



**Biodiversity
Council**

Submission to the South Australian Natural Resources Committee's Inquiry into Buffel Grass

9 October 2026

About The Biodiversity Council

The Biodiversity Council brings together leading experts including Indigenous knowledge holders to promote evidence-based solutions to Australia's biodiversity crisis. The Council was founded by 11 universities with the support of Australian philanthropists.



Overview

The Biodiversity Council welcomes the opportunity to provide feedback on the Natural Resources Committee's inquiry into the management of buffel grass (*Cenchrus ciliaris* and *C. pennisetiformis*) in South Australia.

Recommendations

1. **Adopt proactive, long-term management strategies:** Implement proactive, comprehensive management plans over short-term approaches to maximize long-term protection of biodiversity, cultural sites, infrastructure, and tourism, while lowering net economic costs over time.
2. **Provide sustained, ongoing investment:** Secure long-term, reliable funding for coordination, surveillance, research, and on-ground management—rather than relying on fragmented short-term grants—to ensure multi-year follow-up treatment and retain staff capability.
3. **Establish surge capacity:** Provide dedicated funding following heavy rainfall events—similar to post-bushfire emergency responses for pest species—so organizations can quickly respond to rapid buffel grass growth.
4. **Empower First Nations:** Formally recognize the severe social and cultural impacts of buffel grass on Country and ensure First Nations communities are central to decision-making and equipped with sufficient management resources.
5. **Advocate for a nationally coordinated approach:** Provide support to the nomination of buffel grass as a Weed of National Significance (WONS).
6. **Advocate for research into biological controls:** Fund research into biocontrol agents and advocate for federal co-investment.

Please find our response to the specific Terms of Reference below.

a. The current and projected spread and distribution of buffel grass across South Australia, including areas at greatest risk of further spread

Buffel grass has been accidentally and intentionally introduced around northern South Australia, with small scale trials at pastoral properties since the 1950s. As a consequence of multiple introductions and hybridisation, buffel grass is genetically highly variable and capable of adapting to new environments.¹ In its native range, buffel grass grows in open bush and grassland of semi-arid areas² and so is well-suited to Australian conditions. Once established, the grass will withstand considerable grazing.³

The greatest range expansion in South Australia has occurred since the 1980s,⁴ and it has now been in the Alinytjara Wilurara, South Australian Arid Lands, Eyre Peninsula, Hills and Fleurieu, Limestone Coast, Murraylands and Riverland, and Northern and Yorke regions⁵.

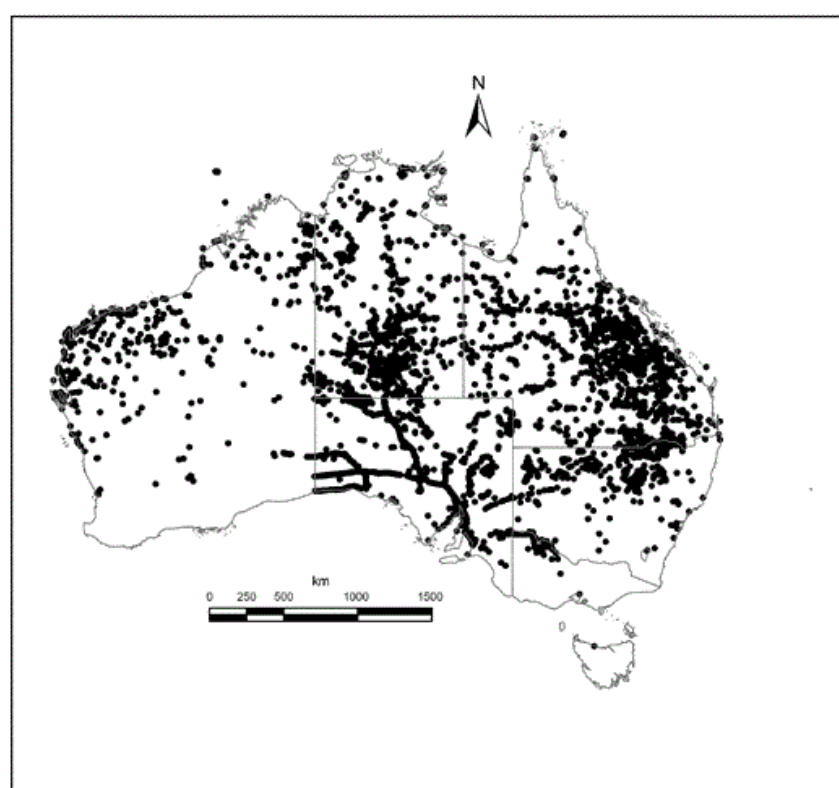


Figure 1: Distribution of *Cenchrus ciliaris* in Australia as at May 2026.

(<https://connectsci.au/bt/article/74/5/BT26021/273168/The-arrival-and-distribution-of-buffel-grass>)

¹ Friedel, M. H. (2026) The arrival and distribution of buffel grass (*Cenchrus ciliaris*) in Australia and its continuing spread in central Australia *Australian Journal of Botany*, **75** (5): BT26021

<https://connectsci.au/bt/article/74/5/BT26021/273168/The-arrival-and-distribution-of-buffel-grass>

² Weber, E. 2003 'Invasive plant species of the world: a reference guide to environmental weeds.' CAB: Wallingford, UK

³ Ibid.

⁴ Reynolds, T. (2012) Buffel grass in South Australia – development of pest plant policy *Eighteenth Australasian Weeds Conference* <https://caws.org.nz/old-site/awc/2012/awc201212081.pdf>

⁵ Minister for Environment and Water (2021) *Declared Plant Policy - buffel grass* Government of South Australia https://pir.sa.gov.au/_data/assets/pdf_file/0008/234548/buffel_grass_policy.pdf

Flinders University scientists recently developed a species distribution model⁶ for buffel grass to identify the likely potential range of the species under current climate conditions, where it is likely to be present but hasn't been recorded yet (due to lack of survey data) and its potential range under different climate scenarios. The study found that the strongest predictor of where buffel grass is likely to occur was distance to roads reflecting dispersal along transport corridors by vehicles and machinery, but also sampling bias (roadsides are accessible and so people are more likely to record weed species along them). The study authors recommend that roads should be a priority for surveillance.

The next strongest predictors related to soil properties - available phosphorus and pH. Buffel grass is more likely to establish in neutral to slightly alkaline soils with elevated phosphorus. This has management implications - increasing phosphorus availability through fertiliser or fire, and making soils more neutral or alkaline through application of lime or changing vegetation cover, is likely to advantage buffel grass. However, this does not mean that 'unimproved land' is safe from buffel grass invasion. Buffel grass is already invading national parks and Indigenous Protected Areas, and the model identifies these areas as high risk into the future.

The model projects a > 20% increase in the potential range of buffel grass across mainland Australia under future climate change. This is consistent with studies that show buffel grass does particularly well with elevated carbon dioxide levels and heat.⁷ It is very drought resistant and tolerates rainfall variation.⁸ It should be noted that buffel grass benefits from rainfall events. While originally introduced to 70 sites in the Alice Springs and Barkly Tablelands in the Northern Territory in the 1960s, it was only after major rainfalls in the mid-1970s that the species spread extensively in central Australia. Established plants can respond rapidly to small rain events in spring, summer and autumn. Plants can germinate from seed, mature and flower within 6 weeks of a significant rainfall. Plants that appear dead can revive and successfully produce seed.⁹ Record rainfalls in 2026 has helped the spread of buffel grass. However, buffel grass cannot stand flooding for more than a week.¹⁰

The Weed Futures website that was developed by Macquarie University shows that buffel grass (*Cenchrus ciliaris*) has a high potential for establishment and expansion in South Australia under current and future climate conditions (2035 RCP8.5, 2065 RCP8.5). Maps of climatic suitability for the species under current and future climate conditions are available on the website, see [here](#).

⁶ Costin, S., Bradshaw, C., Crossman, N., Fickling, N., Martin-Fores, I., Robinson, J., Ryan-Colton, E. and Breed, M., 2026. Climate change redistributes and broadens the potential range of buffel grass (*Cenchrus ciliaris*) across Australia. (pre-print) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7385576

⁷ Marshall, V. M., Lewis, M. M., and Ostendorf, B. (2012) Buffel grass (*Cenchrus ciliaris*) as an invader and threat to biodiversity in arid environments: A review *Journal of Arid Environments* **78**: 1-12. <https://www.sciencedirect.com/science/article/pii/S0140196311003399>

⁸ Weber 2003.

⁹ SA Murray-Darling Basin Natural Resources Management Board *Weed Sheet - buffel grass* Government of South Australia https://data.environment.sa.gov.au/Content/Publications/pests_buffelgrass.pdf

¹⁰Weber 2003.

b. The impacts of buffel grass on:

- **Environment, including biodiversity, native vegetation, threatened species, and bushfire risk**

Buffel grass is considered a transformer weed species because of its ability to fundamentally alter environments that it invades. Many ecologists consider it as “the single biggest invasive species threat to biodiversity across the entire Australian arid zone”.¹¹

Invasive species are consistently identified as one of the most prevalent threats to Australian ecosystems and buffel grass (*Cenchrus ciliaris*) is a significant weed species. Buffel grass has the ability to transform Australia’s arid landscapes through altering fire regimes, soil erosion rates and changing vegetation density and character.¹² The impact of buffel grass on biodiversity in arid and semi-arid environments is considered at least equivalent to foxes and cats.¹³

Where invasive, buffel grass forms dense mats or tussocks that displace native grassland communities and reduce their species richness.¹⁴ It is fast-growing and outcompetes native grasses and shrubs. It can occur at high densities that make it difficult for animals and people to move across the landscape.¹⁵ Buffel grass has led to declines in species richness and changes to species composition.¹⁶

Of particular concern is that buffel grass changes fire behaviour. The dried shoots provide excellent fuel for fires. In some places it creates fuel connectivity, where otherwise it would be naturally low, allowing fire to penetrate sensitive ecosystems. The cover of this grass may increase rapidly after a fire¹⁷ and it regenerates more quickly after fire events than native species such as spinifex.¹⁸

More frequent fires from buffel grass invasion leads to declines in key tree and shrub species, such as river red gum (*Eucalyptus camaldulensis*), mulga (*Acacia aneura*), false sandalwood (*Eremophila mitchellii*), corkwoods (*Hakea* species) and beefwoods (*Grevillea striata*).¹⁹ Buffel grass is a key threat to at least 31 species listed under the *Environment*

¹¹ Biosecurity SA (2019). South Australia Buffel Grass Strategic Plan 2019 - 2024: A plan to reduce the weed threat of buffel grass in South Australia. Government of South Australia. In R. Meffin, D. Cooke, & T. Bowman (Eds.), Biosecurity SA (Department of Primary Industries and Regions South Australia).

¹² Marshall et al. 2012

¹³ Ibid.

¹⁴ Weber 2003.

¹⁵ Alinytjara Wilurara Landscape Board *Buffel Grass* Government of South Australia.
<https://www.landscape.sa.gov.au/aw/projects/buffel-grass>

¹⁶ Marshall et al. 2012

¹⁷ Weber 2003.

¹⁸ Alinytjara Wilurara Landscape Board

¹⁹ Department of the Environment (2015) *Threat Abatement Advice - For ecosystem degradation, habitat loss and species decline in arid and semi-arid Australia due to the invasion of buffel grass (Cenchrus ciliaris and C. pennisetiformis)*

Protection and Conservation Act 1999,²⁰ but this is likely to be an underestimate, as many species were listed before the threat from buffel grass had become apparent.²¹

- **Culture, including Aboriginal cultural heritage and Country**

Buffel grass has emerged as a significant threat to the Country and culture of remote communities.²² According to the Arid Lands Environment Centre, buffel ranks higher than any other environmental threat in terms of its social and cultural impacts for Aboriginal people.²³

Invasion by buffel grass has significant impacts to cultural heritage and Country. Buffel grass negatively impacts native plants and degrades habitat for native animals, affecting the health of Country and reducing the availability of bush foods and medicines.²⁴ Because of the way it changes fire regimes and fire behaviour, buffel invasion affects the ability to conduct traditional fire practice at important sites, as well as fire management at larger scales..²⁵

The Anangu Pitjantjatjara Yankunytjatjara (APY) Waru Rangers, who manage hundreds of square kilometres of land in northwest South Australia presented the [Umuwa Statement on Buffel Grass](#) to the 2022 Indigenous Desert Alliance Conference, where it received unanimous support. It is important to read the powerful statement in full as it highlights how buffel grass is killing Country, threatening culture and putting communities at risk from asthma and fire. The statement calls on “federal, state and territory governments to recognise the threat of buffel grass to our Country, our culture and communities and do what is needed to stop the march of this weed across our Country.” This includes recognising the impacts of buffel grass on First Nations and ensuring that they are truly involved in decision-making and have sufficient resources to manage it on Country.

- **Economics and society, including pastoral land and remote communities**

Buffel grass is estimated to underpin approximately 44% of the value of beef cattle enterprises in Australia. However, this may significantly reduce in the future as carrying capacity could halve in coming decades as buffel pasture drawdowns too much nitrogen and other nutrients reducing the nutritious value of grass itself,²⁶ and also outcompeting native grasses that provide greater protein and energy for livestock than buffel grass.²⁷

https://www.dcceew.gov.au/sites/default/files/env/pages/19e6108c-d6a4-489f-9ac9-9f0754788080/files/threat-abatement-advice-buffel-grass_1.pdf

²⁰ Friedel 2026.

²¹ Read, J. L., Firn, J., Grice, A. C., Murphy, R., Ryan-Colton, E. and Schelsinger, C. A. (2020) Ranking buffel: Comparative risk and mitigation costs of key environmental and socio-cultural threats in central Australia *Ecology and Evolutions* 10(23): 12745-12763. <https://onlinelibrary.wiley.com/doi/10.1002/ece3.6724>

²² Alinytjara Wiluṛara Landscape Board

²³ Arid Lands Environment Centre *The battle against buffel: Protecting Country and Culture* https://www.alec.org.au/buffel_grass

²⁴ <https://nt.gov.au/environment/weeds/weeds-in-the-nt/A-Z-list-of-weeds-in-the-NT/buffel-grass>

²⁵ Cresswell et al. 2021

²⁶ Read et al. 2020

²⁷ Natural Resources SA Arid Lands (2017) *Nutritional value of common pastoral grasses to livestock* https://cdn.environment.sa.gov.au/landscape/docs/saal/20180117_nutritional_grasses_fs.pdf

It is critically important that social and environmental impacts of buffel grass are considered, not only the short-term benefits to pastoralists.

In 2024, Charles Darwin University academics prepared a [report for the Northern Territory Government](#) on the economic impact of buffel grass. The report found that while buffel grass has historically delivered substantial benefits to pastoralists, the costs associated with its impacts on fire regimes, biodiversity, culture, amenity and management costs outweigh the benefits at a ratio of 60:1. Each additional hectare of buffel grass-dominated landscape imposes a cost of \$6,216 per hectare per year in external costs. Importantly, the benefits from buffel grass accrue to private interest while the costs are borne by a more diverse group of public agencies, Traditional Owners, conservation groups and the broader community. The Alinytjara Wilurara Landscape Board spent \$925,000 over 2 years – 17% of its budget – battling buffel grass.²⁸

A further study by Charles Darwin University of the [benefits and costs of three management scenarios](#) in Alice Springs shows that a comprehensive, proactive management strategy, while having the highest short-term (upfront) costs generates the greatest benefits over the long-terms and provides the strongest long-term protection of biodiversity, cultural sites, infrastructure and tourism assets.

- **Critical infrastructure including road/rail transportation network, powerlines and renewable energy projects;**

Buffel grass spreads along rail and road corridors. The increased fuel loads created by buffel grass elevate fire risk to people and infrastructure.

c. Updates of the implementation of the [South Australian Buffel Grass Strategic Plan \(2019 -2024\)](#) including progress to date, emerging challenges, best practice approaches to the prevention, containment and management of buffel grass, and opportunities to improve and support its ongoing delivery

d. Current legislation, policy and governance framework for the management of buffel grass in South Australia, including coordination between relevant stakeholders, research and monitoring, mapping, community awareness and early interventions

South Australia has taken a leading approach to buffel grass, being the first State or Territory to declare it a weed, and prohibiting its sale.

We note that significant work is being undertaken by a range of organisations to control buffel grass, notably First Nations groups, landscape boards, conservation organisations and park rangers. For instance, the Alinytjara Wilurara Landscape Board is leading a multi-agency taskforce against buffel grass in the southern Great Victoria Desert, partnering with neighbouring landscape boards South Australian Arid Lands, Eyre Peninsula, and

²⁸ Swain, R. and Pianta, R. (2025) *A boon and a curse – why a national reckoning with buffel grass is overdue* Australian Rangeland Society
<https://www.austrangesoc.com.au/news/a-boon-and-a-curse-why-a-national-reckoning-with-buffel-grass-is-overdue-richard-swain-and-reece-pianta/>

Northern and Yorke.²⁹ The Alinytjara Wilurara Landscape Board has also released best management guidance to support indigenous communities and other land managers to effectively manage buffel grass.

The Strategic Plan is conceptually sound. The zonal management framework and collaborative approach are key strengths. However, investment is a key issue. As noted above, buffel grass control can be a significant cost to smaller organisations undertaking on-ground work. Effective buffel grass management requires several years of follow-up treatment and monitoring which means that it is an ongoing cost. This requires sustained investment. However, organisations managing buffel grass have to patch together funding from State and Federal Governments and private companies.³⁰ This does not provide sufficient certainty to enable long-term planning and ensure staff capability is retained. We note that funding for the State Buffel Grass Coordinator was due to run out on 1 July 2026, before a successful advocacy campaign.³¹ We support calls from BuffelpalooSA 2026, a multi-state, multi-sector, multi-stakeholder forum, for secure ongoing investment that funds coordination, surveillance, research and on-ground management.³²

The strong response of buffel grass to unusually heavy rainfall requires organisations to have surge capacity to respond effectively and not lose ground that has been gained through ongoing management efforts. The South Australian and Federal government should provide funding when these weather events occur. This would be similar to the emergency response funding provided post-bushfires for large herbivores and predators.³³

Moreover, while the Strategy notes that “biological control is considered the most cost effective management method for dense areas of many weeds”, it places the management response out of scope because of stakeholder engagement issues. This speaks to the need for a nationally coordinated approach to buffel grass (see ‘any other relevant matter’, below).

e. Any other relevant matter

The management of buffel grass in South Australia is challenging because the species is well established in bordering States from which ongoing invasion can occur. Action by the other State and Territory Governments is inadequate. For instance, the Northern Territory Government has officially committed to \$750,000 in ongoing annual funding.³⁴ In 2020, it was estimated that annual national expenditure on buffel grass control, management and

²⁹ Alinytjara Wilurara Landscape Board (2024) *Buffel grass - an ecological transformer* In ‘State of the Environment 2023’ EPA South Australia <https://soe.epa.sa.gov.au/resources/case-studies-papers/buffel-grass>

³⁰ Alinytjara Wilurara Landscape Board 2024. & Landscape South Australia 2026-27 projects <https://www.landscape.sa.gov.au/priorities-fund/2026-27-projects>

³¹ Invasive Species Council (2026) *SA’s frontline defence against buffel grass set to be defunded* <https://invasives.org.au/media-releases/sas-frontline-defence-against-buffel-grass-set-to-be-defunded/>

³² Northern and Yorke Landscape Board (2026) *BuffelpalooSA 2026: 2-day intensive on buffel grass* <https://www.landscape.sa.gov.au/ny/news/buffelpalooSA-2026-2-day-intensive-on-buffel-grass>

³³ See: Department of Energy, Environment and Climate Action (2023) *Managing invasive species after fire* Government of Victoria <https://www.environment.vic.gov.au/invasive-plants-and-animals/managing-invasive-species-after-fire>

³⁴ Attanasio, J. (2026) *Alarm as invasive threat 'spreading like wildfire' across Australia: 'Destroying what we love'* <https://au.news.yahoo.com/alarm-as-invasive-threat-spreading-like-wildfire-across-australia-destroying-what-we-love-065118020.html>

research (\$1.5 million p.a.) was half that directed at feral camel control (\$3 million p.a.)³⁵ despite the much greater threat posed by buffel grass.

Eighty-four organisations, led by the Indigenous Desert Alliance in partnership with the Alinytjara Wilurara Landscape Board and the Arid Lands Environment Centre, are calling for a coordinated national approach to buffel grass, including declaring it as a Weed of National Significance (WONS).³⁶

While there have been concerns raised with the effectiveness of WONS declarations, they do bring attention to problematic species and increase inter-jurisdictional cooperation.³⁷ It should be noted that where a pasture grass provides benefits ‘as feed for livestock’, it is not considered a weed.³⁸ Listing as a WONS would not affect the use of buffel for pasture or impose new regulations on pastoralists.

The advantages of a national approach include the ability to prohibit the introduction of new genetic material,³⁹ increased management effort on Commonwealth lands, and research into biological control agents. The latter is a real possibility if stakeholder issues could be addressed - there are already several potential biocontrol agents already identified for buffel in Australia, including the Australian moth caterpillar (*Mamestra rhodoneura*), fungal pathogens (*Pyricularia grisea* and *Claviceps* species.) and a mealybug (*Heliococcus summervillei*).⁴⁰ At present, the focus of current research is to minimise the effect of these species on buffel grass.⁴¹

³⁵ Read et al. 2020.

³⁶ Alinytjara Wilurara Landscape Board & Arid Lands Environment Centre (2025) *Petition - Weed of National Significance: Buffel grass listing* https://www.alec.org.au/wons_25 & Invasive Species Council (2025) *Science not politics should drive decision-making on buffel grass* <https://invasives.org.au/media-releases/science-not-politics-should-drive-decision-making-on-buffel-grass/>

³⁷ Senate Standing Committee on Environment and Communications (2004) Chapter 5 - Management of invasive species within Australia In ‘Turning back the tide-the invasive species challenge Report on the regulation, control and management of invasive species and the Environment Protection and Biodiversity Conservation Amendment (Invasive Species) Bill 2002’ Commonwealth of Australia https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Completed_inquiries/2004-07/invasivespecies/report/c05

³⁸ Weeds Australia National Established Weed Priorities <https://weeds.org.au/national-established-weed-priorities-newp/>

³⁹ Reynolds 2012.

⁴⁰ Read et al. 2020.

⁴¹ Ibid.