



Commonwealth of Australia

**Amendment to the list of threatened ecological communities under section 181 of the
Environment Protection and Biodiversity Conservation Act 1999 (EC149)**

I, SUSSAN LEY, Minister for the Environment, pursuant to paragraph 184(a) of the
Environment Protection and Biodiversity Conservation Act 1999, hereby amend the list referred
to in section 181 of that Act by:

including in the list of threatened ecological communities in the **endangered** category:

Karst springs and associated alkaline fens of the Naracoorte Coastal Plain Bioregion

as described in the Schedule to this instrument.

Dated this.....3rd.....day of.....December.....2020

Sussan Ley

SUSSAN LEY
Minister for the Environment

SCHEDULE

Karst springs and associated alkaline fens of the Naracoorte Coastal Plain Bioregion

The Karst springs and associated alkaline fens of the Naracoorte Coastal Plain Bioregion is a type of groundwater dependent wetland limited to the Gambier Limestone formation (Gambier Karst Province). It occurs in the Bridgewater subregion of coastal south-eastern South Australia and south-western Victoria. The ecological community's primary defining features are the underlying limestone geology, predominantly freshwater karst fed (alkaline) springs, soaks, pools or streams and associated fringing fens which include herblands, peatlands, sedgeland and/or shrubland vegetation.

The Karst springs and alkaline fens ecological community includes various interconnected habitats: an open water or aquatic zone; a submergent zone that varies with pool depth; and an emergent/fringing zone. Some occurrences have connecting channels between spring pools.

When present, the open freshwater aquatic zone typically occur as pools such as in a drowned cave system, sinkhole or lake. The submerged assemblage of aquatic vegetation within spring pools is considered unique to this ecological community. Free-floating macrophytes such as duckweeds (*Lemna* spp.) are often evident on the surface and may extend into the emergent zone on pool fringes. The pools are generally dominated by Phytoplankton (algae) at depth. Algae in the aquatic zone include species from the genera *Anabaena*, *Batrachospermum*, *Cladophora*, *Enteromorpha*, *Lyngbya*, *Oscillatoria*, and *Spirogyra*.

In the submergent zone vascular plant species vary with water depth, the degree of the pool floor slope and substrate type. True aquatic plant species become evident with increasing depths beyond three metres. In some locations where water depth is generally less than six metres and the pool floor quite broad, extensive beds of macrophytes can occur. Macrophytic species can occur down to six metres and include species such as *Cycnogeton procerum*, *Triglochin striata* (Water Ribbons), *Ruppia polycarpa* (Sea Tassel), *Hydrocotyle* spp. (Pennywort) and *Ranunculus inundatus* (River Buttercup). Some species may extend to greater depth due to water clarity and sediment substratum, for example *Myriophyllum* spp. (Water-Milfoil) and *Stuckenia pectinata* (Fennel Pondweed). Mosses, such as *Cratoneurosis relaxa*, *Distichophyllum microcarpum* and *Fissidens rigidens*, may be present on limestone outcrops and floors of submerged caverns to depths exceeding 15 metres. Epiphytic algal growth can also occur on genera such as *Ranunculus*, particularly when reduced water flow occurs.

The fringing soils support vegetation that ranges from reedbeds, sedgeland and herblands to shrublands. The inundated emergent zone occurs as a dense herbaceous verge of reeds, sedges and rushes which include macrophytic species, such as twig-rushes (*Baumea* spp.), *Cladium procerum* (Leafy Twig-rush), *Cyperus laevigatus* (Boredrain Sedge), *Eleocharis gracilis* (Slender Spike Sedge), *Phragmites australis* (Common Reed), *Selliera radicans* (Swamp Weed), *Schoenoplectus pungens* (Three-square), *Schoenus nitens* (Shiny Bog-sedge) and *Typha domingensis* (Bull-rush).

As sedgeland transitions to shrubland, the overstorey becomes typically dense with *Leptospermum lanigerum* (Silky Tea-tree/Woolly Tea-tree/Punung/Wiriyu) the common dominant canopy species. Other shrub species tolerant of waterlogging which may occur in

the canopy include *Melaleuca squarrosa* (Scented Paperbark), *M. ericifolia* (Swamp Paperbark) and *Ozothamnus ferrugineus* (Tree Everlasting). Large tree species such as *Eucalyptus ovata* (Swamp Gum) can sporadically occur.

The understorey of the fringing zone may be dominated by tall tussock sedges such as *Gahnia trifida* (Cutting Grass) and *Gahnia clarkei* (Tall Saw-sedge) and also includes herbaceous plants such as *Acaena novae-zelandiae* (Bidgee-widgee), *Brachyscome graminea* (Grass Daisy), *Centella cordifolia*, *Epilobium billardioreanum* subsp. *billardioreanum* (Variable Willow-herb), *Lobelia anceps* (Angled Lobelia), *Samolus repens* (Creeping Brookweed), *Senecio biserratus* (Fireweed), *Viola hederacea* (Australian Native Violet) and genera such as *Cotula*, *Hydrocotyle* and *Cynnogeton*. Orchids such as *Pterostylis tenuissima* (Swamp Greenhood) may also be present in the fringing zone. As the shrub canopy density increases, the groundlayer can become sparse due to shading and competition.

The Karst springs and alkaline fens provides diverse habitats for a range of aquatic, terrestrial and volant animals that rely on these permanent to near permanent wetlands. The diverse aquatic habitats associated with the Karst springs and alkaline fens also provide resources for migratory waders and waterbirds in addition to refuge for birds from more arid regions.