



Government
of South Australia

Declared Plant Policy

This policy relates to natural resources management under section 9(1)(d) of the Landscape South Australia Act 2019 (the Act), enabling co-ordinated implementation and promotion of sound management programs and practices for the use, development or protection of natural resources of the State. Specifically, this policy provides guidance on the use and management of natural resources relating to the prevention or control of impacts caused by pest species of plants that may have an adverse effect on the environment, primary production or the community, as per object s7(1)(f) of the Act.

toe-toe (*Cortaderia richardii*)

New Zealand pampas grass or toe-toe is a dense tussock-forming, perennial grass up to 5 m in height that has become invasive in forests of Tasmania. It is not known to occur in this State.

Management Plan for Toe-toe

Outcomes

- Prevent the establishment of toe-toe in South Australia.
- Protect native vegetation and forestry plantations from toe-toe infestations.

Objectives

- Prevent the entry of toe-toe into South Australia
- Destroy any infestation of toe-toe found in South Australia
- Prevent any sale of toe-toe as an ornamental plant in South Australia

Best Practice Implementation

- Regional landscape boards and Green Adelaide to destroy any infestations found.
- Regional landscape boards and Green Adelaide to enforce the prohibition on sale of plants.
- Regional landscape boards and Green Adelaide to ensure any plants found in nurseries are destroyed.

Regional Implementation

Refer to regional management plans for further details.

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Region	Actions
Alinytjara Wilurara	Limited action
Eyre Peninsula	Contain spread – Regional alert
Green Adelaide	Protect sites
Hills and Fleurieu	Protect sites
Kangaroo Island	Contain spread – Regional alert
Limestone Coast	Monitor
Murraylands and Riverland	Limited action
Northern and Yorke	Contain spread – Regional alert
South Australian Arid Lands	Limited action

Declaration

To implement this policy, toe-toe is declared under the *Landscape South Australia Act 2019* throughout the whole of the State of South Australia so that cultivation, sale and movement of plants can be prevented. Its movement or transport on a public road, by itself or as a contaminant, or sale by itself or as a contaminant, are prohibited.

In all regions, land owners are required to destroy any toe-toe plants growing on their land. Regional landscape boards and Green Adelaide are required to destroy plants growing on road reserves in their regions, and may recover costs from the adjoining land owners. Notification of the presence of plants is necessary to ensure any incursions are promptly detected and destroyed.

Toe-toe is declared in category 1 under the Act for the purpose of setting maximum penalties and for other purposes. Any permit to allow its entry, road transport or sale can only be issued by the Chief Executive of the Department for Environment and Water or their delegate pursuant to section 197.

Under the *Landscape South Australia (General) Regulations 2020*, Regulation 27 specifies the conditions under which a person is exempt from the operation of section 186 and may transport wool, grain or other produce or goods carrying toe-toe on public roads, or bring them into the State. Regulation 28 specifies conditions under which a person is exempt from the operation of section 188(2) and may sell wool, grain or other produce or goods carrying toe-toe. Note that certain produce or goods may be excluded from these general movement and sale exemptions by Gazettal Notice of the Chief Executive, DEW.

The following sections of the Act apply to toe-toe throughout each of the regions noted below:

Sections of Act	Region								
	AW	EP	GA	HF	KI	LC	MR	NY	SAAL
186(1) Prohibiting entry to area	X	X	X	X	X	X	X	X	X
186(2) Prohibiting movement on public roads	X	X	X	X	X	X	X	X	X
188(1) Prohibiting sale of the plant	X	X	X	X	X	X	X	X	X
188(2) Prohibiting sale of contaminated goods	X	X	X	X	X	X	X	X	X
190 Requiring notification of presence	X	X	X	X	X	X	X	X	X
192(1) Land owners to destroy the plant on their properties	X	X	X	X	X	X	X	X	X
192(2) Land owners to control the plant on their properties									
194 Recovery of control costs on adjoining road reserves	X	X	X	X	X	X	X	X	X

Review

This policy is to be reviewed by 2025 or in the event of a change in one or more regional management plans for toe-toe.

Weed Risk

Invasiveness

Toe-toe establishes a large root system up to 3.5m deep and spreads from seed and rhizomes (root segments). It produces large quantities of seed, of the order of 240,000 viable seeds per plant, and may be spread up to 25 km by wind. It is dependant on seed for propagation, and seedling establishment appears to be their most critical life stage. The seeds have no dormancy and are short-lived, probably no longer than one year. Seedlings need reliable moisture in their first year to establish.

Toe-toe does particularly well in wetter conditions, making wetlands along rivers and inlets and wet, disturbed heathlands especially vulnerable to infestation.

Common sites of infestation are roadsides, road cuttings, quarry faces, sand dunes, mine spoil, new forest plantations and burnt or mechanically disturbed bushland. It can thrive in low-fertility situations and also tolerate waterlogged conditions.

Impacts

Experience with other *Cortaderia* species has shown that, once established, they are highly competitive, restrict the regeneration of native trees, become a fire hazard and can harbour vermin. They are of greatest potential weed significance to forestry operations, but are not considered agricultural weeds, because young plants are readily grazed by stock and have no potential to establish in cropping systems.

Toe-toe is likely to behave in a similar way. In Tasmania it rapidly colonises disturbed or burnt areas in a range of vegetation types from closed forest to coastal scrub, where it out-competes native plants. It can impede access along roads and walking tracks.

Potential distribution

Cortaderia species grow on soils ranging from sand to clay and moderately acid to alkaline. They appear to be adapted to growth on low-nutrient soils and are most competitive on these sites.

It has a wide potential distribution in the southern part of South Australia including the majority of forested areas of the State, and wetlands or wooded areas in much of the agricultural zone. The pastoral regions are too dry for the establishment of toe-toe.

Feasibility of Containment

Control costs

The method of control for pampas grasses depends on the site on which they occur and the potential risk for causing new infestations. Permanent mechanical removal is recommended wherever possible.

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Smaller plants (less than 40cm) can be controlled using a wiper applicator with the recommended herbicide. For larger plants, slash the plant to reduce the foliage, taking care to dispose of any plant material in the appropriate way to prevent re-establishment, and then spray with herbicide.

Toe-toe is grazed by stock when it is young, before the foliage becomes too abrasive. Grazing prevents the development of flowers and seed set. Plants can also be burnt (if local conditions allow), then allowed to reshoot and the new growth sprayed with herbicide.

Persistence

Individual toe-toe clumps are long lived, capable of surviving for decades. They are resilient to fire once established and can tolerate extended dry periods.

As the seeds survive only a single year in the soil, no significant seed bank is formed.

Current distribution

Toe-toe is not naturalised in South Australia and apart from one plant that was removed from the Mount Lofty Botanic Garden, it is not known to have been imported to South Australia but may possibly have been used in other large gardens in the Adelaide Hills. In Tasmania it has become a weed of forest plantations.

State Level Risk Assessment

Assessment using the Biosecurity SA Weed Risk Management System gave the following comparative weed risk and feasibility of containment scores by land use:

Land use	Weed Risk	Feasibility of control	Response at State Level
Forestry	34	0	monitor
Native vegetation	35	0	monitor

Considerations

Toe-toe is absent from South Australia and only small areas of the State are vulnerable to its establishment. Risk assessment indicates monitoring as the management action at State level; this is implemented by destroying infestations as found in the regions where toe-toe can grow.

Only limited action is needed in the Alinytjara Wilurara, South Australian Arid Lands and Murraylands and Riverland regions, which do not contain habitats susceptible to invasion. Other regions are monitored for any incursion of toe-toe. The Hills and Fleurieu and Green Adelaide regions also plan to protect sites as they contain high rainfall forest habitats susceptible to invasion.

Toe-toe is treated as an Alert Species at State level, and regionally in the Eyre Peninsula, Northern and Yorke and Kangaroo Island regions.

Synonymy

Cortaderia richardii (Endl.) Zotov, New Zealand J. Bot. 1: 84 (1963)

Basionym: *Arundo richardii* Endl., Ann. Wiener Mus. Naturgesch 1: 158 (1836)

Taxonomic synonyms:

Arundo kakao Steud., Syn. Pl. Glumac. 1: 194 (1854)

Gynerium zeelandicum Steud., Syn. Pl. Glumac. 1: 198 (1854)

Arundo australis A. Rich. ex Steud., Nomencl. Bot. 1: 143 (1821)

Other common names include toi-toi, New Zealand pampas grass, Richard's pampas grass and South Island toi toi.

References

Duckett, T. (1989) Managing Tasmania's pampas grass problem: a strategy for control. *Tasforests* 1: 27-31.

Hon David Speirs MP
Minister for Environment and Water

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