



Protection of sacred springs in South Australia's rangelands

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Abstract

Bubbling up from Australia's Great Artesian Basin, mound springs are unique lifelines across the rangelands and are of great ecological and cultural significance. For the Arabana and Dieri people, mound springs are central to their culture, and have sustained life in South Australia's desert lands for thousands of years. In partnership with volunteer group Friends of Mound Springs, Brook Pastoral Company, Dieri Aboriginal Corporation, and the South Australian Arid Lands Landscape Board (SAAL Board) a joint project has had positive outcomes for the culturally important Reedy Springs and St Mary's Pool on Murnpeowie Station on the Strzelecki Track.

Early engagement with all groups in a genuine partnership approach included involvement from initial ideas to co-design, planned works, site visits, and on-ground works. A 2.45 km fence was installed to protect the 42-hectare spring group, expanded to protect the springs as well as new cultural sites identified by Dieri people during site visits. In addition, fencing was also installed to manage vehicle access to a nearby waterhole. Knowledge has been shared on cultural and ecological values of the springs and ongoing monitoring will continue using the same collaborative approach.

Kokatha Aboriginal Corporation were contracted to complete the fencing works, further supporting First Nations employment and participation outcomes and a rich cross-cultural exchange. The Board is working with Arabana Rangers and Arabana Elders, along with FOMS, on opportunities for springs projects on their Country and will consult with other First Nations groups for new projects.

Introduction

South Australia's rangelands contain around 5000 mound springs, which are natural outlets for water from the Great Artesian Basin (GAB), one of the world's largest underground aquifers (Lewis et al. 2013). The mound springs have high ecological value, supporting unique and endemic plant and animal species, while also being culturally significant for Aboriginal people (Beasley-Hall et al. 2024, Hercus & Sutton, 1985). In South Australia, native title groups whose country covers the mound springs includes Arabana, Adnyamathanha, Yankunytjatjara/Antakarinja, Dieri, Yandruwandha/Yawarrawarrka, Wangkangurru/Yarluyandi, and Kokatha (National Native Title Tribunal, 2024).

For more than 40,000 years the springs have been vital sources of water in the arid environment, supporting periodical occupation during suitable conditions, and are linked to cultural stories, trade routes, ceremonies and sites of cultural significance (Brake et al. 2019). For example, for Arabana people, kutha ngarrawa (mound

springs) are a central theme in their culture and the stories that connect Arabana people to their Country (Government of South Australia, 2017, Nursey-Bray & Arabana Aboriginal Corporation, 2015). Arabana are concerned about maintaining Wadlhu Ngurrku-ku (Healthy Country) with kutha ngarrawa providing water and resources, as well as being sites of ceremony and trade routes (Government of South Australia, 2017).

Following pastoral settlement in South Australia, the location of the springs shaped key infrastructure routes, such as the Overland Telegraph line and the Ghan railway (Harris 2002). Across the GAB, springs are under threat from reduced artesian pressures as a result of excess water extraction and uncontrolled bores, and due to physical disturbance of spring structure and dependent ecosystems through grazing, trampling and increased nutrients (Keppel 2022). In the South Australian rangelands, efforts are underway to mitigate these impacts and improve conservation and management of the springs, but meaningful engagement with First Nations, pastoral land holders, volunteer group, industry and government is required if springs management is to be successful.

Methods

In 2022, the SA Arid Lands Landscape Board (SAAL Board) received funding from the Lake Eyre Basin (LEB) Program (a federal program with funding from all LEB jurisdictions), and in 2023 from BHP mining company, with stipulation to deliver projects involving the protection of sites of ecological or cultural importance within the Lake Eyre Basin, which include mound springs.

Site selection - The need for multi-stakeholder involvement for springs management was identified early. Given the large number of springs in South Australia, the SAAL Board first approached Friends of Mound Springs (FOMS) for assistance in identifying suitable springs for protecting. FOMS is a volunteer group with members who have extensive knowledge of South Australian springs, their management history and condition, and have established relationships with First Nations groups.

After FOMS identified potential sites on Dieri and Arabana Country, consultation commenced with pastoral land holders and Dieri and Arabana, to establish which springs might be viable based on all groups' agreeance. The engagement process followed the guidelines in the SAAL Board's Communication and Engagement Strategy (SAAL Board, April 2022). Landholders were approached to gauge interest in participating in springs management and involved a site visit to confirm current conditions and the potential management options. While numerous sites were identified, the complexity of the site for management options (where stock water points, long-term management and spring topography were considered) and landholder interest in the project within the funding timeframe, meant the number of springs as option for the project, were reduced.

Following discussions with Dieri and Arabana, the scope of the project was refined to sites where fencing was deemed a suitable method for springs protection. Two sites were identified in further consultation with pastoral lease owner Brook Pastoral on its lease, Murnpeowie Station, on Dieri Country: Reedy Springs and St Mary's Pool. It is worth noting, that land managers need to approve a potential project, especially for infrastructure, prior to the final agreeance with the respective First Nations group.

The aims of the project were to manage non-native herbivore impacts to springs (Reedy Springs) using exclusion fencing and to manage visitor access to a nearby waterhole (St Mary's Pool) with fencing to prevent vehicle access. Furthermore, in addition to the fencing of Reedy Springs the land managers required an alternate water point to be identified, to reduce pressure on the fence from stock seeking water. Consequently, the project included installation of a new tank and trough, to be fed by new pipework connected to a bore 10km away.

Cultural Surveys and fence design - The main spring vents at the Reedy Spring group are situated in an area of relatively flat topography meaning fence installation is relatively simple. FOMS provided advice on fencing design given their years of fencing experience, with a design that allows for both kangaroo access and restricting non-native herbivores, while also considering soil conditions of the area.

Dieri completed a cultural heritage survey in October 2023 and the fencing boundary was expanded (from initial project design) to incorporate and protect the cultural and archaeological sites Dieri identified during the cultural survey.

Dieri were also concerned about visitor impacts and vehicle management options were discussed at St Mary's Pool with fence locations planned accordingly. On receiving heritage clearance approval from Dieri, a formal agreement was put in place with Brook Pastoral outlining the scope of work and responsibilities for ongoing maintenance.

Fencing - Dieri did not have the resources for completing the fencing, however, recommended other First Nations companies who may have the capacity. Subsequently, Kokatha Aboriginal Corporation were awarded the contract. To ensure the project met the expectations of all involved, a final site visit in May 2024 was conducted ahead of fencing work and any necessary adjustments were made. Representatives from SAAL, FOMS, Dieri, Brook Pastoral, and Kokatha attended.

At the time of fencing a vegetation survey was completed and georeferenced photos were taken to allow for comparisons in the future. The project was completed in early June 2024.

Results

The completed project saw 2.45 km of fencing erected to protect a 42-hectare area around Reedy Springs. The final fence design was a four strand barb wire fence, with rust resistant steel posts every six metres plus intermediate spacers, a main access gate and a spear gate to allow a point of exit for wondering stock. During the cultural heritage survey, cultural and archaeological sites were identified, and consequently, the fencing perimeter was expanded to include these areas. At St Mary's Pool the installation included a short fence consisting of polyethylene coated timber posts and chain gate to manage vehicle access.

The project involved three First Nations groups, one volunteer group (FOMS), a pastoral landholder (Brook Pastoral), multi-government funding, industry funding and the SA Arid Lands Landscape Board as the project facilitator and manager. A monitoring program is now in place for the site which includes fence and ecological (vegetation and water quality) inspections.

Discussion

First Nations involvement and engagement

The engagement process SAAL applied is an established way of doing business between the organisation and First Nations groups (SAAL Board, April 2022). The engagement approach, which sits between 'Collaborate' and 'Empower' on the IAP2 Spectrum of Public Participation (IAP2 2024), has additional benefits that extend beyond the delivery of an infrastructure project. Cross-cultural sharing between SAAL water project staff, FOMS, First Nations and the pastoral enterprise was valued by all involved and allowed everyone to gain an improved understanding of each other's context. While the project has contributed to the protection of a spring group from non-native animal access, of greater importance is the project has enabled First Nations groups to reconnect with the cultural connection they have with springs and be included in the decision making for protection.

Sharing project updates between all groups and collective on Country site visits kept the project on track and ensured the different groups' expectations were understood. Re-negotiating aspects of the project and reporting back to First Nation's Board Members to keep them informed was crucial to the project's success.

The timeline pressures that occur with external funding obligations can mean there isn't enough time for First Nations aspirations to be fully realised and considered in project planning. This is a matter that needs to be raised with funding bodies early, with extra flexibility sought, to shape the project as it evolves. Without this, there is risk that relationships, particularly between government and First Nations are damaged and projects may not reach completion, putting future projects at risk.

Springs Fencing

Reedy Springs is now one of the few springs in South Australia fenced for management purposes and it is worth considering the impact fencing will have on spring condition. It has been observed at other mound springs in South Australia where fencing or stock exclusion has occurred, that *Phragmites australis* has proliferated at the expense of other native flora (Gotch 2013) or has caused a reduction in open water (Harris 2020, Lewis & Packer 2020). However, this has occurred at springs where *Phragmites* was present at the time of fencing (e.g. Billa Kalina springs, The Fountain, Big Cadna-owie; Lewis & Packer 2020). Within the fenced area of Reedy Springs, no *Phragmites* was identified during site visits or prior to fencing and instead, the Springs are dominated by *Cyperus laevigatus* ('bore-drain sedge'). The risk, therefore, of *Phragmites* proliferation, following fencing and removal of grazing pressure is considered lower than at other springs where the species is already present, however regular monitoring of Reedy Springs will document any changes in vegetation composition and extent.

This project at Reedy Springs and St Mary's Pool resulted in renewed focus on springs management in South Australia's rangelands and has already allowed for further collaborative review, with Dieri and Arabana, of other springs with environmental and cultural significance that may benefit from active management. Ultimately this project resulted in strengthened relationships between government, First Nations groups, volunteers and pastoralists and has established a methodology, including the engagement process, that can be applied to the protection of other springs, or land management projects in region. The improved engagement process includes government and First Nations partnership at the very start of a program helping to ensure Traditional Owner guidance and cultural heritage are considered at early-stage project development.

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Arabana Aboriginal Corporation, Australian Government, Brook Pastoral, BHP, Dieri Aboriginal Corporation, Friends of Mound Springs, Kokatha Aboriginal Corporation.

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