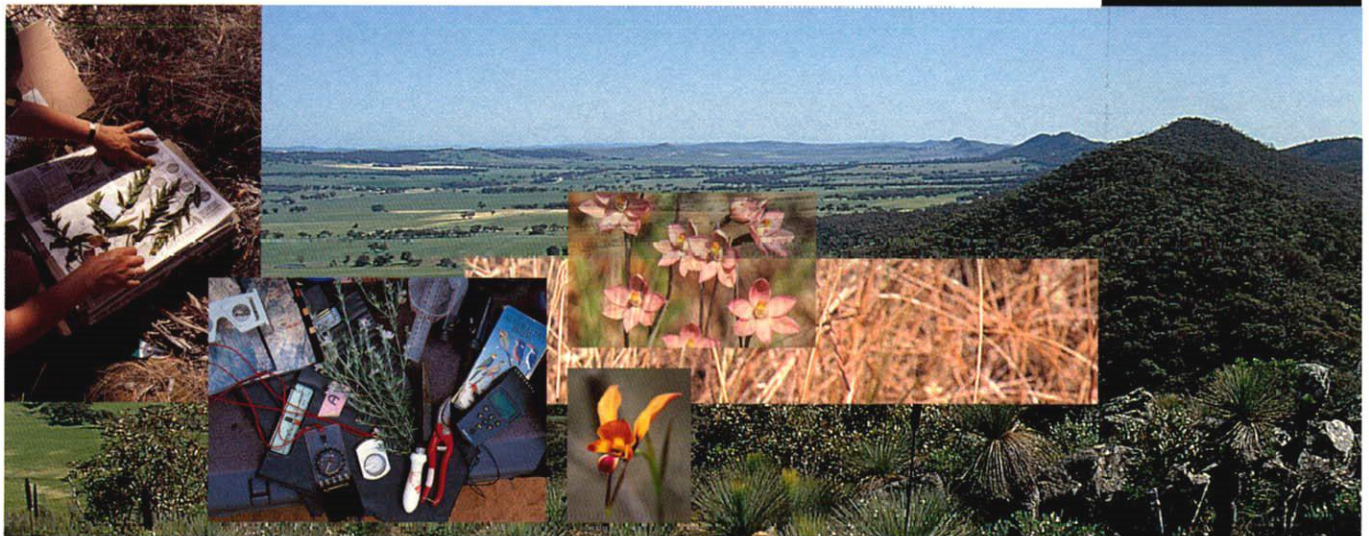




Fact Sheet

1999

Native Vegetation Survey and Mapping over the Agricultural Region of South Australia



Background: Tothill Ranges, South Australia



Fact Sheet

Over the past two decades the philosophy of management policies dealing with native vegetation has changed. The need to manage the remaining native vegetation is now recognised, and in order to do this effectively knowledge of that native vegetation, and its relationship with native fauna (obtained through surveys and mapping) is required.

Native vegetation surveys and floristic mapping are major components of the Biological Survey of South Australia (SA). The Biological Survey of SA, an ongoing series of systematic surveys collecting information on flora and fauna across the state, is conducted under the auspices of a cross agency group, the Biological Survey Co-ordinating Committee. Responsibilities within the program are divided between the various agencies involved. With regard to native vegetation surveys and mapping, the Biological Survey and Research Group and the Biodiversity Evaluation and Monitoring Group of the Department for Environment, Heritage and Aboriginal Affairs (DEHAA) are responsible for these within the Pastoral Region. The Geographic Analysis and Research (GAR) Unit, Planning SA is responsible for this work in the Agricultural Region.

What is the native vegetation survey information used for?

Site based vegetation survey information is used to assist in the floristic vegetation mapping across the State and provide site based biological data to the Environmental Database of SA (EDBSA). This information is used by Federal, State and Local Governments for a range of activities. These activities range from biological and environmental research for land management, conservation and wilderness assessment, environmental impact assessment, fire and weed control, National



Deep Creek Conservation Park, South Australia



Collecting a field herbarium

Forest Inventory, National Land and Water Resources Audit, coastal management, and revegetation programs. All of these require, on an ongoing basis, varying degrees of information on the distribution, extent and relative importance of remnant native vegetation.

As well as Government users there are also many non-government organisations who use the survey information. For example; Landcare groups, Local Action Planning groups and Greening Australia are interested in seed sources, corridor establishment and optimising revegetation schemes to take advantage of existing remnants; salinity mitigation programmes and catchment management schemes are undertaken by a number of organisations; research and academic institutions conduct a variety of research projects including remnant native vegetation management, population studies of plants and animals, evolutionary processes, gene pools, and taxonomy; and private consultants in the preparation of reports for a variety of environmental projects.

Who is responsible for the information?

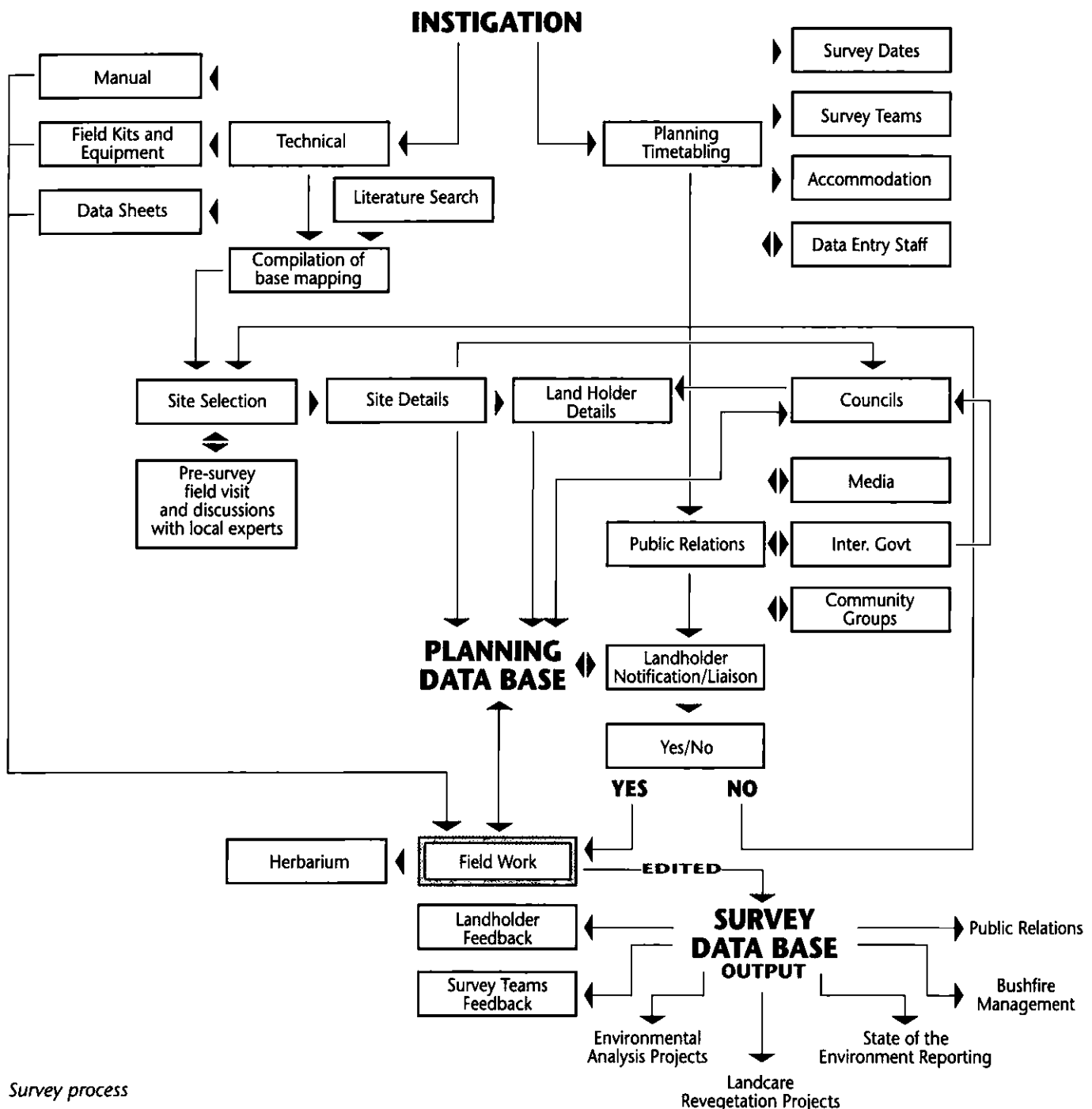
This information is held as part of the EDBSA, which stores both mapping and detailed tables of environmental data to allow its easy access and manipulation. This data is held and maintained under joint custodianship by DEHAA and Planning SA. The GAR Unit maintains the mapping component of the EDBSA accessing this database using a Geographic Information System (GIS). Detailed tables of biological data stored in the database are maintained by the joint custodians, Biological Survey and Research group (DEHAA) and the GAR Unit, with programming support provided by the Data Support Unit, Planning SA. The current database has information for approximately 14,000 vegetation sites.

Fact Sheet

Native Vegetation Survey Process in the Agricultural Region

Native vegetation surveys are conducted on a regional basis within the agricultural region and include both public and private land. The survey regions generally align with 1:50,000 topographic mapsheet boundaries. The overall process of organising regional surveys is complex, consisting of several major stages and many organisational, technical

and scientific tasks. The first step in undertaking a survey is the compilation of a landcover data layer that shows the distribution of remnant vegetation in digital format. Following this, specific sites are selected and landholders are contacted with regard to permission for access to each site. Following the survey, and data entry and validation processes, plant lists are provided back to landholders detailing the information recorded at each site.





Site selection using a stereoscope

How are native vegetation survey sites selected?

Sites are selected using aerial photographs in conjunction with knowledge of the area from literature, other resources and field experience. They are selected to represent different combinations of tone, texture and patterns, on the aerial photographs, that reflect the range of vegetation and landform types within different environmental associations across the study area. They are also selected to represent as many remnant blocks of native vegetation as possible and to produce a roughly even coverage of sites across a 1:50,000 topographic mapsheet. Sites selected are generally located away from ecotones or disturbed areas but where access will not be too difficult.

What data is collected?

Data is collected within a 30 x 30 metre quadrat (in the agricultural region) and comes under two broad groups, physical and vegetation.

The physical data collected summarises the landform pattern of the surrounding area, the landform the site is located on, and specific details on the slope and aspect. Details on the surface soil texture, and the nature, amount and type of surface rock are also recorded. These factors may indicate any correlation between the physical environment and the vegetation. Details on the site's geographic location, presence of vertebrates and disturbances are also recorded.

The vegetation is described by listing all the plant species present (native and introduced), with their cover abundance recorded. It is important for the integrity of the data collected to take voucher specimens of the plant species, which are then lodged at the State Herbarium. Estimates of the overstorey species' height, cover, canopy depth, canopy gap and type of canopy are recorded to assist in

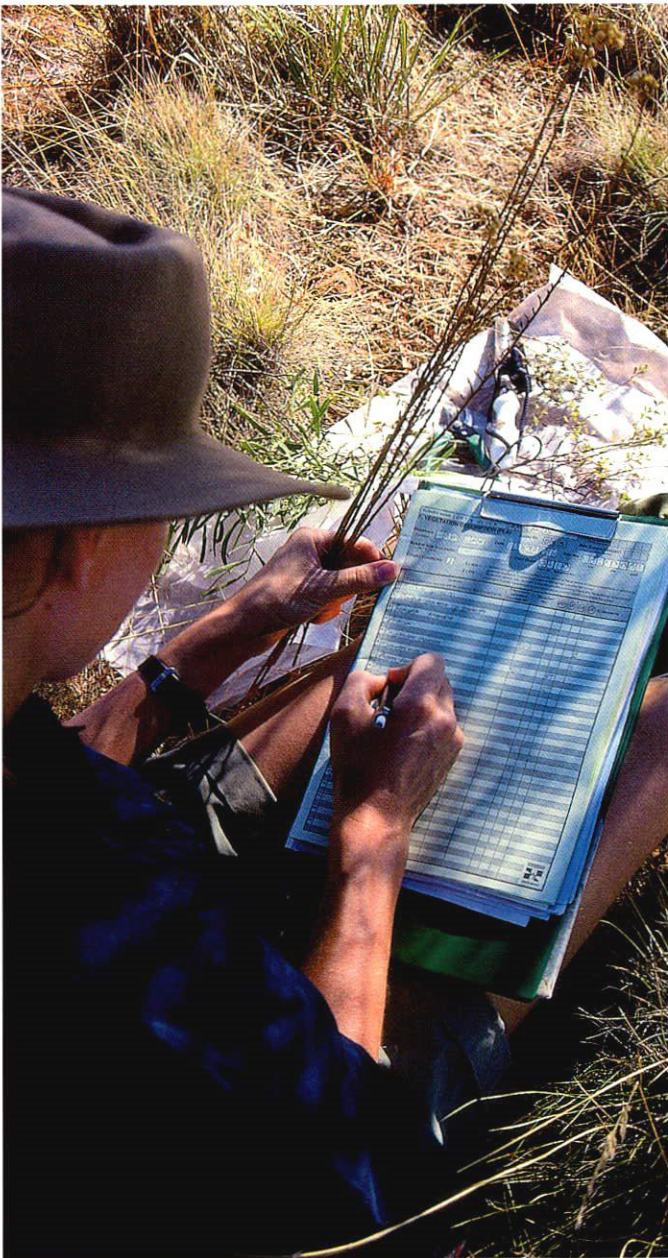
determining the structural type of the vegetation. For example a woodland, mallee, shrubland, grassland, sedgeland or herbland structure. The vegetation is also described in terms of its structural layers, to provide information on fauna habitat.

Floristic Vegetation Analysis

After the vegetation information collected has been entered and validated in the EDBSA, it is compiled and prepared for floristic analysis. The information is analysed using a modern objective method, referred to as PATN, to classify the vegetation. This analysis is based on the principle that sites with similar combinations of plant species should group together to form each floristic group. There is no definitive classification, merely trends and patterns that are identified and interpreted.

As a result of the classification the vegetation is divided into groups, each representing a major change in plant species composition (floristics) and overstorey structure (lifeform, height and projective foliage cover). They reflect broad environmental differences and more subtle changes in the environment such as drainage, local topography, microclimate and fire history. Sometimes additional floristic groups are added to the mapping, based on information from literature references, unpublished field notes and field knowledge.

To differentiate between plant communities, each is usually described in terms of its overstorey dominants; defined as having a proportion of occurrence greater than, or equal to, fifty percent; generally a large lifeform size and high abundance; and overstorey structural formation where possible. Lists of species characteristic of the plant communities within the groups are also compiled.



Completing a data sheet

Native Vegetation Mapping Process

Trends identified in the classification process are used in the mapping of the vegetation communities. Vegetation groups are associated to the survey site locations then extrapolated using the interpretation of 1:40,000 scale colour aerial photographs viewed through a stereoscope. The stereoscope allows the mapper to obtain a three dimensional view of the landscape from the aerial photographs. Boundaries between different types of vegetation groups are delineated.

Native vegetation does not always occur as discrete discernible units that are mappable but may be intergrading or occur in complex mosaic patterns, thus several groups may occur in a delineated area or block. Where distinct communities can be recognised they are delineated, however, where the pattern is more complex, then more than one floristic group, in order of dominance, may be indicated in the original 1:40,000 scale mapping.

Up to six categories may have been recognised in a mosaic within a given area, however, at any given location some of these may or may not be present. Mosaics are not always depicted on regional maps, due to the coarse scale of these maps. For more detailed mapping, indicating other groups present, finer scale vegetation maps must be used.



Taking a site slope measurement

Limitations of the Survey and Mapping data

Despite extensive sampling, it is possible that some rare community types will be missed. In particular there can be under-representation of open grassy woodlands, grasslands, sedgeland and some shrubland communities.

In regard to the mapping, vegetated areas less than one hectare and scattered trees are generally not mapped. Narrow strips of roadside vegetation may not be able to be mapped either. Another method is used to compile the roadside vegetation information. (Refer to the GAR Unit for information on the Roadside Vegetation Survey Methodology).

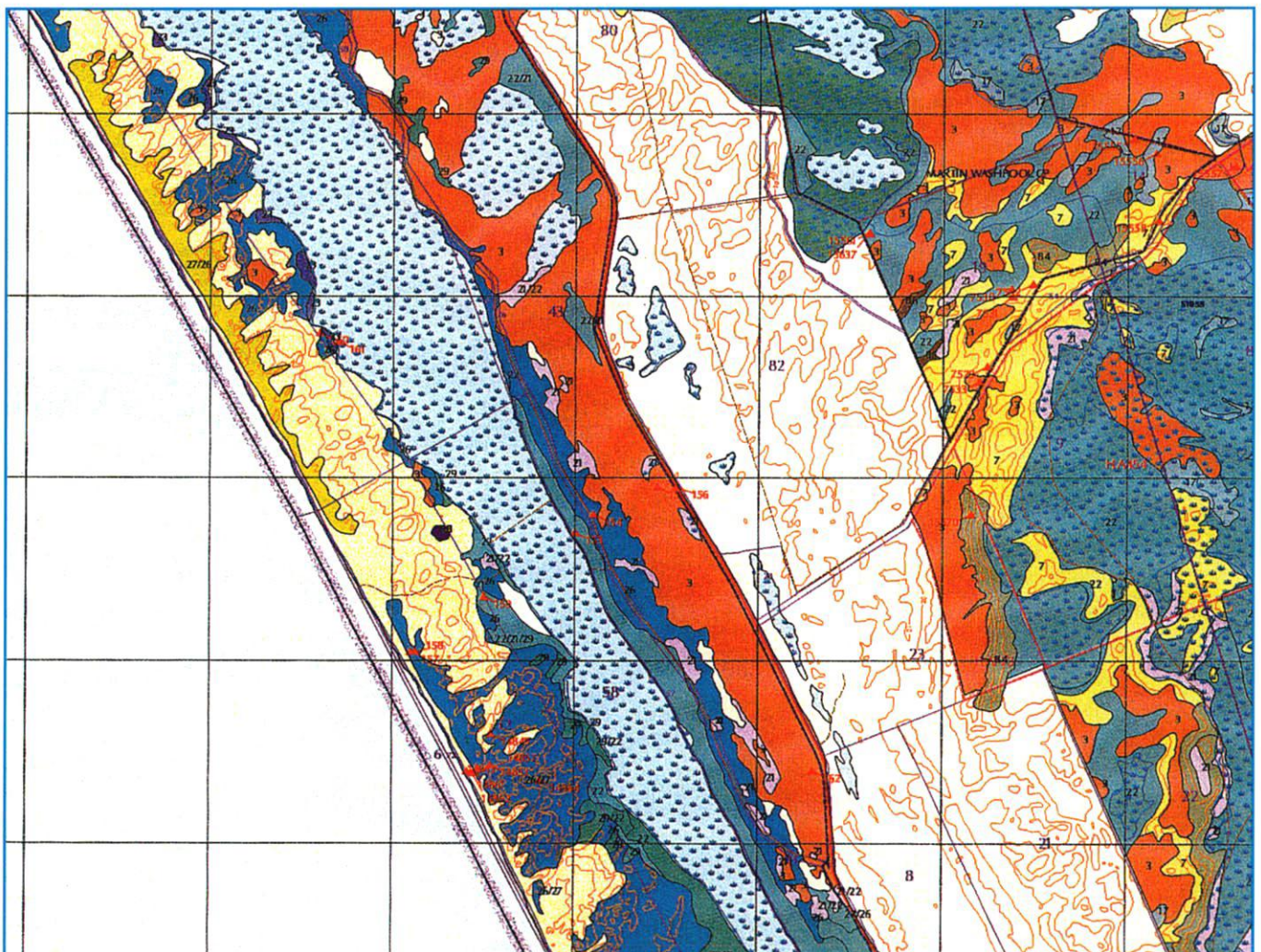
In addition, the vegetation rarely changes as sharply as the boundary lines suggest. The distinction between some floristic groupings is often blurred by the gradual transition from one community type to another.

Due to the techniques used, these maps can be readily updated and further editions are envisaged as additional information becomes available.

How much of the Agricultural region is surveyed and mapped? Where is the program up to?

To date landcover mapping and surveys have been completed for the eastern side of the agricultural region. This information is now being collected on Eyre Peninsula. Vegetation mapping has been completed for the South East, Murray Mallee, Southern Mt Lofty Ranges, Western Murray Flats, Kangaroo Island, and Mid North areas.

Mapping to join the Southern Mt Lofty Ranges and the Mid North is in progress.



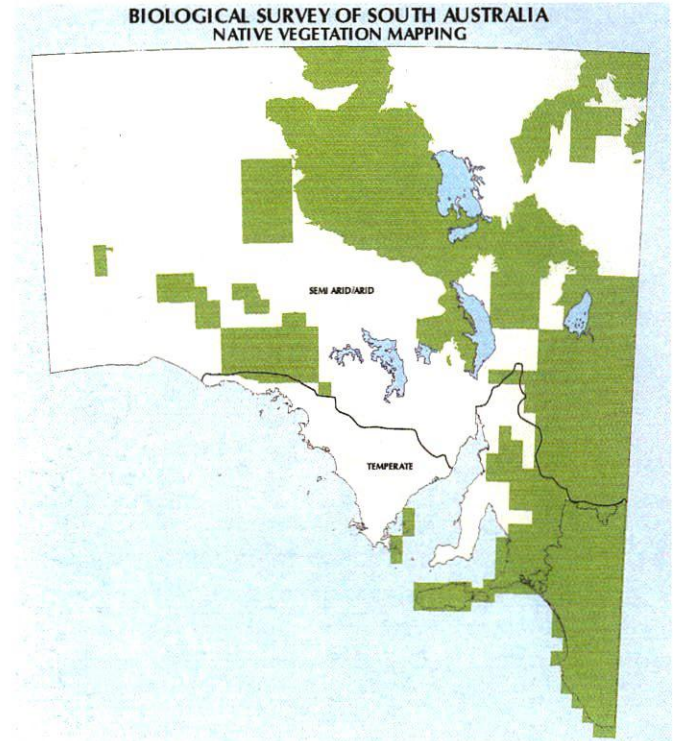
Floristic vegetation mapping, south east region of South Australia

Fact Sheet

Native vegetation data services and products

Existing information from the EDBSA can assist in providing important background information for environmental studies or analyses. Prior to commencing a project or in the initial planning stages, contact the GAR Unit to discuss what existing data may be helpful and what services the Unit can offer. A standard series of base maps showing cadastre, landcover, road access, Heritage Agreements areas, NPWS reserves, previous surveys, drainage, topography, and infrastructure offers a good starting point.

If you or your organisation would like information on how to undertake a native vegetation survey please refer to "Guide to a Native Vegetation Survey Using the Biological Survey of South Australia" produced by Information and Data Analysis Branch, Planning SA.



Extent of mapping over South Australia



The Horseshoe Range, South Australia

For more information on this or other projects please contact
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