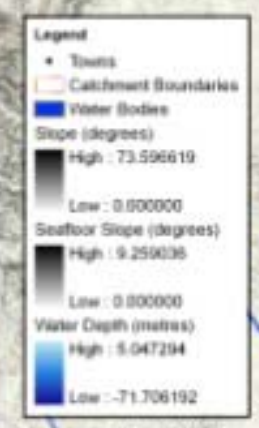
SEQ Natural Resource Management Plan Atlas

Part One: The Benchmark Atlas

Version 3.0
13 January 2010

Collated by SEQ Regional Coordination Group Mapping Group

SEQ Natural Resource Management Plan Technical Paper No. 1



SEQ Catchments
Healthy Land – Healthy Water

SEQTOA

CIRM

Council of Mayors
South East Queensland

Queensland Government
South East Queensland Regional Coordination Group

HEALTHY WATERWAYS

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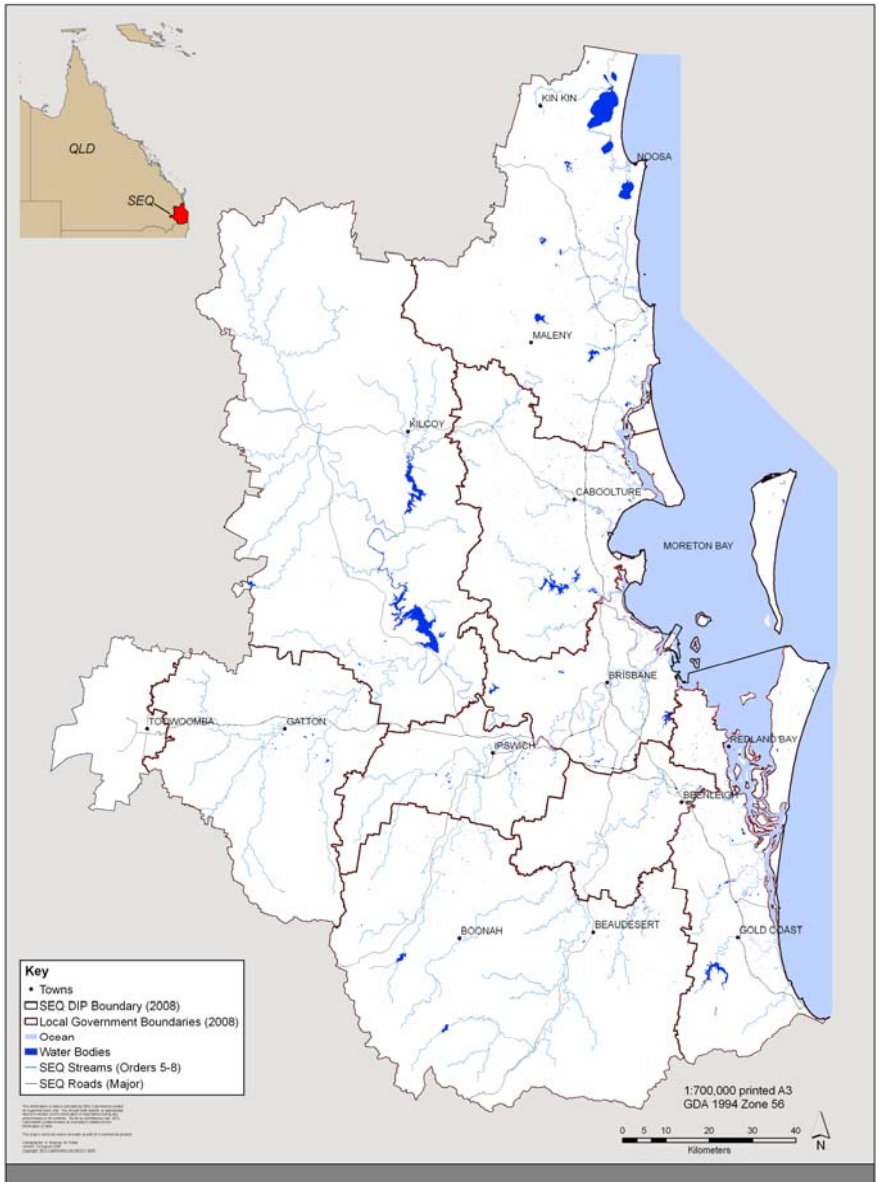
The South East Queensland Natural Resource Management Plan 2009– 2031

The *South East Queensland Natural Resource Management Plan 2009 – 2031* (the NRM Plan) lists measurable targets for the condition and extent of environment and natural resources aligned to desired regional outcomes and policies in the *South East Queensland Regional Plan 2009–2031*. (See Map: SEQ Planning Region)

The NRM Plan has been prepared to coordinate the efforts of people working in environment and natural resource management and guide sustainable development. The NRM Plan provides regional targets to address key pressures on the region, including: rapid urban population growth, climate change, and increasing demand for infrastructure, housing, essential services and consumables.

Implementation of the NRM Plan will ensure that we continue to work towards achieving good-quality water, air and soil, as well as healthy waterways, wetlands, rainforests, woodlands and coastal environments.

Map: SEQ Planning Region



Map: SEQ Planning Region

The SEQ Natural Resource Management Atlas (The Atlas)

The Atlas is in two parts:

Part One – The Benchmark Atlas*, contains regional benchmark maps which have been generated using the best available data to provide a spatial representation or picture of the region as it was at the time the data was collected. This allows the calculation of a benchmark (e.g. number of hectares of remnant vegetation) that the corresponding target will aim for by 2031 and can be used to measure achievement toward the target.*

Part Two - Target Atlas*, will contain Target Implementation Maps (TIM) to be developed in consultation with stakeholders to identify necessary actions and priority areas for on ground projects to achieve each Regional Target or combination of Targets (e.g. land, water).*

Frequently asked questions about the Atlas

Q: Why are different benchmark years identified in targets?
A: Each target is referenced to the most recent and best available region-wide data to establish a baseline for evaluating changes in condition and extent over time. As a result, the benchmark year will vary. Where no region-wide baseline data set currently exists, one of the first key actions for that target will be to address the information gap to establish a suitable benchmark.

Q: What about using better quality local data sets to inform the baseline for targets?
A: In the first instance, the targets must establish a baseline for the whole of the southeast region. Where better quality local data is available (e.g. local government vegetation mapping), activities to identify and include these data sets will be one of the first actions taken to improve the SEQ NRM Plan atlases.

Q: Environment and natural resource management is traditionally aligned to catchment boundaries, yet the boundary adopted by the SEQ NRM Plan is the same as the statutory SEQ Regional Plan. What is the approach to deal with the cross-boundary issues?
A: As with most plans, there are many potential boundary-related issues: catchment boundaries, local government boundaries, NRM regional body boundaries, etc. The critical concern is that implementation and investment activities are coordinated to ensure outcomes are achieved. This will be a key element in the implementation approach for the plan.

Part One – The Benchmark Atlas

Introduction

This report details the data sets and methodology used to benchmark the Resource Condition Targets (RCTs) for the NRM Plan i.e. what is the current extent or condition of our natural assets in SEQ?

To achieve the Desired Regional Outcomes (DROs) and the overall vision for the region by 2031, it is imperative that each target is described in a way that provides a measure of the required extent and condition of natural assets. This allows us the ability to measure progress towards the achievement of the target at regular intervals to ensure activity remains focused and integrated.

As current data to describe the extent and condition of these assets is not always available, the year in which reliable data was collected is nominated as the benchmark year.

A benchmark is a point of reference by which something can be measured.

Regional versus Local Data

It is also important to note that this benchmark atlas is based primarily on State and Regional Government data sets to enable comparability and consistency across the broader Southeast Queensland region. It should be noted that many local governments within the region have finer scale mapping of their natural assets. If you are examining the benchmarks and targets for a particular local government area, please contact the relevant local government to ascertain the availability of finer scale mapping.

Benchmark versus Implementation of SEQ NRM Targets

The maps contained in this report are Benchmark Maps and do not necessarily display where actions should be carried out to achieve the regional targets. Target Implementation Maps are required to overlay current constraints and opportunities for action that will support the achievement of the regional targets. These maps are currently under development and will guide the implementation of the NRM Plan. Target Implementation Maps will require analysis by the community and other NRM stakeholders including Local and State Government to identify realistic on ground actions and possible policy and planning actions to support the achievement of regional targets. The Benchmark Maps in this report have been produced to allow the quantification of the target and to ascertain the measurability of the target.

Benchmark Atlas Data Catalogue

Data utilized in this Atlas is described in the Benchmark Atlas Data Catalogue in Appendix A.

Landscape and Biodiversity Scientific Expert Panel Review

The Landscape and Biodiversity Scientific Expert Panel (SEP) is a skills based panel aligned to the Land, Biodiversity and Nature Conservation resource condition targets in the *SEQ Natural Resource Management Plan 2009-2031.*

The Panel met on Wednesday 4 November 2009 as the start of a process to provide independent advice on the landscape and nature conservation aspects of the *Draft SEQ Natural Resource Management Plan ATLAS - Part One: The Benchmark Atlas.*

Specifically the panel was asked to provide advice on the Benchmark Maps for the Land and the Nature Conservation resource condition targets. This involved considering if the benchmark maps are:

- an accurate spatial representation of the current state or extent of resources in SEQ;
- a relevant expression of the types of information needed to establish a benchmark for each of the resource condition targets;
- adequate as a spatial layer to support each of the resource condition targets; and
- currently not developed due to data limitations, what types of information are needed to establish a benchmark?

(See appendix D for summary)

Acknowledgements

SEQRCG acknowledges organizations and agencies that have provided data through a series of data sharing agreements that have made this Atlas possible. Special thanks to SEQ Catchments Mapping Team (Shannon Mooney, Mik Petter and Andrew Davidson), Ross Brown and Ammie Stone, Department of Environment and Resource Management, and all others who have provided ongoing support.

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Table 1 - Summary of Data Sets used to map benchmark values.

Note: Data utilized in this Atlas is described in full in the Benchmark Atlas Data Catalogue in Appendix A.

SEQ NRM Plan RCTs	Data Set	Benchmark	Why have this target?
AIR and ATMOSPHERE			
A 1 Greenhouse Gases By 2031, the region will make an equitable contribution to the national and regional targets for reduction in greenhouse gas emissions.	No agreed dataset	No benchmark currently available.	
A 2 Air Quality By 2031, the levels of air pollutants in the SEQ air shed will be at or below the quality objectives in the appropriate Schedule of the Environmental Protection (Air) Policy 2008.	No agreed dataset	No benchmark currently available.	
A 3 Thermal pollution By 2031, SEQ thermal pollution will be at or below 2003 levels.	No agreed dataset	No benchmark currently available.	
A 4 Noise Pollution By 2031, SEQ noise pollution will be at or below 1998 levels.	No agreed dataset	No benchmark currently available.	
A 5 Light Pollution By 2031, SEQ light pollution will be at or below 1998 levels.	No agreed dataset	No benchmark currently available.	
COASTAL AND MARINE			

SEQ NRM Plan RCTs	Data Set	Benchmark	Why have this target?
CM 1 Seagrass, saltmarsh and mangroves By 2031, the extent of seagrass AND mangrove ecosystem (including saltmarsh) in bays and estuaries is greater than or equal to that in 1988 and 2001 respectively.	• Seagrass Cover (DPI&F, 1984-1988). • Coastal Vegetation - Land Zone 1 features captured from Regional Ecosystem Dataset (Department of Environment and Resource Management, DERM).	The total area of seagrass meadows in 1988 was 27,085 ha. Coastal vegetation (mangroves, saltmarsh and samphire) 2001 extent was 21,287 ha.	Seagrass is an indicator of the health of Moreton Bay. Seagrass extent, density and type provides a measurable indicator of the health of the Bay and waterways. Mangrove forests provide important habitat and nursery areas particularly for juvenile fish, crabs and prawns. A reduction in the extent or condition of mangroves may indicate a loss in the functionality of our coastal and marine areas.
CM 2 Coral By 2031, the condition and spatial distribution of soft and hard corals is maintained at 2005 levels.	• Reef (DERM, 2005). • Moreton Bay Coral (DERM, 2004).	2,856 ha of reef. This figure includes some island area including Mud Island. Recorded coral was 1,351 ha in 2004.	Overtime in SEQ, submerged rocky outcrops have been colonised by hard and soft corals and other invertebrates, making rich reefs and habitat for a wide variety of marine life.
CM 3 Headlands, Beaches and Dunes By 2031, the condition of open coastlines (headlands, beaches and dunes) is at or better than in 2006.	• Landcover (SEQC, 2006) • High Energy Beach (SEQC, 2006)	The area of the Beach Buffer Zone that was disturbed has been used as an indicator of condition of the coastline. A total of 310 ha was disturbed within the Beach Buffer zone including non vegetated (218.69 ha), road (62.09 ha), canal (0.73 ha), and irrigated crop and pasture (29.04 ha). A total of 4,009 ha of beaches and sand.	Headlands, beaches and dunes provide barriers and vegetation to buffer the effects of extreme weather events such as cyclones and storm surges on life, property and infrastructure. High Energy Beach refers to the Ocean Beach. (see Glossary)
CM 4 Fish Stocks By 2031, wild fishery stock condition will be sustained at sufficiently high levels to support commercial, recreational and indigenous cultural fisheries, based on the 1995–2005 benchmark (ten-year rolling average).	No agreed dataset	Benchmark and monitoring program to be developed based on Fisheries Performance Measurement System for recreational and commercial catch data (Queensland Primary Industries and Fisheries).	Measuring the quantity of fish, crab, prawns and other species provides an indication of the productivity and health of our coastal waters.

SEQ NRM Plan RCTs	Data Set	Benchmark	Why have this target?
CM 5 Marine Species By 2031, the extent and condition of the habitat of bottlenose and indo pacific humpback dolphins, dugongs, sharks, turtles and wader birds is equal to or greater than that in 2001 for each species**.**	• Dolphin Density, Dugong Density, Turtle Density (based on Wildnet records, DERM 2007). • SEQ Waders (DERM, 1998) • Turtle Rookery	Total Wader habitat 65,828 ha includes Pumicestone Passage and beaches etc. of which 445 ha is Critical Wader Habitat including high roost sites. Currently 9 Turtle Rookery sites are known across SEQ.	The presence of iconic species is an indicator of the health of our coastal and marine environments and is a key contributor to the tourism industry.
CM 6 Coastal Algal Blooms By 2031, the extent and frequency of coastal algal blooms (CAB) are reduced from 2002-2005 benchmark (5 year rolling average).	EHMP Technical report has Lyngbya in Moreton Bay mapped. Data to be sourced.	No benchmark currently available.	Algal blooms in estuarine and marine waters of SEQ have been increasing in frequency and extent since the mid-1990s. Algal blooms impact on water quality, biodiversity, human health, and the recreational and commercial values of coastal waterways
CM 7 Coastal Wetlands By 2031, the extent (ha) of SEQ coastal wetlands connecting fresh and marine habitat (including fish passage) is equal or greater than that in 2007.	Wetland System (DERM, Version 2 October 2009)	Total Coastal Wetlands is 22,738 ha (Estuarine Wetland Class).	Coastal wetlands provide critical habitat and key ecosystem functions within the coastal zone. The connection of coastal wetlands to other water bodies such as rivers, creeks, estuaries and oceans is a critical component for ecosystem function.
COMMUNITY			
C1 By 2031, natural resource managers, government and non-government organisations will be resourced and working together to implement the SEQ NRM Plan.	No agreed dataset	No benchmark currently available.	The region has a history of voluntary community action supported by industry and government investment. The majority of the the region is managed by private landholders. Enhancing and maintaining the capacity and ability of the community to engage in planning, implementation and monitoring of local actions to support achievement of regional targets is therefore a priority.
LAND			
L 1 Secondary Salinity By 2031, the area of secondary salinity in SEQ will be at least 10% less than in 2008.	Salinity Extent Mapping for SEQ (DERM).	Total area of salinity identified is 17,699 ha. To achieve the target of 10% less salinity, the new extent must be 15,929 ha. (10% is 1,770 ha)	The ability of our land assets to efficiently meet the needs of existing and future communities require that they are not impacted by salinity or soil health decline in general.
L 2 Good Agricultural land By 2031, >90% (>266,667ha) of SEQ good agricultural land at 2004 is available for sustainable agriculture.	Agricultural Land Classes (DERM, 2004).	Total area of A, B and C Class lands equates to 1,414,185 ha. Target of 90% is 1,272,766 ha. (19,050 ha of agricultural lots less than or equal to 1 ha).	The ability of the SEQ Region to produce food and fibre is fundamental to meeting the needs of existing and future communities. The number of small lots allows a measure of fragmentation and potential impacts on productivity.

SEQ NRM Plan RCTs	Data Set	Benchmark	Why have this target?
L 3 Soil Acidity By 2031, the area of acidified agricultural soils within SEQ will be reduced by 50% from the 2008 baseline.	Soil Acidity Risk Mapping (DERM). Further analysis of organic matter data required. Any targets or sampling need to relate to the National Soil Health Monitoring Framework to be released soon. Suggested project with DERM to establish representative soil sampling sites across the region for sampling at 5 yr intervals.	Total of 57,110 ha high risk soil acidity area. Target of 50% as per target is 28,555 ha.	The ability of our land assets to efficiently meet the needs of existing and future communities requires that they are not impacted by soil health decline.
L4 Organic Matter By 2031, the level of soil organic matter (carbon in t/ha) in agricultural soils will be higher than in 2008 or baseline year.		No benchmark currently available.	
L 5 Acid Sulfate Soils By 2031, the area of "severe" soil acidification caused by the disturbance of ASS is lower than that in 2008.	• Acid Sulfate Soils Risk mapping (DERM, 2006) • Land less than 5 m (SEQ Catchments, 2008) • Acid Sulfate Soils by Land Cover (SEQ Catchments, 2006).	Non Vegetated/Disturbed 28,744 ha (40%) of total risk area of 72,233 ha of Acid Sulfate Soils.	Acid Sulfate Soils (ASS) are formed through natural processes and are generally covered over by other soils. However, when ASS are exposed to air by drainage or digging and then wet again, highly acid drainage water is produced. Acid runoff causes a range of detrimental impacts to the environment, coastal development, fishing and agricultural industries
L6 Soil Erosion By 2031, the extent of erosion from hill slopes and gullies will be reduced by 50% from the 2008 baseline.	• Erosion Risk (SEQC) The adoption of 4 data sets to identify potential erosion areas. Data layers include Stream Bank Hazard (no trees on waterways), Low Grass Cover (<30% cover), Landslip Hazard (areas with a slope of 12-45 degrees with no woody vegetation), and outputs of the revised universal soil loss estimate (RUSLE).	Total area of high and very high soil erosion risk is 255,026 ha. Target is to reduce risk area by 127,513 ha.	Degradation from soil erosion, both on site (e.g. gullies loss of nutrients) and offsite (damage to infrastructure, siltation of dams, increased cost for treatment of water supplies) is difficult to quantify but includes considerable private and public community costs.
L 7 Grazing Land Condition By 2031, 75% of grazing land in SEQ will be in a 'good' condition.	No agreed dataset.	No benchmark currently available.	The management of grass cover to manage soil erosion and mass movement (landslip) is fundamental to the sustainable management of land resources. Improving land condition increases the productive potential of grazing lands and enhances biodiversity.
L8 Land Contamination By 2031, existing contamination sites and off-site impacts will be reduced; and no new sites will be created over the 2008 baseline data.	Dataset from Department of Environment and Resource Management (DERM) – not available at this time.	No benchmark currently available.	Soil contamination can potentially cause sickness or death in people, plants and animals. Long-term soil contaminants such as persistent organochlorine pesticides (dieldrin and heptachlor), cadmium, lead and high energy radiation are more insidious because they can accumulate

SEQ NRM Plan RCTs	Data Set	Benchmark	Why have this target?
			to unacceptable levels in food plants and farm animals without causing visible harm to their host.
L9 Extractive Resources By 2031, extractive resources within "Key Resource Areas" in SEQ will be available for their highest use with no net loss of other environmental and landscape values.	Key Resource Area (KRA) and Separation Area databases (DERM, 2007).	Total Key Resource Area is 10,329 ha. The Separation Area is 18,536 ha which provides a buffer to the KRA's.	Mining and extractive resources are protected by a State Planning Policy which allows these resources to be accessed. This creates potential conflicts for the achievement of other RCTs such as Nature Conservation. Having a target for extractive industry in the SEQ NRM Plan enables the offsetting requirements of this industry to achieve a no net loss of other environmental and landscape values as represented by other RCTs.
NATURE CONSERVATION			
NC1 Remnant and Woody Vegetation By 2031, the 2001 extent of regional vegetation cover – including both remnant vegetation (35%) and additional non-remnant woody vegetation (22%) – will be maintained or increased.	• Remnant Vegetation based on Regional Ecosystems of Queensland Version 4.0 (DERM, 2003) and Version 4.1 (DERM, 2004) • Woody Vegetation based on 2001 Statewide Land and Tree Study (SLATS) (DERM, 2009) • Queensland Herbarium Report on Clearing and Status of Regional Ecosystems (DERM)	Total Remnant is 810,685 ha (35%). Total Woody Vegetation is 646,128 ha (28%).	There is a broad recognition that at least 30% remnant vegetation cover is required to maintain a minimum level of species and ecosystem function throughout a region. Studies have also indicated a progressive decline of species and greater rate of extinctions with incremental habitat loss.
NC2 – Vegetation Fragmentation and Connectivity By 2031, there will be no net fragmentation of larger tracts (greater than 5000 ha), and 20% of priority smaller tracts (less than 5000 ha) will be better connected than the 2003 baseline.	• Remnant Vegetation based on Regional Ecosystems of Queensland Version 4.0 (DERM, 2003) and Version 4.1 (DERM, 2004) • Woody Vegetation based on 2001 Statewide Land and Tree Study (SLATS) (DERM, 2009) • SEQ Roads based off State Digital Road Network (DERM, 2007)	Core Tracts (larger tracts >5000 ha) of which there are 21 in SEQ. Total number of non core (smaller tracts 100ha – 5000 ha) is 362 in SEQ. Priority non core tracts (20% of 362) is 72 ie. need to connect at least 72 smaller tracts to the 21 larger tracts.	Large areas of vegetation and vegetation corridors support ecological processes that are important if the region is to maintain its rich biodiversity and clean air and water.

SEQ NRM Plan RCTs	Data Set	Benchmark	Why have this target?
NC3 Wetlands By 2031, the 2008 extent and condition of SEQ wetlands will be maintained or increased.	Wetland System (DERM, Version 2 October 2009)	Total extent of wetlands is 162,742 ha.	Wetlands assist in the maintenance of water quality and provide habitat and food for fish, birds and animals.
NC4 Vulnerable Ecosystems By 2031, at least 4% of the original pre-clearing extents of vulnerable regional ecosystems will be represented in protective measures.	• Regional Ecosystem Distribution Database (REDD) (DERM, 2007) • Remnant Vegetation based on Regional Ecosystems of Queensland Version 4.0 (DERM, 2003) and Version 4.1 (DERM, 2004)	154 Regional Ecosystems (REs) in SEQ; ▪ 102 of these are identified as Not of Concern and have greater than 4% in reserve (protected); ▪ The remaining 52 are vulnerable REs made up of: o 29 REs have less than 4% in reserve (protected) including 10 Endangered, 12 Of Concern and 7 Not of Concern; o 12 REs are Of Concern; o 11 REs are Endangered.	The large number of REs that we currently have in SEQ work together to carry out the ecological processes that provide ecosystem services. We do not know what it might mean for the ability of the region to provide these services if we were to start losing REs. We need to maintain or improve the number and type of REs that we have in protective measures if we are to ensure the ongoing provision of important ecosystem services.
NC5 Threatened Species In 2031, the 2008 conservation status of native species will be maintained or improved.	SEQ Biodiversity Planning Assessment V3.5 (DERM).	Refer to Appendix C for full list of Endangered Vulnerable and Rare (EVR) and Back on Track species.	To maintain a healthy natural environment that supports the region's rich biodiversity, the conservation status of these species should be improved or maintained.
NC6 Habitat for Priority Taxa By 2031, the 2001 extent and condition of habitat for priority taxa will be maintained or increased.	• SEQ Biodiversity Planning Assessment V3.4 (DERM). • Brigalow Belt Biodiversity Planning Assessment V1.3 (DERM). • Wildnet (DERM, 2007).	Total area is 689,610 ha which includes Core Habitat for EVR (165,628.5 ha) and Priority Taxa (632,740.5 ha).	In order to keep taxa from becoming endangered, vulnerable, rare we need to keep the core habitat or those areas that provide food and shelter for these plants and animals.
REGIONAL LANDSCAPE AREAS			
RLA 1 – Landscape Heritage By 2031, at least 90% of the 2011 area of regionally important landscape heritage will be retained within each local government area.	• Estate Boundaries (DERM, 2009) • Ramsar (DERM) • Heritage Places Register (DERM) • Marine Park (DERM, 2008)	Combined area is 586,783 ha.	Landscapes are important in preserving environmental, sociocultural and historic connections, including landscapes with cultural significance.

SEQ NRM Plan RCTs	Data Set	Benchmark	Why have this target?
	• World Heritage Areas (DERM, 2005) • National Estate Register (AG DEWHA)		
RLA 2 – Outdoor Recreation Settings By 2031, the 2011 extent of regional outdoor recreation settings will be maintained or increased.	No agreed dataset.	No benchmark currently available.	
RLA 3 – Outdoor Recreation Demand By 2031, 90% of the demand for outdoor recreation will be met through a mix of public land, waterways and the voluntary provision of opportunities on private land.	No agreed dataset.	No benchmark currently available.	
RLA 3 – Outdoor Recreation Demand By 2031, 90% of the demand for outdoor recreation will be met through a mix of public land, waterways and the voluntary provision of opportunities on private land.	No agreed dataset.	No benchmark currently available.	
RLA 4 – Regionally High Scenic Amenity By 2031, the area of regionally high scenic amenity will be maintained or improved from the 2004 baseline.	Scenic Amenity Rating (SEQROC, 2004).	Total area of Regionally Significant (Value 9-10) Scenic Amenity is 637,607 ha.	Scenic amenity is the measure of a landscape's scenic qualities, reflecting the psychological benefit that the community derives from viewing the region's wide variety of landscapes. Examples of outstanding scenic qualities include beaches, ranges and farmlands.
RLA 5 – Locally Important Scenic Amenity By 2031, at least 80% of the 2004 area of locally important scenic amenity within each local government area will be retained.	Scenic Amenity Rating (SEQROC, 2004).	1,606,211 ha locally important scenic amenity.	Scenic amenity is the measure of a landscape's scenic qualities, reflecting the psychological benefit that the community derives from viewing the region's wide variety of landscapes. Examples of local scenic qualities include parks, waterways, view sheds and local landmarks.
TRADITIONAL OWNERS			

SEQ NRM Plan RCTs	Data Set	Benchmark	Why have this target?
T01 By 2031, Traditional Owners and Aboriginal people will be resourced and working together with natural resource managers, government and non-government organisations to implement the SEQ Natural Resource Management Plan and the Cultural Resource Management Plan.	The capacity of Traditional Owners and Aboriginal People will be enhanced as part of the implementation of SEQTOA's Cultural Resource Management Plan and suitable indicators identified to benchmark and measure this target.	No benchmark currently available.	Recognition of Traditional Owners as natural resource managers is one of the Guiding Principles of the *SEQ NRM Plan*. Although shaped by human occupants for tens of thousands of years prior to 1824, the region's lands, waters, atmosphere and biodiversity were unaffected by the impacts of development. Non-Aboriginal settlement has had impacts. Natural resource planning, management and action can be guided by holistic traditional knowledge and values: the spiritual and respectful attitudes to "country" of the Traditional Owners are a key to the recovery of significant values. A key activity is to achieve active involvement of Aboriginal and Torres Strait Islander peoples in community planning and decision making and ensuring they are engaged in business about their country.
WATER			
W 1 Environmental flows By 2031, environmental flows will meet aquatic ecosystem health and ecological process requirements.	No agreed dataset	No benchmark currently available.	Downstream habitats can be altered by dams, water extraction, land modification and point source discharges which disrupt natural flow regimes. Ecosystem processes, the life cycles of aquatic species and the distribution and abundance of aquatic life may be affected where flows are disrupted. This occurs in most waterways in SEQ and it threatens the long term viability of aquatic ecosystems.
W 2 Groundwater levels By 2031, 75% of SEQ Groundwater Resource Units will have ground water levels within identified acceptable annual ranges.	DERM to develop a methodology to establish acceptable range based on historic data. Monitoring programs exists in a number of groundwater systems. Further programs to be assessed.	No benchmark currently available.	The rate of groundwater recharge varies across SEQ. In some areas, the level of the water table determines whether there is water in the streams. A high rate of groundwater extraction for increasing irrigation and urban use, coupled with expanding drought conditions, is placing groundwater resources across the region under pressure.
W 3 Groundwater quality By 2031, ground water quality (nutrients and EC measurements) in all SEQ Groundwater Resource Units will be within identified acceptable annual ranges.	DERM to develop a methodology to establish benchmark and ongoing monitoring building on work in the Lockyer.	No benchmark currently available.	Rapid population growth is increasing the area of rural residential areas and urban developments with a corresponding increase in septic and sullage wastewater discharges which can seep into the groundwater system. Urban areas also present a wide variety of groundwater pollution sources including fuel stations, industrial sites, contaminated sites, dumps and landfills. Agriculture and

SEQ NRM Plan RCTs	Data Set	Benchmark	Why have this target?
			intensive industry are other potential sources of increased nutrient concentration in groundwater.
W4 Groundwater dependent ecosystems By 2031, the condition of groundwater ecosystems and groundwater dependent ecosystems will be within identified acceptable annual ranges.	• Wetland System (DERM, Version 2 October 2009) • Regional Ecosystems, Version 5.0 (DERM, 2005)	Combined total is 82,384 ha.	Groundwater in aquifers and caves supports unique ecosystems with a variety of organisms which spend their whole life underground and are subject to extremely uniform conditions compared with surface life. Groundwater interacts with surface water and these interactions support the structure and function of groundwater dependent ecosystems including springs, streams, wetlands and swamps.
W 5 High Ecological Waterways In 2031, High Ecological Value waterways in SEQ will maintain their 2008 classification.	Environmental Values (EV) and Water Quality Objectives (WQOs) for Moreton Bay/South-east Queensland (DERM, 2007)	As mapped.	High ecological value (HEV) waterways scheduled under the Environmental Protection (Water) Policy (EPP) 1997 are effectively unmodified or other highly valued systems, typically (but not always) occurring in national parks, conservation reserves or in remote and/or inaccessible locations. High priority areas that represent critical aquatic and riparian habitat and areas which make an important contribution to waterway health (including water quality) in the region need to be protected and conserved.
W 6 Waterways maintenance and enhancement In 2031, scheduled water quality objectives for all SEQ waterways will be achieved or exceeded.	Environmental Values (EV) and Water Quality Objectives (WQOs) for Moreton Bay/South-east Queensland (DERM, 2007)	No benchmark currently available.	This target includes potable or drinking water supplies from streams and dams. The achievement of this target is crucial for the supply of clean drinking water. Management focused on achieving or maintaining the WQOs necessary to support agreed Environmental Values (EVs) provides the most secure approach to minimising the social, economic, public health and environmental risks associated with a decline in water quality in SEQ waterways.
W 7 Waterways Restoration By 2031, waterways classified as ranging from slightly to moderately disturbed and/or highly disturbed will have ecosystem health and ecological processes restored.	Ecosystem Health Monitoring Program (SEQ HWP)	No benchmark currently available.	The health of waterways is crucial to the health of receiving waters such as Moreton Bay.

Asset: Air and Atmosphere

Note: Results for Air and Atmosphere are indicators to assist further calculations of benchmarks.

A 1 Greenhouse Gases

By 2031, the region will make an equitable contribution to the national and regional targets for reduction in greenhouse gas emissions.

Dataset
National Pollutant Inventory (NPI) Data for 2005

Methodology
National Pollutant Inventory 2005 (NPI) data was mapped. Data is point source only, primarily from large stationary sources. Carbon Monoxide (COx) was mapped using density function, grouping point source emissions for a 500 m radius. In urban areas, motor vehicles are the major source of carbon monoxide. Power stations, domestic wood heaters and bushfires are other sources of carbon monoxide.

Results from Tarong Power Station are included in brackets because although the power station is not officially in the SEQ Airshed it is presumed to contribute pollutants to the Airshed.

Results
For Carbon Monoxide Emission, there are 153 point sources totaling 13,198,211 kg (13,198 tonnes/year).
SEQ Air Shed data totals 600,772 tonnes/year for 2005 (figure includes emissions from motor vehicles and bushfires).
This brings **total CO Emissions for SEQ to 613,970 tonnes/year** (2005 year).
(Tarong COx – 1,651 tonnes/year)

A 2 Air Quality

By 2031, the levels of air pollutants in the SEQ air shed will be at or below the quality objectives in the appropriate Schedule of the Environmental Protection (Air) Policy 2008.

Dataset
National Pollutant Inventory (NPI) Data for 2005

Methodology
Using NPI data for 2005, NOx, SOx and Particulate Matter Emissions were mapped. Particles with diameters less than 10 micro m are inhalable and pose the greatest risk to human health, referred to as PM10.

Results from Tarong Power Station are included in brackets because although the power station is not officially in the SEQ Airshed it is presumed to contribute pollutants to the Airshed.

Results
Oxides of Nitrogen – 126 point sources totaling 11,404,345 kg (11,404 tonnes/year).
SEQ Air Shed data totals 82,193 tonnes/year.
Total NOx Emissions for SEQ 93,597 tonnes/year (2005 year).
(Tarong NOx – 49,448 tonnes/year)

Sulphur Dioxide – 126 point sources totaling 15,906,002 kg (15,906 tonnes/year).
SEQ Air Shed data totals 6,493 tonnes/year.
Total SOx Emissions for SEQ 22,399 tonnes/year (2005 year).
(Tarong SOx – 30,791 tonnes/year)

Particulate Matter – 124 point sources totaling 5,137,756 kg (5,138 tonnes/year).
SEQ Air Shed data totals 18,146 tonnes/year.
Total PM10 Emissions for SEQ 23,284 tonnes/year (2005 year).
(Tarong PM10 – 30,791 tonnes/year)

There are other point source substances being monitored for the NPI.

A 3 Thermal pollution
By 2031, SEQ thermal pollution will be at or below 2003 levels.

A 4 Noise Pollution
By 2031, SEQ noise pollution will be at or below 1998 levels.

A 5 Light Pollution
By 2031, SEQ light pollution will be at or below 1998 levels.

Asset: Coastal

CM 1 – Seagrass and Mangroves

By 2031, the extent of seagrass and mangrove ecosystems (including saltmarsh) in bays and estuaries is greater than or equal to that in 1988 and 2001 respectively.

Dataset
Seagrass Cover (based on Seagrass meadows, QPI&F 1984-1988)
Coastal Vegetation (based on Remnant Vegetation 2001, DERM)

Benchmark
1988 used for seagrass as this is when data was first collected and a return to this extent is seen as favourable as an indicator for the health of the bay and the quality of waters received by the Bay. 2001 has been adopted for mangroves, saltmarsh and samphire as the most accurate benchmark dataset available.

Methodology
Seagrass data adopted.
Land Zone 1 features captured from Remnant Vegetation 2001 database to provide a coverage of mangroves, saltmarsh and samphire.

Results
The total area of seagrass meadows in 1988 was 27,085 ha.

Table CM1.1: Seagrass by Percentage Cover 1988

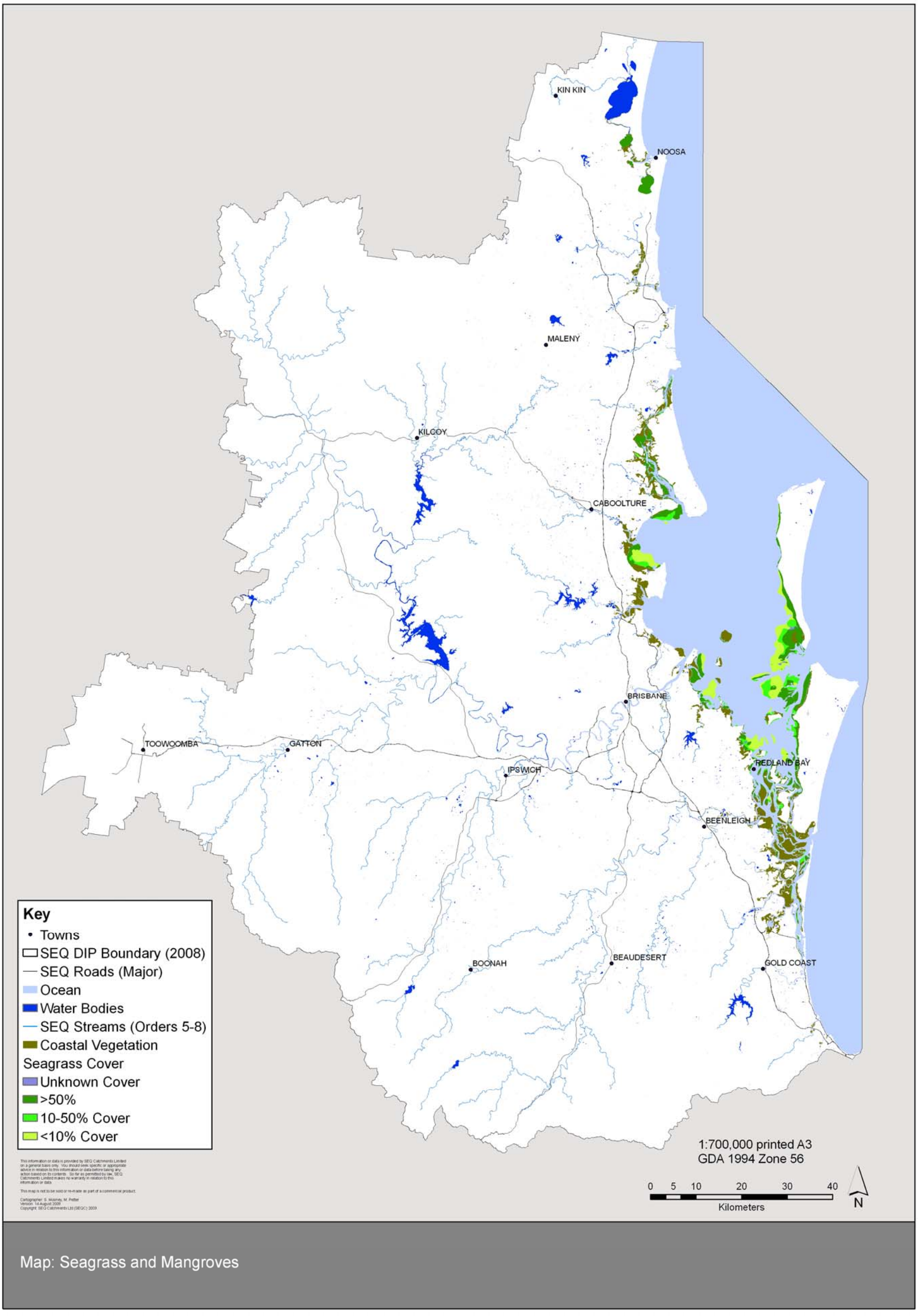
Cover Category	Area (ha)
Unknown Cover	447
>=50%	14,928
10-50%	4,025
<=10%	7,685
Total	**27,085ha**

Coastal vegetation (mangroves, saltmarsh and samphire) 2001 extent was 21 287ha.

Status of Benchmark
Complete
Note: Seagrass data collected in 1987 report released in 1989.

Rationale
Seagrass and coastal vegetation chosen as indicators for the health of sheltered estuarine ecosystems. These ecosystems provide important habitat and nursery areas for marine life and a range of fauna species (e.g. birds, invertebrate).

Data Review
Unknown



Map: Seagrass and Mangroves

Map: Seagrass and Mangroves

CM 2 – Coral

By 2031, the condition and spatial distribution of soft and hard corals is maintained at 2005 levels.

Dataset
Reefs (SEQ Coastal Management Plan Reef Dataset, DERM 2005)
Moreton Bay Coral (DERM, 2004)

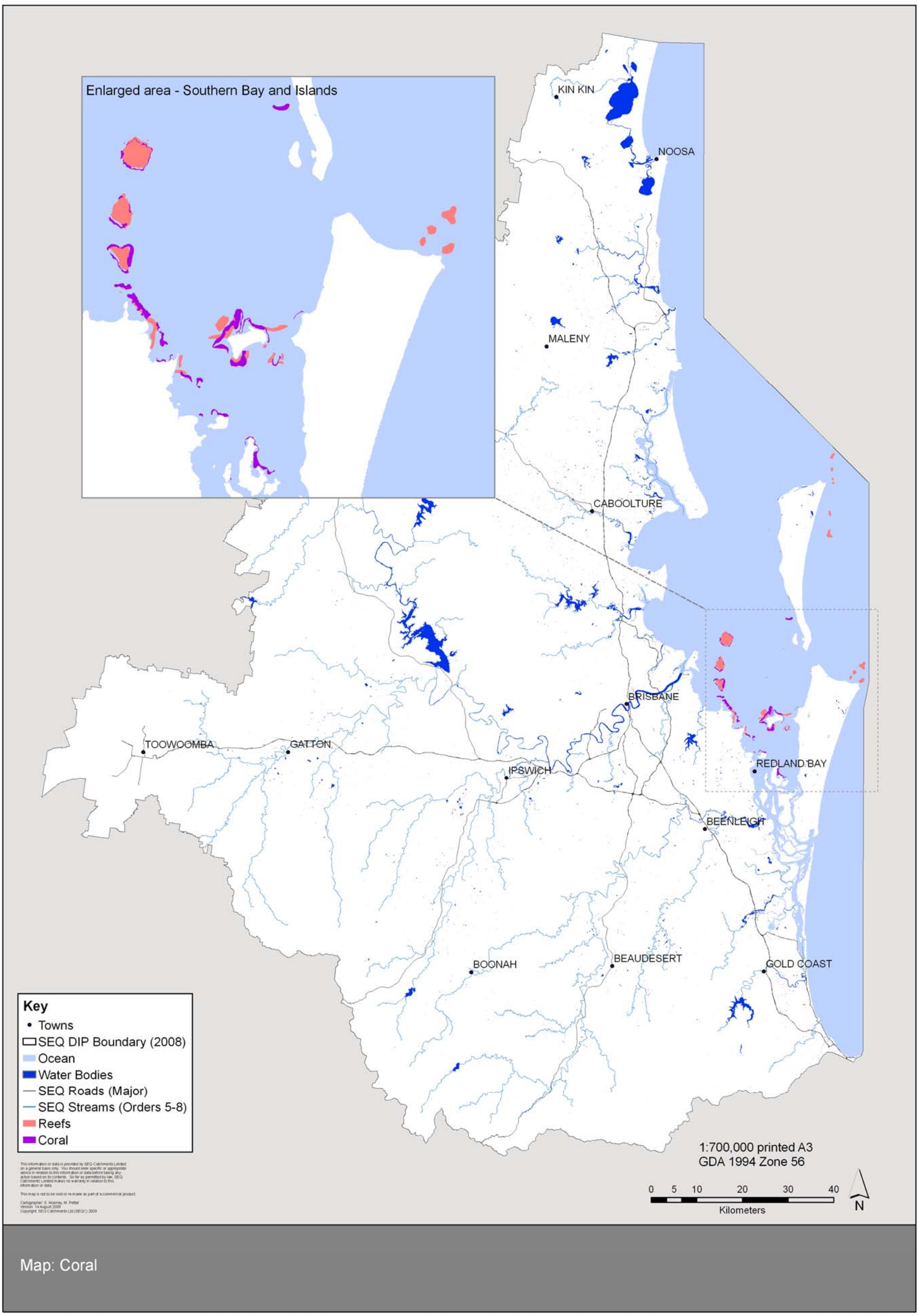
Benchmark
Reef extent 2005
Coral extent 2004

Methodology
Dataset adopted in full.

Results
Reef 2,856 ha (this figure includes some of the islands including Mud Island).
Coral 1,351 ha.

Status of Benchmark
Benchmark should incorporate Reef Watch data to provide condition rating.
Exclude areas above Highest Astronomical Tide (HAT) to eliminate islands in future calculations.

Data reviewed
Unknown


Enlarged area - Southern Bay and Islands
KIN KIN
NOOSA
MALENY
CABOOLTURE
BRISBANE
TOOWOOMBA
GATTON
IPSWICH
REDLAND BAY
BEENLEIGH
BOONAH
BEAUDESERT
GOLD COAST
Key
Towns
SEQ DIP Boundary (2008)
Ocean
Water Bodies
SEQ Roads (Major)
SEQ Streams (Orders 5-8)
Reefs
Coral
1:700,000 printed A3
GDA 1994 Zone 56
0 5 10 20 30 40
Kilometers
N
Map: Coral

Map: Coral

CM 3 Beaches

By 2031, the condition of open coastlines (headlands, beaches and dunes) will be at or better than in 2006.

Dataset
Landcover (SEQC, 2006)
High Energy Beach (SEQC, 2006)

Benchmark
2006 is the most recent and accurate dataset available.

Methodology
Beach identified through 2006 landcover analysis and applied 50 m buffer zone from the beach. The ocean side was removed and landcover types were applied to the buffer.

Results
A total of 4,009 ha of beaches and sand.

Table lists the landcover types in the 50 m buffer zone to identify disturbed areas at risk of damage and loss of condition.

Table CM3.1 - Landcover types in the 50 m Beach Buffer Zone

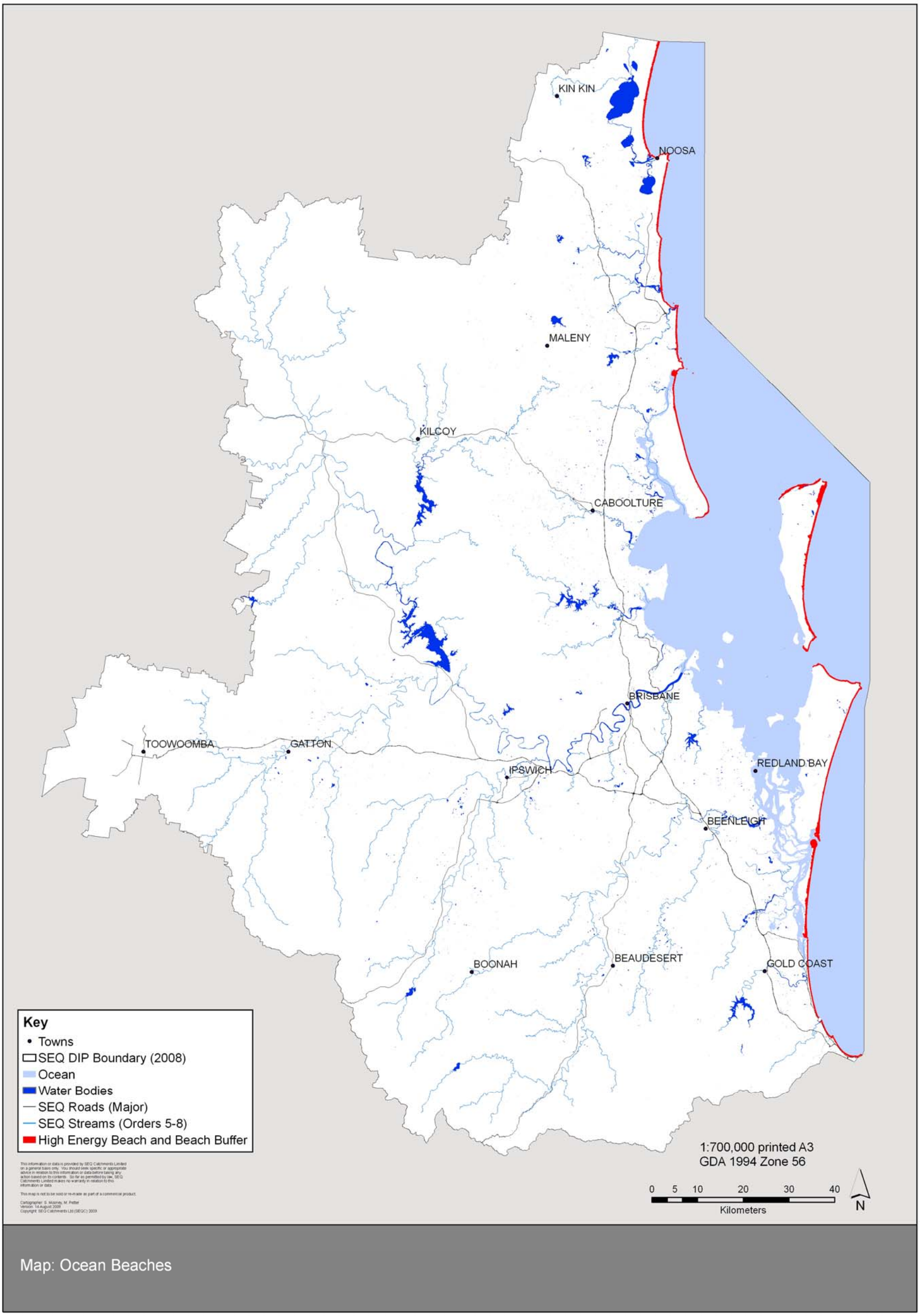
Landcover Type	Area within 50 m buffer zone (ha)	% of buffer
Road	62.09	3.3
Cloud	5.22	0.3
Waterbody	43.48	2.3
Canal	0.73	0.0
Native vegetation	516.68	27.6
Non forest vegetation	578.74	30.9
Sand/mud bank	63.90	3.4
Grass	353.37	18.9
Irrigated	29.04	1.5
Non vegetation	218.69	11.7
Unclassified	0.04	0
Other values	1.90	0.1
Total	**1,874 ha**	**100 %**

310 ha (16%) of area was disturbed in the Beach Buffer Zone represented by road (62.09 ha), canal (0.73 ha), irrigated (29.04 ha) and non vegetated (218.69 ha).
1,449 ha (77%) of the total area of 50 m buffer zone along the beaches of SEQ has vegetation on it.

Rationale
50m buffer employed to represent high energy beach zone in which appropriate vegetation was deemed important to buffer against beach erosion and provide protection from wave and surge events.

Status of Benchmark
Complete
Investigations into assessing the condition of beaches underway.

Data reviewed
Unknown


KIN KIN
NOOSA
MALENY
KILCOY
CABOOLTURE
BRISBANE
TOOWOOMBA
GATTON
IPSWICH
REDLAND BAY
BEENLEIGH
BOONAH
BEAUDESERT
GOLD COAST
Key
Towns
SEQ DIP Boundary (2008)
Ocean
Water Bodies
SEQ Roads (Major)
SEQ Streams (Orders 5-8)
High Energy Beach and Beach Buffer
1:700,000 printed A3
GDA 1994 Zone 56
0 5 10 20 30 40
Kilometers
N
Map: Ocean Beaches

Map: Beaches

CM 4 Fish Stocks

By 2031, wild fishery stock condition will be sustained at sufficiently high levels to support commercial, recreational and indigenous cultural fisheries, based on the 1995–2005 benchmark (ten-year rolling average).

Dataset
No benchmark map currently available

Status of Benchmark
Benchmark and monitoring program to be developed based on Fisheries Performance Measurement System for recreational and commercial catch data (Queensland Primary Industries and Fisheries).

CM5 Key Marine Species

By 2031, the habitat and abundance of bottlenose and indo pacific humpback dolphins, dugongs, sharks, turtles and wader birds is equal to or greater than that in 2001 for each species.

Dataset
Dolphin Density, Dugong Density, Turtle Density (based on Wildnet records, DERM 2007)
SEQ Waders (DERM, 1998)
Turtle Rookery (DERM)

Benchmark
1998 and 2007 data - best available Wader records.
Wildnet - extracted all records between 1981 & 2001.

Methodology
Extracted Wildnet records of dolphins, turtles and dugongs. Records date from 1981 – 2001. A 25 m kernel density function with 1.5 km density radius applied to the Wildnet point records.
SEQ Wader Data was adopted in full. Wader Bird sites are identified in the data for high wader significance and or threatened sustainability (considers wader usage, overall risk, diversity of species and number of rare wader species). Critical Wader Habitat and general Wader Habitat was identified.
Turtle Rookery known sites were adopted in full.
Shark data unavailable at this stage.

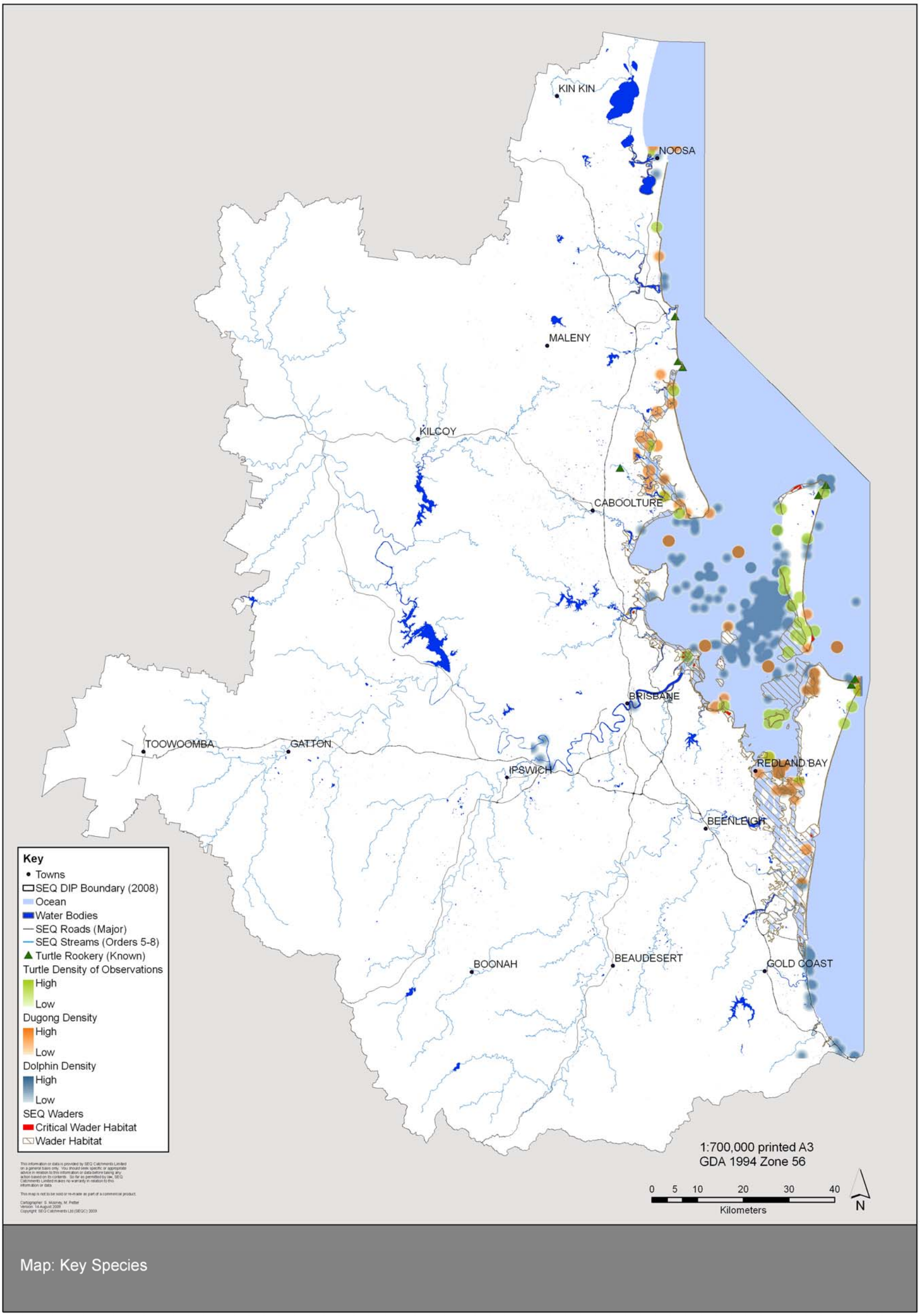
Results
Total Wader habitat 65,828 ha includes Pumicestone Passage and beaches etc. of which 445 ha is Critical Wader Habitat including roosting sites.
Currently 9 Turtle Rookery sites are known across SEQ. (mostly from 1998)

Rationale
Given the absence of ecological studies of marine biodiversity and ecosystem structure, key marine species were selected based on their ecological niche and data availability. These species are a surrogate until comprehensive studies are done. Waders were selected as surrogate species for health of the intertidal areas, Dugong were selected as surrogates for health of shallower water and seagrass ecosystems. Turtles were selected as generalist predators that use both shallow water and deeper waters. The turtle rookery locations could be seen as an indicator of beach health. Dolphins were selected as predators for pelagic and estuarine species. Sharks would have been used as a keystone predator species given their position at the top of the food chain. Rays were suggested as a surrogate for a benthic indicator species. Predators were given preference because their numbers indicate the extent of biomass in the food webs under them.

Density functions were used to give an approximate indication of species range. Kernel density calculates a magnitude per unit area from point or polyline features using a kernel function to fit a smoothly tapered surface to each point or polyline. Kernel Density calculates the density of features in a neighborhood around those features. It can be calculated for both point and line features. Possible uses include finding density of houses, crime reports, density of roads or utility lines influencing a town, or for wildlife habitat. (Extracted from ArcMap help. See Silverman, B.W., 1986. Density Estimation for Statistics and Data Analysis. Chapman & Hall, New York)

Status of Benchmark
Include other survey data as available.

Data reviewed
Wildnet reviewed annually.



Map: Key Species

Map: Key Species

CM 6 Coastal Algal Blooms

By 2031, the extent and frequency of coastal algal blooms (CAB) are reduced from 2002-2005 benchmark (5 year rolling average)

Dataset
No dataset currently accessed.

Status of Benchmark
DERM to provide any available datasets.

CM 7 Coastal Wetlands

By 2031, the condition and extent of SEQ coastal wetlands, particularly those connecting fresh and estuarine/marine habitat (including fish passage), will be equal to or greater than that in 2007.

Dataset
Wetland System (DERM, Version 2 October 2009)

Benchmark
2008 dataset.

Methodology
Extracted Marine and Estuarine wetlands from DERM dataset based on wetland regional ecosystems.

Five major "Ecological Systems" are recognized by the Wetland Mapping and Classification System.

- Marine (M)
- Estuarine (E)

Affected by tidal salinity

- Riverine (R)
- Lacustrine (L)
- Palustrine (P)

Not affected by tidal salinity

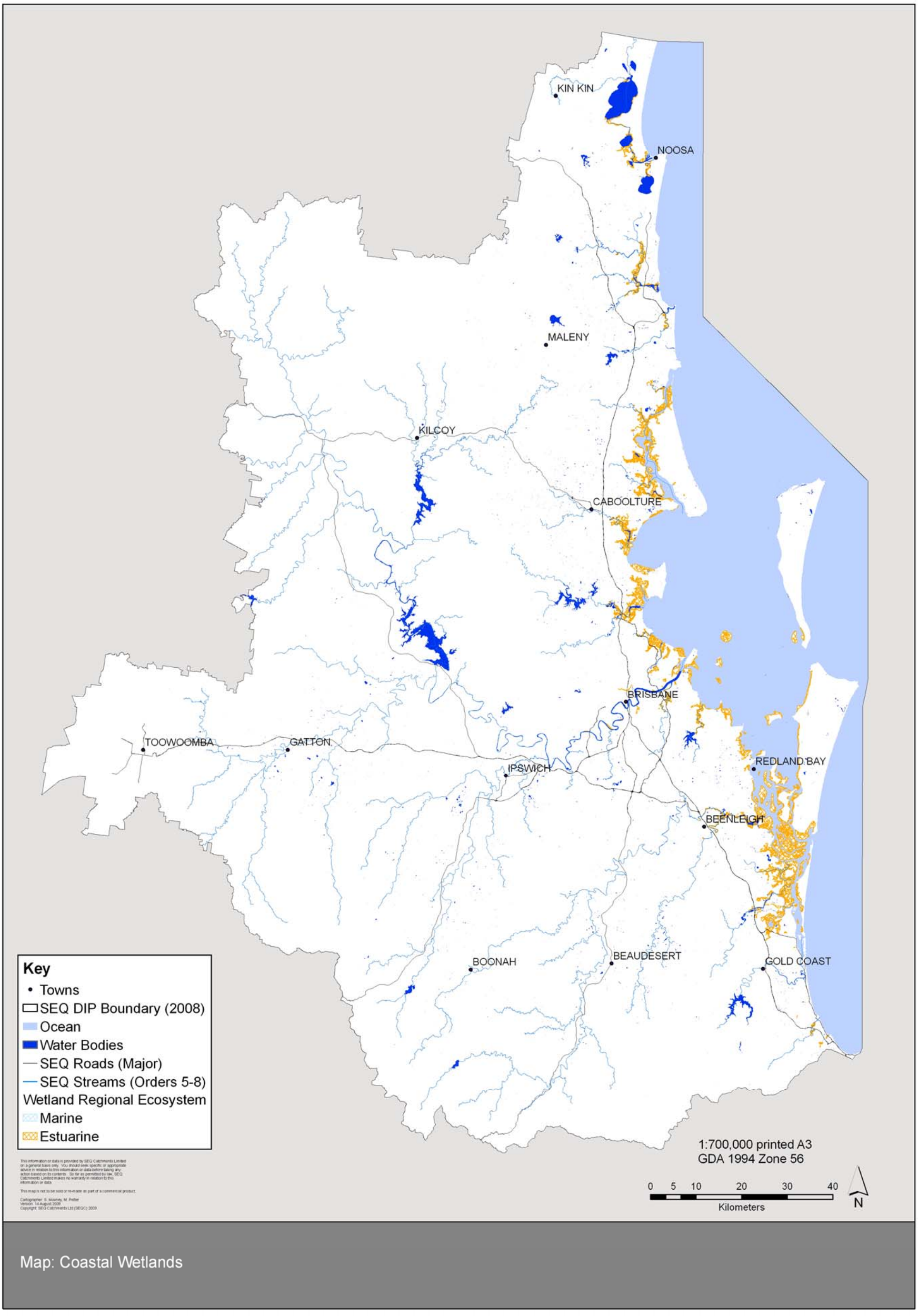
(Environmental Protection Agency. 2005 *Wetland Mapping and Classification Methodology* – Overall Framework – A Method to Provide Baseline Mapping and Classification for Wetlands in Queensland, Version 1.2, Queensland Government, Brisbane. ISBN 0 9757 344 6 6)

Results
22,738 ha total coastal wetlands in SEQ. No marine wetlands represented by Regional Ecosystems (vegetation).

A further 41,251 ha of Unclassified wetlands were identified supporting Coastal/Sub-Coastal floodplain tree swamps. Palustrine wetlands totaled 38,130 ha and were described as habitats with Coastal/Sub-coastal floodplains, heaths and swamps.

Status of Benchmark
Need to review what wetlands constitute for the Target of 'Coastal Wetlands'.

Data reviewed
Unknown



Map: Coastal Wetlands

Map: Coastal Wetlands

Asset: Community

C1 By 2031, natural resource managers, government and non-government organisations will be resourced and working together to implement the SEQ NRM Plan.

Dataset
No agreed dataset.

Status of benchmark
Requires identification of indicators to measure target.

Asset: Land

L 1 Salinity

By 2031, the area of secondary salinization in SEQ is 10% less than in 2008.

Dataset
Salinity Extent Mapping for SEQ, Department of Environment and Resource Management (DERM).

Benchmark
2008 most up to date benchmark dataset available. (final dataset SEQ Salinity Data with Coastal Information, 22/12/2009)

Methodology
Separated salinity extent into two classes based on expert advice – Coastal Salinity and Dryland/Irrigation Salinity. Coastal salinity was identified within lands less than 5 m elevation. The remaining area affected by salinity assigned Dryland/Irrigation salinity.

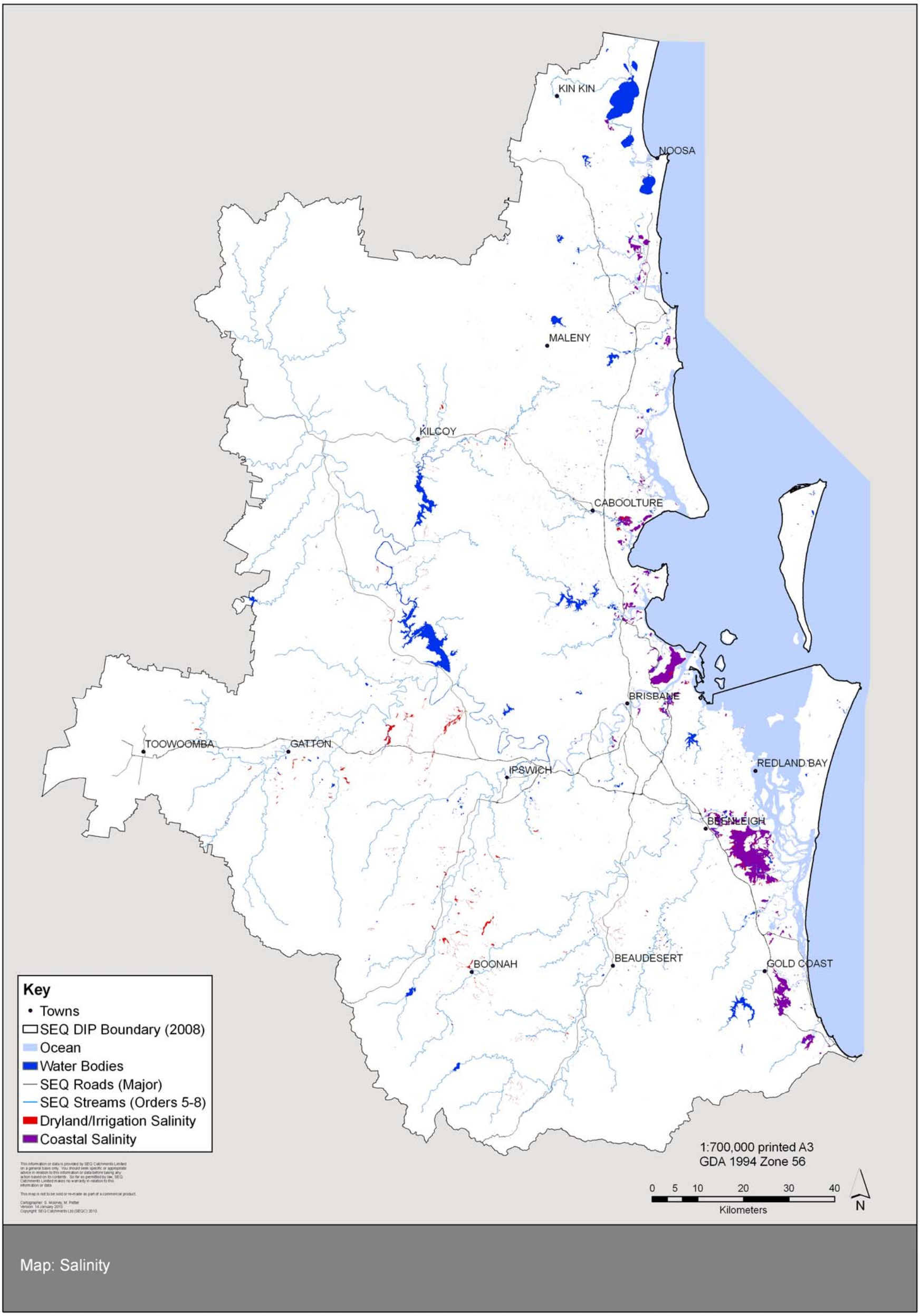
Results
Total area of salinity identified is 17,699 ha. (10% is 1,770 ha)
To achieve the target of 10% less salinity, the new extent must be 15,929 ha.

Area of Coastal Salinity is 14,673 ha.
Area of Dryland/Irrigation Salinity is 3,026 ha.

Rationale
The ability of our land assets to efficiently meet the needs of existing and future communities require that they are not impacted by salinity or soil health decline in general.

Status of Benchmark of Indicator
Complete

Data reviewed
Unknown



Map: Salinity

L 2 Agricultural Land

By 2031, >90% (>266,667ha) of SEQ agricultural land at 2004 will be available for sustainable agriculture.

Dataset
Agricultural Land Classes (DERM, 2004)

Benchmark
2004 was most reliable benchmark dataset available.

Methodology
Class A, B and C land exported to represent good agricultural land.
The area of agricultural lots less than or equal to 1 ha was calculated as a measure of fragmentation.

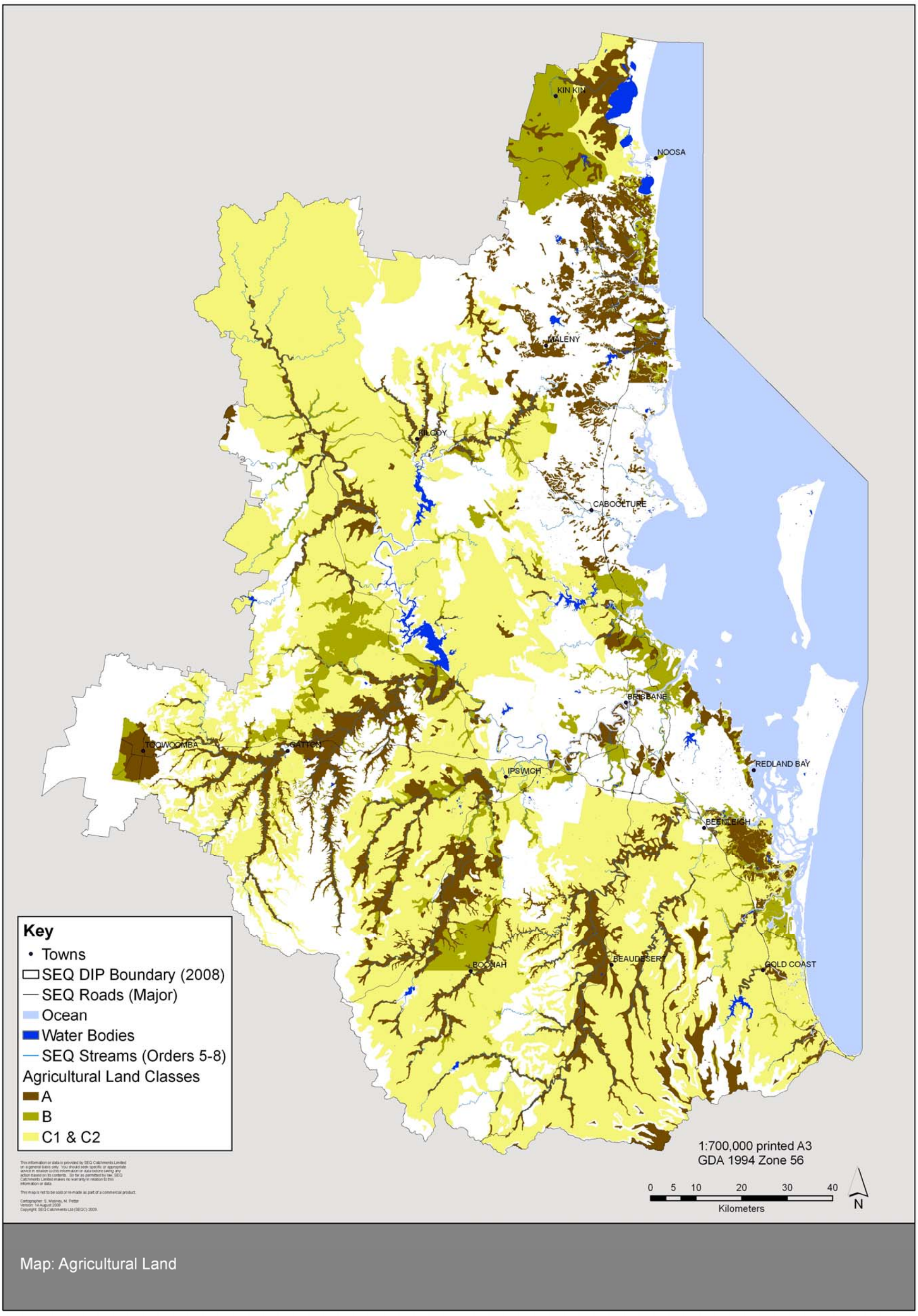
Results
1,272,766 ha is 90 % of the total area of A, B and C Class lands (1,414,185 ha in total);
19,050 ha of agricultural lots that make up this total area are less than or equal to 1 ha. This may provide an indicator of potential for fragmentation and loss of availability for sustainable agriculture.

Status of Benchmark
Target needs to be reviewed in response to any future changes in Agricultural Land Policies e.g. proposed adoption of Key Agricultural Resource Areas (KARA):

Key Agricultural Resource Areas (KARA) is the proposed replacement for Good Quality Agricultural Land (GQAL). KARA comprises versatile cropping lands (VCL - contiguous area of 100ha or more) and surrounding land mapped to cadastral boundaries by DERM in a State Planning Policy to incorporate in statutory regional plans and planning schemes. There may be several KARAs in a region e.g. along alluvial plains and tableland areas with volcanic soils. KARAs protect the State Interest in the resource. Local government may designate buffers around KARAs depending on land uses in the KARA and surrounding areas.

Rationale
90% recognizes the reality that further good agricultural land could be lost but a substantial area of good agricultural land must remain in SEQ to enable significant production of food and fibre for future populations.

Data reviewed
Unknown



Map: Agricultural Land

L 3 Soil Acidity

By 2031, the area of acidified agricultural soils within SEQ will be reduced by 50% from the 2008 baseline.

Dataset
Soil Acidity Risk mapping (DERM)

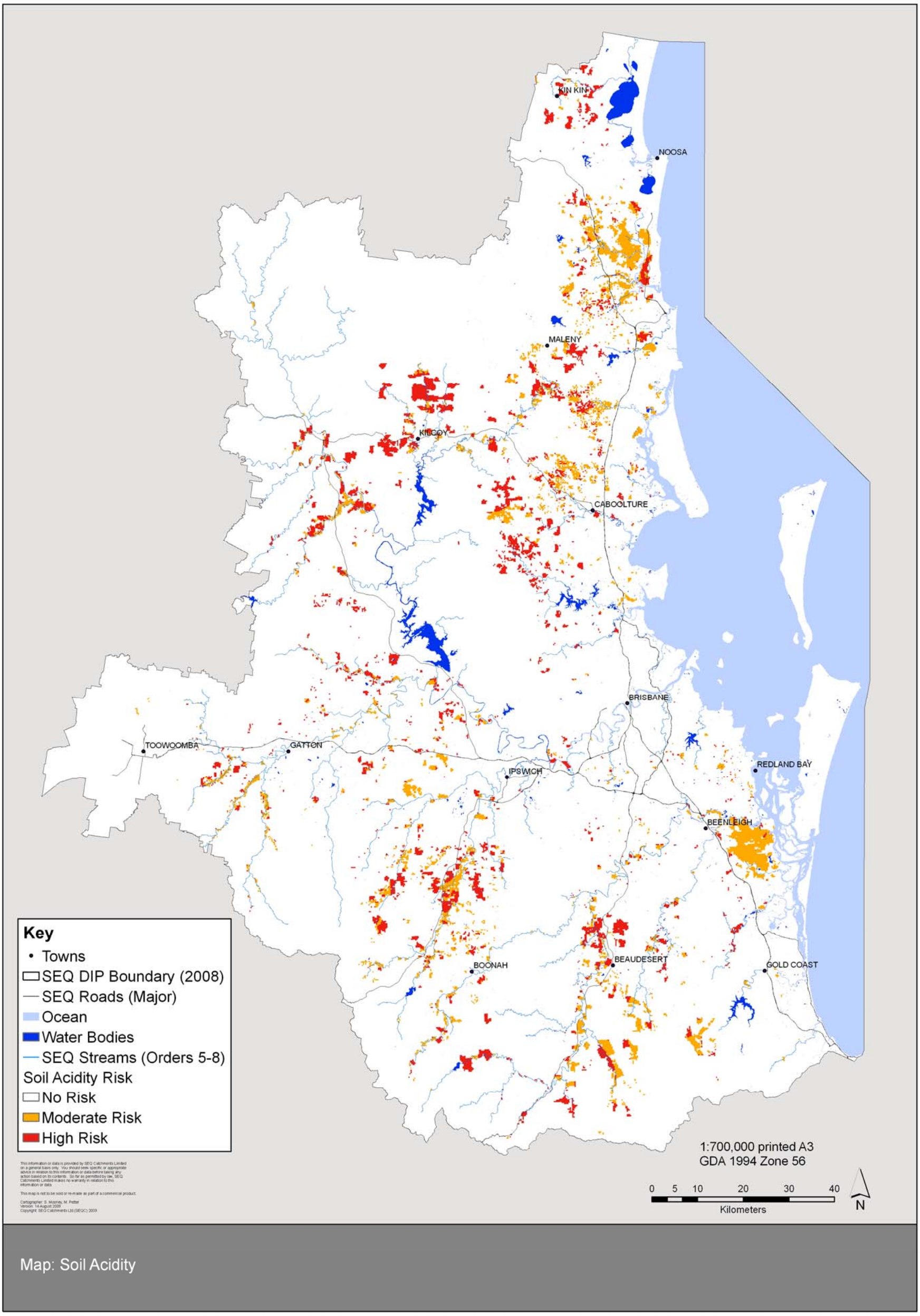
Benchmark
50% suggested as realistic target.
2008 suggested to allow further collation of data.

Methodology
Soil Acidity Risk mapping adopted unmodified.
This mapping was generated by combining land use mapping (intensity) with soil order mapping. It estimates the risk of soil acidity affecting soil health and is grouped into high, medium and low categories. The high category was measured for this benchmark.

Results
28,555 ha is 50% of 57,110 ha of total high soil acidity risk area.

Rationale
The availability of data limited options for assessment of risks to soil health. Soil acidity (bufferering capacity) was identified as a surrogate layer.

Status of Benchmark
Any soil health targets or sampling need to relate to the National Soil Health Monitoring Framework to be released in the near future. Suggested project with DERM to establish representative soil sampling sites across the region for sampling at 5 year intervals.



Map: Soil Acidity

L4 Soil Organic Matter

By 2031, the level of soil organic matter (carbon in t/ha) in agricultural soils will be higher than in 2008 or baseline year.

Dataset
No dataset available.

Benchmark
2010 to allow collation of available data to create dataset or conversely to allow development of a methodology to provide benchmark data.

Status of Benchmark
Any soil health targets or sampling need to relate to the National Soil Health Monitoring Framework to be released soon. Suggested project with DERM to establish representative soil sampling sites across the region for sampling at 5 year intervals.

Rationale
Soil organic matter decline is a major threat to sustainable agricultural production. Trends indicate an ongoing decline which must be reduced to allow a net increase in organic matter to occur across the region in the near future.

L 5 Acid Sulfate Soils (ASS)

By 2031, the area of 'severe' acidification caused by the disturbance of Acid Sulfate Soils (ASS) will be lower than in 2008.

Dataset
Acid Sulfate Soils Risk mapping (DERM, 2006)
Land less than 5 m (SEQ Catchments, 2008)
Acid Sulfate Soils by Land Cover (SEQ Catchments, 2006)

Benchmark
2006

Methodology
Area at risk calculated from unmodified dataset and mapping.
Potentially disturbed areas calculated by applying Land Cover, Woody Vegetation and Grass Cover layers to indicate areas which are not vegetated or associated with land uses that may disturb acid sulfate soils namely roads, mine/quarry, irrigated crop and pasture and non vegetated (as per table L5.1).

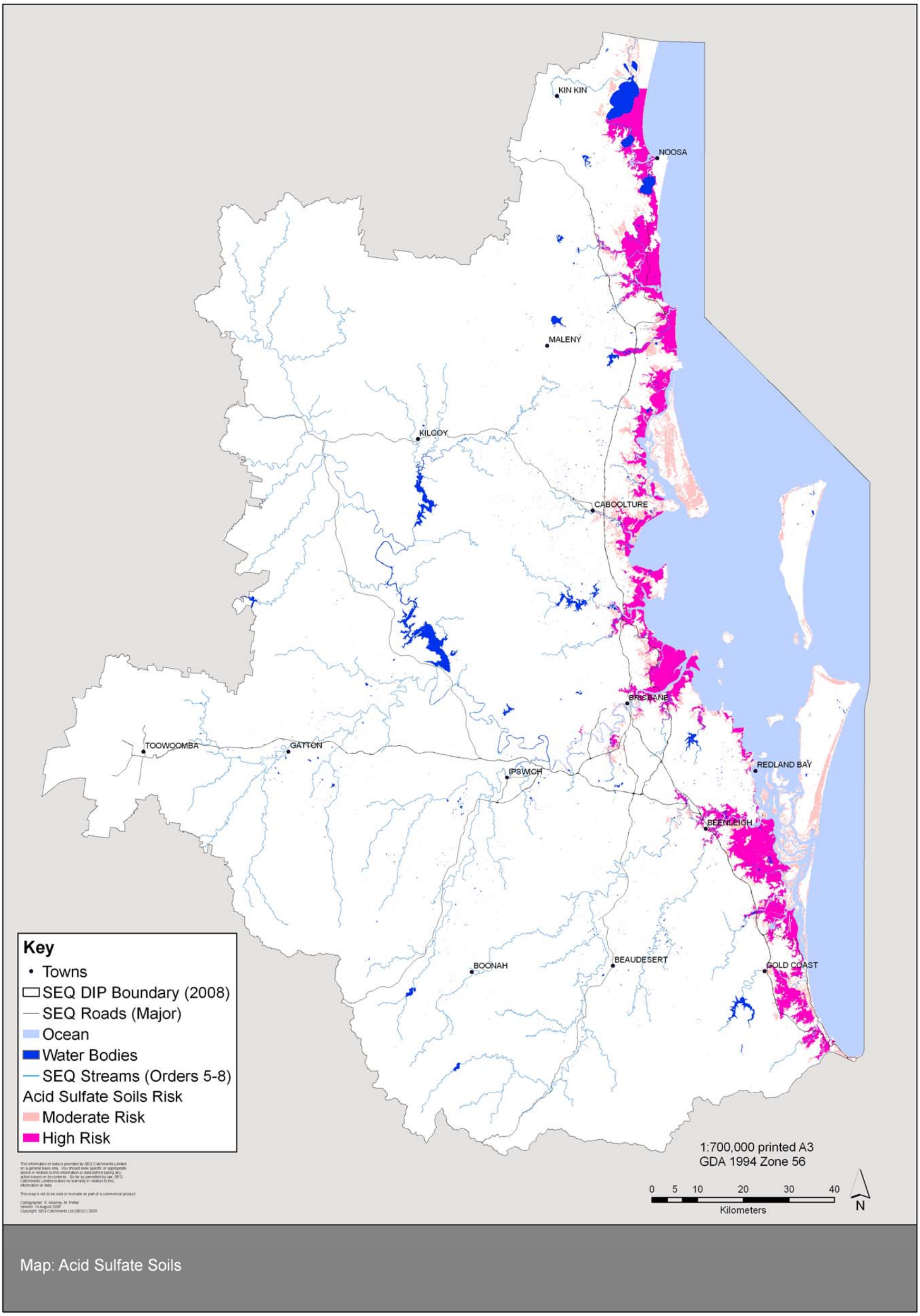
Results
28,744 ha (40%) non vegetated or disturbed of the total area of 72,233 ha of Acid Sulfate Soils.

Table L5.1 – Land Cover classes (2006)

Land Cover Class	Area (ha)	% of Total
Road	4,820.31	6.67%
Ocean	593.88	0.82%
Mine/Quarry	148.44	0.21%
Waterbody	1,200.38	1.66%
Canal	1,390.56	1.93%
Native vegetation	19,160.00	26.52%
Plantation	1,272.44	1.76%
Non forest vegetation	8,870.56	12.28%
Sand/mud bank	318.94	0.44%
Grass	11,879.31	16.45%
Tree crop	7.19	0.01%
Irrigated crop & pasture	10,117.88	14.01%
Non vegetated	12,384.50	17.15%
Cloud	56.81	0.08%
Unclassified	12.56	0.02%

Table L5.2 Land Cover classes (2006) considered as disturbed

Land Cover Class	Area (ha)	% of Total
Road	4,820.31	6.67%
Mine/Quarry	148.44	0.21%
Plantation	1,272.44	1.76%
Non vegetated	12,384.50	17.15%
Irrigated crop & pasture	10,117.88	14.01%
Total Non Vegetated/Disturbed	**28,744 ha**	**40%**



Map: Acid Sulfate Soils

L6 Soil Erosion

By 2031, the extent of erosion from hill slopes and gullies will be reduced by 50% from the 2008 baseline.

Dataset
Erosion Risk (SEQC)

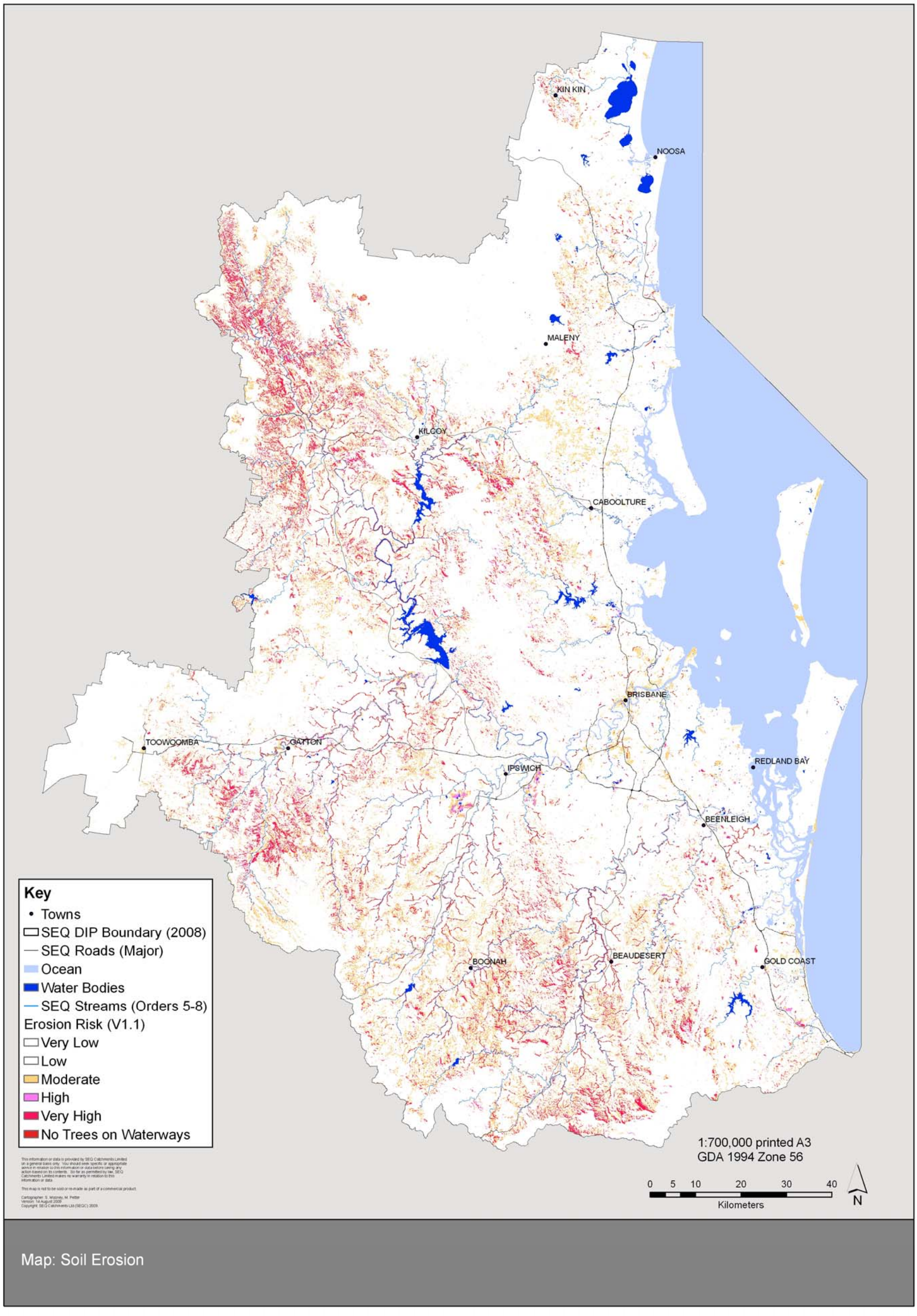
Benchmark
2008

Methodology
The following 4 data sets were combined to produce an Erosion Risk Map

- 2008 Revised Universal Soil Loss Equation (RUSLE) (DERM)
- Hillslope and landslip hazard (SEQC)
- Low grass cover (SEQC)
- Stream bank erosion hazard (SEQC)

Results
255,026 ha of high and very high soil erosion risk.
127,513 ha is the target for a 50% reduction.

Data reviewed
Unknown



Map: Soil Erosion

Map: Soil Erosion

L7 Grazing Land Condition

By 2031, 75% of grazing land in SEQ will be in a ‘good’ condition.

Dataset
No dataset currently available.

L8 Land Contamination

By 2031, existing contamination sites and off-site impacts will be reduced; and no new sites will be created over the 2008 baseline data.

Dataset
Unavailable

Rationale
Soil contamination can potentially cause sickness or death in people, plants and animals. Long-term soil contaminants such as persistent organochlorine pesticides (dieldrin and heptachlor), cadmium, lead and high energy radiation are more insidious because they can accumulate to unacceptable levels in food plants and farm animals without causing visible harm to their host.

Status of Benchmark
Dataset to be supplied by DERM

L9 – Extractive Resources

By 2031, extractive resources within "Key Resource Areas" in SEQ will be available for their highest use with no net loss of other environmental and landscape values.

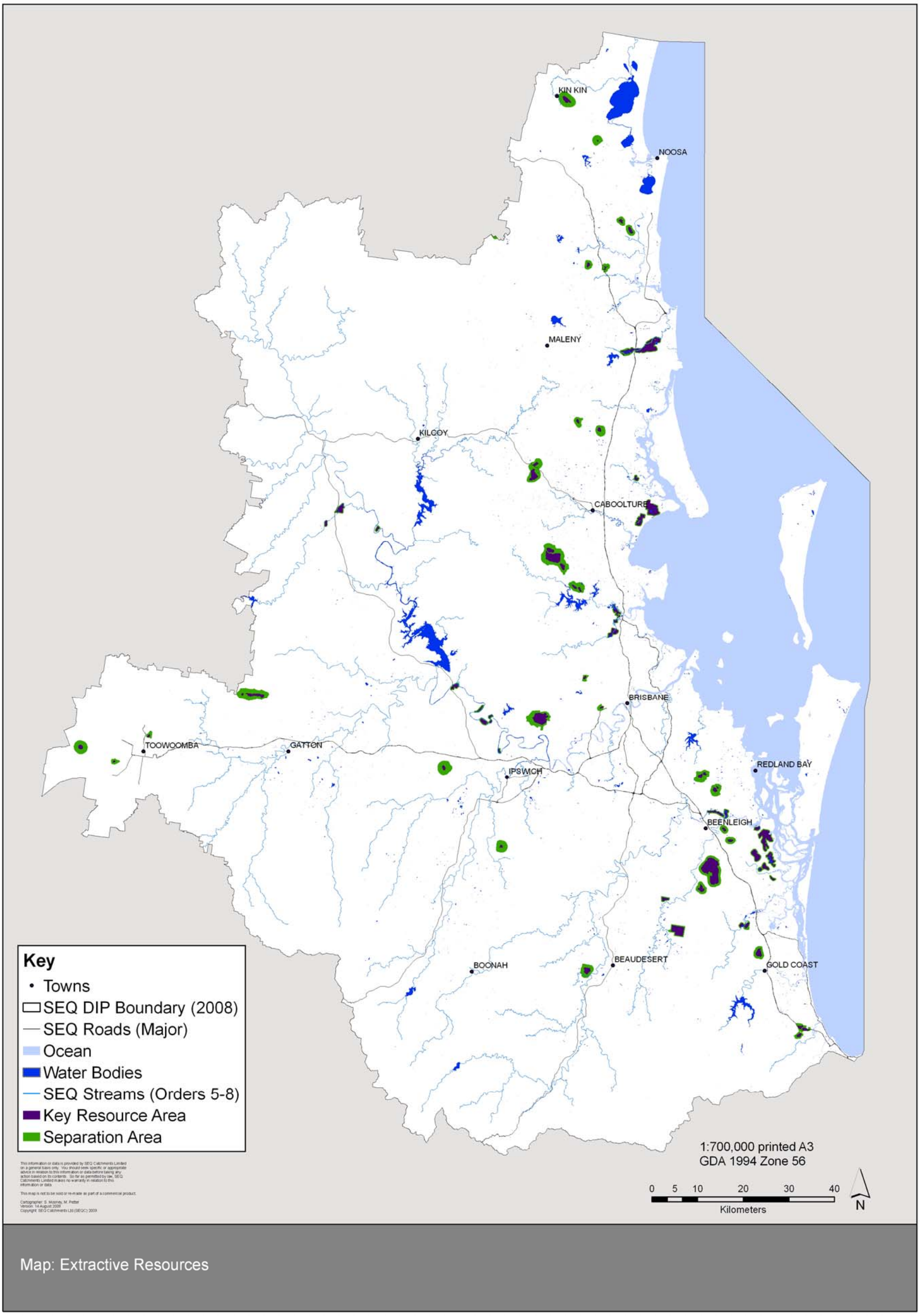
Datasets
Key Resource Area (DERM, 2007)
includes Separation Areas

Methodology
Datasets adopted.

Results
Total Key Resource Area is 10,329 ha.
The Separation Area is 18,536 ha which provides a buffer to the KRA's, with no net loss of environmental and landscape values targeted.

Rationale
Mining and extractive resources are protected by a State Planning Policy which allows these resources to be accessed. This creates potential conflicts for the achievement of other RCTs such as Nature Conservation. Having a target for extractive industry in the NRM Plan enables the offsetting requirements of this industry to achieve a no net loss of other environmental and landscape values as represented by other RCTs.

Status of Benchmark
Complete



Map: Extractive Resources

Map: Extractive Resources

Asset: Nature Conservation

NC1 Remnant and Woody Vegetation

By 2031, the 2001 extent of regional vegetation cover – including both remnant vegetation (35%) and additional non-remnant woody vegetation (22%) – will be maintained or increased.

Dataset
Remnant Vegetation based on Regional Ecosystems of Queensland Version 4.0 (DERM, 2003) and Version 4.1 (DERM, 2004)
Woody Vegetation based on 2001 Statewide Land and Tree Study (SLATS) (DERM, 2009)
Queensland Herbarium Report on Clearing and Status of Regional Ecosystems (DERM)

Benchmark
810,685 ha – 35.4% (35%) remnant vegetation in 2001 (2001 most accurate benchmark dataset available).

646,128 ha – 28.2% (28%) non remnant woody vegetation in 2001.

Methodology
Queried 2001 Regional Ecosystem dataset and 2003 Statewide Land and Tree Study.

Distribution of the extent of remnant vegetation by subcatchment was also extracted from Herbarium Report on Clearing and Status of REs.

Results
SEQ Regional Coordination Group area - 2,289,262 ha
Total area of remnant vegetation at 2001 - 810,685 ha or 35.4% (35%)
Total area of non remnant woody vegetation at 2001 - 646,128 ha or 28.2% (28%)

Data limitation
The SLATS figure represents possible vegetation cover and should not be construed as tree or foliage cover.

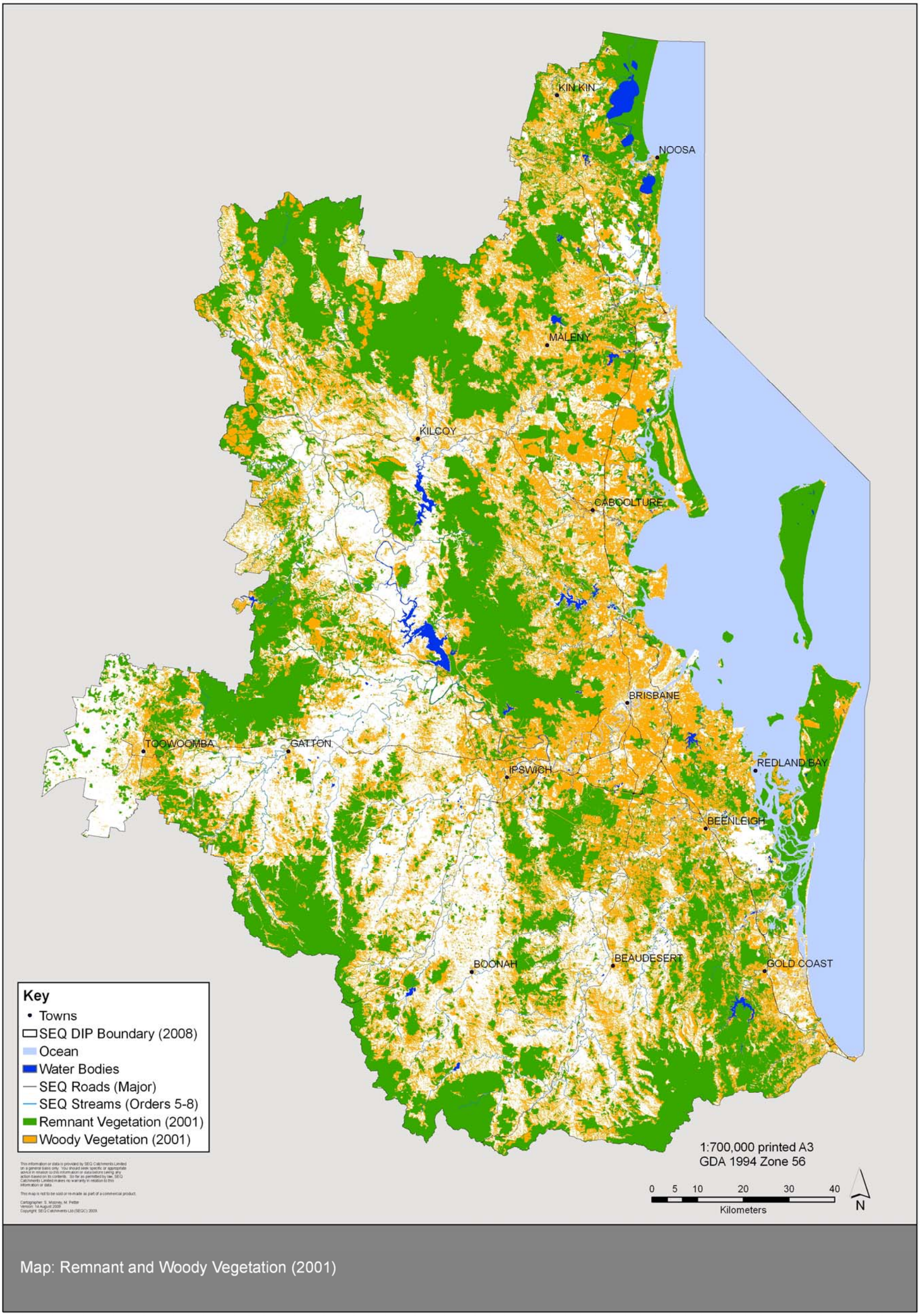
Status of Benchmark of Indicator
Complete

Rationale
There is a broad recognition that at least 30% remnant vegetation cover is required to maintain a minimum level of species and ecosystem function throughout a region. Studies have also indicated a progressive decline of species and greater rate of extinctions with incremental habitat loss. The SEQ Region as a whole has 35% minimum remnant vegetation cover mostly located in upland areas. In lowland areas, remnants comprise small patches of fragmented vegetation.

Areas of woody regrowth and non-woody ground cover that provide habitat structure necessary for survival of many species are also important assets that can make a positive contribution to vegetation cover both now and into the future.

Remnant vegetation cover varies across SEQ and while 35% remains the regional target, targets to support this goal will need to be considered in each catchment/local government area.

Data reviewed
SLATS reviewed annually by DERM



Map: Remnant and Woody Vegetation (2001)

Map: Remnant and Woody Vegetation

NC2 – Vegetation Fragmentation and Connectivity

By 2031, there will be no net fragmentation of larger tracts (greater than 5000 ha), and 20% of priority smaller tracts (less than 5000 ha) will be better connected than the 2003 baseline.

Data set
Remnant Vegetation based on Regional Ecosystems of Queensland Version 4.0 (DERM, 2003) and Version 4.1 (DERM, 2004)
Woody Vegetation based on 2001 Statewide Land and Tree Study (SLATS) (DERM, 2009)
SEQ Roads based off State Digital Road Network (DERM, 2007)

Methodology
The SLATS dataset was used to group areas of vegetation that had a continuous foliage projective cover (FPC) of >33% using GIS analysis and quantile splits of data records. The grouped vegetation was used to map tracts. The SLATS mapping can sometime register roads as shadow or 100% FPC so the mapped tracts was intersected with a buffered road network database to remove these anomalies and get a more accurate tract analysis. Remnant vegetation tracts were derived from herbarium mapping. The woody vegetation and remnant tracts were then combined to the give the overall tract analysis for the region.

Foliage projective cover is defined as the percentage of the land covered by foliage.

Results
Using the above datasets and a foliage projective cover of >33%, produced the results recorded in Table NC2.1.

Table NC2.1 Characteristics of tracts of vegetation in SEQ

Size Class	No. of tracts	Total Area (ha)
< 1 ha	167,870	30,487
1 ha - 20 ha	16,691	58,580
20 ha - 50 ha	780	24,292
50 ha - 100 ha	323	22,350
100 ha - 200 ha	164	23,099
200 ha - 500 ha	119	36,877
500 ha - 1000 ha	45	32,012
1000 ha - 5000 ha	34	60,005
>5000 ha	21	810,851
Total		**1,098,557 ha**

Core Tracts have been described as continuous areas of vegetation >5000 ha of which there are 21 in SEQ. Non core Tracts have been described as continuous areas of vegetation 100ha – 5000 ha. Selected Tracts include all areas of continuous vegetation >20 ha for on-ground purposes.

The target refers to connecting priority non core tracts to core tracts.

These statistics facilitate the quantification of the target. For example focus could be given to non core tracts of 100ha or over of which there is 362 in SEQ (see rationale below). Therefore, to meet the target of 20% of priority non core vegetation tracts connected to core tracts, 72 of these tracts need to be connected to one of the 21 core tracts.

Status of Benchmark of RCT
Complete

Rationale
A cutoff of 33% for FPC was selected on the basis of quantile splits and field groudtruthing. This stopped scattered trees in urban and other areas being viewed as continuous tracts of vegetation. The areas of between 12 & 33% FPC also encompass areas that groundtruthing reveal can frequently contain no woody vegetation. This “false positive” problem is being addressed by the SLATS team. Areas that can be picked up as woody vegetation in this band can include, bladey grass, bracken fern and moister runoff areas.

A ‘tract’ is a continuous patch of connected vegetation. Tract analysis provides an assessment of the degree of fragmentation across the landscape. Continuous larger tracts of vegetation are more self sustaining than smaller fragmented tracts and are more likely to support viable populations and communities of species.

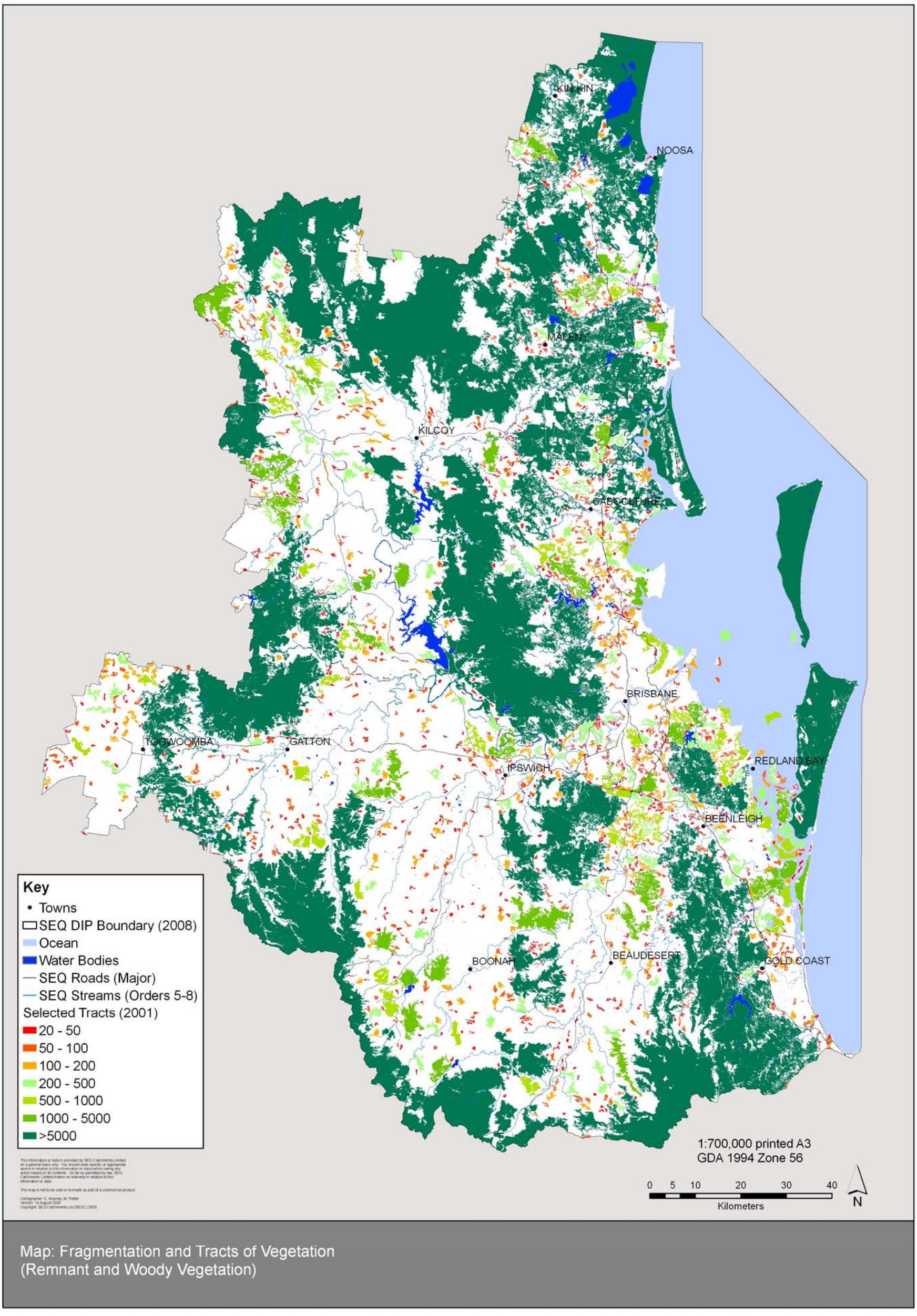
After the tract analysis was completed, tracts over 100ha were suggested for the initial quantification of the target as they provide an economical and achievable target for reconnecting landscapes with limited funds. This size tract also provides a higher degree of resilience in the face of threats such as climate change, fire and other edge effects that could result in the eventual disappearance of fragmented areas of vegetation.

Tracts of smaller size could be prioritised if there was strategic justification, such as they were necessary to link a regional corridor or further funds were available.

20% was chosen as a realistic number of tracts, approximately 72 priority non core tracts, that could be invested in to achieve connection across the region. This is a minimum while anything greater than this would require considerable more resources to achieve.

Tract analysis also identifies the degree of fragmentation across the landscape.

Next review of data
SLATS reviewed annually by DERM.
Tract analysis redone by SEQC with data provided by DERM.



Map: Fragmentation and Tracts of Vegetation
(Remnant and Woody Vegetation)

Map: Fragmentation and Tracts of Vegetation

NC3 – Wetlands

By 2031, the 2008 extent and condition of SEQ wetlands will be maintained or increased.

Dataset
Wetland System (DERM, Version 2 October 2009)

Benchmark
2008/09 dataset most accurate benchmark available.

Methodology
Map generated based on Wetland Mapping and Classification for Queensland* which maps marine, estuarine, riverine, lacustrine and palustrine wetlands. Areas were calculated based on all *wetclass* types extracted from the Wetland Regional Ecosystem. Total vegetated wetland area is 126,351 ha.

In addition, Wetland Water Bodies were included for Palustrine, Lacustrine and Riverine systems (freshwater). Total wetland water bodies is 36,391 ha.

Results
Combined total is 162,742 ha (Table NC3.1)

Table NC3.1 Wetland Type and Area in SEQ (based on Regional Ecosystems)

Wetland Type	Area (ha)
Marine	0
Estuarine	22,738
Palustrine	38,130
Lacustrine	111
Riverine	24,121
Unclassified	41,251
Wetland Water Bodies	36,391
Total	**162,742**

Status of Benchmark
Complete

Need to review 'Areas that may include Wetlands' that are included in the Wetland Mapping and Classification for Queensland database.

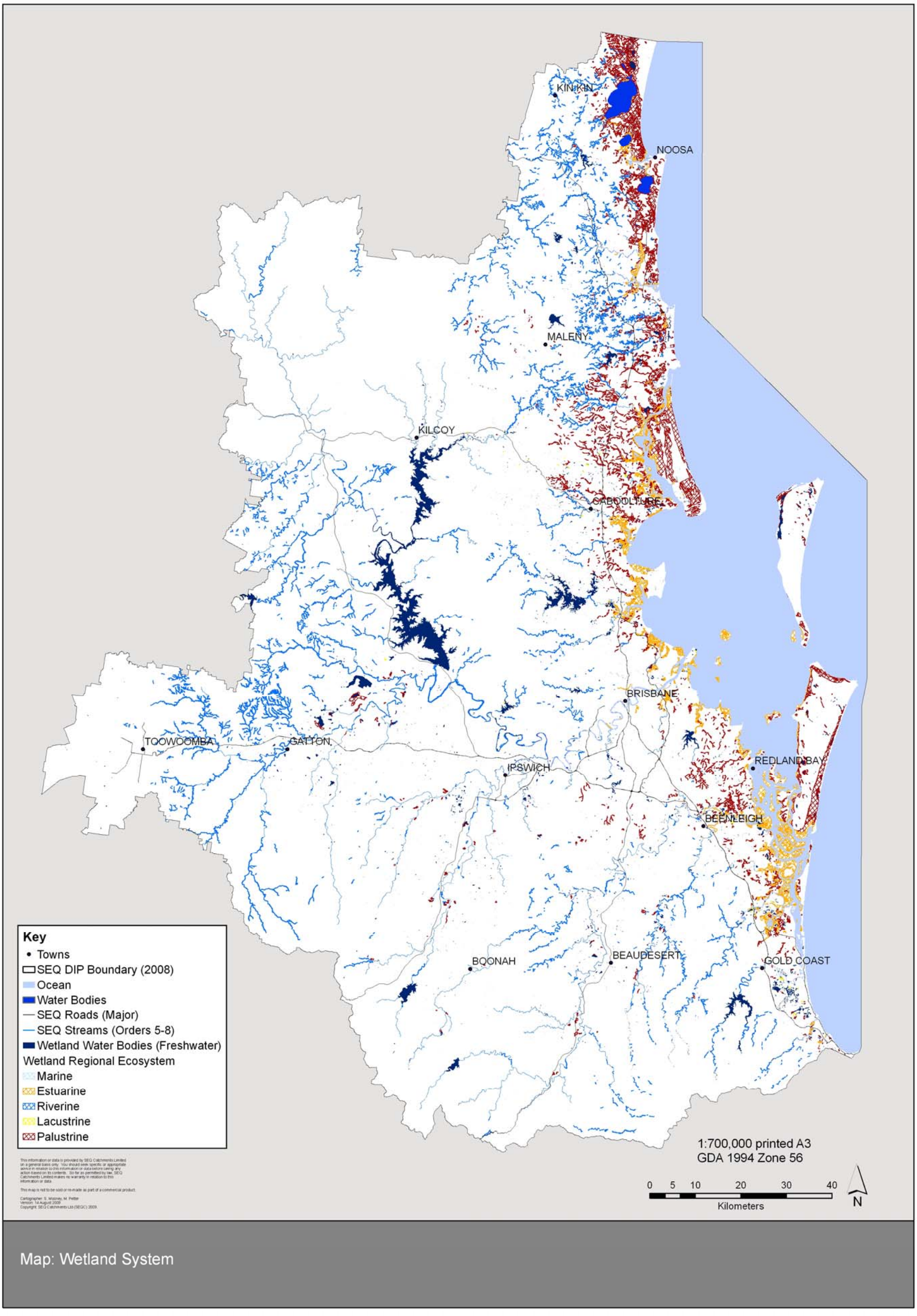
Requirement to include significance measure for further prioritization. Significance could be classified as state, region, local.

Note: Some wetlands have been masked by Water Bodies in the map e.g. Lacustrine Wetlands.

Rationale
Existing areas of wetlands should be maintained due to historical loss and significant role these ecosystems play in nature conservation and water quality.

Data Reviewed
Unknown

*Wetland Mapping and Classification for Queensland Version 2 (2009). Queensland Wetlands Program, Department of Environment and Resource Management.



Map: Wetlands Systems

NC 4 – Vulnerable Ecosystems

By 2031, at least 4% of the original pre-clearing extents of vulnerable regional ecosystems will be represented in protective measures.

Dataset
Regional Ecosystem Distribution Database (REDD) (DERM, 2007)
Remnant Vegetation based on Regional Ecosystems of Queensland Version 4.0 (DERM, 2003) and Version 4.1 (DERM, 2004)

Methodology
Queried REDD for regional ecosystems with low extent reserved or not represented in protective measures.

Selected poorly conserved Regional Ecosystems (Res) from RE mapping Version 4.1.

Protected measures include Areas of Estate 2007 (including National Park, Conservation Park, State Forest) and Nature Refuges 2007.

Results

Table NC4.1 – Area of Regional Ecosystems by Status and Percentage Reserved

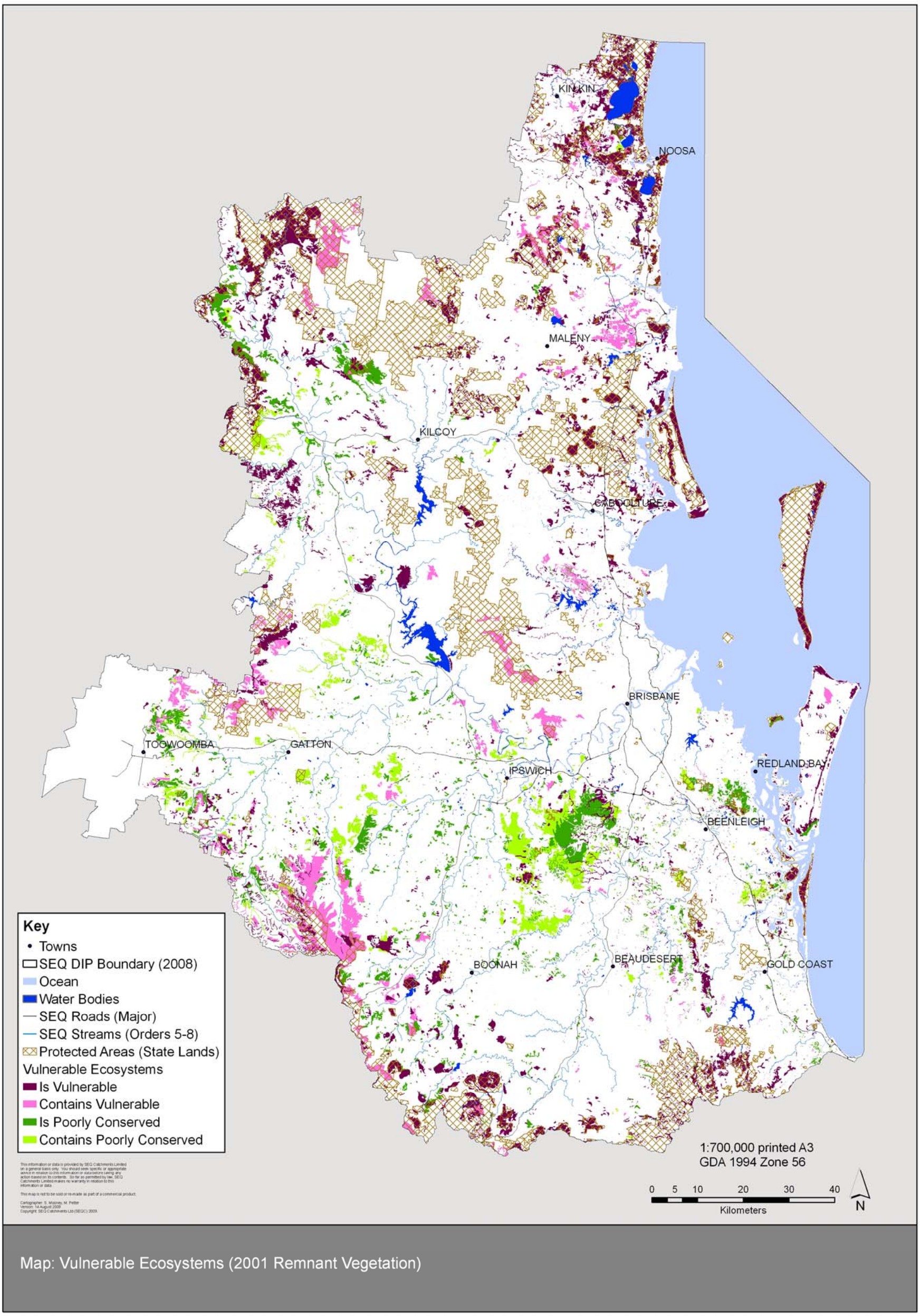
Status of Regional Ecosystem	Total	Area (ha)	Label
Not of Concern and have greater than 4% reserved (protected)	102	688,159	
Of concern have greater than 4% reserved (protected) but still considered vulnerable	12	56,213	Vulnerable
Endangered RE with greater than 4% reserved (protected) but still considered vulnerable	11	28,510	Vulnerable
Endangered REs with less than 4% in reserve (not protected)	10	5,895	Poorly Conserved
Of concern REs with less than 4% in reserve (not protected)	12	42,828	Poorly Conserved
Not of concern with less than 4% in reserve (not protected)	7	10,096	Poorly Conserved
Total Regional Ecosystems (REs)	**154**	**831,701 ha**	

Refer Appendix B for full list of vulnerable REs and individual areas required to meet target.

Status of Benchmark
Complete pending review of State Forest datasets for benchmark year.

Rationale
To conserve and manage the region's biodiversity values and maintain supporting ecological processes requires a regional system of viable samples of regional ecosystems, and should include a degree of replication to ensure that RE's are not further threatened by catastrophic events such as major bushfires and to reduce the long term impacts of climate change. The desired extent of regional ecosystems in protected areas is between 4% and 10% of their original extent with the target of 4% by 2031 suggested by the SEQ NRM Plan Expert Panels as more achievable in SEQ.

Data reviewed
Extent of REs for 2001 has been completed.



Map: Vulnerable Ecosystems (2001 Remnant Vegetation)

Map: Vulnerable Ecosystems

NC 5 – Threatened Species

In 2031, the 2008 conservation status of native species will be maintained or improved.

Dataset
SEQ Biodiversity Planning Assessment (BPA) Version 3.5 (DERM)

Benchmark
2006 most up to date benchmark dataset available.

Methodology
Tables taken from BPA SEQ Expert Flora and Fauna Panel Reports.

Rationale
100% chosen as an in principle commitment to nature conservation.

Results
Refer to Appendix C for full list of Endangered, Vulnerable and Rare (EVR) species and Back on Track species.

Status of Benchmark
Complete

Data reviewed
Next update of BPA

NC 6 – Habitat for Priority Species

By 2031, the 2001 extent and condition of habitat for priority taxa will be maintained or increased.

Dataset
SEQ Biodiversity Planning Assessment (BPA) Version 3.4 (DERM)
Brigalow Belt Biodiversity Planning Assessment V1.3 (DERM)
Wildnet (DERM, September 2007).

Benchmark
2001 most reliable benchmark dataset available.

Methodology

1. From the BPA 3.4 for the Regional Plan area in SEQ Region
- Selected EVR Criteria A records - Very High and High
- Selected Habitat for Priority Taxa Criteria H (H Rating)

2. From the BPA 1.3 for the Regional Plan area in the Brigalow Belt
- Selected EVR Criteria A records - Very High and High
- Selected Habitat for Priority Taxa Criteria H (H Rating)

3. Priority taxa not within remnant taken from Wildnet records included. Density function of 1 km applied to site records.

1, 2 and 3 added together to provide Table NC 6.1

Condition measure not currently available.

The criterion also addresses the significance of vegetated areas for other Priority Taxa deemed to be of importance by the expert panels. Priority taxa, other than EVRs, are identified for each bioregion on the basis of one or more special values and the written opinion of experts. These values may include taxa at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular Regional Ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Priority fauna taxa, other than EVR taxa, are listed by bioregion in Appendix 7 in the BPA. Similar lists for priority flora taxa are under development.

Expert panels will be responsible for screening this information and indicating any caveats associated with its use.

Core Habitat defined by expert panels is treated as if the area had a spatially accurate, confirmed record for the taxon.

Note: Some known EVR areas such as the Border Ranges were coming up ‘No Habitat’ under Criteria A and Criteria H. This benchmark needs to include other existing habitat values noted in the BPA into an additional Criterion (e.g. Other H) for this benchmark to be finalized.

Results

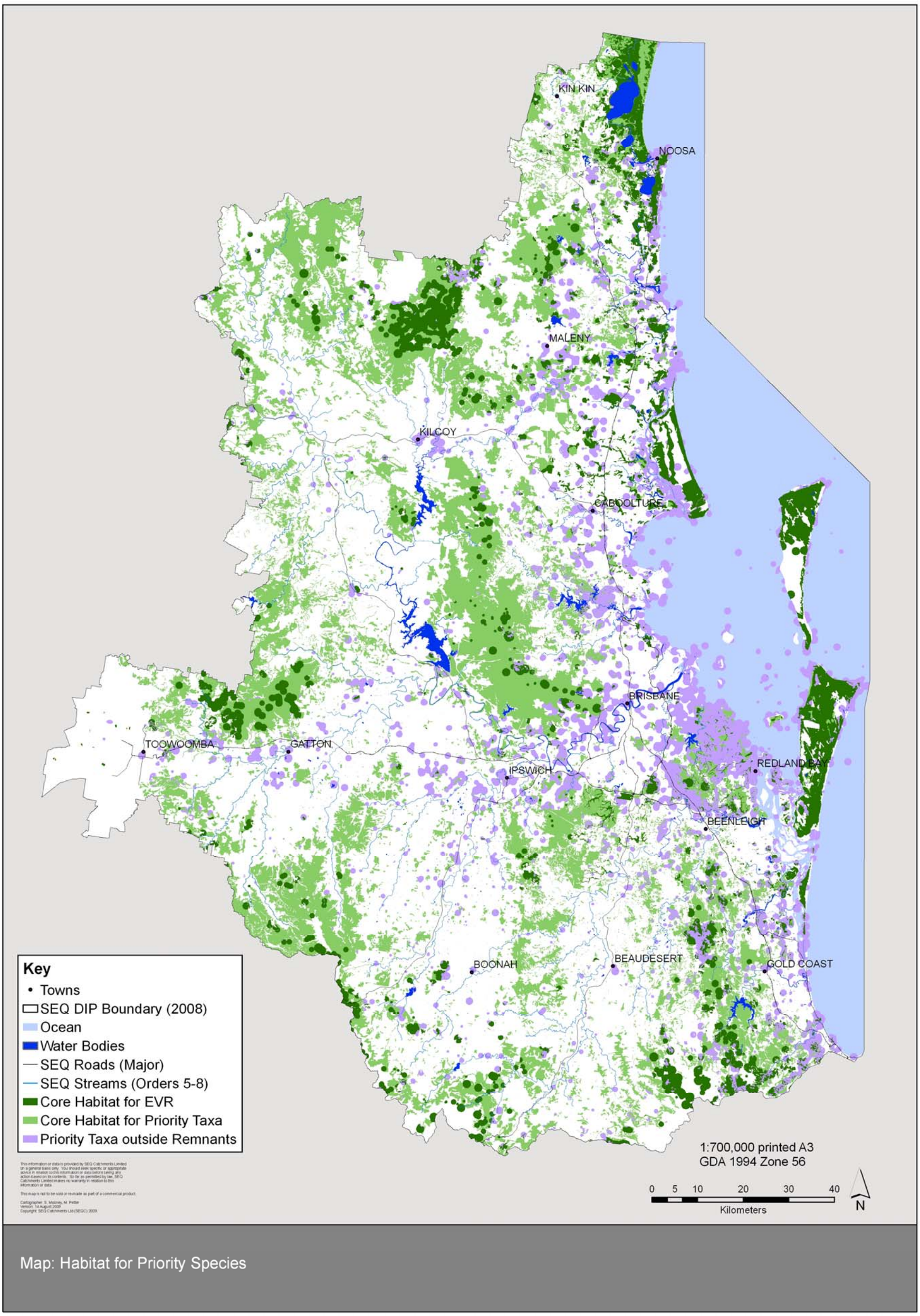
Table NC 6.1 Core habitat for EVR and Priority Species.

Core habitat type	Area (ha)
Core Habitat for EVR Species	165,628
Core Habitat for Priority Species	632,741
Total	**689,610 ha**

Status of Benchmark
Some known EVR areas such as the Border Ranges were coming up No Habitat under Criteria A and Criteria H in BPA 3.4. This benchmark needs to include other existing habitat values noted in the BPA into an additional Criterion (e.g. Other H) for this benchmark to be finalized.

Rationale
Priority Taxa are flora and fauna including EVR as well as iconic common species or species in danger of being listed as endangered, vulnerable or rare under State or Commonwealth legislation or species identified in the DERM's "Back on Track" species prioritisation process as priorities for conservation action within the SEQ region. Core habitat is the areas that provide food and shelter for these plants and animals.

Data reviewed
SEQ BPA Version 3.5 (DERM, 2008).



Map: Habitat for Priority Species

Map: Habitat for Priority Species

Asset: Regional Landscape Areas

RLA 1 – Landscape Heritage

By 2031, at least 90% of the 2011 area of regionally important landscape heritage will be retained within each local government area.

Datasets
Estate Boundaries (DERM, 2009)
Ramsar (DERM)
Heritage Places Register (DERM)
Marine Park (DERM, 2008)
World Heritage Areas (DERM, 2005)
National Estate Register (AG DEWHA)

Benchmark
2009

Methodology
Merged datasets above to obtain a unique area for landscape heritage.

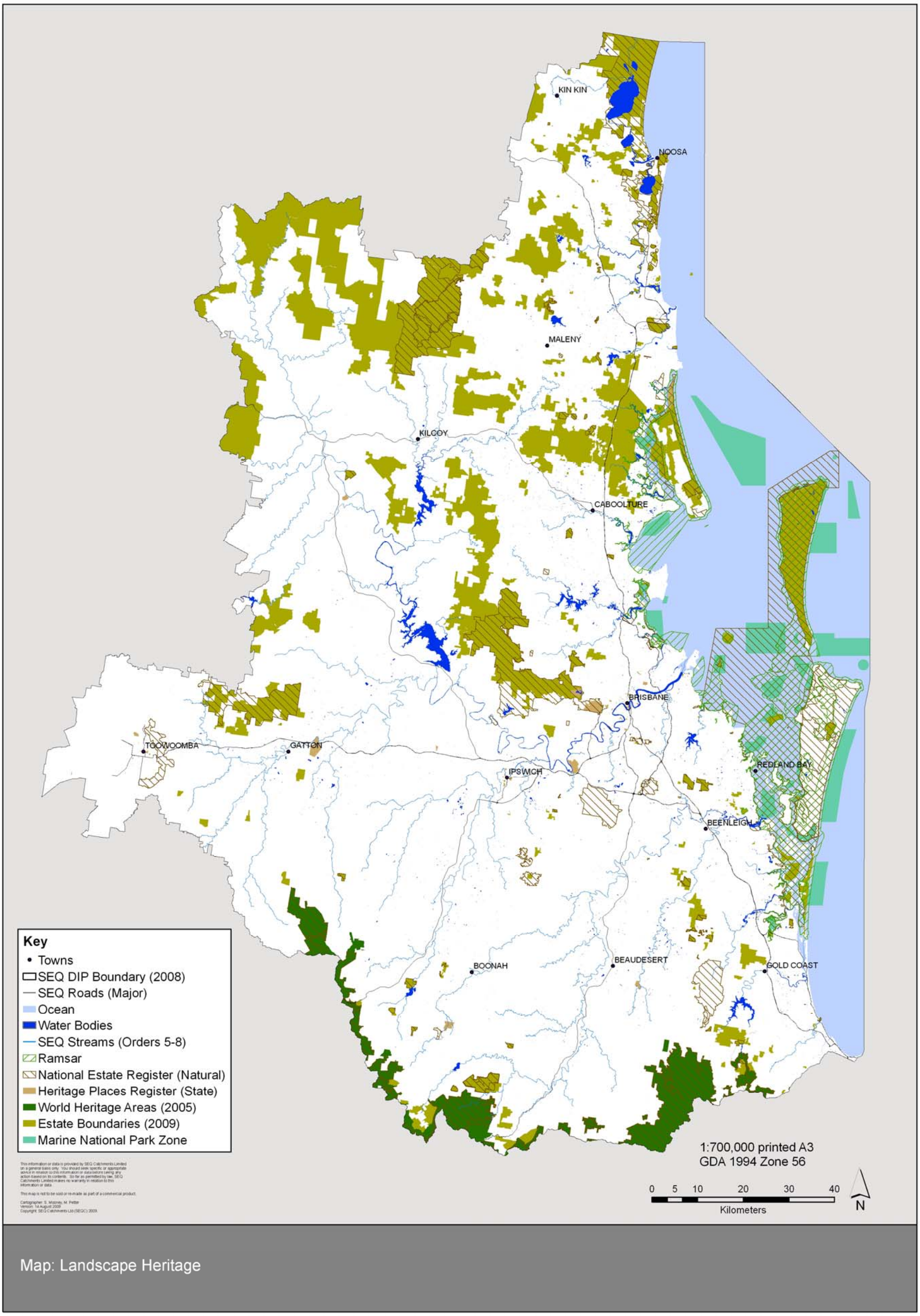
Results
586,783 ha combined area. (Does not include overlapping areas)

Table RLA 1.1 – Area of Landscape Heritage

Dataset	Area (ha)
Estate Boundaries	355,526
Ramsar	120,253
Heritage Places Register	3,921
Moreton Bay Marine National Park	54,265
World Heritage Areas	51,536
National Estate Register	397,083
Total	**586,783 ha**

Rationale
Landscapes are important in preserving environmental, sociocultural and historic connections, including landscapes with cultural significance.

Status of Benchmark
Further spatial definition of landscape heritage areas required.



Map: Landscape Heritage

Map: Landscape Heritage

RLA 2 – Outdoor Recreation Settings

By 2031, the 2011 extent of regional outdoor recreation settings will be maintained or increased.

Datasets
No agreed dataset

Benchmark
Not currently available.

RLA 3 – Outdoor Recreation Demand

By 2031, 90% of the demand for outdoor recreation will be met through a mix of public land, waterways and the voluntary provision of opportunities on private land.

Dataset
No agreed dataset

Benchmark
Not currently available.

RLA 4 – Regionally High Scenic Amenity

By 2031, the area of regionally high scenic amenity will be maintained or improved from the 2004 baseline.

Dataset
Scenic Amenity Rating (SEQROC, 2004)

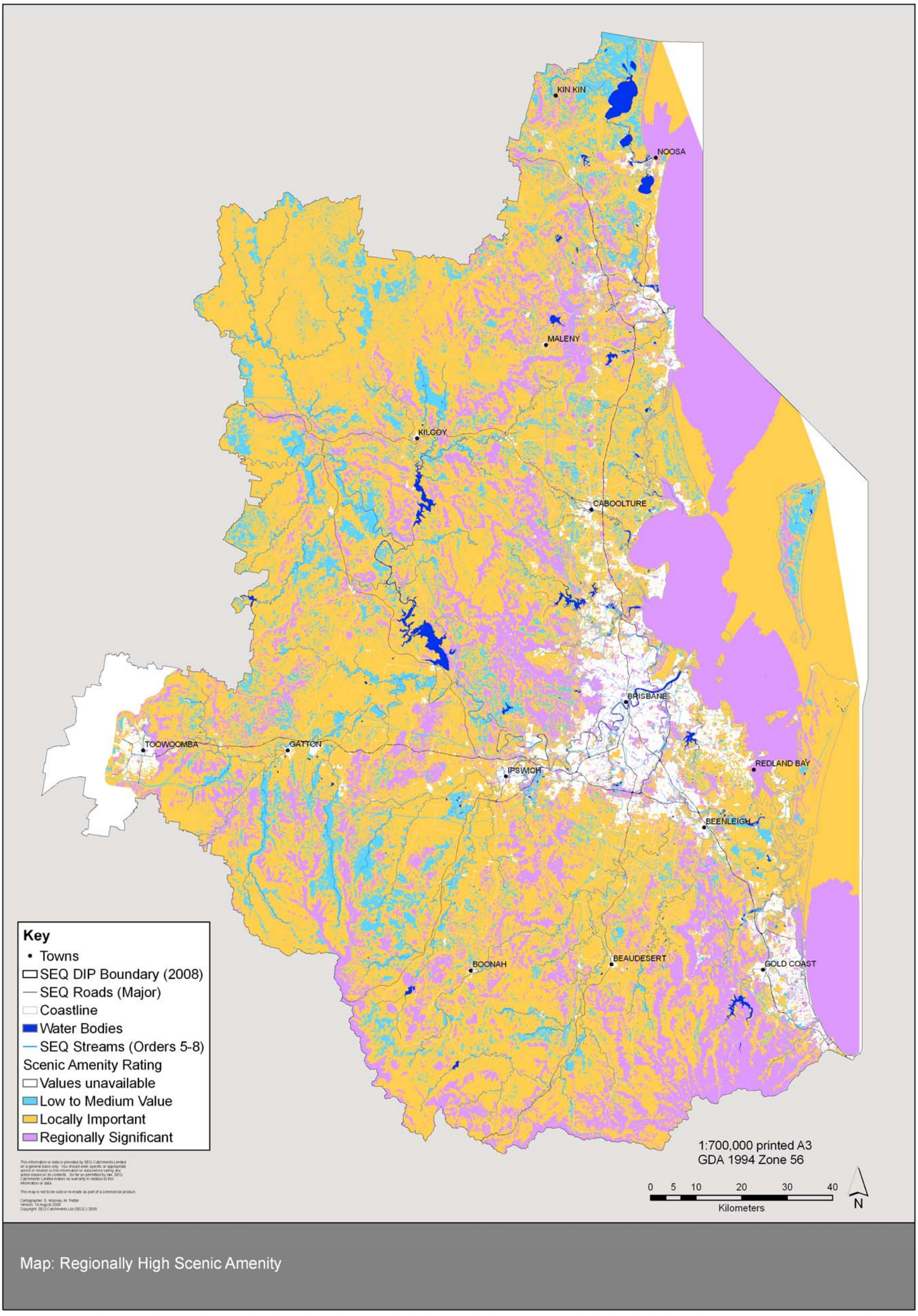
Benchmark
2004

Methodology
Selected values 9-10 as regionally high from the dataset.

Results
637,607 ha regionally significant scenic amenity.

Rationale
Scenic amenity is the measure of a landscape's scenic qualities, reflecting the psychological benefit that the community derives from viewing the region's wide variety of landscapes. Examples of outstanding scenic qualities include beaches, ranges and farmlands.

Status of Benchmark
Complete.



Map: Regionally High Scenic Amenity

Map: Regionally High Scenic Amenity

RLA 5 – Locally Important Scenic Amenity

By 2031, at least 80 % of the 2004 area of locally important scenic amenity within each local government area will be retained.

Dataset
Scenic Amenity Rating (SEQROC, 2004)

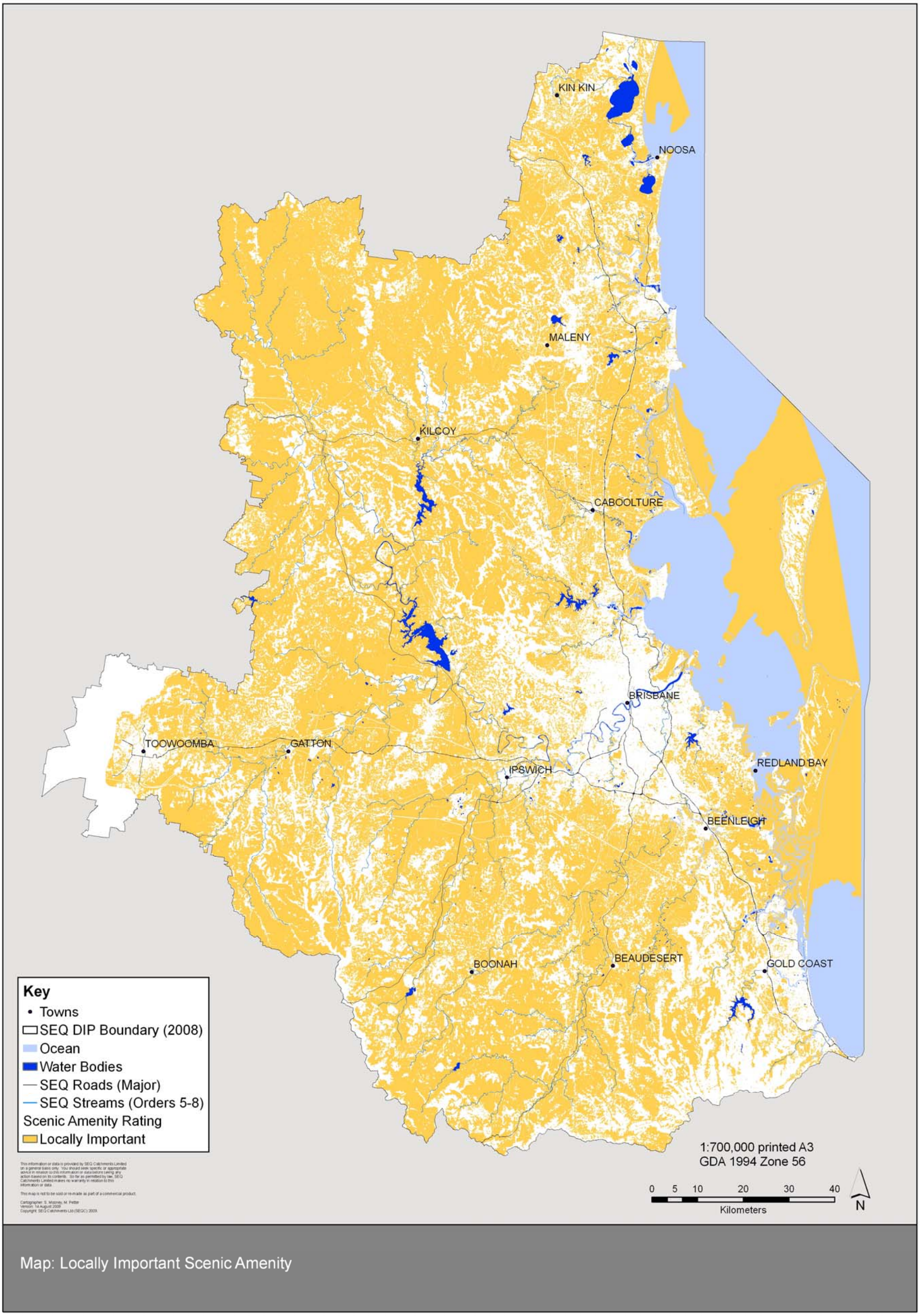
Benchmark
2004

Methodology
Selected values 6-8 as locally important from the dataset.

Results
1,606,211 ha locally important scenic amenity.

Rationale
Scenic amenity is the measure of a landscape's scenic qualities, reflecting the psychological benefit that the community derives from viewing the region's wide variety of landscapes. Examples of local scenic qualities include parks, waterways, view sheds and local landmarks.

Status of Benchmark
Complete.



Map: Locally Important Scenic Amenity

Map: Locally Important Scenic Amenity

Asset: Traditional Owners

TO1 By 2031, Traditional Owners and Aboriginal people will be resourced and working together with natural resource managers, government and non-government organisations to implement the SEQ Natural Resource Management Plan and the SEQTOA Cultural Resources Management Plan.

SEQTOA has developed an SEQ Traditional Owner Cultural Resource Management Plan, *"Our Plan"*, and Regional Investment Strategy.

Our Plan presents Resource Condition Targets and Management Action Targets under 5 themes, namely, Recognition, Genuine Consultation & Engagement, Capability, Our Culture, Our Land & Sea Country (Biodiversity) and Making Sure Our Plan is Working.

The *SEQ NRM Plan* refers to the SEQ Traditional Owner Cultural Resource Management Plan, its targets and actions, as an integral element of regional natural resource management planning. *Our Plan* will be implemented by SEQTOA in collaboration with government and non-government partners.

The capacity of Traditional Owners and Aboriginal People will be enhanced as part of this process and suitable indicators identified to benchmark and measure this target.

Asset: Water

W 1 – Environmental Flows

By 2031, environmental flows will meet aquatic ecosystem health and ecological process requirements.

Dataset
No dataset currently available

W 2 – Groundwater Levels

By 2031, 75% of SEQ Groundwater Resource Units will have ground water levels within identified acceptable annual ranges.

Dataset
No dataset currently available

Status of Benchmark
DERM to investigate a methodology to establish acceptable range based on historic data.
A monitoring program exists in State listed groundwater systems.

W 3 – Groundwater Quality

By 2031, ground water quality (nutrients and EC measurements) in all SEQ Groundwater Resource Units will be within identified acceptable annual ranges.

Dataset
No dataset currently available

Status of Benchmark
DERM to investigate a methodology to establish conductivity benchmark and ongoing monitoring. Work completed on groundwater trends in the Lockyer Valley has produced maps that could be used as a benchmark or updated based on 2008 information.

W 4 – Groundwater Dependent Ecosystems

By 2031, the condition of groundwater ecosystems and groundwater dependent ecosystems will be within identified acceptable annual ranges.

Dataset
Wetland System (DERM, Version 2 October 2009)*
Regional Ecosystems, Version 5.0 (DERM, 2005)

Benchmark
Dataset created to provide most accurate benchmark available.

Methodology
Data sets combined

1. Wetland Regional Ecosystem from Queensland Wetland Program, 2009.

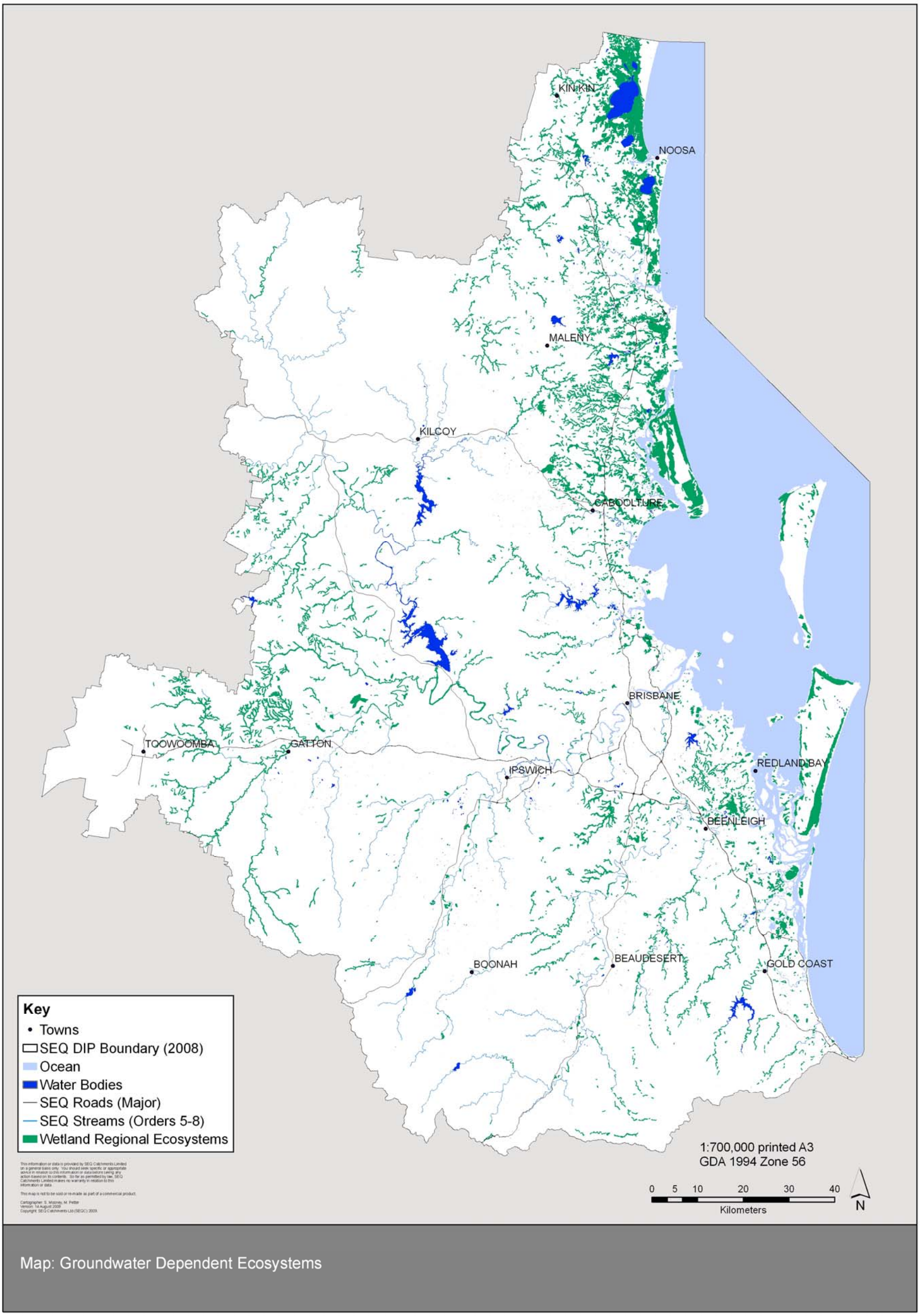
2. Extracted additional wetland communities from 2003 extent of Regional Ecosystems as below. The Regional Vegetation Management Code, Southeast Queensland Bioregion lists wetland regional ecosystems as:

12.2.7 Melaleuca quinquenervia or M. viridiflora open forest to woodland on sand plains
12.2.15 Swamps with Baumea spp., Juncus spp. and Lepironia articulate
12.3.4 Melaleuca quinquenervia, Eucalyptus robusta open forest on coastal alluvium
12.3.5 Melaleuca quinquenervia open forest on coastal alluvial plains
12.3.6 Melaleuca quinquenervia, Eucalyptus tereticornis, Lophostemon suaveolens woodland on coastal alluvial plains
12.3.8 Freshwater swamps with Cyperus spp., Schoenoplectus spp. and Eleocharis spp.
12.9-10.22 Closed sedgeland/shrubland on sedimentary rocks Coastal parts

Results
Total area is 82,384 ha.

Status of Benchmark
Further investigation required.

*Wetland Mapping and Classification for Queensland Version 2 (2009). Queensland Wetlands Program, Department of Environment and Resource Management.



Map: Groundwater Dependent Ecosystems

Map: Groundwater Dependent Ecosystems

W 5 – High Ecological Value Waterways

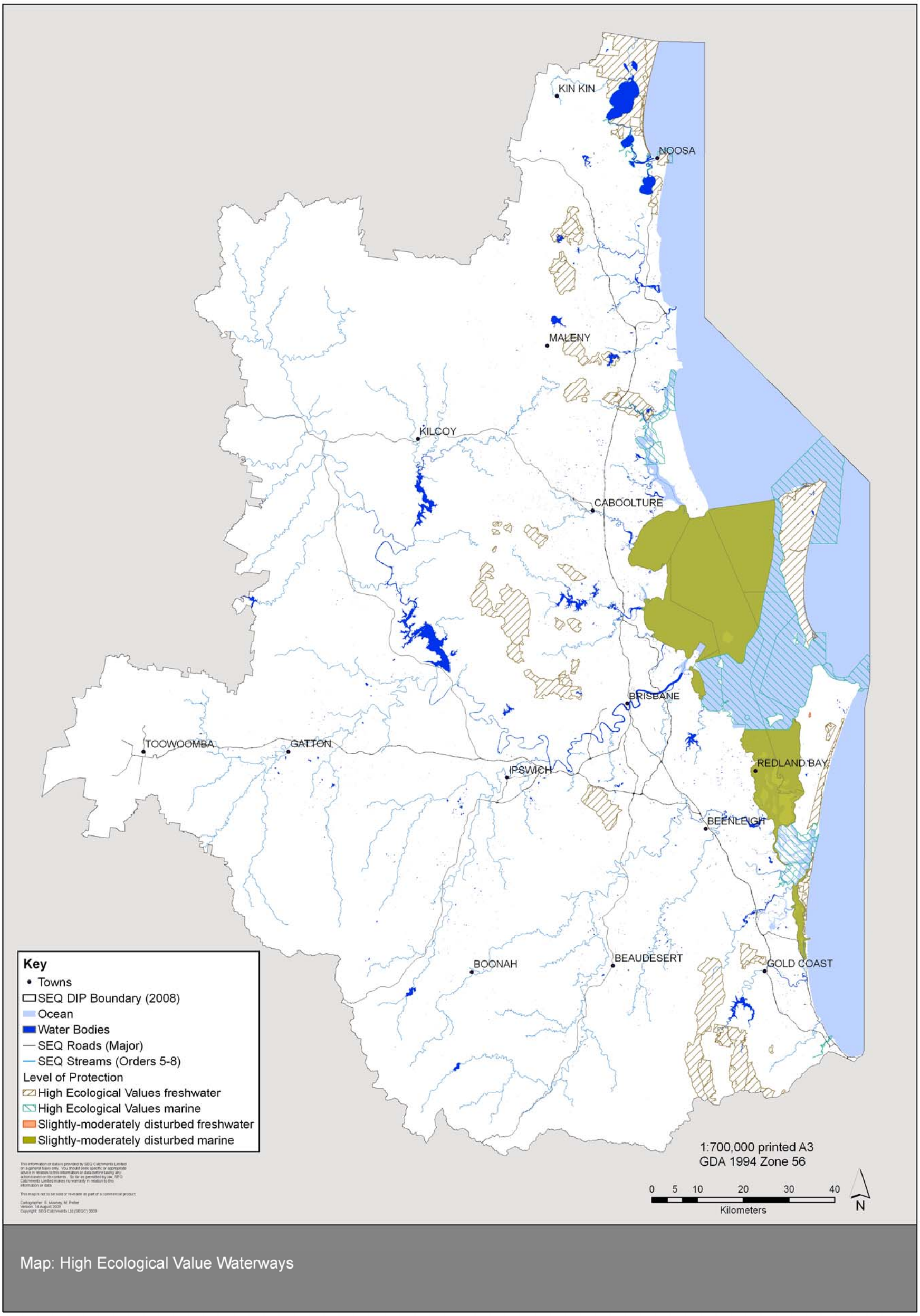
In 2031, High Ecological Value waterways in SEQ will maintain their 2008 classification.

Dataset
Environmental Values (EV) and Water Quality Objectives (WQOs) for Moreton Bay/South-east Queensland (DERM, 2007)

Methodology
Environmental Values and Level of Protection displayed.

Rationale
High priority areas that represent critical aquatic and riparian habitat and areas which make an important contribution to waterway health (including water quality) in the region need to be protected and conserved. HEV waterways are effectively unmodified or other highly valued systems, typically (but not always) occurring in national parks, conservation reserves or in remote and/or inaccessible locations. Monitoring the ongoing health of these areas acts as a regional indicator of the ecological health of waterways.

Status of Benchmark
Eastern areas available.
Values being assigned for the Western catchments.
Use current EVs for coastal areas.
Focus on areas in Western catchments with high ecological health as described in W7.



Map: High Ecological Value Waterways

Map: High Ecological Value Waterways

W 6 – Waterways Maintenance and Enhancement

In 2031, scheduled water quality objectives for all SEQ waterways will be achieved or exceeded.

Dataset
Environmental Values (EV) and Water Quality Objectives (WQOs) for Moreton Bay/South-east Queensland (DERM, 2007)

Methodology
No agreed methodology.

Rationale
Management focused on achieving or maintaining the WQOs necessary to support agreed EVs provides the most secure approach to minimising the social, economic, public health and environmental risks associated with a decline in water quality in SEQ waterways.

Status of Benchmark
Incomplete
Environmental Health Monitoring Program (EHMP) could be used to identify waterways meeting their WQOs.

W 7 – Waterway Restoration

By 2031, waterways classified as ranging from slightly to moderately disturbed and/or highly disturbed will have ecosystem health and ecological processes restored.

Dataset
Ecosystem Health Monitoring Program (SEQ Healthy Waterways Partnership)

Methodology
Extracted fish, macroinvertebrates, conductivity, temperature and pH. Averaged the records over five year period 2002-2007 and employed thresholds set by EHMP to classify three classes - pass, fail and close to fail.

Results
For review.

Rational
The health of waterways is crucial to the health of receiving waters such as Moreton Bay and coastal waters. EHMP data provides an assessment of ecological processes that are critical for the health of waterways.

Status of Benchmark
Further investigation required.

Data Reviewed
Yearly

Abbreviations

ASS	Acid Sulfate Soils
BPA	Biodiversity Planning Assessment
CAB	Coastal Algal Blooms
CO2	Carbon Dioxide
CM	Coastal and Marine
DEM	Digital Elevation Model
QPI&F	Queensland Primary Industries and Fisheries
DERM	Department of Environment and Resource Management
DRO	Desired Regional Outcome
EC	Electro conductivity
EHI	Environmental Health Index
EHMP	Environmental Health Monitoring Program
EPBC	Environmental Protection and Biodiversity Conservation Act
EPP	Environmental Protection Policy
EVR	Endangered, Vulnerable and Rare
EV	Environmental Values
HAT	Highest Astronomical Tide
HWS	Health Waterways Strategy 2007-2012
Ha	Hectares
HEV	High Ecological Value
HWP	Healthy Waterways Partnership
KASA	Key Agriculturally Strategic Areas
NAPSWQ	National Action Plan for Salinity and Water Quality
NCA	Nature Conservation Act
NPI	National Pollutant Inventory
NRM	Natural Resource Management
NRM Plan	South East Queensland Natural Resource Management Plan
NOx	Nitrogen Oxide
pH	Level of acidity or alkalinity
PM10	Particulate matter 10
RCTs	Resource Condition Targets
RE	Regional Ecosystem
REDD	Regional Ecosystem Distribution Database
RUSLE	Revised Universal Soil Loss Equation
SEQ	South East Queensland
SEQC	South East Queensland Catchments Ltd.
SEQRAQS	South East Queensland Regional Air Quality Strategy
SEQROC	South East Queensland Regional Organisation of Councils (now Council of Mayors, COM)
SEQRP	South East Queensland Regional Plan
SEQTOA	South East Queensland Traditional Owner Alliance
SLATS	Statewide Land and Tree Study
SOx	Sulphur oxides
SO2	Sulphur dioxide
t/ha	tonnes per hectare
TIM	Target Implementation Maps
TO	Traditional Owners
t/yr	tonnes per year
VCA	Voluntary Conservation Agreement
VCC	Voluntary Conservation Covenant
VOCs	Volatile organic compounds
WQO	Water Quality Objective

Glossary

Term	Description
Acid sulfate soils	Soils containing iron sulfides, commonly found in low-lying coastal areas. When these soils are exposed to oxygen through drainage or disturbance, the pyrite undergoes chemical reactions to produce sulfuric acid, which is then washed into waterways
Artificial light	A source of light generated by human technology
Beach Buffer Zone	Buffer zone created for the purposes of analyzing the stability of the coastline of SEQ. 50m buffer zone to the leeward side of the beach mapped using the 2006 Landcover analysis. 50m buffer zone adopted as the area most likely to absorb the high energy impacts of oceanic forces.
Biodiversity	Biological diversity - the natural diversity of wildlife, together with the environmental conditions necessary for their survival
Capacity building	Working with people to enhance their skills and abilities, communication networks, access to resources and leadership qualities
Catchment	The area of land that collects and transfers rainwater into a waterway
Coastal algal blooms	Algal blooms in waterways and bays which pose a threat to human and animal health or the environment.
Community wellbeing	The condition or state of a human community being collectively healthy contented and satisfied with life. Wellbeing has several components including physical, mental, social and spiritual. Wellbeing can be used in a collective sense to describe how well a society satisfies people's wants and needs.
Core Tracts	Continuous areas of vegetation above 5000ha of which there are 15 in SEQ.
Ecosystem	A community of organisms, interacting with one another, plus the environment in which they live and with which they also interact
Ecosystem services	Are the benefits people obtain from ecosystems.
Electro conductivity	A measure of the total dissolved ions in a substance which indicates the substance's ability to conduct electricity.
Endangered, Vulnerable and Rare	Taxon listed under the *Nature Conservation Act 1992* or the *Environmental Protection and Biodiversity Conservation Act 2000* (if there is a difference, the higher threat category is used, unless an expert panel recommends a lower threat category).
eNQUIRE database	A web based tool providing a central point for reporting natural resource management information and activity.
Environmental flow	The water flows required to sustain a healthy environment.

Term	Description
Environmental values	Particular values or uses of the environment that are important for a healthy ecosystem or for public benefit, welfare, safety or health and which require protection from the effects of development and human activities. Several environmental values may be designated for a specific water body (AWQG, 2000).
Estuarine	The tidal part of a river or creek where sea water mixes with fresh water.
Fragmentation	The process of separating habitats or landscapes into separate fragments by clearing, development and land use.
"Good' condition	The assessment of land condition for leasehold lands under the Delbessie Agreement accounts for several attributes, including pasture condition, soil surface, declared pests, biodiversity, salinity, riparian vegetation and natural resources. Improving land condition increases the sustainable and productive potential of grazing lands and enhances biodiversity, water quality and natural resource assets.
Greenhouse gases	Mainly carbon dioxide, methane and nitrous oxide.
Groundwater	Water found in the cracks, voids or pores, spaces or other spaces between particles of clay, silt, sand, gravel or rock within the saturated zone of a geologic formation.
Groundwater resource unit	A hydraulically connected groundwater system that is defined and recognised by State and Territory agencies.
Habitat	The environment in which a plant or animal lives.
Harmful algal bloom	Algal blooms in waterways and bays which pose a threat to human and animal health or the environment.
High ecological value (HEV) waterways	Effectively unmodified or other highly valued waterways, typically (but not always) occurring in national parks, conservation reserves or in remote and/or inaccessible locations. HEV waterways in SEQ are identified in Schedule 1 of the Environment Protection (Water) Policy 1997
High Energy Beach	The high energy beach refers to ocean beaches in SEQ where strong sometimes destructive waves occur. The strong waves reduce the quantity of sediment and sand present on the beach by carrying it out to bars under the sea.
Land salinisation	The process of increasing the amount of soluble salts in soils.
Nutrient	A substance which provides nourishment for living organisms, but if present in excessive amounts, can also adversely affect environmental health.
Open space	All land and water areas of any size and type which are characterised by having no or very few built structures, and which have nature conservation, environmental, scientific, social, recreational, cultural, spiritual, scenic, health or economic benefits for a community, both now and in the future. Open space can include wetlands, steep slopes, bushland, wildlife habitat, beaches, lakes, dams, agricultural lands, forests, scenic views, culturally significant places, outdoor recreation areas, buffers and linkages.

Term	Description
Organic carbon	Carbon which has, at some stage, been incorporated into an organism. In aquatic environments, organic carbon is produced by plant photosynthesis and bacterial growth. Leaching of humic substances and decomposition of plants and animals are also natural sources of organic carbon to surface waters. Human-related sources include agricultural runoff and municipal and industrial effluents.
Organic matter	Natural carbon-hydrogen based material originating from plant or animal sources.
Peri – urban	The blended zone of strongly competing interests between mainly rural and urban areas that are within 2 hours commuting distance of the nearest metropolitan area. It marks the interface between a generally more uniform rural landscape with relatively common land uses, community values and a mainly agricultural economy and the highly complex urban zone.
pH	A scale used to describe the degree of acidity or alkalinity of a substance. The pH range generally ranges from 1-14 with low pH substances being acidic and high pH substances being alkaline. Neutral is 7.
Photochemical smog	Secondary pollutants formed by the action of hydrocarbons and oxides of nitrogen in the presence of strong sunlight.
Pollutant	A substance which may naturally occur but is present at harmful levels (e.g. sediment or nutrients in a water body) or which may be unnatural in the environment and capable of producing environmental harm (e.g. chlorinated pesticides).
Priority species	Flora or fauna taxa currently listed as EVR under State or Commonwealth legislation (Presumed Extinct, Endangered, Vulnerable, Rare or of Cultural Significance), or identified in various Action Plans as being of concern, most transcontinental migrants listed under international agreements (CAMBA and JAMBA), as well as taxa at risk or of management concern within specific bioregions based on the written opinions of experts, or taxa of scientific interest as relictual, endemic or locally significant populations based on the written opinion of experts.
Regional land use categories	The land use categories in the SEQ Regional Plan which provide the spatial context for the Regulatory Provisions, namely: Urban Footprint Rural Living Area; and Regional Landscape and Rural Production Area.
Regional Landscape and Rural Production Area	A regulated land use category in the SEQ Regional Plan dominated by non-urban uses and activities.
Regional Plan	The South East Queensland Regional Plan 2009-2031
Remnant vegetation	Areas of relatively mature native vegetation remaining in the landscape – also legally defined under the *Vegetation Management Act 1999* for the purposes of that Act.
Riparian	Associated with the banks of a freshwater watercourse (creeks, rivers, pond or lake).
Riparian zone	the area of land immediately alongside both sides of a waterway which directly influences waterway form and function, supports a varying range of ecological and amenity

Term	Description
	values and acts to buffer the waterway from the impacts of development and human activities.
Salinity	The increased accumulation of excessive salts in land and water at sufficient levels to impact on humans and natural resources (plants, animals, aquatic ecosystems, water supplies, agriculture or infrastructure.
Scenic amenity	A measure of the relative contribution of each place in the landscape to the collective community appreciation of open space, as viewed from places that are important to the public.
Secondary salinity	The salinisation of land and water resources due to the impacts of human activities.
Sediment	Solid material settled from suspension in a liquid.
Soil structure	The arrangement of particles and air space in soils.
Stakeholders	Individuals, groups or organisations with specific interest in and/or influence on a project.
Taxa	Units of biological classification. Taxa are arranged in a hierarchy from kingdom to subspecies, a given taxon ordinarily including several taxa of lower rank. In the classification plants and animals, certain taxonomic categories are universally recognized; in descending order, these are kingdom, phylum (in plants, division), class, order, family, genus, species, and subspecies, or race.
Threatened Species	Includes and Endangered and Vulnerable under the *Nature Conservation Act 1992.* Species identified as critically endangered, endangered or vulnerable (IUCN categories International Union for the Conservation of Nature and Natural Resources) in the Department of Environment and Resource Management's Back on Track species prioritisation framework.
Traditional Owners	Aboriginal and Torres Strait Islander people with a particular connection to land under tradition.
Vulnerable Regional Ecosystems	Includes: Endangered and of concern ecosystems under the *Vegetation Management Act 1999* ; Endangered - those ecosystems at serious risk of disappearing from the wild within 10-20 years if present land use and other casual factors continue to operate. Regional Ecosystems are endangered when less than 10% of the pre-clearing extent remains in an intact condition. Of concern - where a significant reduction in the distribution or condition of a regional ecosystem has occurred and a particular management response is needed to ensure that it does not become endangered. Poorly conserved - less than 4% of the pre-clearing extent is represented in protected areas.
Water quality objective	A quantitative description of the physio-chemical quality of the water in a water body which needs to be maintained in order for the water body's environmental values to be protected. For example, water quality objectives have been set to provide stakeholders with knowledge on the level of water turbidity in western Moreton Bay that, if exceeded on a sustained basis, will result in the loss of valuable seagrass meadows.

Term	Description
Waterway	A passage for water or a body of water, including all orders of perennial and ephemeral streams (lined or unlined), rivers and other wetlands, and bays. Includes Moreton Bay and all estuaries, marine waters and foreshores.
Wetland	Areas of permanent or periodic/intermittent inundation, whether natural or artificial, with water which is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6 meters. To be a wetland the area must have one or more of the following attributes: i. at least periodically the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle; or ii. the substratum is predominantly undrained soils which are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers; or iii. the substratum is not soil and is saturated with water, or covered by water at some time. Wetland Classes *Marine System* – Consists of open ocean overlying the continental shelf and its associated high energy coastline down to a depth of 6 m below lowest astronomical tide. *Estuarine System* – Includes wetlands with oceanic water that is at least occasionally diluted with freshwater run-off from the land. *Riverine System* – Includes all wetlands and deepwater habitats contained within a channel, with two exceptions 1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and 2) habitats with water containing ocean-derived salts in excess of 0.5 %. *Lacustrine System* – Includes permanently flooded lakes and reservoirs, intermittent lakes, and tidal lakes with ocean derived salinities below 0.5 %. *Palustrine System* - Includes all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 %.

Appendix A - SEQ NRM Plan Benchmark Atlas Data Catalogue

Data Layer	Custodian	Data Quality	Project Summary
Acid Sulfate Soils by Land Cover	SEQ Catchments	10 m grid file.	Assigned a Land Cover class where Acid Sulfate Soils Risk was present. See also descriptions for Acid Sulfate Soils Risk and Land Cover.
Acid Sulfate Soils Risk	Department of Environment and Resource Management	Ground truthing has been carried out at an intensity of one site per square kilometre.	Title: Acid Sulfate Soils from the Queensland border to Noosa (SEA). These maps indicate the presence or absence of acid sulfate soils at a scale of 1:100,000 for the area Tweed Heads to Noosa. Reference is given to acid sulfate soils (ASS) on undisturbed land; ASS on disturbed land with urban development (limited field assessment); and non ASS land.
Agricultural Land Classes	Department of Environment and Resource Management	Land resource information has been collected at a broad-scale by DEEDI and CSIRO, and is available for most areas of the State. Expected accuracy exceeds 80%.	Title: Agricultural Land Classes (ALC) Maps the location and extent of good quality agricultural land. Polygon boundaries are probabilistic interpretations of changes in soil or land type.
Brigalow Core Habitat for EVR	Department of Environment and Resource Management	1:100,000. Positional accuracy +/-100 metres.	Criteria A extracted from the Brigalow Belt Biodiversity Planning Assessment Version 1.3. Refer to Biodiversity Assessment and Mapping Methodology Report. This criterion classifies areas according to their significance based on the presence of Endangered, Vulnerable and/or Rare (EVR) taxa.
Brigalow Core Habitat for Priority Taxa	Department of Environment and Resource Management	1:100,000. Positional accuracy +/-100 metres.	Criteria H extracted from the Brigalow Belt Biodiversity Planning Assessment Version 1.3. Refer to Biodiversity Assessment and Mapping Methodology Report. This criterion can be used to identify Essential and General Habitat for EVR and other Priority Taxa additional to that derived under Diagnostic Criterion A.
Coastal Vegetation	SEQ Catchments and Queensland Herbarium	Vegetation mapping at a map scale of 1:100,000 and 1:50,000 in part, based on surveys of vegetation communities. SEQ mapped	All vegetation communities within Landzone 1 – tidal flats and beaches. Quaternary estuarine and marine deposits subject to periodic inundation by saline or brackish marine waters. Includes mangroves, saltpans, off shore tidal flats and tidal beaches.

		at 1:50,000. Positional accuracy - polygons 100m.	
Core Habitat for EVR	Department of Environment and Resource Management	1:100,000. Positional accuracy +/-100 metres.	Criteria A extracted from South East Queensland Bioregion Biodiversity Planning Assessment Version 3.4. Refer to Biodiversity Assessment and Mapping Methodology Report. This criterion classifies areas according to their significance based on the presence of Endangered, Vulnerable and/or Rare (EVR) taxa.
Core Habitat for Priority Taxa	Department of Environment and Resource Management	1:100 000. Positional accuracy +/-100 metres.	Criteria H extracted from South East Queensland Bioregion Biodiversity Planning Assessment Version 3.4. Refer to Biodiversity Assessment and Mapping Methodology Report. This criterion can be used to identify Essential and General Habitat for EVR and other Priority Taxa additional to that derived under Diagnostic Criterion A.
DIP Mainland and Marine (dissolved)	Department of Infrastructure and Planning (SEQ Region)	Positional accuracy derived from the August 2008 Digital Cadastral Database (DCDB) and Local Government Council planning scheme information. Accurate to the August 2008 DCDB.	The SEQ Planning area as identified by the Department of Infrastructure and Planning as defined under the Integrated Planning Act 1997 (IPA). The marine zone has been added, approximately 3 nautical miles from eastern coastline.
Dolphin Density	SEQ Catchments and the Department of Environment and Resource Management	Site data with an accuracy of 5 m re-interpreted using a density function with a cell size of 25 m.	WildNet is the Department of Environment and Resource Management's corporate wildlife information system for the taxonomy and distribution of Queensland's plants and animals. Extracted all current (post 1990) dolphin records from WildNet and applied a density function using 25 m grid cells and a 2500 m radius.
Dugong Density	SEQ Catchments and the Department of Environment and Resource Management	Site data with an accuracy of 5 m re-interpreted using a density function with a cell size of 25 m.	Extracted all current (1990) dugong records from WildNet and applied a density function using 25 m grid cells and a 2500 m radius.
Environmental Values and Water Quality Objectives Includes: - Environmental Values Schedule - Level of Protection - Water Quality Schedule - Water Type	Department of Environment and Resource Management	This dataset has been derived as a desktop study from varying data sources and has not been verified on the ground. The data sources range from 1:25,000 to 1:250,000.	The South East Queensland Level of Protection dataset is included in the Atlas. This is one of the datasets that comprise the South East Queensland Environmental Values Schedule 1 Database, March 2007. These datasets provide the spatial context for the Environmental Values (EVs) and Water Quality Objectives (WQOs) scheduled under the Environmental Protection (Water) Policy (1997). This dataset defines the management areas for which locally derived WQOs have been set and contains High Ecological Value

			Ecosystems and Slightly-Moderately Disturbed Ecosystems within Moreton Bay.
Erosion Risk	SEQ Catchments	A composite of various data-sets with a cell size of 25 m.	The adoption of 4 data layers to inform potential erosion areas. Data layers include Stream Bank Hazard (no trees on waterways), Low Grass Cover (<30% cover), Landslip Hazard (Areas with a slope of 12-45 degrees with no woody vegetation), and outputs of the revised universal soil loss equation (RUSLE).
Estate Boundaries (2009)	Department of Environment and Resource Management	Positional accuracy matches the accuracy of the Qld Digital Cadastral Database (DCDB). Amendments to DCDB polygon and attribute information are based on official gazetted plans. The shapes and locations of a number of islands and some coastline has been matched to other sources.	To show the Estate as managed by the Department of Environment and Resource Management for protected areas under the Nature Conservation Act 1992 (National Park of various types, Conservation Park, Resources Reserve), areas managed under the Forestry Act 1959 (Forest Reserve, State Forest and Timber Reserve).
Heritage Places Register (State)	Department of Environment and Resource Management	Translated into a spatial layer by matching lotplan information with the current DCDB.	This layer shows indicative locations for places entered in the Queensland Heritage Register. Information about these places was obtained from the QCHIP (Queensland Cultural Heritage Inventory of Places) database. This layer does not represent the heritage-listing boundary assigned to each place upon entry in the Queensland Heritage Register. Places that are provisionally and permanently entered in the Queensland Heritage Register are protected under the provisions of the Queensland Heritage Act 1992. The Queensland Heritage Council has approved these places. Places nominated to the Queensland Heritage Register are also included though the cultural heritage significance of these places has not been established under the Queensland Heritage Act 1992.
High Energy Beach	SEQ Catchments	Remote sensing output from SPOT 10 m satellite imagery.	A product of the Landcover Remote Sensing project based on 2006 SPOT 10 m Satellite Imagery. Landcover type was sand/mud and manually selected all sand/mud outside Moreton Bay. This generated an Ocean Beach dataset which was then cross-referenced with 2006 SPOT 2.5 m Satellite Imagery.
High Energy Beach Buffer	SEQ Catchments	Cell size is 10 m.	Established a terrestrial 50 m buffer zone to High Energy Beach dataset. Removed actual beach and ocean parts from

			buffer zone. This was then assigned Landcover Type based on 2006 Landcover. Total area within buffer zone 1,874 ha.
High Energy Beach Landcover	SEQ Catchments	Remote sensing output from SPOT 10 m satellite imagery.	A product of the Landcover Remote Sensing project based on 2006 SPOT 10 m Satellite Imagery. Landcover type was sand/mud and manually selected all sand/mud outside Moreton Bay. This generated an Ocean Beach dataset which was then cross-referenced with 2006 SPOT 2.5 m Satellite Imagery. A buffer (50 m) was applied to the beach and Landcover Classes assigned to buffer.
Island Streams	SEQ Catchments and Department of Environment and Resource Management	Grid size 25 m.	Extracted from Department of Environment and Resource Management 1:100 000 Waterways database. Assigned a 25 m buffer to streams. Intersected buffered streams with Landcover (2006 SPOT 10 m Satellite Imagery) Vegetation. Landcover types include Native Forest (Secondary Class 10), Plantation/Non-Native Vegetation (Secondary Class 11), and Non-tree Native Vegetation (Secondary Class 12). Buffered areas with a blank Landcover type were assigned 'No Trees' Class.
Key Resource Area (includes Separation Areas)	Department of Environment and Resource Management and Department of Infrastructure and Planning	Unknown	Limit of area to which State Planning Policy 2/07: Protection of Extractive Resources applies. To identify areas where Policy must be given regard in planning decisions. The separation area is the area needed to maintain separation of people from undesirable levels of noise, dust, ground vibration or air blast overpressure that may be produced as residual impacts from existing or future extraction or processing of the extractive resource.
Land Cover (2006)	SEQ Catchments	Cell size is 10 m. The results were assessed by generating an error matrix with an overall accuracy of approximately 90%.	This is a 10 m, land cover classification mosaic produced from 18 individual SPOT 5 scenes covering South East Queensland catchment areas. The 10 m SPOT 5 scenes were captured between September 2005 and September 2006. Once classified, the scenes were then reclassified using a range of GIS data layers through expert rules applied using a decision tree approached.
Land less than 5m	SEQ Catchments	Cell size is 20 m.	Applying the shuttle radar digital elevation model (SRTM-Oz), all lands less than 5 m in elevation were selected. Removed ocean from analysis.
Marine Park (as identified through the Moreton Bay Marine Park Zoning 2008)	Department of Environment and Resource Management	Approximately 1:100,000 scale and relevant to DCDB. All dataset attributes are complete and are 100%	This dataset represents the zoning from the Marine Parks (Moreton Bay) Zoning Plan 2008 (which comes into effect 1 March 2009).

		accurate. This boundary was based on the description found in Schedule 1 of the Marine Parks (Declaration) Regulation 2006 and the best possible datasets available.	
Maroochy Seagrass	Department of Environment and Resource Management	Positional accuracy +/- 10 m.	Seagrass mapping of Maroochy River between Petrie Creek and the river mouth, conducted as part of the Ecosystem Health Monitoring Program.
Moreton Bay Coral (2004)	Department of Environment and Resource Management	Positional accuracy +/- 10 m.	Coral habitat mapping of Moreton Bay, conducted as part of the Ecosystem Health Monitoring Program.
National Estate Register	Australian Government – Department of the Environment, Water, Heritage and the Arts	Relevant to DCDB.	Register of the National Estate is a list of natural, Indigenous and historic heritage places throughout Australia. It was originally established under the Australian Heritage Commission Act 1975. Under that Act, the Australian Heritage Commission entered more than 13,000 places in the register. In 2004, responsibility for maintaining the Register shifted to the Australian Heritage Council, under the Australian Heritage Council Act 2003 (AHC Act).
No Trees on Waterways	SEQ Catchments and SEQ Healthy Waterways Partnership	Cell size is 10 m.	Applying the SEQ Streams dataset, stream orders 3-8 were selected and converted to 5 m grids. Expanded stream orders 3-5 with 10 m buffer; stream order 6 with 15 m buffer; and stream order 7-8 with 20 m buffer. Adjusted widths for lower parts of the Bremer River (50 m) and Brisbane River (75 m). Intersected buffered streams with Landcover (2006 SPOT 10 m Satellite Imagery) Vegetation. Landcover types include Native Forest (Secondary Class 10), Plantation/Non-Native Vegetation (Secondary Class 11), and Non-tree Native Vegetation (Secondary Class 12). Buffered areas with a blank Landcover type were assigned 'No Trees' Class.
Noosa River Seagrass	Department of Environment and Resource Management	Captured at scales ranging from 1:300 to 1:5,000. Positional accuracy +/- 10 m.	Seagrass mapping of the Noosa River system as part of the Ecosystem Health Monitoring Program.
Ocean	SEQ Catchments	Cell size is 10 m.	A product of the Landcover Remote Sensing project based on 2006 SPOT 10 m Satellite Imagery. Landcover type was ocean, Secondary Class 9.
Priority Taxa outside Remnant	SEQ Catchments and the Department of Environment and Resource Management	GPS specific.	Based on Wild Net records and community based fauna monitoring programs (e.g. Fauna Watch). Records that fell outside of remnant vegetation were extracted from the

			database and a density function of 2 km applied to site records.
Pumicestone Passage Seagrass (2002)	Department of Environment and Resource Management	Captured at scales ranging from 1:300 to 1:5,000. Positional accuracy +/- 10 m.	Seagrass mapping of Pumicestone Passage as part of the Ecosystem Health Monitoring Program.
Ramsar	Department of Environment and Resource Management	Variable	The convention on wetlands of international importance was the first modern inter-governmental treaty between nations aiming to conserve natural resources (Ramsar Convention). There are 5 Ramsar sites within Queensland: Moreton Bay (Queensland), Bowling Green Bay (Queensland), Currawinya Lakes (Queensland), Shoalwater and Corio Bays (Queensland/ Commonwealth), Great Sandy (Queensland).
Reefs	Department of Environment and Resource Management	Unknown	Information dataset from the South-east Queensland Regional Coastal Management Plan, August 2006.
Remnant Vegetation (2001) (based on Regional Ecosystems)	Queensland Herbarium	1:250,000. Positional accuracy 100 m – 500 m.	The mapping includes regional ecosystems as described in Sattler and Williams (ed.) (1999) and updated in the Regional Ecosystem Description Database. The Queensland Herbarium classifies vegetation using the association unit (Beadle and Costin 1952). More recently, this vegetation classification has been incorporated into the regional ecosystem classification, which is based on vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil.
Salinity Extent	Department of Environment and Resource Management	Positional accuracy +/- 10 m.	The location and extent of land affected by salinity is currently recorded in a variety of ways including desktop exercises, field inspections and systematic resource surveys. The data collected shows significant variation in the methodology and definition of salt affected land.
Scenic Amenity	SEQ Region of Councils (now Council of Mayors)	Cell size is 25 m.	A data product from the South East Queensland Scenic Amenity Study, July 2004.
Seagrass Cover	SEQ Catchments, Wildlife Protection Society Qld Bayside Branch and the Department of Environment and Resource Management	Cell size is 25 m.	The Seagrass Cover dataset is the combination of the Seagrass Meadows database and Seagrass Watch database. Seagrass Meadows provide extent of beds and the Seagrass Watch database give a cover factor.
Selected Tracts (2003)	SEQ Catchments	Cell size is 25 m.	With the capture of woody vegetation across the landscape picking up individual trees and clumps of trees (forming a patch), tract analysis is applied. Selected tract were >20 ha in size.
SEQ BPA v3.5 and v3.4	Department of Natural	Map scale of 1:100,000 and	Data represents Version 3.5 of the South East Queensland

	Resources and Water	1:50,000 (based on Regional Ecosystem Mapping).	Biodiversity Planning Assessment. The underlying methodology is derived from the Biodiversity Assessment and Mapping Methodology (BAMM) which provides a consistent approach for assessing biodiversity values at the landscape scale in Queensland using vegetation mapping data as a fundamental basis.
SEQ DIP Boundary (2008)	Department of Infrastructure and Planning	Positional accuracy derived from the August 2008 Digital Cadastral Database (DCDB) and Local Government Council planning scheme information. Accurate to the August 2008 DCDB.	The SEQ Planning area as identified by the Department of Infrastructure and Planning as defined under the Integrated Planning Act 1997 (IPA).
SEQ Roads	Department of Natural Resources and Water	Horizontal positional accuracy of the street centrelines varies from +/- 1.5 m in urban areas up to +/- 250 m in rural / remote areas.	Dataset representing street centerlines of Queensland. Street records are polylines with attribution including street name, address ranges, road classification, one-way direction indicator, alias name, Local Government Authority code, Locality Code, Unique Feature Identifier. The primary source of data is the QLD DCDB for the QLD portion.
SEQ Streams	SEQ Healthy Waterways Partnership	Built off 20 m digital elevation model and local government digital elevation models (where available).	Spatial representation of South East Queensland Streams and Catchments. Relevant Local and State Government agencies supplied applicable topographic data sets for the study area that allowed for the creation of the DEM. After extensive edge matching a DEM at 20 m grid resolution was created. Areas not covered by suitably detailed data were filled with 5 m contour data. Stream location and their associated stream order were derived from the DEM. Drainage basins (catchments) were also created from the DEM. Feedback indicated that 0.1 km^2 was the preferred catchment definition, providing the greatest level of detail and best fit with detailed local drainage network data.
SEQ Waders	Department of Environment and Resource Management	GPS specific and field surveys (1:5,000).	Wader site data collation and survey projects for the South East Queensland area.
Soil Acidity	Department of Environment and Resource Management	Grid size is 25 m.	Soil acidity (buffer capacity) was identified by combining land use mapping with soil order mapping. It estimates the risk of soil acidity affecting soil health and is grouped into high, medium and low categories.
Trees on Waterways	SEQ Catchments and SEQ Healthy Waterways Partnership	Cell size is 10 m.	Applying the SEQ Streams dataset, stream orders 3-8 were selected and converted to 5 m grids. Expanded stream orders 3-5 with 10 m buffer; stream order 6 with 15 m buffer; and

			stream order 7-8 with 20 m buffer. Adjusted widths for lower parts of the Bremer River (50 m) and Brisbane River (75 m). Intersected buffered streams with Landcover (2006 SPOT 10 m Satellite Imagery) Vegetation. Landcover types include Native Forest (Secondary Class 10), Plantation/Non-Native Vegetation (Secondary Class 11), and Non-tree Native Vegetation (Secondary Class 12). Buffered areas with a blank Landcover type were assigned 'No Trees' Class.
Towns	Department of Environment and Resource Management	1:250,000	This data is based on the Place Names Database (PNDB) which is a system that records and displays information on Place Names within Queensland.
Turtle Rookery (known)	Department of Environment and Resource Management	1 minute accuracy.	Database of turtle nesting sites across Qld.
Turtle Density	SEQ Catchments and the Department of Environment and Resource Management	Site data with an accuracy of 5 m re-interpreted using a density function with a cell size of 25 m.	Extracted all turtle records from WildNet and applied a density function using 25 m grid cells and a 2,500 m radius.
Vulnerable Ecosystems	SEQ Catchments and Qld Herbarium	Cell size is 25 m.	Used REDD 5.1 database to develop list of poorly conserved Regional Ecosystems for the SEQ Bioregion. Target applied was 4% of pre clearing remnant. Intersected poorly conserved with National Parks to ascertain extent within protective measures. Added Regional Ecosystems "not represented" to Poorly Conserved database.
Waterbody 2006 (SPOT)	SEQ Catchments	Cell size is 10 m.	A product of the Landcover Remote Sensing project based on 2006 SPOT 10 m Satellite Imagery. Landcover type was Water Body, Secondary Class 7.
Wetland System (Version 2, October 2009)	Department of Environment and Resource Management	Map scale of 1:100,000.	The Queensland Wetland Mapping and Classification Project. Four principles form the basis for the wetland mapping and classification method including rapid wetland classification, incorporation of existing knowledge, application at catchment or basin scale, and aquatic ecosystem classification and assessment. Wetlands were classed as Marine, Estuarine, Palustrine, Lacustrine and Riverine.
Wetland Vegetation (based on Regional Ecosystems)	SEQ Catchments and Qld Herbarium	Map scale of 1:100,000 and 1:50,000.	Extracted wetland regional ecosystems from Regional Ecosystems (200512 V5) database. The Regional Vegetation Management Code (Vegetation Management Act 199) for the SEQ Bioregion lists the following wetland regional ecosystems: 12.2.7; 12.2.15; 12.3.4; 12.3.5; 12.3.6; 12.3.8; and 12.9-10.22.

Woody Vegetation (2001 & 2003)	Department of Environment and Resource Management	Cell size is 25 m.	The Statewide Landcover and Trees Study (SLATS) is a major vegetation monitoring initiative to investigate the overall cover of woody vegetation. An outcome is the Foliage Projective Cover (FPC) emitted using satellite imagery and remote sensing processes. The FPC is quantified from 0-100 %, whereby 0% is cleared or bare ground and 100% is dense canopy or heavily vegetated cover.
World Heritage Areas (2005)	Department of Environment and Resource Management	Scales range from 1:500,000, 1:250,000, and 1:100,000.	A collection of fourteen (14) digital coverages represent Australia's World Heritage properties. They are: Australian Fossil Mammal Sites - Naracoorte Australian Fossil Mammal Sites – Riversleigh, Blue Mountains, Central Eastern Rainforest Reserves Australia (CERRA), Fraser Island, Heard and McDonald Islands, Kakadu National Park, Lord Howe Island Group, Shark Bay, The Great Barrier Reef, The Tasmanian Wilderness, Uluru-Kata Tjuta National Park, Wet Tropics of Queensland, Willandra Lakes.

Appendix B - Poorly Conserved Ecosystems in SEQ

Note: Poorly conserved status is calculated using whole of SEQ Bioregion extents. The target and gap areas in the following Table are calculated on RE extents within the SEQ RCG Region.

RE Label	PC Status	VM Status	Target	In Reserve	Gap	Remain
11.8.5	PC_04	NOC	0.4624	-	0.4624	10.2445
12.11.18a	PC_04	NOC	8.2936	-	8.2936	135.3720
12.11.23	PC_04	OC	445.6844	137.2690	308.4154	2,045.7152
12.11.5j	PC_04	OC	260.6473	242.7294	17.9178	1,353.2589
12.12.15a	PC_04	OC	70.6614	1.9360	68.7254	430.2491
12.12.3a	PC_04	OC	16.8144	-	16.8144	25.0362
12.12.8	PC_04	OC	773.4665	49.8902	723.5764	1,715.0495
12.2.5a	PC_04	NOC	12.5168	-	12.5168	312.9206
12.3.10a	PC_04	E	77.7069	-	77.7069	8.2829
12.3.3	PC_04	E	6,538.5546	41.5128	6,497.0418	2,305.5591
12.3.3a	PC_04	NOC	3.8038	-	3.8038	68.1876
12.3.5a	PC_04	E	284.8793	4.2231	280.6562	330.9552
12.3.7a	PC_04	OC	1.9347	-	1.9347	14.4792
12.3.8	PC_04	NOC	138.4023	5.0165	133.3859	1,216.1961
12.5.2	PC_04	E	408.3010	105.3147	302.9862	954.1581
12.5.3a	PC_04	E	45.0288	-	45.0288	15.9641
12.8.14a	PC_04	E	87.5928	-	87.5928	187.1099
12.8.1a	PC_04	OC	15.5921	-	15.5921	118.8241
12.8.21	PC_04	OC	203.0526	51.9654	151.0872	1,169.1997
12.8.23	PC_04	E	18.4698	-	18.4698	19.5359
12.9-10.11	PC_04	E	105.3673	-	105.3673	233.7560
12.9-10.12	PC_04	OC	493.0935	-	493.0935	3,406.8253
12.9-10.12a	PC_04	OC	123.1650	-	123.1650	805.1239
12.9-10.17a	PC_04	NOC	384.7949	368.6562	16.1387	4,174.3921
12.9-10.19a	PC_04	NOC	267.1422	222.1701	44.9722	4,179.3962
12.9-10.6	PC_04	E	1,303.3869	12.8016	1,290.5853	973.9802
12.9-10.7	PC_04	OC	8,712.3298	2,176.7074	6,535.6224	30,257.2890
12.9-10.7a	PC_04	OC	246.6160	-	246.6160	1,487.0875
12.9-10.8	PC_04	E	424.5033	256.8594	167.6439	866.6091

Appendix C – Priority Taxa from BPA Version 3.5

EVR Fauna Taxa
Records were queried and any dubious ones removed or flagged for re-assessment. Additional records, especially breeding locations for high mobility taxa, were identified by various panel members. Criterion A allows for inclusion of accurate breeding or significant roost site records for high mobility taxa. A summary of comments and actions for each taxon is given in Table 2.

Table 2 EVR Taxa
Codes:
STAT – Status as per NCA &/or EPBC; E – Endangered, V – Vulnerable, R – Rare,
MOB – Mobility; L – Low Mobility, H – High Mobility, NA – No Action.
Panel Comments – HSM – Habitat Species Model

GP	Scientific Name	Common Name	STAT	MOB	Panel Comments
Reptiles	*Phyllurus caudiannulatus*	Ringed Thin-tailed Gecko	R	L	Check habitat mapping for the Oakview population. More records to be included. Could be a candidate for HSM.
Reptiles	*Ramphotyphlops silvia*	blindsnake	R	L	no comment
Reptiles	*Saproscincus rosei*	skink	R	L	Link with Saproscincus spectabilis see below. Records available from PHD student.
Reptiles	*Saproscincus spectabilis*	skink	R	L	Confused taxonomy for all Saproscincus in SEQ; treat as combined taxon. Back on Track. Was listed as Rare and then it was split into 3 species. Probably all qualify as rare. Rosei most widespread (R) under NCA, spectabilis is most restricted and is upland. Records available from PHD student.
Reptiles	*Simoselaps warro*	Robust Burrowing Snake	R	L	no comment
Reptiles	*Strophurus taenicauda*	Golden-tailed Gecko	R	L	no comment
Reptiles	*Varanus semiremex*	Rusty Monitor	R	L	Threatened by mangrove removal. Marginal to the bioregion.

GP	Scientific Name	Common Name	STAT	MOB	Panel Comments
Birds	*Accipiter novaehollandiae*	Grey Goshawk	R	H	
Birds	*Atrichornis rufescens*	Rufous Scrub-bird	V	L	Records 386782, 344742 dubious.
Birds	*Calyptorhynchus lathami*	Glossy Black-Cockatoo	V	H	Local government project to gather records.
Birds	*Climacteris erythrops*	Red-browed Treecreeper	R	L	Records 156293, 2710146, 2559150, 2730819 dubious
Birds	*Collocalia spodiopygius*	White-rumped Swiftlet	R	H	no comment
Birds	*Cyclopsitta diophthalma coxeni*	Coxen's Fig-Parrot	E	H	All remnant vegetation within areas specified as Coxen's Fig-Parrot habitat (Moore Park-Deepwater NP, Kin Kin Creek-Mothar Mountain, and headwaters Mooloolah River-Stanley River-Mary River, McPherson Range-Main Range) be considered of State Significance. Interim HSM developed and implemented.
Birds	*Dasyornis brachypterus*	Eastern Bristlebird	E	L	
Birds	*Ephippiorhynchus asiaticus*	Black-necked Stork	R	H	Need to list/map breeding sites. 1992648 not a breeding record, just a sighting
Birds	*Erythrotriorchis radiatus*	Red Goshawk	E	H	Habitat Model under development. More records for the species to be sourced.
Birds	*Esacus neglectus*	Beach Stone-curlew	V	H	
Birds	*Falco hypoleucos*	Grey Falcon	R	H	not shown to panel
Birds	*Geophaps scripta scripta*	Squatter Pigeon (sth subsp.)	V	H	Data in WildNet may not be identified down to subspecies. All species records found in SEQ Bioregion will be Gss and should be included in BPA. Apply five year filter.
Birds	*Grantiella picta*	Painted Honeyeater	R	H	no comment
Birds	*Haematopus fuliginosus*	Sooty Oystercatcher	R	H	
Birds	*Lathamus discolor*	Swift Parrot	E	H	Apply 5 sightings over years rule.
Birds	*Lophoictinia isura*	Square-tailed Kite	R	H	
Birds	*Melithreptus gularis*	Black-chinned Honeyeater	R	H	The proposed method for providing 5 records over years will cater for this species in the BPA. Published record in Sunbird Journal.

GP	Scientific Name	Common Name	STAT	MOB	Panel Comments
Birds	*Menura alberti*	Albert's Lyrebird	R	L	Records ok. 2786345 dubious.
Birds	*Neophema pulchella*	Turquoise Parrot	R	H	No comment
Birds	*Nettapus coromandelianus*	Cotton Pygmy-goose	R	H	
Birds	*Ninox strenua*	Powerful Owl	V	H	If it meets a 5 record strike criteria then can there be a bigger buffer applied? Not sure which approach to take to buffer records and identify range? 500m may be too small for this species.
Birds	*Numenius madagascariensis*	Eastern Curlew	R	H	
Birds	*Pachycephala olivacea*	Olive Whistler	R	L	Records 2272408, 2272407, 2272405 - precision should be decreased. Association with high altitude Nothofagus forests.
Birds	*Pezoporus wallicus*	Ground Parrot	V	L	Records ok. HSM developed and implemented.
Birds	*Podargus ocellatus plumiferus*	Plumed Frogmouth	V	L	Main Range records dubious as well as 476007. 2682750 dubious.
Birds	*Poephila cincta cincta*	Black-throated Finch (white-rumped subsp.)	E	H	No records in the bioregion.
Birds	*Rallus pectoralis*	Lewin's Rail	R	L	No comment
Birds	*Rostratula benghalensis*	Painted Snipe	R	H	Updated coordinates
Birds	*Sterna albifrons*	Little Tern	E	H	Possible change to status. Threatened by disturbance and ferals.
Birds	*Stictonetta naevosa*	Freckled Duck	R	H	No comment
Birds	*Stipiturus malachurus*	Southern Emu-wren	V	L	Record 462577 dubious.
Birds	*Tadorna radjah*	Radjah Shelduck	R	H	Check breeding sites/records.
Birds	*Turnix melanogaster*	Black-breasted Button-quail	V	L	Include a list of duplicate records from WildNet for exclusion.
Birds	*Tyto tenebricosa*	Sooty Owl	R	H	RFA habitat model for sooty owl including wet sclerophyll gullies.
Birds	*Xanthomyza phrygia*	Regent Honeyeater	E	H	no comment
Fish	*Maccullochella peelii*	Murray Cod	V	L	New since last BPA
Fish	*Maccullochella peelii mariensis*	Mary River Cod	E	L	
Fish	*Nannoperca oxleyana*	Oxleyan Pygmy Perch	E	L	No comment
Fish	*Neoceratodus forsteri*	Australian Lungfish	V	L	New since last BPA. Buffer known spawning sites by 200m - due to sensitivity to disturbance in riparian zone.
Fish	*Pseudomugil mellis*	Honey Blue Eye	V	L	No comment
Frogs	*Adelotus brevis*	Tusked Frog	V	L	New EVR since last BPA.
Frogs	*Assa darlingtoni*	Pouched Frog	R	L	2784037 dubious.
Frogs	*Crinia tinnula*	Wallum Froglet	V	L	Tugun records missing. Review core habitat modelling in northern SEQ. HSM developed and implemented.
Frogs	*Lechriodus fletcheri*	Black Soled Frog	R	L	Lower Coomera records incorrect. Incorrect Lat long. 540337, 540338, 540339
Frogs	*Litoria brevipalmata*	Green Thighed Frog	R	L	Another record for Southport (on border but habitat is on NSW side of the border) Development
Frogs	*Litoria cooloolensis*	Cooloola Sedgefrog	R	L	HH to check 2450362. Noosa north shore record to be added. HSM developed and implemented.

GP	Scientific Name	Common Name	STAT	MOB	Panel Comments
Frogs	*Litoria freycineti*	Wallum Rocketfrog	V	L	Records missing. Review core habitat modelling in northern SEQ to review habitat modelling for acid frogs. 1112814 dubious. HSM developed and implemented.
Frogs	*Litoria olongburensis*	Wallum Sedgefrog	V	L	Records missing. Review core habitat modelling in northern SEQ. Review habitat modelling for acid frogs. 1112886 dubious. HSM developed and implemented.
Frogs	*Litoria pearsoniana*	Cascade Treefrog	V	L	Currently status is E but will probably revert to V due to error. 963094 dubious.
Frogs	*Litoria pearsoniana (Kroombit Tops population)*	Cascade Treefrog (Kroombit Tops population)	E	L	Litoria pearsoniana ('Kroombit Tops population). Additional records to be included.
Frogs	*Litoria revelata*	Whirring Treefrog	R	L	More records to be included.
Frogs	*Litoria* sp. cf. *cooloolensis*	'Stradbroke' Sedgefrog	R	L	Ok. HSM developed and implemented.
Frogs	*Mixophyes fleayi*	Fleay's Barred Frog	E	L	Ok. WildNet records to be integrated
Frogs	*Mixophyes iteratus*	Giant Barred Frog	E	L	Record 262328 dubious. Missing Coomera River records.
Frogs	*Philoria kundagungan*	Red-and-yellow Mountainfrog	R	L	More records to include. AKA Kyarranus
Frogs	*Philoria loveridgei*	Masked Mountainfrog	R	L	More records to be included. AKA Kyarranus sp.
Frogs	*Rheobatrachus silus*	Southern Gastric Brooding Frog	E	L	Ok
Frogs	*Taudactylus diurnus*	Southern Dayfrog	E	L	Ok
Frogs	*Taudactylus pleione*	Kroombit Tinkerfrog	E	L	Update status in table to E. Potential habitat model. Subset of Wet rainforest polygons to be included.
Invert.	*Acrodipsas illidgei*	Illidge's Ant-blue	V	L	no comment
Invert.	*Argyreus hyperbius inconstans*	Australian Fritillary	E	L	no comment
Invert.	*Ornithoptera richmondia*	Richmond Birdwing	V	L	no comment
Mammals	*Chalinolobus dwyeri*	Large-eared Pied Bat	V	L	Provide more records.
Mammals	*Chalinolobus picatus*	Little Pied Bat	R	L	ok.
Mammals	*Dasyurus hallucatus*	Northern Quoll	E	L	New EVR since last BPA
Mammals	*Dasyurus maculatus maculatus*	Spotted-tailed Quoll (sth subsp.)	E	H	5km buffer for 5 strike rule should be used. 2001 decision: That all accurate, post-1975 records (≤500m precision) of Spotted-tailed Quoll be included in Criterion A. Although a high mobility taxon, the panel considered that such records are likely to reflect habitat that is being used (unlike flying taxa that are often sighted traversing over unused habitat types).
Mammals	*Hipposideros semoni*	Semon's Leaf-nosed Bat	E	L	All records are duplicate records.
Mammals	*Kerivoula papuensis*	Golden-tipped Bat	R	L	IG to supply new records.
Mammals	*Macroderma gigas*	Ghost Bat	V	H	Leave as historical record. ok.
Mammals	*Nyctophilus timoriensis*	Greater Long-eared Bat	V	L	Provide recent record from Bunyas.
Mammals	*Petrogale penicillata*	Brush-tailed Rock-wallaby	V	L	Modelling underway. 210408 - location should be spelt correctly. 675954 flag as possible escapee/released.
Mammals	*Phascolarctos cinereus*	Koala	V	L	HSM developed and implemented.

3.2 Review of Priority Fauna Taxa

The panel made additions and deletions to the original list provided. An amended list of Priority taxa for Southeast Queensland is given in Table 3. Also included in the list are recommendations from an Invertebrate Expert Panel held in November 2002. This panel needs to be reconvened to update its recommendations prior to any decisions being implemented.

Records for priority fauna taxa were subject to the filtering rules as described above. Subsequently, for species of State Significance, high precision records (precision ≤ 500m) were buffered by twice their precision (as for Criterion A) and assigned "VERY HIGH" in Criterion H. The mapped area representing these records is designated as special area "seq_fa_28". Similarly. For species of Regional Significance, high precision records (precision ≤ 500m) were buffered by twice their precision (as for Criterion A) and assigned "HIGH" in Criterion H and designated as special area "seq_fa_29". For low precision State, Regional and flag species, the point records were buffered by 1000m and assigned "MEDIUM" in Criterion H and designated as special areas "seq_fa_30", "seq_fa_31" and "seq_fa_32" respectively (Table 4).

Table 3 List of Priority Taxa Reviewed by the Expert Panel

Codes:

DISTRIB - RL – Range Limit (with compass bearing in parentheses if appropriate), EN – Endemic, RQD – Restricted Queensland Distribution, DP – Disjunct
POP - Population, R – Rare, D – Declining, I – Indicator, SH – Stronghold
Other Values - DD – Data Deficient Requiring Attention, CS - Cultural Significance

NB. Only records of species designated "State" or "Regional" significance were implemented in GIS

GP	Scientific Name	Common Name	DISTRIB	POP	Other Values	September 2002 Comments	August 2006 Comments	August 2006 Significance
Birds	*Ailuroedus crassirostris*	Green Catbird	RL (N)			Range limit		
Birds	*Anthochaera carunculata*	Red Wattlebird	RL (N)			Range limit		
Birds	*Anthochaera chrysoptera*	Little Wattlebird	RL (N)			Range limit		
Birds	*Ardea sumatrana*	Great-billed Heron	RL(S)	R		Rare throughout range & range limit	Nesting sites only.	State
Birds	*Artamus cinereus*	Black-faced Woodswallow	RL (E)			Range limit		
Birds	*Biziura lobata*	Musk Duck	RL (N)			Range limit		
Birds	*Botaurus poiciloptilus*	Australasian Bittern	RL (N)			Declining & Range limit		Regional
Birds	*Burhinus grallarius*	Bush Stone-curlew		D		Declining, patchy distribution	Declined in Lockyer. Breeding sites only.	Flag
Birds	*Caprimulgus macrurus*	Large-tailed Nightjar	RL (S)			Range limit		
Birds	*Cheramoeca leucosternus*	White-backed Swallow	RL (N)			Declining	breeding sites only	Regional

GP	Scientific Name	Common Name	DISTRIB	POP	Other Values	September 2002 Comments	August 2006 Comments	August 2006 Significance
Birds	*Conopophila rufogularis*	Rufous-throated Honeyeater	RL (S)			Range limit		
Birds	*Dacelo leachii*	Blue-winged Kookaburra	RL (S)			Range limit		
Birds	*Dromaius novaehollandiae*	Emu				Declining	breeding sites	Regional
Birds	*Gerygone palpebrosa*	Fairy Gerygone	RL (S)			Range limit		
Birds	*Glossopsitta concinna*	Musk Lorikeet	RL (N)			Range limit		
Birds	*Heteroscelus incanus*	Wandering Tattler		R		Rare migrant & restricted habitat		
Birds	*Lichenostomus melanops*	Yellow-tufted Honeyeater			DD	Data Deficient	Change to range limit.	
Birds	*Manorina melanophrys*	Bell Miner	RL (N)			Range limit		
Birds	*Myiagra alecto*	Shining Flycatcher	RL (S)			Range limit		
Birds	*Myzomela obscura*	Dusky Honeyeater	RL (S)			Range limit		
Birds	*Nectarinia jugularis*	Yellow-bellied Sunbird	RL (S)			Range limit		
Birds	*Nettapus pulchellus*	Green Pygmy-goose	RL (S)			Range limit		
Birds	*Ninox connivens*	Barking Owl		R, D?		Rare & possibly declining	Nesting sites only. Look at breeding site records/new record.	Regional
Birds	*Numenius minutus*	Little Curlew	RL (S)			Range limit		
Birds	*Orthonyx temminckii*	Logrunner	RL (N)			Range limit		
Birds	*Oxyura australis*	Blue-billed Duck	RL (N)			Range limit		
Birds	*Petroica multicolor*	Scarlet Robin	RL (N)			Range limit		Flag
Birds	*Phaps elegans*	Brush Bronzewing	RL (N)			Range limit	All records at Noosa and north. All records south of Noosa dubious - need validation.	Regional
Birds	*Phylidonyris novaehollandiae*	New Holland Honeyeater	RL (N)			Range limit		
Birds	*Platycercus eximius*	Eastern Rosella	RL (N)			Range limit		
Birds	*Ptilinopus superbus*	Superb Fruit-Dove		R		Considered migrant at risk	Less abundant than Rose-crowned F-Dove	
Birds	*Ptiloris paradiseus*	Paradise Riflebird	EN?, RL (N)			Considered endemic & of concern , range limit		
Birds	*Ramsayornis fasciatus*	Bar-breasted Honeyeater	RL (S)			Range limit		
Birds	*Stagonopleura guttata*	Diamond Firetail	RL (E)	D		Considered declining & range limit	Not many records. Only inland records.	Regional

GP	Scientific Name	Common Name	DISTRIB	POP	Other Values	September 2002 Comments	August 2006 Comments	August 2006 Significance
Birds	*Tyto novaehollandiae*	Masked Owl		D, R		Hollow-dependent, near-threatened, rare	Nesting sites only	Regional
Fish	*Gadopsis marmoratus*	River Blackfish	RQD, DP, RL (N)	D		Considered declining & restricted disjunct distribution, range limit	all records.	State
Fish	*Galaxias olidus*	Mountain Galaxias	RQD, DP, RL (N)	D	DD	Considered declining & restricted disjunct distribution, range limit	All records. Only found in headwaters of Condamine streams.	Regional
Fish	*Gobiomorphus coxii*	Cox's Gudgeon	RQD, RL (N)		DD	Restricted distribution, range limit & poorly known	Brisbane River. N most limit. All records.	Regional
Fish	*Kuhlia rupestris*	Jungle Perch	DP, RL (S)			Restricted disjunct distribution	Review and write records and significance.	
Fish	*Porochilus* sp. cf. *rendahli*	Catfish	EN	D?, R	DD	Considered rare, declining, restricted distribution & endemic; widespread but cryptic	Review and with respect to records and significance.	
Fish	*Rhadinocentrus ornatus*	Ornate Rainbowfish	EN	D		Considered declining, endemic & phylogenetic significance	Review and write records and significance.	
Frogs	*Crinia deserticola*	Chirping Froglet	RL, DP			Range limit & disjunct population		
Frogs	*Crinia signifera*	Clicking Froglet	RL (N)			Range limit		
Frogs	*Cyclorana alboguttata*	Greenstripe Frog	RL (E)			Range limit	Records south of Noosa River (*Litoria*)	Regional
Frogs	*Cyclorana brevipes*	Superb Collared-Frog	RL (S)	D		Range limit & declining	South of Noosa records	Regional
Frogs	*Cyclorana novaehollandiae*	Eastern Snapping-Frog	RL (E)	D		Range limit & declining		
Frogs	*Limnodynastes convexiusculus*	Marbled Frog	RL (S)			Range limit		
Frogs	*Limnodynastes dumerilii*	Grey-bellied Pobblebonk	RL (N)			Range limit	Changed to N limit	
Frogs	*Limnodynastes salmini*	Salmon-striped Frog		D		Considered declining	South of Noosa records	Regional
Frogs	*Litoria dentata*	Bleating Treefrog	RL (N)			Range limit		
Frogs	*Litoria inermis*	Bumpy Rocketfrog	RL (S)			Range limit		
Frogs	*Litoria peronii*	Emerald-spotted Treefrog	RL (N)			Range limit		
Frogs	*Litoria rothii*	Red-eyed Treefrog	RL (S)			Range limit		
Frogs	*Litoria tyleri*	Laughing Treefrog	RL (N)			Range limit		
Frogs	*Litoria verreauxii*	Whistling Treefrog	RL (N)			Range limit		

GP	Scientific Name	Common Name	DISTRIB	POP	Other Values	September 2002 Comments	August 2006 Comments	August 2006 Significance
Frogs	*Pseudophryne coriacea*	Red-backed Broodfrog	RL (N)			Range limit		
Frogs	*Pseudophryne major*	Great Brown Broodfrog	RL (S)			Range limit	Leave in the list. no level of significance.	
Frogs	*Pseudophryne raveni*	Copper-backed Broodfrog	RL (S)			Range limit		
Invert.	*Cherax robustus*	freshwater crayfish	EN				Range reduction due to habitat loss (coastal heaths on deep sands)	
Invert.	*Euastacus hystricosus*	Giant Spiny Crayfish	EN			Restricted distribution		State
Invert.	*Euastacus jagara*	freshwater crayfish	EN			Very restricted distribution	Mount Mistake only	State
Invert.	*Euastacus maidae*	freshwater crayfish	EN			Very restricted distribution	Tallebudgera and Currumbin Cks only - State significance?	State
Invert.	*Euastacus monteithorum*	freshwater crayfish	EN			Considered endemic	Kroombit Tops and Mt Robert only	State
Invert.	*Euastacus setosus*	Mount Glorious Spiny Crayfish	EN			Very restricted distribution	Mount Glorious only - State significance?	State
Invert.	*Euastacus sulcatus*	freshwater crayfish	RL(N)			Range limit	Scenic Rim - widespread and abundant in reserves/downstream.	Regional
Invert.	*Euastacus urospinosus*	freshwater crayfish	EN	R		Considered rare & endemic		State
Invert.	*Euastacus valentulus*	freshwater crayfish	RL(N)			Range limit	Tallebudgera and Currumbin Cks only.	State
Invert.	*Junonia hedonia zelima*	Brown Soldier	RL (S)	R		Considered rare		
Invert.	*Lissapterus* sp. nov.	stag beetle	EN	D		Considered endangered & endemic		State
Invert.	*Nameria insularis*	Burleigh Heads Spider	EN	D		Considered vulnerable & endemic		State
Invert.	*Neogeoscapheus barbarae*	Giant Burrowing Cockroach	EN	D		Considered endangered & endemic		State
Invert.	*Sphaenognathus* sp. nov.	stag beetle	EN	D		Considered endangered & endemic		State
Invert.	*Tenuibranchiurus glypticus*	freshwater crayfish	EN				Range reduction due to loss coastal heaths	State
Invert.	*Tiziphone abeona morrisi*	Swordgrass Brown (Gold Coast)	RL (N)	D		Considered endangered and declining		
Mammals	*Aepyprymnus rufescens*	Rufous Bettong		D		Considered declining		
Mammals	*Antechinus subtropicus*	Subtropical Antechinus	EN			Endemic		

GP	Scientific Name	Common Name	DISTRIB	POP	Other Values	September 2002 Comments	August 2006 Comments	August 2006 Significance
Mammals	*Antechinus swainsonii*	Dusky Antechinus	RL(N); RQD			Restricted distribution, regional concern & declining	All records.	State
Mammals	*Cercartetus nanus*	Eastern Pygmy-possum	RL (N), RQD	D		Of concern & declining, range limit with restricted distribution		State
Mammals	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	RL (N), RQD	D?		Considered declining. Patchy distribution and range limit	change to edge of range/ patchy distribution	Regional
Mammals	*Macropus agilis*	Agile Wallaby	RL (S), DP			Disjunct population , range limit		Regional
Mammals	*Macropus dorsalis*	Black-striped Wallaby		D		Considered declining, especially in southern part of SEQ		
Mammals	*Mormopterus norfolkensis*	East Coast Freetail Bat	RL (N)		DD	Considered vulnerable, poorly known, range limit	Change to poorly known range limit	
Mammals	*Myotis macropus*	Large-footed Myotis		D		Considered declining & Near Threatened	Change to no evidence of decline	
Mammals	*Ornithorhynchus anatinus*	Platypus		I	CS	Listed as Culturally Significant under NCA; indicator of water quality	all records	Regional
Mammals	*Petauroides volans*	Greater Glider		I		Hollow-dependent & indicator of old growth values	Declining in eucalypt and melaleuca forests south of Tewantin in landzone 3 and 5 - use records from these areas.	Regional
Mammals	*Petaurus australis australis*	Yellow-bellied Glider (Sth subsp.)		D, I		Near-threatened & hollow-dependent marsupial of concern	See greater glider excl. melaleuca forests	Regional
Mammals	*Petaurus norfolcensis*	Squirrel Glider		SH		Considered declining elsewhere but may locally abundant in SEQ – a stronghold	all records	Flag
Mammals	*Petrogale herberti*	Herbert's Rock-wallaby	RL (S)	D		Considered declining, range limit		
Mammals	*Phascogale tapoatafa*	Brush-tailed Phascogale		D		Near-threatened & considered declining	under surveyed - various opinions about significance.	Flag
Mammals	*Pseudocheirus peregrinus*	Common Ringtail Possum			DD	Patchy distribution, especially outside urban areas		
Mammals	*Pseudomys delicatulus*	Delicate Mouse	RL (S)			Range limit		
Mammals	*Pseudomys gracilicaudatus*	Eastern Chestnut Mouse		D		Declining		

GP	Scientific Name	Common Name	DISTRIB	POP	Other Values	September 2002 Comments	August 2006 Comments	August 2006 Significance
Mammals	*Pseudomys novaehollandiae*	New Holland Mouse	RL (N)	R		Range limit & rare	all records. Rare in SEQ as only recently identified and declining in other states.	State
Mammals	*Pseudomys patrius*	Queensland Pebble-mound Mouse	RL(S)	R		Range limit & rare		Flag
Mammals	*Pteropus alecto gouldi*	Black Flying-fox		D		Considered declining migrant	Camp sites. New records from SP.	Flag
Mammals	*Pteropus scapulatus*	Little Red Flying-fox		D		Considered declining migrant	Camps SP to provide records.	Flag
Mammals	*Rattus sordidus*	Canefield Rat	RL (S), DP			Range limit & disjunct population	Actually closer to *tunneyi*	
Mammals	*Scoteanax rueppellii*	Greater Broad-nosed Bat		D, R		Considered rare and Near Threatened		
Mammals	*Scotorepens orion*	South-eastern Broad-nosed Bat	RL (N)			SEQ – Range limit (SEQ)		
Mammals	*Scotorepens* sp. (Parnaby)	Central-eastern Broad-nosed Bat	RL (N), EN?		DD	Considered poorly known, confused taxonomy		
Mammals	*Sminthopsis murina*	Common Dunnart		D, I		Declining & indicator of woodland health		
Mammals	*Syconycteris australis*	Eastern Blossom-bat		D		Considered declining		
Mammals	*Taphozous georgianus*	Common Sheathtail Bat		D		Considered declining	Taxonomic changes	
Mammals	*Thylogale stigmatica*	Red-legged Pademelon		D		Considered declining		
Mammals	*Trichosurus caninus*	Short-eared Possum	RL (N)			Range limit, note Qld populations maybe new taxon-Lindenmayer	name stays as *caninus*. common - short-eared possum	
Mammals	*Vespadelus darlingtoni*	Large Forest Bat	RL (N)			Range limit	abundant in habitat but restricted in range	Regional
Mammals	*Vespadelus regulus*	Southern Cave Bat	RL (N)			Range limit	2442926 dubious - check sound records.	Regional
Mammals	*Vespadelus vulturnus*	Little Forest Bat	RL (E)			Range limit		
Mammals	*Wallabia bicolor welsbyi*	Swamp Wallaby	EN			Golden form - restricted distribution, mostly South Stradbroke Is	Glen Ingram's report	Regional
Reptiles	*Anomalopus leuckartii*	skink	RL(E)	D		Considered declining, range limit		
Reptiles	*Cacophis krefftii*	Dwarf Crowned Snake	RL (N)			Range limit		
Reptiles	*Calyptotis lepidorostrum*	skink	EN?, RL (S)			Considered endemic, range limit		

GP	Scientific Name	Common Name	DISTRIB	POP	Other Values	September 2002 Comments	August 2006 Comments	August 2006 Significance
Reptiles	*Calyptotis temporalis*	skink	RL (S)				Disjunct population	
Reptiles	*Carlia pectoralis*	skink	RL (S)			Range limit		
Reptiles	*Chlamydosaurus kingii*	Frilled Lizard	RL (S)	D		Declining, of regional concern & range limit	all records Nambour south	Regional
Reptiles	*Coggeria naufragus*	Satinay Sand Skink	EN			Considered endemic	all records. Only found on Fraser Is.	Regional
Reptiles	*Ctenotus arcanus*	skink	EN		DD	Considered poorly known & endemic		
Reptiles	*Ctenotus eurydice*	skink	EN?, RL (N)	R	DD	Rare, poorly known & endemic, range limit		
Reptiles	*Ctenotus strauchii*	skink	RL (E)			Range limit	retain as type locality	
Reptiles	*Delma plebeia*	legless lizard	RL (N)	D		Considered declining, range , limit		Flag
Reptiles	*Demansia atra*	Black Whip Snake	RL (S)			Range limit		
Reptiles	*Diporiphora australis*	Tommy Roundhead	RL (S)			Range limit		
Reptiles	*Egernia major*	Land Mullet	RL (N)			Range limit		
Reptiles	*Egernia mcpheei*	skink	RL (N)			Range limit		Regional
Reptiles	*Elseya albagula*	'Burnett River' Snapping Turtle	RL (S)	D, R		Considered rare, declining	Recommendation to treat as Vulnerable. Check with management plan. Breeding habitat loss threatens future generations.	State
Reptiles	*Emydura macquarii signata*	shortneck turtle	EN			Endemic	changed to Emydura macquarii signata	
Reptiles	*Eremiascincus richardsonii*	Broad-banded Sand Swimmer	RL (E), DP			Disjunct distribution		
Reptiles	*Eulamprus murrayi*	skink	RL (N)			Range limit		
Reptiles	*Eulamprus tryoni*	skink	EN			Endemic		State
Reptiles	*Glaphyromorphus punctulatus*	skink	RL (S)			Range limit		
Reptiles	*Hoplocephalus bitorquatus*	Pale-headed Snake		D		Considered declining		
Reptiles	*Hypsilurus spinipes*	Southern Angle-headed Dragon	RL (N)			Range limit		
Reptiles	*Lampropholis amicula*	skink	RL (N)			Range limit		
Reptiles	*Lampropholis couperi*	skink	EN		DD	Poorly known & endemic	2440666	
Reptiles	*Lampropholis guichenoti*	Grass Skink	RL (N)			Range limit		
Reptiles	*Menetia greyii*	skink	RL (E)			SEQ – Range limit		
Reptiles	*Menetia timlowi*	skink	DP	R		Rare & disjunct distribution		

GP	Scientific Name	Common Name	DISTRIB	POP	Other Values	September 2002 Comments	August 2006 Comments	August 2006 Significance
Reptiles	*Morethia boulengeri*	skink	RL (E)			Range limit		
Reptiles	*Morethia taeniopleura*	Fire-tailed Skink	RL (S)			Range limit		
Reptiles	*Notechis scutatus*	Eastern Tiger Snake	RL (N)	D, R		Rare, northern limit & declining		Regional
Reptiles	*Oedura* sp. cf. *lesueurii*	Lesueur's Velvet Gecko	RL (N)/EN		DD	Range limit	Taxonomy & distribution unresolved; possible decline due to loss of lowland eucalypt forest	
Reptiles	*Ophioscincus ophioscincus*	skink	EN		DD	Rare or insufficiently known. Considered endemic		
Reptiles	*Pseudechis guttatus*	Spotted Black Snake	RL (E)			Considered declining, range limit		Regional
Reptiles	*Ramphotyphlops nigrescens*	blindsnake	RL (N)			Range limit		
Reptiles	*Saiphos equalis*	skink	RL (N)			Range limit		
Reptiles	*Saltuarius salebrosus*	gecko	RL (E)			Range limit		
Reptiles	*Saltuarius swaini*	gecko	EN?, RL (N), DP			Considered endemic, disjunct population, range limit		
Reptiles	*Saproscincus challengeri* and all *Saproscincus* sp. records	skink	EN?, RL (N)			Considered endemic, range limit	This species and all *Saproscincus* spp records in *challengeri* group in SEQ treated as Rare status. Another record from Conondales.	Regional
Reptiles	*Saproscincus oriarus*	skink	RL (N), RQD			Range limit		State
Reptiles	*Simoselaps australis*	Coral Snake		D		Declining		
Reptiles	*Trachydosaurus rugosus*	Shingle-back	RL (E)	D		Range limit	Decline in dry forest areas	

3.1 Criterion A. EVR Flora Species List

Table 2 EVR Flora Species that occur within the SEQ South Bioregion.

NB. Where a species was found not to occur in SEQ it was deleted from the master list for SEQ South. A number of species were deleted from the final list due to records being flagged for issues such as: precision, collection year, cultivation.

Species	NCA	EPBC
Acacia acrionastes	R	
Acacia attenuata	V	V
Acacia baueri subsp. baueri	V	
Acacia brunioides subsp. brunioides	R	
Acacia brunioides subsp. granitica	R	
Acacia orites	R	
Acacia saxicola	E	
Acianthus amplexicaulis	R	
Acomis acoma	R	
Acronychia baeuerlenii	R	
Acronychia littoralis	E	E
Agiortia cicatricata	R	
Allocasuarina emuina	E	E
Allocasuarina filidens	R	
Allocasuarina rigida subsp. exsul	V	
Allocasuarina thalassoscopica	E	E
Alloxylon pinnatum	R	
Alyxia magnifolia	R	
Aponogeton elongatus subsp. elongatus	R	
Archidendron lovelliae	V	V
Archidendron muellerianum	R	
Ardisia bakeri	R	
Argophyllum nullumense	R	
Arthraxon hispidus	V	V
Arundinella grevillensis	R	
Arundinella montana	R	
Austrobuxus swainii	R	
Baloghia marmorata	V	V
Banksia conferta subsp. conferta	V	
Bertya ernestiana	V	
Bertya pinifolia	V	V
Bertya sharpeana	R	
Blandfordia grandiflora	R	
Boronia keysii	V	V
Boronia rivularis	R	
Bosistoa transversa	C	V
Bosistoa transversa		V
Bothriochloa bunyensis	V	V
Brachyscome ascendens	R	
Brasenia schreberi	R	
Bulbophyllum globuliforme	R	V

Species	NCA	EPBC
Bulbophyllum weinthalii subsp. weinthalii	V	
Callerya australis	R	
Callitris baileyi	R	
Callitris monticola	R	
Cassia marksiana	R	
Caustis blakei subsp. macrantha	V	
Choricarpia subargentea	R	
Clematis fawcettii	V	V
Comesperma breviflorum	R	
Coopernookia scabridiuscula	V	V
Corchorus cunninghamii	E	E
Corybas montanus	V	V
Corynocarpus rupestris subsp. arborescens	R	
Cryptocarya floydii	R	
Cryptocarya foetida	V	V
Cryptostylis hunteriana		V
Cupaniopsis newmanii	R	
Cupaniopsis shirleyana	V	V
Cupaniopsis tomentella	V	V
Cyathea cunninghamii	R	
Cyperus semifertilis	V	V
Davidsonia johnsonii	E	
Dendrobium schneiderae var. schneiderae	R	
Dichanthium setosum	R	V
Diploglottis campbellii	E	E
Discaria pubescens	R	
Dodonaea rupicola	V	V
Durringtonia paludosa	R	
Endiandra floydii	E	E
Endiandra globosa	R	
Endiandra hayesii	V	V
Endiandra introrsa	R	
Eucalyptus codonocarpa	R	
Eucalyptus conglomerata	E	E
Eucalyptus curtisii	R	
Eucalyptus dunnii	R	
Eucalyptus kabiana	V	V
Eucalyptus michaeliana	R	
Eucalyptus taurina	V	
Eucryphia jinksii	E	
Euphrasia bella	E	V
Floydia praealta	V	V
Fontainea australis	V	V
Fontainea venosa	V	V
Gahnia insignis	R	
Genoplesium sigmoideum	R	
Glycine argyrea	R	
Gompholobium virgatum var. emarginatum	R	
Gonocarpus effusus	R	

Species	NCA	EPBC
Gossia fragrantissima	E	
Gossia gonoclada	E	
Gossia inophloia	R	
Graptophyllum excelsum	R	
Graptophyllum reticulatum	E	E
Grevillea hodgei	V	
Grevillea linsmithii	E	
Grevillea quadricauda	V	V
Grevillea singuliflora	R	
Habenaria harroldii	E	
Haloragis exalata subsp. velutina	V	V
Helicia ferruginea	R	
Helmholtzia glaberrima	R	
Hernandia bivalvis	R	
Hibbertia hexandra	R	
Hibbertia monticola	R	
Hicksbeachia pinnatifolia	V	
Huperzia varia	R	
Hydrocharis dubia	V	V
Indigofera baileyi	R	
Isotropis foliosa	R	
Jasminum jenniae	E	
Kunzea flavescens	R	
Lastreopsis silvestris	R	
Leionema elatius subsp. beckleri	E	
Leionema gracile	R	
Leionema obtusifolium	V	V
Lenwebbia prominens	R	
Lenwebbia sp. (Blackall Range P.R.Sharpe 5387)	R	
Lepiderema pulchella	R	
Lepidium peregrinum		E
Leptospermum luehmannii	R	
Leptospermum oreophilum	R	
Leucopogon recurvisepalus	E	
Lilaeopsis brisbanica	E	
Liparis simmondsii	R	
Lychnothamnus barbatus	V	E
Macadamia integrifolia	V	V
Macadamia ternifolia	V	V
Macadamia tetraphylla	V	V
Macarthuria complanata	R	
Marsdenia coronata	V	V
Marsdenia hemiptera	R	
Marsdenia longiloba	V	V
Maundia triglochinoides	V	
Melaleuca cheelii	R	
Melaleuca groveana	R	
Melaleuca irbyana	R	
Muellerina myrtifolia	R	

Species	NCA	EPBC
Myriophyllum implicatum	R	
Notelaea lloydii	V	V
Nothoalsomitra suberosa	R	
Ochrosia moorei	E	E
Olearia heterocarpa	R	
Olearia hygrophila	E	E
Owenia cepiodora	V	V
Ozothamnus vagans	V	V
Ozothamnus whitei	R	
Pandorea baileyana	R	
Papillilabium beckleri	R	
Pararistolochia laheyana	R	
Pararistolochia praevenosa	R	
Parsonsia largiflorens	R	
Parsonsia tenuis	R	
Paspalidium grandispiculatum	V	V
Persicaria elatior	V	V
Persoonia volcanica	R	
Phaius australis	E	E
Phaius bernaysii	E	E
Phaius tancarvilleae	E	E
Picris conyzoides	R	
Pimelea umbratica	R	
Pittosporum oreillyanum	R	
Plectranthus alloplectus	R	
Plectranthus habrophyllus	E	E
Plectranthus leiperi	V	V
Plectranthus nitidus	E	E
Plectranthus torrenticola	E	E
Podolepis monticola	R	
Pomaderris crassifolia	V	
Pouteria eerwah	E	E
Prasophyllum exilis	R	
Prasophyllum wallum	V	V
Prostanthera palustris	V	
Pseudanthus pauciflorus subsp. pauciflorus	R	
Pterostylis bicornis	V	V
Pterostylis nigricans	R	
Pultenaea pycnocephala	R	
Pultenaea whiteana	R	
Quassia bidwillii	V	V
Randia moorei	E	E
Rhaponticum australe	V	
Rhodamnia maideniana	R	
Ricinocarpos speciosus	V	
Romnalda strobilacea	V	V
Rulingia salviifolia	R	
Sarcochilus fitzgeraldii	E	V
Sarcochilus hartmannii	V	V

Species	NCA	EPBC
Sarcochilus weinthalii	E	V
Schoenus scabripes	R	
Senna acclinis	R	
Solanum spirale	R	
Sophora fraseri	V	V
Symplocos baeuerlenii	V	V
Symplocos harroldii	R	
Syzygium hodgkinsoniae	V	V
Syzygium moorei	V	V
Taeniophyllum muelleri	C	V
Tecomanthe hillii	R	
Tetramolopium vagans	R	
Thelionema grande	R	
Thelypteris confluens	V	
Thesium australe	V	V
Thismia rodwayi	R	
Tinospora tinosporoides	V	V
Triunia robusta	E	E
Uromyrtus lamingtonensis	R	
Wahlenbergia glabra	R	
Wahlenbergia scopulicola	R	
Westringia blakeana	R	
Westringia grandifolia	R	
Westringia rupicola	V	V
Westringia sericea	R	
Xanthostemon oppositifolius	V	V
Zieria adenodonta	R	
Zieria collina	V	V
Zieria furfuracea subsp. gymnocarpa	E	
Zieria sp. (Brolga Park A.R.Bean 1002)	E	E

3.2 Criterion H: Priority Flora Species

Section 2.7 describes the rules utilised for filtering priority taxa for inclusion in Table 3.

Table 3 Priority Flora Species within or marginal to the SEQ South Bioregion

NB: The list is comprised of species that were assigned an interim class of "A", species nominated by panel members from class "B" and species from the "Back on Track" program that were rated as "Critical" or "High" taxon but had not already been included on the BPA list. State or Regional significance was assigned by panel members.

Species	Class (See Section 2.7.1)	Significance
Abelmoschus moschatus subsp. tuberosus	B	Regional
Acacia bakeri	A	Regional
Acacia longissima	A	Regional
Acacia sp. (Bulburin W.J.McDonald 3208)	A	Regional
Acronychia octandra	A	Regional
Acronychia wilcoxiana	A	Regional
Actephila bella	B	Regional
Adriana urticoides var. urticoides	B	Regional
Agathis robusta	A	Regional
Artanema fimbriatum	B	Regional
Arthropodium sp. Mt Cordeaux	Back on Track high taxon	Regional
Austrocynoglossum latifolium	B	Regional
Austromyrtus glabra	A	Regional
Babingtonia similis	A	Regional
Backhousia oligantha	A	Regional
Backhousia sciadophora	A	Regional
Baeckea diosmifolia	A	Regional
Bertya cunninghamii subsp. rupicola	A	Regional
Beyeria lasiocarpa	A	Regional
Beyeria viscosa	B	Regional
Boronia bella	A	Regional
Boronia parviflora	B	Regional
Brachychiton sp. (Ormeau L.H.Bird AQ435851)	A	State
Brunoniella spiciflora	A	Regional
Burmannia disticha	A	Regional
Callicarpa pedunculata	B	Regional
Chamaecrista maritima	Back on Track high taxon	Regional
Clausena smyrelliana	A	State
Comesperma ericinum	A	State
Commersonia leiperi	A	State
Croton mamillatus	A	State
Dendrocnide moroides	A	Regional
Dinosperma melanophloia	A	Regional
Dissiliaria muelleri	A	Regional
Dodonaea peduncularis	A	Regional
Dodonaea viscosa subsp. cuneata	A	Regional
Endiandra compressa	A	Regional
Endiandra virens	A	Regional
Galbulimima baccata	A	State
Graptophyllum spinigerum	A	Regional
Grevillea hilliana	A	Regional
Gyrostemon osmus	A	State
Harnieria hygrophiloides	B	Regional
Homalanthus stillingiifolius	B	Regional
Hygrophila angustifolia	B	Regional
Isotropis filicaulis	B	Regional
Lepiderema punctulata	A	Regional
Lepidosperma quadrangulatum	Back on Track critical taxon	State

Species	Class (See Section 2.7.1)	Significance
Leptomeria drupacea	A	State
Limnophila aromatica	B	Regional
Lycopodiella serpentina	B	Regional
Mallotus megadontus	A	Regional
Mazus pumilio	B	Regional
Medicosma sp.(Mt Mellum P.I.Forster+ PIF25572)	A	State
Melaleuca decora	A	Regional
Neisosperma poweri	A	Regional
Nematolepis squamea subsp. squamea	A	Regional
Notelaea ipsviciensis	A	State
Olearia chrysophylla	B	Regional
Olearia oppositifolia	B	Regional
Phaleria chermsideana	A	State
Phebalium distans	A	State
Phebalium nottii	A	Regional
Platysace sp. Mt Ninderry	Back on Track high taxon	Regional
Pseudovanilla foliata	B	Regional
Quassia sp. (Mt Nardi B.L.Walker AQ330746)	A	Regional
Rhodamnia acuminata	A	Regional
Rhynchosia acuminatissima	B	Regional
Rulingia dasyphylla	B	Regional
Sarcochilus dilatatus	B	Regional
Senna gaudichaudii	B	Regional
Senna sulfurea	B	Regional
Seringia sp. (Chermside S.T.Blake 23068)	A	State
Smithia sensitiva	B	Regional
Sophora tomentosa	B	Regional
Stictocardia tiliifolia	A	Regional
Stylidium tenerum	B	Regional
Swainsona queenslandica	B	Regional
Tephrosia bidwillii	B	Regional
Teucrium sp. (Ormeau G.Leiper AQ476858)	A	State
Triflorensia cameronii	A	Regional
Zieria sp. (Mooloolaba G.Leiper AQ636552)	A	State

Appendix D – Actions from Scientific Expert Panel Review

Recommendation/Feedback	Action taken	Comments
How will mapping guide integration of natural resource management.		
Land management practice map required.		
Glossary to be updated.		
Meta data to be updated. 'Best available data for target' rather than 'data'.	Updated metadata table – Appendix A: SEQ NRM Plan Benchmark Atlas Data Catalogue.	
Further work on rationales. This includes some interpretation of maps.		
Supporting maps required – locality map, tenure/estates map.	Locality map added to Benchmark Atlas.	
Land maps are mostly risk maps and don't address resource condition target. (e.g. Soil Acidity, Soil Erosion)	Will be addressed in Implementation Atlas where priority areas will be identified for further investigation or remediation.	Maps are mostly risk and the extent of issue or theme.
General comments on Atlas: - maintain currency - data quality verse spatial resolution - engaging with other experts in review - reliability diagram should be standard for all maps - all maps should include lga boundaries.		
Salinity map – separate dryland/irrigation and coastal salinity.	Separated out salinity affected areas that were found in the 'less than 5 m zone'.	Incorporated final dataset received 22/12/2009. New map and updated statistics.
Monitor land development and infrastructure		Implementation action.

Recommendation/Feedback	Action taken	Comments
expansion that intersects areas of high salinity hazard assessment.		
Revise salinity hazard and risk assessment using climate change scenarios.		Implementation action.
Agricultural lands map – 2 ha cut to be applied for statistics.		Will calculate area of ag lands contained within 2 ha parcels during implementation phase. Advice from growers is that 2 ha would support substantial crops (e.g strawberries, water melons) for production purposes.
How much Ag land is being fragmented?		Implementation action.
Monitor and map the changes in land use and land management practices.		Trend activity.
Undertake soil attributes survey project.		SEQC to meet with DERM to develop small pilot project.
Establish a baseline of soil acidification using soil pH as indicator.		Part of the soil attributes survey project.
Soil Acidity Target, the area acidified needs to be identified.	Soil Acidity Hazard map generated. The area acidified identified through implementation or further studies including soil attributes survey project.	
Monitor soil carbon as an indicator of soil health.		Part of the soil attributes survey project. (proposed)
Establish a baseline of soil health using soil carbon as an indicator.		Part of the soil attributes survey project.
Complete the identification of Acid Sulfate Soils hot spots in order to establish a baseline.		Implementation action.
Include acid sulfate soils for the islands in	Defaulted to Lands less than 5 m	Will replace with actual risk when

Recommendation/Feedback	Action taken	Comments
benchmark map.	(dataset) for the island due to data gaps or access to data.	data becomes available.
Erosion map – separate hillslope/sheet and gully.		Implementation action.
Map the extent and severity/activity of gullies.		Currently a gap with only small areas completed using Lidar Imagery and remote sensing techniques.
Identify priority areas for gully restoration.		Implementation action.
Identify priority areas for restoration of erosion. Areas affected by erosion need to be identified.	Soil Erosion Risk map generated. Further ground-truthing required.	Implementation action.
Soil erosion and Salinity extent combined to identify active movement of sediment.		Implementation action. Will only pick up areas on floodplains/alluvium.
Erosion Risk map updated using pasture condition assessment and bare ground cover.	Bare ground cover included in Soil Erosion Risk map.	
Identify areas of wind induced erosion especially on islands.	Picked up using Bare ground cover.	Major sandblows on Moreton Island identified.
Grazing Land Condition (RCT L7) need to set a benchmark.		
Identify the condition of vegetated areas using weeds, pest and fire.		Implementation action.
Identify what % each local government requires to meet 35% target.		Implementation action.
Improve the knowledge and understanding of ecosystem services and biodiversity values of re-growth, replanted and remnant vegetation.		Research action.
Apply a consistent 2001 baseline to both remnant and woody vegetation.	This is now completed and map has been updated to include 2001 remnant and woody vegetation.	
Combine NC1 map with Land use.		Implementation action. A similar approach has been taken applying planning schemes/zoning to indicate

Recommendation/Feedback	Action taken	Comments
		what 'level of protection' vegetation has.
Mask out exotic/native plantations from remnant/woody vegetation.	No complete dataset currently available.	
Identify priority smaller tracts and associated corridors that have high values.		Implementation action.
Integrate biodiversity corridors as identified by the Regional Plan and local government conservation plans. (NC2)		Implementation action.
Identify other areas in high strategic need of greater ecological connectedness.		Implementation action. Could intersect tracts with BPA V3.5.
Improve the recognition, protection and restoration of riparian vegetation bordering streams and rivers.		
Identify priority tracts. Develop a process to identify priority areas and associated corridors.	Non core tracts are 100-5000 ha. The target refers to 20% of these tracts which become the priority non core tracts of which there are 72.	Implementation action. The current benchmark map NC2 shows all tracts >20 ha.
Define fragmentation.	Updated glossary and NC2 methodology, results and rationale.	
Combine remnant and woody vegetation to generate new tract/fragmentation map.	Completed.	This now ensures more consistency with NC1 and NC2.
The condition of wetlands is not currently measured at a regional scale.		May be addressed by AquaBAMM.
Develop management actions that improve or restore wetlands.		Implementation action.
Currently map only applies to wetlands under water/inundated or artificial therefore it is not inclusive of modified wetlands.	Updated map.	Map refers to extent of wetlands. Other surrogates like elevation and floodplains could identify historical/modified wetlands.
Confirm how streams and river orders are mapped	Briefly met with Mike Rohnan	

Recommendation/Feedback	Action taken	Comments
including discontinuous streams.	(DERM). Map updated.	
There is a need to ensure some consistency in how water bodies are represented in the series of benchmark maps.		
NC4 – rewording of title in legend. Change 'Vulnerable RE' to '2001 remnant extent of vulnerable ecosystems'.	Change to Map: Vulnerable Ecosystems (2001 Remnant Vegetation)	
NC 4 - Benchmark map to recognize 1) the role of local government, 2) identify what areas are protected and 3) under what conditions.		Implementation action.
Define the different categories and mechanisms for protective measures and responsibilities (Vulnerable Ecosystems).		Implementation/future action.
NC 6 – Improve and test methods of identification of priority taxa.	Priority species updated and included in Glossary.	
Monitor and review priority taxa.		
Develop fire management strategies that optimize biodiversity conservation.		Implementation action.
Identify the main threatening processes for priority taxa.	Refer to Back on Track recommendations for guidance.	
Identify and list what data is derived from point source or modeled.		
The Wildnet data should have a cut of 20 years.		
CM1 – there is a concern about statistical uncertainty and spatial dynamics.	Seagrass cover was averaged across individual meadows based on number of survey points.	
CM1 - The benchmark map would be enhanced by having possibly: - finer time scale - species/group differentiation	1988 was chosen as the benchmark with the Bay showing more favorable conditions for seagrass. Ecosystem approach taken rather than individual	The diversity of seagrass species can be explored during the implementation phase.

Recommendation/Feedback	Action taken	Comments
	species.	
Pressure only map (CM1).		This map represents the state of the RCT. Pressures and responses to be considered in the implementation phase.
Need to change the RCT to reflect the target in the SEQ NRM – Coastal vegetation should be mangroves, saltmarsh, samphire.	Land Zone 1 Regional Ecosystems were captured to represent coastal vegetation. These include mangroves, saltmarsh and samphire. (refer to Methodology)	
Mangrove data should be updated with the latest Herbarium regional ecosystem mapping (2005).	The benchmark year was set at 2001.	
Suggest colour choice pink for reefs and orange for medium is not suitable, also blue for sparse areas hard to interpret. (CM2)	Map updated	
Mud island needs to be shown with coral around it.	Enlarged area shows this area better.	
'No data' instead of 'no coral/absence' where coral may exist but was not surveyed.		Known areas mapped, as more areas become available will be included.
Usefulness of map would be enhanced through providing an insert zooming. E.g. islands (CM2)	Map updated	
The beaches along the Broadwater, the Bay side of Stradbroke Island and Redcliffe etc are not included. (CM3)	Ocean side beaches were mapped due to high energy nature and the role these beaches to provide buffering against extremes (e.g. tidal surges, tsunamis)	
Make clearer why some beaches are red and some are yellow.	Map revised. High Energy Beach and Beach Buffer shown as one colour. (grouped)	
Rename Beaches map to 'Ocean Beaches', otherwise include the beaches inside the bay. The	Map revised and renamed Ocean Beaches.	

Recommendation/Feedback	Action taken	Comments
map is currently a 'coastal property risk map'.		
CM5 – concerns about the use of point data. Why this choice of species.	Updated rationale with why species were selected and approach taken.	
Gold Coast turtle data missing.		Need to acquire this data.
The condition and extent of wader habitat, is that correct? Is this Ramsar? (CM5)		Mostly aligned with Ramsar as you would expect, due to waders preferring coastal/estuarine and wetland habitats. The Ramsar extent is greater.
Need to define coastal wetlands, what about the areas around Peel Island. Pulustrine should be freshwater.	Definitions updated.	
There is the need to either delete the inland areas or change the name to general wetlands.	Map refined - Estuarine Wetland Class mapped based on Regional Ecosystems.	Need to review what other classes or wetlands to include as Palustrine Wetlands support Coastal/Sub-coastal wetlands.
The map only shows the extent no quality or density?	Extent only mapped.	
The estuarine areas in the bay is incorrect. It should only be a estuarine wetlands when there is a salt water gradient.	Map now reflects wetlands based on Regional Ecosystems.	
W4 – colour choice is poor. Further definitions on wetland classes.	Colours as chosen by DERM. Definitions updated.	
Why show baseline such as wetland systems. Preferable to show one colour of ecosystem vegetation that is ground water dependant.	Updated map with Wetland Regional Ecosystems and Wetland Water Bodies (both freshwater dependent).	
What about the ecosystem that is dependent on river flow and dam levels? Is that really ground water dependant.	Revised map to include wetland regional ecosystems and wetland water bodies.	Further investigations required.
This map only shows presence only. (W4)	Presence only.	Condition will be assessed potentially

Recommendation/Feedback	Action taken	Comments
		through AquaBAMM in 2011 (SEQ program schedule).
W5 – The map is too busy with too many water types. Suggest that remove the water types and highlight the disturbed areas.	Updated and revised map to show only 'Level of Protection and HEV Areas'.	
W6 – Map how far each area is away from the WQO. Otherwise exclude map.	Map excluded.	