

South East Catchment Action Plan



Local Land
Services
South East

Acknowledgements:

Our organisation recognises that sustainable use and care of the region's natural resources is everyone's responsibility. We acknowledge the many land owners, land and water managers, individuals, community groups and other organisations who have taken up this responsibility. We particularly acknowledge the Aboriginal people of the region who have been the custodians of the land and sea for thousands of years. Together we are working towards a more resilient future for the South East landscape and community.

Disclaimer:

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Front cover images

Left: Members of the Maclaughlin River Landcare group discuss plant identification and pasture management at "Sherwood", Bridgewater.

Centre: Bobundra landscape

*Right: Pelicans (*Pelecanus onocrotalus*)*

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Context:

The South East Catchment Action Plan (CAP) has been developed to guide investment in natural resource management in the South East region towards a vision of *sustainable communities, profitable industries, resilient landscapes*.

The South East CAP combines the intent and priorities of four Minister approved CAPs into one common strategy that defines a vision, goals, strategies, targets and priority actions for the region. The four CAPs that contributed to the development of the South East CAP are:

- Hawkesbury-Nepean Catchment Action Plan 2013 – 2023
- Lachlan (Kalare) Catchment Action Plan 2013 – 2023
- Murrumbidgee Catchment Action Plan 2013 – 2023
- Southern Rivers Catchment Action Plan 2013 – 2023

The strategies, targets and priority actions of each of these CAPs have been directly mapped to those in the South East CAP, ensuring that the community priorities in each CAP have been carried forward into the new strategy.

The South East CAP guides investment in natural resource management across the region until a new local strategic plan is developed by South East Local Land Services and approved by the Minister for Primary Industries.

Minister's Foreword

Catchment Action Plans are developed in partnership with local communities and present a vision for healthy natural landscapes across New South Wales to help support regional prosperity.

As Minister for Primary Industries, I am pleased that through implementation of these regional plans we have motivated, supported, encouraged and funded local communities to deliver more than 13,000 important projects, both large and small to NSW.

Against the backdrop of many serious natural events, including drought, flood and bushfire, the achievements in natural resource management across NSW have continued to be both impressive and ground-breaking.

Catchment Action Plans benefit from regular review in order to incorporate the growing knowledge of the catchment's natural, social and cultural resources.

This second iteration of Catchment Action Plans has provided an opportunity to cast a critical eye over the objectives, investment priorities and targets outlined, as well as an opportunity to outline new approaches to setting priorities for investment in natural resources.

The Catchment Action Plans have been developed in close consultation with local communities, shire councils and government agencies, using the latest scientific knowledge. This is a plan that outlines the shared vision for the sustainable management of the catchment's natural resources. The successful implementation of the Catchment Action Plan will be driven by continued good relations between government agencies at all levels, industry and the wider community.

From January 2014, Local Land Services will deliver functions currently provided by Catchment Management Authorities (CMAs), Livestock Health & Pest Authorities (LHPAs) and advisory services of Agriculture NSW (part of the Department of Primary Industries).



The Hon Katrina Hodgkinson MP

This upgraded Catchment Action Plan will play a critical role in planning natural resource management so that Local Land Services can continue with the building of healthy and resilient regional communities.

We all have a role to play in the sustainable and productive management of the region's resources and this Catchment Action Plan will ensure positive and practical outcomes for the years ahead.

A handwritten signature in blue ink, appearing to read 'K. Hodgkinson'. The signature is fluid and stylized, with a long, sweeping underline.

The Hon Katrina Hodgkinson MP
NSW Minister for Primary Industries

Chair's Foreword

The South East Catchment Action Plan (CAP) will guide natural resource management investment for the next two years until South East Local Land Services (LLS) is in a position to review and update their regional plan to cover all LLS functions, including biosecurity, agricultural productivity, emergency services and natural resource management.

The South East CAP is based on the active support of profitable, natural resource dependent industries and resilient communities and landscapes. It reflects an understanding of the interaction between people and natural resources across the area encompassed by the new boundary of South East LLS. The CAP enables targeted action in which the whole of community and whole of government can participate across the South East LLS region.

The South East CAP:

- reinforces the clear link between natural resource management and primary production systems
- recognises the importance of natural resources to economic prosperity and community wellbeing
- values and supports the sustainable use and care of natural resources by land owners, land managers and custodians
- provides a unifying vision for the ongoing use and care of natural resources.

The development of four CAPs (Hawkesbury-Nepean, Lachlan, Murrumbidgee and Southern Rivers) from which the South East CAP has drawn involved consultation and engagement with stakeholders and partners across the region, including farming groups, oyster growers, Aboriginal communities, Landcare groups and local, NSW State and Australian Government agencies.



Pam Green Chairperson

The South East CAP is a strategy for the sustainable use and care of the region's natural resources to achieve the vision of *sustainable communities, profitable industries, resilient landscapes* for current and future generations.

I commend the document and its intent for the South East LLS region and invite you to be an active participant in achieving these outcomes.

A handwritten signature in black ink, appearing to read 'Pam Green'.

Pamela Green
Chair, Southern Rivers CMA

Contents

Minister's Foreword	1
Chair's Foreword	2
South East CAP Executive Summary	4
PART 1 – The Strategy	6
The South East region	6
Implementing NSW 2021	6
Principles underpinning South East CAP	7
South East CAP framework	7
Prioritising effort and investment	8
South East CAP strategies and priorities	9
South Coast and Highlands landscape at a glance	12
Far South Coast landscape at a glance	16
Monaro landscape at a glance	20
Slopes landscape at a glance	24
Tablelands landscape at a glance	28
PART 2 – Concepts and tools underpinning South East CAP	32
Adoption of a resilience approach	33
Drivers of change	34
Recognising the distinct landscapes (socio-ecological systems)	35
The importance of natural resources to economic prosperity and community wellbeing	35
'State and Transition' models	37
PART 3 – Bringing it all together	38
Pillar 1: Sustainable economies and community wellbeing	40
Pillar 2: Adaptive management and devolved decision making	47
Pillar 3: Diverse, healthy, connected and productive natural environments	50
PART 4 – Making it happen – Implementation of South East CAP	72
PART 5 – Background information	85
Acronyms	85
Glossary	86
References	88
Supporting documentation	90

South East CAP Executive Summary

Context and content

South East CAP is a strategy to focus government and community effort on three key outcomes for the South East region:

- sustainable communities
- profitable industries
- resilient landscapes.

Each of these outcomes is linked by many complex relationships and dependencies. South East CAP is based on the analysis of this complexity, identification of the key drivers that affect change in the region and the development of strategies, targets and actions that will have the greatest effect in achieving these outcomes.

South East CAP recognises the importance of profitable industries such as agriculture, aquaculture and tourism which are dependent upon natural resources. These industries play a critical role by providing employment and income to support individual and community livelihoods and wellbeing. South East CAP includes strategies to improve the natural resource base on which these industries depend and to ensure that land and water managers are able to effectively adapt to change.

South East CAP also recognises the importance of supporting communities and individuals to contribute to landscape resilience. Landscape resilience underpins the viability of many of the region's enterprises, providing scenic beauty valued by community and visitors alike, cultural connection and economic opportunity for Aboriginal people.

The plan is defined by three pillars – people, governance and natural resources – each with a goal, strategies and targets that set strategic direction and key performance measures for each pillar. Also included are the priority actions required to affect the greatest change.

Pillar 1 focuses on people, with the goal of achieving sustainable economies and community wellbeing. Priorities are – to support profitable, diverse and sustainable enterprises and economies, to support land and water managers in their decision making, and to increase the capacity of the community to contribute to natural resource management (NRM).

Pillar 2 focuses on governance, with the goal of achieving adaptive management and devolved decision making. Priorities are – to ensure the coordinated delivery of services to clients, to provide relevant and timely information to decision makers, and to build capacity to adapt and respond to change.

Pillar 3 focuses on natural resources, with the goal of achieving diverse, healthy, connected and productive natural environments. Priorities are – to protect soil condition, to maintain or improve key habitat, and to support key surface water, estuarine, wetland, marine and groundwater assets for people and the environment.

The figure opposite (Figure 1) provides a summary of the strategic directions of South East CAP.

Purpose of South East CAP

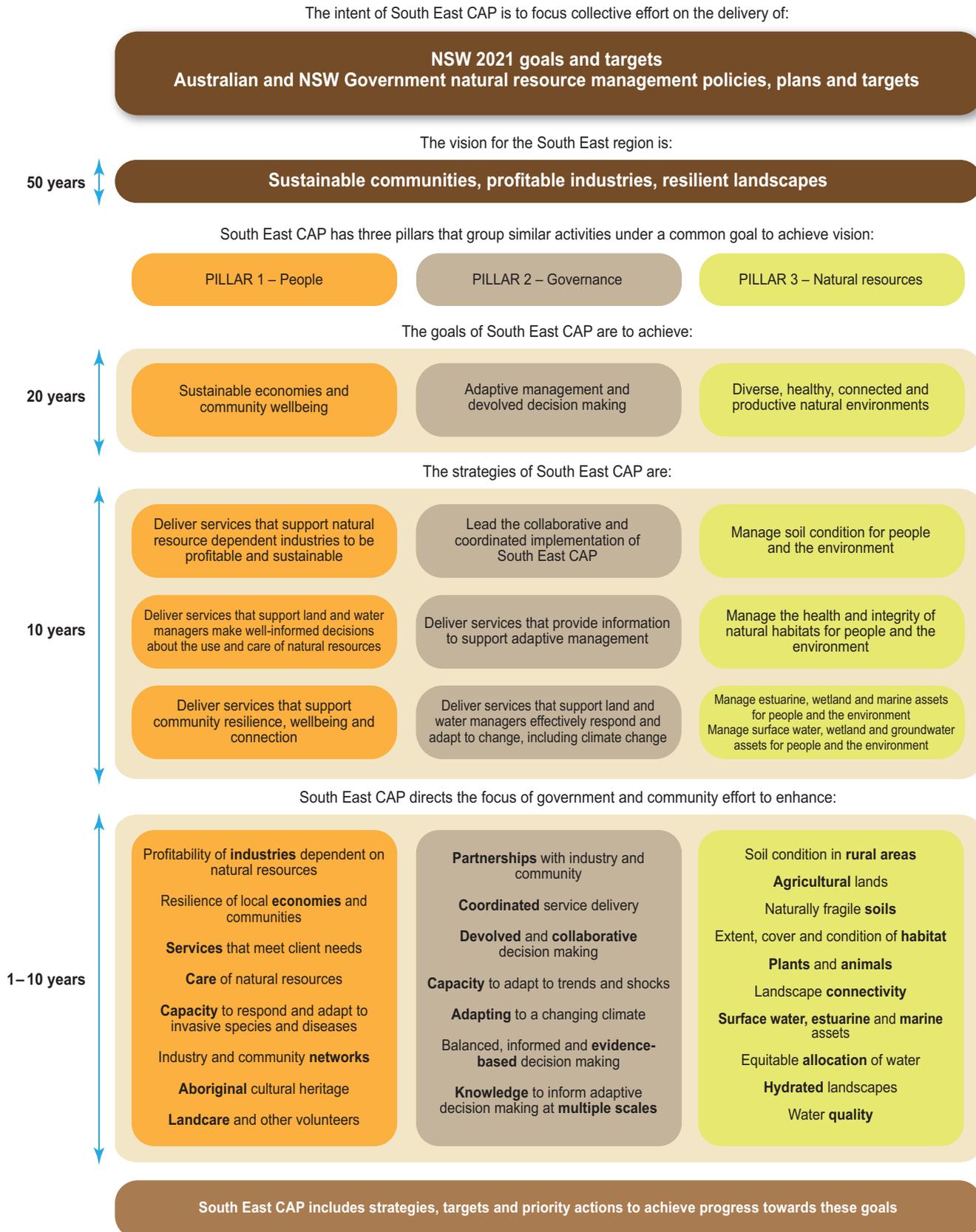
Catchment Action Plans are statutory, non-regulatory plans under the Catchment Management Authorities Act 2003. From January 2014, Local Land Services will deliver functions previously provided by Catchment Management Authorities (CMAs), Livestock Health & Pest Authorities (LHPAs) and advisory services of Agriculture NSW (part of the Department of Primary Industries). South East CAP will play a critical role in planning natural resource management under the Local Land Services Act 2013 so that Local Land Services can continue with the building of healthy and resilient regional communities.

The South East CAP is a strategic plan that identifies the priorities and actions for natural resource management (NRM) in the region. It provides direction for collaborative action and investment by government, community and industry partners.

South East CAP does not describe detailed implementation or project activities which will be defined in implementation and investment plans. These plans will set out quantified targets, budgets and partnerships for projects that will achieve the strategies defined in South East CAP.

South East CAP is a document for everyone with an interest in the future of the South East region. Its framework for action can be used by any organisation, group or individual to prioritise and implement NRM decisions, whether it is at a paddock, farm or landscape scale.

Figure 1. South East CAP strategic directions



PART 1 – The Strategy

The South East region

The South East region, located in south-east NSW, covers an area of 55,600 km² from Helensburgh in the north to the Victorian border in the south. The region extends westward to the Australian Capital Territory (ACT) and includes the local government areas of Bega Valley, Bombala, Booroowa, Cooma-Monaro, Eurobodalla, Goulburn-Mulwaree, Kiama, Palerang, Queanbeyan, Shellharbour, Shoalhaven, Snowy River, Upper Lachlan, Wingecarribee, Wollongong and Yass Valley. The region extends three nautical miles out to sea to the east, including 673 km of coastline (40% of the NSW coast) – refer Figure 2.

Figure 2. South East region



The region is home to approximately 605,000 people including approximately 17,000 Indigenous Australians (ABS 2011). The majority of people reside in regional towns and centres, with Wollongong, Shellharbour, Kiama, Nowra, Ulladulla, Goulburn and Queanbeyan being the largest. The slopes and tablelands tend to be more sparsely populated with a declining population base in some areas.

The current economic prosperity of the South East region is dependent on natural resources, which support agriculture, aquaculture, fishing and tourism. On the coast, land use is dominated by large tracts of public land, including national parks, State forests and crown lands that underpin nature-based tourism. The coastal plains support a range of profitable agricultural enterprises, particularly oysters, fishing, dairy and beef. By contrast, the tablelands are dominated by grazing enterprises that support wool, prime lambs and beef. Again, nature-based tourism is a significant contributor to the economy, especially in the Snowy Mountains and associated ski fields. The slopes and tablelands surround the ACT on three sides and are part of the Sydney-Canberra corridor.

For Aboriginal people, the social, economic, biophysical, cultural and spiritual aspects of the South East region are inextricably linked. Aboriginal people of the region have a unique and long-standing relationship to their Country. 'Country' is everything related to the land and water, including access and use, spiritual and cultural heritage. There are many Aboriginal groups within the region with a number of language groups and several dialects.

Implementing NSW 2021

NSW 2021 is the State Plan for the NSW Government, detailing a set of priorities to make NSW number one. South East CAP will deliver outcomes that contribute to multiple goals of NSW 2021, including:

- Goal 3 – Drive economic growth in regional NSW
- Goal 22 – Protect our natural environment
- Goal 23 – Increase opportunities for people to look after their own neighbourhoods and environments
- Goal 24 – Make it easier for people to be involved in their communities
- Goal 26 – Fostering opportunity and partnership with Aboriginal people
- Goal 27 – Enhance cultural, creative, sporting and recreation opportunities
- Goal 28 – Ensure NSW is ready to deal with major emergencies and natural disasters
- Goal 30 – Restore trust in State and local government as a service provider
- Goal 31 – Improve government transparency by increasing access to government information
- Goal 32 – Involve the community in decision making on government policy, services, and projects.

Principles underpinning South East CAP

South East CAP is a strategy for the sustainable use and care of the region's natural resources, developed using best practice NRM strategic planning.

As a fundamental principle, South East CAP recognises that the economic prosperity (including profitability of primary production), community wellbeing and the natural resources of the region are linked. This requires integrated planning and management to deliver the multiple outcomes desired by community and government. This is well understood by people who live and work on the land. Aboriginal people have applied this approach as custodians of the land and sea for thousands of years.

South East CAP is an integrated plan to achieve social, economic and natural resource outcomes.

A second fundamental principle has been to plan for change within the region. It is recognised that in the next decade, regional communities will experience significant change; some that can be planned for and other change that will be unexpected. The extent of this change will vary across the region, as will the impacts on natural resources and different sectors of the community.

The impact of these changes will increasingly be felt by people, farms, industries, households and communities. South East CAP is based on the best available understanding of change and the likely impacts in the South East region. Actions that build the capacity of local communities and managers of natural resources to effectively respond and adapt to change are a priority of South East CAP.

South East CAP has been 'built from the ground up' in consultation with partners, stakeholders, technical experts, community and industry groups and the Boards from the Hawkesbury-Nepean, Lachlan, Murrumbidgee and Southern Rivers CMA regions.

In developing the plan, the rights and obligations of all land owners, land managers and custodians are recognised, as is the importance of intergenerational equity.

The intent of South East CAP is to:

- express a vision and plan for the natural resources of the South East region that has been developed collaboratively with communities and partners
- promote localism, devolving where possible, functions, resources and accountability to capable local partners
- recognise and protect the natural resource assets that underpin the region's economic sustainability and community wellbeing
- recognise that communities have a strong connection to and closely identify with their landscapes
- set strategies and targets that aim to build resilient landscapes and communities
- apply a transparent and consistent approach to prioritisation
- set a clear framework for implementation and achievement of strategies and targets
- include a framework for devolved decision making and adaptive management.

South East CAP framework

As a strategic plan, South East CAP sets the direction for the sustainable use and care of the natural resources of the South East region. It includes those activities that will affect the greatest change towards the vision of *sustainable communities, profitable industries, resilient landscapes*.

South East CAP is structured into three pillars – people, governance and natural resources. This structure explicitly recognises the relationships and interdependencies between people and natural resources (refer to Figure 3).

People receive a range of benefits and services from using natural resources that support social and economic outcomes for individuals, communities and industries. South East CAP includes strategies for the sustainable use of natural resources.

The health and productivity of the region’s natural resources is dependent on how they are cared for by landowners, land managers, communities and custodians. South East CAP includes strategies for the effective care or stewardship of natural resources for current and future generations.

Natural resource decisions by individuals, communities, industries and institutions directly influence the sustainable use and care of natural resources. South East CAP includes strategies to support effective decision making and capacity to adapt to change.

Each of the three pillars has a goal, strategies and targets that set the strategic direction and key performance measures for South East CAP. Also included are the specific priority actions required to affect the greatest change.

In recognition of the wide diversity of social, economic and natural resource characteristics across the region, South East CAP divides the region into five landscapes – the South Coast and Highlands, the Far South Coast, the Monaro, the Slopes and the Tablelands. Adopting a landscape approach allows for an integrated understanding of the natural resource and community issues in each landscape and for priority actions to be better targeted across the region.

Figures 4, 5 and 6 define the strategies and priorities for each of the three pillars. Figures 8, 10, 12, 14, 16 summarise the key functions and challenges in each of the five landscapes.

Figure 3. South East CAP framework

This figure demonstrates how the three pillars work towards the achievement of the vision and the interrelationships between them.

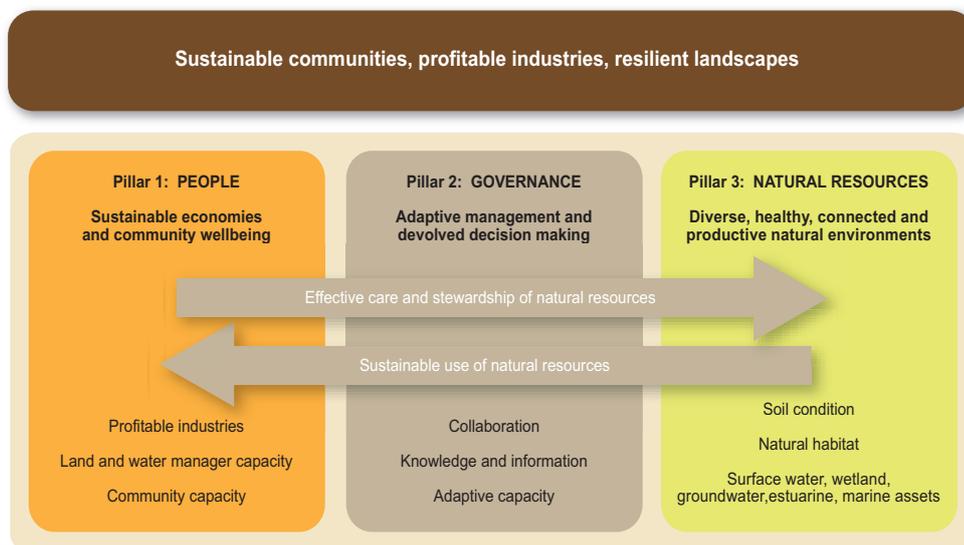
Prioritising effort and investment

South East CAP recognises that it is not possible to meet the full list of community and government aspirations within existing timeframes and resources. Priorities must be set to guide effort and investment. Each strategy in South East CAP has a specific set of priority actions. These have been developed following rigorous analysis of community, economic and landscape systems and integrating this with community and government values.

The key variable that influences the condition of natural resources is the management of land and water within its capability. The management of land and water resources is bound by natural variables, and when the resource is used beyond its capabilities, there are a range of undesired outcomes on site and off site. When land and water is managed within its capability, economic and social outcomes are maximised, and the resource condition is maintained or improved.

The primary driver that defines how land and water is managed is the capacity of managers to make effective decisions to ensure that natural resources are managed within their capability. When capacity to make decisions is increased, natural resources are improved, the productive capacity of agricultural lands is improved, the tourism industry’s economic opportunities are increased and individual lifestyle and community wellbeing is improved.

The highest priority of South East CAP is to deliver services that increase the capacity of land and water managers to make effective decisions on the sustainable use and care of natural resources.



South East CAP strategies and priorities

Figure 4. Pillar 1: People – strategies and priorities

Goal: Sustainable economies and community wellbeing	
Strategy: Deliver services that support natural resource dependent industries to be profitable and sustainable	
Target: From 2014, natural resource dependent enterprises are supported to adopt practices that improve profitability and sustainability	
Priority actions to implement:	Focus for action and investment:
Support business performance within natural resource dependent industries	Grazing, mixed farming systems, dairy, aquaculture, fishing and horticulture industries Aboriginal enterprises
Support local industries maintain and improve natural resource assets	Grazing, dairy, aquaculture, fishing, mixed farming systems, horticulture and tourism industries
Support local economies and communities broaden their industry base	Food production and distribution systems Nature-based tourism Industries that reduce dependency on external resources, particularly fossil fuels Carbon sequestration industries
Strategy: Deliver services that support land and water managers make well-informed decisions about the use and care of natural resources	
Target: From 2014, land and water managers are supported to increase their capacity to manage natural resources	
Priority actions to implement:	Focus for action and investment:
Deliver information and extension services that meet land and water manager needs	Primary producers Small scale enterprises Rural residential and absentee landholders Managers of priority public land assets Land use practices consistent with land capability Stewardship of land and water
Support land and water managers to prepare, respond and adapt to biosecurity threats, including weeds, pests and diseases	Weeds, pests and diseases that threaten existing lifestyles and livelihoods New and emerging weeds, pests and diseases Land and water manager capacity
Support the community to prepare, respond and adapt to natural resource shocks	Emergency planning and response Land and water manager capacity to adapt Government capacity to adapt Information systems to support decision making
Strategy: Deliver services that support community resilience, wellbeing and connection	
Target: From 2014, communities are supported to increase their capacity to contribute to natural resource management and social wellbeing	
Priority actions to implement:	Focus for action and investment:
Support new and existing industry and community networks	Primary producer, Landcare, Aboriginal, rural residential and absentee landholders, small farm and recreation groups Youth in agriculture and NRM Nature-based tourism
Support a greater contribution by individuals to their local area	Landcare volunteers, primary producers, nature based tourism, recreational users, Aboriginal people, youth and corporations
Celebrate and promote the cultural and natural identity of local landscapes and communities	People's connection to land and water Aboriginal cultural heritage Diversity of values and aspirations Urban communities



Figure 5. Pillar 2: Governance – strategies and priorities

Goal: Adaptive management and devolved decision making	
Strategy: Lead the collaborative and coordinated implementation of South East CAP	
Target: From 2014, partnerships are implemented to coordinate, and collaboratively deliver South East CAP	
Priority actions to implement:	Focus for action and investment:
Foster new and existing partnerships with industry, community, government and non-government organisations	Primary producer, Landcare, Aboriginal groups Local government Regional organisations
Develop an implementation framework to deliver South East CAP	Localised implementation of South East CAP Commitment of resources to priority actions Clear benefits for local industries and communities Increased investment in agriculture, aquaculture and NRM
Deliver integrated services in a coordinated and collaborative way	Delivery of services without duplication Utilising the strengths of each service provider Emergency planning and response Maximise cross-regional opportunities
Strategy: Deliver services that provide information to support adaptive management	
Target: From 2014, information is available to support adaptive and evidence-based decision making by land and water managers	
Priority actions to implement:	Focus for action and investment:
Monitor, evaluate and report on the performance of South East CAP implementation and outcomes	Asset condition Monitoring performance of implementation Reporting on performance to industry, community and government Using multiple lines of evidence Learning from implementation
Monitor, analyse, evaluate and adapt to risks, trends and shocks	Climate, financial, industry and wellbeing trends and shocks
Facilitate access to information and knowledge for decision making at a range of scales	Key knowledge gaps Encourage innovation Partnerships with research institutions and universities Reliable, timely and accessible information Collaborating across regions
Strategy: Deliver services that support land and water managers effectively respond and adapt to change, including climate change	
Target: From 2014, frameworks and protocols are implemented for devolved, adaptive and evidence-based decision making	
Priority actions to implement:	Focus for action and investment:
Establish devolved and collaborative decision making structures at the appropriate scale	Devolving decision making to appropriate scale Industry and community participation in decision making Working with existing structures
Support government authorities to make balanced, transparent and evidence-based decisions at all scales	Land use plans, land use decisions, development controls Land capability Water and estuary planning and management Planning for climate change
Support government authorities incorporate local priorities into national, State and regional policies, plans and priorities	Policies, plans and priorities adapt to new evidence and knowledge Lessons from regional service delivery inform improvements at the State scale

Figure 6. Pillar 3: Natural resources – strategies and priorities

Goal: Diverse, healthy, connected and productive natural environments	
Strategy: Manage soil condition for people and the environment	
Target: From 2014, land managers are supported to increase the adoption of practices that: <ul style="list-style-type: none"> - improve soil condition of productive lands - manage naturally fragile soils within their capability 	
Priority actions to implement:	Focus for action and investment:
Practices that improve soil condition in rural lands (Land and Soil Capability Classes 3-5)	Productive capacity of agricultural lands Soil carbon Capacity of landscape to absorb and retain water
Practices that manage naturally fragile soils	Land and Soil Capability Classes 6-8 Sodic, acid, acid sulfate, saline, shallow soils Dune systems
Practices that protect priority aquatic assets from land degradation	Water supplies Good condition wetlands, estuaries, marine and marine protected areas High value fish habitat
Strategy: Manage the health and integrity of natural habitats for people and the environment	
Target: From 2014, land and water managers are supported to increase the adoption of practices that maintain or improve the: <ul style="list-style-type: none"> - extent and condition of priority habitats - connectivity of habitat 	
Priority actions to implement:	Focus for action and investment:
Practices that maintain and improve the extent and condition of priority habitats	Under reserved and threatened vegetation communities Habitat that supports threatened species High value fish habitat High carbon capture ecosystems
Practices that maintain and improve habitat that supports connectivity priorities	State, regional and locally significant corridors Significant barriers to fish passage
Integrate production and conservation goals into primary production systems	Grazing landscape Aquaculture Mixed farming systems
Strategy: Manage estuarine, wetland and marine assets for people and the environment	
Target: From 2014, land and water managers are supported to increase the adoption of practices that maintain or improve the condition of priority estuarine, wetland and marine assets	
Priority actions to implement:	Focus for action and investment:
Practices that maintain and improve the condition of priority estuarine, wetland and marine assets	Good condition estuaries, marine areas, marine protected areas and wetlands
Implement practices that contribute to the maintenance of improvement of water quality and river health	Priority aquatic assets that support local industry Impacts from urban environments
Strategy: Manage surface water, wetland and groundwater assets for people and the environment	
Target: From 2014, land and water managers are supported to increase the adoption of practices that maintain or improve the condition of surface water, wetland and groundwater assets	
Priority actions to implement:	Focus for action and investment:
Practices that maintain and improve the condition of priority surface water, wetland and groundwater assets	Good condition, high recovery potential and strategic river reaches Priority groundwater resources
Practices that contribute to the maintenance of improvement of water quality and river health	Priority aquatic assets that support industry Impacts from urban environments Saline flows into the Murray-Darling Basin
Facilitate the equitable sharing of water between people and the environment	Water is available to meet the needs of people and the environment

The South Coast and Highlands landscape

The South Coast and Highlands landscape covers land on the NSW coast immediately south of Sydney, including the Illawarra, Shoalhaven and Southern Highlands (as shown in Figure 7). It is highly urbanised in the northern Illawarra area, contains some of the most productive agricultural lands in the South East region and encompasses large forested tracts of national parks, State forests and Sydney water catchment lands.

The landscape is comprised of ranges and plateaus of the Great Dividing Range to 900 metres altitude, sandstone escarpment and foothills along the Illawarra coast, undulating rolling hills and flatter coastal alluvial plains in the Shoalhaven area and the coastal dune fields and rocky headlands along the coast. The landscape encompasses the local government areas of Wollongong, Kiama, Shellharbour, Shoalhaven and Wingecarribee.

The climate is regarded as oceanic along the coastal portion of the landscape with summer heat tempered by sea breezes. The elevated highland area has cooler winters with heavy frost and fogs but can experience hot dry summer conditions.

The 307 km coastline includes major estuaries and coastal lakes, extensive beach and dune systems, headlands, bluffs and near shore marine waters.

Soil types are very diverse with sandy loams, alluviums, peats, clays and basalt derived types across the landscape.

The landscape is the most densely populated area within the region and contains Australia's ninth largest city – Wollongong. The landscape is characterised by its complexity, particularly in the Highlands, with strong contrasts between the natural and the urban environments. The landscape has productive dairy, oyster and grazing industries and a range of other agricultural producers such as wine growers and alpaca breeders.

Threats to the landscape include coastal development, land use pressure, weeds and pests. Climate impact profiles for 2050 predict that there will be increased and more intense storm activity, increased rainfall and altered fire regimes. These impacts are likely to cause widespread changes to ecosystems, including weed diversity and the composition of native vegetation communities (DECCW 2010).

The landscape is rich in cultural heritage, particularly along the coastline, reflecting the attraction of the bountiful marine and estuarine ecosystems for traditional Aboriginal communities (DECCW 2010). The known Aboriginal language boundaries within the landscape are Tharawal, Gundungurra and Yuin. There are eight Local Aboriginal Land Councils within the landscape.

Local vision: A community that has the knowledge, skills and a sense of common purpose to sustain a healthy landscape and ecosystem services

Figure 7. Map of the South Coast and Highlands landscape



South Coast and Highlands landscape key statistics

Total area	8,494 km ²
Land management (% total area)	
Conservation	48.8%
Agriculture	20.0%
Urban	5.7%
Other*	25.5%
Local government areas (% total landscape area)	Kiama (3%) Shellharbour (2%) Shoalhaven (55%) Wingecarribee (32%) Wollongong (8%)
Major centres	Bowral, Kiama, Nowra, Moss Vale, Shellharbour, Ulladulla, Wollongong
Human assets	
Population	413,216
Aboriginal population (% of total)	2.8% (range 1.4% Kiama – 4.7% Shoalhaven)
Median age (national – 37 years)	37 (Shellharbour) – 46 (Shoalhaven)
Social assets	
Rate of volunteerism (national average 17.8%)	13.0% (Shellharbour) – Kiama (26.1%)
Number of volunteer 'care groups'	175
Internet connection	77%
Local Aboriginal Land Councils	Batemans Bay, Illawarra, Jerrinja, Nowra, Pejar, Tharawat, Ulladulla
Economic assets	
Median weekly household income (national – \$1,234)	\$822 (Shoalhaven) – \$1,234 (Kiama)
Unemployment (national average 5.6%)	6.6% (range 4.2% Wingecarribee – 7.6% Shoalhaven)
Industry of employment by sector (top five responses)	School education Cafes, restaurants and takeaway food services Hospitals Residential care services Tertiary education
Occupied private dwellings	154,244
Number of agri-businesses	1,212 (ABS 2006)
Total area occupied by agriculture	446,846 ha (OEH 2007)
Value of agriculture (per annum)	\$101,403,670 (ABS 2006)
Value of agriculture per hectare of agricultural land	\$227 (ABS 2006)
Natural assets	
Predominant landform	Rolling hills and coastal alluvial plains, defined by the escarpment and cooler highlands area to the west
Length of coastline	307 km
Total stream length	26,637 km
Estuaries	44
Listed wetlands	17
Threatened species (vulnerable, endangered or critically endangered)	520 plant and animal species 21 endangered ecological communities
Major river catchments	Clyde, Hawkesbury, Lake Illawarra, Port Hacking, Shoalhaven
Travelling Stock Reserves	64 ha
Climate	Mean annual rainfall 1,052mm (Australian BOM 2013) Average minimum temperature July 6.5°C (Australian BOM 2013) Average maximum temperature January 25.9°C (Australian BOM 2013)
Programs	
Hawkesbury Nepean CMA	Biodiversity River Health Rural Landscapes Community Engagement and Capacity Building
Southern Rivers CMA	Landholder and Community Resilience Profitable and Sustainable Farming Resilient Land and Seascapes

* Other is a category which encompasses land uses such as mining and quarrying, transport corridors, power generation, tree and shrub cover which is not utilised for either agriculture or conservation and wetlands.

Source: ABS (2011) unless noted otherwise.

Figure 8. South Coast and Highlands landscape key natural resources



Image: Minnamurra

Table 1. South Coast and Highlands landscape priorities

This table lists the priorities that have been identified for the South Coast and Highlands landscape.

Pillar 1 – Sustainable economies and community well being		
Strategy: Deliver services that support natural resource dependent industries be profitable and sustainable		
Priority action: Support local industries to maintain and improve natural resource assets	Focus: <ul style="list-style-type: none"> • Grazing and dairy industry • Aquaculture and fishing industry • Nature based tourism • Emerging industries e.g. equine industry, viticulture 	Actions: <ul style="list-style-type: none"> • Practices that maintain and improve the natural resource assets that support industry, including soil, terrestrial ecosystems and marine, estuarine and freshwater ecosystems
Strategy: Deliver services that support land and water managers make well-informed decisions about the use and care of natural resources		
Priority action: Deliver information and extension services that meet land and water manager needs Support land and water managers to prepare, respond and adapt to biosecurity threats, including weeds, pests and diseases	Focus: <ul style="list-style-type: none"> • Primary producers • Small-scale and peri-urban enterprises • New and emerging weeds, pests and diseases • Land and water manager capacity to adapt 	Actions: <ul style="list-style-type: none"> • Deliver extension services that support farm profitability and land and water stewardship practices, e.g. initiatives for improving water quality in drinking water catchments • Facilitate cross-tenure collaboration on management of weeds, pests and diseases
Strategy: Deliver services that support community resilience, wellbeing and connection		
Priority action: Support new and existing industry and community networks Celebrate and promote the cultural and natural identity of local landscapes and communities	Focus: <ul style="list-style-type: none"> • Primary producer and small farm groups • Landcare groups • Aboriginal groups • People's connection to land and water • Aboriginal cultural heritage • Urban communities 	Actions: <ul style="list-style-type: none"> • Encourage collaboration between networks • Build capacity and foster leaders • Support events that celebrate local landscapes • Develop community visions for the natural resources of local areas • Recognise and value Aboriginal cultural heritage
Pillar 3 – Diverse, healthy, connected and productive natural environments		
Strategy: Soil condition is managed to support people and the environment		
Priority action: Protect priority aquatic assets from land degradation	Focus: <ul style="list-style-type: none"> • Water supplies • Priority wetlands • High value fish habitat • Acid sulfate soils 	Actions: <ul style="list-style-type: none"> • Practices that maintain groundcover • Practices that are consistent with capability of the land • Practices to mitigate impact of acid sulfate soils
Strategy: Manage natural habitats to improve their integrity and health for people and the environment		
Priority action: Practices that maintain and improve habitat that supports connectivity priorities	Focus: <ul style="list-style-type: none"> • Regional and locally significant corridors • Fish passage 	Actions: <ul style="list-style-type: none"> • Practices that maintain or improve condition and extent of habitat • Remove high priority barriers to fish passage
Strategy: Manage estuarine, wetland and marine assets for people and the environment		
Priority action: Maintain and improve the condition of priority estuarine, wetland and marine assets	Focus: <ul style="list-style-type: none"> • Good condition estuaries, marine areas and wetlands • Impacts from urban environments 	Actions: <ul style="list-style-type: none"> • Practices that maintain or improve including habitat management, pest and disease management and rehabilitation of degraded habitat
Strategy: Manage surface water, wetland and groundwater assets		
Priority action: Practices that maintain and improve the condition of priority water assets	Focus: <ul style="list-style-type: none"> • Good condition high recovery potential and strategic river reaches • Good condition groundwater resources 	Actions: <ul style="list-style-type: none"> • Practices that mitigate impacts from point source and non-point source pollution • Protection of good condition riparian and wetland vegetation • Practices that maintain or improve groundwater
Implementation partners: Australian Government, NSW State Agencies, local governments – Kiama, Shellharbour, Wollongong, Wingecaribee, Shoalhaven. Landcare Illawarra, Shoalhaven Landcare, Wingecaribee Landcare and Bushcare Network. Local Aboriginal Land Councils. Primary producer groups – South Coast Highlands Dairy Industry Group, South Coast Beef Producers Association, Australia's Oyster Coast, Small Farms Network. Non-government organisations – Greening Australia, National Parks Association.		
Adaptive management and devolved decision making strategies under Pillar 2 will be implemented across each landscape and at a region wide level.		

Far South Coast landscape at a glance

The Far South Coast landscape is defined by its proximity to the coast. It aligns with the local government boundaries of Eurobodalla and Bega Valley Shires and covers a total area of 9,709 km². To the north, the Eurobodalla Shire encompasses the coastal strip between South Durras and Wallaga Lake, extending westwards to the Clyde Mountain and Belowra in the south-west. To the south, the Bega Valley Shire's coastal fringe extends from Wallaga Lake in the north to Cape Howe and the Victorian border in the south. Inland, the Bega Valley Shire extends into the Great Dividing Range (as shown in Figure 9).

The Far South Coast is a diverse landscape including areas under the influences of dynamic coastal processes along with major estuaries, coastal lakes and small coastal creeks. The hinterland is characterised by undulating coastal slopes and ranges shaped by the underlying granite geology. It is contained by an escarpment to the west that delineates the Far South Coast from the Monaro and Tablelands landscapes.

Over 70% of the Far South Coast landscape is publicly owned within national parks (43%), State forests (25%) and Crown land (3%). The high proportion of intact terrestrial and aquatic ecosystems underpins the region's tourism industry with large numbers of visitors primarily seeking to experience the region's natural assets including beaches and national parks. Tourism and associated service industries are significant in the Far South Coast landscape, contributing \$600 million to the economy annually (Tourism Research Australia 2008 - 2011).

The region's natural assets directly support employment, particularly in agriculture, aquaculture and nature based tourism. Agriculture contributes over \$71 million per annum to the regional economy (ABS 2006). Livestock, milk, wool and meat production contribute more than half the value of total agricultural production reflecting the importance of the dairy industry. There are over 100 oyster growers in the Far South Coast who produce approximately \$10 million worth of oysters per year (Trenaman 2011 - includes South Coast production).

Key threats to the landscape include coastal development, land use pressure, invasive weeds and pests and a changing climate.

Climate impact profiles for 2050 (DECCW 2010a) predict there will be increased and more intense storm activity, intense rainfall events and altered fire regimes. Widespread changes to ecosystems are expected along with significant damage to built infrastructure from extreme events including storm surge.

The Far South Coast is significant to Aboriginal people and a number of migration routes, bridle trails or Dreaming trails exist across the region. These routes connected people to ceremony, gatherings and seasonably available resources. The known Aboriginal languages within the Far South Coast are Thawa, Dyirringan, Dhurga and Ngarigu. There are eight Local Aboriginal Land Councils within the Far South Coast landscape.

Local vision: Diverse natural systems and productive agricultural systems operating together

Figure 9. Map of the Far South Coast landscape



Far South Coast landscape key statistics

Total area	9,733 km ²
Land management (% total area)	
Conservation	67%
Agriculture	15.9%
Urban	2.9%
Other*	14.2%
Local government areas (% total landscape area)	Bega Valley, Eurobodalla
Major centres	Batemans Bay, Bega, Eden Narooma
Human assets	
Population	67,691
Aboriginal population (% of total)	4.0%
Median age (national – 37 years)	48 (Bega Valley) – 50 (Eurobodalla)
Social assets	
Rate of volunteerism (national average 17.8%)	21.9% (Eurobodalla) 26.3% (Bega Valley)
Number of volunteer 'care groups'	46
Internet connection	74.6%
Local Aboriginal Land Councils	Batemans Bay, Bega, Bodalla, Cobowra, Eden, Merrimans, Mogo, Wagonga
Economic assets	
Median weekly household income (national – \$1,234)	\$784 (Eurobodalla) \$848 (Bega Valley)
Unemployment (national average 5.6%)	6.7% (range 5.9% Bega Valley – 7.5% Eurobodalla)
Industry of employment by sector (top five responses)	School education Cafes, restaurants and takeaway food services Accommodation Supermarket and grocery stores Daily product manufacturing
Occupied private dwellings	26,905
Number of agri-businesses	632 (ABS 2006)
Total area occupied by agriculture	151,902 ha (OEH 2007)
Value of agriculture (per annum)	\$71,330,319 (ABS 2006)
Value of agriculture per hectare of agricultural land	\$469 (ABS 2006)
Natural assets	
Predominant landform	Beaches and rocky headlands, estuaries and coastal lakes Coastal floodplains rising to undulating slopes and ranges
Length of coastline	366 km
Total stream length	38,173 km
Estuaries	54
Listed wetlands	18
Threatened species (vulnerable, endangered or critically endangered)	128 plant and animal species 17 endangered ecological communities
Major river catchments	Clyde, Deua/Moruya, Tuross, Bega, Towamba
Travelling Stock Reserves	418 ha
Climate	Mean annual rainfall 804.4mm (Australian BOM 2013) Average minimum temperature July 2.8°C (Australian BOM 2013) Average maximum temperature January 26.2°C (Australian BOM 2013)
Programs	
Southern Rivers CMA	Landholder and Community Resilience Profitable and Sustainable Farming Resilient Land and Seascapes

* Other is a category which encompasses land uses such as mining and quarrying, transport corridors, power generation, tree and shrub cover which is not utilised for either agriculture or conservation and wetlands.
Source: ABS (2011) unless noted otherwise.

Figure 10. Far South Coast landscape key natural resources

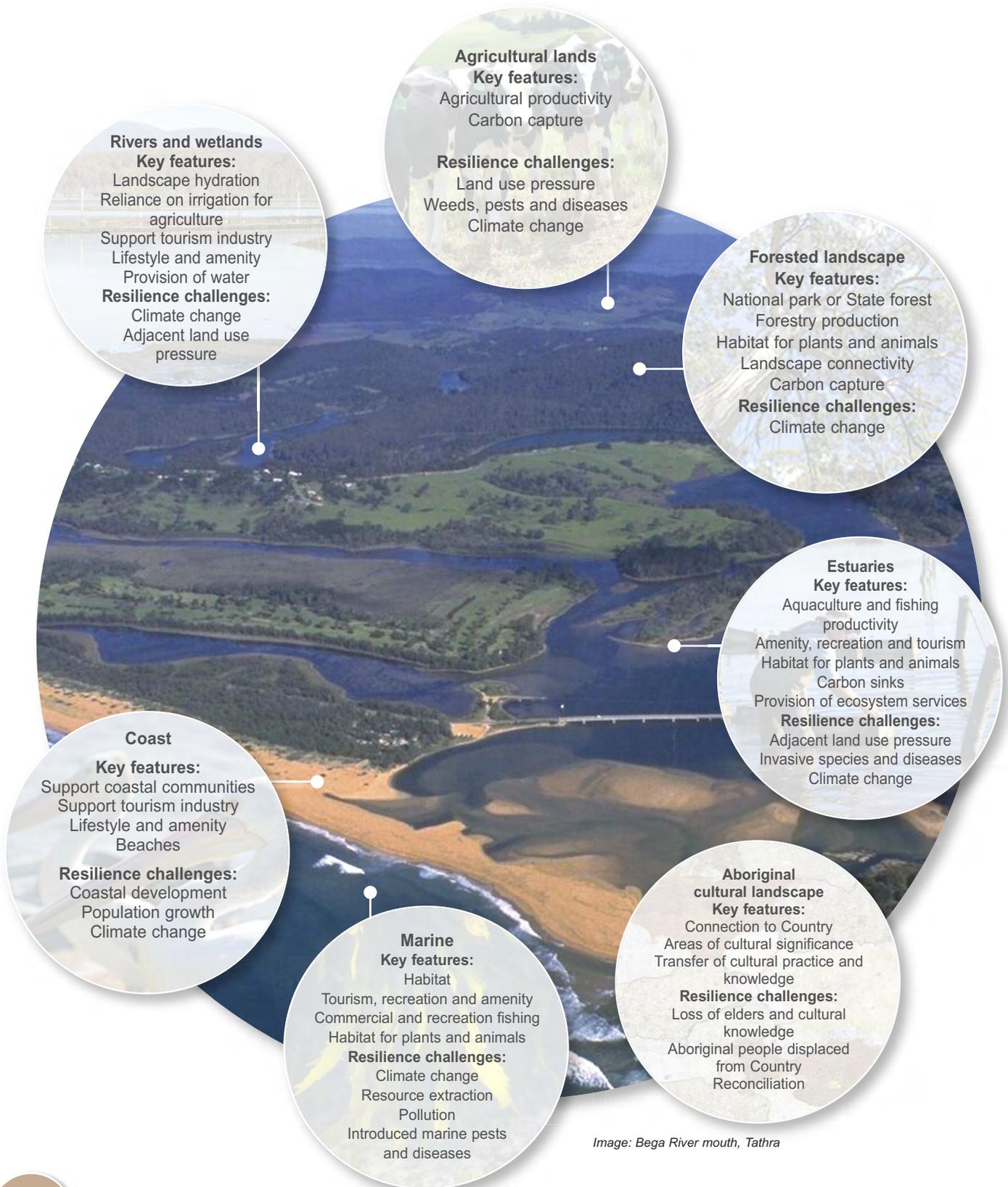


Image: Bega River mouth, Tathra

Table 2. Far South Coast landscape priorities

This table lists the priorities that have been identified for the Far South Coast landscape.

Pillar 1 – Sustainable economies and community well being		
Strategy: Deliver services that support natural resource dependent industries be profitable and sustainable		
Priority action: Support business performance within natural resource dependent industries	Focus: <ul style="list-style-type: none"> • Grazing industry • Dairy industry • Aquaculture and fishing industry • Horticulture industry • Aboriginal enterprise development 	Actions: <ul style="list-style-type: none"> • Facilitate access to enterprise development opportunities including business planning, succession planning, environmental management systems and property management training
Strategy: Deliver services that support land and water managers make well-informed decisions about the use and care of natural resources		
Priority action: Deliver information and extension services that meet land and water manager needs	Focus: <ul style="list-style-type: none"> • Primary producers • Small-scale and peri-urban enterprises • Managers of priority public land assets 	Actions: <ul style="list-style-type: none"> • Deliver extension services that support farm profitability and land and water stewardship practices
Strategy: Deliver services that support community resilience, wellbeing and connection		
Priority action: Support new and existing industry and community networks	Focus: <ul style="list-style-type: none"> • Primary producer groups • Landcare groups • Aboriginal Groups • Nature-based tourism 	Actions: <ul style="list-style-type: none"> • Build the strength of existing networks • Encourage collaboration between networks
Pillar 3 – Diverse, healthy, connected and productive natural environments		
Strategy: Soil condition is managed to support people and the environment		
Priority action: Practices that improve soil condition in rural lands (Land and Soil Capability Classes 3-5)	Focus: <ul style="list-style-type: none"> • Productive capacity of agricultural lands • Soil carbon • Capacity of landscape to absorb and retain water 	Actions: <ul style="list-style-type: none"> • Practices that maintain groundcover • Practices that increase the productive capacity of agricultural lands • Practices that increase soil carbon
Strategy: Manage the health and integrity of natural environments for people and the environment		
Priority action: Maintain and improve habitat that supports connectivity priorities	Focus: <ul style="list-style-type: none"> • State, regional and locally significant corridors • Fish passage 	Actions: <ul style="list-style-type: none"> • Practices that maintain or improve condition and extent • Remove high priority in-stream barriers to fish
Strategy: Manage surface water, wetland and groundwater assets for people and the environment		
Priority action: Implement practices that contribute to the maintenance or improvement of water quality and river health	Focus: <ul style="list-style-type: none"> • Priority aquatic assets that support local industries 	Actions: <ul style="list-style-type: none"> • Practices that minimise impacts from non-point source pollution • Protection of existing good condition riparian vegetation
Implementation partners: Australian Government, NSW State Agencies, local government – Eurobodalla and Bega. Local Aboriginal Land Councils – Eden, Bega, Merrimans, Wagonga, Mogo, Batemans Bay, Cobowra. Eurobodalla Landcare Network, Far South Coast Landcare Association. Primary producer groups – Australia's Oyster Coast, Bega Cheese, Dairy NSW, Small Farms Network, South East Producers Association. Gulaga and Biamanga Boards of Management, Nature Coast Marine Group, Conservation Volunteers Australia, WetlandCare Australia, SAGE, OceanWatch. Tourism groups – Sapphire Coast Tourism, Eurobodalla Coast Tourism, South Coast Regional Tourism Organisation, Destination NSW. TAFE, University of Wollongong.		
Adaptive management and devolved decision making strategies under Pillar 2 will be implemented across each landscape and at a region wide level.		

Monaro landscape at a glance

The Monaro landscape is located between the Kybean ranges and the Snowy Mountains, at an elevation generally ranging from 800 to 2,228 m with the highest peaks located in alpine areas of Kosciuszko National Park.

The Monaro landscape covers a total area of 15,183 km², spanning from Michelago in the north to the NSW-Victorian border in the south (as shown in Figure 11). The Monaro landscape encompasses the three local government areas of Bombala, Cooma-Monaro and Snowy River. The Monaro landscape is adjacent to the Australian Capital Territory.

On the Monaro, the climate is regarded as sub-alpine. Winters are long and cold, with temperatures regularly falling below freezing and periodic snowfalls occurring throughout the region. Due to the Monaro's location (lee of the Snowy Mountains) a rain shadow effect is experienced throughout the region, creating low and irregular annual rainfall.

The Monaro landscape includes the headwaters of the Snowy and Murrumbidgee Rivers. The creeks and rivers of the Monaro landscape are generally fed by winter rains, with a number supplemented by snow melt, so they would normally be cold and fast flowing. The hydrology, flow regimes and aquatic biodiversity of the region have been significantly affected by storage and diversion structures. The topography ranges from large river valleys to alpine and sub-alpine regions of the Snowy Mountains. The landscape is characterised by the Monaro plains, an elevated plateau. In the western parts, the landscape consists mostly of flat to undulating terrain often referred to as the 'treeless plain'.

The soil types are diverse with the majority being of granite, basalt and soils of sedimentary origin. Most are naturally acidic and typically deficient in phosphorous.

Agriculture contributes over \$66 million per annum to the regional economy (ABS 2006). The region is renowned for its wool and prime lamb production, with a small area of irrigated agriculture for vegetable production. The community comprises a mix of public land managers, long-term landholders, hobby farmers and absentee landholders. Alpine tourism brings more than 3 million visitors to the region each year (Australian Alps NP 2012).

Key threats to the landscape include land use pressures, weed infestation including African lovegrass, serrated tussock, blackberry and willows and changing climate. Climate impact profiles for 2050 (DECCW 2010a) suggest that the climate will be hotter with lower snowfall, increased summer rains and decreased winter rains. Widespread changes to natural

ecosystems are expected, particularly to alpine and fire-sensitive environments.

The Monaro landscape is rich in spiritual and cultural heritage values to the Aboriginal people who have occupied this place for thousands of years. There are six Local Aboriginal Land Councils in the Monaro landscape.

Local vision: Responsible landscape management which ensures natural assets are passed on to future generations in an improved state

Figure 11. Map of the Monaro landscape



Monaro landscape key statistics

Total area	15,183 km ²
Land management (% total area)	
Conservation	28.8%
Agriculture	47.4%
Urban	1.1%
Other*	22.7%
Local government areas (% total landscape area)	Bombala (26%) Cooma-Monaro (34%) Snowy River (40%)
Major centres	Cooma, Jindabyne, Bombala
Human assets	
Population	19,689
Aboriginal population (% of total)	2.0%
Median age (national – 37 years)	38 (Snowy River) – 46 (Bombala)
Social assets	
Rate of volunteerism (national average 17.8%)	24.4% (Snowy River) – 33.5% (Bombala)
Number of volunteer 'care groups'	19
Internet connection	76%
Local Aboriginal Land Councils	Bega, Bodalla, Eden, Merrimans, Mogo, Wagonga
Economic assets	
Median weekly household income (national – \$1,234)	\$805 (Bombala) – \$1,154 (Snowy River)
Unemployment (national average 5.6%)	3.5%
Industry of employment by sector (top five responses)	Sheep, beef cattle and grain farming School education Cafes, restaurants and takeaway food services Accommodation Sports and physical recreation activities
Occupied private dwellings	7,198
Number of agri-businesses	829 (ABS 2006)
Total area occupied by agriculture	717,588 ha (OEH 2007)
Value of agriculture (per annum)	\$66,693,205 (ABS 2006)
Value of agriculture per hectare of agricultural land	\$93 (ABS 2006)
Natural assets	
Predominant landform	Alpine and sub-alpine areas, rolling treeless plains, forest and woodlands to the west and east on mountain ranges
Total stream length	47,394 km
Listed wetlands	15, 1 Ramsar site
Threatened species (vulnerable, endangered or critically endangered)	121 plant and animal species 6 endangered ecological communities
Major river catchments	Genoa, Tuross, Snowy, Murrumbidgee
Travelling Stock Reserves	3,377 ha
Climate (Australian Bureau of Meteorology 2013)	Mean annual rainfall 978mm (Australian BOM 2013) Average minimum temperature, July -1.7°C (Australian BOM 2013) Average maximum temperature, January 24.1°C (Australian BOM 2013)
Programs	
Murrumbidgee CMA	Ecosystem Restoration and Recovery Sustainable Agricultural Landscapes
Southern Rivers CMA	Landholder and Community Resilience Profitable and Sustainable Farming Resilient Land and Seascapes

* Other is a category which encompasses land uses such as mining and quarrying, transport corridors, power generation, tree and shrub cover which is not utilised for either agriculture or conservation and wetlands.

Source: ABS (2011) unless noted otherwise.

Figure 12. Monaro landscape key natural resources



Image: Bobundra landscape

Table 3. Monaro landscape priorities

This table lists the priorities that have been identified for the Monaro landscape.

Pillar 1 – Sustainable economies and community well being		
Strategy: Deliver services that support natural resource dependent industries be profitable and sustainable		
Priority action: Support business performance within natural resource dependent industries	Focus: • Grazing industry	Actions: • Investigate issues impacting on the profitability and sustainability of existing primary production enterprises • Facilitate access to enterprise development opportunities, including business planning, succession planning, environmental management systems and property planning training
Strategy: Deliver services that support land and water managers make well-informed decisions about the use and care of natural resources		
Priority action: Support land and water managers to respond and adapt to biosecurity threats, including weeds, pests and diseases e.g. Serrated Tussock, African lovegrass	Focus: • Primary producers • Weeds, pests and diseases that threaten existing lifestyles and livelihoods • Land and water manager capacity	Actions: • Implement regional weed strategies • Facilitate effective cross tenure collaboration on management of weeds, pests and diseases • Investigate alternative lifestyle and livelihood options for those regions that are at risk of significant change from weeds, pests and diseases • Implement the NSW Biosecurity Strategy
Strategy: Deliver services that support community resilience, wellbeing and connection		
Priority action: Support new and existing industry and community networks	Focus: • Primary producers • Landcare volunteers	Actions: • Build the strength of existing networks, government and non-government • Investigate alternative models to connect people • Encourage greater collaboration between networks • Foster knowledge sharing across generations
Pillar 3 – Diverse, healthy, connected and productive natural environments		
Strategy: Soil condition is managed to support people and the environment		
Priority action: Practices that improve soil condition in rural lands	Focus: • Productive capacity of agricultural lands • Soil carbon	Actions: • Practices that increase productive capacity of agricultural lands • Practices that maintain groundcover • Practices that increase soil carbon • Practices that retain water in the landscape
Strategy: Manage the health and integrity of natural environments for people and the environment		
Priority action: Practices that maintain and improve habitat that supports connectivity priorities Integrate production and conservation goals into primary production systems e.g. Natural Temperate Grasslands	Focus: • Under reserved and threatened vegetation communities • Habitat that supports threatened species • State, regional and locally significant corridors • Significant barriers to fish passage • Grazing landscapes	Actions: • Identify and map priority habitat for conservation in each landscape • Practices that maintain or improve habitat condition • Practices that improve size and shape of remnant vegetation patches • Practices that retain key habitat features
Strategy: Manage surface water, wetland and groundwater assets for people and the environment		
Priority action: Practices that maintain and improve the condition of priority surface water, wetland and groundwater assets	Focus: • Good condition, high recovery potential and strategic river reaches • Priority groundwater resources • Priority wetlands	Actions: • Protection of existing good condition riparian vegetation • Revegetation of riparian corridors and wetland environments
Implementation partners: Australian Government, NSW State Agencies, ACT government, local governments – Bombala, Cooma-Monaro, Snowy River. Local Aboriginal Land Councils – Bega, Bodalla, Eden, Merrimans, Mogo, Wagonga. Primary producer groups – Monaro Farming Systems. Snowy River Interstate and Upper Snowy River Landcare Associations. Research institutions. Non-government organisations – Greening Australia, Bush Heritage Australia, Kosciuszko 2 Coast. Tourism industry groups.		
Adaptive management and devolved decision making strategies under Pillar 2 will be implemented across each landscape and at a region wide level.		

Slopes landscape at a glance

The Slopes landscape covers an area of 13,685 km². The southern border of the landscape is the Australian Capital Territory and the northern border, the Abercrombie River. The Slopes landscape follows the boundaries of Boorowa, Upper Lachlan and Yass Valley shire councils (as shown in Figure 13).

The landscape is comprised of the ranges and plateau country of the Great Dividing Range to the north east and north including part of the Blue Mountains National Park. To the west are agricultural landscapes, with corridors of native vegetation following the ranges, rocky outcrops and river systems. To the south of the landscape are the densely vegetated ranges of Brindabella National Park.

The regional centres are Boorowa, Crookwell and Yass. Agriculture contributes over \$173 million per annum to the regional economy (ABS 2006). The agricultural industries include sheep, beef cattle, wine and grain production.

The Slopes landscape includes parts of the Lachlan, Hawkesbury, Murrumbidgee and Lake George river catchments. Major rivers in the Slopes landscape include the Crookwell, Abercrombie and Boorowa Rivers which flow into the Lachlan River, the Yass and Goodradigbee River which flow into the Murrumbidgee River and a small section of the Wollondilly River which flows into the Hawkesbury-Nepean River. Major dams include Burrinjuck, Pejar and Wyangala.

The climate of the landscape ranges from east to west with higher temperatures and lower rainfall to the west. Mean annual rainfall is 705mm (BOM 2013).

Soils range from highly fertile soils used for intensive agriculture to fragile erodible soils and soils prone to salinisation. Threats to the landscape include peri-urban development, soil erosion, soil acidification, salinity, water quality decline, weeds and pests.

The Aboriginal cultural landscape comprises many significant sites and places such as the granite outcrops which were traditionally used to make grinding tools and other essential pieces of equipment. There are five Local Aboriginal Land Councils in the Slopes landscape.



Sheep, early evening, Boorowa district

Local vision: The community successfully balances profitable agriculture with a high standard of environmental management and conservation

Figure 13. Map of the Slopes landscape



Slopes landscape key statistics

Total area	13,685 km ²
Land management (% total area)	
Conservation	4.9%
Agriculture	81.4%
Urban	1.0%
Other*	12.7%
Local government areas (% total landscape area)	Booroowa (19%) Upper Lachlan (52%) Yass Valley (29%)
Major centres	Booroowa, Crookwell, Yass
Human assets	
Population	24,612
Aboriginal population (% of total)	1.9%
Median age (national – 37 years)	40 (Yass Valley) – 46 (Upper Lachlan)
Social assets	
Rate of volunteerism (national average 17.8%)	26.8% (Yass Valley) – 28.9% (Upper Lachlan)
Number of volunteer 'care groups'	26
Internet connection	77.3%
Local Aboriginal Land Councils	Brungle/Tumut, Cowra, Ngunnawal, Pejar, Onerwal
Economic assets	
Median weekly household income (national – \$1,234)	\$778 (Booroowa) – \$1,625 (Yass Valley)
Unemployment (national average 5.6%)	2.6%
Industry of employment by sector (top five responses)	Sheep, beef cattle and grain farming Government Farming School education Administration
Occupied private dwellings	8,943
Number of agri-businesses	1,965 (ABS 2006)
Total area occupied by agriculture	1,113,085 ha (OEH 2007)
Value of agriculture (per annum)	\$173,040,806 (ABS 2006)
Value of agriculture per hectare of agricultural land	\$155 (ABS 2006)
Natural assets	
Predominant landform	Rolling undulating hills, scattered woody areas and extensively cleared grazing lands
Total stream length	37,989 km
Listed wetlands	1
Threatened species (vulnerable, endangered or critically endangered)	77 plant and animal species 6 endangered ecological communities
Major river catchments	Lachlan, Yass, Murrumbidgee
Travelling Stock Reserves	1,803 ha
Climate (Australian Bureau of Meteorology 2013)	Mean annual rainfall 705mm (Australian BOM 2013) Average minimum temperature, July 0.2°C (Australian BOM 2013) Average maximum temperature, January 28.3°C (Australian BOM 2013)
Programs	
Lachlan CMA	Sustainable Agriculture Sustainable Environment
Southern Rivers CMA	Landholder and Community Resilience Profitable and Sustainable Farming Resilient Land and Seascapes
Murrumbidgee CMA	Ecosystem Restoration and Recovery Sustainable Agricultural Landscapes

* Other is a category which encompasses land uses such as mining and quarrying, transport corridors, power generation, tree and shrub cover which is not utilised for either agriculture or conservation and wetlands.
Source: ABS (2011) unless noted otherwise.

Figure 14. Slopes landscape key natural resources

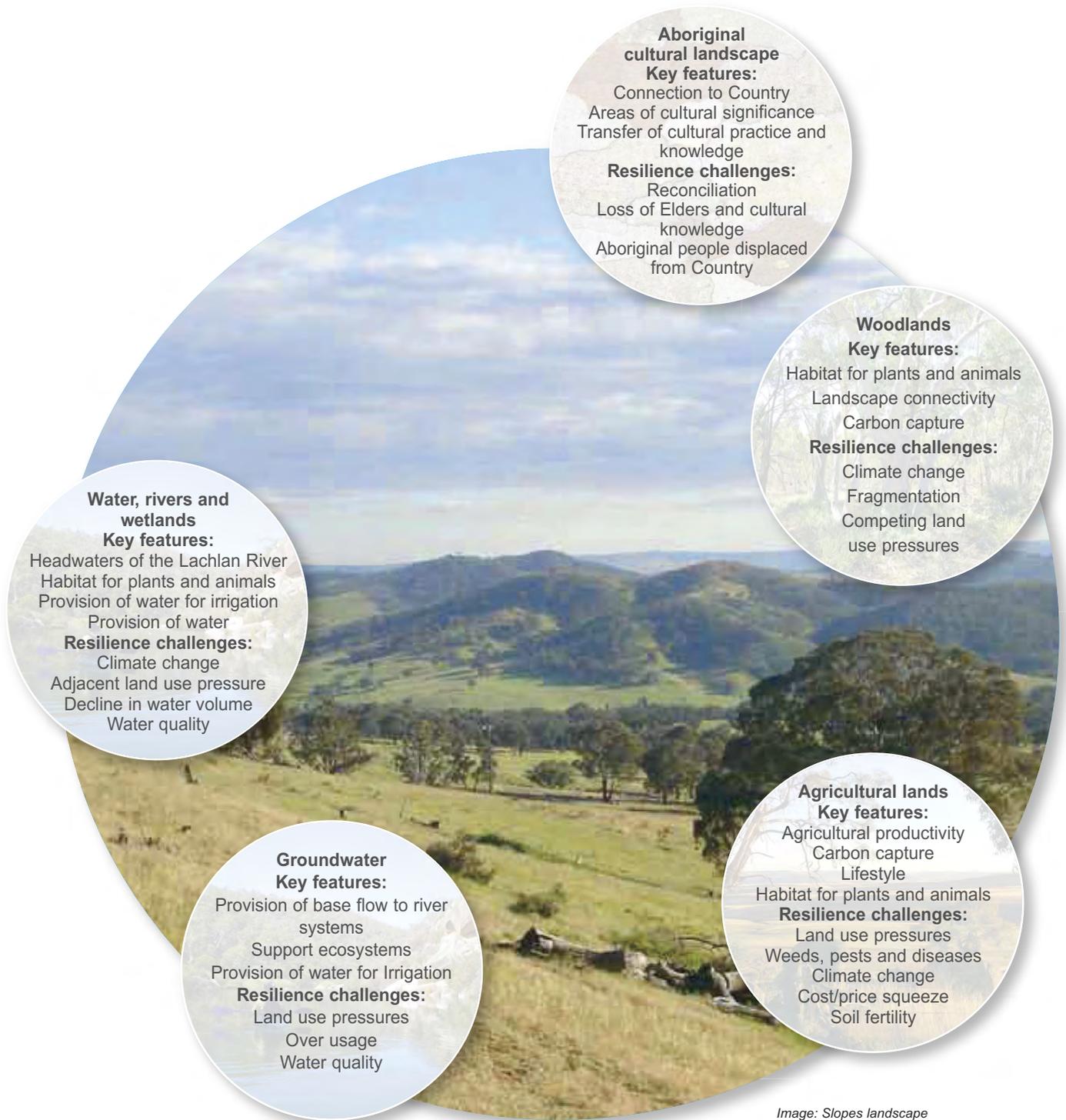


Table 4. Slopes landscape priorities

This table lists the priorities that have been identified for the Slopes landscape.

Pillar 1 – Sustainable economies and community well being		
Strategy: Deliver services that support natural resource dependent industries be profitable and sustainable		
Priority action: Support business performance within natural resource dependent industries	Focus: <ul style="list-style-type: none"> • Grazing industry • Mixed farming systems • Small-scale and peri-urban enterprises • Horticulture 	Actions: <ul style="list-style-type: none"> • Investigate issues impacting on the profitability and sustainability of existing primary production enterprises • Facilitate access to enterprise development opportunities, including business planning, succession planning, environmental management systems and property planning training
Strategy: Deliver services that support land and water managers make well-informed decisions about the use and care of natural resources		
Priority action: Support land and water managers to respond and adapt to biosecurity threats, including weeds, pests and diseases	Focus: <ul style="list-style-type: none"> • Primary producers • Small-scale and peri-urban enterprises • Weeds, pests and diseases that threaten existing lifestyles and livelihoods • New and emerging weeds, pests and diseases 	Actions: <ul style="list-style-type: none"> • Deliver extension services that support farm profitability and land and water stewardship practices • Facilitate effective cross tenure collaboration on management of weeds, pests and diseases • Investigate alternative lifestyle and livelihood options for those regions that are at risk of significant change from weeds, pests and diseases
Strategy: Deliver services that support community resilience, wellbeing and connection		
Priority action: Support a greater contribution by individuals to their local area	Focus: <ul style="list-style-type: none"> • Landcare volunteers • Primary producers • Urban communities • Youth • Aboriginal communities 	Actions: <ul style="list-style-type: none"> • Provide resources and technical advice to support volunteer effort • Build capacity of and foster local leaders • Support community visions for the natural resources of local areas
Pillar 3 – Diverse, healthy, connected and productive natural environments		
Strategy: Soil condition is managed to support people and the environment		
Priority action: Practices that improve soil condition in rural lands	Focus: <ul style="list-style-type: none"> • Productive capacity of agricultural lands • Soil carbon • Capacity of landscape to absorb and retain water 	Actions: <ul style="list-style-type: none"> • Practices that increase productive capacity of agricultural lands • Practices that maintain groundcover • Practices that mitigate the impact of dryland salinity • Practices to mitigate impact of active erosion and sedimentation • Practices that increase soil carbon • Practices that retain water in the landscape
Strategy: Manage the health and integrity of natural environments for people and the environment		
Priority action: Practices that maintain and improve habitat that supports connectivity priorities e.g. Kynangara Boyd to Wyangala corridor, White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland EEC	Focus: <ul style="list-style-type: none"> • State, regional and locally significant corridors • Under reserved and threatened vegetation types and • Habitat that supports threatened species • Fish passage • High value fish habitat 	Actions: <ul style="list-style-type: none"> • Practices that maintain or improve habitat condition • Practices that improve size and shape of remnant vegetation patches • Practices that maintain or improve condition and extent, including revegetation, regeneration, invasive species and diseases management • Remove high priority in-stream barriers to fish passage • Practices that maintain and improve fish habitat
Strategy: Manage surface water, wetland and groundwater assets for people and the environment		
Priority action: Practices that maintain and improve the condition of priority surface water, wetland and groundwater assets	Focus: <ul style="list-style-type: none"> • Good condition, high recovery potential strategic river reaches • Good condition wetlands • Priority groundwater resources • Priority aquatic assets that support industry • Saline in-flows into the Murray Darling Basin 	Actions: <ul style="list-style-type: none"> • Protection of existing good condition riparian and wetland vegetation • Revegetation of riparian corridors and wetland environments • Practices that maintain or improve groundwater resources • Practices that minimise impacts of saline in-flows • Protect and rehabilitate groundwater dependant ecosystems
Implementation partners: Australian Government, NSW State agencies, ACT Government, local governments – Booroowa, Upper Lachlan and Yass Valley. Local Aboriginal Land Councils – Pejar, Onerwal, Brungle/Tumut, Ngunnawal and Cowra. Landcare – LachLandcare Inc. Non-government organisations, primary producer groups, Sydney Catchment Authority, Murrumbidgee Irrigation Ltd, Murray-Darling Basin Authority, research institutions.		
Adaptive management and devolved decision making strategies under Pillar 2 will be implemented across each landscape and at a region wide level.		

Tablelands landscape at a glance

The Tablelands landscape covers a total area of 8,532 km², spanning from Marulan in the north to Queanbeyan in the south (as shown in Figure 15). With an elevation ranging from 580 metres to 1,231 metres, with the highest peak being Mt Palerang, near Braidwood. Around Braidwood the eastern boundary is along the coastal escarpment. The Tablelands landscape encompasses the three local government areas of Palerang, Goulburn-Mulwaree and Queanbeyan. The Tablelands landscape is adjacent to the ACT.

On the Tablelands, the climate is regarded as temperate with warm to hot summers and no dry season. Winters are typically cool to cold with rainfall distributed relatively evenly throughout the year.

The Tablelands landscape includes the upper portion of the Shoalhaven River catchment and the headwaters of the Hawkesbury-Nepean River near Goulburn. The Tablelands landscape also encompasses the large Lake George basin north of Canberra and sections of the Molonglo and Queanbeyan Rivers that flow to the Murrumbidgee River through the ACT. The rivers in this landscape are important in terms of water supply both for local communities, the ACT and Sydney communities.

The landscape is characterised by wide open rolling hills and plains, with the more rugged eastern and western upland ranges dominated by native forest and woodlands. Much of the landscape is rural in character except for the larger and growing urban centres at Queanbeyan and Goulburn. The landscape has a strong agricultural base with sheep and cattle grazing in the central and northern parts and more recently niche rural industries such as vineyards, olive groves and alpaca have been introduced. Tourism, mineral resources, energy production through wind farms and a home for people seeking a rural lifestyle are also characteristic of the landscape.

Goulburn and its surrounding areas have developed an increasingly varied economic base underpinned by specialist farming, service industries, retailing and tourism. The Goulburn area will continue to grow in the medium to long term as its location becomes increasingly important as a regional centre within the Sydney to Canberra Corridor.

Soils across the tablelands include shallow sandy loams that are acidic, highly porous, with highly erodible subsoils. Fertility is generally low and there are localised problems with waterlogging, rising water tables and gully erosion. There are substantial areas of land with moderate, high and very high salinity hazard in the Upper Shoalhaven.

Threats and pressures within this landscape include increasing weed and pest populations, fragmentation of native vegetation, urban development and rural residential expansion.

Climate impact profiles for 2050 (DECCW 2010a) suggest that the climate will be hotter with increased summer rains and decreased winter rains. Widespread changes to natural ecosystems are expected and both urban and rural landscapes will be increasingly impacted by fires, flooding and drought.

The Tablelands is the traditional home of several groups of Aboriginal people, the Ngunnawal, Ngarigo, Wandandian and Walbunja people. There are six Local Aboriginal Land Councils in the Tablelands landscape.

Local vision. A well-managed environment providing for a range of lifestyle options, agricultural enterprises and natural areas

Figure 15. Map of the Tablelands landscape



Tablelands landscape key statistics

Total area	8,532 km ²
Land management (% total area)	
Conservation	15.7%
Agriculture	51.4%
Urban	6.8%
Other*	26.1%
Local government areas (% total landscape area)	Goulburn-Mulwaree (38%) Palerang (60%) Queanbeyan (2%)
Major centres	Braidwood, Goulburn, Queanbeyan
Human assets	
Population	79,824
Aboriginal population (% of total)	2.7%
Median age (national – 37 years)	35 (Queanbeyan) – 41 (Palerang, Goulburn-Mulwaree)
Social assets	
Rate of volunteerism (national average 17.8%)	16.4% (Queanbeyan) – 26.7% (Palerang)
Number of volunteer 'care groups'	29
Internet connection	79.3%
Local Aboriginal Land Councils	Batemans Bay, Bodalla, Illawarra, Mogo, Ngambri, Pejar
Economic assets	
Median weekly household income (national – \$1,234)	\$981 (Goulburn-Mulwaree) – \$1,813 (Palerang)
Unemployment (national average 5.6%)	3.7% (range 2.6% Palerang – 5.7% Goulburn-Mulwaree)
Industry of employment by sector (top five responses)	Central government Administration Cafes, restaurants and takeaway food services School education Defence
Occupied private dwellings	16,498
Number of agri-businesses	866 (ABS 2006)
Total area occupied by agriculture	438,033 ha (OEH 2007)
Value of agriculture (per annum)	\$50,724,984 (ABS 2006)
Value of agriculture per hectare of agricultural land	\$116 (ABS 2006)
Natural assets	
Predominant landform	Rolling undulating hills, scattered woody areas and extensively cleared grazing lands
Total stream length	30,550 km
Listed wetlands	3
Threatened species (vulnerable, endangered or critically endangered)	111 plant and animal species 11 endangered ecological communities
Major river catchments	Hawkesbury, Deua/Moruya, Murrumbidgee, Lake George, Shoalhaven
Travelling Stock Reserves	883 ha
Climate (Australian Bureau of Meteorology 2013)	Mean annual rainfall 652mm (Australian BOM 2013) Average minimum temperature, July 0.4°C (Australian BOM 2013) Average maximum temperature, December 27.6°C (Australian BOM 2013)
Programs	
Hawkesbury-Nepean CMA	Biodiversity River Health Rural Landscapes Community Engagement
Murrumbidgee CMA	Ecosystem Restoration and Recovery Sustainable Agricultural Landscapes
Southern Rivers CMA	Landholder and Community Resilience Profitable and Sustainable Farming Resilient Land and Seascapes

* Other is a category which encompasses land uses such as mining and quarrying, transport corridors, power generation, tree and shrub cover which is not utilised for either agriculture or conservation and wetlands.
Source: ABS (2011) unless noted otherwise.

Figure 16. Tablelands landscape key natural resources



Image: Mulloon Creek, Braidwood

Table 5. Tablelands landscape priorities

This table lists the priorities that have been identified for the Tablelands landscape.

Pillar 1 – Sustainable economies and community well being		
Strategy: Increase profitability and sustainability of natural resource dependent industries		
Priority action: Support business performance within natural resource dependent industries	Focus: <ul style="list-style-type: none"> • Grazing industry • Mixed farming systems 	Actions: <ul style="list-style-type: none"> • Facilitate access to business planning, succession planning and property planning
Strategy: Support private and public land and water managers to make well-informed decisions about the use, care and stewardship of natural resources		
Priority action: Deliver information and extension services that meet land and water manager needs Support land and water managers to respond and adapt to biosecurity threats, including weeds, pests and diseases	Focus: <ul style="list-style-type: none"> • Primary producers • Small-scale and peri-urban enterprises • New and emerging weeds, pests and diseases • Land and water manager capacity to adapt 	Actions: <ul style="list-style-type: none"> • Deliver extension services that support farm profitability and land and water stewardship practices • Facilitate cross-tenure collaboration on management of weeds, pests and diseases
Strategy: Deliver services that support community resilience, wellbeing and connection		
Priority action: Support new and existing industry and community networks Celebrate and promote the cultural and natural identity of local landscapes and communities	Focus: <ul style="list-style-type: none"> • Primary producer groups • Landcare groups • People's connection to land and water • Aboriginal cultural heritage • Urban communities 	Actions: <ul style="list-style-type: none"> • Build the strength of existing networks • Build capacity and foster leaders • Support events that celebrate local landscapes • Develop community visions for the natural resources of local areas • Recognise and value Aboriginal cultural heritage
Pillar 3 – Diverse, healthy, connected and productive natural environments		
Strategy: Soil condition is managed to support people and the environment		
Priority action: Improve soil condition in rural lands Manage naturally fragile soils	Focus: <ul style="list-style-type: none"> • Soil carbon • Capacity of landscape to retain water • Sodic soils • Acid soils 	Actions: <ul style="list-style-type: none"> • Practices that increase productive capacity of agricultural lands • Practices to mitigate active erosion • Practices that maintain groundcover • Practices that are consistent with capability of land
Strategy: Manage the health and integrity of natural environments for people and the environment		
Priority action: Practices that maintain and improve habitat and support connectivity priorities	Focus: <ul style="list-style-type: none"> • Habitat that supports threatened species • Regional and locally significant corridors • Fish passage 	Actions: <ul style="list-style-type: none"> • Complete mapping of corridors • Practices that maintain or improve condition and extent of habitat • Remove high priority barriers to fish passage
Strategy: Manage surface water, wetland and groundwater assets for people and the environment		
Priority action: Practices that maintain and improve the condition of priority water assets	Focus: <ul style="list-style-type: none"> • Drinking water catchments • Good condition high recovery potential and strategic river reaches • Priority wetlands • Good condition groundwater resources • High value fish habitat 	Actions: <ul style="list-style-type: none"> • Protection of good condition riparian and wetland vegetation • Practices that maintain or improve groundwater • Practices that mitigate impacts from non-point source pollution
Implementation partners: Australian Government, NSW State agencies, ACT Government, local government – Palerang, Goulburn-Mulwaree, Queanbeyan. Landcare/NRM groups in the Goulburn area, Upper Shoalhaven Landcare Council, Queanbeyan Landcare. Local Aboriginal Land Councils – Batemans Bay, Bodalla, Illawarra, Mogo, Ngambri, Pejar. Primary producer groups – Tablelands Farming Systems. ACTEW Water, ACT NRM Council. Non-government organisations – Greening Australia, Molongolo Catchment Group, Mulloon Institute.		
Adaptive management and devolved decision making strategies under Pillar 2 will be implemented across each landscape and at a region wide level.		

PART 2 – Concepts and tools underpinning South East CAP

Conceptual framework

South East CAP introduces a new conceptual framework for NRM. Over the last five years there has been a significant shift in NRM thinking. Rather than thinking about restoring landscapes to a prior condition, there is a growing recognition that landscapes are made up of human communities and biophysical processes that interact and shape each other and are constantly changing.

South East CAP has been guided and developed using the following concepts:

1. adopting a resilience approach
2. identifying drivers of change
3. analysing socio-ecological systems
4. recognising the importance of natural resources to economic prosperity and community wellbeing
5. using models to understand different states of the landscape and the key drivers of change.

Each of these concepts has been explored in detail, to underpin the analysis of landscape systems and to set strategic direction. The background analysis undertaken to inform the South East CAP included an evaluation of the relevant CAPs (i.e. Southern Rivers, Murrumbidgee, Lachlan and Hawkesbury-Nepean), gathering of available knowledge, landholder and community surveys, analysis of the plans, policies and priorities of all levels of government and workshops with stakeholders and other experts.

The background analysis for South East CAP is presented in the supporting documentation and is available on South East LLS OPEN, accessed through:

www.southeast.lls.nsw.gov.au



Dairy cows, Jamberoo Valley



Farm store, Monaro



Winter morning, Cooma

Adoption of a resilience approach

South East CAP seeks to understand and set strategies in the context of the entire landscape system. This system includes people, economies and natural resources.

A key concept underpinning this approach is resilience. At its simplest, resilience describes the ability of a system to cope with disturbance and still retain its basic character and function.

Figure 17 demonstrates system resilience and has been adapted from Chapin et al. (2009) and Walker and Salt (2012). State A is the desired state, as the system is robust in nature and has a degree of resilience or stability. This stability enables it to recover or maintain its character and function if exposed to shocks and threats, where it moves to state B.

If shocks and threats continue to operate on a state B system, it will show signs that it is changing to state C, which is referred to as the transitional state. If these forces continue to operate on the system, it may be pushed across the threshold into state D. At this point, a system can settle into the undesired state E, from which a return to a desired state is difficult or impossible.

Resilience can be specific to a particular function, or general in

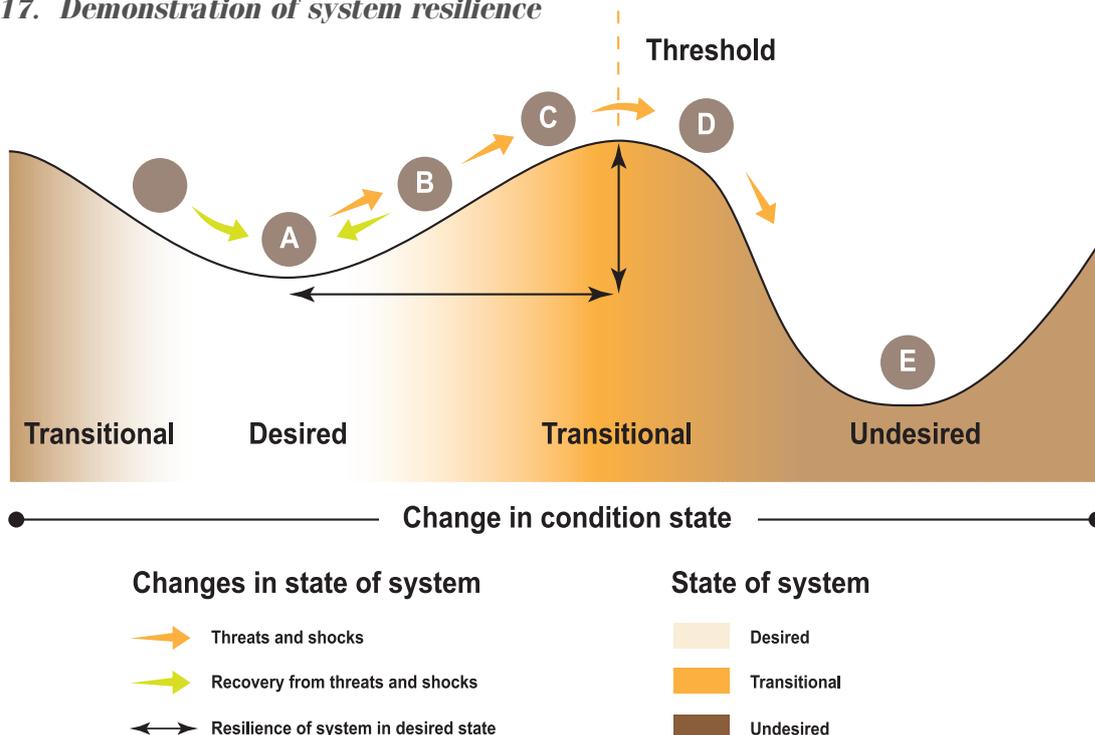
relation to the entire system. The concept of resilience can be applied to many different types of systems. A natural system can have resilience, an economy can have resilience or a local community may have resilience.

Forces or conditions that change a system's character and function are referred to within South East CAP as threats and shocks. Shocks can be social, economic or ecological (e.g. global financial crisis, change of government policies, wildfire and other natural disasters). Shocks are generally fast, large in scale and come from outside the system, rather than being controlled from within. Threats are referred to within South East CAP as the immediate, generally biophysical forces that can act on a system and change its state, such as loss of ground cover or gully erosion.

It is important to recognise that there are limits to how much a system (a farm business, a town, a region, a landscape, an ecosystem) can change and still recover. Beyond these limits, the system will function differently, and usually in an undesired way. Resilience thinking is about identifying those limits and planning to stay within them.

South East CAP uses resilience thinking to understand the region's landscape systems and importantly what it is that drives change within the system.

Figure 17. Demonstration of system resilience



Drivers of change

Drivers have been defined within South East CAP as the underlying forces that cause threats or positive processes to operate. Threats are easier for us to identify and manage, but in order to address the core problem, actions need to be undertaken to address the drivers of change, rather than just the symptoms.

A selection of recurring issues were identified for the South East region by community and government stakeholders during the consultation process. These have been analysed and grouped under 'primary drivers of change' in Table 6.

Drivers of change are significant in that they can push a system beyond the point of return, from which recovery to the original state is difficult or impossible. Such limits are referred to as thresholds and are useful, where they exist, to support the prioritisation and timing of action. Often, primary drivers are not independent and can overlap (both in space and time) as demonstrated conceptually by Figure 18. The complex interactions that occur between each of these drivers means that we need to address all of them in order to adapt to change. South East CAP identifies that each of these drivers impacts on the quality of decisions in relation to the use and care of natural resources.

Targeting actions on these drivers of change, by supporting land and water managers to increase their capacity to make well-informed decisions, will deliver multiple outcomes within the landscape.

Figure 18. Overlap between primary drivers of change

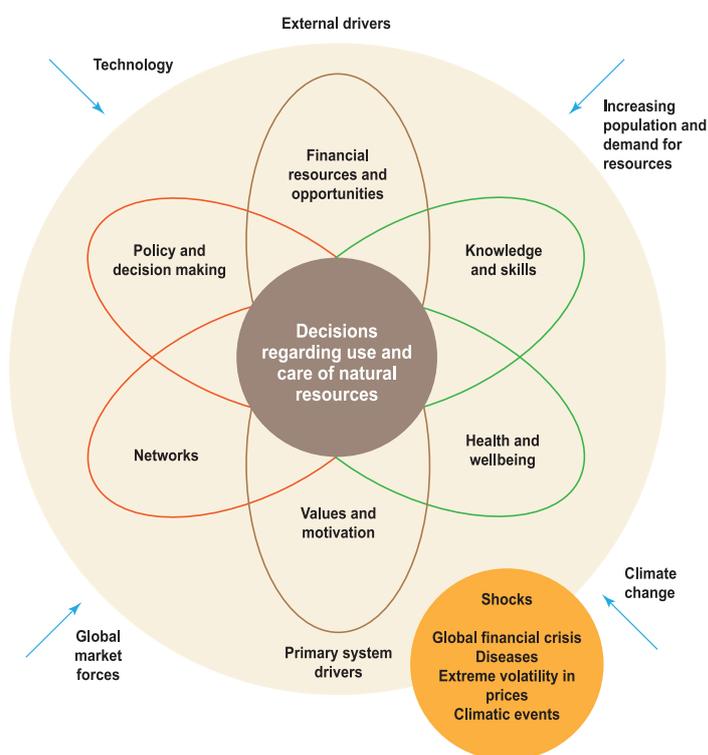


Table 6. Primary drivers of change influencing the South East region

Primary driver	Example of related issues raised during community consultation	
Financial resources and opportunities	<ul style="list-style-type: none"> Declining terms of trade Debt to income ratios Increasing land process Land use conflict - prime agricultural lands, priority aquaculture areas, natural environments and urban development 	<ul style="list-style-type: none"> Farm profitability Lack of critical infrastructure High cost of effectively restoring degraded landscapes
Knowledge and skills	<ul style="list-style-type: none"> Managing land and water within its capacity Land and water management practices 	<ul style="list-style-type: none"> Knowledge and skills gaps
Health and wellbeing	<ul style="list-style-type: none"> Ageing farmers and Landcare volunteers Farm succession issues 	<ul style="list-style-type: none"> Available time
Values and motivation	<ul style="list-style-type: none"> Impact of historic land use Community demand to live in certain locations 	<ul style="list-style-type: none"> Mixed demographics and value sets
Networks	<ul style="list-style-type: none"> High turnover in land ownership High rates of absentee landholders 	<ul style="list-style-type: none"> Disconnect between land managers and water users Decision making in isolation
Policy and decision making	<ul style="list-style-type: none"> Misalignment of plans and policies Changing priorities for investment Poor implementation of planning frameworks Absence or decline in extension support 	<ul style="list-style-type: none"> Pressure from population growth Pressure on natural resources Over allocation of water
Climate change	<ul style="list-style-type: none"> Changes to rainfall patterns/temperature Sea level rise 	<ul style="list-style-type: none"> Increased frequency of extreme climatic events, changes to weed distribution, plant and animal range and distribution

Recognising the distinct landscapes (socio-ecological systems)

South East CAP sets goals, strategies and targets at a regional level. At the same time, it recognises that the size and scale of different social, economic and natural resource characteristics of the region can make it difficult to develop strategies to facilitate diversity.

To cater for this, South East CAP has adopted the concept of 'socio-ecological systems' (referred to as landscapes) to better understand the region. The landscape approach allows for a more appropriate setting of strategies and priorities across the region, and allows the community and stakeholders to identify what is important in their area.

Socio-ecological systems are systems that can be defined by their unique and consistent combination of social, economic and ecological characteristics (e.g. landform, land use and social structures). Whilst these systems generally have no specific boundaries, they tend to share more key characteristics, particularly when compared to adjacent areas. They are therefore a useful basis for planning, engagement, decision making and delivery of on-ground action in partnership with communities.

Five landscapes have been identified across the South East region (refer Figure 19). These are:

- South Coast and Highlands, encompassing the broader Shoalhaven and Illawarra areas and the elevated plateau of the Southern Highlands
- Far South Coast, encompassing the broader Eurobodalla and Bega areas
- Monaro, encompassing the areas of Bombala, Cooma-Monaro and Snowy River. This landscape includes the alpine region of Kosciuszko down to the Monaro high plains
- Slopes, encompassing the Boorowa, Upper Lachlan and Yass Valley areas. This landscape is adjacent to the ACT
- Tablelands, encompassing the areas of Palerang, Goulburn-Mulwaree and Queanbeyan. This landscape is adjacent to the ACT.

It is acknowledged that whilst there are commonalities across these landscapes, there are also distinct differences between each landscape. Below the landscape scale, there are smaller units or localities that are finer-scale socio-ecological systems. These localities are not used for setting South East CAP priorities and targets, but will be used at a later stage in the development of implementation and investment plans (the main mechanism for translating South East CAP targets to specific action at a local scale).

Figure 19.
South East socio-ecological systems



The importance of natural resources to economic prosperity and community wellbeing

The South East region is characterised by a great diversity of industries, communities, lifestyles and natural features. At the same time, there are important characteristics that are common across the region.

Firstly, feedback from consultations and landholder surveys indicates that people value and love the places in which they live, work and play. People from across the South East region have strong connections with each of their natural, built, productive and aesthetic environments.

Research into NRM and wellbeing has shown that improving the amenity of the natural environment and the functionality of the landscape in turn supports the wellbeing of landholders and the community (refer to Figure 20). It is recognised that many of the factors that support wellbeing are also the primary drivers of change that influence the quality of natural resource decisions (Figure 18).

South East CAP recognises and demonstrates the significant interrelationship between people and the environment. Wellbeing contributes to quality natural resource decisions and the health of natural resources contributes to people's wellbeing.

Secondly, the economic prosperity of the South East region is largely driven by the health and productivity of the natural environment. Many enterprises, small businesses and jobs are dependent on natural resources.

Agriculture, aquaculture, commercial fishing and tourism enterprises are particularly dependent upon the health and productivity of natural resources. Even industries that are not directly dependent upon natural resources are influenced by the health and productivity of the natural environment. The viability of fishing tackle stores, food and wine-based tourism, agricultural service providers and nature-based tourism enterprises are reliant on clean, healthy and productive oceans, estuaries, beaches, rivers, forests and alpine areas.

Importantly, this highlights a second key interrelationship between people and the environment. Financial resources are a key driver of quality natural resource decisions (Figure 18) and the health and productivity of natural resources contributes to the economic prosperity of enterprises and regions.

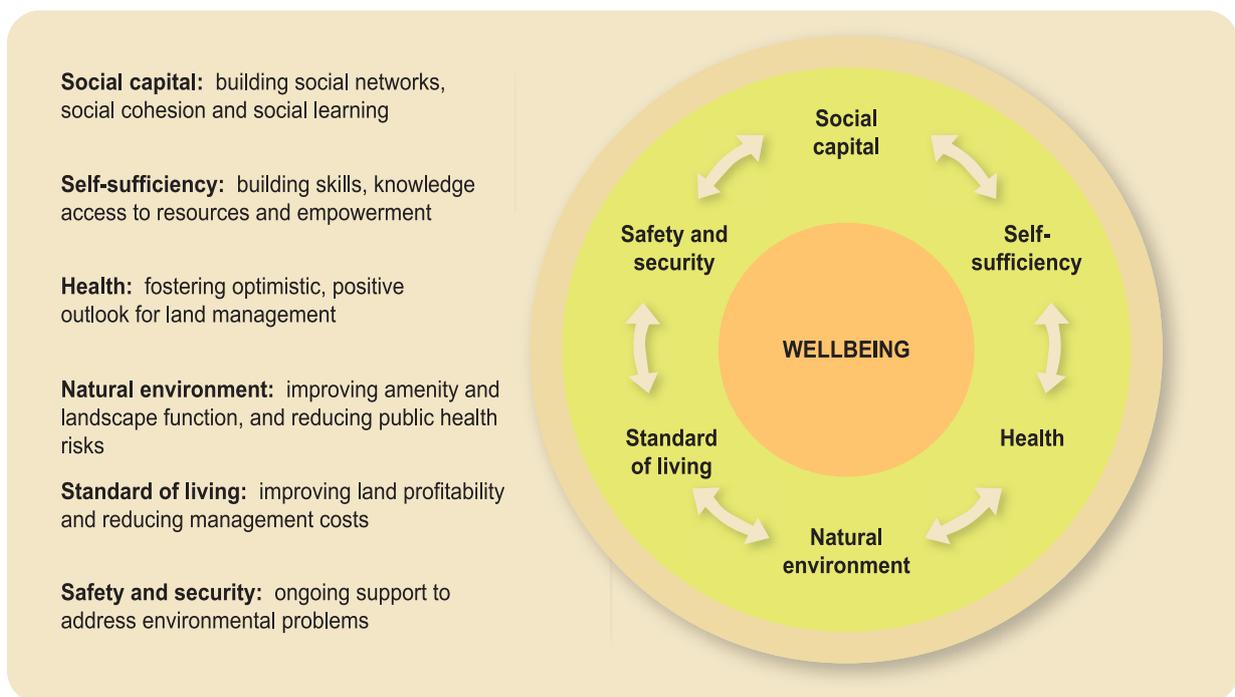
Investment in natural resources has a much greater benefit than its monetary value. This is because of the underlying services and values natural resources provide to individuals and the community.

South East CAP identifies that healthy and productive natural resources need to be a key factor when planning to improve economic prosperity and personal wellbeing in communities. South East CAP aims to contribute to these outcomes by building the resilience of the landscapes within which people live.

South East CAP provides a framework for decision makers from all levels of government to explicitly recognise, value and effectively manage the natural resources that underpin the economies of the region. It aims to build the capacity of communities and industries to improve and thrive from the natural resources that they rely on.

Figure 20. Wellbeing model

Wellbeing model that indicates pathways through which NRM can support wellbeing of landholders and community (Source: Schirmer 2012).



‘State and Transition’ models

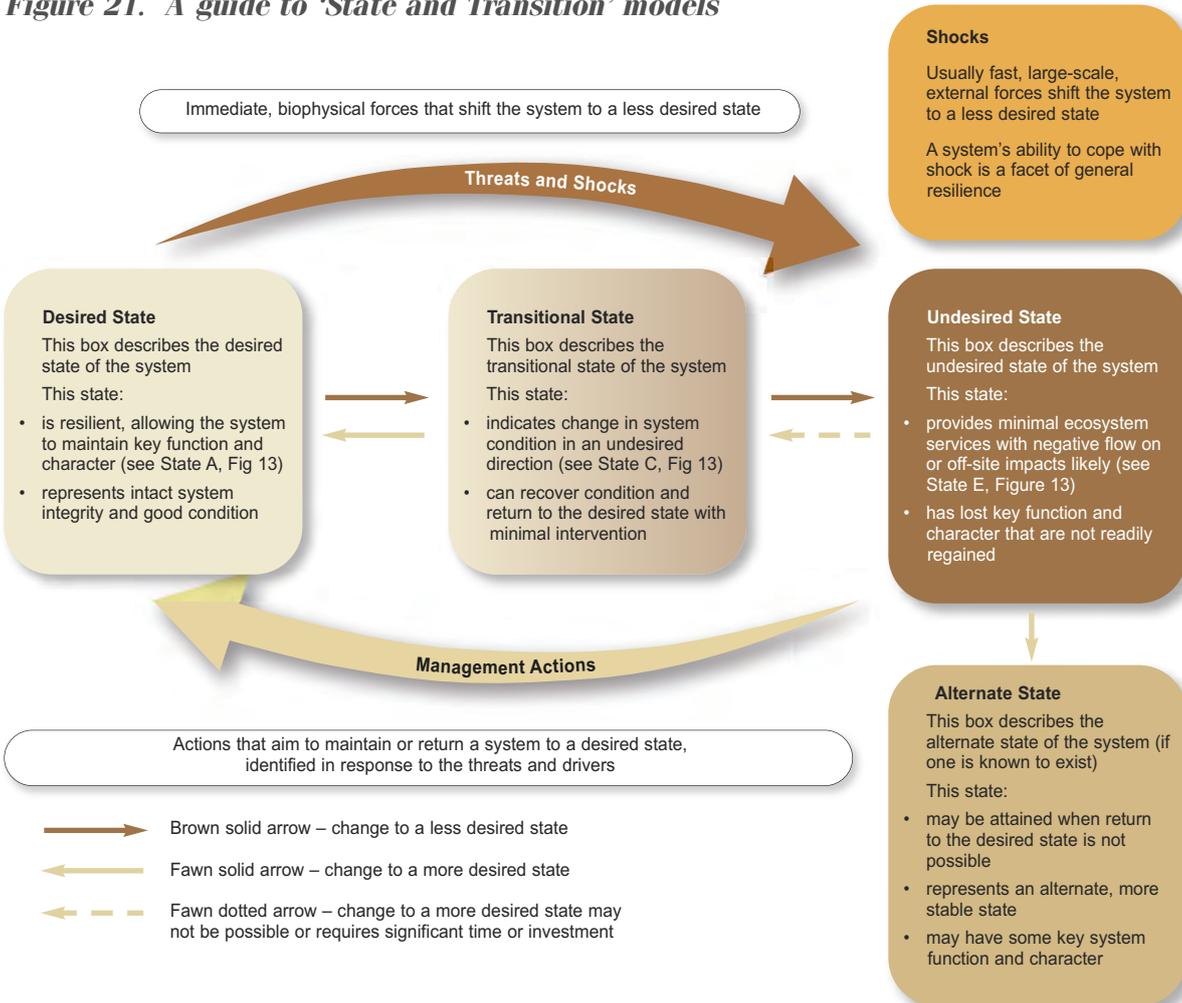
‘State and Transition’ models have been used to describe and communicate the analysis and understanding of the region’s landscape systems. They describe the different states that can exist in the landscape and the threats and shocks that can drive a system from a desired state to an undesired state, which is useful for describing the current state of the South East region.

State and Transition models identify the priorities on which to focus effort and investment. These models also identify management actions that can keep the system in the desired state or drive it from an undesired to a desired state.

State and Transition models have directly informed the strategies, priorities and actions of South East CAP. They have been developed in consultation with the community and technical experts to describe many of the attributes that are important to economic sustainability, community wellbeing, and the natural environment.

The detailed analysis and thinking that supports these models is presented in the supporting documentation. A guide to interpreting ‘State and Transition’ models is presented in Figure 21.

Figure 21. A guide to ‘State and Transition’ models



PART 3 – Bringing it all together

This part provides additional detail on the analysis and logic that has informed the development of South East CAP. Information, knowledge and evidence has been collected, validated and analysed through:

- community and key stakeholder input
- identification of South East landscapes
- and development of State and Transition models.

This strong evidence base provides a baseline for assessing the effectiveness of priority actions in achieving South East CAP targets, goals and ultimately 'sustainable, profitable industries and resilient landscapes'.

Spatial mapping has been used to assist in understanding and communicating the health of the region's natural resources. These maps are underpinned by robust data sets and have been used to display where priorities are located across the region. State and Transition models have been used to describe the understanding of the region's landscape systems. More information, including baseline data and links to key evidence is included in the relevant South East CAP background papers.

Using this knowledge, South East CAP aims to strike the right balance of how natural resources are used and cared for by private and public land managers. Practices to maximise the productive capacity of natural resources within their capability are identified alongside practices to promote effective care of natural resources. The three pillars explicitly recognise that South East CAP requires an integrated and coordinated approach between people, governance and natural resources.

Figure 22 provides a representation of the most significant functions and relationships that affect change towards the vision of sustainable communities, profitable industries, resilient landscapes in the South East region. It demonstrates that sustainable economies provide functions that support community wellbeing and that both sustainable economies and community wellbeing are directly supported by healthy and productive natural environments.

Natural resources provide a range of services and benefits to industries, individuals and communities. These include land, water and vegetation for primary production, recreation and lifestyle opportunities, a sense of identity and connection to the land, and individual health benefits. To ensure the ongoing provision of these or similar services for current and future generations, natural resources need to be managed within their capability or natural limits.

South East CAP sets a strategy for the sustainable use and care of natural resources by private and public land and water managers, individuals and communities.

The highest priority action is to deliver services that increase the capacity of land and water managers to make effective natural resource decisions.

Please refer to Figures 23, 29 and 30 for descriptions of the goals, targets, strategies and priority actions for each pillar and Table 9 for the priority actions, landscape priorities and implementation partners.

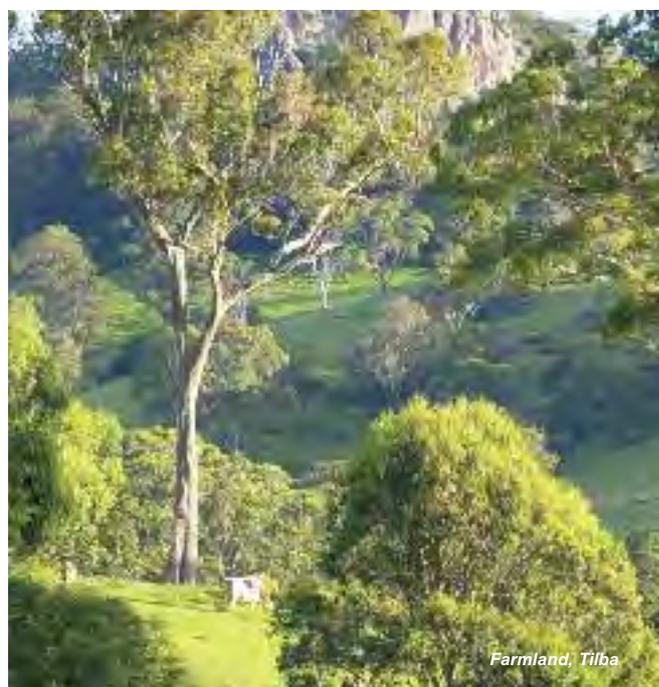
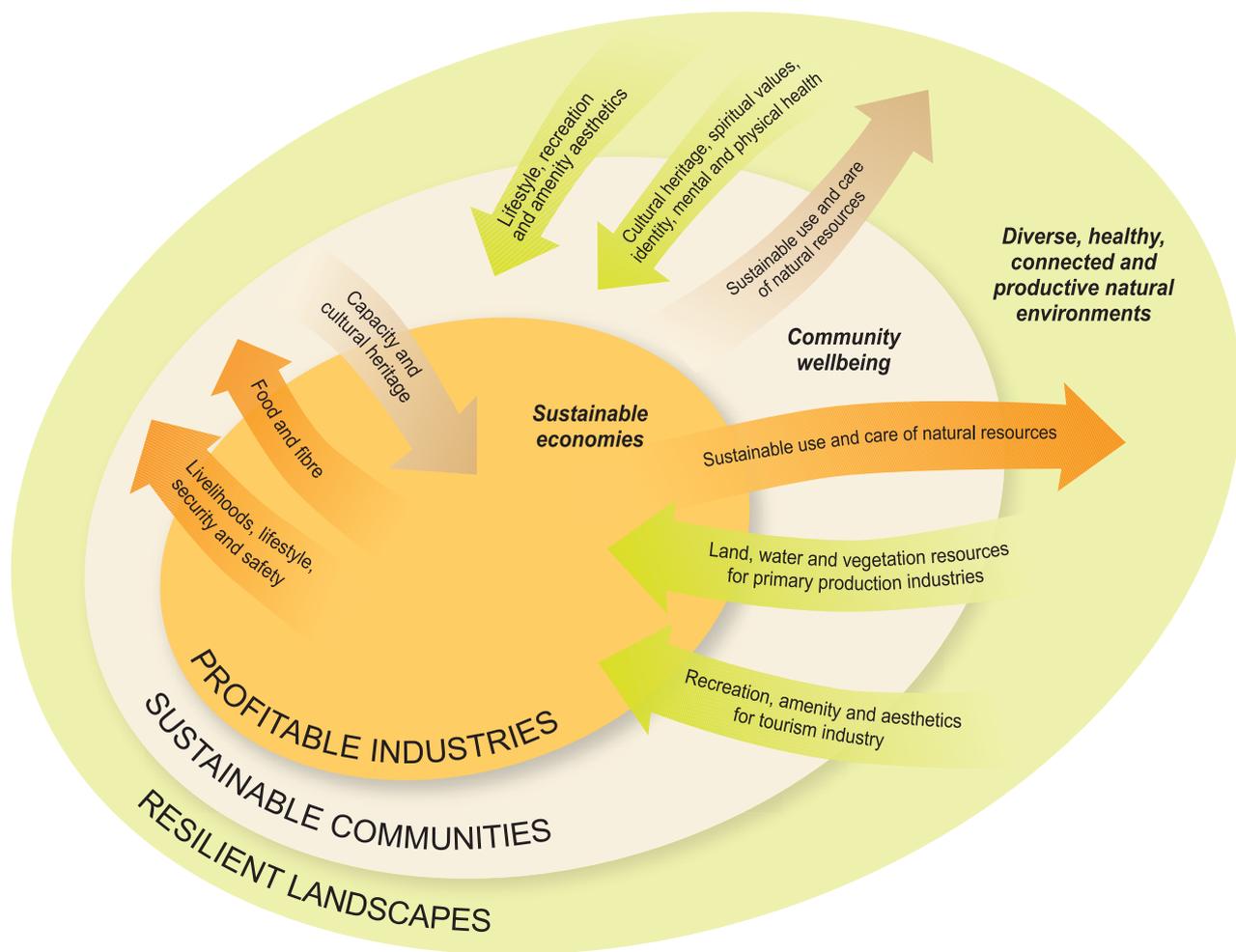


Figure 22. South East landscape system model

This figure describes the most significant functions and relationships that affect change towards the vision of sustainable communities, profitable industries, resilient landscapes in the South East region.



SOUTH EAST CAP recognises:

- the relationship and functions between sustainable economies, community wellbeing and natural resources
- the management of land and water resources is bound by natural variables and limits
- that when land and water is managed within its capability, social and economic outcomes can be maximised and sustained for current and future generations, and the condition of the resource can be maintained or improved
- the primary driver that defines how land and water is managed is the capacity of managers to make effective decisions on the use and care of natural resources

SOUTH EAST CAP strategic priority:

To deliver services that increase the capacity of land and water managers, individuals and communities to make effective natural resource management decisions.

Priority actions to achieve this include:

- delivering extension services
- adopting sustainable practices
- providing network support
- providing information to managers
- collaborating between industry, community and government
- adapting to change
- devolving decision making

Pillar 1: Sustainable economies and community wellbeing

What is meant by sustainable economies and community wellbeing?

Sustainable economies are considered in South East CAP as economies that provide a range of financial, material and social benefits to individuals and communities without reducing options for future generations.

For the purpose of South East CAP, wellbeing is considered as the extent to which someone feels satisfied or fulfilled with their life (Costanza et al. 2007). There are five key capital assets or stocks that underpin sustainable economies and community wellbeing. Each of these capitals influences the livelihoods and lifestyles of individuals and communities and their capacity to engage in NRM (refer to Table 7).

For the purposes of the South East CAP, sustainable economies and community wellbeing are considered under the one pillar due to the strong links between social and economic wellbeing and management of the region's natural resources.

Characteristics of sustainable economies and community wellbeing across the South East region

The South East region supports a high level of industry and community activity that is dependent upon the region's natural resources. A diverse range of partnerships and networks have been established and nurtured to implement NRM.

The capacity of many individuals, groups and organisations to undertake NRM has increased over the last 20 years. There has been a focus on developing 'enabling relationships' that have supported groups and organisations to contribute to NRM and assisted individual landholders to manage land to protect natural resources and for productivity. The work of Catchment Management Authorities has sought to empower local people and build resilience through social networking, groups and leadership support.

Key threats

Threats to sustainable economies that have been identified through South East CAP development include:

- widely spaced communities and dependence on fossil fuels
- dependence on a narrow range of industries in some landscapes
- capacity of enterprises to adapt to changing circumstances
- limited market opportunities
- climate variability and trends
- natural disasters.

Major issues to community wellbeing were identified via landholder surveys, face to face discussions and online forums. These included:

- time constraints
- declining membership of NRM or Landcare groups
- increasing proportion of absentee landholders
- poor land and water manager/government relationships
- financial capital constraints
- lack of knowledge regarding Aboriginal culture, practices and history
- invasive species and diseases
- disconnect between land managers and waterway users
- conflict between prime agricultural lands, priority aquaculture areas, natural environments and urban development.



How will South East CAP contribute to economic sustainability and community wellbeing?

Implementation of South East CAP will support the wellbeing of land and water managers, individuals and communities across the South East region by:

- building social capital: building social networks, social cohesion and social learning
- supporting self-sufficiency: building skills, knowledge, access to resources and empowerment
- supporting health: fostering an optimistic, positive outlook for land and water management
- supporting stewardship of the natural environment: improving amenity and landscape function, reducing public health risks
- supporting an improved standard of living: improving profitability and reducing management costs
- contributing to certainty and security: ongoing support to address environmental problems.

(Source: Schirmer 2012)

The strategic directions for Pillar 1 – sustainable economies and community wellbeing – are shown in Figure 23. State and Transition models have been developed to describe attributes of sustainable economies and community wellbeing in the South East region, and are shown in Figures 24-27.

Desired future state of the South East region

With a greater understanding of sustainable economies and community wellbeing and the factors that contribute to them, priorities can be identified (refer Table 7 for the desired state for sustainable economies and community wellbeing) and more effectively targeted actions (as shown in Figure 23) designed to respond to priority NRM issues and to local community needs and aspirations. In this way the South East CAP is a plan that supports local people and communities to transform in the face of change.

Table 7. The five capital assets that underpin capacity to manage natural resources (Jacobs et al. 2010) and the desired state for these assets to support community in the face of change

Five capitals	Desired state
Human	Healthy, engaged and skilled people
Social and cultural	Connected, inclusive, positive relationships and culture
Financial	A sufficient and enabling economy
Natural	Healthy soil, adequate water resources and intact natural systems
Physical	Accessible resources and infrastructure

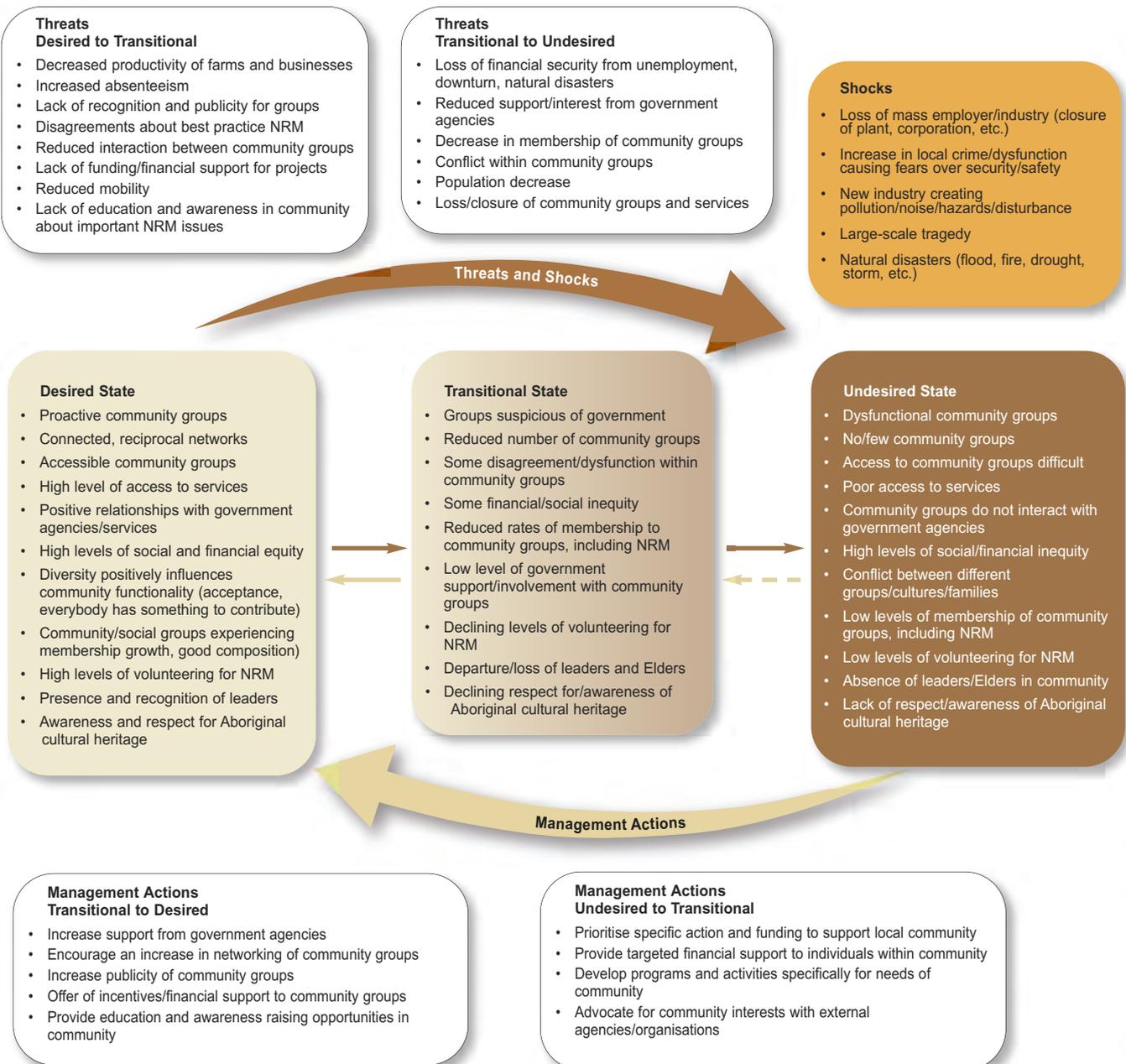


Figure 23. Pillar 1: People – strategies and priorities

Goal: Sustainable economies and community wellbeing	
Strategy: Deliver services that support natural resource dependent industries to be profitable and sustainable	
Target: From 2014, natural resource dependent enterprises are supported to adopt practices that improve profitability and sustainability	
Priority actions to implement:	Focus for action and investment:
Support business performance within natural resource dependent industries	Grazing, mixed farming systems, dairy, aquaculture, fishing and horticulture industries Aboriginal enterprises
Support local industries maintain and improve natural resource assets	Grazing, dairy, aquaculture, fishing, mixed farming systems, horticulture and tourism industries
Support local economies and communities broaden their industry base	Food production and distribution systems Nature-based tourism Industries that reduce dependency on external resources, particularly fossil fuels Carbon sequestration industries
Strategy: Deliver services that support land and water managers make well-informed decisions about the use and care of natural resources	
Target: From 2014, land and water managers are supported to increase their capacity to manage natural resources	
Priority actions to implement:	Focus for action and investment:
Deliver information and extension services that meet land and water manager needs	Primary producers Small scale enterprises Rural residential and absentee landholders Managers of priority public land assets Land use practices consistent with land capability Stewardship of land and water
Support land and water managers to prepare, respond and adapt to biosecurity threats, including weeds, pests and diseases	Weeds, pests and diseases that threaten existing lifestyles and livelihoods New and emerging weeds, pests and diseases Land and water manager capacity
Support the community to prepare, respond and adapt to natural resource shocks	Emergency planning and response Land and water manager capacity to adapt Government capacity to adapt Information systems to support decision making
Strategy: Deliver services that support community resilience, wellbeing and connection	
Target: From 2014, communities are supported to increase their capacity to contribute to natural resource management and social wellbeing	
Priority actions to implement:	Focus for action and investment:
Support new and existing industry and community networks	Primary producer, Landcare, Aboriginal, rural residential and absentee landholders, small farm and recreation groups Youth in agriculture and NRM Nature-based tourism
Support a greater contribution by individuals to their local area	Landcare volunteers, primary producers, nature based tourism, recreational users, Aboriginal people, youth and corporations
Celebrate and promote the cultural and natural identity of local landscapes and communities	People's connection to land and water Aboriginal cultural heritage Diversity of values and aspirations Urban communities

Figure 24. Community (social capital) State and Transition model

This model describes the different condition states for social capital within the South East region. Social capital is one of the five recognised capital assets that contribute to community capacity and influence the ability to adapt to change. For further detail, refer to the South East CAP Paper – Understanding community, partners and landholders of the South East region. For further explanation on State and Transition models refer to Figure 21.



Strategic priorities of relevance to this model:

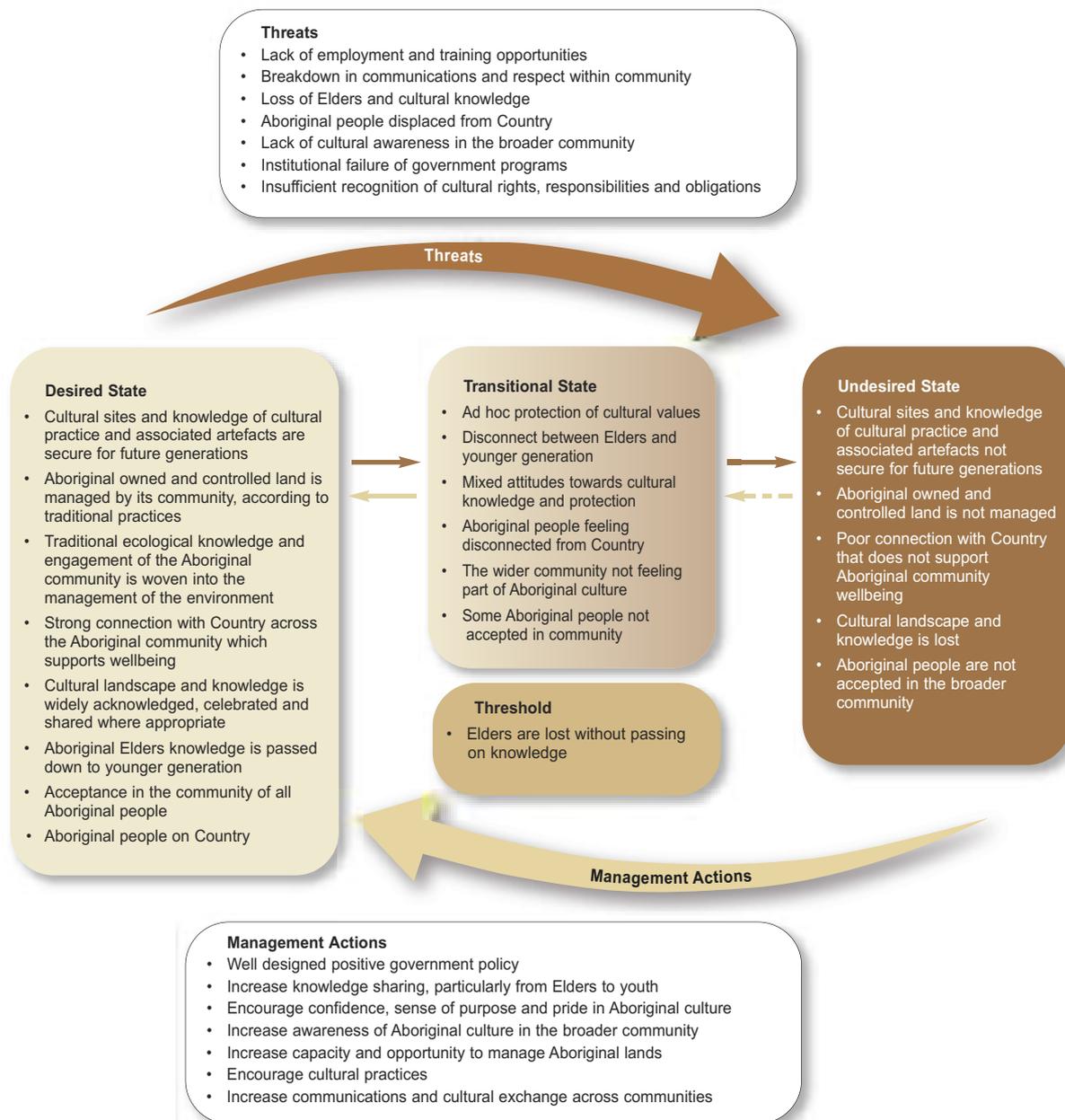
- Facilitate access to information and knowledge for decision making at a range of scales
- Establish devolved and collaborative decision making structures at the appropriate scale
- Deliver information and extension services that meet land and water manager needs
- Support land and water managers to prepare, respond and adapt to biosecurity threats, including weeds, pests and diseases
- Support the community to prepare, respond and adapt to natural resource shocks.

Management actions are most effectively applied to the:

- Transitional and undesired state.

Figure 25. Aboriginal community cultural landscape State and Transition model

This model describes the different condition states for the Aboriginal community cultural landscape of the Southern Rivers CMA region, it will be adapted in the future, following consultation with the Aboriginal community for the South East region. Figure 26 provides a spatial representation of some of the key elements of this cultural landscape. There is a threshold of particular note in the state of the Aboriginal community cultural landscape from which a return to a more desired state is very difficult. Once Elders are lost from the community and their knowledge has not been passed on, it becomes more difficult to recover this knowledge. Strategies such as cultural exchange across communities may assist in these circumstances. For further details refer to the South East CAP paper – The Aboriginal community cultural landscape. For further explanation on State and Transition models refer to Figure 21.



Strategic priorities of relevance to this model:

- Support new and existing industry and community networks
- Support a greater contribution by individuals to their local area
- Celebrate and promote the cultural and natural identity of local landscapes and communities
- Foster new and existing partnerships with industry, community, government and non-government organisations.

Management actions are most effectively applied to the:

- Transitional state, particularly where there is a risk that the knowledge threshold will be crossed.

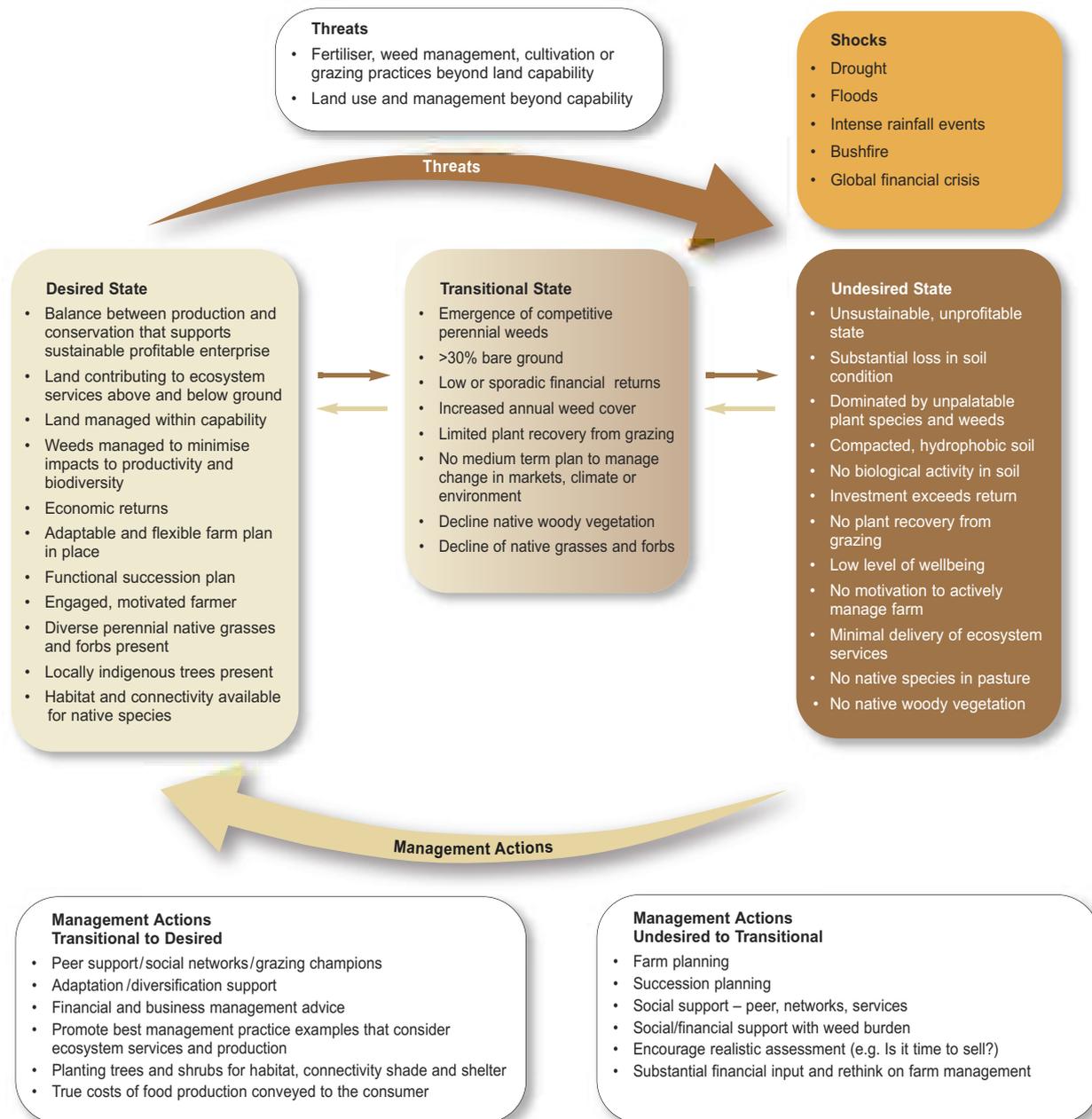
Figure 26. Aboriginal community cultural landscape map

This map shares Aboriginal peoples' perspective on their cultural landscape. It shows a small number of examples of important places which are significant and important to Aboriginal people across the South East region. Language boundaries were drawn from Eades (1976).



Figure 27. Grazing landscapes State and Transition model

This model describes the different condition states for grazing landscapes, which are a strategic priority for the South East region. Resilience of grazing landscapes is presented here through the inclusion of biophysical, social and economic elements. Through ecosystem service delivery, grazing landscapes can realise their full potential to sequester carbon in the desired state. Smith et al. (in press) pose a property scale framework for achieving a balance between production and conservation as part of the desired state for this system. For further details on grazing landscapes refer to South East CAP Paper – Land. Refer to Figure 21 for further explanation on State and Transition models.



Strategic priorities of relevance to this model:

- Support business performance within natural resource dependent industries
- Support local industries maintain and improve natural resource assets
- Support local economies and communities broaden their industry base
- Practices that improve soil condition in rural lands.

Management actions are most effectively applied to the:

- Transitional state.

Pillar 2: Adaptive management and devolved decision making

What is meant by adaptive management and devolved decision making?

Adaptive management in its simplest form is defined as a three step continuous improvement cycle: ‘plan – do – learn’, which is achieved through strategic planning, implementation, knowledge management and then adapting plans based on key learnings (refer to Figure 28).

Each step in the adaptive management cycle is linked, with the aim of continuing to improve management decisions over time. The key to achieving this is to incorporate new knowledge into the way services are delivered, ensuring they are responsive to changing circumstances.

Devolved decision making aims to ensure that management decisions are made at the appropriate scale and with the appropriate stakeholders participating in those decisions.

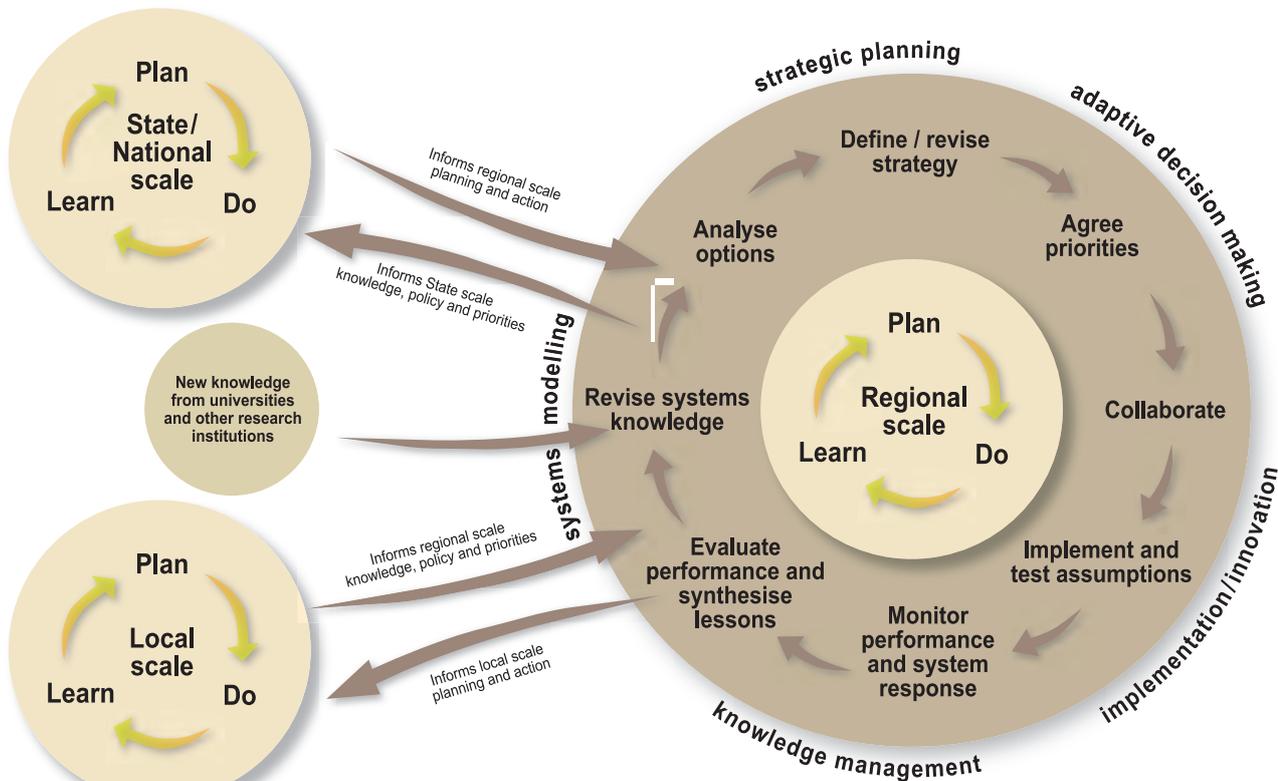
How will South East CAP contribute to adaptive management and devolved decision making?

South East CAP recognises that the landscapes in which we live, work and play are continuously changing and affected by change. Adaptive management is therefore critical at all scales, from local to national, to ensure that decision makers are able to adapt and respond to these changes.

Effective decision making in respect to the sustainable use of natural resources, was one of the main issues raised by the community during the CAP consultation process. Poor land use planning and conflicts arising as a result of competing land and water uses were commonly cited as examples.

South East CAP aims to establish adaptive management practices and governance structures that will enable effective decision making on the use and care of the region’s natural resources at a variety of scales.

Figure 28. Adaptive management cycle



Effective adaptive management requires collaboration:

- at all steps/between all scales/across boundaries/between community, industry and government

Characteristics of adaptive management and devolved decision making across the South East region

The key characteristics of the South East CAP adaptive management approach include:

- ensuring best available information is provided to decision makers
- continuous testing and refinement of assumptions underpinning landscape system models and knowledge
- regular reference to community values and priorities, including changes over time
- increasing capacity of land and water managers, community and government to adapt to change
- regular monitoring of internal and external drivers
- communicating lessons learned at the regional scale into State scale policy and planning processes.

Key threats

Key threats to adaptive management are:

- lack of community, industry and government ownership of South East CAP
- ineffective partnerships with industry and community groups
- poor implementation and investment planning
- poor engagement of industry, community and government in finer scale planning
- poor coordination of service delivery between government and non-government organisations
- no capacity to report on whole of government and whole of community implementation of South East CAP.

Key threats to ensuring that new knowledge informs adaptive decision making are:

- lack of collaboration on knowledge management within the region, across regions and with State government
- lessons learnt from regional scale delivery not informing improvements to State and national scale policies, plans and priorities

- decision makers being unable to access reliable and timely information
- lack of information about external trends, drivers and shocks available to support decision makers, including land managers
- decision making structures not established at the appropriate scale, nor with the appropriate level of stakeholder participation.

Desired future state of the South East region

South East CAP aims to have adaptive management practices working effectively at a range of scales, with clear linkages and feedbacks between scales.

At the enterprise scale, land and water managers will be supported to make decisions based on best available knowledge and information.

Governments at all scales will be adapting their service delivery in response to new knowledge, information and community expectations.

Industry and community will have access to a full range of information to support decision making and will understand how well government is performing in the delivery of services to the region.

The strategic directions for Pillar 2 – adaptive management and devolved decision making – are shown in Figure 29.



Figure 29. Pillar 2: Governance – strategies and priorities

Goal: Adaptive management and devolved decision making

Strategy: Lead the collaborative and coordinated implementation of South East CAP

Target: From 2014, partnerships are implemented to coordinate, and collaboratively deliver South East CAP

Priority actions to implement:

Focus for action and investment:

Foster new and existing partnerships with industry, community, government and non-government organisations

Primary producer, Landcare, Aboriginal groups
Local government
Regional organisations

Develop an implementation framework to deliver South East CAP

Localised implementation of South East CAP
Commitment of resources to priority actions
Clear benefits for local industries and communities
Increased investment in agriculture, aquaculture and NRM

Deliver integrated services in a coordinated and collaborative way

Delivery of services without duplication
Utilising the strengths of each service provider
Emergency planning and response
Maximise cross-regional opportunities

Strategy: Deliver services that provide information to support adaptive management

Target: From 2014, information is available to support adaptive and evidence-based decision making by land and water managers

Priority actions to implement:

Focus for action and investment:

Monitor, evaluate and report on the performance of South East CAP implementation and outcomes

Asset condition
Monitoring performance of implementation
Reporting on performance to industry, community and government
Using multiple lines of evidence
Learning from implementation

Monitor, analyse, evaluate and adapt to risks, trends and shocks

Climate, financial, industry and wellbeing trends and shocks

Facilitate access to information and knowledge for decision making at a range of scales

Key knowledge gaps
Encourage innovation
Partnerships with research institutions and universities
Reliable, timely and accessible information
Collaborating across regions

Strategy: Deliver services that support land and water managers effectively respond and adapt to change, including climate change

Target: From 2014, frameworks and protocols are implemented for devolved, adaptive and evidence-based decision making

Priority actions to implement:

Focus for action and investment:

Establish devolved and collaborative decision making structures at the appropriate scale

Devolving decision making to appropriate scale
Industry and community participation in decision making
Working with existing structures

Support government authorities to make balanced, transparent and evidence-based decisions at all scales

Land use plans, land use decisions, development controls
Land capability
Water and estuary planning and management
Planning for climate change

Support government authorities incorporate local priorities into national, State and regional policies, plans and priorities

Policies, plans and priorities adapt to new evidence and knowledge
Lessons from regional service delivery inform improvements at the State scale

Pillar 3: Diverse, healthy, connected and productive natural environments

What is meant by diverse, healthy, connected and productive natural environments?

Diverse natural environments are considered in South East CAP as those that contain a wide range of different habitats, supporting a range of different functions for people, plants and animals.

Healthy natural environments are considered in South East CAP as those that maintain their character and function when exposed to external shocks and provide a range of ecosystem and production services.

Connected natural environments are considered in South East CAP as those where different habitats are joined across the landscape and enable plants and animals to persist over time.

Productive natural environments are considered in South East CAP as those that are supporting economic values, for example, directly for grazing or aquaculture enterprises or indirectly for tourism enterprises.

The South East region supports a diverse range of natural systems that underpin economic sustainability, community wellbeing and environmental health. The types of services provided by the natural environment include provision of fresh water, habitat, mineral resources, food and fibre, renewable energy, carbon sinks, recreation and tourism, cultural diversity and heritage, pollination, air quality, nutrient and water cycling and soil formation. These important ecosystem and production services are ultimately dependent upon the maintenance of a diverse, healthy, connected and productive environment.

Characteristics of diverse, healthy and connected natural environments across the South East region

The key natural resource assets of the South East region are land, vegetation, rivers, estuaries, marine, wetlands and groundwater.

Land

Over centuries, geological processes have shaped the landforms and landscapes that characterise the South East region. As a result, there are varying soil types and soil conditions across the region. The primary factors affecting soil condition are maintenance of ground cover and using land within its capability.

Land and soil capability ultimately determines the carrying capacity of all land across the region, and is especially important to the agricultural sector. South East CAP recognises that with effective stewardship, the capability of the soil can be increased.

Plants and animals

The South East region supports a diverse range of vegetation communities, ranging from montane peatlands and swamps, grasslands, grassy woodlands, tall wet sclerophyll forests, cool temperate rainforest, heathlands, seagrass, mangroves and saltmarsh.

A large proportion of the region is designated reserve with extensive, well-connected native vegetation along the coastal escarpment, Great Dividing Range and through Kosciuszko National Park. Not all vegetation types are well represented within these reserves, particularly grassy woodlands, grasslands and forested wetlands. Several threatened grassy woodland communities are represented, predominantly as small patches scattered across the rural landscape. Coastal dunes and associated vegetation are highly valued community assets supporting public recreation, tourism and buffering the coastline from likely climate change impacts.

There are 166 flora species, 157 fauna species and 41 Endangered Ecological Communities listed under the *NSW Threatened Species Conservation Act 1995* as endangered, critically endangered or vulnerable in the South East region. Iconic threatened species include the Green and Golden Bell Frog, Macquarie Perch, Superb Parrot, Bush Stone Curlew and Brush-tailed Rock Wallaby.

There are 12 threatened ecological communities in the region that are listed under the *Environmental Protection and Biodiversity Conservation Act 1999* including White Box-Yellow Box-Blakely's Red Gum grassy woodland, Natural Temperate Grasslands, alpine sphagnum and coastal saltmarsh communities.

A majority of listed species are widely distributed and/or highly mobile and considered best protected through addressing threats that operate at the landscape scale. Key factors affecting vegetation condition, extent and connectivity are fragmentation and degradation of native vegetation associated with land use pressure, invasive species, recreational use and land management activities.

Rivers, estuaries, marine, wetlands and groundwater

The South East region contains a large number of unique and varied river, estuary, marine, wetland and groundwater systems. These range from pristine natural river systems that support diverse aquatic flora and fauna and productive estuaries, to highly modified systems in developed urban and industrialised areas.

The region has highly variable and, at times, scarce water resources. Several significant reservoirs, including Burrinjuck, Wyangala and Cataract dams supply water to maintain the region's economic, social and environmental values. The region's water assets support unique and complex biodiversity and a range of agricultural, aquaculture and recreational activities.

The headwaters of the Lachlan and Murrumbidgee Rivers are situated in the South East region. These working rivers supply significant areas of downstream irrigation. The coast and marine assets of the region make a significant economic contribution to regional coastal communities through fishing and oyster aquaculture industries. The natural, healthy and scenic qualities of rivers, estuaries and wetlands are also directly linked to the economic prosperity of the recreation and tourism sectors.

Key threats and associated drivers

The key threats to natural resources in the South East region are shown in Table 8.

Table 8. Key threats and associated drivers

Natural resource asset	Key threats	Drivers of change that underpin these threats have been identified as:	Some specific examples of these drivers are:
Land and soil	<ul style="list-style-type: none"> • loss of ground cover • inappropriate use of chemicals, cultivation and fire • land that is managed beyond its capability • weeds, pest and diseases • climate variability impacts 	<ul style="list-style-type: none"> • knowledge and skills • financial resources and opportunities • policy and decision making • social capital • values and motivation • climate change 	<ul style="list-style-type: none"> • land being managed beyond capability • land prices and debt servicing • low economic return and increasing cost of production • gaps in landholder knowledge and skills • high turnover in land ownership • high rates of absentee land holders • intensification of land use • population growth via subdivision • more extreme weather events
Plants and animals	<ul style="list-style-type: none"> • loss of native vegetation (both remnant and regrowth) • degradation and condition decline of native vegetation • chemical use • climate variability impacts • impact of weeds, pests and diseases • inappropriate fire regimes 	<ul style="list-style-type: none"> • knowledge and skills • financial resources and opportunities • policy and decision making • values and motivation • climate change 	<ul style="list-style-type: none"> • fear of bushfire • increasing population growth • land use planning decisions • sea level rise • insufficient funds, time or knowledge to manage vegetation • commercial development potential

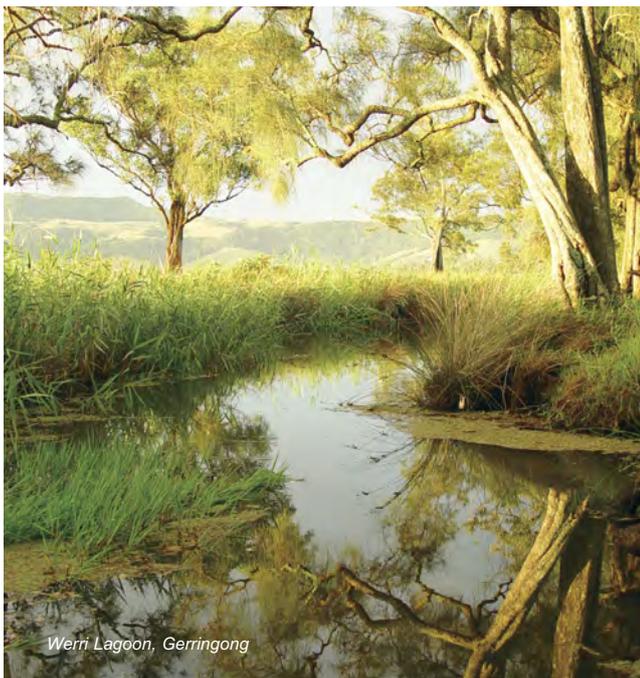
Natural resource asset	Key threats	Drivers of change that underpin these threats have been identified as:	Some specific examples of these drivers are:
Rivers	<ul style="list-style-type: none"> land that is managed beyond its capability invasive species and aquatic diseases loss of native riparian vegetation localised streambank or streambed erosion reduction in large woody debris (rivers) sedimentation and reduced water quality reduction in water quantity and habitat climate variability impacts barriers to water flow and/or fish passage 	<ul style="list-style-type: none"> knowledge and skills financial resources and opportunities policy and decision making values and motivation climate change 	<ul style="list-style-type: none"> pressure from population growth over allocation or over extraction of water inappropriate recreational activities intensification of land use or land managed beyond capability ageing farmers
Estuaries	<ul style="list-style-type: none"> loss and degradation of riparian, aquatic and catchment vegetation declining water quality (including sedimentation, nutrients, and pollutants) exposure to acid sulfate soils barriers and changes to fresh water and tidal flows over allocation of resources climate variability impacts terrestrial and aquatic invasive species and diseases 	<ul style="list-style-type: none"> knowledge and skills financial resources and opportunities policy and decision making values and motivation climate change 	<ul style="list-style-type: none"> land use planning decisions over allocation of resources inadequate protection of assets conflicting policy objectives land managed beyond capability limited knowledge on estuary systems and their values demand for coastal lifestyle inappropriate recreational activities variable and extreme climatic events
Marine environment	<ul style="list-style-type: none"> land-based impacts (e.g. reduced water quality, point and non-point source pollution, removal of aquatic and catchment vegetation) unsustainable levels of resource use (e.g. illegal fishing practices, mining, dredging) introduced marine pests and aquatic diseases marine pollution (e.g. oil, sewage, ballast and marine debris) climate variability habitat modification (e.g. destructive fishing methods, dredging, mining and poor water quality) 	<ul style="list-style-type: none"> knowledge and skills policy and decision making financial resources and opportunities values and motivation climate change 	<ul style="list-style-type: none"> land use planning decisions land use change inadequate protection of marine resources competing government priorities inappropriate land management practices research, resource user, resource manager and community knowledge gaps declining profit margins
Wetlands	<ul style="list-style-type: none"> loss of native vegetation cover invasive species declining water quality (including sedimentation, nutrients, and pollutants) barriers to water flow and/or fish passage climate variability impacts over allocation of water resources 	<ul style="list-style-type: none"> knowledge and skills financial resources and opportunities policy and decision making values and motivation climate change 	<ul style="list-style-type: none"> limited understanding of values of ecosystem services wetlands provide intensification of land use sea level rise over allocation and extraction of water declining profit margins
Groundwater	<ul style="list-style-type: none"> resource use (water extraction) reduction in water quantity and habitat (e.g. drainage of swamps) declining water quality (including nutrients, salinity, turbidity) loss and degradation of catchment vegetation 	<ul style="list-style-type: none"> knowledge and skills financial resources and opportunities policy and decision making values and motivation climate change 	<ul style="list-style-type: none"> over allocation of resources land use change pressure from population growth limited understanding of how groundwater dependent ecosystems function

How will South East CAP contribute to diverse, healthy and connected natural environments?

South East CAP seeks to address many of the key issues affecting land, vegetation and water resources that support the economic sustainability and community wellbeing of the South East community.

South East CAP includes specific strategies to:

- improve soil condition in rural lands
- manage naturally fragile soils
- protect priority assets from land degradation
- maintain and improve the extent and condition of priority habitats
- maintain and improve habitats that support connectivity priorities
- integrate production and conservation goals into primary production systems
- maintain and improve the condition of priority estuarine, wetland and marine assets
- maintain and improve the condition of priority surface water, wetland and groundwater assets
- implement practices that contribute to the maintenance or improvement of water quality
- implement equitable sharing of water between people and the environment.



Werri Lagoon, Gerringong

Desired future state of the South East region

Land

Maintaining natural capital, especially soils, is important for long-term agricultural profitability. Investment in retaining soils in good condition insures against long-term risks to production and long-term global food demand. South East CAP seeks to improve or maintain soil condition across the region, especially on prime agricultural lands.

Key factors contributing to good soil condition are use of land within its capability and practices that contribute to increased soil condition.

Vegetation

Vegetation in a desired state is characterised by:

- ecological communities and populations able to persist in the medium to long term, with sufficient population size, genetic diversity and distribution to recover from shock events such as disease and wildfire
- richness in plant species and variability in vegetation structure appropriate to the vegetation community
- provision of a range of ecosystem services
- minimal impact from weeds, pests and diseases
- a diversity of fauna species supported
- the provision of key habitats such as hollows, fallen logs and bush rocks
- sufficient connectivity across the landscape to enable species to move between areas of habitat and a shift in species distribution
- the expression of full diversity of ecological communities across the landscape
- Aboriginal cultural connection with plants and animals is widely acknowledged and celebrated.

Water

South East CAP seeks to maintain the function and condition of surface water, estuarine, wetland, groundwater and marine assets. This is to enhance the natural resilience of these systems to recover from shock (e.g. floods) and improve the viability of adjacent landholders and industries dependent upon clean, available water.

Rivers in good condition are characterised by:

- absence of general bed incision or degradation
- functional connectivity within stream, adjacent floodplains and between surface and groundwater
- presence of native vegetation with near natural diversity, suitable for supporting native fauna
- sufficient riparian buffers to protect water quality
- minimal impact from invasive species and aquatic diseases
- self-adjusting form and processes that allow for fast recovery after disturbance.

Estuaries in good condition are characterised by:

- water quality (turbidity and nutrients) that is within natural limits
- peak and base flow variability that is within natural limits
- salinity levels within natural limits (due to unaltered tidal processes)
- diverse and abundant aquatic and fringing ecosystems that operate across the natural tidal range
- native riparian vegetation associations that are intact with near natural diversity
- high aquatic species diversity and intact trophic interactions
- connectivity of flow between the estuary, its floodplain and wetlands
- minimal terrestrial and aquatic invasive species
- minimal impact from aquatic diseases.

A marine environment in good condition is characterised by:

- a range of diverse and connected habitats that support complex food webs
- water quality that is within its natural variability
- minimal impact from introduced marine pests and aquatic diseases
- well-vegetated, healthy terrestrial environments.

Wetlands in good condition are characterised by:

- presence of native vegetation with appropriate levels of plant and animal diversity
- functional connectivity
- sufficient buffers
- intact hydrological systems
- minimal impacts from invasive species and diseases.

Groundwater in good condition is characterised by:

- connectivity with groundwater supply
- near natural hydrological regime
- sufficient buffers
- healthy and diverse aquatic flora and fauna.

The strategic directions for Pillar 3 – diverse, healthy, connected and productive environments – are shown in Figure 30. State and Transition models have been developed to describe attributes of diverse, healthy and connected environments in the South East region. These are shown with relevant maps detailing priorities across the landscape in Figures 31–46.

Coal and coal seam gas activity

The land asset within the South Coast and Highlands Landscape includes significant resources for mining and extraction. The Southern and Western coalfields are important resources and have well established underground mining operations. The Sydney Basin and Illawarra coal measures also represent an enormous reservoir for methane (UoW 2012:16). This coal seam gas is being increasingly recognised as a valuable resource.

Some of the threats that need to be managed in the extraction of the coal seam gas resource in this landscape are:

- Water supply needed for drilling and mining
- Groundwater drawdown and contamination risk
- Produced water storage and containment
- Impact on surface water quality due to compressive failure fracturing (UoW 2012:2)

Figure 30. Pillar 3: Natural resources – strategies and priorities**Goal: Diverse, healthy, connected and productive natural environments****Strategy: Manage soil condition for people and the environment**

Target: From 2014, land managers are supported to increase the adoption of practices that:
 - improve soil condition of productive lands - manage naturally fragile soils within their capability

Priority actions to implement:	Focus for action and investment:
Practices that improve soil condition in rural lands (Land and Soil Capability Classes 3-5)	Productive capacity of agricultural lands Soil carbon Capacity of landscape to absorb and retain water
Practices that manage naturally fragile soils	Land and Soil Capability Classes 6-8 Sodic, acid, acid sulfate, saline, shallow soils Dune systems
Practices that protect priority aquatic assets from land degradation	Water supplies Good condition wetlands, estuaries, marine and marine protected areas High value fish habitat

Strategy: Manage the health and integrity of natural habitats for people and the environment

Target: From 2014, land and water managers are supported to increase the adoption of practices that maintain or improve the:
 - extent and condition of priority habitats - connectivity of habitat

Priority actions to implement:	Focus for action and investment:
Practices that maintain and improve the extent and condition of priority habitats	Under reserved and threatened vegetation communities Habitat that supports threatened species High value fish habitat High carbon capture ecosystems
Practices that maintain and improve habitat that supports connectivity priorities	State, regional and locally significant corridors Significant barriers to fish passage
Integrate production and conservation goals into primary production systems	Grazing landscape Aquaculture Mixed farming systems

Strategy: Manage estuarine, wetland and marine assets for people and the environment

Target: From 2014, land and water managers are supported to increase the adoption of practices that maintain or improve the condition of priority estuarine, wetland and marine assets

Priority actions to implement:	Focus for action and investment:
Practices that maintain and improve the condition of priority estuarine, wetland and marine assets	Good condition estuaries, marine areas, marine protected areas and wetlands
Implement practices that contribute to the maintenance of improvement of water quality and river health	Priority aquatic assets that support local industry Impacts from urban environments

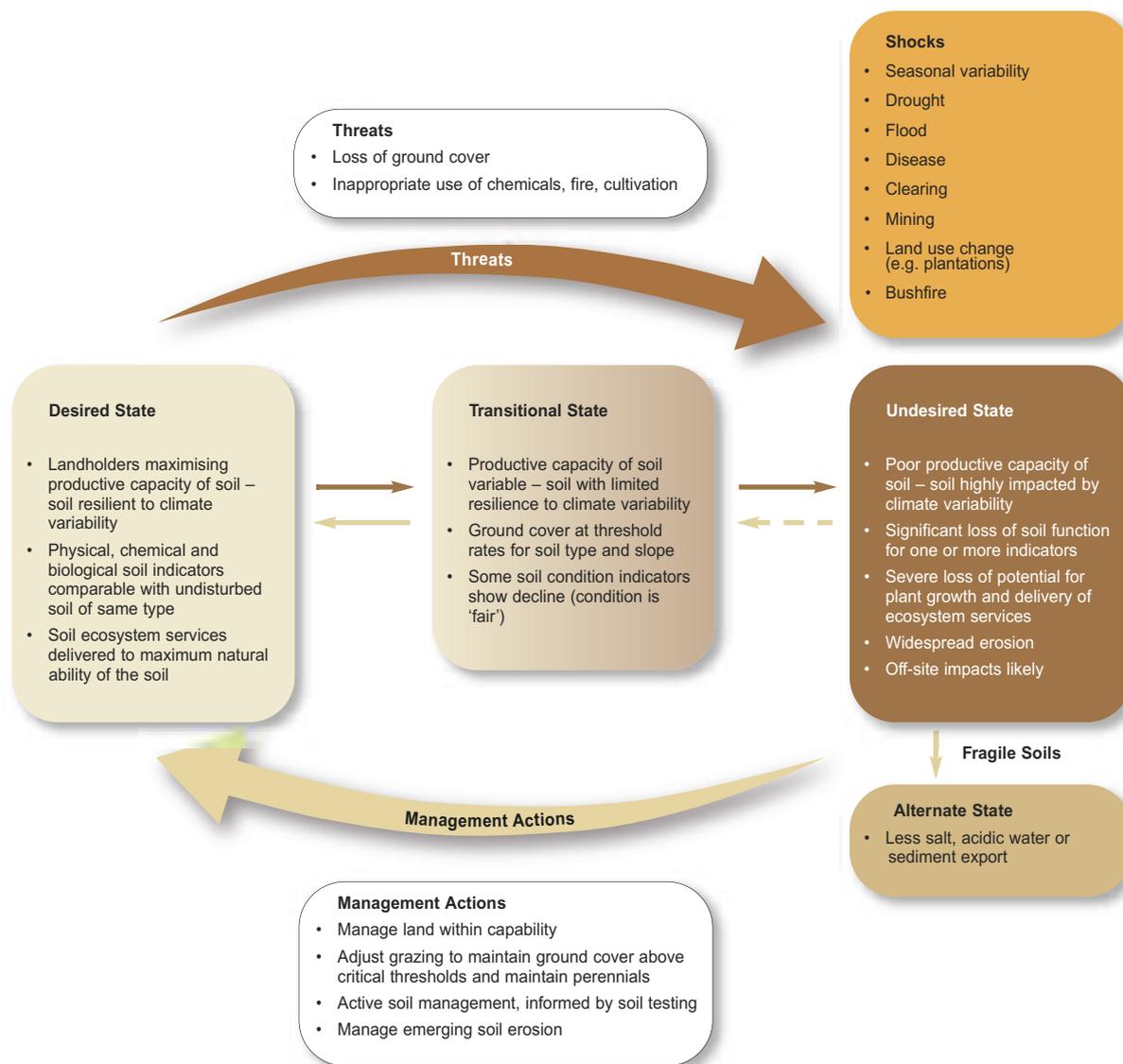
Strategy: Manage surface water, wetland and groundwater assets for people and the environment

Target: From 2014, land and water managers are supported to increase the adoption of practices that maintain or improve the condition of surface water, wetland and groundwater assets

Priority actions to implement:	Focus for action and investment:
Practices that maintain and improve the condition of priority surface water, wetland and groundwater assets	Good condition, high recovery potential and strategic river reaches Priority groundwater resources
Practices that contribute to the maintenance of improvement of water quality and river health	Priority aquatic assets that support industry Impacts from urban environments Saline flows into the Murray-Darling Basin
Facilitate the equitable sharing of water between people and the environment	Water is available to meet the needs of people and the environment

Figure 31. Soil condition State and Transition model

This model describes the different condition states for soil within the South East region. An indicator of soil condition of particular note is organic carbon which is vital to reduce erosion potential, maintain biological soil health and maximise water holding capacity and water availability. Capacity to retain water in the landscape is an ecosystem service of importance to buffer against expected climate change impacts. Ground cover thresholds provide an indication of where soil condition may be shifting towards an undesired state. Thresholds have been adopted for percentage ground cover required to reduce excessive runoff and erosion and sustain productivity based on soil type and land slope. For further details on soil condition refer to South East CAP Paper – Land. Figure 21 explains State and Transition models.



Strategic priorities of relevance to this model:

- Practices that improve soil condition in rural lands (Land Capability Class 3–5 – refer to Figure 32)
- Practices that manage naturally fragile soils (Land Capability Class 6–8 – refer to Figure 32, sodic, acid, acid sulfate, saline, shallow soils and dune systems)
- Practices that protect priority aquatic assets from land degradation.

Management actions are most effectively applied to:

- Ground cover approaching the transitional state
- Maintenance of the desired state for fragile soils
- The undesired state where it can be shifted to a more appropriate alternative state, particularly where priority aquatic assets are at risk.

Figure 32: Soil and land capability map

This map displays the inherent physical capacity of the land and its soils to sustain a range of land uses and management practices in the long term. It can be defined as the ability of the land and soil to absorb disturbance and still retain its basic function and structure. This soil and land data and the associated descriptions for each class are drawn from OEH (2012b).

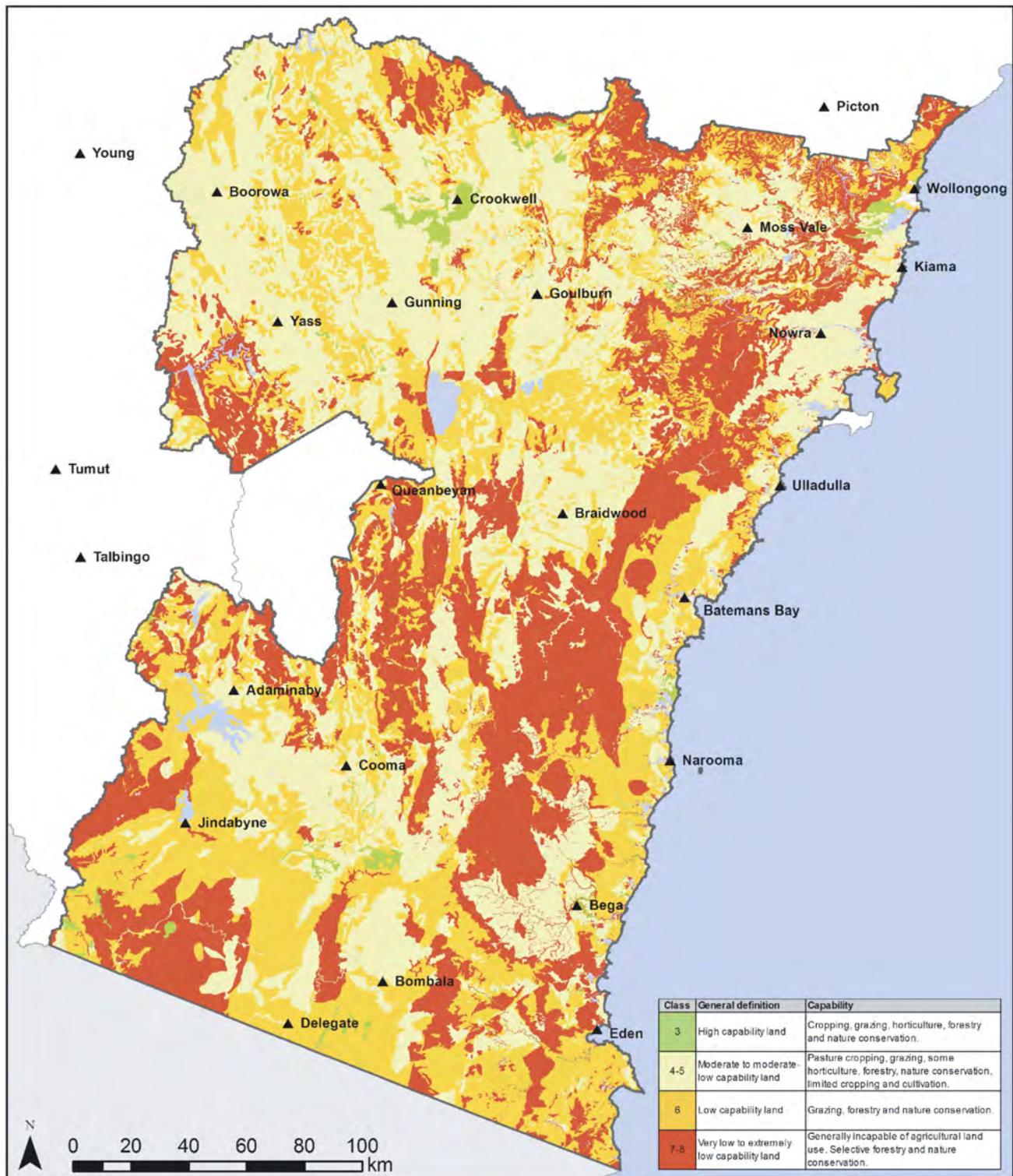
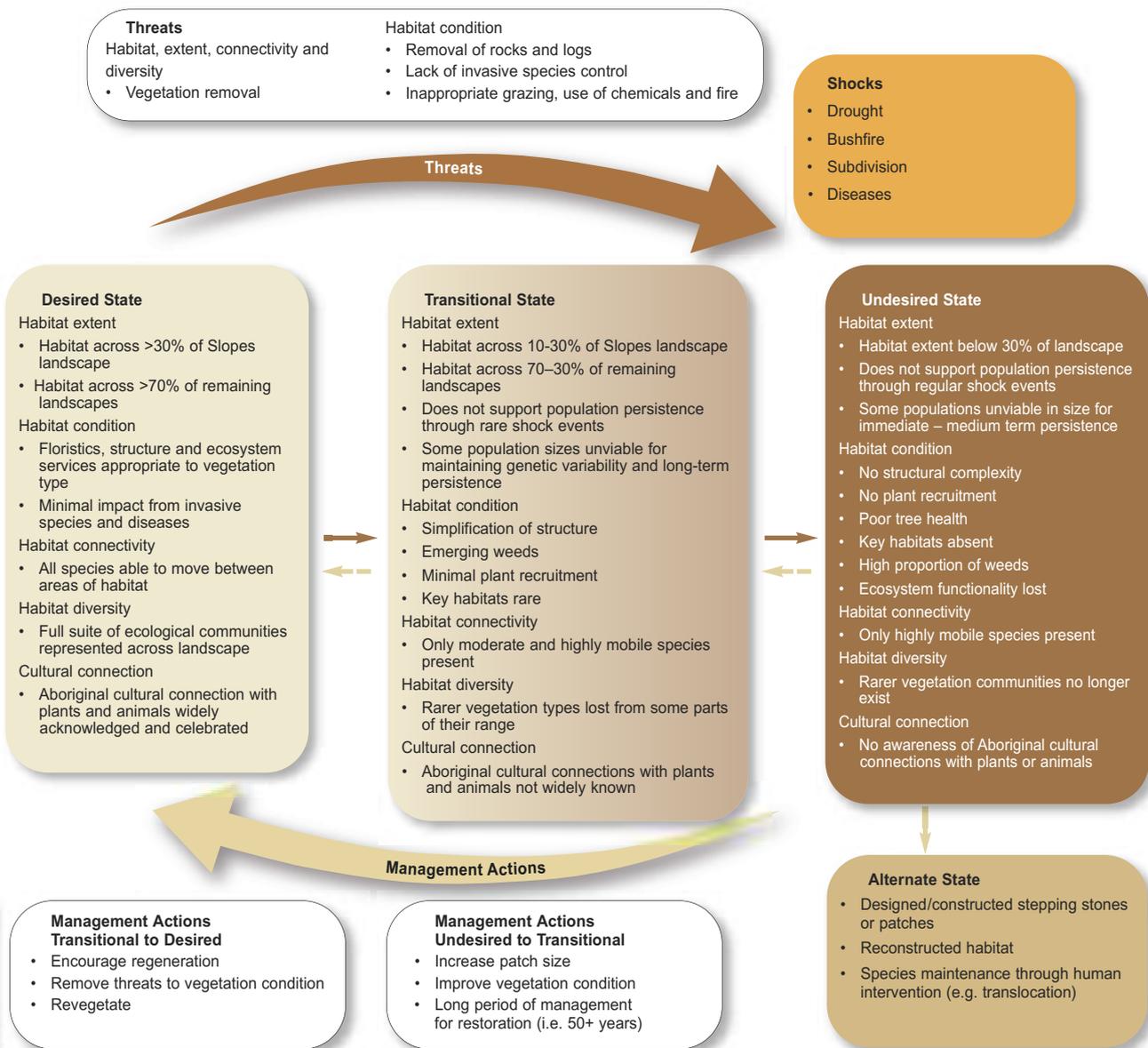


Figure 33. Landscape habitat State and Transition model

This model describes the different condition states of plant and animal habitat. It considers the key elements of habitat dynamics which are, extent, condition, connectivity, diversity and cultural connection. While these concepts are just as relevant to plants and animals in aquatic habitats, this model specifically focuses on land-based habitats. Of importance to note is the difficulty involved in improving condition of habitat once it is in an undesired state. The dashed arrow indicates there may be a high level of uncertainty around potential for restoration success and that it may not be possible to return the full suite of ecosystem services. Restoration efforts from the undesired state may actually create an alternative state, rather than a return to the original state of the system. For further details on plant and animal habitat refer to South East CAP Paper – Plants and animals. For further information on State and Transition models, refer to Figure 21.



Strategic priorities of relevance to this model:

- Practices that maintain and improve the extent and condition of priority habitats
- Practices that maintain and improve habitat that supports connectivity priorities
- Integrate production and conservation goals into primary production systems.

Management actions are most effectively applied to the:

- Desired state where threats to vegetation are expected/evident
- Transition state where further loss of extent or condition is likely, rarer vegetation types have been retained in good condition or connectivity may be improved to support local, regional or State priorities
- Alternative state where connectivity may be improved to support local, regional or State priorities.

Figure 34. Connectivity map

This map displays priority areas for action to improve native vegetation connectivity, compiled from a number of sources, including national, State, regional and local level corridor planning documents (e.g. OEH 2012a; Wollongong City Council et al. 2011). Further investigation is being undertaken to map and categorise areas for corridor management in the Monaro, Slopes and Tablelands.

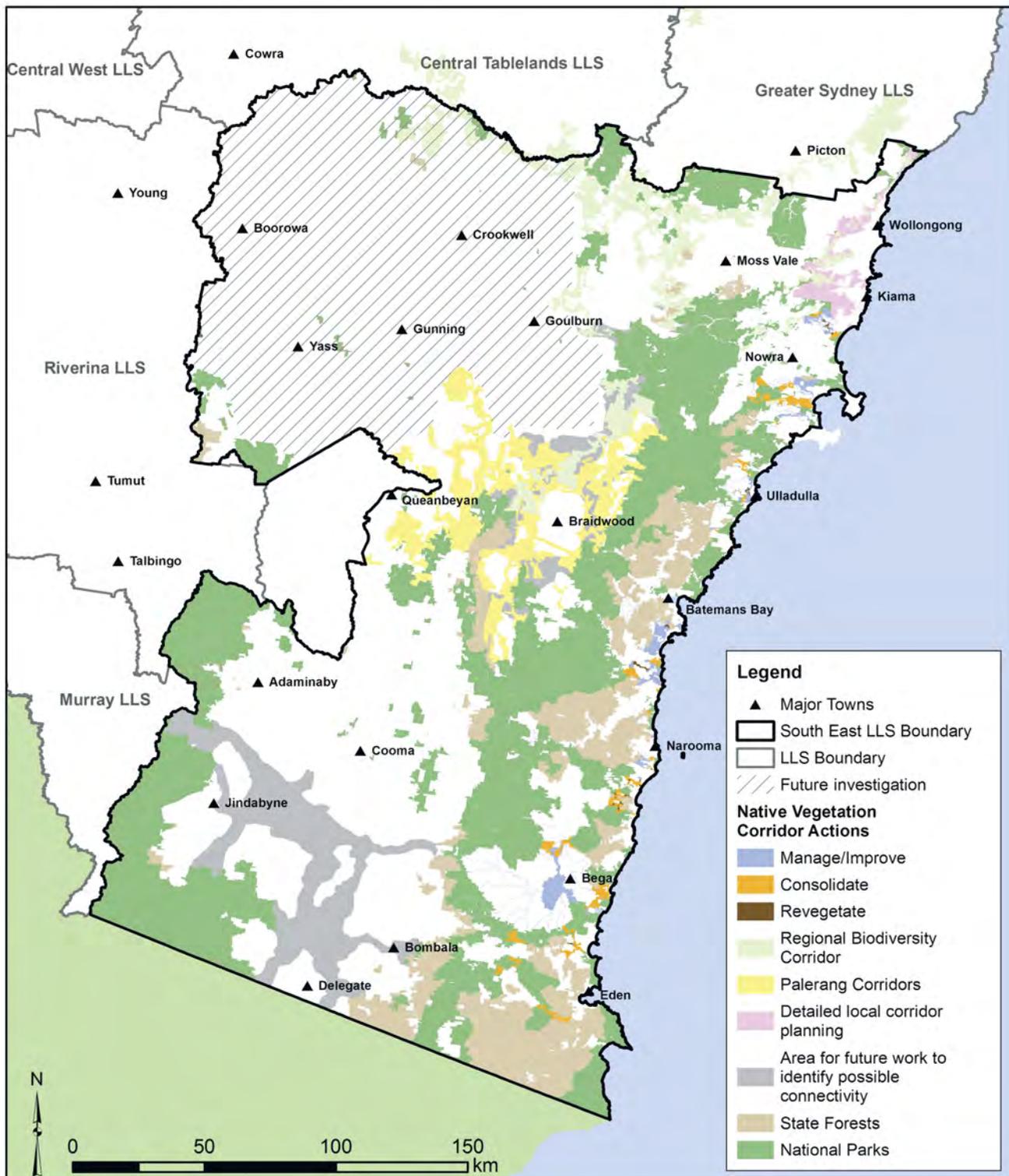
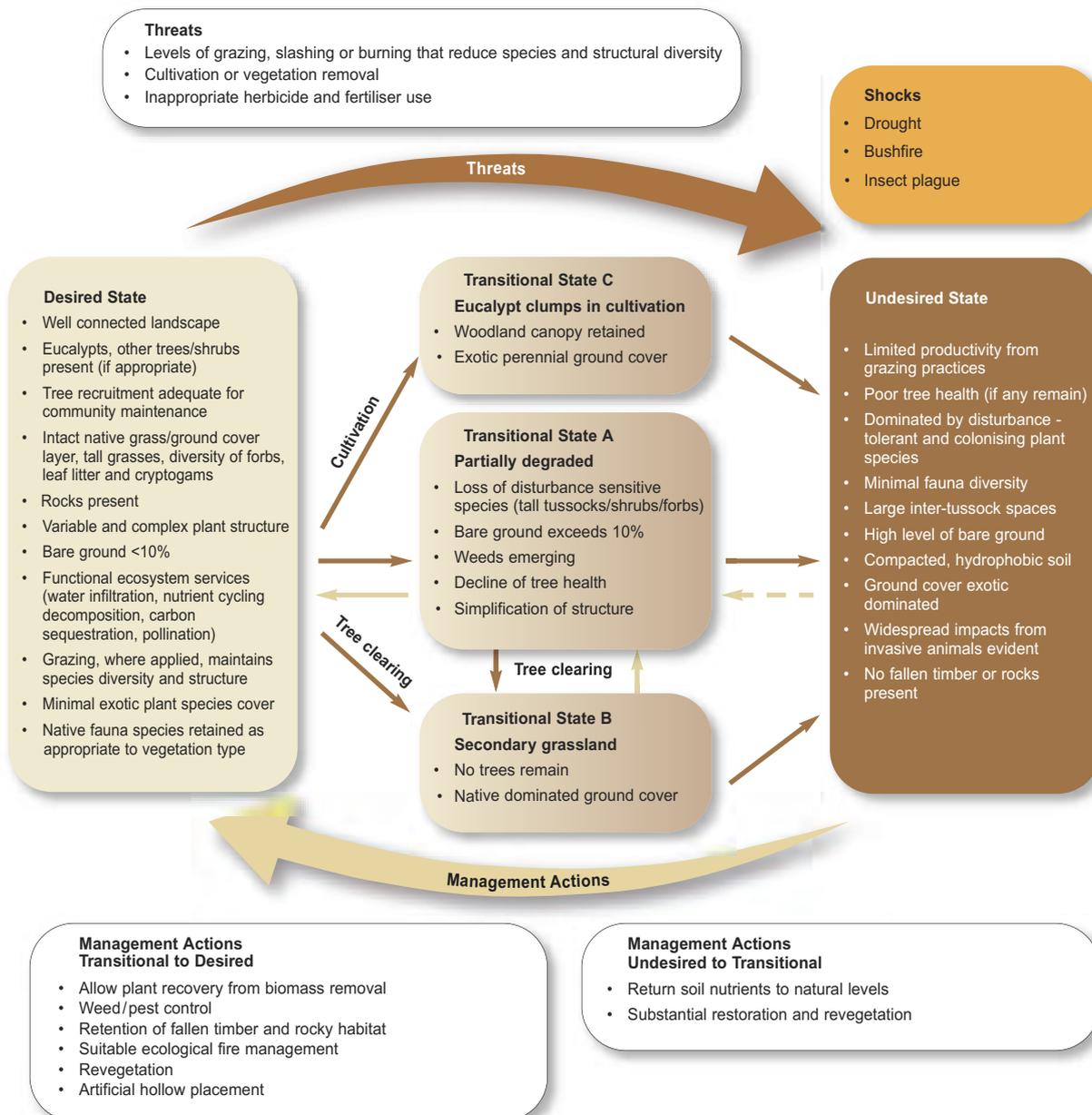


Figure 35. Grassy ecosystems State and Transition model

This model describes the different condition states for grassy ecosystems of the South East region. This includes a diversity of grasslands and grassy woodlands, many of which are either poorly represented in our reserve system and/or listed under State or federal legislation as threatened. Grassy ecosystems are a priority for the South East region, with many occurring within agricultural, grazing landscapes. In this context Smith et al. (in press) suggest that a balance between production and conservation may be achieved with a minimum of 10% of the property managed as a 'core conservation' area. This model relates to this 'core conservation' area. For further details on grassy ecosystems refer to the South East CAP Paper – Land. For further explanation on State and Transition models refer to Figure 21.



Strategic priorities of relevance to this model:

- Practices that maintain and improve the extent and condition of priority habitats
- Integrate production and conservation goals into primary production systems.

Management actions are most effectively applied to the:

- Desired state where threats are expected
- Transition state A and B.

Figure 36. Threatened vegetation community probability map

This map displays the probability of threatened vegetation communities across the region. Further investigation is required for the Monaro, Slopes and Tablelands landscapes. The map has been compiled from a number of mapped vegetation data sources including remote sensing and ground-truthed data. Threatened vegetation communities include federally listed ecological communities under the Environment Protection and Biodiversity Conservation Act 1999 and listed ecological communities under the NSW Threatened Species Conservation Act 1995.

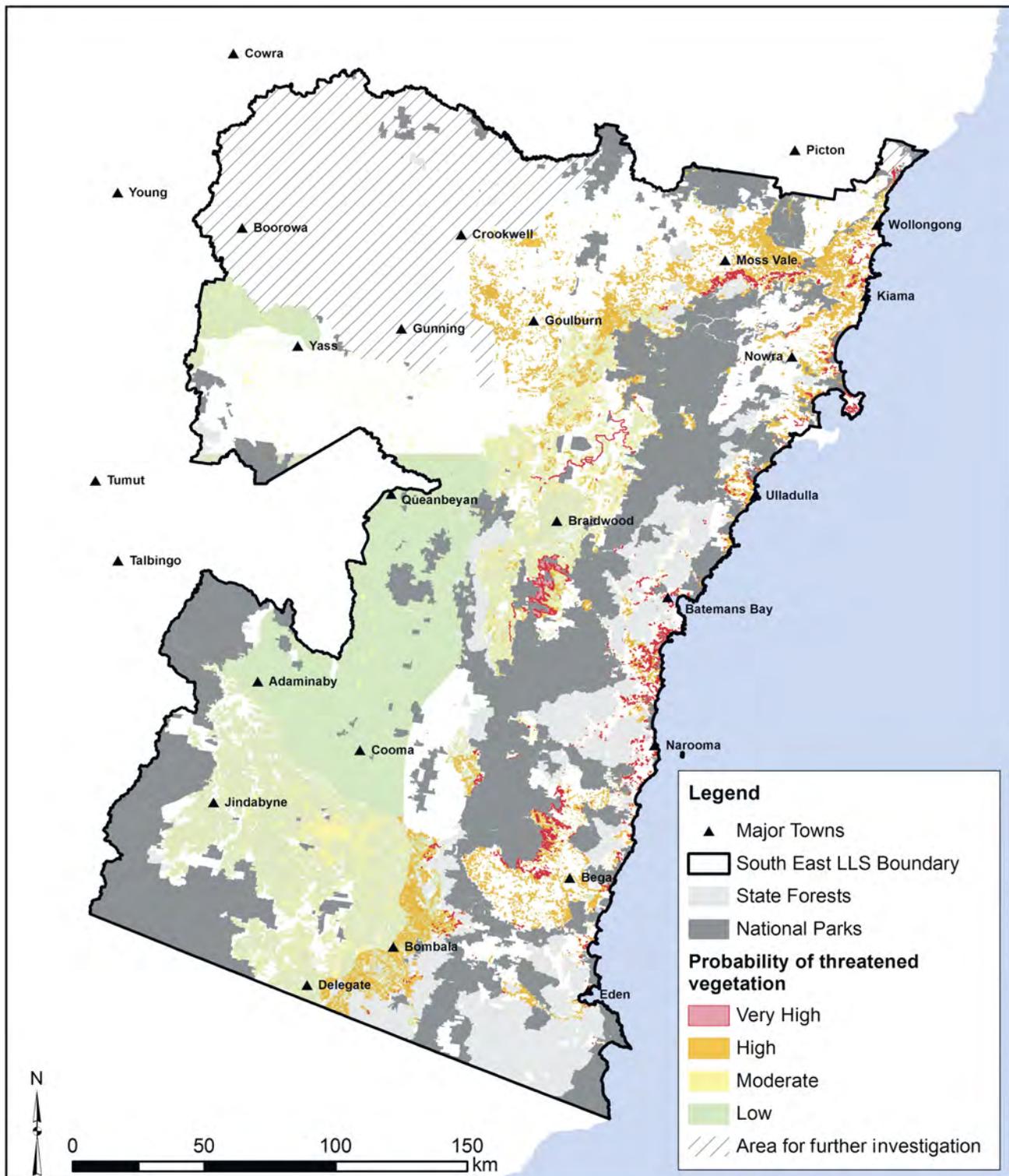
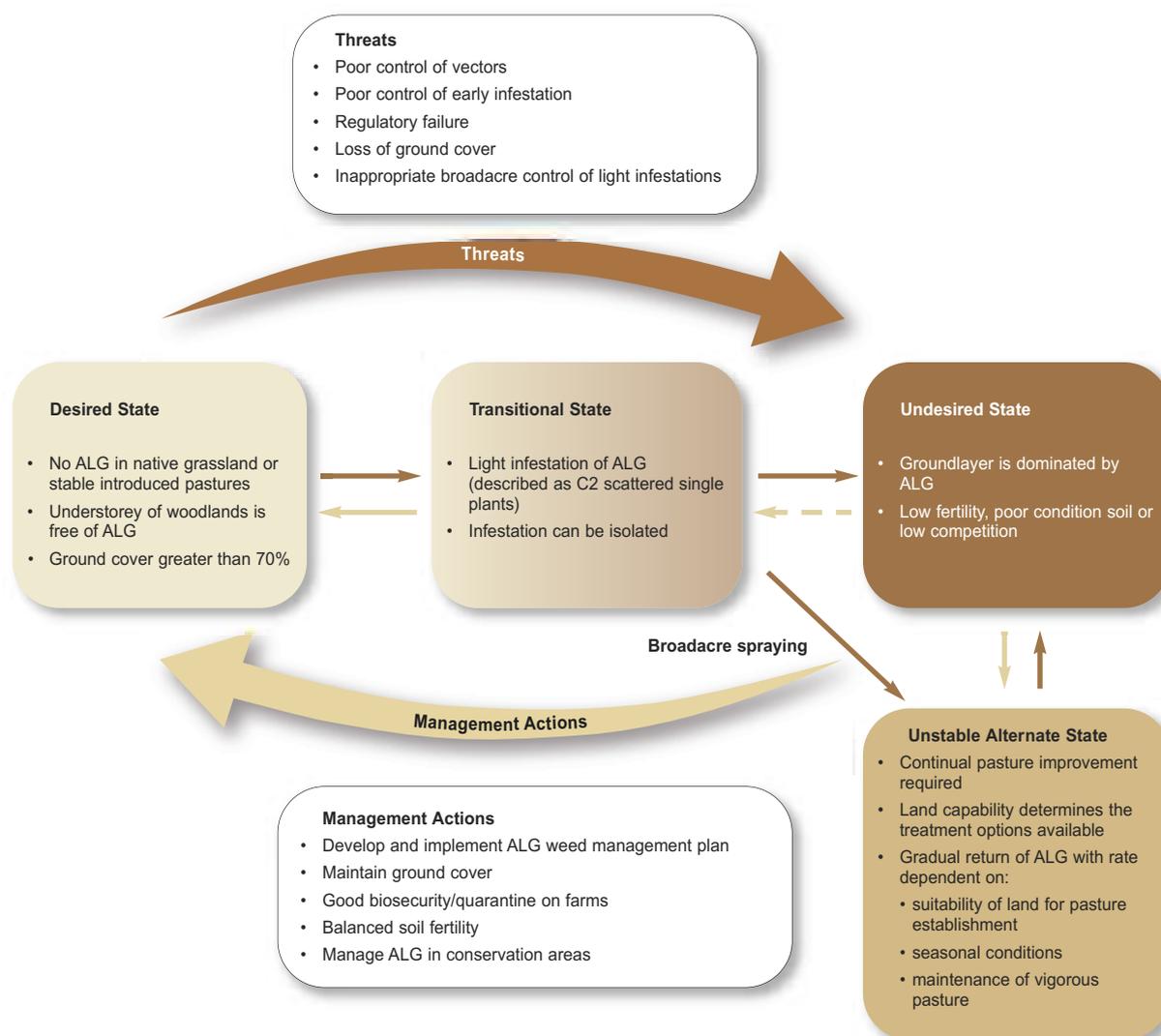


Figure 37. African lovegrass (ALG) State and Transition model – weed affected land example

This model describes the different condition states of land affected by African Lovegrass (*Eragrostis curvula*). African Lovegrass is a widespread weed of particular concern to landholders of the South East region. The species is challenging to manage as it is difficult to identify, and is able to germinate and set seed multiple times within a season. For further information on African Lovegrass refer to the South East CAP Paper – Land. For further explanation on State and Transition models refer to Figure 21.



Strategic priorities of relevance to this model:

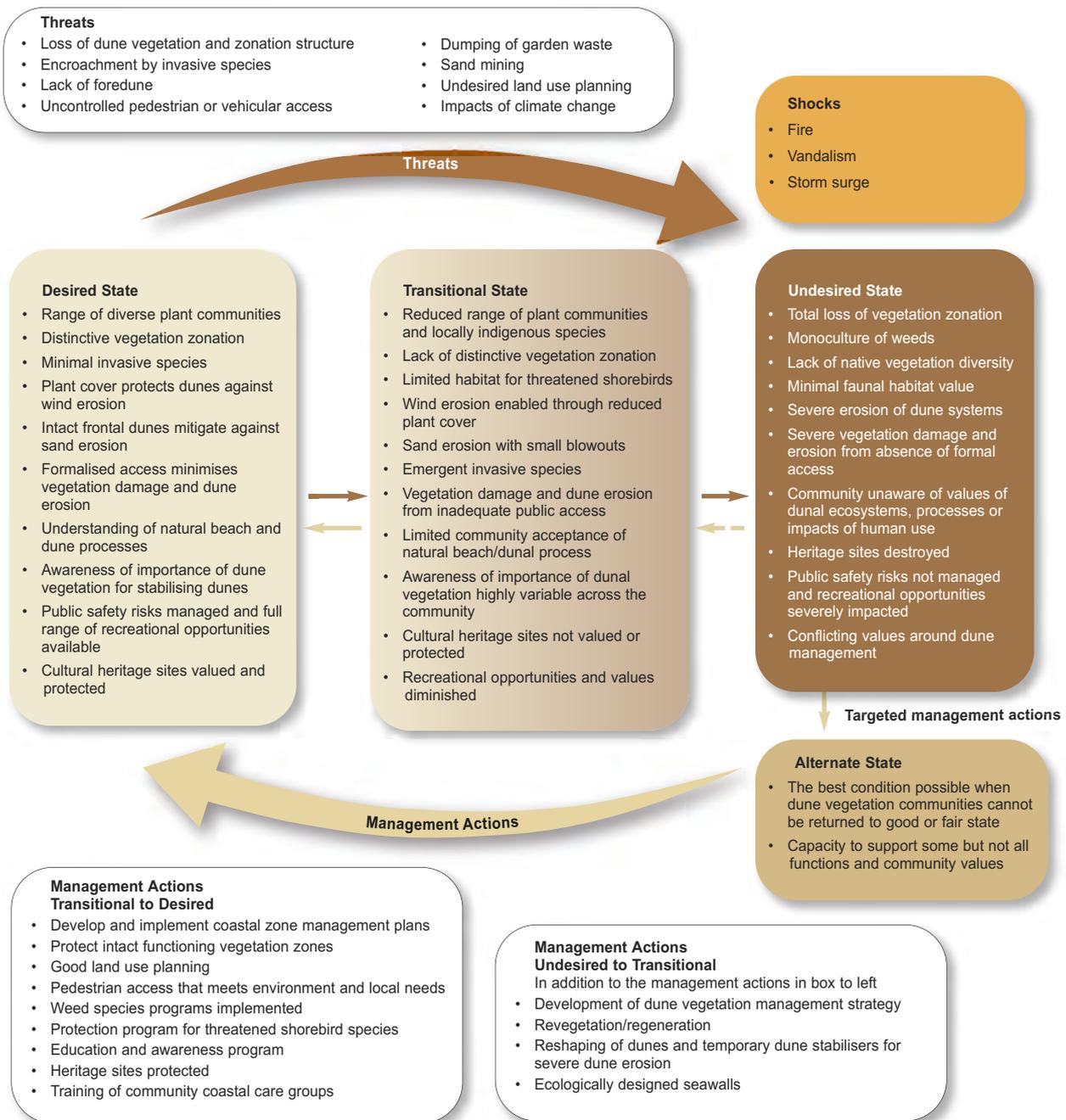
- Practices that improve soil condition in rural lands
- Support land and water managers to prepare, respond and adapt to biosecurity threats, including weeds, pests and diseases.

Management actions are most effectively applied to the:

- Transitional state, where early management of light infestations will avoid the need for expensive, long-term control techniques
- Desired state, particularly during extended dry periods when land management may extend beyond land capability.

Figure 38. Dunal vegetation State and Transition model

This model describes the different condition states for dunal vegetation within the South East region. Threats to these environments and the underlying drivers are relatively unique as compared to other land-based habitats. Dune and associated beach environments are highly valued and utilised public assets. For this reason resilience of dunal vegetation is presented through the inclusion of both biophysical and social elements. For further details on dunal vegetation refer to the South East CAP Paper – Plants and animals. For further explanation on State and Transition models refer to Figure 21.



Strategic priorities of relevance to this model:

- Practices that maintain and improve the condition of priority habitats
- Practices that manage naturally fragile soils
- Practices that improve habitat that supports connectivity priorities
- Support local industries maintain and improve natural resource assets.

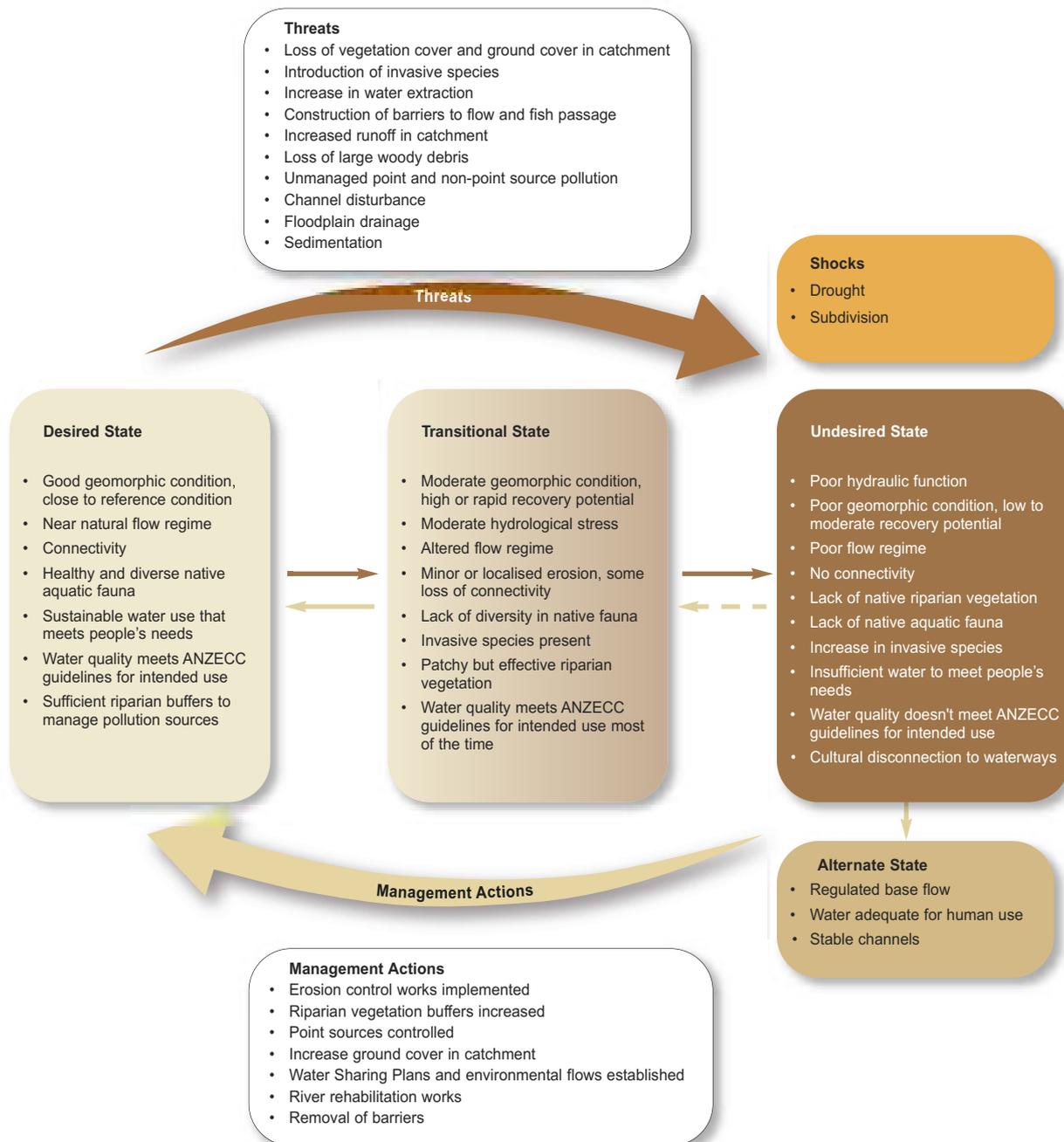
Management actions are most effectively applied to the:

- Desired state where threats are emerging
- Transitional state where threats are continuing to operate
- Undesired state where an alternate, less erosive, state can be achieved.



Figure 39. Water quality, quantity and movement State and Transition model

This model describes the different condition states for water quality, quantity and movement within the South East region. The water needs of people and the environment have both been considered. For further details on water refer to the South East CAP Paper – Water. For further explanation on State and Transition models refer to Figure 21.



Strategic priorities of relevance to this model:

- Practices that protect priority aquatic assets from land degradation
- Practices that maintain and improve habitat that supports connectivity priorities
- Implement practices that contribute to the maintenance or improvement of water quality and river health
- Facilitate the equitable sharing of water between people and the environment.

Management actions are most effectively applied to the:

- Undesired state where there is potential for poor water quality or quantity to impact on priority aquatic assets
- Transitional state where threats are continuing to operate.

Figure 40. Fish biodiversity hotspots

This map displays sites where NSW Department of Primary Industries has recorded fish biodiversity hotspots within the South East region.

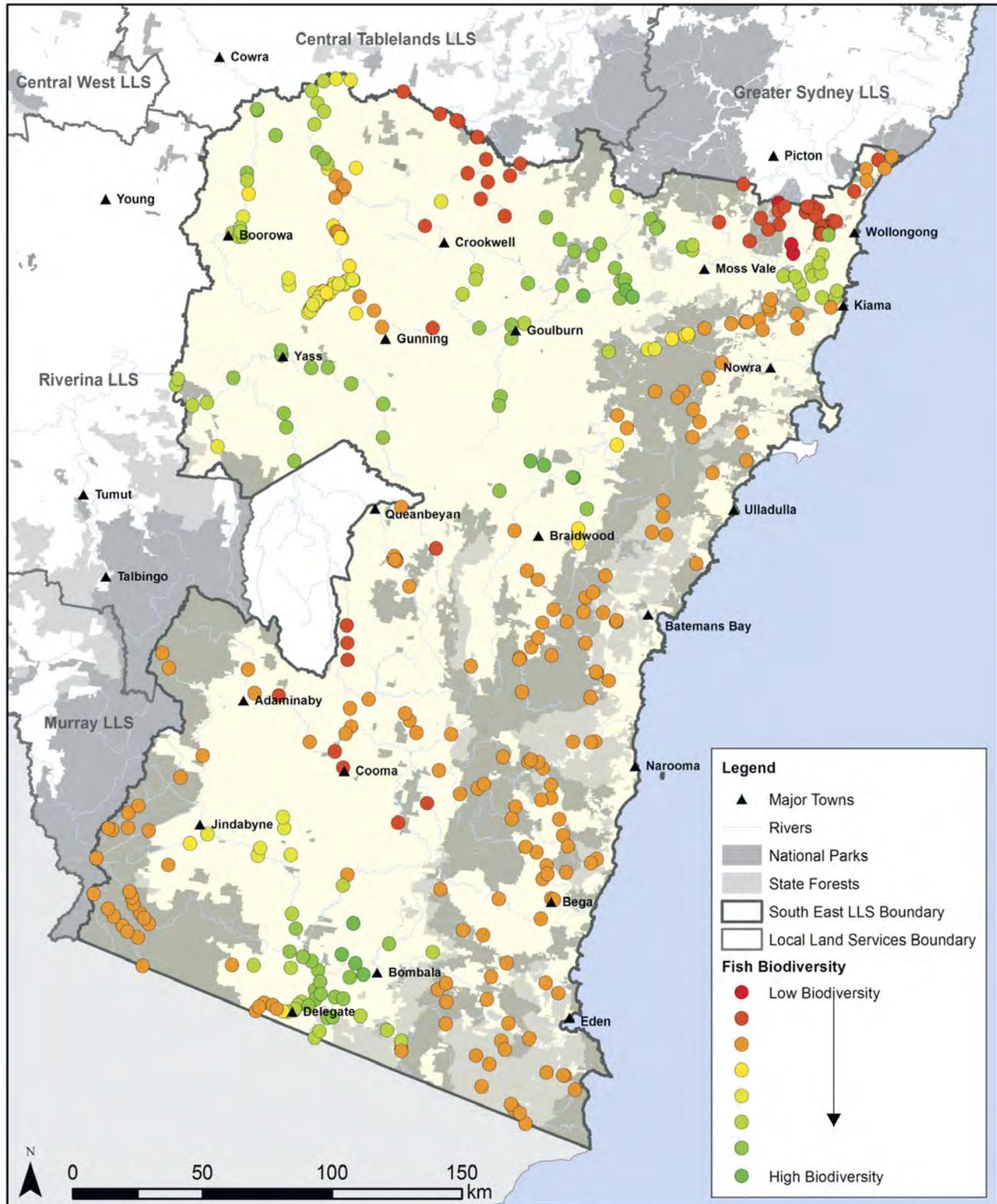
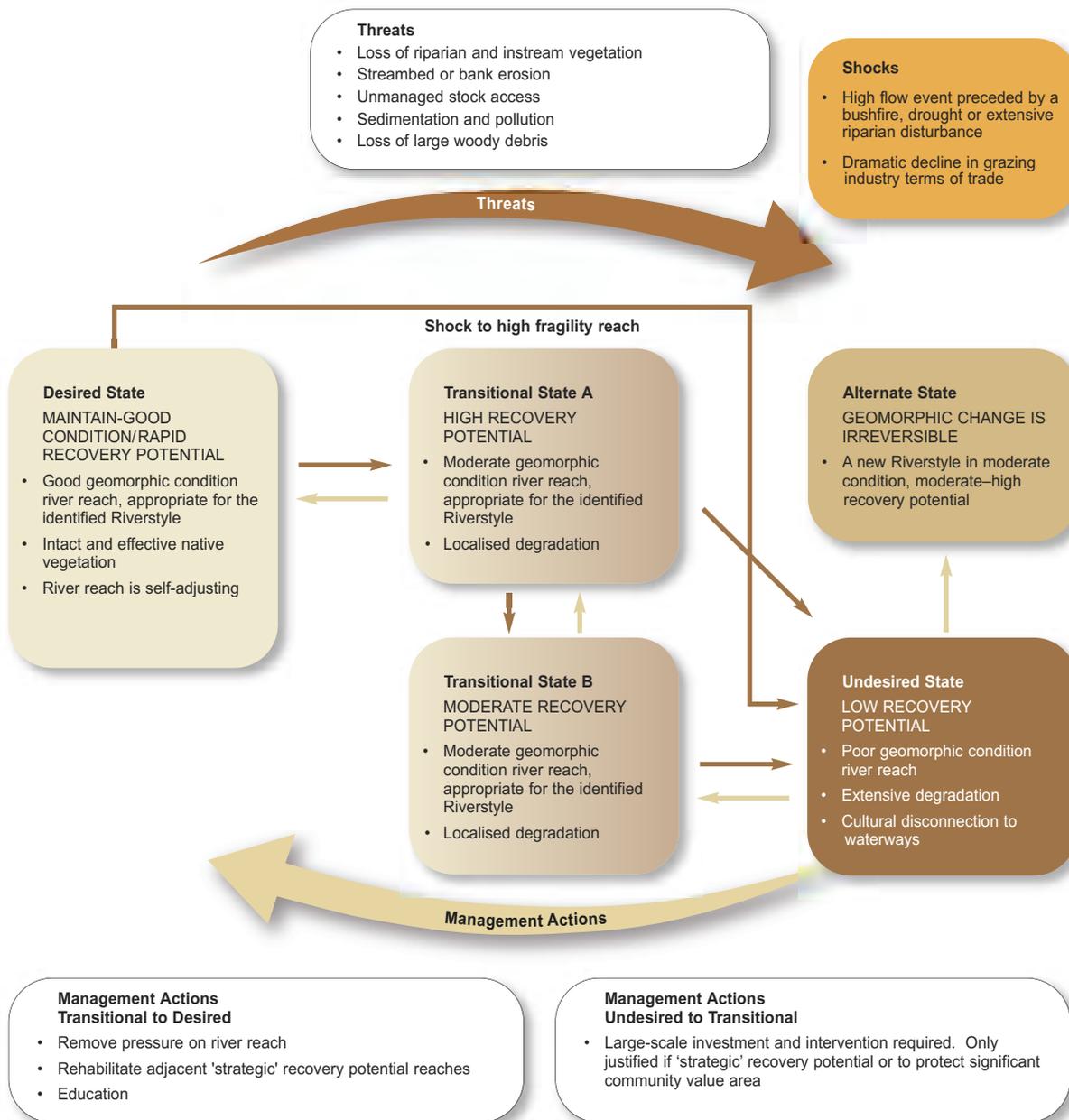


Figure 41. River reach State and Transition model

This model describes the different condition states for river reaches within the South East region. It is based on Riverstyles and associated river reach recovery potential mapped for the South East region (refer to Figure 42). The two transitional states shown vary in the management actions required to improve their condition. State A only requires small-scale, low cost intervention whereas State B requires medium-scale. For further details on river reach recovery potential and priorities refer to the South East CAP Paper – Water. For further explanation on State and Transition models refer to Figure 21.



Strategic priorities of relevance to this model:

- Maintain and improve the condition of priority surface water, wetland and groundwater assets
- Practices that maintain and improve the extent and condition of priority habitats
- Implement practices that contribute to the maintenance or improvement of water quality and river health.

Management actions are most effectively applied to the:

- Desired state where threats are emerging, particularly for fragile river reaches and strategic reaches
- Transitional state for strategic reaches or those with high recovery potential
- Undesired state where it is a strategic river reach and river health.

Figure 42. River priorities map

This map displays the recovery potential of river reaches across the region (NSW Office of Water 2012). Recovery potential is the assessed potential of the river reach to return to good or rehabilitated condition. The priority for river works in the South East region is river reaches which have been classified as 'strategic', 'high', 'rapid', or 'conservation'. Definitions for these recovery potential categories are provided in the glossary.

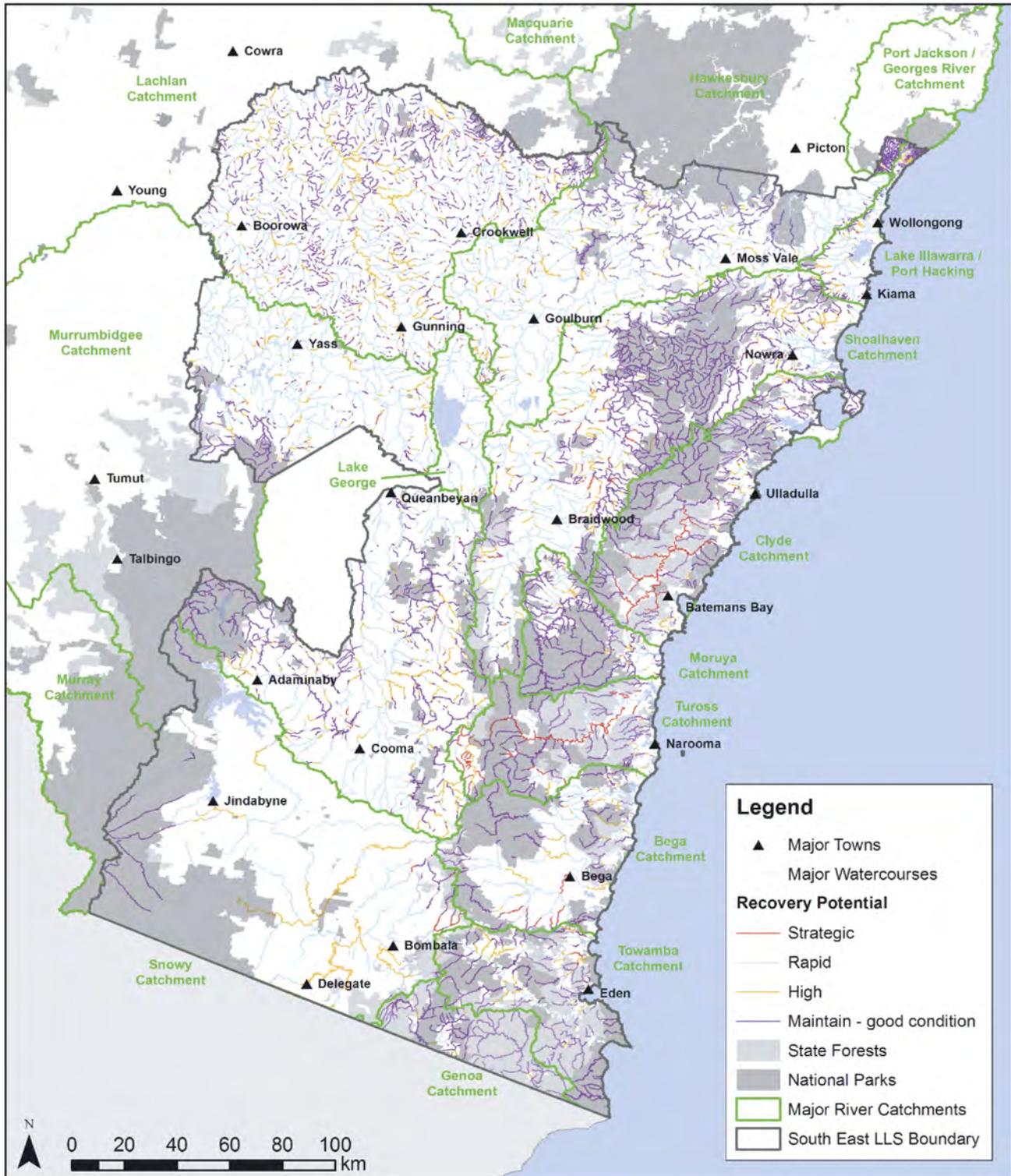
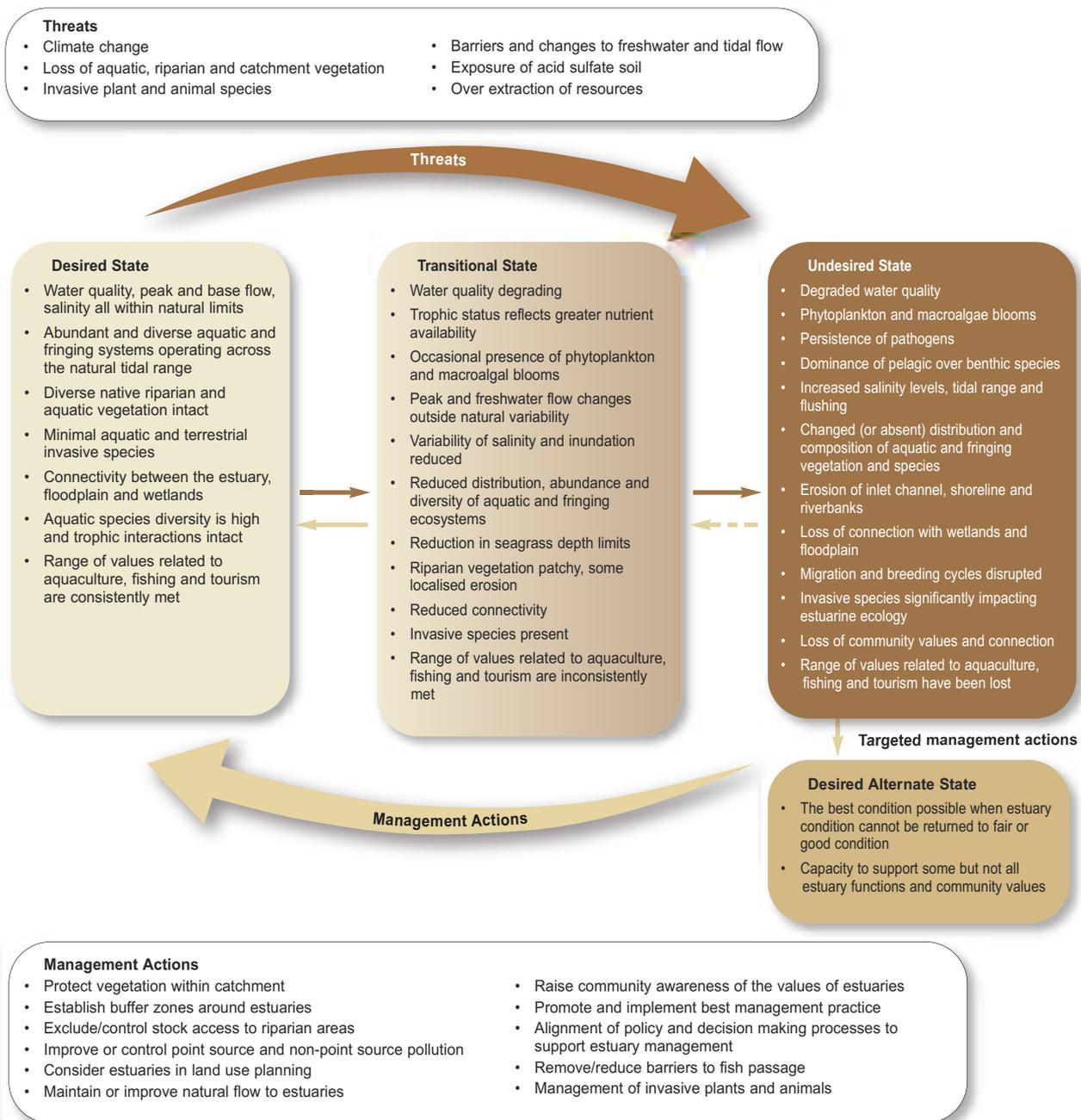


Figure 43. Estuary State and Transition model

This model provides a ‘generalised’ description of the different condition states for the region’s estuaries, acknowledging that there are a wide variety of estuary types present. Two estuarine environments of particular note are mangroves and tidal marshes that are recognised as potential high carbon capture ecosystems (Herr et al. 2012). This model acknowledges the important connection between the biophysical condition of estuaries and the need to support community and industry. For further details on estuary environments refer to the South East CAP Paper – Water. For further explanation on State and Transition models refer to Figure 21.



- Strategic priorities of relevance to this model:**
- Practices that maintain and improve the condition of priority estuarine, wetland and marine assets
 - Practices that maintain and improve the extent and condition of priority habitats
 - Support local industries maintain and improve natural resource assets.

- Management actions are most effectively applied to the:**
- Desired state where threats may emerge (refer to ‘Protection to maintain condition’ category in Figure 44)
 - Desired state where threats are affecting estuary condition (refer to ‘Targeted management of threats’ category in Figure 44)
 - Undesired state where a desired alternate state can be achieved (refer to ‘Targeted protection of key ecosystem elements’ category in Figure 44).

Figure 44. Estuary management priorities map

This map displays the estuary management priorities of the region, based on an analysis of information about the health of each estuary and the threats to its condition (Roper et al. 2011). Using this analysis, estuaries have been grouped into four categories that determine the focus of priority management actions. For further details on these categories refer to South East CAP Paper – Water.

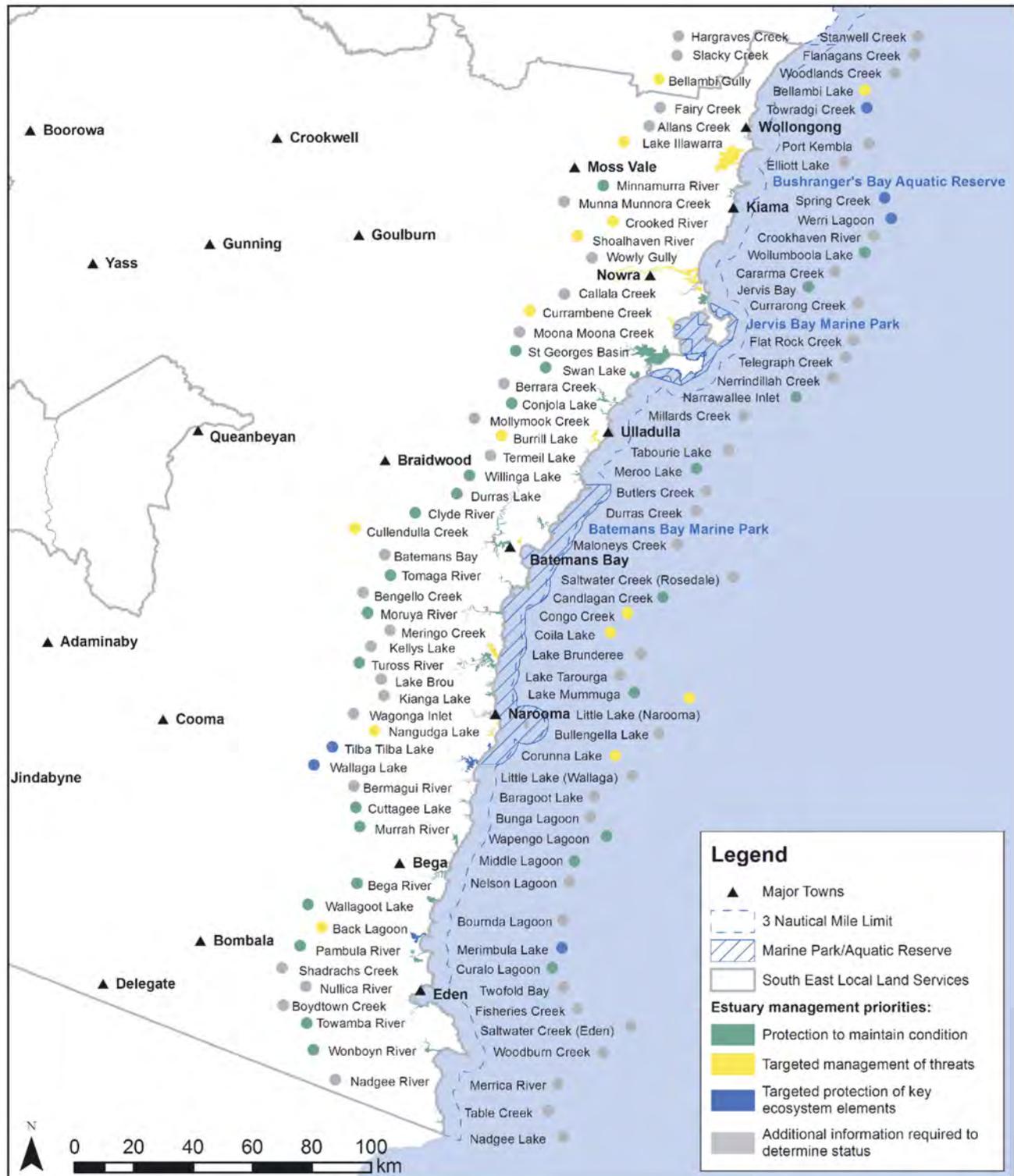
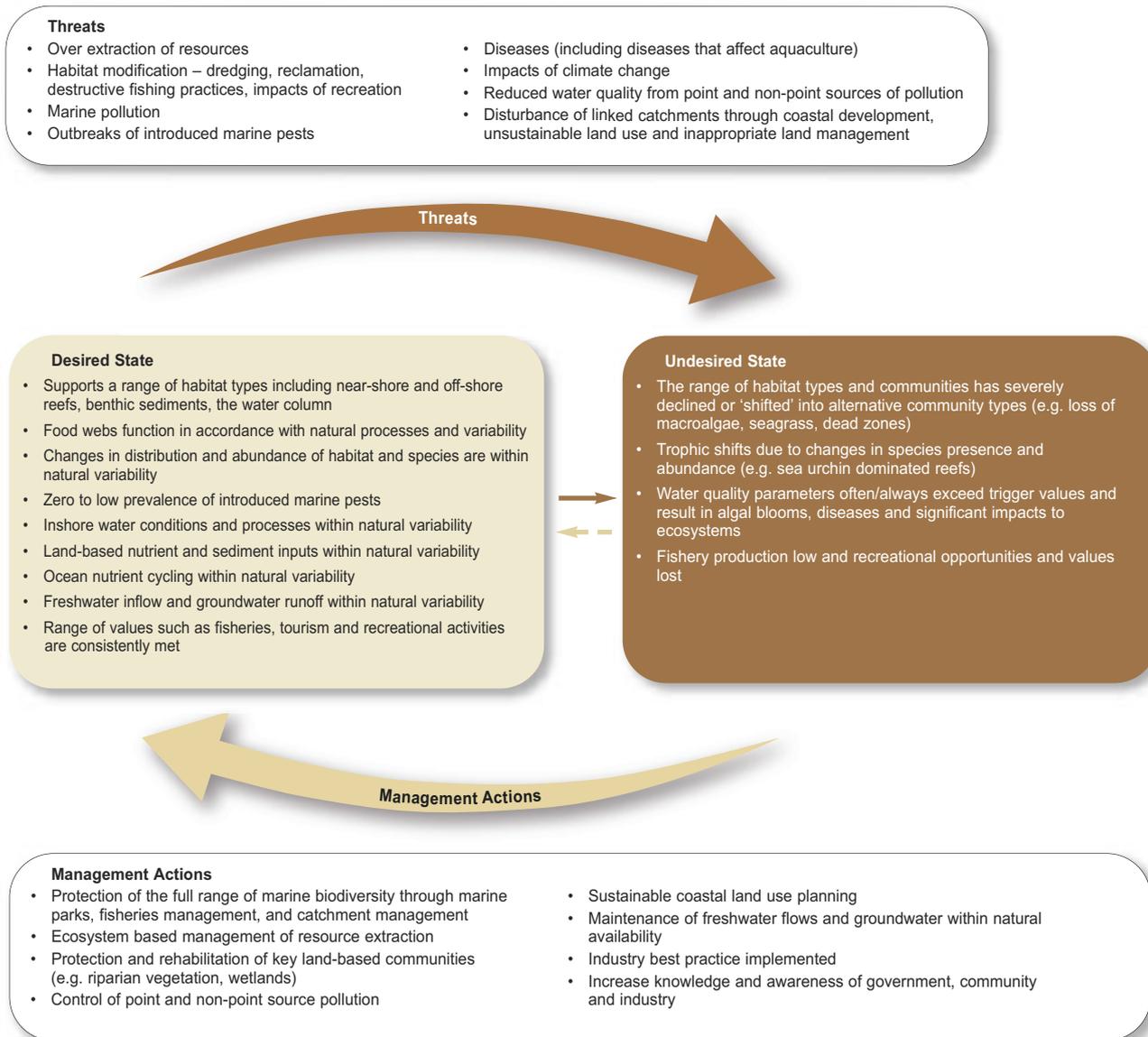


Figure 45. Marine State and Transition model

This model provides a ‘generalised’ description of the different condition states for marine environments within the South East region, acknowledging that there are a wide variety of marine environments present. One environment of particular note is seagrass meadows that are recognised as potential high carbon capture ecosystems (Herr et al. 2012). This model acknowledges the important role of marine environments in supporting plants and animals, as well as community and industry. For further details on marine environments refer to the South East CAP Paper – Water. For further explanation on State and Transition models refer to Figure 21.



Strategic priorities of relevance to this model:

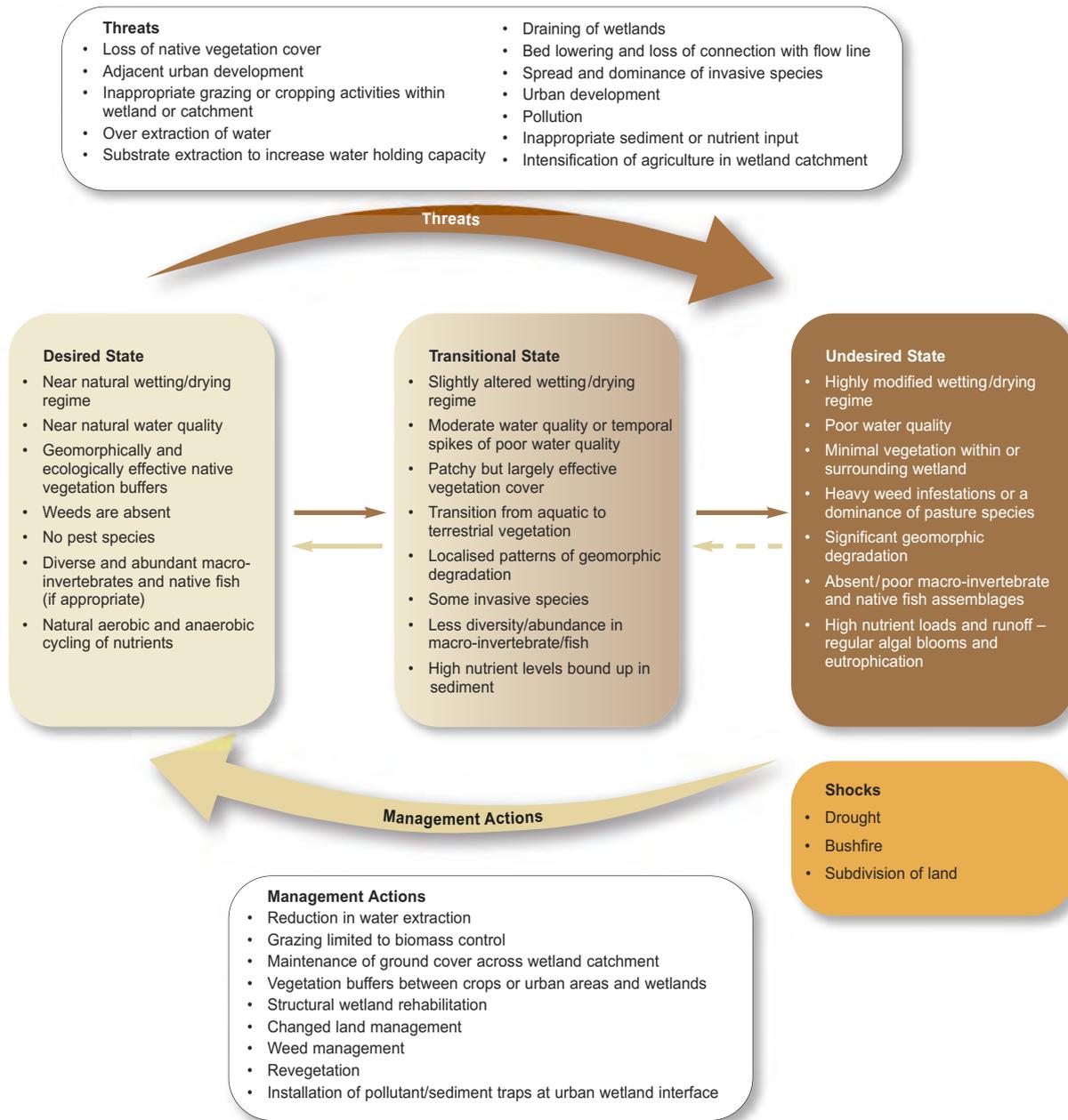
- Practices that maintain and improve the condition of priority estuarine, wetland and marine assets
- Practices that maintain and improve the extent and condition of priority habitats
- Implement practices that contribute to the maintenance or improvement of water quality and river health
- Support local industries maintain and improve natural resource assets.

Management actions are most effectively applied to:

- Desired state where threats are emerging.

Figure 46. Wetlands State and Transition model

This model describes the different condition states for wetlands within the South East region. This includes a wide variety of wetlands from permanent glacial lakes, ephemeral wet meadows through to coastal lagoons on sand plains. Major knowledge gaps exist in terms of wetland condition across the region as well as distribution and types of wetlands across the Slopes, Monaro and Tablelands landscape. For further information on wetlands refer to the South East CAP Paper – Water. For further explanation on State and Transition models refer to Figure 21.



Strategic priorities of relevance to this model:

- Practices that protect priority aquatic assets from land degradation
- Practices that maintain and improve the extent and condition of priority habitats
- Integrate production and conservation goals into primary production systems
- Practices that maintain and improve the condition of priority wetland habitats.

Management actions are most effectively applied to the:

- Desired state where wetlands are under pressure or threats are likely to emerge.

Part 4 – Making it happen – Implementing South East CAP

A new approach

South East CAP applies a new approach to NRM planning, based on an improved understanding of the interactions between people and natural resources.

South East CAP provides direction for improved implementation and service delivery in the region. To achieve the right set of outcomes that maximise community, economic and environmental benefits, community and government will need to change the way they work together.

Part 4 describes the key tasks that need to be completed, the priority actions and the main implementation partners to need to collaborate to implement strategies (refer to Table 9).

Implementation planning and investment prioritisation

Implementation planning will translate the targets and strategies of South East CAP into specific projects and services to be delivered with local communities.

A key part of implementation planning is to translate the priorities expressed in South East CAP to local scales. South East CAP has prioritised where effort and investment is need, and considered how priorities vary between landscapes. The next step is to map this out in more detail, locally.

This will involve a more detailed analysis of natural resource priorities, particularly using spatial modelling tools to help identify the highest priority areas to focus investment, that is those areas that will deliver multiple outcomes during implementation.

Combining the analysis of natural resource priorities with more detailed understanding of community capacity at the local scale, implementation arrangements will be focused on the areas that will have the most impact, delivering services that cater to the specific needs of that community.

Partnerships and collaborations will be the primary mechanism for leveraging available resources to deliver South East CAP. By leveraging resources and improving coordination across government, investment in priority actions will lead to significant and meaningful results for local communities.



Boorowa recovery area

This analysis will also quantify South East CAP targets for each planning cycle, to support improved auditing of implementation performance.

An implementation plan will be developed that describes the planned actions to be taken, the budget for these actions and the South East CAP targets these actions will contribute to.

Monitoring, evaluating, reporting and improvement

Effective monitoring, evaluating and reporting (MER) is a critical part of knowledge management and the adaptive management cycle (refer to Figure 28). MER provides two key functions; firstly, to assess performance of South East CAP implementation and secondly, to test the assumptions that underpin the knowledge of the landscape systems.

A well designed MER system that focuses on testing and building on existing knowledge will provide significant long-term gains at a range of scales.

At the site scale, management practices will be more targeted and appropriate to site conditions. At the landscape scale, service delivery and collaborations will be focused on the outcomes that will have best effect, efficiently allocating scarce resources. At the State and national scale, policies and plans will enable the delivery of services that meet the needs of local and regional communities.

During the first year of South East CAP implementation, a detailed MER plan will be developed.

Knowledge management

Additional to MER, knowledge management needs to focus on building new knowledge with research partners such as universities and other organisations. South East CAP has identified a number of key knowledge gaps, evaluation questions and research requirements that need to be addressed.

Identified knowledge gaps include:

- community adaptive capacity
- vegetation and corridor mapping
- wetland prioritisation
- weed mapping
- links between NRM and community wellbeing
- links between NRM and economic prosperity.

Filling knowledge gaps and further research will be completed in a collaborative way with research partners and where practicable in collaboration with land and water managers.

During the first year of South East CAP an implementation and knowledge strategy will be developed.

Availability of information

A key South East CAP strategy is to make information available to individuals or organisations who make decisions on the sustainable use and care of natural resources.

The information and analysis used to develop South East CAP is available for local government, industry groups, government agencies or community groups involved in natural resource decision making and planning.

Adaptive management triggers

Adaptive management is one of the foundational pillars of South East CAP. A key part of adaptive management is to define the circumstances when a review of the strategy is required.

Using a resilience approach, the circumstances that would trigger a review of the strategy are best defined by the major potential shocks to the landscape systems.

Shocks can be social, environmental or economic and include events such as a major change of policy, institutional change, sustained period of changed climate, natural resource disasters, disease outbreaks and global financial pressures.

During the first year of South East CAP implementation the circumstances that will trigger a review of the plan will be defined. Additionally, monitoring of potential shocks will be established to support the assessment of risk to these triggers.



Superb Parrot (*Polytelis swainsonii*) feeding



Kangaroo grass (*Themeda australis*)

A whole of government commitment to South East CAP

South East CAP is the principal guiding document for NRM activity and service provision by the NSW Government in the South East region. To this end, it documents the commitments and intent of:

- South East Local Land Services
- Department of Primary Industries
- Office of Environment and Heritage
- Department of Planning and Infrastructure
- Office of Communities, Aboriginal Affairs

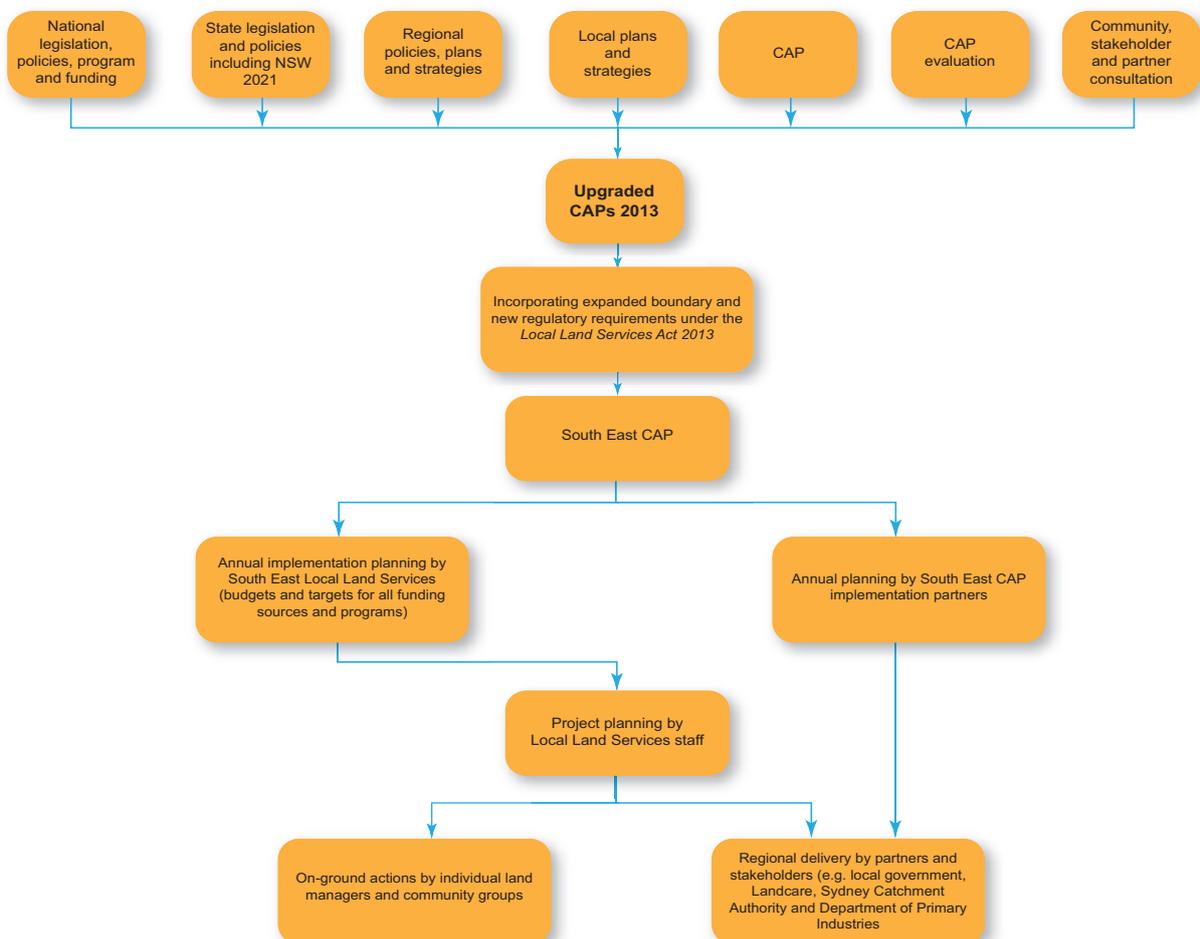
South East CAP seeks to ensure that services to communities that are delivered by multiple service providers across regional boundaries are coordinated and collaborative.

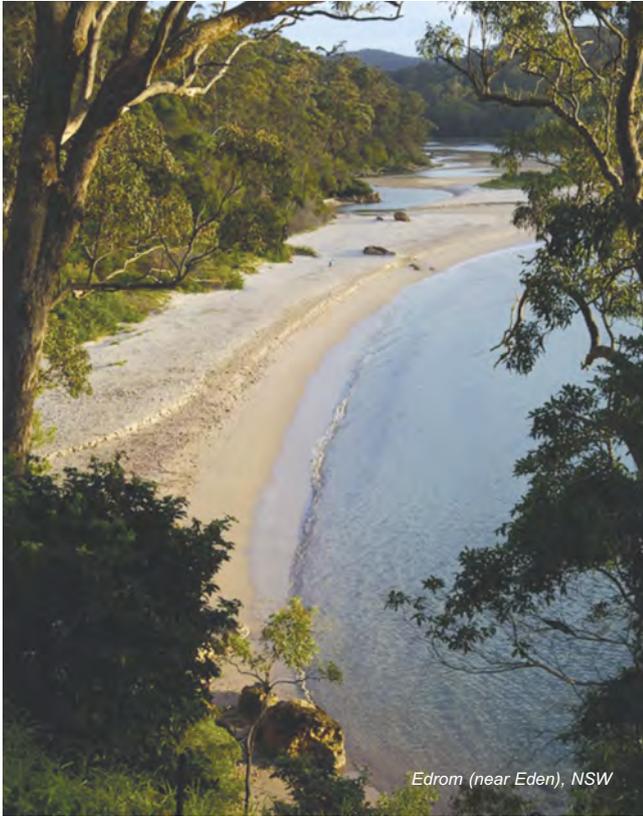
South East Local Land Services shares state borders with Victoria and the ACT. Within NSW boundaries are shared with Greater Sydney, Central Tablelands, Riverina and Murray Local Land Services Regions. River catchments flow into the Murray Darling Basin which impacts on South Australia.

South East CAP seeks to work with the State level policy sections of NSW Government agencies to ensure that State policies, plans and priorities enable effective delivery of services at the local scale.

Most importantly, South East Local Land Services is the key coordination and delivery body for services at the local scale. It will work closely with other agencies, local governments, non-government organisations, community and industry groups to collaboratively deliver services to the communities and landholders of the South East region (refer to Figure 47).

Figure 47. South East CAP framework for action





Edrom (near Eden), NSW



Cattle, Monaro



Pigeon House Mountain, Morton National Park



*Snow gum (*Eucalyptus pauciflora*)*



Bobundra landscape

Table 9. Implementation arrangements

This table lists the priority actions for each strategy. Each of these priority actions is based on the analysis of landscape systems integrated with community and government aspirations. All actions are a priority. This table also lists the relative priorities between actions and across the five landscapes. These actions:

- are identified for each landscape (SCH – South Coast and Highlands, FSC – Far South Coast, M – Monaro, S – Slopes and T – Tablelands)
- outline expected community and organisational involvement (implementation partners)
- are shown as an (•) or emphasised by an (●), depending on the relevance of the priority action in each landscape.

Sustainable communities, profitable industries, resilient landscapes	Landscape					Implementation partners
	SCH	FSC	M	S	T	
Goal: Sustainable economies and community wellbeing						
Strategy: Deliver services that support natural resource dependent industries be profitable and sustainable						
Target: From 2014, natural resource dependent enterprises are supported to adopt practices that improve profitability and sustainability						
<p>Priority action: Support business performance within natural resource dependent industries</p> <p>Focus:</p> <ul style="list-style-type: none"> • Grazing industry • Mixed farming systems • Dairy industry • Aquaculture and fishing industry • Horticulture industry • Aboriginal enterprise development <p>Actions:</p> <ul style="list-style-type: none"> • Investigate issues impacting on the profitability and sustainability of existing primary production enterprises • Facilitate access to enterprise development opportunities, including business planning, succession planning, environmental management systems and property planning training • Facilitate the establishment of new market opportunities • Facilitate enterprise diversification and innovation 	●	●	●	●	●	Aboriginal groups, LLS, DPI (Agriculture NSW, Fisheries NSW), economic development organisations, local government, major accounting firms, primary producer groups, RDA
	●	●		●		
	●	●	•	•	•	
	●	●	●	●	●	
<p>Priority action: Support local industries maintain and improve natural resource assets</p> <p>Focus:</p> <ul style="list-style-type: none"> • Grazing industry • Dairy industry • Aquaculture and fishing industry • Horticulture industry • Tourism industry • Mixed farming systems <p>Actions:</p> <ul style="list-style-type: none"> • Identify and map the natural resource assets that support industry in each landscape • Practices that maintain and improve the natural resource assets that support industry, including soil, terrestrial ecosystems and marine, estuarine, surface water, wetland and groundwater ecosystems • Secure additional investment in the natural resource assets that support local industries 	●	●	●	●	●	Aboriginal groups, LLS, DP&I, DPI (Agriculture NSW, Crown Land, Fisheries NSW, Forests NSW), economic development organisations, local government, primary producer groups, RDA, SCA, tourism industry groups
	●	●	•	•	•	
	●	●	●	●	●	
	•	•	•	•	•	
<p>Priority action: Support local economies and communities broaden their industry base</p> <p>Focus:</p> <ul style="list-style-type: none"> • Food production and distribution systems • Nature-based tourism • Industries that reduce dependency on external resources, particularly fossil fuels • Carbon sequestration industries <p>Actions:</p> <ul style="list-style-type: none"> • Facilitate the establishment of new, alternative and emerging industries • Investigate business models that address barriers to the establishment of new primary production enterprises 	•	•	•	•	•	Aboriginal groups, LLS, DP&I, DPI (Agriculture NSW, Fisheries NSW), economic development organisations, Landcare, local government, primary producer groups, RDA, sustainability groups, tourism industry groups
	•	•	•	•	•	
	•	•	•	•	•	
	●	●	●	●	●	

SCH FSC M S T

Sustainable communities, profitable industries, resilient landscapes	Landscape					Implementation partners	
	SCH	FSC	M	S	T		
Strategy: Deliver services that support natural resource dependent industries be profitable and sustainable Target: From 2014, natural resource dependent enterprises are supported to adopt practices that improve profitability and sustainability							
Priority action: Deliver information and extension services that meet land and water manager needs Focus: <ul style="list-style-type: none"> Primary producers Small-scale and peri-urban enterprises Rural residential and absentee landholders Managers of priority public land assets Land use practices consistent with land capability Stewardship of land and water Actions: <ul style="list-style-type: none"> Deliver extension services that support farm profitability and land and water stewardship practices Provide ongoing information and extension services to support continuous improvement Develop tools to provide reliable, timely and accessible information to support land manager decision making 	●	●	●	●	●	Aboriginal groups, LLS, DPI (all divisions), economic development organisations, Landcare, local government, non-government organisations, primary producer groups, RDA, SCA	
Priority action: Support land and water managers to prepare, respond and adapt to biosecurity threats, including weeds, pests and diseases Focus: <ul style="list-style-type: none"> Weeds, pests and diseases that threaten existing lifestyles and livelihoods New and emerging weeds, pests and diseases Land manager capacity to adapt Government capacity to adapt Actions: <ul style="list-style-type: none"> Implement regional weed strategies Facilitate effective cross tenure collaboration on management of weeds, pests and diseases Investigate alternative lifestyle and livelihood options for those regions that are at risk of significant change from weeds, pests and diseases Implement the NSW Biosecurity Strategy 	●	●	●	●	●		Aboriginal groups, Australian Government, LLS, DPI (all divisions), economic development organisations, Landcare, local government, non-government organisations, primary producer groups, RDA, research institutions, SCA
Priority action: Support the community to prepare, respond and adapt to natural resource shocks Focus: <ul style="list-style-type: none"> Emergency planning and response Land manager capacity to adapt Government capacity to adapt Information systems to support land manager decision making Actions: <ul style="list-style-type: none"> Deliver programs that increase land manager capacity to adapt Ensure government services are responsive to shocks and able to meet land manager needs Develop tools to provide reliable, timely and accessible information to support land manager decision making 	●	●	●	●	●		
	SCH	FSC	M	S	T		



Sustainable communities, profitable industries, resilient landscapes	Landscape					Implementation partners
	SCH	FSC	M	S	T	
Strategy: Deliver services that support community resilience, wellbeing and connection Target: From 2014, communities are supported to increase their capacity to contribute to natural resource management and wellbeing						
Priority action: Support new and existing industry and community networks Focus: <ul style="list-style-type: none"> Primary producer groups Landcare groups Aboriginal groups Rural residential and absentee landholders Small farm groups Youth in agriculture and NRM Nature-based tourism Recreation groups Actions: <ul style="list-style-type: none"> Build the strength of existing networks, government and non-government Investigate alternative models to connect people Encourage greater collaboration between networks Foster knowledge sharing across generations 	●	●	●	●	●	AA, Aboriginal groups, Australian Government, ACT government, LLS, DPI (NSW Agriculture, Fisheries NSW), health networks, Landcare, local government, non-government organisations, primary producer groups, RDA, RFS, SCA
Priority action: Support a greater contribution by individuals to their local area Focus: <ul style="list-style-type: none"> Landcare volunteers Primary producers Nature-based tourism Recreational users Aboriginal people Youth Corporations Actions: <ul style="list-style-type: none"> Provide resources and technical advice to support volunteer effort Build capacity of and foster local leaders Enable greater corporate social responsibility investment in agriculture, aquaculture and NRM 	●	●	●	●	●	AA, Aboriginal groups, Australian Government, LLS, DPI (Agriculture NSW, NSW Fisheries), Landcare, local government, non-government organisations, primary producer groups
Priority action: Celebrate and promote the cultural and natural identity of local landscapes and communities Focus: <ul style="list-style-type: none"> People's connection to land and water Aboriginal cultural heritage Diversity of values and aspirations Urban communities Actions: <ul style="list-style-type: none"> Develop community visions for the natural resources of local areas Support events that promote the region's identity Recognise and value Aboriginal cultural heritage, including access to culturally significant sites, flora and fauna Foster the application of Traditional Ecological Knowledge Foster greater understanding of the value of ecosystem services in urban communities 	●	●	●	●	●	AA, Aboriginal groups, ACT government, arts organisations, Australian Government, LLS, Landcare, local government, non-government organisations, RDA

SCH FSC M S T

Sustainable communities, profitable industries, resilient landscapes	Landscape					Implementation partners
	SCH	FSC	M	S	T	
Goal: Adaptive management and devolved decision making						
Strategy: Lead the collaborative and coordinated implementation of South East CAP						
Target: From 2014, partnerships are implemented to coordinate and collaboratively deliver South East CAP						
<p>Priority action: Foster new and existing partnerships with industry, community, government and non-government organisations</p> <p>Focus:</p> <ul style="list-style-type: none"> • Primary producer groups • Landcare groups • Aboriginal groups • Local government • Regional organisations <p>Actions:</p> <ul style="list-style-type: none"> • Negotiate agreements for cooperative and collaborative delivery of South East CAP • Facilitate greater collaboration across service providers • Facilitate co-investment in agriculture, biosecurity and NRM 	●	●	●	●	●	Aboriginal groups, Australian Government, ACT government, LLS, DP&I, DPI (all divisions), economic development organisations, Landcare, local government, non-government organisations, NOW, OEH (NPWS, Regional Operations), primary producer groups, RDA, research institutions, SCA
<p>Priority action: Develop an implementation framework to deliver South East CAP</p> <p>Focus:</p> <ul style="list-style-type: none"> • Localised implementation of South East CAP • Commitment of resources to priority actions • Clear benefits for local industries and communities • Increased investment in agriculture, aquaculture and NRM <p>Actions:</p> <ul style="list-style-type: none"> • Negotiate priorities with local industries and communities • Develop implementation plans • Secure investment to implement priority action 	●	●	●	●	●	Aboriginal groups, Australian Government, ACT government, LLS, DPI (all divisions), economic development organisations, Landcare, local government, non-government organisations, OEH (NPWS, Regional Operations), primary producer groups, RDA, research institutions, SCA
<p>Priority action: Deliver integrated services in a coordinated and collaborative way</p> <p>Focus:</p> <ul style="list-style-type: none"> • Delivery of services without duplication • Utilising the strengths of each service provider • Emergency planning and response • Maximise cross-regional opportunities <p>Actions:</p> <ul style="list-style-type: none"> • Coordinate State government service delivery • Align State and local government service delivery • Align government and non-government service delivery 	●	●	●	●	●	AA, LLS, DPI (all divisions), Landcare, local government, OEH (all divisions), non-government organisations, SCA

SCH FSC M S T

Sustainable communities, profitable industries, resilient landscapes	Landscape					Implementation partners
	SCH	FSC	M	S	T	
Strategy: Deliver services that provide information to support adaptive management Target: From 2014, information is available to support adaptive and evidence-based decision making by land and water managers						
Priority action: Monitor, evaluate and report on the performance Focus: <ul style="list-style-type: none"> Asset condition Monitoring performance of implementation Reporting on performance to industry, community and government Using multiple lines of evidence Learning from implementation Actions: <ul style="list-style-type: none"> Establish a performance monitoring framework, linked to State wide monitoring programs Evaluate programs to inform future implementation 	●	●	●	●	●	LLS, DPI (all divisions), Landcare, local government, OEH (all divisions), SCA
	●	●	●	●	●	
Priority action: Monitor, analyse, evaluate and adapt to risks, trends and shocks Focus: <ul style="list-style-type: none"> Climate trends and shocks Financial trends and shocks Industry trends and shocks Wellbeing trends and shocks Actions: <ul style="list-style-type: none"> Establish a risk monitoring framework Communicate risk information to industry and community Ensure information and analysis is available to support adaptive decision making 	●	●	●	●	●	AA, Australian Government, LLS, DP&I, DPI (all divisions), local government, OEH (all divisions), RDA, research institutions, SCA
	●	●	●	●	●	
Priority action: Facilitate access to information and knowledge for decision making at a range of scales Focus: <ul style="list-style-type: none"> Key knowledge gaps Innovation Partnerships with research institutions and universities Reliable, timely and accessible information Collaborating across regions Actions: <ul style="list-style-type: none"> Identify key knowledge gaps Establish collaborations with other regions, research institutions, universities and community Develop tools to provide reliable, timely and accessible information to decision makers 	●	●	●	●	●	AA, Australian Government, ACT government, LLS, community, DP&I, DPI (all divisions), local government, OEH (all divisions), RDA, research institutions, SCA
	●	●	●	●	●	

SCH FSC M S T

Sustainable communities, profitable industries, resilient landscapes	Landscape					Implementation partners
	SCH	FSC	M	S	T	
Strategy: Deliver services that support land and water managers effectively respond and adapt to change, including climate change Target: From 2014, frameworks and protocols are implemented for devolved, adaptive and evidence-based decision making						
Priority action: Establish devolved and collaborative decision-making structures at the appropriate scale Focus: <ul style="list-style-type: none"> • Devolving decision-making to appropriate scale • Industry and community participation in decision-making • Working with existing structures Actions: <ul style="list-style-type: none"> • Build on existing decision making structures • Investigate alternative models for devolved and collaborative decision making 	●	●	●	●	●	Aboriginal groups, LLS, DP&I, DPI (all divisions), economic development organisations, Landcare, local government, non-government organisations, OEH (all divisions), primary producer groups, RDA, research institutions, SCA
Priority action: Support government authorities to make balanced, transparent and evidence-based decisions at all scales Focus: <ul style="list-style-type: none"> • Land use plans • Land use decisions • Development controls • Land capability • Water and estuary planning and management • Planning for climate change Actions: <ul style="list-style-type: none"> • Develop tools to provide reliable, timely and accessible information to land use decision makers • Facilitate land use plans and decisions to be consistent with regional planning strategies, to maintain strategic natural resource assets including agricultural lands • Facilitate development controls in existing and greenfield developments to minimise impact on strategic natural resource assets • Review existing regulatory arrangements to assess alignment to South East CAP • Provide land capability and best management practice information to land managers 	●	●	●	●	●	AA, Aboriginal groups, Australian Government, LLS, DP&I, DPI (all divisions), economic development organisations, Landcare, local government, non-government organisations, OEH (all divisions), primary producer groups, RDA, research institutions, SCA
Priority action: Support government authorities incorporate local priorities into national, State and regional policies, plans and priorities Focus: <ul style="list-style-type: none"> • Policies, plans and priorities adapt to new evidence and knowledge • Lessons from regional service delivery inform improvements at the State scale Actions: <ul style="list-style-type: none"> • Collaborate with other regions with similar landscapes • Gather evidence to inform improvements • Develop frameworks to ensure consideration of regional issues 	●	●	●	●	●	Australian government, LLS, DP&I, DPI (all divisions), OEH (all divisions), SCA

SCH FSC M S T

Sustainable communities, profitable industries, resilient landscapes	Landscape					Implementation partners	
	SCH	FSC	M	S	T		
Goal: Diverse, healthy, connected and productive natural environments							
Strategy: Manage soil condition for people and the environment							
Target: From 2014, land managers are supported to increase the adoption of practices that:							
- improve soil condition of productive lands - manage naturally fragile soils within their capability							
Priority action: Practices that improve soil condition in rural lands (Land and Soil Capability Classes 3–5) Focus: <ul style="list-style-type: none"> • Productive capacity of agricultural lands • Soil carbon • Capacity of landscape to absorb and retain water Actions: <ul style="list-style-type: none"> • Practices that increase productive capacity of agricultural lands • Practices that maintain ground cover • Practices that increase soil carbon • Practices that retain water in the landscape • Practices that mitigate the impact of dryland salinity 	●	●	●	●	●	Australian Government, LLS, DPI (Agriculture NSW, Crown Land, NOW), Landcare, non-government organisations, OEH (Regional Operations), primary producer groups, SCA	
Priority action: Practices that manage naturally fragile soils (Land and Soil Capability Classes 6-8) Focus: <ul style="list-style-type: none"> • Land and Soil Capability Classes 6–8 • Sodic soils • Acid sulfate soils • Saline soils • Shallow soils • Dune systems Actions: <ul style="list-style-type: none"> • Practices that maintain groundcover • Practices that are consistent with capability of the land 	●	●	●	●	●		Australian Government, LLS, DPI (NSW Agriculture), Landcare, OEH (Regional Operations), primary producer groups, RFS, SCA
Priority action: Practices that protect priority aquatic assets from land degradation Focus: <ul style="list-style-type: none"> • Water supplies • Good condition wetlands • Good condition estuaries • Good condition marine areas and marine protected areas • High value fish habitat Actions: <ul style="list-style-type: none"> • Identify and map priority sites for treatment of land degradation in each landscape • Practices to mitigate impact of active erosion • Practices to mitigate impact of acid sulfate soils • Practices to mitigate impact of saline soils 	●	●	●	●	●		

SCH FSC M S T

Sustainable communities, profitable industries, resilient landscapes	Landscape					Implementation partners
	SCH	FSC	M	S	T	
Strategy: Manage estuarine, wetland and marine assets for people and the environment Target: From 2014, land and water managers are supported to increase the adoption of practices that maintain or improve the condition of priority estuarine, wetland and marine assets						
Priority action: Practices that maintain and improve the condition of estuarine, wetland and marine assets Focus: <ul style="list-style-type: none"> • Good condition estuaries • Good condition marine areas and marine protected areas • Good condition coastal wetlands Actions: <ul style="list-style-type: none"> • Identify and map good condition marine, estuary and wetland assets • Practices that maintain or improve estuaries and wetlands including, reconnection with adjacent ecosystems, seagrass and foreshore habitat management, rehabilitation of degraded habitat, invasive species and diseases management • Practices that maintain and improve marine areas, including ecosystem based fisheries management, habitat protection, marine pest and aquatic disease management 						Australian Government, Aboriginal groups, LLS, DP&I, DPI (Fisheries NSW, NOW), Landcare, local government, non-government organisations, OEH (Regional Operations, Science), primary producer groups, SCA
Strategy: Manage surface water, wetland and groundwater assets for people and the environment Target: From 2014, land and water managers are supported to increase the adoption of practices that maintain or improve the condition of surface water, wetland and groundwater assets						
Priority action: Practices that maintain and improve the condition of priority surface water, wetland and ground water assets Focus: <ul style="list-style-type: none"> • Good condition, high recovery potential strategic river reaches • Good condition wetlands • Priority groundwater resources • Priority aquatic assets that support industry • Impacts from urban environments • Saline flows into the Murray-Darling Basin Actions: <ul style="list-style-type: none"> • Protection of existing good condition riparian and wetland vegetation • Revegetation of riparian corridors and wetland environments • Practices that maintain or improve groundwater resources • Protecting priority groundwater assets in drinking water catchments and areas important for irrigation water, through land use planning • Practices that deliver water sensitive urban design and best practice urban water cycle management • Practices that mitigate impacts from point source and non-point source pollution • Practices that minimise impacts of saline flows • Protect and rehabilitate groundwater dependent ecosystems 						Australian Government, ACT government, Aboriginal groups, LLS, DP&I, DPI (Fisheries NSW, NOW), Landcare, local government, non-government organisations, OEH (Regional Operations, Science), primary producer groups, SCA
Priority Action: Facilitate the equitable sharing of water between people and the environment Focus: <ul style="list-style-type: none"> • Water is available to meet the needs of people and the environment Actions: <ul style="list-style-type: none"> • Implementation of existing and future water sharing plans, including environmental water plans • Practices that retain water in the landscape • Practices that provide sustainable security of water supply for the community 						Aboriginal groups, Australian Government, ACT government, LLS, DPI (Fisheries NSW, NOW), Landcare, local government, non-government organisations, OEH (Regional Operations, Science), SCA
	SCH	FSC	M	S	T	

Part 5 – Background information

Acronyms

AANSW	Office of Communities, Aboriginal Affairs
ANZECC	Australian and New Zealand Environment Conservation Council
ABS	Australia Bureau of Statistics
ACT	Australian Capital Territory
ALG	African Lovegrass (<i>Eragrostis curvula</i>)
CAP	Catchment Action Plan
CAP 1	Southern Rivers Catchment Action Plan 2006–2016
CAP 2023	Southern Rivers Catchment Action Plan 2013–2023
CMA	Catchment Management Authority
DP&I	Department of Planning and Infrastructure
DPI	Department of Primary Industries (comprising Agriculture NSW, Fisheries NSW, Forests NSW, NSW Food Authority, Biosecurity NSW, NSW Office of Water, Catchments & Lands [including Crown Land] and Business Services)
EEC	Endangered Ecological Community
EPA	Environment Protection Authority
FSC	Far South Coast landscape
LHPA	Livestock Health and Pest Authority
LLS	Local Land Services
M	Monaro Landscape
MER	Monitoring, Evaluation and Reporting
MPA	Marine Parks Authority
NOW	NSW Office of Water
NPWS	National Parks and Wildlife Service
NRM	Natural Resource Management
NSW	New South Wales
OEH	Office of Environment and Heritage (including National Parks and Wildlife Service, Regional Operations and Science divisions)
RDA	Regional Development Australia
RFS	Rural Fire Service
S	Slopes Landscape
SCH	South Coast and Highlands landscape
SCA	Sydney Catchment Authority
SES	Socio-ecological System
T	Tablelands landscape
TEC	Threatened Ecological Community

Glossary

Aboriginal: For the purposes of South East CAP this includes Aboriginal and Torres Strait Islander people.

Adaptive management: A resource management approach based on the science of learning by doing. It involves testing the response of a system then applying this understanding to future decisions.

Biosecurity: Means the protection of the economy, environment and community from the negative impact of pests, diseases and weeds.

Community wellbeing: Wellbeing is related to concepts such as 'quality of life' (Vernon et al. 2009) and has been described as the stable state of being well, feeling satisfied and contented (Australian Unity 2012). Wellbeing is linked to personal and community health, social justice, security, interpersonal relationships, social networks and connectedness, education, housing and health of the surrounding environment (Vernon et al. 2009).

Connectivity: The degree to which land or water allows movement of plants and animals and the operation of ecological processes between different areas of habitat.

Corridor: A landscape element that connects two or more areas of habitat.

Drivers: Underlying forces that cause threats or positive processes to operate on the environment. Drivers may be internal to a system, such as knowledge or skills, or external, such as global market forces.

Focus: The focus in the South East CAP describes where to focus effort and investment to affect maximum change. The focus is defined for each strategy and, where relevant, are differentiated spatially across the region.

Fragmentation: The breaking up of natural areas into isolated patches. Habitat connectivity is lost through this process.

Goals: South East CAP goals express an end point that has an observable and measurable element. The South East CAP vision is delivered in the medium term (20 years) by the following three goals:

1. Sustainable economies and community wellbeing
2. Adaptive management and devolved decision making
3. Diverse, healthy, connected and productive natural environments.

Habitat: A place suitable for survival and/or reproduction of a particular plant or animal.

High carbon capture ecosystems: Forests, peatlands and blue carbon ecosystems (mangroves, tidal marshes and sea grass) are recognised as ecosystems with a high capacity to capture and store carbon. Degradation of these systems is of particular concern as the resulting carbon dioxide emissions contribute to climate change (Herr et al. 2012).

Key natural resource assets: The key natural resource assets of the South East region are land, vegetation, rivers, estuaries, marine, wetlands and groundwater.

Land and water manager: An individual or a collective who manages natural resources. They may be the land owner, leasee or an employee. They may be a private or public entity, private landholders, local government, NSW State Government and the Australian Government are all land and water managers.

Localism: Devolving where possible, functions, resources and accountability to capable local partners.

Management actions: The key activities required to implement the strategy. Many of the actions deliver multiple outcomes, within or across pillars. Implementation and investment planning will identify where actions deliver multiple outcomes.

Objectives: The set of more specific achievements that will jointly contribute to the South East CAP goals and are intended to direct the catchment community's efforts over the next 10 years.

Organic carbon: The amount of carbon bound in organic compounds in the soil. It is a prime biological determinant of soil health.

Pillars: The three pillars, 'people', 'governance' and 'natural resources' provide a framework for the set of strategies, targets and priority actions that are required to achieve progress towards the South East CAP vision.

Priority habitats: Identified through South East CAP consultation as under reserved and threatened vegetation types, threatened species habitat, high value fish habitat and high carbon capture ecosystems.

Resilience: The capacity of a system to absorb disturbance and still retain its basic structure and function.

River priorities:

- Conservation recovery potential: Where a section of river has relatively intact native vegetation that resists erosion, and river shape and behaviour is consistent with an undisturbed river, allowing fast, complete recovery from disturbance.
- High fragility river reach: A section of river that is highly susceptible to degradation due to the geology and shape of the surrounding landscape.
- High recovery potential: Where a section of river is in moderate condition. Recovery of good condition is occurring at a moderate rate but has potential to recover quickly if existing threats are removed.
- Rapid recovery potential: Where natural recovery of vegetation, river shape and/or behaviour that is consistent with an undisturbed river, is occurring rapidly.
- Strategic recovery potential: Where a degraded section of river poses imminent threat to an adjacent good condition section of river or a section of river is a significant feature of the catchment and is under threat of further degradation, such as a rare riparian vegetation type or fragile type of stream. Strategic recovery reaches may be in any condition state.

Socio-ecological system: An area with broadly consistent social, economic and environmental characteristics (e.g. landform, land use, climate and social structures) and therefore is a useful unit for planning and decision making.

Soil condition: The ability of soil to deliver a range of essential ecosystem services such as habitat, decomposition, nutrient and water cycling, climate regulation and support of primary production. Also referred to as soil health.

Stewardship: Within South East CAP stewardship refers to taking care of natural resources through responsible use and protection. It incorporates consideration of intergenerational responsibility for natural resource condition.

Strategies: South East CAP strategies describe what broad actions need to be undertaken to meet the objectives.

Sustainable community: A community of people that is economically, environmentally, and socially healthy and resilient while ensuring that adequate resources are equitably available for future generations. For further details go to: www.iscvt.org/what_we_do/sustainable_community/

Sustainable economy: An economy that operates within safe environmental limits and enriches people's lives with ongoing access for future generations to the resources and opportunities to live well.

System: A connected set of elements organised in such a way that they achieve a purpose or function. A system is more than the sum of its parts. Systems can exhibit adaptive, dynamic, goal-seeking, self-preserving and evolutionary behaviour (Meadows 2008).

Targets: Targets describe the specific results that will be evident if the South East CAP objectives have been achieved. They are key measures against which the performance of South East CAP implementation can be audited. More quantified targets, based on available resources, will be defined in implementation and investment plans.

Thresholds: The critical tipping point before a system changes into a different state, either desired or undesired.

Travelling Stock Reserve: means

- any route or camping place reserved for travelling stock route or camping place under the Crown Lands Act 198, or
- any reserve for travelling stock, water reserve, reserve for access or crossing (where the reserve is for the purpose of providing travelling stock with access to or a crossing of water, whether expressly notified for that purpose or not), or
- any stock watering place.

Vision: The vision 'sustainable communities, profitable industries, resilient landscapes' describes the long-term 50 year view of the future and is presented as an aspiration for the region.

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Supporting documentation

South East CAP is informed by a number of papers which are listed below and form the supporting documentation for the plan. This information is available through South East LLS OPEN, accessed through: www.southeast.lls.nsw.gov.au

South East CAP Papers:

- Adopting a resilience thinking approach – Future Makers or Future Takers?
- Alignment of South East CAP with existing state government policies, plans and strategies
- CAP 1 evaluation
- Description of the Far South Coast landscape
- Description of the South Coast landscape
- Description of the Tablelands landscape
- Embracing community wellbeing and livelihood
- Getting the scale right (spatial, temporal and institutional)
- Hawkesbury-Nepean Catchment Action Plan 2013 – 2023
- Lachlan (Kalare) Catchment Action Plan 2013 – 2023
- Land
- Murrumbidgee Catchment Action Plan 2013 – 2023
- Plants and animals
- Southern Rivers Catchment Action Plan 2013 – 2023
- Strategic decision making
- The Aboriginal community cultural landscape
- Understanding community, partners and landholders of the region
- Water



Pastor Ossie Cruse, Edrom (near Eden), NSW



Monaro landscape



Rock swirl



Dairy cattle, Jellat Jellat



*Short beaked echidna
(Tachyglossus aculeatus)*



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