



State of the Marine and Coastal Environment 2021 Report

Indicator report summaries



Wedge-tailed eagle (*Aquila audax*)
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Traditional Owners

The Commissioner for Environmental Sustainability proudly acknowledges Victoria's Aboriginal community and their rich culture and pays respect to their Elders past and present. We acknowledge Aboriginal people as Australia's First Peoples and as the Traditional Owners and custodians of the land and water on which we rely. We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life, and how this enriches us. We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice.



Summaries

The tables on the following pages provide a summary of the Status, Trend and Data Confidence in the 82 indicator assessments undertaken for the State of the Marine and Coastal Environment 2021 Report. The colour keys for the assessments are as follows:

Key to status



Good



Fair



Poor



Unknown



Narrative but
not assessed



Not assessed
and no narrative

Key to trend



Improving



Stable



Deteriorating



Unclear

Key to data



High



Moderate



Low



Unknown



Not Applicable

Summaries

Theme 1 indicator summaries: Water quality and catchment inputs

Indicator 01: Water quality (physicochemical)

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes	Lake King		
	Lake Victoria		
	Lake Wellington		
Data source:	Environment Protection Authority Victoria (EPA), Melbourne Water, DELWP		

Indicator 02: Toxicants

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			Moderate (status), Low (trend)
Corner Inlet-Nooramunga			
Gippsland Lakes			Moderate (status), Low (trend)
Data source:	EPA, Melbourne Water, academic researchers		

Indicator 03: Water quality (estuaries)

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			High (status), Low (trend)
Western Port			High (status), Low (trend)
Corner Inlet-Nooramunga			High (status), Low (trend)
Gippsland Lakes			High (status), Low (trend)
Statewide			High (status), Low (trend)
Data source:	DELWP		




































Table 1: SMCE 2021 report card.



Summaries

Indicator 04: Plankton			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes	Lake King		
	Lake Victoria		
	Lake Wellington		
Statewide			
Data source:	EPA, Integrated Marine Observing System (IMOS)		
Indicator 05: <i>Enterococci</i> bacteria			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Data source:	EPA		
Indicator 06: Regulated point source discharges to marine waters			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Corner Inlet-Nooramunga			
Data source:	EPA		
Indicator 07: Stormwater			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			Moderate (status), Low (trend)
Western Port			Moderate (status), Low (trend)
Corner Inlet-Nooramunga			
Gippsland Lakes			
Data source:	Melbourne Water		

Summaries

Indicator 08: Total nutrient loads			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			Low (status), Moderate (trend)
Corner Inlet-Nooramunga			Moderate (status), Low (trend)
Gippsland Lakes			
Data source:	Melbourne Water, academic researchers		
Indicator 09: Total sediment loads			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes	Lake King		
	Lake Victoria		
	Lake Wellington		
Data source:	Melbourne Water, academic researchers		
Indicator 10: Coastal acid sulfate soils			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Data source:	Department of Jobs, Precincts and Regions		



Summaries

Theme 2 indicator summaries: Litter and pollution

Indicator 11: Litter and plastics

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			

Data source:

Port Phillip EcoCentre, Tangaroa Blue Foundation, academic researchers

Indicator 12: Light pollution

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			

Data source:

<https://www.lightpollutionmap.info/>, academic researchers

Indicator 13: Coastal contaminated land

















Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			

Data source:

EPA

Summaries

Indicator 14: Coastal air quality



















Region	2021 status	2021 trend	2021 data
Port Phillip Bay	 (ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide)		 (near shipping terminals)
	 (fine particle pollution)		 (elsewhere)
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes	 (fine particle pollution during bushfire periods)		 (during bushfires)
	 (all other times)		 (all other times)
Data source:	EPA, academic researchers		

Theme 3 indicator summaries: Biodiversity

Indicator 15: Conservation of coastal ecosystems in protected areas

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Parks Victoria		

Indicator 16: Saltmarsh

Region	2021 trend	2021 data	2021 data	
Port Phillip Bay				
Western Port				
Corner Inlet- Nooramunga	Corner Inlet			
	Nooramunga			
	Nooramunga islands			
Gippsland Lakes				
Data source:	Academic researchers, DELWP			



Summaries

Indicator 17: Mangroves

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Data source:	Academic researchers, DELWP		

Indicator 18: Wetland and estuarine vegetation

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes	 (estuarine flora)		 (estuarine flora)
	 (wetland habitat extent)		 (wetland habitat extent, condition of paperbark-dominated wetlands)
	 (condition of paperbark-dominated wetlands)		
Statewide			
Data source:	Academic researchers, DELWP		

Indicator 19: Species of conservation concern

Region	2021 trend	2021 data	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Statewide			
Data source:	Victorian Biodiversity Atlas		























Summaries

Indicator 20: Mobile invertebrates on intertidal reefs			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Other marine protected areas			
Data source:	Parks Victoria		
Indicator 21: Sessile invertebrates on intertidal reefs			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Other marine protected areas			
Data source:	Parks Victoria		
Indicator 22: Invertebrates on subtidal reefs			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay		 (north) (south)	
Other marine protected areas			
Data source:	Parks Victoria, Reel Life Surveys		
Indicator 23: Commercially and recreationally important invertebrates			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay	 (commercial scallop, short-spined sea urchin)	 (commercial scallop, short-spined sea urchin)	 (commercial scallop, short-spined sea urchin)
Statewide	 (southern calamari, Maori octopus)	 (southern calamari, Maori octopus, southern rock lobster)	 (southern calamari, southern rock lobster)
	 (southern rock lobster)	 (blacklip abalone)	 (Maori octopus, blacklip abalone)
	 (blacklip abalone)	 (pipi, greenlip abalone)	 (pipi, greenlip abalone)
	 (pipi, greenlip abalone)		
Data source:	VFA		











Summaries

Indicator 24: Commercially and recreationally important fish

Region	2021 status	2021 trend	2021 data
Port Phillip Bay	 (snapper, King George whiting)	 (King George whiting)	 (snapper, King George whiting)
	 (southern sand flathead)	 (snapper, southern sand flathead)	 (southern sand flathead)
Western Port	 (snapper, King George whiting)	 (King George whiting)	 (snapper)
		 (snapper)	 (King George whiting)
Corner Inlet-Nooramunga	 (King George whiting, rock flathead)	 (King George whiting)	 (King George whiting, rock flathead)
		 (rock flathead)	
Gippsland Lakes	 (black bream, dusky flathead)	 (dusky flathead)	 (black bream, dusky flathead)
		 (black bream)	
Statewide	 (bluethroat, purple wrasse)	 (bluethroat, purple wrasse)	 (bluethroat, purple wrasse)
Data source:	VFA, academic researchers		

Indicator 25: Subtidal reef fish

Region	2021 status	2021 trend	2021 data
Port Phillip Bay	 (north)	 (north)	
	 (south)	 (south)	
Other marine protected areas			
Data source:	Parks Victoria, Reef Life Surveys, ReefWatch		

Summaries

Indicator 26: Diadromous fish

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Gippsland Lakes			
Statewide			
Data source:	Academic researchers, DELWP, Melbourne Water		

Indicator 27: Marine and coastal waterbirds

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Data source:	BirdLife Australia, academic researchers, DELWP, Melbourne Water		

Indicator 28: Migratory shorebirds

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Data source:	BirdLife Australia, academic researchers, DELWP, Melbourne Water		



Summaries

Indicator 29: Piscivorous (fish-eating) birds

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Data source:	BirdLife Australia, academic researchers, DELWP, Melbourne Water		

Indicator 30: Little penguins

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Data source:	Earthcare St Kilda, Phillip Island Nature Parks		

Indicator 31: Marine mammals

Region	2021 status	2021 trend	2021 data
Port Phillip Bay	 (dolphins)	 (dolphins)	 (dolphins)
Western Port	 (dolphins and seals)	 (dolphins) (seals)	 (seals) (dolphins)
Gippsland Lakes	 (dolphins)	 (dolphins)	 (dolphins)
Data source:	Dolphin Research Institute, Marine Mammal Foundation, Phillip Island Nature Parks, academic researchers		

Summaries

Theme 4 indicator summaries: Seafloor integrity and health

Indicator 32: Conservation of marine ecosystems in protected areas

Region	2021 status	2021 trend	2021 data
Other marine protected areas			

Data source: Parks Victoria

Indicator 33: Nitrogen cycle

Region	2021 trend	2021 data	2021 data	
Port Phillip Bay				
Western Port				
Lake King				
Gippsland Lakes	Lake Victoria			
	Lake Wellington			

Data source: DELWP, Melbourne Water, academic researchers.

Indicator 34: Seagrass

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Other marine protected areas			

Data source: Academic researchers, Melbourne Water



Summaries

Indicator 35: Shellfish reefs

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Data source:	Academic researchers		

Indicator 36: Macroalgae on intertidal reefs

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Other marine protected areas			
Data source:	Parks Victoria		

Indicator 37: Macroalgae-dominated subtidal reefs

Region	2021 status	2021 trend	2021 data
Port Phillip Bay	 (Port Phillip Heads Marine National Park)		
	 (Ricketts Point Marine Sanctuary)		
	 (Point Cooke and Jawbone marine sanctuaries)		
Other marine protected areas			
Data source:	Parks Victoria		

Summaries

Theme 5 indicator summaries: Pests and invasive species

Indicator 38: Invasive marine species

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Other marine protected areas			

Data source: Department of Jobs, Precincts and Regions

Indicator 39: Coastal invasive plants

Region	2021 status	2021 trend	2021 data
Statewide			

Data source: DELWP, Department of Jobs, Precincts and Regions, Parks Victoria

Indicator 40: Coastal invasive animals

Region	2021 status	2021 trend	2021 data
Statewide			

Data source: Statewide



Summaries

Theme 6 indicator summaries: Climate and climate change impacts

Indicator 41: Rainfall

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			

Data source:

Bureau of Meteorology (BoM), Commonwealth Scientific and Industrial Research Organisation (CSIRO), DELWP

Indicator 42: Air temperature

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Statewide			

Data source:

BoM, CSIRO, DELWP

Indicator 43: Water temperature

Region	2021 status	2021 trend	2021 data
Statewide			

Data source:

BoM, CSIRO, DELWP

Indicator 44: Ocean acidification

Region	2021 status	2021 trend	2021 data
Statewide			High (status) Low (trend)

Data source:

BoM, CSIRO, DELWP

Summaries

Indicator 45: Areas of coastal vulnerability

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Statewide			

Data source: DELWP, academic researchers

Indicator 46: Sea-level and coastal inundation

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Statewide			

Data source: BoM

Indicator 47: Wave climate

Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Statewide			

Data source: Academic researchers






Summaries

Indicator 48: Coastal erosion			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Corner Inlet-Nooramunga			
Gippsland Lakes			
Statewide			
Data source:	DELWP		
Indicator 49: Seawater intrusion into coastal aquifers			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Academic researchers		
Indicator 50: Frequency and impact of fire on marine and coastal ecosystems			
Region	2021 status	2021 trend	2021 data
Gippsland Lakes			
Data source:	Academic researchers		
Indicator 51: Climate change impact on marine and coastal infrastructure			
Region	2021 status	2021 trend	2021 data
Port Phillip Bay			
Western Port			
Gippsland Lakes			
Statewide			
Data source:	DELWP, AURIN (Australian Urban Research Infrastructure Network)		



Summaries

Theme 7 indicator summaries: Managing coastal hazard risks



Indicator 52: Considering climate change risks in land-use planning

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	DELWP		




Indicator 53: Climate change adaptation plans

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Catchment management authorities (CMAs)		

Indicator 54: Nature-based adaptation

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	DELWP		

Indicator 55: Emergency planning and preparedness

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Emergency Management Victoria		



Summaries

Theme 8 indicator summaries: Communities

Indicator 56: Population (resident)

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Australian Bureau of Statistics (ABS), DELWP		

Indicator 57: Population (visitors)

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	DELWP Planning, Business Victoria 2020, Phillip Island Nature Parks		

Indicator 58: Significant landscapes

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	DELWP Planning		

Indicator 59: Coastal settlements

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	ABS, Agriculture Victoria, DELWP Planning		

Indicator 60: Cultural heritage

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	First Peoples – State Relations Group, Heritage Victoria		

Indicator 61: Use of marine and coastal areas

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	DELWP (Ipsos Social Research Institute), Parks Victoria		

Summaries

Indicator 62: Tourism			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Business Victoria 2020, Parks Victoria, Tourism Victoria		
Indicator 63: Recreational boating and fishing contribution to the Victorian economy			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Better Boating Victoria, VFA		
Indicator 64: Recreational boating			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	VFA, Better Boating Victoria, academic researchers		
Indicator 65: Recreational fishing			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	VFA, academic researchers		
Indicator 66: Shipping and ports			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Bureau of Infrastructure and Transport Research Economics; Department of Infrastructure, Transport, Regional Development and Communications; Port of Melbourne, Gippsland Ports, Department of Agriculture, Water and the Environment		
Indicator 67: Commercial fishing			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	ABS, Fisheries Research and Development Corporation, VFA, academic researchers		



Summaries

Indicator 68: Aquaculture			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Fisheries Research and Development Corporation, Agriculture Victoria		
Indicator 69: Resources and energy generation			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Department of the Environment and Energy, DELWP, Department of Jobs, Precincts and Regions, academic researchers		
Indicator 70: Agriculture			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Agriculture Victoria, DELWP Planning, Melbourne Water		
Indicator 71: Built and public benefit infrastructure			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	DELWP Coastal Programs, Victorian Auditor-General's Office		
Indicator 72: Recreational boating infrastructure			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Better Boating Victoria, DELWP, Victorian Environmental Assessment Council (VEAC)		
Indicator 73: Illegal activities			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	EPA, Maritime Safety Victoria, VFA, DELWP, Office of the Conservation Regulator		

Summaries

Theme 9 indicator summaries: Stewardship and collaborative management

Indicator 74: Stewardship

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	DELWP		

Indicator 75: Community connection to the coast

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Ipsos Marine and Coastal Community Attitudes and Behaviour Report, VFA creel surveys		

Indicator 76: Volunteering

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	ABS, DELWP, Parks Victoria		

Indicator 77: Citizen science

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	DELWP, Parks Victoria, VFA, Victorian National Parks Association (VNPA), Tangaroa Blue Foundation, EstuaryWatch, Redmap, Atlas of Living Australia		

Indicator 78: Planning and implementation

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	VEAC, Geoscience Australia, DELWP		

Indicator 79: Committees and councils

Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	VEAC, Geoscience Australia, DELWP		



Summaries

Indicator 80: Institutional knowledge and capacity			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	N/A		
Indicator 81: Engagement and inclusiveness			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Engage Victoria		
Indicator 82: Delivery and accountability			
Region	2021 status	2021 trend	2021 data
Statewide			
Data source:	Parks Victoria, Victorian Auditor-General's Office		

Summary of status assessments

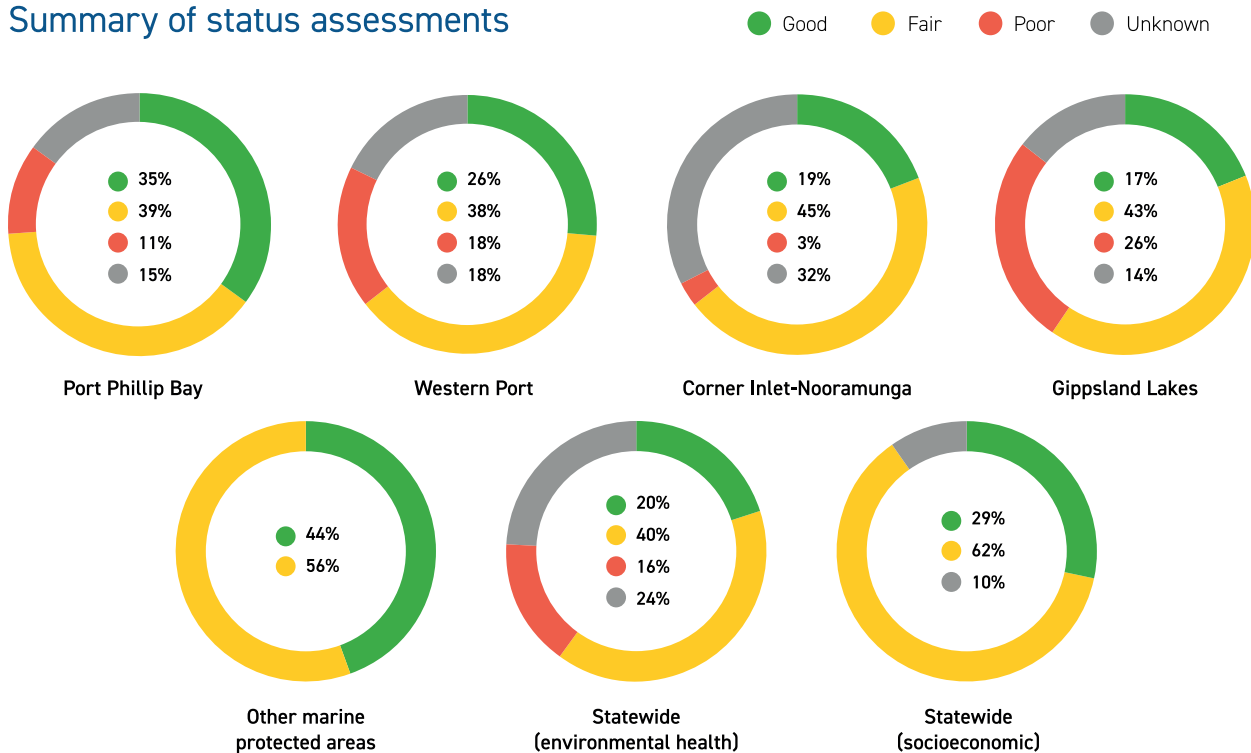


Figure 3: SMCE 2021 summary of regional indicator status assessments.

Statewide (environmental health) = statewide indicator assessments for Themes 1-7: Environmental health.

Statewide (socioeconomic) = statewide indicator assessments for Theme 8: Communities and Theme 9: Stewardship and collaborative management.

Summaries

Summary of trend assessments

↗ Improving
 → Stable
 ↘ Deteriorating
 ? Unclear

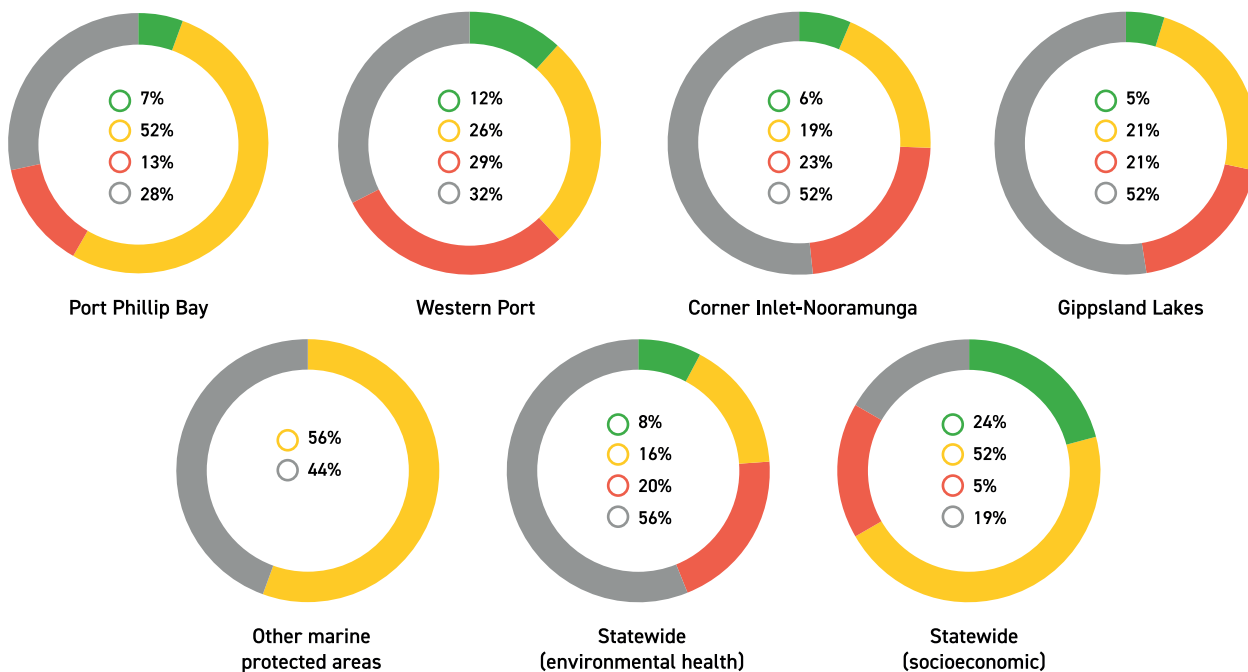


Figure 4: SMCE 2021 summary of regional indicator trend assessments.

Summary of data confidence assessments

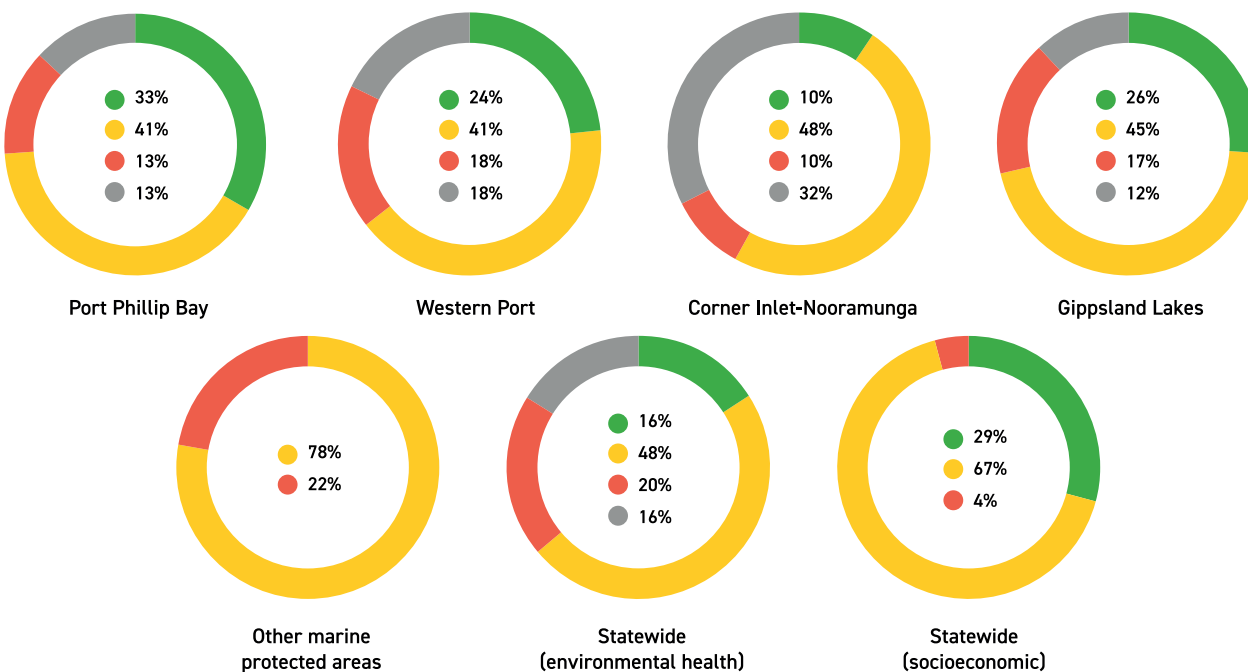


Figure 5: SMCE 2021 summary of regional indicator data confidence assessments.

Statewide (environmental health) = statewide indicator assessments for Themes 1-7: Environmental health.

Statewide (socioeconomic) = statewide indicator assessments for Theme 8: Communities and Theme 9: Stewardship and collaborative management.



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Published by the Commissioner
for Environmental Sustainability,
Victoria, 2021

Level 36, 2 Lonsdale Street
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info.ces@ces.vic.gov.au
www.ces.vic.gov.au



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