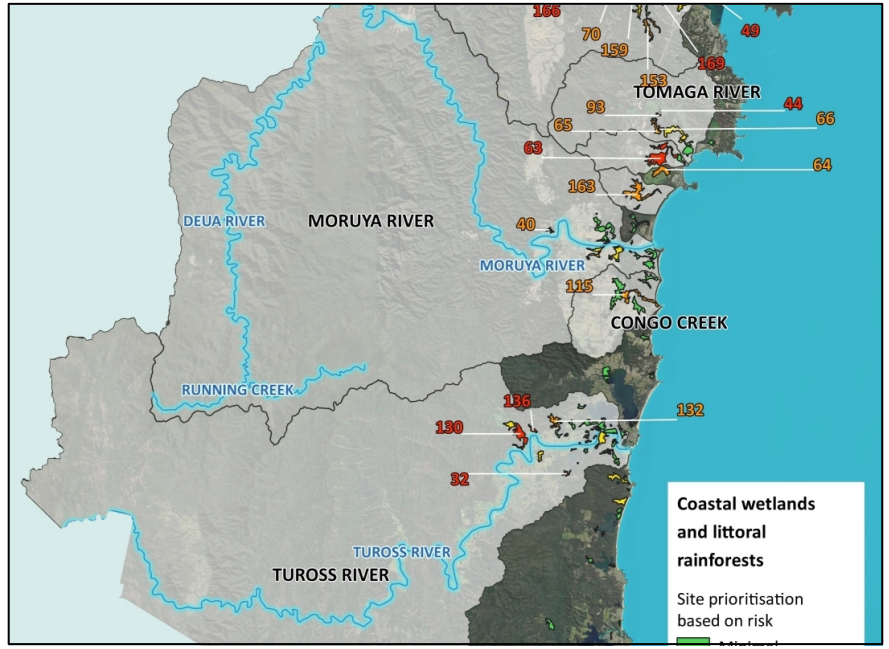


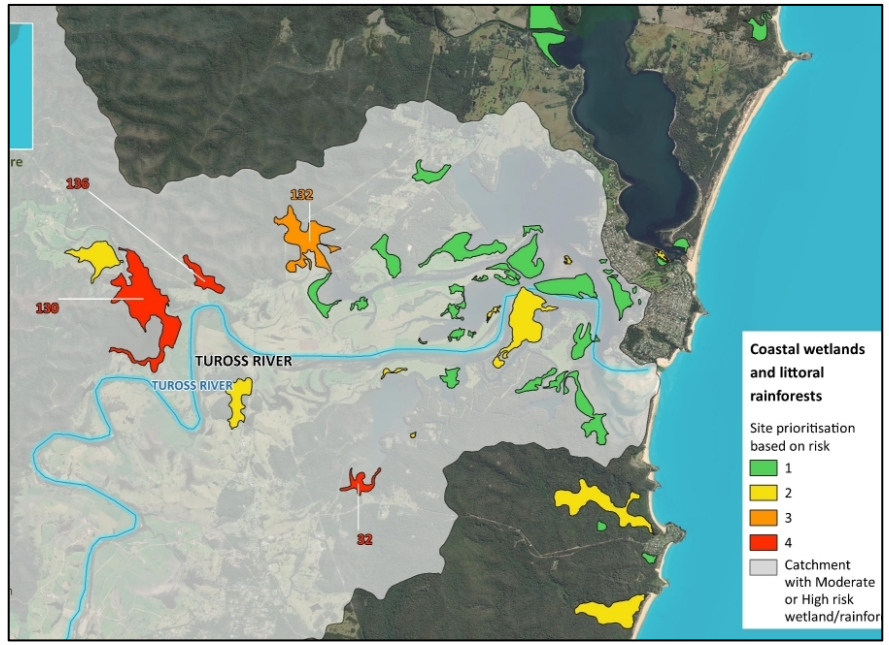
High or moderate risk from any value
Field work or stakeholders
Priority waterway

High risk for both estuaries and waterways
High risk wetlands or littoral rainforest
High cultural value
Field work or stakeholders

Catchment	ID	LGA	LALC	Tenure - Simple	Tenure - Detailed	Reasoning	Weed species	Environmental risk (4 = High risk)			Cumulative risk	
								Estuaries	Freshwater	Wetlands	Environmental	All values
MORUYA RIVER	MORUYA RIVER 62	Eurobodalla Shire	Cobowra LALC, Mogo LALC	FREEHOLD, NPWS	FREEHOLD, DEUA NATIONAL PARK/RESERVE	Risk assessment		4	4	1	9	15
	MORUYA RIVER 64	Eurobodalla Shire	Cobowra LALC	FREEHOLD, NPWS	FREEHOLD, DEUA NATIONAL PARK/RESERVE	Risk assessment		4	4	1	9	16
	MORUYA RIVER 74	Eurobodalla Shire	Cobowra LALC	FREEHOLD, NPWS	FREEHOLD, DEUA NATIONAL PARK/RESERVE	Risk assessment		4	4	1	9	16
	MORUYA RIVER 86	Eurobodalla Shire	Cobowra LALC	NPWS	DEUA NATIONAL PARK/RESERVE	Risk assessment		4	4	1	9	19
	MORUYA RIVER 93	Eurobodalla Shire	Bodalla LALC	NPWS	DEUA NATIONAL PARK/RESERVE	Risk assessment		4	4	1	9	19
	MORUYA RIVER 95	Eurobodalla Shire	Bodalla LALC, Wagonga LALC	NPWS	DEUA NATIONAL PARK/RESERVE	Risk assessment	Blackberry	4	4	1	9	19
	MORUYA RIVER 54	Eurobodalla Shire	Mogo LALC	NPWS	MONGA, DEUA NATIONAL PARK/RESERVE	Risk assessment		4	3	1	8	17
	MORUYA RIVER 57	Eurobodalla Shire	Cobowra LALC, Mogo LALC	FREEHOLD, STATE FOREST, CROWN LAND, EUROBODALLA SHIRE COUNCIL	FREEHOLD, WANDERA, MOGO STATE FOREST	Stakeholder workshops; Field assessments; Risk assessment		4	3	1	8	17
	MORUYA RIVER 67	Eurobodalla Shire	Cobowra LALC	FREEHOLD, NPWS	FREEHOLD, DEUA NATIONAL PARK/RESERVE	Risk assessment		4	2	1	7	16
	MORUYA RIVER 80	Eurobodalla Shire	Cobowra LALC	FREEHOLD, NPWS	FREEHOLD, DEUA NATIONAL PARK/RESERVE	Risk assessment		4	2	1	7	16
	MORUYA RIVER 84	Eurobodalla Shire	Cobowra LALC	FREEHOLD, NPWS	FREEHOLD, DEUA NATIONAL PARK/RESERVE	Risk assessment		4	2	1	7	16
	MORUYA RIVER 55	Eurobodalla Shire	Mogo LALC	FREEHOLD, NPWS	FREEHOLD, DEUA NATIONAL PARK/RESERVE	Risk assessment		4	1	1	6	15

Priority Sub catchments



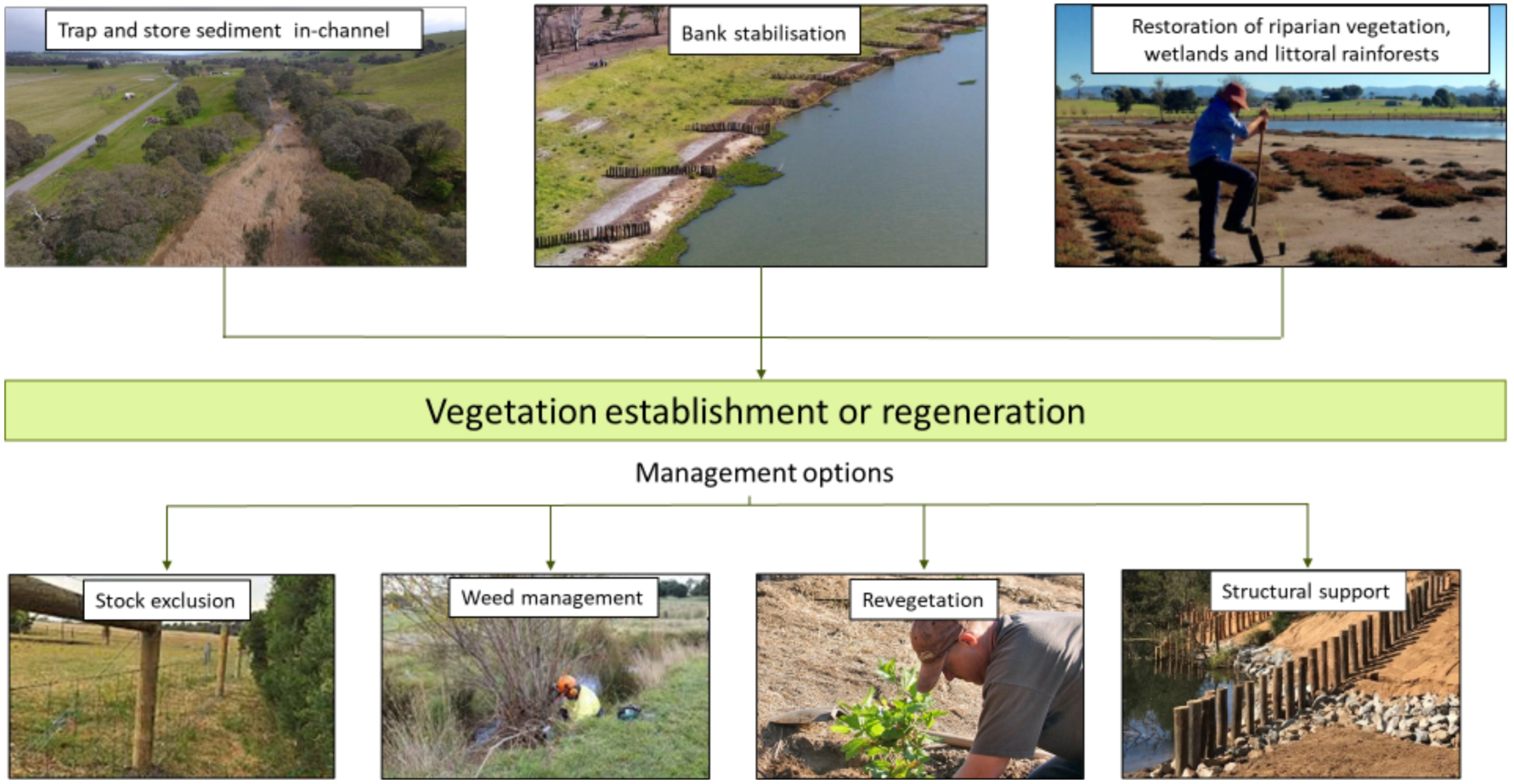


Catchment	Wetland ID (Alluvium)	Number of subcatchments hosting wetlands	Risk/priority	Type	Area (ha)
Durras Lake	23	4	High	Coastal wetland	43.509
	24	1	Moderate	Coastal wetland	3.282
	53	12	Moderate	Coastal wetland	139.859
Tuross River	32	1	High	Coastal wetland	12.232
	130	2	High	Coastal wetland	103.267
	136	1	High	Coastal wetland	15.966
	132	1	Moderate	Coastal wetland	53.788
Moruya River	40	1	Moderate	Coastal wetland	9.096
Tomaga River	44	1	High	Coastal wetland	0.599
	65	6	Moderate	Coastal wetland	35.839
	66	2	Moderate	Coastal wetland	9.144
	93	1	Moderate	Coastal wetland	1.344
Candlagan Creek	63	18	High	Coastal wetland	190.112

Priority Wetlands and Littoral Rainforest

Burnt SEPP mapped Wetlands
Burnt SEPP mapped Littoral Rainforest
Impact Risk Assessment

Management Options



Implementation Plan

- Councils and partner agencies to undertake further site visits to determine individual site works
- Chosen from priority reaches, wetlands and sub-catchment tables

Wonboyn Catchment (Rachel Duczynski Bega Valley Shire Council), July 2020

Step 1:

Identify whether any of the priority sites are being addressed under existing programs being undertaken by other agencies.

Step 2:

Identify whether any priority sites have existing relationships with landholders. Engage with landholders.

Step 3:

Undertake site visits with relevant stakeholders

- Undertake engagement with landholders and traditional owners during site visit where possible
- Identify management options and need for detailed assessments for structural works
- Estimate high level costs of management actions
- Produce conceptual design or engage relevant expertise to produce

Step 4:

Produce functional/detailed design

Key considerations are:

- The underlying processes driving bed or bank erosion at the site
- Detailed modelling requirements (hydraulic modelling)
- Wherever possible, site investigations should be grouped together to minimise project costs

Step 5:

Proceed to works

- Wherever possible, councils should utilise local contractors including LALC work crews, or partner agencies
- Document works as per MER plan

Monitoring and Evaluation Program

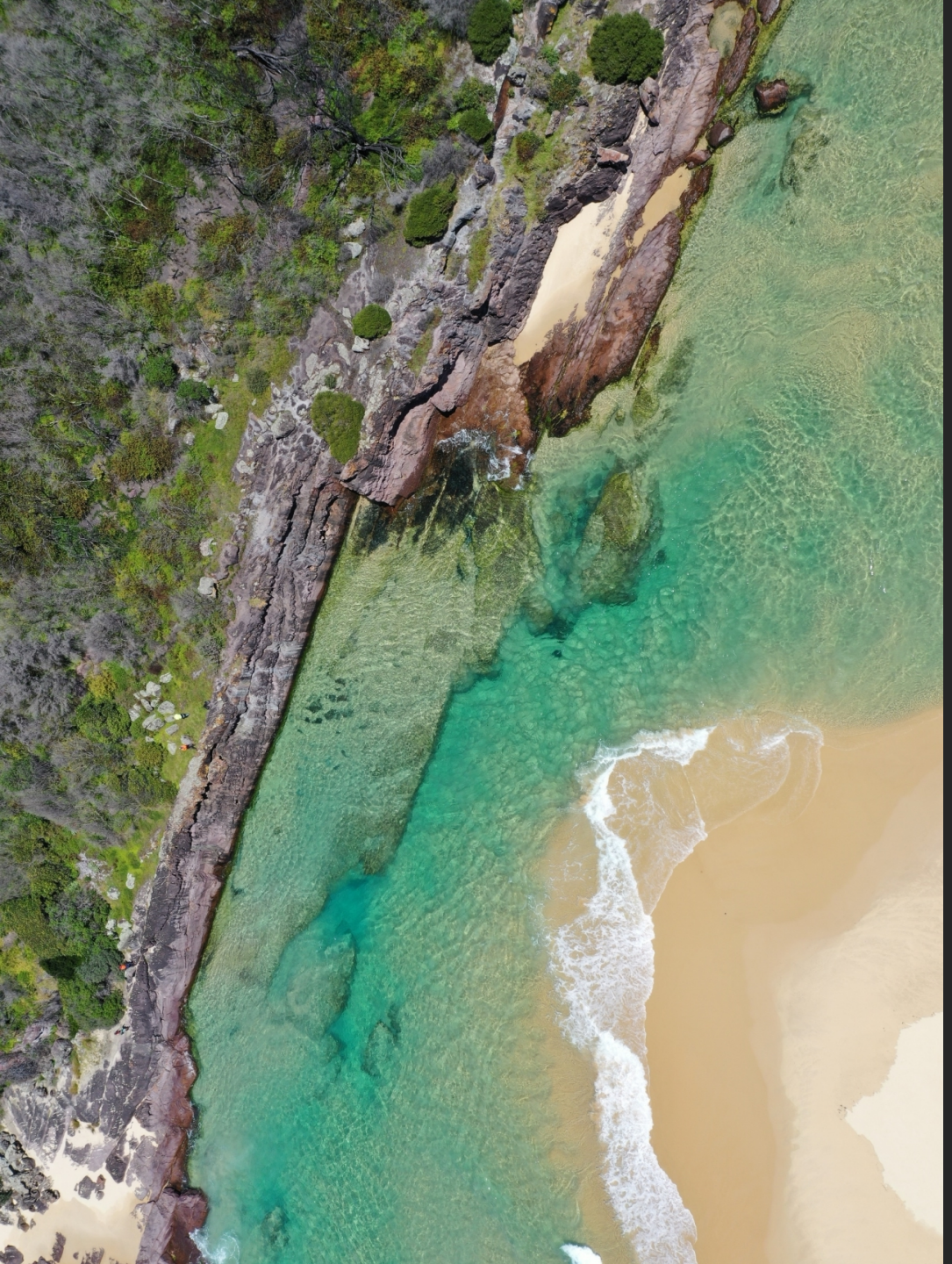
Short Term – By end of grant

Longer Term – 5 and 10 years

Covering

- Plan achievements (e.g. has it been used to chose sites)
- Options implemented (e.g. km of fencing, number of plants, area of weed control)
- Estuary Health / water quality monitoring

Photos: Lake Conjola Feb and Nov 2020



Next Steps

Find out more at

Shoalhaven City Council

eurobodalla shire council

bega valley shire council

Support and funding assistance for this project was provided by the NSW Government under its

Bushfire Affected Coastal Waterways Program

Department of Planning, Industry and Environment