Declared Plant Policy

Government of South Australia

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.*

buffel grass (*Cenchrus ciliaris* and *C. pennisetiformis*)

A perennial tussock grass from Africa and Asia, introduced for rangeland improvement and now widespread across northern Australia. It is scattered in the pastoral zone of South Australia, most prevalent in northern areas but more recently extending southwards.

Management Plan for Buffel Grass

Outcomes

- Buffel grass contained and its impacts on native vegetation, grazing systems, remote communities and infrastructure in South Australia minimised.

Objectives

- Vulnerable sites currently uninfested with buffel grass protected from invasion.
- Buffel grass contained within its present range in South Australia, and this range incrementally reduced where possible.
- Buffel grass infestations are removed from key dispersal nodes and pathways.
- Natural and built assets protected from the fire risk associated with buffel grass infestations.

Best Practice Implementation

- Implement the South Australia Buffel Grass Strategic Plan 2019-24 through the operation of the State Buffel Grass Taskforce in accordance with the management zoning in the plan.
- Remove infestations of buffel grass threatening high priority assets and at high priority locations in transport corridors.
- Prevent long-distance dispersal of buffel grass propagules.
- Awareness raising (recognition, impacts, best practice management).
- Regional landscape boards to co-ordinate control of buffel grass infestations on public and private land, in accordance with the Strategic Plan.

- Land owners to control infestations on private land as required by regional landscape boards.

- Regional landscape boards to control infestations on road reserves, in accordance with the Strategic Plan.

Regional Implementation

Refer to regional management plans and the South Australia Buffel Grass Strategic Plan 2019-2024 for further details.

Region	State Management Zone	Regional Actions
Alinytjara Wilurara	APY Lands: Zone 1 (Manage weed) MT Lands: Zone 3 (Destroy infestations)	Manage weed (APY Lands) Destroy infestations (MT Lands)
Eyre Peninsula	Zone 3 (Destroy infestations)	Destroy infestations
Green Adelaide	Zone 3 (Destroy infestations)	Destroy infestations
Hills and Fleurieu	Zone 3 (Destroy infestations)	Destroy infestations
Kangaroo Island	Zone 3 (Destroy infestations)	Destroy infestations
Limestone Coast	Zone 3 (Destroy infestations)	Destroy infestations – Regional alert
Murraylands and Riverland	Zone 3 (Destroy infestations)	Destroy infestations
Northern and Yorke	Upper North District: Zone 2 (Protect sites) Lower North and Yorke districts: Zone 3 (Destroy infestations)	Protect sites (Upper North District) Contain spread (native vegetation in Lower North and Yorke districts)
South Australian Arid Lands	All districts except Marla-Oodnadatta: Zone 2 (Protect sites) Marla-Oodnadatta District: Zone 1 (Manage weed)	Manage weed (Marla-Oodnadatta District) Protect sites (all districts except Marla-Oodnadatta)

Declaration

To implement this policy, buffel grass is declared under the *Landscape South Australia Act 2019* throughout the whole of the State of South Australia. Its entry to South Australia, movement or transport on a public road by itself or as a contaminant, or sale by itself or as a contaminant are prohibited. Land owners in the Hills and Fleurieu, Kangaroo Island, Limestone Coast, and Murraylands and Riverland regions are required to notify their regional landscape board of any buffel grass plants found on their lands.

The Alinytjara Wilurara, Northern and Yorke, and South Australian Arid Lands Landscape Boards may require land owners to control buffel grass plants growing on their properties. These three landscape boards are required to control plants on road reserves, and may recover costs from adjoining land owners.

The Eyre Peninsula, Hills and Fleurieu, Kangaroo Island, and Limestone Coast, and Murraylands and Riverland Landscape Boards and Green Adelaide may require land owners

to destroy buffel grass plants growing on their land. These authorities are required to destroy plants on road reserves in their regions and may recover costs from adjoining land owners.

Buffel grass is declared in category 2 under the Act for the purpose of setting maximum penalties and for other purposes. Any permit to allow its entry to the State, road transport or sale can only be issued by the Chief Executive of the Department for Environment and Water (DEW) 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 buffel grass 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 buffel grass. 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 buffel grass throughout each of the regions noted below:

Region Sections of Act	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		
192(1) Land owners to destroy the plant on their properties		X	X	X	X	X	X		
192(2) Land owners to control the plant on their properties	X							X	X
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 buffel grass.

Weed Risk

<u>Invasiveness</u>

Buffel grass spreads through dispersal of its fluffy burrs by wind, water and animals, particularly along drainage lines, roads and other transport corridors. Its spread along roads can also be assisted by vehicle draughts and movement of soil by graders and other vehicles. Buffel grass may be slow to establish initially but it may then spread readily beyond the introduction sites under favourable seasonal conditions. In the arid zone, it has spread extensively during infrequent episodes when summer rainfall was well above average for several years. Buffel grass invasion is facilitated by burning, producing positive feed-back between fire and the invasion of buffel grass.

Higher fuel loads associated with large-scale buffel grass invasion can support fires of far greater intensity, frequency or spatial area than would have occurred previously. Buffel grass is capable of rapid vegetative recovery from the high-intensity fires that it fuels, and gains a

competitive advantage in the post-fire environment. In this way, burning results in the increased relative abundance of buffel grass. The rapid re-establishment of flammable fuel loads also increases the risk of future fire events, perpetuating the positive fire-invasion feedback.

Impacts

Buffel grass is an erect, deep-rooted, tussock forming, summer-growing perennial grass (C_4) that forms dense single-species stands that displace native species and change fire regimes. Although a useful fodder species for periods after rain on rangelands of northern Australia, in many habitats it reduces pasture productivity in the long term.

Buffel grass is one of the relatively few weeds that invades and builds up dense populations in the arid semi-arid rangelands. It has been noted as impeding traditional land uses in the Anangu lands.

Through competition with native species, it reduces diversity of native pastures including native grasses that are highly valued fodder after rain. Dry foliage can form a relatively continuous flammable ground layer that can carry extensive and intense fires. The consequence of the positive fire-invasion feedback loop is an increased rate of degradation of the landscape as buffel grass increases in density and out-competes non-fire-dependent native species and further dominates the ground layer. As a result of hotter and more frequent fires, established trees and shrubs can be killed and post-fire progeny are killed before reaching reproductive maturity. Numerous studies have shown that the cover of buffel grass is negatively associated with species richness. Food sources and habitat for native fauna may be altered (e.g. depletion of native grass seed eaten by granivorous birds, through competition and displacement). Habitat patchiness and diversity of invertebrates is reduced. Loss of trees and shrubs to fire reduces habitat diversity.

Buffel grass has been identified as a transformer species in rangelands as it can change the character of vegetation over substantial areas.

Potential distribution

Climatic modelling for South Australia predicts that no part of the State's land area is entirely unsuitable for establishment of buffel grass. The model presented in the South Australia Buffel Grass Strategic Plan shows that the degree of suitability for establishment is variable across the State: 30.5% is "moderately suitable", a further 42% is "highly suitable", and a further 27.5% is "very highly suitable". A relatively small proportion of the State (0.03% or 33,000 ha, confined to the South Australian Arid Lands and Alinytjara Wilurara regions) was predicted to be "extremely suitable".

Feasibility of Containment

Control costs

Herbicides may be used to control buffel grass under Australian Pesticides and Veterinary Medicines Authority (APVMA) permit.

Buffel grass has growth response characteristics that enable it to withstand persistent heavy grazing and increase stock carrying capacity in some systems, but its spread into non-pastoral areas has environmental costs.

Persistence

The high seed production and moderate seed dormancy of buffel grass enables it to build up a large seed bank in the soil. Seeds may lie dormant in the ground for up to 8 months, while retaining their original viability. Beyond 12 months, germination rates drop to less than 12%, and remain at 10% for a further two years.

Individual tussocks have a long lifespan (possibly up to 20 years) and can readily re-sprout following fire. Buffel grass is also tolerant to drought, cultivation, mutilation and grazing pressure. It has a strategy of opportunistic survival in arid environments: it accumulates carbohydrates at the base of its stems for slow release when needed, and has a deep root system that enables it to access water supplies faster and for longer than most native grasses and forbs.

Current distribution

Buffel grass is naturalised in the pastoral areas of Western Australia, Northern Territory, South Australia, Queensland and New South Wales. Within South Australia it has been recorded in the Alinytjara Wilurara, South Australian Arid Lands, Eyre Peninsula, Hills and Fleurieu, Limestone Coast, Murraylands and Riverland, and Northern and Yorke, regions.

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**
Grazing - rangeland	very high 303	negligible 184	manage weed
Native vegetation	very high 371	low 58	protect sites, manage weed

Considerations

Since 1944, 580 accessions of buffel grass have been brought into Australia, giving it a broader genetic base than many other weeds. Cultivars have been developed commercially with increased growth rates, disease resistance and tolerance to a range of environmental conditions. It has been widely used as a pasture species in northern Australian rangelands, and was deliberately introduced in the Anangu Pitjantjatjara Yankunytjatjara lands in the 1990s to reduce dust around settlements.

The Pastoral Board of South Australia has had a policy against the introduction of non-indigenous species to the pastoral lands. One object of the *Pastoral Land Management and Conservation Act 1989*, provides for the prevention of degradation of the land and its indigenous plant and animal life. The Pastoral Board has not permitted the introduction of plants not locally indigenous for the purpose of improving pasture values without its written approval.

Risk assessment indicates that buffel grass should be managed in the rangelands, and native vegetation protected according to the priority of sites. In practice, this is implemented according to the level of infestation in each region. In the South Australian Arid Lands region, buffel grass is managed in the Marla-Oodnadatta district, with site protection in other districts; its management is included in the statutory Environmental Impact Assessments for

mining developments. In the Alinytjara Wilurara region, actions are management in the northern zone and destroy infestations in the southern zone. Northern and Yorke aims to protect sites in the northern part of the region and contain spread in native vegetation by destroying infestations as found. In the other regions buffel grass is very localised or absent, and infestations are destroyed as detected.

Little is known about the ecological requirements of *Cenchrus pennisetiformis* which is morphologically and ecologically similar to *Cenchrus ciliaris*.

Synonymy

Cenchrus ciliaris L., Mant. Pl. Altera 302 (1771)

Nomenclatural synonym:
Pennisetum ciliare (L.) Link, Hort. Berol. 1: 213 (1827).

Taxonomic synonyms:
Cenchrus bulbosus Fresen. ex Steud., Nomencl. Bot., ed. 2. 1: 317 (1840).
Cenchrus longifolius Hochst. ex Steud., Syn. Pl. Glumac. 1: 109 (1854).
Cenchrus melanostachyus A.Camus, Bull. Soc. Bot. France 81: 594 (1934).
Pennisetum cenchroides Rich., Syn. Pl. (Persoon) 1: 72 (1805).
Pennisetum polycladum Chiov., Annuario Reale Ist. Bot. Roma 6: 167 (1896)
Pennisetum rufescens (Desf.) Spreng., Syst. Veg. 1: 302 (1824).

Other common names include mamu tjanpi, mamu grass, black buffel grass, slender buffel grass.

Cenchrus pennisetiformis Hochst. & Steud. ex Steud., Syn. Pl. Glum. 1(1): 109 (1853)

Known as slender buffel grass or Cloncurry grass.

References

Biosecurity SA (2019) *South Australia Buffel Grass Strategic Plan 2019-2024*. (Government of South Australia).

Hon David Speirs MP
Minister for Environment and Water

Date: 28 March 2021