



## ARID LANDSCAPES OF SOUTH AUSTRALIA

Arid and semi-arid environments of South Australia have hot and persistently dry climates. These landscapes have extensive native chenopod shrublands, open woodlands, grasslands and desert (Fig. 1). The soils are old and weathered, and categorised for their low nutrient availability, poor biological activity, fine particle size, and high levels of salinity, alkalinity and sodicity. Thick mats of soil crust have important functions in these systems; they bind soil, minimise erosion, fix carbon and nitrogen, and absorb rainfall.



Figure 1: Vegetation of the arid zone.

## CLEARING ARID AREAS FOR CONSTRUCTION

Typically, construction zones are completely cleared of vegetation and then graded, which removes the thin layer of organic material and soil crust. These flat, open areas facilitate machine and plant movement on site and efficient construction activities. However, this approach also creates dust pollution and operational problems in arid areas that will be experienced over the life of the development, including:

- High risk of soil erosion and dust pollution
- Soiling of solar panels that decreases efficiency and increases operation costs (e.g. panel washing)
- Soil structure and stability issues (Fig. 2)
- Human health and community concerns
- Weed and vegetation management issues
- Poor restoration outcomes



Figure 2: Cleared arid soils are difficult to stabilise, restore and revegetate (top); PV panels soiled from dust pollution (bottom).

## APPLIED ECOLOGY

A range of key ecological processes can be applied to project design, site preparation and ongoing management to reduce negative impacts on soils, improve business outcomes and enhance restoration outcomes in arid systems. Our processes are applicable to construction activities in the arid zone of South Australia, including pumped hydro, solar and wind projects.



## MANAGEMENT OF ARID LANDSCAPES

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*Figure 3: Intact vegetation (top) can be flattened instead of cleared (bottom).*

An applied ecological approach provides options for improving management of arid landscapes, including:

- Minimising vegetation clearance and offset requirements
- Changing clearing practices to maintain soil structure and reduce dust issues in the short- and long-term (Fig. 3)
- Using low-stature vegetation and vegetation buffers to reduce erosion
- Using plants and biological soil crusts to reduce ambient temperatures and capture dust
- Using vegetation to compete with weeds and reduce weed outbreaks
- Using broadacre revegetation methods that avoid the losses associated with traditional approaches

## SUCCESSION ECOLOGY

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[Succession Ecology](#) is a multi-faceted environmental consulting business with a particular interest in arid restoration, dust mitigation and the use of ecological principals to improve site outcomes. Services include:

- Vegetation Management Plans
- Alternative site preparation for reducing offsets
- Offset advice, assessments, brokering and management
- Arid and semi-arid botanical and ecological expertise
- Plant-based soil stabilisation and dust suppression services
- Soil and seedbank tests
- Biodiversity services, including weed management
- Site restoration



## CONTACT

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