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# Fowlers Gap Arid Zone Research Station





Ochre House: One of the artist's residences at Fowlers Gap (Photo Richard Freeman)

# Welcome to Fowlers Gap

**Fowlers Gap Arid Zone Research Station, in the far west corner of NSW, is a gateway for researchers, artists and any curious mind looking to study (or portray) Australia's iconic outback. Now more than ever, with a half-century of research wisdom at Fowlers Gap, we are changing direction on a path of ecosystem restoration and arid zone ecology.**

Fowlers Gap Arid Zone Research Station was a sprawling sheep station north of Broken Hill but is now entering a new phase of management focusing on the restoration of ecosystems and understanding arid zone ecology. As well, we continue to develop our outreach and education programs. The facilities of Fowlers Gap Research Station, with its accommodation for visitors and laboratories and kitchens and cottages is extensive and ideal for showcasing this wonderful part of the world.

# Mission

“We drive creativity and innovation through our partnerships in training, outreach, and research into the restoration and lived experience of dynamic ecosystems.”

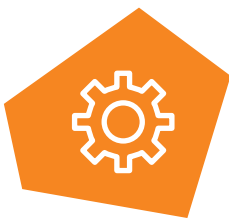
We are explicitly taking a Strategic Adaptive Management (SAM) approach to the management and restoration of the ecosystems of Fowlers Gap Research Station. We are aiming to continue our long investment in management, with decisions about what we do, driven by an evidence base and scientific data wherever possible, recognising social dimensions.

This has involved developing a vision and associated mission as well as identification of the key attributes which make Fowlers Gap such a special place. Subsequently, we have used these to identify potential threats and opportunities in crafting high level objectives which will drive development of finer scale level objectives and subsequent actions for achieving this vision.



Main buildings and facilities of the Fowlers Gap Research Station

# Vision



## Management

To develop and implement a management approach which is focuses , transparent, and effective.



## Research

To foster divers research opportunities



## Biodiversity /Ecology

To restore ecosystems and their biodiversity processes

**“Fowlers Gap – global leadership in the arid zone, connecting people to landscapes”**



## People Connections/ Partnerships

To develop opportunities for connecting to landscapes



## Education

To provide diverse opportunities for education



## Financial

To develop and implement a management approach which is focuses , transparent, and effective.



# Management history

Fowlers Gap has a long management history, providing a focus for innovating approaches to arid zone sustainability and creativity associated with art, ecology and technology (e.g., emissions expertise). It is a 39,000-hectare property located deep in NSW's arid zone, yet just over an hour's drive from Broken Hill. This makes the station a rare nexus: where conservation meets agriculture in the vast, dry interior of the country.

In 1996, Fowlers Gap was listed on the Register of the National Estate in recognition of its continuous +40-year monitoring of sites, serving as a unique and long-term ecological record. The rich ecological research history and capacity at Fowlers Gap (with some areas monitored continuously for decades) will serve as rock-solid context for new findings. This will serve as a template for similar restoration projects around the country as we move to restore more of our country's degraded habitat.

Fowlers Gap is divided into different paddocks formerly for the management of sheep and now for the conservation and restoration of arid ecosystems. A large section of Fowlers Gap (39,000 ha) falls within an area for potential investment by the Biodiversity Conservation Trust. The station also has significant infrastructure in buildings, dams, roads and fences. There is one homestead complex (~20ha) including domestic quarters, sheds, and offices, with camping restricted to the homestead complex.

## From sheep station to research station: a brief history of Fowlers Gap

112 kms north of Broken Hill, Fowlers Gap has a long and colourful history, first operating as grazing land for sheep since the 1870s, and even as a site for prospecting and mining. It wasn't until 1966, while the station was a working farm, that UNSW acquired a perpetual lease for the property and turned it into a field research station for studying the dynamics of arid zone ecosystems and their interface with pastoral activity. This is one of the fenced off areas for examining the effects of sheep grazing on ecosystems.





# Research capacity

Fowlers Gap Arid Zone Research Station

**Over 70% of Australia falls within the arid zone, which, due to its harshness, remains less than well understood. Fowlers Gap presents a unique opportunity to study the outback and understand its mysteries from the outside-in.**

The University of New South Wales Sydney holds a perpetual lease to the station and plays host to many of its own researchers as well as those from other institutions from Australia and around the world. The station is a base for understanding the physical and ecological processes that define the arid zone, and the behaviour and evolution of the organisms that call it home.

For half a century, Fowlers Gap has operated a double life. For researchers with UNSW and elsewhere, it has been Fowlers Gap the Arid Zone Research Station, while for the agricultural community it has been Fowlers Gap the sheep station. Now Fowlers Gap has entered a new phase of its life: Fowlers Gap will be a dedicated site for the conservation and restoration of arid ecosystems and understanding their dynamics. This is an exciting time to join Fowlers Gap and a rare opportunity to witness and study one of Australia's most iconic ecosystems—that of the arid zone—as it returns to its former state of biodiversity and ecosystem functioning after more than 150 years of agricultural land use.

Zebra finches, one of the iconic research species at Fowlers Gap. Research focusses on their ecology in relation to boom and bust changes in this outback environment (Photographer S. Griffiths).



**While the pastoral history at Fowlers Gap is long, its research history is broad and diverse like the geology and ecosystems that underpin it.**

Research opportunities at Fowlers Gap include a look at restoring arid zone ecosystems, geology, hydrology, and how these systems have been changed by pastoralism, with the site itself remaining an important station for its neighbouring and visiting communities. We are taking a Strategic Adaptive Management (SAM) approach to managing, understanding and appreciating the ecological and social dimensions of this landscape. The best way to demonstrate future opportunities, though, is by looking at our current ones.



# Biodiversity and ecology

Fowlers Gap Arid Zone Research Station



**Fowler's Gap is in the arid zone of Australia. The landscape is composed of hot desert and semi-desert ecotypes, populated with shrubland and other heat-hardened (sclerophyllous) plants such as the river red gums that run along ephemeral creeks.**

The station is divided in two by the vertically running Barrier Ranges. On the western side lay the lowlands and on the eastern are plains. Fowlers Gap is in a winter-rainfall arid zone, with mild winters and hot summers, within the Lake Bancannia Surface Waters Management Area. Its low and sporadic annual rainfall (averaging 227.2 mm) gives rise to episodic creek systems, which – in conjunction with dams and other water courses – support waterbird and other bird species. On the property itself there are numerous essential artificial water sources.

The varied desert and semi-desert ecosystems at Fowlers Gap give rise to a diversity of well-studied plants and animals, forming a near-true representation of precolonial habitat with only 0.064% exotic vegetation. The predominant vegetation type is the drought- and salt-tolerant chenopod shrubland made up of salt- and blue bush.





The shrubland forms habitat to a rich assemblage of mammal, reptile, bird, and invertebrate communities – with over 100 bird species. Of these, 12 bird, one reptile and four rodent species are currently classified as being Vulnerable or Endangered in NSW. Two species are of note: the plains rat (*Pseudomys australis*), a rodent native to arid and semi-arid Australia, limited to just five sub-populations recognised nationally; and the rare curly mallee (*Eucalyptus gillii*), a Eucalypt with a localised range, with 40% of all NSW individuals being found at Fowlers Gap.

Fowlers Gap has fostered hundreds of research papers, books and theses on everything from cooperative breeding in apostlebirds and thrips, to the drought-coping strategies of babbler and rediscovery of 'extinct' mice, and with the station shifting to become a dedicated site of conservation and restoration, many new projects are available.

**Associate Professor  
Lisa Schwanz**

**"Fowlers Gap has a wonderful diversity of habitats for large-scale experiments that will improve our fundamental understanding of these arid systems. And I love the diversity of reptiles and chenopod shrubs. There is always something new to see every time I step outside."**



# People, connections and partnerships

Over half a century of science has taken place at Fowlers Gap but one element has remained at its heart: the connection of people with the land. Fowlers Gap has always had a diverse visitor base. Most visitors are researchers or students from UNSW, local and international universities, Government Departments and private Institutions. In addition, annually, it hosts field courses and numerous ecotourists, contractors and artists.

Fowlers Gap is also bounded by five stations and though they tend to function independently from one another, there is some collaboration on the control of feral animals and natural disaster (fire and flood) relief. The potential for UNSW to engage with Indigenous communities across NSW has not yet been realised, though there are two important opportunities: 1) new research by UNSW academics in anthropology, and 2) a partnership with the Baaka Community Trust in Wilcannia, with endorsement from the community for any projects, collaborative research and training programs undertaken.





UNSW is committed to assisting with educating the next generation of First Nations leaders, whilst also celebrating the cultural heritage and advancing the rights and progress of Australia's First Peoples.



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# Education

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**At least 800 UNSW students – science, art and more – have journeyed out to Fowlers Gap in the last ten years to form lifelong memories, while some students, so taken by their experience, have returned time and again with Fowlers Gap at the core of their work**

For artists, the landscape and wildlife of Fowlers Gap is a muse. "... It proved a great exercise in pushing boundaries and exploring other art practices such as performance and installation," says Katerina Patrikeos, Fine Art student at UNSW. And for media artist Patrick Younis, the station has a vast and rich landscape that seems "Martian" and otherworldly. "At night, when the flies and heat have dissipated, the stars are so prominent you can see the cluster of the Milky Way."

Students, UNSW researchers and artists aren't the only visitors to Fowlers Gap. The research station also hosts field courses and ecotours for the public. The station averaged 267 visitors annually for approximately 3,500 bed-nights (average length of stay 13.7 days in 2019).





Sophie Hewitt

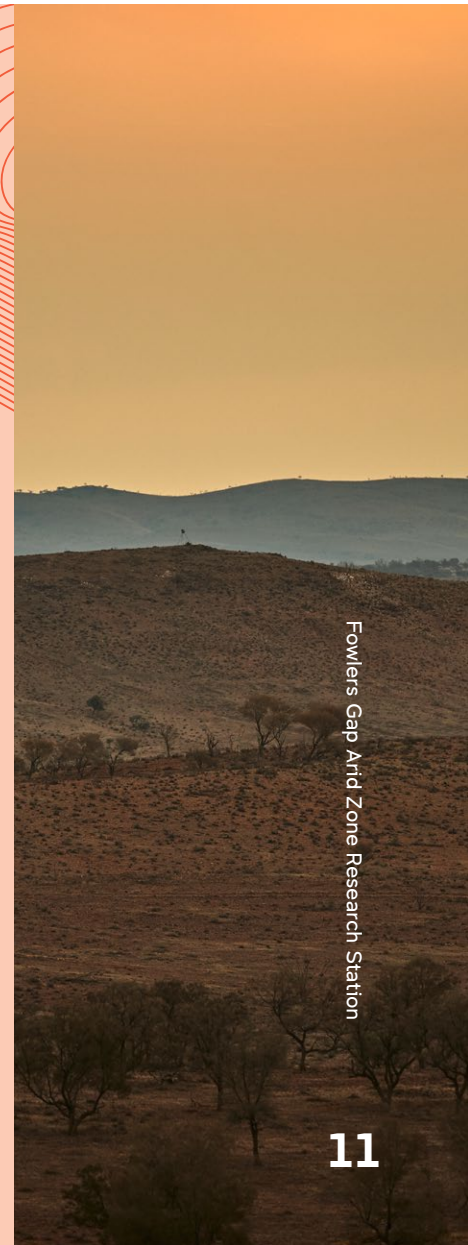
“My time at Fowlers Gap was the highlight of my honours year. Conducting my own fieldwork allowed me to apply the skills I’ve learnt throughout my undergraduate degree and has opened my eyes to what a career in ecology could be.”



# Financial resilience

Fowlers Gap has a diverse revenue base in addition to conservation agreements and research grants.

It derives income from the control of feral goats (for 5 years); accommodation fees from (a) tourists, (b) researchers, (c) courses, (d) conferences and; filming fees. It continues to explore different partnerships with state governments and other organisations to support the complexity of the work in research, education and stewardship.



Fowlers Gap Arid Zone Research Station



Feral goats are a key threat to biodiversity of Fowlers Gap.

## Threats and challenges

**We know there are some major challenges in restoring this arid zone landscape and ensuring that the range of opportunities and goals can be achieved.**

We need to manage threats to Fowlers Gap biodiversity, including feral animals, such as goats and pigs. There are also challenges in arid Australia in relation to overgrazing by native herbivores, particularly kangaroos. There are also a range of weeds which may affect biodiversity.

Increasing temperatures with climate change are going to be challenging for our staff, researchers and visitors as well as biodiversity. And knowing how we can best adapt to these will be important. We also need to build opportunities for identifying ways of collaborating on funding opportunities that build our capacity.



# What we are doing

To support our vision and mission, we have six broad objectives, relating to our management, research, biodiversity, people, education and financial resilience. To make these happen, we are developing the short and long-term actions that deliver over the coming decades on our vision for this wonderful place.

Research has always been a primary pillar of our endeavours at Fowlers Gap and we aim to strengthen this by diversifying what we do and involving researchers and organisations from a range of different disciplines and areas, from the sciences to the arts.

A core direction for the future is restoration of the area's ecosystems and biodiversity. We aim to work with our partners to make this area a beacon for arid ecology research on its biodiversity. This will involve the full range of partners and disciplines. We have started by removing livestock, sheep which were once the core of the station's activities to be replaced by restoration of ecosystems.

We can only do much of this through our partnerships within UNSW Sydney, other institutions and governments and of course our local community, including neighbours and organisations within the Broken Hill district. We also aim to build the social capital in terms of establishing research funding opportunities, working with our partners.

Education is fundamental to UNSW Sydney's core business and we have a long record in providing courses in arid zone ecology and art at Fowlers Gap. These will continue and are highly popular. We also have honours students who contribute significantly to our understanding of this landscape.

Finally, UNSW Sydney is interested in partnerships that build our opportunities for better managing this landscape and contributing to people's experiences so that we can share this. This requires exploring funding partnerships with a range of different organisations and learning and informing from experiences beyond Fowlers Gap in arid zone ecology and management.

The night skies that wheel above Fowlers Gap. As rich and diverse the knowledge Fowlers Gap Arid Zone Research Station has sprung in its 50 years as part farming property, UNSW is eager to beckon in new collaborations.





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