

Assessment of Victoria's Coastal Reserves

Coastal Reserves Inventory: Key datasets and information sources

October 2019

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Introduction

In June 2018 the Minister for Energy, Environment and Climate Change requested VEAC to conduct an assessment of Victoria's coastal reserves. The terms of reference list one of the specific purposes of the assessment as compilation of an inventory of values and uses of coastal reserves.

This report lists the key datasets used to identify significant values and uses for coastal reserves as reported in the inventory. VEAC has included the risks from the impacts of climate change as an additional section in this inventory. This approach permits comparison of coastal reserves with high values and those with threats from climate change.

The coastal reserves land unit inventory is available at <http://www.veac.vic.gov.au/investigation/assessment-coastal-reserves/reports>.

Approach

The inventory is prepared based on coastal reserve land units and documents Crown land reserve status and reservation purpose. There are around 230 coastal reserve land units. Significant values and uses are recorded in each of four sections for each coastal reserve land unit. Climate change threats are documented for each coastal reserve in the remaining section of the inventory. The six sections of the inventory are as follows:

- coastal reserve land unit details; Crown land parcel, manager and reserve information
- natural values
- recreation and tourism values
- cultural values
- infrastructure and tenures
- climate change risks.

VEAC's draft report provides additional descriptions of the attributes recorded here. The following sections of the draft report relate to the information provided in the inventory:

- chapter 3 – Crown land reservation purpose and type
- chapter 4 – selection of high or significant values reported in the inventory
- chapter 7 – climate change threats.

Most significant values assessed in this inventory are available as statewide GIS datasets permitting a comparison with the extent of coastal reserves prepared by VEAC. Spatial data sources are provided below and the methodology for selecting significant values described.

For some information types additional work was undertaken using aerial photography and street mapping to improve quality or provide enhanced detail.

Coastal reserve land units

Decision-making criteria for establishing which areas of Crown land are coastal reserve are described in chapter 2 of the draft report. Coastal reserves information is depicted in three geographic blocks (West, Central and East) separated along Local Government Area (LGA) boundaries. The LGAs for each block and rough outline of the assessment area boundary are provided in the draft report.

Generally coastal reserves comprise long thin Crown parcels, many extending along several kilometres of the coastline. The allocation of Crown land parcels to individual land units was undertaken primarily to reflect areas of similar uses, values, natural character or management arrangements. VEAC has generally split Crown parcels that extend across local municipal boundaries (or have areas allocated to other public land uses) and these are documented in the inventory with a suffix of a,b,c etc.

The structure of Crown land parcel boundaries has strongly influenced where the boundaries between land units have been defined; many land units also relate to Crown reservation history or purpose. Additional work is necessary to include divisions based on specific management arrangements for each land unit or other characteristics.

Other reference information in the inventory include the land unit ID number, the public land use category (noting that only coastal reserves and the sub-category of Gippsland Lakes Reserve are included in this inventory).

Crown land reservation and management information has been derived using DELWP's online titles system for Crown land (VOTs) and internal database 'Portal'.

Example of land unit inventory: Altona Coastal Reserve

Land Unit	Aireys Inlet Coastal Reserve		Assessment Block	Central	ID#	10107
	Coastal Reserve	Land Unit Area (hectares)	39.1			77

Natural values		Bioregion(s)	Otway Plain
Conservation-listed species	Plant <input type="checkbox"/>	Count	
<small>Species recorded on an international treaty, EPBC, FFG, or DELWP advisory list</small>	Animal <input checked="" type="checkbox"/>	4	Count
EVC (BCS) <input checked="" type="checkbox"/>	Important marine biotope <input checked="" type="checkbox"/>		
<small>Endangered, vulnerable, depleted, rare</small>	<small>Restricted extent, important ecological function, vulnerable community</small>		
Site of high blue carbon <input type="checkbox"/>	DELWP marine asset <input checked="" type="checkbox"/>		
	UNESCO Biosphere Reserve <input type="checkbox"/>		
	Ramsar wetland <input type="checkbox"/>		
	Important coastal bird site <input type="checkbox"/>		
	BirdLife International Key Biodiversity Area (KBA) <input type="checkbox"/>		
	Geological site of significance <input checked="" type="checkbox"/>		

Recreation and tourism values		
Marine access infrastructure <input type="checkbox"/>	Built community facilities <input checked="" type="checkbox"/>	Lighthouse, Tourist lookout
<small>includes jetties and piers</small>		
Caravan or camping area <input type="checkbox"/>	Active sports facilities <input type="checkbox"/>	

Cultural values		Traditional Owners
National Heritage List <input type="checkbox"/>	Victorian Heritage Register <input checked="" type="checkbox"/>	Wathaurung
Landscape significance <input checked="" type="checkbox"/>	Historic shipwreck <input type="checkbox"/>	
		Country Plan <input type="checkbox"/>

Infrastructure and tenures		
Utilities/ infrastructure <input type="checkbox"/>	Coastal protection structures <input type="checkbox"/>	Crown land tenure
		CL licence <input checked="" type="checkbox"/> CL lease <input type="checkbox"/>

Climate change risks			
Sea level rise	2040 <input checked="" type="checkbox"/>	% of land unit	14.9
	2100 <input checked="" type="checkbox"/>	% of land unit	18.5
Erosion vulnerability	<input type="checkbox"/>		
Storm surge	2040 <input checked="" type="checkbox"/>	% of land unit	20.7
	2100 <input checked="" type="checkbox"/>	% of land unit	21.6
Acid sulphate soils	<input checked="" type="checkbox"/>	% of land unit	2.3

Crown parcels included in land unit						
Parcel Number	Area (ha)	LGA	Land manager	Reserve type	Reserve purpose	SPI
P394837	11.5	Surf Coast	DELWP	Temporary	Public Purposes	2033\PP2015
P376837	23.7	Surf Coast	part local govt/ part	Temporary	Public Purposes (foreshore)	2019\PP2015
P110082	3.7	Surf Coast	GORC COM CAT 1	Temporary	Public and tourism purposes (lighth	15F\PP2015
P110083	0.2	Surf Coast	local govt	Temporary	Public and tourism purposes (lighth	15G\PP2015
P109765	0.0	Surf Coast	local govt	Temporary	Public and tourism purposes (lighth	15D\PP2015
P109837	0.0	Surf Coast	local govt	Temporary	Public and tourism purposes (lighth	15E\PP2015

Natural values

Bioregions

Bioregions are a landscape-scale classification of the environment using features like climate, geology, landform, native vegetation and species information. Victorian bioregions form part of the national framework for the terrestrial environment, the Interim Biogeographic Regionalisation for Australia (IBRA). The bioregion of all coastal reserves was identified using a spatial layer. Where coastal reserves overlapped two bioregions, both bioregion names are given in the inventory.

GIS layer (DELWP)	
<i>Victorian Bioregions - Mapped at 1:100,000 (version 3.0 - May2004)</i>	Object name: FLORAFUNA1.VBIOREG100

Conservation-listed species

Four spatial data layers (two public and two restricted) were used to identify flora and fauna records from the Victorian Biodiversity Atlas for all conservation-listed species. Conservation listing mechanisms considered were DELWP advisory lists (vertebrates, invertebrates and rare or threatened plants), the Victorian *Flora and Fauna Guarantee Act 1988*, the federal *Environment Protection and Biodiversity Conservation Act 1999*, and international agreements or treaties (Japan-Australia Migratory Bird Agreement, China-Australia Migratory Bird Agreement, Republic of Korea-Australia Migratory Bird Agreement, Bonn Treaty). In addition to species listed as critically endangered, endangered and vulnerable, species with a conservation status of conservation dependent, near threatened, rare and data deficient were included. All records dated after and including 1980 were used.

GIS layers (DELWP)	
<i>Victorian Biodiversity Atlas flora records (unrestricted) for sites with high spatial accuracy</i>	Object name: FLORAFUNA1.VBA_FLORA25
<i>Victorian Biodiversity Atlas flora records (restricted)</i>	Object name: FLORAFUNA1.VBA_FLORA_RESTRICTED
<i>Victorian Biodiversity Atlas fauna records (unrestricted) for sites with high spatial accuracy</i>	Object name: FLORAFUNA1.VBA_FAUNA25
<i>Victorian Biodiversity Atlas fauna records (restricted)</i>	Object name: FLORAFUNA1.VBA_FAUNA_RESTRICTED

Ecological vegetation classes (BCS)

Ecological vegetation classes (EVCs) are defined by a combination of plant species occurrence, lifeforms, position in the landscape, and an inferred preference for and fidelity to specific environments. Within every bioregion, each EVC is assigned a bioregional conservation status (BCS). The BCS is a function of the current extent and condition for each EVC compared to its extent and condition prior to European settlement. As bioregions have differing amounts of native vegetation remaining, an EVC may have a different conservation status across bioregions. The BCS spatial data layer was last updated for each EVC by DELWP in 2005.

Any records of EVCs with a BCS of endangered, vulnerable, depleted or rare that were greater than or equal to 0.1 hectare were included in the inventory.

GIS layer (DELWP)	
<i>Native Vegetation - Modelled 2005 Ecological Vegetation Classes (with Bioregional Conservation Status)</i>	Object name: FLORAFUNA1.NV2005_EVCBCS

Site of blue carbon

Coastal saltmarsh, mangroves and seagrass (collectively known as blue carbon ecosystems) have a key role in carbon sequestration, a key ecosystem service. Blue carbon ecosystems were mapped across Victoria as part of The Nature Conservancy's Mapping Ocean Wealth project. This work was also supported by an Australian Research Council Linkage Grant led by Deakin University with The Nature Conservancy, University of Queensland, Parks Victoria, and DELWP as partners. The maximum recorded value for tonnes of carbon was used to assess coastal reserves with high soil carbon. All values greater than or equal to 350 tonnes of carbon were assessed as high.

GIS layer (external)	
<i>Coastal Ecosystems Soil Carbon Stock (Mg per hectare)</i>	http://maps.oceanwealth.org/

Important marine biotope

The Combined Biotope Classification Scheme (CBiCS) classifies all marine habitats and is analogous with the terrestrial system of Ecological Vegetation Classes for describing vegetation. For the inventory, important biotopes were assessed by experts as those that are rare, vulnerable to disturbance or play a key known ecological role (e.g. nursery habitat).

Only biotopes with an occurrence of greater than or equal to 0.01 hectares in a coastal reserve were included in the inventory.

Biotope mapping has not yet been published in DELWP's corporate spatial layer. Mapping for Port Phillip Bay, Western Port and the Gippsland Lakes can be viewed using DELWP's biodiversity mapping portal NatureKit (<http://maps.biodiversity.vic.gov.au/viewer/>). Detailed information on individual biotopes can be viewed on the draft CoastKit website (<http://dev-coastkit.cbics.org/>).

GIS layer (unpublished)	
<i>Victorian Marine Biotopes</i>	Internal layer only

DELWP marine asset

Marine assets are tangible biophysical elements that are valuable for their ecosystem services. Statewide marine assets were identified by an expert panel based on the state or bioregional importance of the asset for its biodiversity, endemism, ecological role or function; support and contribution of the asset to the fitness of a species that is of international, state or bioregional importance for biodiversity; performance of a key ecological role or function; and representativeness of the asset in terms of marine habitats, and the naturalness and resilience of the asset. A description of the largest and most significant assets is in appendix 2 of the VEAC's Assessment of the Values of Victoria's Marine Environment (VEAC 2019).

GIS layer (DELWP)	
<i>Marine Assets</i>	Object name: MARINE1.MARINE_ASSETS

UNESCO Biosphere Reserve

Biosphere reserve is an international designation made by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) based on nominations submitted by countries participating in the Man and the Biosphere Program. The Mornington Peninsula and Western Port Biosphere Reserve is the only Victorian biosphere reserve that encompasses coastal reserves. A published map of the Mornington Peninsula and Western Port Biosphere Reserve was compared with the VEAC coastal reserve layer to determine coastal reserves that fall within this biosphere reserve.

Published document	
<i>Mornington Peninsula and Western Port Biosphere Reserve Boundaries</i>	https://www.biosphere.org.au/map-boundaries-stage-1-nomination

Ramsar wetland

The 1971 Convention on Wetlands of International Importance especially as waterfowl habitat was signed in Ramsar, Iran. Known as the 'Ramsar Convention', this agreement aims to halt the worldwide loss of wetlands and conserve those that remain through wise use and management. Coastal reserves included in Ramsar wetlands were identified using a spatial layer.

GIS layer (DELWP)	
<i>Ramsar Wetland Areas in Victoria at 1:25 000</i>	Object name: FLORAFUNA1.RAMSAR25

Important coastal bird site

This spatial layer identifies shorebird coastal roosting sites and was produced for the Oil Spill Response Atlas. Sites were identified from a range of published and unpublished sources of information and from personal communications made by experts in the field.

GIS layer (DELWP)	
<i>Shorebird roosting sites on the Victorian coast</i>	Object name: MARINE2.SHOREBIRD_ROOSTING_SITES

Birdlife International Key Biodiversity Areas

Key Biodiversity Areas (KBA) are sites contributing significantly to the global persistence of biodiversity. Spatial data on KBAs was obtained from the World Database of Key Biodiversity Areas, maintained by Birdlife International. Only coastal reserves with greater than or equal to 0.1 hectare in the KBA were included

GIS layer (external)	
<i>Key Biodiversity Areas</i>	http://www.keybiodiversityareas.org/site/mapsearch

Geological sites of high significance

Sites of national and international geological significance were identified from published material and information provided by Geological Society of Australia (Victoria Division) Heritage subcommittee members (relevant references are provided in the draft report). Identification of sites occurring on coastal reserves was undertaken using published maps of sites and the GIS layer of coastal reserves prepared by VEAC was discussed with a Heritage subcommittee representative.

Published document	
Conservation and heritage: Registering sites of significance. In: <i>Geology of Victoria</i> . Birch, W.D. (ed.) Geological Society of Australia Special Publication 23,	White, S., King, R.L., Mitchell, M.M., Joyce, E.B., Cochrane, R.M., Rosengren, N.J., and Grimes, K.G. (2003)

Published document	
Geological Society of Australia (Victoria Division), Melbourne. Pages 703-711	
<i>Sites of geological and geomorphological significance along the Victorian Coast</i> . Geological Survey of Victoria unpublished report 1993/4.	Buckley, R.W. (1993)
<i>Sites of geological and geomorphological significance in East Gippsland, Victoria</i> . Environmental Studies Series 341. State of Victoria, Ministry for Conservation, Melbourne.	McRae-Williams, M.S., Rosengren, N.J. and Kraemers S.M. (1981)
<i>Sites of geological significance in the Melbourne 1:250 000 mapsheet area</i> . Geological Survey of Victoria unpublished report 2000/1. Geological Survey of Australia (Victoria Division).	Mitchell, M., King R.L., and Cochrane R.M. (2000)
<i>Sites of geological and geomorphological significance in the Shire of Otway Bay</i> . Environmental Studies Publication 399. State of Victoria, Ministry for Conservation, Forests and Lands, Melbourne.	Rosengren, N.J. (1984)
<i>Sites of geological and geomorphological significance in the catchment of Westernport Bay</i> . Environmental Studies Publication 401. State of Victoria, Ministry for Conservation, Forests and Lands, Melbourne.	Rosengren, N.J. (1984)
<i>Sites of geological and geomorphological significance in central Gippsland</i> . Report to the Environmental Studies Division, Ministry for Conservation, Victoria. Department of Geography, University of Melbourne, Victoria.	Rosengren, N.J., McRae-Williams, M.S., Kraemers, S.M. (1981)
<i>Sites of geological and geomorphological significance in the VEAC Marine Investigation area</i> . Report to the Victorian Environmental Assessment Council. Available at: http://www.veac.vic.gov.au/investigation/marine-investigation/resources	Wakelin-King, G. and White, S. (2013)

Recreation and tourism values

Built community facilities

Four layers from the Vicmap 'features of interest' dataset were used to identify the presence of built community facilities. Polygon and point layers for features of interest (e.g. sports grounds, botanic gardens, municipal reserves and shopping precincts) were used to identify most facilities. This data was supplemented by building polygon and point layers to identify further features, including houses, sheds, structures, buildings, undefined buildings.

To ensure the facility occurred in the coastal reserve, polygons which overlapped the coastal reserve by less than 0.001 hectares were excluded. It was not possible to screen point data in this way. Some 18 categories of built community facilities are reported in the inventory: amphitheatre, angling club, childcare, coast guard, hall, lifesaving club, lighthouse, marine rescue service, museum, other building, other club, rotunda, sailing or yacht club, school, storage building, tourist attraction, tourist lookout, and visitor information.

Vicmap data were cross-checked against online club directories for surf lifesaving and sailing clubs and yacht clubs. Aerial imagery and Google Street View were used to confirm the location of the clubs on coastal reserve.

A list of lighthouses was compiled from an online directory. Aerial imagery and Google Street View were used to determine their location on coastal reserves. This list was cross checked against an internal list of parcels that were reserved for purposes relating to lighthouses.

GIS layers (DELWP)	
<i>FOI - Polygon - Vicmap Features of Interest</i>	Object name: VMFEAT.FOI_POLYGON
<i>FOI - Point - Vicmap Features of Interest</i>	Object name: VMFEAT.FOI_POINT
<i>Building Polygon</i>	Object name: VMFEAT.BUILDING_POLYGON
<i>Building Point</i>	Object name: VMFEAT.BUILDING_POINT
Online directories (external)	
Surf Life Saving Australia	https://sls.com.au/club_directory/
Australian Sailing	https://www.sailing.org.au/club-finder/
Lighthouses of Australia Inc.	https://lighthouses.org.au/vic/

Caravan or camping area

An initial record of coastal caravan and camping parks was compiled from a list published by the Department of Sustainability and Environment (DSE 2010). Aerial imagery, Google Street View and the camping application WikiCamps were used to determine which of the parks included on this list were in coastal reserves. Where park boundaries were unclear (e.g. several separately managed parks located adjacently) individual park websites were used for clarification. Additional cross-referencing was achieved using camp grounds, group camps and caravan parks identified in the Vicmap features of interest polygon layer.

GIS layer (DELWP)	
<i>FOI - Polygon - Vicmap Features of Interest</i>	Object name: VMFEAT.FOI_POLYGON
Published document	
<i>Crown land caravan and camping parks Victoria</i>	DSE (2010)

Marine access infrastructure

Two spatial layers contributed data on marine access infrastructure. One layer identified the location of coastal boat ramps (sealed surface, usually concrete, extending into the water at least at high tide which can be accessed by a boat trailer), boat launches (natural surface where the water can be accessed by a boat trailer, usually across the beach, sometimes with a sealed surface from the road or car park to the top of the beach) and boat slipways (facilities where a boat is transported to the water on rails). A second layer provided the location of jetties and piers. Land unit names were cross checked after inputting all spatial data, as some land unit names identified the presence of marine access infrastructure that was not identified in spatial layers.

GIS layers (DELWP)	
<i>Coastal Boat Access Points - Boat Ramps, Boat Launches, Boat Slipways</i>	Object name: MARINE2. BOAT_ACCESS_POINTS
<i>Jetties and piers</i>	Object name: MARINE2.VIC_PERS_JETTIES_POINTS

Active sports facilities

Four layers from the Vicmap features of interest dataset were used to identify the presence of active sports facilities. Polygon and point layers for features of interest (e.g. sports grounds, botanic gardens, municipal reserves and shopping precincts) were used to identify most utilities and

infrastructure resources. This data was supplemented by building polygon and point layers to identify further features, including houses, sheds, structures, buildings, undefined buildings.

To ensure the resource occurred in the coastal reserve, polygon resources which overlapped the coastal reserve by less than 0.001 hectares were excluded. It was not possible to screen point data in this way. Six categories of active sports facilities are reported in the inventory: bowls club, golf course, other sports facility, pool, skate park, and tennis.

Vicmap data for bowling clubs were cross-checked against the Bowls Victoria club directory. Aerial imagery and Google Street View were used to confirm the location of the clubs on coastal reserve

GIS layers (DELWP)	
<i>FOI - Polygon - Vicmap Features of Interest</i>	Object name: VMFEAT.FOI_POLYGON
<i>FOI - Point - Vicmap Features of Interest</i>	Object name: VMFEAT.FOI_POINT
<i>Building Polygon</i>	Object name: VMFEAT.BUILDING_POLYGON
<i>Building Point</i>	Object name: VMFEAT.BUILDING_POINT
Online directory (external)	
Bowls Victoria	https://www.bowlsvic.org.au/clubassist/club-directory/

Cultural values

Traditional Owners and Country plans

Three spatial datasets and one published document were used to identify the Traditional Owners, the relevant Registered Aboriginal Parties (RAPs) and the existence of a Country plan for each coastal reserve.

Recognition and Settlement Agreements (RSAs) are made with traditional owner groups under the *Traditional Owner Settlement Act 2010* (Vic). RSAs give formal recognition to Traditional Owner groups as the Traditional Owners of the agreement area.

RAPs have been recognised under the *Victorian Aboriginal Heritage Act 2006* as the primary guardians, keepers and knowledge holders of Aboriginal cultural heritage. These boundaries have been determined by Aboriginal communities and registered by the Victorian Aboriginal Heritage Council.

GIS layers (DELWP)	
<i>Registered Aboriginal Parties (RAP) Appointed Boundaries</i>	Object name: CULTURE.RAP
<i>Recognition and Settlement Agreement area</i>	Object name: CROWNLAND.RSA
GIS layer (external- National Native Title Tribunal)	
<i>Native Title Claimant Applications and Determination Areas</i>	http://www.nntt.gov.au/assistance/Geospatial/Pages/Spatial-aata.aspx
Published document	
<i>Assessment of the Values of Victoria's Marine Environment Report</i>	VEAC (2019)

Native Title Claimant Applications and Determination Areas under the *Native Title Act 1993* (Cth) were identified using information available from the National Native Title Tribunal.

A list of existing Country Plans was provided to VEAC by the Federation of Victorian Traditional Owner Corporations as part of a report prepared by them for VEAC's 2019 Assessment of the Values of Victoria's Marine Environment. This list was used to identify where country plans include areas of coastal reserves.

National Heritage List

The Great Ocean Road is the only National Heritage List (NHL) place located on coastal reserve. Spatial data for the NHL was compared with VEACs mapping of coastal reserves to identify land units that host sections of this national heritage place.

GIS layer (external- Commonwealth Department of Environment)	
<i>National Heritage List Spatial Database (NHL) – public</i>	http://www.environment.gov.au/fed/catalog/search/resource/

Victorian Heritage Register

The Victorian Heritage Register lists the State's most significant heritage places and objects protected under the *Heritage Act 1995*. Detailed information about individual sites can be found in the online Victorian Heritage Database (<https://vhd.heritagecouncil.vic.gov.au/>)

GIS layer (DELWP)	
<i>Victorian Heritage Register</i>	Object name: PLANNING.HERITAGE_REGISTER

Historic shipwrecks

Shipwrecks were identified using a GIS layer compiled by DELWP Maritime Heritage Unit with additional verification carried out via the Australasian Underwater Cultural Heritage Database (AUCHD). Locations of shipwrecks were compared with VEACs mapping of coastal reserves to identify sites located within coastal reserves. Whilst many shipwrecks have known locations there are some wrecks where exact coordinates cannot be obtained although they are known to exist within an approximate area. Where these wrecks occur in close proximity to the coastal reserve they have been considered to be within the reserve.

GIS layer (DELWP)	
<i>Victorian Maritime Heritage</i>	Object names: VIC.SHIPWRECKS.LOCATED.Z54, VIC.SHIPWRECKS.LOCATED.Z55
Online directory (external)	
<i>Australasian Underwater Cultural Heritage Database (AUCHD)</i>	https://www.environment.gov.au/heritage/underwater-heritage/auchd

Landscape significance

In 2006 the Victorian Coastal Council identified significant landscapes along the Victorian coast (excluding Metropolitan Melbourne). The published framework - *Coastal Spaces Landscape Assessment Study* was designed to assist local governments, landholders and other agencies to manage future development impacts. The framework included maps of the coast detailing where areas of landscape significance had been identified, a comparative assessment with VEACs mapping of coastal reserves was carried out to identify coastal reserves within landscapes of State Significance.

Published document	
<i>Coastal Spaces Landscape Assessment Study</i>	Victorian Coastal Council (VCC) 2006

Infrastructure and tenures

Utilities and infrastructure

Four layers from the Vicmap features of interest dataset were used to identify the presence of utilities or infrastructure. Polygon and point layers for features of interest (e.g. sports grounds, botanic gardens, municipal reserves and shopping precincts) were used to identify most utilities and infrastructure resources. This data was supplemented by building polygon and point layers to identify further features, including houses, sheds, structures, buildings, undefined buildings.

To ensure the resource occurred in the coastal reserve, polygon resources which overlapped the coastal reserve by less than 0.001 hectares were excluded. It was not possible to screen point data in this way. Nine categories of utilities and infrastructure resources are reported in the inventory: administrative building, emergency marker, energy, factory, fire station, telephone exchange, survey monument, waste transfer station, weather station.

GIS layers (DELWP)	
<i>FOI - Polygon - Vicmap Features of Interest</i>	Object name: VMFEAT.FOI_POLYGON
<i>FOI - Point - Vicmap Features of Interest</i>	Object name: VMFEAT.FOI_POINT
<i>Building Polygon</i>	Object name: VMFEAT.BUILDING_POLYGON
<i>Building Point</i>	Object name: VMFEAT.BUILDING_POINT

Coastal protection structures

The presence of coastal protection structures was assessed using two spatial data layers created by the Department of Primary Industries for the Future Coasts Program in 2011 using aerial photography and the Future Coasts topographic LiDAR Digital Elevation Model. One layer depicts coastal protective structures (breakwaters, groynes, revetments, seawalls, wharves and other) and the second depicts coastal levees (constructed for flood protection, saltworks ponds, or sewage treatment ponds).

GIS layers (DELWP)	
<i>Coastal Protection Structures</i>	Object name: COASTS.COAST_PROTECTION_STRUCT_LINE
<i>Coastal Levees</i>	Object name: COASTS.COASTAL_LEVEES

Crown land licences and leases

Leases grant the holder exclusive use over an area of Crown land (subject to conditions), whereas licences grant non-exclusive use. The presence of Crown land tenures (licences and leases) was identified using a spatial layer that provides information about the private use of Crown land parcels and Crown roads. Tenures include agricultural licences (e.g. unused road licences, water frontage licences, grazing licences), leases (e.g. commercial type leases), general licences (e.g. miscellaneous community use licences, permits and consents), and pipe licences (e.g. water supply pipelines). The database is continually maintained. Additional data on apiary licences was included from a separate spatial layer.

In the inventory, direct tenures (issued by DELWP) were reported against six licence categories (grazing, unused road, water frontage, apiculture and other) and two lease categories (surf lifesaving club, other). Delegated tenures (issued by committees of management) were reported as either licences or leases where information was available.

GIS layers (DELWP)	
<i>Vicmap Crown Land Tenure</i>	Object name: VICMAP_CLTENURE
<i>Apiary rights and Bee farm and range licences</i>	Object name: CROWNLAND.APIARY

Climate change risks

Data on climate change risks were derived from existing DELWP corporate spatial layers (presence of coastal acid sulphate soils) and a project conducted by Spatial Vision for DELWP as part of the Victorian Coastal Monitoring Program on statewide vulnerability to erosion and inundation along the Victorian coastline in 50 metre blocks (Spatial Vision 2017). The data layers developed by Spatial Vision are also now available as DELWP corporate spatial layers. Finer scale (third pass) local coastal hazard assessments are available for Bellarine-Corio Bay, Gippsland Lakes, Port Fairy and Western Port. While these are valuable for local planning and adaptation, the statewide layers were used for this inventory to represent data at the same resolution across all coastal reserves.

Sea level rise and storm surge

The Victorian coastal inundation dataset consists of eight spatial layers modelling the extent of land subject to coastal inundation due to projected sea level rise from 2009 to 2100. Sea level rise data are available for four time periods: 2009 (current), 2040 (20 centimetre rise), 2070 (47 centimetre rise) and 2100 (82 centimetre rise). Storm surge data (1-in-100 year storm tide with added wind forcing plus sea level rise) are also available for the same four periods: 2009 (current inundation to 1-in-100 year storm tide level), 2040 (storm surge increased by 6 per cent plus 20 centimetre sea level rise), 2070 (storm surge increased by 13 per cent plus 47 centimetre sea level rise) and 2100 (storm surge increased by 19 per cent plus 82 centimetre sea level rise).

For the inventory, only the 2040 and 2100 data were used. Data are presented as the percentage of each coastal reserve that will be inundated under a given scenario (e.g. 2040 sea level rise).

GIS layer (DELWP)	
<i>Victorian Coastal Inundation</i>	Object name: COASTS.COASTAL_INUNDATION

Erosion vulnerability

Data on the vulnerability of the coast were combined from five Catchment Management Authority (CMA) layers, generated as part of the Victorian Coastal Monitoring Program.

For the inventory, coastal reserves with high (score of 46.77- 128) and very high (score of 128.01 to 279.51) erosion vulnerability are reported. Because the spatial layer is linear rather than a polygon, it is not possible to show the percent of the coastal reserve which is affected.

GIS layers (DELWP)	
<i>Statewide Victorian Coastal Hazard Assessment 2017 - Corangamite CMA</i>	Object name: COASTS.VCHA2017_Corangamite_CMA

GIS layers (DELWP)	
<i>Statewide Victorian Coastal Hazard Assessment 2017 – East Gippsland CMA</i>	Object name: COASTS. VCHA2017_East_Gippsland_CMA
<i>Statewide Victorian Coastal Hazard Assessment 2017 – Glenelg Hopkins CMA</i>	Object name: COASTS. VCHA2017_Glenelg_Hopkins_CMA
<i>Statewide Victorian Coastal Hazard Assessment 2017 – Port Phillip CMA</i>	Object name: COASTS. VCHA2017_Port_Phillip_CMA
<i>Statewide Victorian Coastal Hazard Assessment 2017 – West Gippsland CMA</i>	Object name: COASTS. VCHA2017_West_Gippsland_CMA

Acid sulphate soils

Disturbing coastal acid sulphate soil (CASS) causes oxygen to penetrate material containing metal oxides either in sulfidic material or sulfuric material. Sulfidic material is soil or sediment that contains metal sulfides which oxidise to sulfuric acid in the presence of oxygen. Sulfuric material has either partially or completely oxidised metal oxides. Inventory data are presented as the percent of each coastal reserve that likely contains coastal acid sulphate soils.

GIS layer (DELWP)	
<i>Coastal Acid Sulphate Soils</i>	Object name: CATCHMENTS.COASTAL_ACID_SULPHATE_SOILS

Appendix 1 Terms of reference

Victorian Environmental Assessment Council Act 2001

REQUEST TO THE VICTORIAN ENVIRONMENTAL ASSESSMENT COUNCIL TO CONDUCT AN ASSESSMENT OF VICTORIA'S COASTAL RESERVES

Pursuant to section 26B of the *Victorian Environmental Assessment Council Act 2001*, the Minister for Energy, Environment and Climate Change hereby requests the Victorian Environmental Assessment Council (the Council) to carry out an assessment of Victoria's coastal reserves¹.

The purpose of the assessment is to:

- a) review the number and types (reservation status) of coastal reserves in Victoria;
- b) identify reserves with high environmental, cultural heritage, social and economic values and identify values at risk from the impacts of climate change;
- c) identify current and emerging uses of the coastal reserves; and
- d) compile an inventory, including spatial distribution, of values and uses of the coastal reserves.

As a first step, the Council is required to publish a definition of coastal reserves to be used in the assessment, including a diagrammatic representation and map of Victoria's coastal reserves.

The assessment and associated inventory will assist the Victorian Government's future planning and decision-making for Victoria's coasts.

The Council must take into account relevant agreements under the *Traditional Owner Settlement Act 2010*.

As part of the assessment, the Council must produce a draft report and seek public comment on it.

The Council must report on the completed assessment by 6 December 2019.

¹ For the purposes of this assessment, Victoria's coastal reserves include any Crown land along Victoria's coast (including the coast of any bay, inlet and estuary and the Gippsland Lakes) that is:

- a) reserved under section 4(1)(ze) of the *Crown Land (Reserves) Act 1978* for the protection of the coastline or is otherwise reserved under that Act and is landward of low water mark; or
- b) unreserved Crown land under the *Land Act 1958* that is landward of low water mark.

For clarity, Victoria's coastal reserves do not include any Crown land described as a park or marine sanctuary in Schedule 2, 2B, 3, 4, 7 or 8 to the *National Parks Act 1975* or any unreserved Crown land from low water mark to the outer limit of Victoria's coastal waters (mostly 3 nautical miles).