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Alistair Paterson

CONFRONTING THE SOURCES:
THE ARCHAEOLOGY OF CULTURE-CONTACT
IN THE SOUTH-WESTERN LAKE EYRE BASIN,
CENTRAL AUSTRALIA

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degree of Doctor of Philosophy

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Abstract

This thesis investigates the results of culture-contact in the south-western Lake Eyre Basin between Aboriginal people and European pastoral settlers during the second half of the nineteenth century. Archaeological studies of colonial period cultural interaction in Australia are rare, none having been conducted in this region. The evidence used in this investigation includes archaeological data and historic sources. There are various methods for using documentary evidence in archaeological investigations. The approach adopted in this study was to analyse the different evidence separately, then conduct a comparative analysis. This is reflected in the thesis structure, which begins by providing a background to the study region and research. The archaeological research and analysis are presented in the second part of the thesis, which presents the evidence from archaeological sites recorded throughout the study area during field seasons. The patterning of archaeological material demonstrates the ways that Aboriginal life was affected from the 1860s onwards by the establishment of a pastoral industry in the region. The evidence reveals relationships between human settlement and the environment, both prior to, and following, contact. The third part of the thesis presents the analysis of documentary evidence, which includes letters written between 1860 and 1900 by the European pastoralists. The final part of the thesis presents the results of a comparative analysis of the archaeological and historic evidence which demonstrate the important contribution of labour and knowledge that Aboriginal people made to the pastoral industry in this region. The pastoral domain is shown to be structured by the pastoralists' practice of rationing food and goods in payment for indigenous labour, and by government rationing regimes and seasonal organisation of pastoral labour. This research provides a case study for the integration of archaeological evidence and documentary evidence, and of a specific regional contact period process. The study demonstrates the potential of archaeology to contribute to an understanding of Aboriginal peoples' history .

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List of abbreviations

AA	Australian Archives
ADB	<i>Australian Dictionary of Biography</i>
DAA	Department of Aboriginal Affairs
DBID	Database identification number
DBMS	Database management system
DNB	<i>Dictionary of National Biography</i>
GRG	General Record Group
MC	Mounted Constable
mf	Microfiche
MLSA	Mortlock Library of South Australiana
ms	Manuscript
NLA	National Library of Australia
POA	Protector of Aborigines
PRG	Public Record Group
psm	per square metre
SAPP	South Australian Parliamentary Papers
SRSA	State Records Office (South Australia)

Conversions

Imperial	Metric
1 farthing (1/4 penny)	0.21 cents
1d (penny)	0.83 cents
1s (shilling)	10 cents
£1 (pound)	\$2
1 foot (12 inches)	0.31 metres
1 yard (3 feet)	0.91 metres
1 mile (5280 feet)	1.61 kilometres
1 square mile	2.59 square kilometres
1 acre (4840 square yards)	4046 square metres (0.4 hectares)
1 pound (16 ounces)	0.45 kilograms
cwt (hundredweight = 112 pounds)	50.8 kilograms
1 ton (2240 pounds)	1016 kilograms
1 inch	25.4 millimetres
1 hundredth (measuring rainfall)	0.25 millimetres

PART I
BACKGROUND TO RESEARCH

Chapter 1. Nature and scope of study

Introduction

Until recently, archaeological studies of cross-cultural interaction between Aboriginal Australians and European settlers were relatively rare. In addition to providing an account of significant historic events and processes, 'culture-contact' studies provide fresh perspective on archaeological approaches, as such studies typically use evidence common to both prehistoric and historic archaeology. This is particularly pertinent in countries where there has been clear differentiation between historic and prehistoric archaeologies, as has been reported for America (Lightfoot 1995) as well as Australia and South Africa (Colley & Bickford 1996; Murray 1996; Funari 1999; Funari, Jones & Hall 1999). It follows that contact period studies are meeting places for the different techniques and research questions of historical and prehistoric archaeology, highlighting the artificial nature of constructions of 'prehistory' and 'history' (Lightfoot 1995). Similarly, culture-contact studies realise the potential of historical archaeology to bridge gaps in knowledge concerning the histories of literate and non-literate people in historic period studies:

The transformation to contemporary societies was shaped by confrontation and interaction between literate and nonliterate peoples. Because of this, it is impossible to rely on either written sources alone or material evidence alone in reconstructing and understanding the events and outcomes of that process. (Deagan 1996, p. 136).

The nature of contact studies requires taking into account longer time frames than often used in historic period studies. This allows detecting trajectories in indigenous life extending from prior to their contact with 'outsiders' (using John Mulvaney's 1989 term), which in Australia encompasses four centuries of documented interaction of Aboriginal peoples with Macassan, Japanese, Papuan, Dutch, French, English, Chinese, Pacific Islander and Afghan peoples (Mulvaney 1989, p. xvi). To accomplish this requires considering archaeological material often ignored by historical archaeologists, that is, the pre and post-contact evidence of Aboriginal life left in occupation middens, art sites, living floors and working areas. Importantly, measuring

pre and post-contact patterns of Aboriginal settlement and subsistence requires recognising that many material aspects of historic period Aboriginal life resemble 'prehistoric' contexts, in terms of technologies, settlement patterns and the organisation of living and working areas. In this thesis I explore pre-contact and post-contact contexts, dealing with problems in the recognition of indigenous historic period sites raised by Colley and Bickford (1996):

Even today, Aboriginal people sometimes use 'traditional' places (e.g. rock shelters, waterholes, campsites) without leaving any 'European' materials behind. To label these Aboriginal sites as 'prehistoric' because they contain no exotic materials is to render post-contact Aboriginal places, and the people who use them, invisible. (Colley & Bickford 1996, p. 8)

This thesis is primarily a case study in culture-contact. The study area is confined to Anna Creek Station, within the south-western Lake Eyre Basin in northern South Australia (fig. 1-1). The topics of this thesis are the events and results of culture-contact between Aboriginal people and Europeans during the nineteenth century. Accordingly, the approach adopted was to consider aspects of pre and post-contact Aboriginal life by using archaeological evidence from a range of environmental and social contexts, supplemented by evidence from historic sources. This approach aims to detect regional trends in Aboriginal life over time, and thus avoid problems regarding recognition of indigenous historic period sites. (There presumably remained, however, sites at which contact period life remained undetected, as described in chapters 5 and 8).

Research into colonial contexts in Australia, particularly by historians (Reynolds 1972, 1978, 1983, 1989, 1990, 1994; McGrath 1987; May 1994; Watson 1998), economists (Rowley 1970, 1971) and anthropologists (Rowse 1983, 1987, 1998; Baker 1990a, 1990b, 1999; Rose 1991) chronicle the role of Aboriginal people in colonial systems, challenging 'the still-popular view that pioneering was the exclusive achievement of Europeans and that the Aborigines contributed nothing to the [European] colonisation of the continent' (Reynolds 1990, p. 231). Despite these advances there is still considerable scope for further work on specific regional contact period process, particularly studying how and why Aboriginal people came to be involved in (or not, as the case may be) colonial period systems (Reynolds 1990, p. 235; May 1994, p. 2).

This requires an understanding of how such systems worked. I therefore interpret at length the early pastoral industry based at Strangways Springs and attempt to show that an understanding of cross-cultural processes over time is, in part, structured by the pastoral domain and rationing regimes.

There are few Australian archaeological studies of culture-contact, with the exception of Allen (1969), Birmingham (1992), Murray (1993), Clarke (1994), Mitchell (1994) and Frederick (1997). Mulvaney (1989) provides an overview of some scenes of cultural interaction in Australia. Many of these studies have been place based, with mission sites being particularly popular. Other site types are identified by Murray, who states that 'the best locations [for studying contact] are farm and station sites where Aboriginal people camped and were drawn into close relation with a particular form of white society' (1992, p. 6). Regional studies using landscape based approaches, as conducted by Clarke (1994) on Groote Eylandt and Mitchell (1994) on the Cobourg Peninsula, provide comparative potential for studies using single site data. By exploring interaction at a landscape level this study contributes to place based and regional studies of contact.

The pastoral settlement at Strangways Springs represents the first prolonged interaction of European settlers with the Aboriginal people of the western Lake Eyre Basin. This was an early step in the continent wide assumption of Aboriginal land. None of this occurred within living memory, and few stories (particularly by Aboriginal people) have been told of these events.

Consequently, little is known of the contact history of the south-western Lake Eyre Basin. European settlers arrived from the 1840s onwards, establishing pastoral stations from the 1860s, where sustained contact between Aboriginal people and pastoral settlers ensued. No archaeological study of the contact period in this region has previously been attempted. This paucity of research can in part be explained as an extension of perceptions formed in the late-nineteenth century amongst ethnographers, where scholarly attention was directed towards the Aboriginal peoples of Central Australia who were considered more 'traditional' and therefore worthy of scientific

interest. By the time anthropologists visited the Lake Eyre region they often directed their attention to Aboriginal societies considered to be more pristine, and less affected by European presence. Spencer and Gillen spent time with Arabana people in 1898 (Spencer 1928, p. 11) and Gillen visited Strangways Springs station in 1875 noting that 'all the shepherds employed on this station are Niggers...and do as well as the whites' (Gillen 1995, p. 49). However, in 1912 Spencer and Gillen wrote dismissively that the Arabana:

gathered together at the few outlying cattle stations....where, in return for clothes and 'tucker', they help in the work of the station...[a people who have] given up the performance of their old ceremonies - even the ordinary corroborees have dwindled down to a mere nothing. (Spencer & Gillen 1912)

Very little is known of the early pastoral industries in South Australia, with general overviews focusing on the achievements of white pastoral leaseholders (for example Bean 1910; Cockburn 1925). Aboriginal involvement in pastoral industries has been documented in northern Australia (Stevens 1974; Shaw 1986; McGrath 1987; Rose 1991; May 1994; Watson 1998) but less so for southern Australia.

Study area and period

In the nineteenth century the study area was known as Strangways Springs station. The analysis was largely confined to data concerning the last four decades of the nineteenth century, which mirrors the European use of Strangways Springs as a settlement (1862 to 1896), although patterns of human life over longer periods of time inform the analysis. However, this thesis is less concerned with the twentieth century, rather seeking to explore the earliest period of interaction between Aboriginal and European peoples. I examine evidence for both European and Aboriginal peoples, making as the primary subject Aboriginal people. This follows my intention to explore archaeological evidence for Aboriginal people's life in the early contact period. However, this research does provide material and social insight into the lives of European pastoral workers. Accordingly, this thesis can be read as regional history.¹

¹ For other historical studies relevant to Central Australia see: Gale (1964), Gale and Brookman (1975), Gale and Lawton (1969), Hassell (1966).

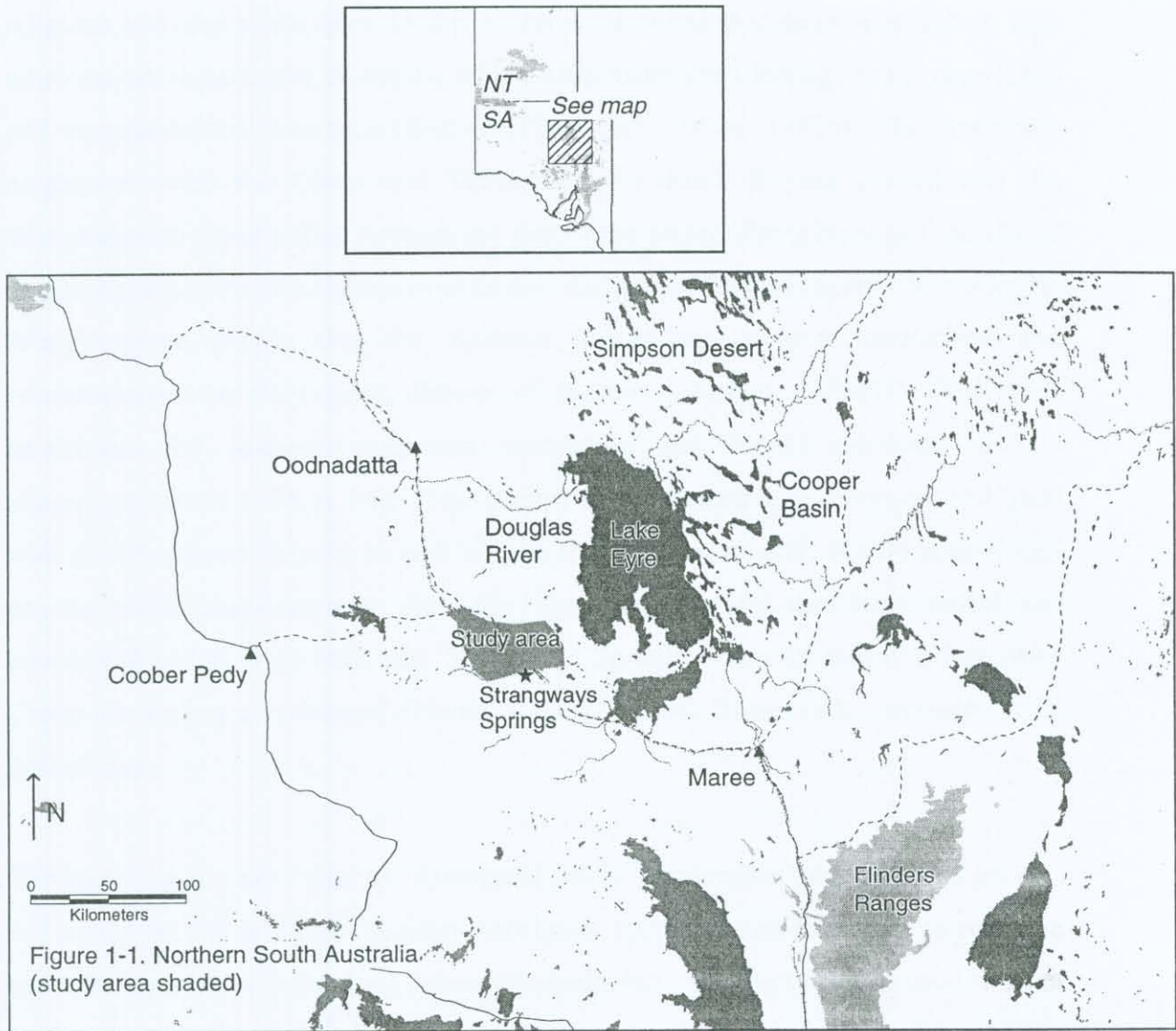


Figure 1-1. Study area in the south-western Lake Eyre Basin, Central Australia

Arabana country

At European settlement Arabana² people lived throughout the mound spring country of the south-western Lake Eyre Basin. Today Arabana people live in regional centres, such as Marree, Oodnadatta, Port Augusta and Adelaide. Nevertheless, Arabana identity strongly identifies with the mound spring country. Arabana country extends from an area east of Strangways Springs and north towards Oodnadatta. The whole area was used for food and other resources and is networked with Arabana names and

² Alternate spellings include 'Arabunna' (Mattingly & Hampton 1992), 'Urabunna' (Spencer & Gillen 1899, 1904), 'Urrapunna' and 'Urapunna' (Gillen's letters published in Mulvaney, Morphy & Petch 1997).

religious and ceremonial sites. Oral histories demonstrate that these sites link in with more extensive networks of stories, which were maintained through long range trade and communication networks (Hercus 1971, 1980, 1982a, 1982b). The Arabana's neighbours were the Diyari and Thirrari (to the east), Kuyani (south) and the Wangkangurru (north). The Arabana are part of the larger 'Pama-Nyungan' family of languages which included speakers of Diyari, Kuyani and Wangkangurru. It is with the Wangkangurru people that the Arabana shared the greatest similarities and communication as they speak dialects of the one language: 'Nharla'. With their neighbours the Arabana conducted ceremonies and shared patrilocal totemic allegiances (Shaw 1995, p. 24). These groups shared knowledge, ceremony and trade with the Diyari and Kuyani, as well as with the southern Aranda. Aiston commented on the relationships between the Lake Eyre peoples, and that large social and ceremonial events were held near Strangways Springs: 'they all assembled at Anna Creek for the big corroborees' (Horne & Aiston 1924). These links continue to the present day.

Throughout this study I refer to 'Aboriginal people' more often than 'Arabana people' for continuity and accuracy, as other Aboriginal people visited and came to reside in the Lake Eyre Basin following contact. Similarly, the term 'European' is used to label settler Australians, despite the presence of other non-European settlers, for example Chinese and Afghanistan peoples. The importance of Aboriginal people's relationships with these non-Europeans has been considered elsewhere (Hercus 1981; Stevens 1989; Shaw 1995).

Studies of more recent periods of Aboriginal history (Rose 1992; Morphy 1994; Strang 1994, 1999) often include components of Aboriginal cosmology, particularly how Aboriginal people know places, thus defining Aboriginal landscapes. Recent archaeological research proposes that this type of evidence can be used in landscape based studies to demonstrate continuity of relationships in social landscapes over time (Gosden & Head 1994; Head & Fullagar 1997, 1999). I have not relied extensively on Aboriginal knowledge for several reasons. The Arabana people today live in regional centres, which made it logistically difficult for them to be involved in field work. Despite this, key sites were visited with Arabana people, and other sites were recorded

following discussions with community leaders who remembered places where their relatives lived and worked. Additionally, the interim century between the early pastoral era described here and the present day has meant that two or more lifespans separate the study period from the present. This discontinuity between the study period and today was exacerbated by epidemics, removal of children and other successive detrimental government policies regarding Aboriginal peoples. Shifting pastoral-Aboriginal relations also contributed. This is not to suggest that Aboriginal people today have no understanding of historic events. Aboriginal histories have been able to protect much of what otherwise may not have been known (Hercus 1971, 1977, 1981, 1982a, 1982b, 1984, 1987, 1990; Hercus, Sutton & Kinhill Stearns 1985; Hercus & Clarke 1986; Hercus & Sutton 1986; Gibson & Shaw 1987; Shaw 1995). However, the specific events and processes of the early colonial period are the most poorly preserved in oral history. This encourages the approach adopted in this study, which complement studies of more recent Aboriginal-European contact in northern Australia, particularly those concerned with the pastoral industry (Stevens 1974; Berndt & Berndt 1986; Shaw 1986; McGrath 1987; Rose 1991; May 1994; Watson 1998; Baker 1999).

Definition of contact

This thesis considers a topic currently termed 'contact archaeology' or 'contact history'. There exists debate over the appropriateness and meaning of the term 'contact', and whether it implies a process rather than a moment in time. This is hardly surprising, as the moment of 'first contact' fascinated those who perceived of a threshold between modern and prehistoric worlds:

Scholars imagine themselves standing on the interface of past and present, watching former hunters teetering on the cusp as they hurtle into modernity with no previous experience of change... (Schrire 1984b, p. 1)

Alternative terms such as 'encounters with difference' (Denning 1992; Rainbird in press) aim to highlight change in interaction over time. There is, however, widespread usage of the term 'contact' meaning a process, rather than a singular event (for example Murray 1993, Clarke 1994). Accordingly, the term 'contact' is used here to describe cultural interaction between Aboriginal people and Europeans, from its inception and as it progressed. Consequently, the term 'pre-contact' is used to describe

indigenous life before European settlement. The line between contact and pre-contact is necessarily blurred, and the border between them permeable. The affects of European colonialism proceeded the settlers themselves in the form of diseases, new species, new objects and cultural practices. In the case of the Lake Eyre Basin early exploration in the 1840s was followed by a hiatus until further explorations in the 1850s in response to increased pressure for new pastoral lands.

Another perceived problem with contact studies is that they are Eurocentric by making the presence of Europeans the key defining element (Rainbird, in press). This image is fading, as indicated by recent approaches which see contact as a two-way process:

The culture change undergone by Native Americans was neither one-sided nor solely governed by European intentions and strategies. Rather it is evident...that the attitudes and actions of Native Americans played a large part in determining the impact of contact. (Wilson & Rogers 1993, p. 3)

This is the approach adopted here, and it forms the basis for interpretations of contact era processes as potentially characterised by social strategies with multiple expressions of agency.

Purpose of study

This thesis examines the events and results of culture-contact between Aboriginal people and Europeans during the late-nineteenth century in the south-western Lake Eyre Basin from an archaeological perspective. Two central questions are raised in this respect:

- a) What evidence is there of this period of human settlement and colonial interaction, and how can it best be used?
- b) What can be interpreted about the events and processes of the contact period from the available evidence?

To answer the first question involved considering how archaeological and documentary evidence recorded during the research project interrelated. This has been accomplished here by maintaining evidential independence, then exploring continuities and dissonances between archaeological and historic data.

The second question involved considering several key themes in the archaeological and written records, specifically:

- a) The evidence for the pastoral industry, from its inception in the south western Lake Eyre Basin at Strangways Springs Station (1862) until the early-twentieth century.
- b) The evidence for Aboriginal participation and non-participation in the pastoral industry based at Strangways Springs.
- c) The role of colonial regimes (other than the pastoral domain) in Aboriginal life. Central to this was the role of rationing by the pastoralists and colonial government in structuring frontier cultural interaction.
- d) The evidence for Aboriginal settlement and subsistence before and after European settlement, including how, over time, local communities related to regional networks of trade and communication. This required developing techniques to define aspects of the post-contact Aboriginal material record as apposed to pre-contact ('traditional') artefacts and assemblages.

Description of data and analytical framework

This research used archaeological data, recorded by the writer during field seasons conducted between 1994 and 1998 on Anna Creek station (fig. 1-1). The archaeological methodology involved the mapping, sampling and excavation of archaeological sites (described in chapters 4 and 5). The earliest field work placed an emphasis on sites where extensive multiple archaeological assemblages had accumulated in late Holocene and colonial period (post-1840) contexts. Later field recording tested the landscape for material remains of past human activities, recording multiple archaeological assemblages throughout the study area. These included pre and post-contact Aboriginal sites, and pastoral activity areas and settlements.

As suggested by the thesis title - *Confronting the sources* - I elected to use a supplementary data set in my analysis, specifically historic documents related to the Strangways Springs pastoral station. The most comprehensively used documentary sources were letters from station managers and owners, the bulk of which were restricted to the 1860s, the first decade of the pastoral settlement at Strangways

Springs (MLSA, PRG 21, The Warren Papers). These letters and memoirs are a valuable resource for interpreting the organisation and recollections of one of the most remote pastoral settlements in Australia in the 1860s. These are the subject of the analysis presented in chapter 7. Apart from the pastoral letters, newspaper and magazine accounts, other observations pertinent to an analysis of the study area in the nineteenth century include unpublished accounts by: Howitt (LaTrobe Library, ms 9356, 1859); police journals from Strangways Springs (SRSA, GRG 5); the Protector of Aborigines and the Aborigines Office (SRSA, GRG 52/7, Letter Books); and police reports related to Aboriginal people at Anna Creek station (SRSA, GRG 5). Transcriptions of these unpublished select documents are included in appendix D. Published accounts informing this study include explorers accounts (Stuart 1965; *also in* Hardman 1964[1865], 1975[1865]; Babbage, Warburton, Geharty & Parry *in* SAPP 1858, 1, no. 25; 'Northern Explorations' SAPP 1857-8, 2, no. 193; and 'Northern Explorations' SAPP. 1858, no. 151, p. 14; Warburton 1988[1866]; Giles 1889; Gregory 1906) and late-nineteenth and early-twentieth century ethnographers interested in Aboriginal life, subsistence, social and political organisation (Spencer & Gillen 1899, 1912 and in Mulvaney, Morphy & Petch 1997; Howitt 1904; Roth 1904, 1910; Horne & Aiston 1924; Basedow 1920; Elkin 1934). Much of this later material postdates early contact by 40 to 50 years, and is used judiciously in this study, normally being restricted to demographic information.

The use of documentary sources in archaeological research has been the focus of debate in historical archaeology (Leone & Crosby 1987; Beaudry 1988; Gaughwin 1988; Leone 1988; Leone & Potter 1988a, 1988b; Little 1992, 1994; Kosso 1995; Funari, Jones & Hall 1999; Small 1999a, 1999b), and informed by a wider discussion on the use of multiple sets of data in archaeological interpretation (for a cross section of approaches *see* Beaudry 1988; Kirch & Sahlins 1992; Rogers & Wilson 1993; Wilson 1993; Parker Pearson 1999; Small 1999b). The position adopted in this study was that culture-contact studies are a prime venue for historical archaeology studies which attempt to develop methods for appropriate use of supplementary evidence (in this case historic written sources) in archaeological analysis without privileging one set of data over the archaeological evidence.

Following theoretical positions which advocate the independence of archaeological and documentary evidence (for example, Wylie 1985; Leone & Crosby 1987; Beaudry 1988; Leone 1988; Leone & Potter 1988a; Kirch & Sahlins 1992; Little 1992; Stahl 1993, 1994; Small 1999b) I conducted the initial analysis of archaeological data and historic sources separately. Following from that I adopted a comparative approach to the treatment of archaeological and historic data, with the intention of highlighting continuities and dissonances between the different evidence (Stahl 1993, 1994). This approach aims to provide an enhanced interpretation of contact between Aboriginal people and Europeans in the region.

Limitations and delimitations

Certain limitations were encountered (or delimited) in the course of the research. In summary these were:

- a) The analysis is largely restricted to nineteenth century contexts (until ca. 1900). This decision reflects an aim to study the earlier contexts of culture-contact. However, the thesis provides a nineteenth century study comparable with studies of twentieth century contexts of indigenous-pastoral interaction.
- b) Consequently, oral testimony has only been used fleetingly in this study, except to include some Aboriginal interpretations of archaeological features and Aboriginal people's understandings of some campsites.
- c) Extreme weather conditions, and the high cost of prolonged field work in remote regions in combination with a relatively small amount of project funding precluded the participation of Aboriginal people in the field work. However, the Arabana community were consulted about the work, were supportive, and visited Strangways Springs during field recording.
- d) The archaeological assemblages in this study were almost without exception surface deposits, resulting in poor preservation of organic remains (including residues on tools) and study-wide absence of stratified material.

In summary, this thesis is both substantive, making an account of cross-cultural interaction and aspects of the lives of Aboriginal and European peoples in the study area, and methodological, by advocating pluralism in the sources used in

archaeological studies of contact by presenting a framework to critically assess documentary evidence in order to provide enhanced interpretive protocols.

Chapter themes

Following from the approach outlined above this thesis is organised into four parts. Part 1 (chapters 1 to 3) presents aims, background information and reviews current literature. Part 2 (chapters 4 and 5) presents the analysis of archaeological data. In Part 3 (chapters 6 and 7) I analyse the historic written accounts. Part 4 (chapters 8 and 9) uses comparative analysis of the different data to present the results of the study.

In chapter 2 I discuss the landscape in terms of environment, geography, biology and those resources used by people, especially water sources. I also provide a background to pastoralism in the region and the historic sources used in the study. In chapter 3 I review related research, moving from research of Aboriginal life during the Holocene, to studies of European settler contexts. The review considers archaeological studies of cultural interaction moving from global to local studies, with particular reference to Australian contexts. I also review methodologies for using multiple data sets, in particular regarding using documentary evidence.

In chapter 4 I present my archaeological recording methods and analysis. I overview material culture used in this study to resolve chronologies and function in late-nineteenth and early-twentieth century contexts. I refine existing chronologies for some material culture in order to determine changes in settlement patterns over time, which, like many examples of culture-contact in Australia, have occurred within a relatively short time period, in this case since the 1860s. This discussion contributes to a corpus of existing research, much still in its infancy, by archaeologists using historic period material culture from Australian contexts. Chapter 5 presents the distribution of archaeological material recorded in the study. The site descriptions and intra-site analysis form the basis for a discussion of inter-site archaeological evidence for Aboriginal and European settlement. As these sites are also places of interaction between local Aboriginal groups and European settlers, a focus of the analysis of archaeological material concerns evidence for cross-cultural interaction.

Chapter 6 presents the approach adopted in the study for critical contextualisation of documentary evidence selected for this study. This discussion considers the selection and constraints of the primary sources, their authenticity and credibility. This approach responds to Galloway's (1991, p. 453) position that 'effective use of ... narratives from the early contact period by archaeologists...has been hindered by frequent failure to apply adequate rigour to the evaluation of written records'. In chapter 7 the historic accounts are analysed in terms of the ordering of the pastoral domain, colonial period practices and European observations of Aboriginal people. These sources demonstrate the role of rationing and pastoral labour processes, and how these structure pastoral-Aboriginal interaction.

Chapter 8 uses a comparative approach to compare and integrate the archaeological and documentary evidence. This discussion presents the evidence in terms of Aboriginal, pastoral and contact landscapes to provide an account of culture-contact within the study area. The notion of 'social landscape' is used to structure the comparative analysis. I consider the ways that different data interrelated in the study in terms of continuity and dissonance between archaeological and historic data. This chapter concludes by summarising the results of the thesis as a set of criteria which demonstrate the texture of agency in the study, and acts a model for people's frontier agency. I argue that interaction is characterised by different and deliberate decisions by indigenous people, and structured by the seasonal demands of pastoral labour and rationing regimes. I conclude in chapter 9 by reviewing the implications of the study.

Chapter 2. Geographical and cultural context of the study area

We came to deep cuttings running into a dry lake - in which were numerous large mound springs overgrown with weeds ten feet in height. There are most likely not less than fifty of these springs, which if opened up would give a great supply of water, but the country between...is perfectly worthless and would not feed a bandicoot - and it looks the same beyond.

From the journal of Alfred Howitt (October 1859)

Introduction

In the above quote, Howitt was describing a complex of artesian springs named Strangways Springs. These represent the centre of the study area for this thesis. The springs had been named in 1858 by the explorer Warburton, who felt the springs 'would improve with use' (SAPP 1858, no. 25, p. 14). Warburton proposed that the artesian springs (termed 'mound springs') throughout the western Lake Eyre Basin would provide support for a pastoral industry, an optimistic opinion obviously not shared by Howitt. However, the mound spring country was rich in life, being home to Arabana people, who call Strangways Springs 'Pangki Warruna'.

This chapter provides context to the study by describing the environment and resources in the study area. The region is bordered by Mount Margaret in the north, Lake Eyre in the east, and Stuarts Creek in the south. This geographical area approximates the traditional lands of Arabana and Kujani people (Tindale 1974; Hemming & Clarke 1992, p. 16). The study area is characterised by gibber plains, shrublands and grassplains, dune fields, salt lakes, riverbeds and mound springs. Past archaeological studies (reviewed in chapter 3) have focussed on archaeological deposits at mound springs. My survey and analyses demonstrate that archaeological sites also occur in association with dune fields, mulga woodland, lakes, claypans and creeks.

Climate

In terms of human settlement the environment is harsh, especially on the gibber plain away from water sources. Temperature ranges are extreme, with winter minima falling

below 0°C and summer maxima rising up to 50°C. High evaporation rates with an annual mean of 3600 millimetres contrast with some of the lowest rainfall averages in Australia, (in the 130 to 140 millimetres range) (Harris 1981, p. 27). Rainfall tends to be infrequent and localised, occurring in high density episodes in which the normally dry river and creek courses discharge water into isolated reservoirs along their length.

Geography

The Lake Eyre Basin is a tectonic depression twenty metres below sea level which is fed by the intermittent flows of a drainage system covering one sixth of the continent. From the north-east through the Simpson Desert flow the final sections of Cooper Creek and the Diamantina and Georgina Rivers into Lake Eyre. Fed by ranges to the north-west, the Neales, Finke and Warburton Rivers feed into Lake Eyre North. Lake Eyre South is fed from water courses originating as far south as the northern Flinders Ranges. Despite this river system, the lake is rarely filled. In fact geographers estimate a flood only every 500 years (McBryde 1987, p. 253).³ Much of the water supply used by humans was from mound springs, or from surface waters accumulated after rare rainfalls; that is, collected between dunes, and in waterholes, claypans and lakes. In addition to this there are ground waters forming soakages and water holes (Smith 1989). Non-permanent sources are described throughout this study as 'ephemeral' water sources. The relative scarcity of water makes the mound springs particularly significant for the survival of many animals, including humans.

The landscape is interspersed with low ridges and isolated stony outcrops, dunefields, gibber plains and chenopod shrublands.⁴ The dunefields of the south and west of Lake Eyre are formed by longitudinal or linear dunes (van Oosterzee 1991, p. 42). These have vegetation along their flanks and occasionally along their crest. These shallow

³ Floods have filled Lake Eyre three times during the twentieth century, although this is apparently exceptional.

⁴ Thomson and Barnett (1985, pp. 3-6) define five geomorphic units in the study region: 1.) A silcrete surface forming a series of plateaux and mesa which stand 30-50 metres above the level of the plain. The concave sides of these formations have a thick silcrete lag. 2.) A pediment surface with gilgai formation flanks the silcrete residuals. It cuts into the gypsum and Cretaceous Shales. 3.) A Pleistocene gypsum deposit occurring at 3-15 metres above sea level. This unit is covered with a fine gibber lag which forms an extensive pavement throughout the region. It is covered by the thin linear sand dunes and sheets of the dune fields and clay pans. 4.) A post gypsum surface and flood plains. These occur in the study area at the shores of Lake Eyre and in the river drainage channels where fluvial sediments are deposited. 5.) The mound springs of Pleistocene and recent ages.

dunefields overlay the gibber plains which are inhospitable environments where the silcrete surface reaches summertime temperatures of 70°C.

Vegetation and animals

The following background to fauna and flora of the region will focus on species used by humans, remembering that many 'traditional' Aboriginal uses changed following European settlement in the study region (table 2-1). The dominant vegetation of the region is chenopod shrublands (saltbushes and bluebushes), grasslands and woodlands. Being a succulent plant, chenopods are an important source of nutrition and liquids for herbivores. Consequently, the chenopod plains were the basis of the sheep industry in this region. Acacia shrublands are another important habitat as they form an open woodland with resources supporting human occupation. The term 'mulga' refers to the drought tolerant, perennial woody acacias (van Oosterzee 1991, p. 75). These woodlands provided shelter and fuel for Aboriginal people, who ate the seeds of a variety of acacias. Mulga woodlands occur along linear dunes, and at isolated sand ridges, such as those on the western side of Strangways Springs.

The distribution of plant species at the larger mound springs creates different vegetation zones including immediate mound spring environs, tall shrub lands, chenopod shrublands and spinifex grasslands. The immediate vicinity of an active spring supports saltbushes, acacias and occasional eucalypts (Harris 1992, p. 160; Symon 1985; Mollemans 1989). As well as woodland and shrubland, the sand ridges also support hummock grasslands with saltbush.

Plant	Name	Aboriginal use	European uses
Tree	mulga (<u>Acacia aneura</u>)	seeds processed for food, timber, seeds, fuel	Building material, also for yards
	box tree eucalypts beefwood (<u>Grevillea striata</u>), needlewood (<u>Hakea leucoptera</u>), corkbarks (<u>Hakea ivoryi</u>), whitewood (<u>Atalya hemiglauca</u>), blackoak (<u>Casuarina cristata</u>), sandalwood (<u>Santalum lanceolatum</u>), desert willow (<u>Pittosporum phylliraeoides</u>),	seeds ground as food tool, fuel, bark, resin	Structural timbers Structural timber Structural timbers and fuel
Shrub	saltbush (<u>Atriplex vesicaria</u>) bluebushes (<u>Maireana aphylla</u> , <u>M. astroticha</u>)	attract herbivores attract herbivores	stock grazing stock grazing
Herb	bush 'Munyeroo' milkweed pigweed (<u>Portulaca oleracea</u>)	ground for food moisture moist leaves, seeds	stock grazing stock grazing, kangaroo (and smaller mammals) grazing
Grass	Mitchell (<u>Astrelba lappacea</u>), mulga (<u>Aristida contorta</u> , <u>A. anthoxanthoides</u> , <u>A. capillifolia</u>), button (<u>Dactyloctenium radulans</u>), and wanderrie (<u>Eriachne aristidea</u> , <u>E. benthamii</u>) grasses	ground for food adhesives for crafts ground for food ground for food	
	native millet (<u>Panicum decompostum</u>) spinifex grasses nardoo (<u>Marsilea drummondii</u>) <u>Panicum</u> species		
Animal	Name	Aboriginal use	European use (date of introduction)
Bird	Bustard, Emu, Crake, Eagle, Brolga, Quails, Wanderers, Rails, Coots, Native Hens, pelicans, gulls, great cormorants, terns	meat, sinew, feathers, eggs	emu eggs collected for John Warren
Fish	Yellowbelly, Bony Bream, Lake Eyre Hardyhead	meat	
Lizard	goanna, monitor lizard, shingleback, bearded dragon	meat	
Mammal	Red Kangaroo, Western Grey Kangaroo, Euro, possums dingoes	meat, sinew, bone, skin used for hunting, later paid rations for skins	meat attacked sheep
	mice, rat, bats, echidna, bandicoots cattle, sheep and goats horse, bullock camel rabbit dog	meat herding husbandry paid rations for skins companion, hunting, shepherding	meat (on occasion) pastoral industry (1862) transport (before 1858) transport (late 1860s) threat (1890 or later) companion, pastoral work (1862)

Table 2-1. Fauna and flora of the region, and Aboriginal and European people's associations

Many plant species were used by Aboriginal people as food (table 2-1), ground seeds providing important nutrition (McBryde 1987, p. 458). When exploring the area in 1865 Stuart 'camped close to a large quantity of acacia seed that [Aborigines] had been preparing when we arrived' (Stuart 1865, p. 114). This process required grindstones and bowls which were quarried from Anna Creek, the stones surviving in archaeological deposits. The succulent leaves and roots of pigweed and milkweed provided moisture. Spinifex and other grasses provided adhesives used for hafting tools and weapons. Acacias and eucalypts were used for making tools, weapons, for fuel and were seed sources; as were beefwood, needlewood, corkbark, whitewood, blackoak, sandalwood and desert willow (Florek 1993, p. 37).

Animals important to human subsistence found in the study area include birds, reptiles, fish and mammals common to arid zone habitats (table 2-1). Highly mobile larger birds, such as the bustard and the emu, were favoured by Aboriginal people for meat, sinew, and feathers as well as for their eggs, the shells of which appear in occupation assemblages (Florek 1993, p. 42). They also acted as guides to nectar and fruit sources. Other birds, such as the crane, eagle, brolga, quail, wanderer, rail, coot and native hen, occupy dry grasslands and creek beds as well as better watered habitats, such as wetlands associated with springs (Badman 1985, p. 84)⁵. Species such as fish eating birds, pelicans, gulls, great cormorants and terns are only common during floods (van Oosterzee 1991, p. 146).

Freshwater fish during flood include bony bream, Lake Eyre hardyhead and yellowbelly. Fish, molluscs and freshwater crayfish also inhabit the creeks, waterholes and springs. These were favoured by Aboriginal people, and oral accounts recall that in pre-European times two main activities of the men were trapping animals in pitfalls and fishing (Hemming & Clarke 1992, p. 6). Reptiles are numerous in many different habitats with twenty-two species associated with the mound springs (Thompson 1985, p. 78). They were important food sources with the larger goanna and monitor lizard foraged by Aboriginal people, as were the smaller shingleback and bearded dragon.

⁵ Badman, in a 1985 study of birds located at mound springs and bores, found diverse avifauna with over 150 species. The greatest number of birds were found at springs and creek habitats.

Native mammals were important for Aboriginal people as they provided food, sinew and fat. Many native mammals have disappeared, unable to compete with introduced species which occupy similar foraging niches in the ecosystem (Wood 1923). Several kangaroo species are still found, including the red kangaroo, the western grey kangaroo and the euro (West 1985). Dingoes are present, as are other mammals, including smaller native mice, bats, possums, echidna and bandicoots.

The mound springs: *oases in the desert*

As regular sources of water, the mound springs supported Aboriginal people during the harshest seasons.⁶ They are foci for a diverse range of flora and fauna, and by sustaining vegetation in the bordering dunes, they provide shelter, food and fuel. Except Dalhousie Springs in the Northern Territory, the principle springs occur in northern South Australia, accounting for some 68% of all outflow from the artesian basin (Harris 1992, p. 157). Spring complexes relevant to this study are located at Strangways Springs, in Francis Swamp, at Lake William, in Anna Creek and Warriner Creek.

The mound springs vary from surface level seepage to raised outcrops up to eight metres high with a circular or oval section (Boyd 1990, p. 108). Depending on the flow (and many active springs do not flow continuously) water may only be evident as damp earth or as small local pools. Springs are described as 'active' or 'non-active'. The term 'extinct' is reserved for Pleistocene springs, which have formed much larger mounds 20 to 40 metres high (Thomson & Barnett 1985, p. 18). Chemical precipitates in the spring water form tufa, limestone and travertine, with the main lithifying agent being calcium carbonate (Thomson & Barnett 1985, p. 14). Travertine, a type of limestone, is particularly common at Strangways Springs. It was used by Aboriginal people as a heat-retainer in fireplaces, and by Europeans as a building material. The quality of spring water varied at different springs. The water at Strangways Springs was reputed to make people and horses ill; although, in 1858 Warburton stated that he

⁶ For the purposes of the archaeological assessment of human settlement in the Lake Eyre Basin, Martin and Paton defined five ecological zones: gibber plains, sand dunes, salt lakes, high ground, and creeks (Martin & Paton 1988). To this can be added mound spring environs.

'drank the water in pretty large quantities and found no ill effects from it' (SAPP. 1858, no. 151, p. 14). He was, however, trying to persuade pastoralists to occupy this area. Many springs in this study had a reputation for poor taste due to a naturally occurring sulphur content.

Changes to the environment: effects of human use

The springs have been a vital focus for many forms of life and for human occupation as demonstrated by the large archaeological assemblages at most mound springs. Prior to European settlement the springs would have had a greater outflow. They were maintained by Aboriginal people to ensure water flow. Stuart discovered a spring in 1865 'in one of the creeks [that] the natives had cleared out, and the water was very good' (Stuart 1865, p. 127).⁷

Introduced species that accompanied European settlement compete with indigenous species. Particularly disruptive species have been sheep, cattle, camels, horses, dogs, cats, foxes and rabbits (table 2-1). They have reduced native populations, some to extinction, altered the sensitive ecology of these resources and devastated natural pastures around the springs. This is not merely a contemporary observation. As many as 178 introduced species were recorded as early as 1889 at some of the springs including Strangways Springs (Tate 1889, p. 87). Within six months of the discovery of the Hergott Springs by John McDouall Stuart, government delegations described them as fouled by treadage and called for immediate protective fencing. Early stocking rates in the 1860s were four times higher than currently acceptable levels although this optimism was met with extremely high stock losses during droughts in the mid-1860s (Harris 1981, p. 33).

The practice of sinking artesian bores since the 1880s spelt the end of protective fencing for the springs which caused increased levels of animal damage. This has also affected archaeological assemblages. It has been proposed that the use of artesian bores, and the practice of cutting springs, caused a decrease in the outflow from natural

⁷ This quote was used by Florek (1993, p. 31) who additionally stated: 'It is likely that in pre-colonial times Aborigines maintained the artesian springs by clearing the outflow of water and removing muck (Blackman, L. 1990, pers. comm.)'.

springs and the extinction of many smaller springs (Harris 1981, p. 36). This is supported in this study, which found that many springs used in the nineteenth century are no longer active. For example, figure 2-1 shows an active mound spring at Strangways Springs in the early-twentieth century (as revealed by the rush of reeds at the top of the mound). This compares with a contemporary photograph taken from the same position which reveals that the mound has decreased in height, and is no longer active.

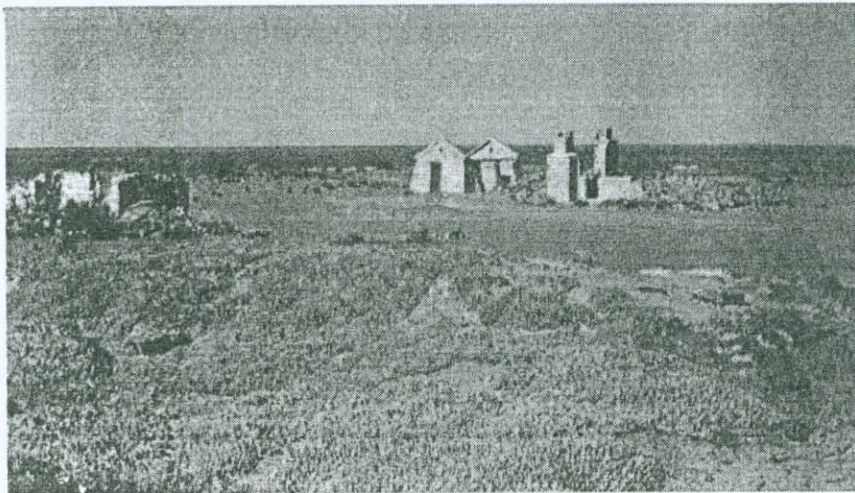
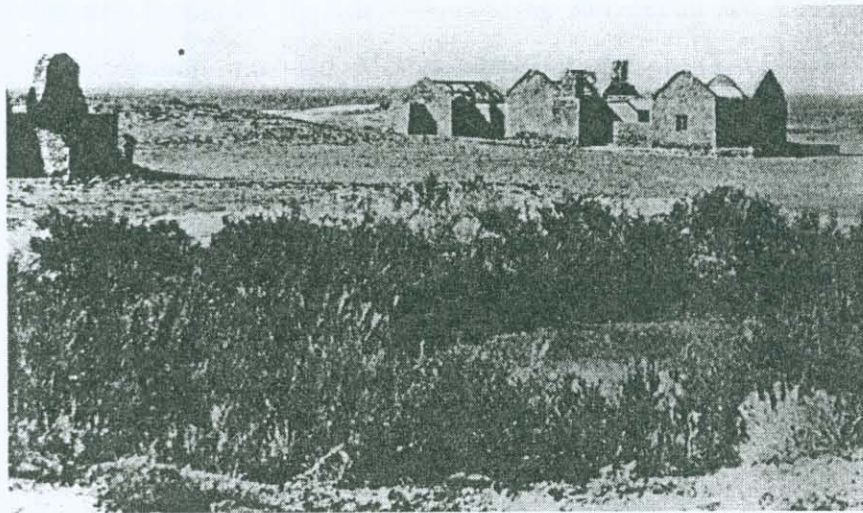


Figure 2-1. Photographs from same position showing changes in mound spring adjacent to Strangways Springs head station over 80 year period. Upper photograph taken in the early-twentieth century; lower photograph taken in 1996.

Background to pastoralism in the region

The European colonisation of mainland South Australia began with the coastal settlement of Adelaide in 1838. By the 1850s pastoralists had moved as far north as the Flinders Ranges. The 'Far North' described the region north of the Flinders Ranges towards Central Australia, an area which was first visited by explorers in the mid-1850s⁸. The pastoral settlement of the far north region in the 1860s followed explorer's descriptions of the potential of artesian springs. Squatters set up large runs which were funded by absentee landlords in Adelaide. During the 1860s the pastoral stations established in the region included Mount Margaret station (The Peake) north of Strangways Springs, and to the east Mt Hamilton, Stuarts Creek, Finnis Springs, Callanna, Mundowdna and Mt Deception (fig. 2-2).

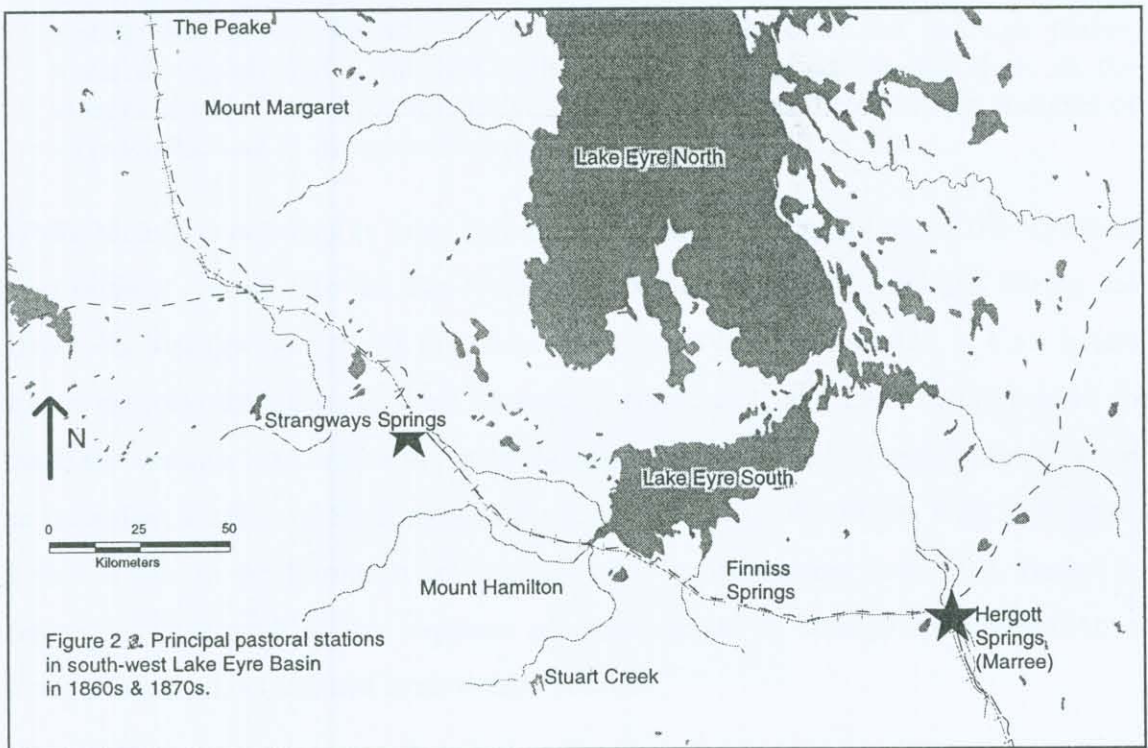


Figure 2-2. Map of pastoral stations in the Far North during the 1860s

The pastoralists soon became aware that the limited pastures near the springs were quickly consumed by sheep and cattle. To keep their flocks alive, they were required to

⁸ John Eyre had visited the region in the 1840s, and claimed to have reached the shores of Lake Eyre South. The next explorer to visit was John McDouall Stuart in 1856.

find other water sources and pastures. During the 1860s a three year drought (1864 to 1867) forced most pastoralists to abandon the region until returning in the 1870s. As will be shown, the pastoralists in the study area managed to survive that drought, and other droughts that followed in later decades. Throughout northern South Australia, pastoralists eventually became dependant on water from artesian bores. Some of the discussion in this thesis is concerned with the evidence for this transition in pastoral practice.

Optimism fuelled the pastoral expansion. Meinig, in *On the Margins of the Good Earth*, discusses the colonisation of the wheat-belt in the Far North:

The great northward stream of settlers could now be likened unto one of those real, erratic, perplexing Australian streams that flowed into the outback: fed by the wet fertile districts, swollen by the good seasons, gathering momentum as it ran swiftly among the ranges, fanning out broadly and thinly onto the saltbush plains, transforming all that it touched with an illusion of goodness and then, as the seasons changed, slowly, ebbing, dying, leaving as far as the outermost margins of its reach the scar of its momentary presence. (Meinig 1988, p. 92)

While Meinig is referring to crop farmers, his analogy is relevant here. The squatters who initially moved into the Far North met extreme weather conditions during the 1860s. At Strangways Springs the pastoralists persevered, as revealed in their letters which describe the depth of their financial commitment, and their determination to make the venture work with the smallest possible financial risk. These letters provide an important account of Strangways Springs station during the 1860s, which occupied a central role in the European colonial presence in the western Lake Eyre Basin. In figure 2-3, I summarise the sequence of events relate to Strangways Springs/Anna Creek station, as determined from written sources.

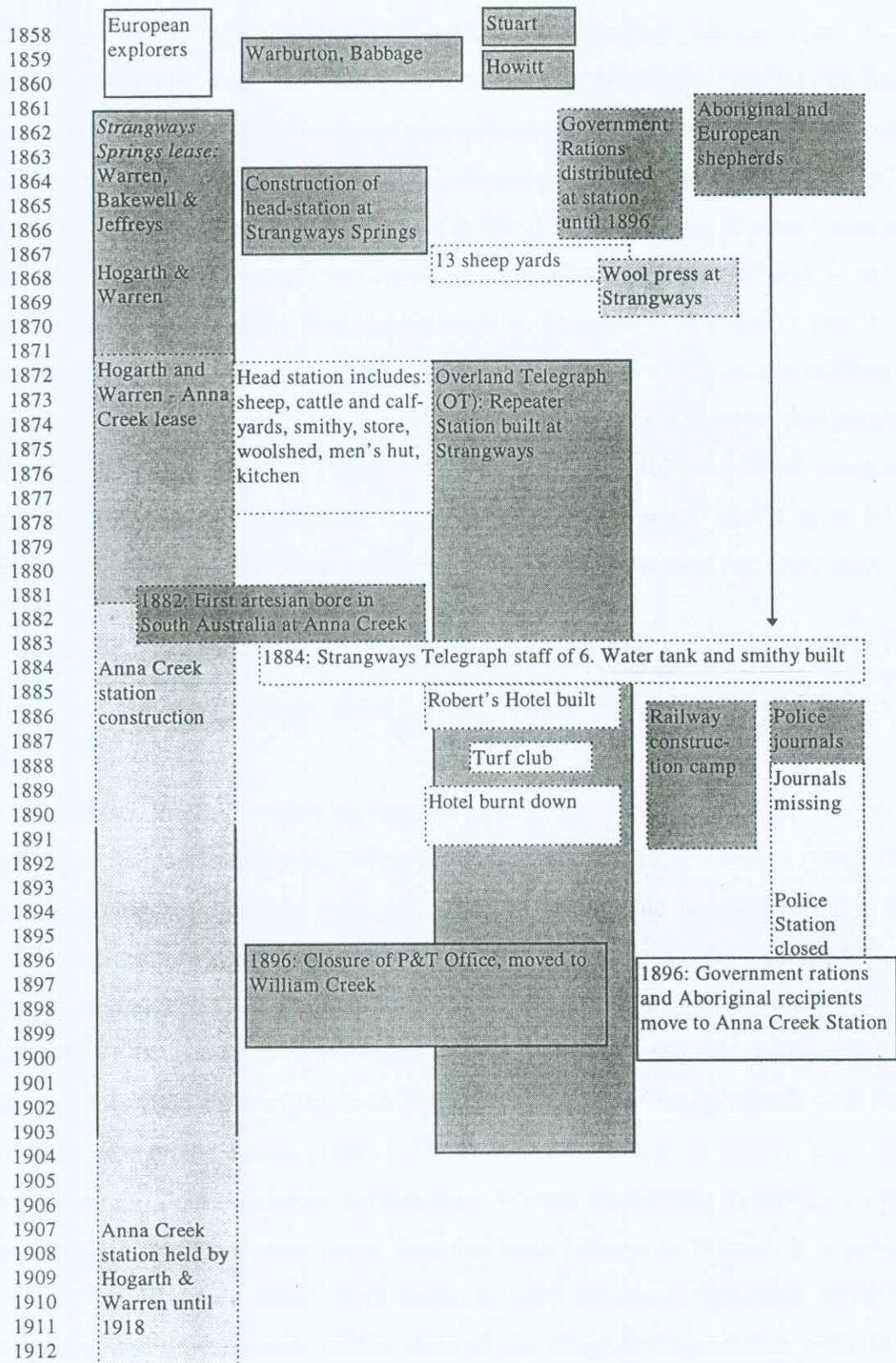


Figure 2-3. Chronology of activity at Strangways Springs indicated in written sources

I will now review the station owners and managers from Strangways Springs station who wrote these accounts, principally: John Warren (senior), his son John Warren (junior), and station managers Julius Jeffreys and John Oastler. John Warren Senior (b.1830, d.1914) was from a renowned pastoral family. His father arrived in the colony in 1838 and established 'Springfield', a pastoral property north of Adelaide, which John Warren inherited in 1873. Springfield is the place where John Warren wrote most of his correspondence, and was the centre for his pastoral ventures. In 1862, at the age of 32, John Warren took up 500 square miles at Strangways Springs, in partnership with John Bakewell and Julius Jeffreys. The annual rent was cheap, at one shilling and sixpence per square mile. The property was stocked with 3,000 ewes, 300 rams, 40 cattle and 20 horses (Pearce 1980, p. 9). On 6 March 1863, the *South Australian Register* described the first stock taken up to the station (at which time Mount Deception Station was one of the most remote European settlements in Australia):

Sheep for the Far North. A letter from Mount Deception dated February 28th, says:- 'Mr Julius Jeffreys has just passed with 3,000 sheep, on his way to his new run at Strangways Springs, about 150 miles north or this'. (MLSA, PRG 21, 28 Feb. 1865)⁹

Julius Jeffreys, the first station manager at Strangways Springs, produced the earliest accounts of the pastoral station. During his three years as station manager (1863-1866) Jeffreys returned to Adelaide only once. He was responsible for establishing a head station at Strangways Springs (SAPP 14/1867, pp. 96-7; SAPP 118/1884, p. 1), supervising workers, finding water and food for the sheep, and constructing buildings and yards. Thirty-one letters from Julius Jeffreys to John Warren written between June 1864 and July 1866 survive (fig. 2-4). The greater number of letters date from Jeffreys' last 12 months on the station (1866-1867). During this period, he wrote a letter nearly every fortnight. Fourteen letters survive from Warren responding to Jeffreys, a much less complete set of correspondence than that from Jeffreys to Warren. It is probable that many of Warren's letters were drafts, as they include a significant number of corrections and amendments, unlike most of the other correspondence used in this

⁹ There are several references to documents from the archival group MLSA, PRG 21. From this point in the thesis, letters by Jeffreys, Oastler and Warren are from this group, unless otherwise stated.

research. Presumably the drafts were for letters which Warren actually sent, and he kept the drafts in his personal papers for his own record.

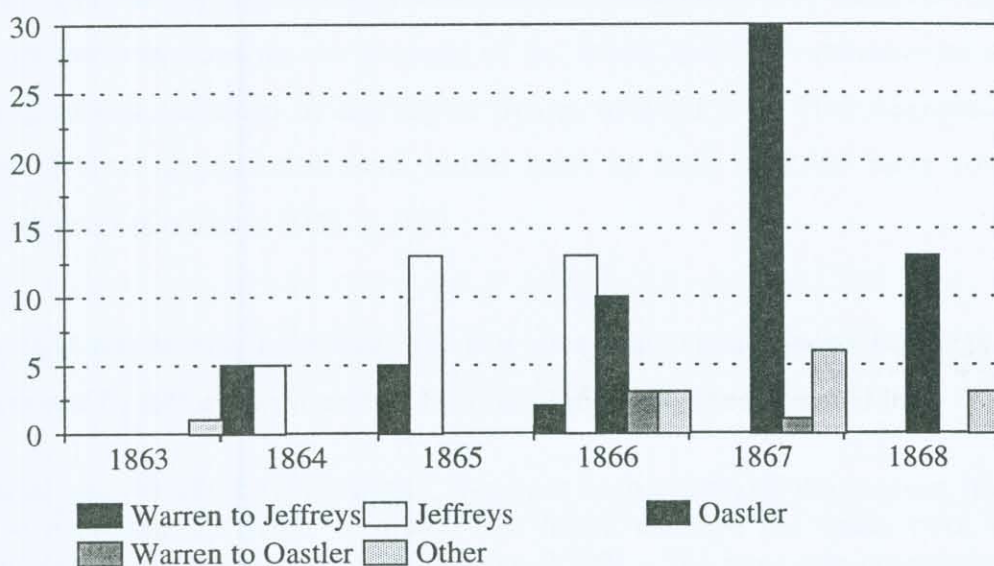


Figure 2-4. Letters selected from the 'Warren Papers' (MLSA PRG 21), by year and author for the 1860s

Warren, Jeffreys and Bakewell were all part of the same colonial pastoral elite. Bakewell was married to John Warren's older sister, Jane. Jeffreys was a friend of the Bakewell family, receiving 49 letters from William Bakewell and his four daughters between 1862 and 1865. When he returned to Adelaide he married one of the daughters. Bakewell's contribution to the station was largely fiscal, as he was not a pastoralist but a crown solicitor. Letters reveal his reservation regarding the financial worth of the pastoral station.

John Warren first visited Strangways Springs in August 1864. There is very little communication in Jeffreys and Warrens letters regarding this visit. His arrival was prior to a severe drought that continued until 1867, ending the rush to take up country north of Port Augusta. The scale of desertion was expressed by Julius' brother, Henry:

It seems a pity that most of the stations have [been] abandoned; The Finnis, Mount Hamilton, Callanna, Stuarts Creek and Mundowdna on which at last there is the finest pasturage. (Jeffreys, H., 3 Nov. 1867)

Strangways Springs was one of the few stations where pastoralists remained during the drought, although it suffered severe losses of stock. Correspondence from Jeffreys and Oastler reveals how they managed the station during this period of extreme stress. As discussed later, an important strategy was to keep expenditure low by using Aboriginal labour as much as possible. An example of the 'boom and bust' character of these squatting runs is indicated by the export figures of wool from Port Augusta. The amount of wool shipped fell from 13,000 bales in 1863 to 6,000 bales for the following years (Cockburn 1925, p. 205).

The drought was broken in January 1866 in a great rainfall that flooded the Far North. As expressed by Jeffreys to Warren in February 1866 many sheep were killed:

I must tell you of 'the great event'. We have been visited by the greatest flood I have ever seen in South Australia. Our losses amongst the sheep have been frightful, they are reduced to 3400 [from 9,300]....We have this consolation to know that this is the only station between here and Port Augusta where there are any sheep alive ... You will see from the enclosed letter [that Braund's] sheep are dead except 130, and that is nothing. Patterson started from town with 2,800, they are all dead, his working bullocks all dead and his rations and all his property destroyed....If Mr Bakewell is still in England send him this letter. I think it will interest him. Give my kind regards to Mrs Warren and your father. (Jeffreys, 1 Feb. 1866)

In a letter to Warren several months later, in June 1866, Jeffreys explained he thought 'it [was] necessary to go to town for a change of air' (Jeffreys, 11 June 1866). On Jeffrey's departure Oastler became the station manager. His ambition was noted by Warren, who had written in October 1864: 'I fancy if Oastler had a little more power of command of respect from men he would not make a bad head overseer. He wants that however very much' (Warren, 21 Oct. 1864). John Oastler had been orphaned in England at age 16, and emigrated soon afterwards to Australia. He worked for John Warren at Strangways Springs station for over forty years, from 1863 until 1908. Fifty-seven letters between Oastler and Warren exist, all written between June 1866 and January 1868 (fig. 2-4). Fifty-three letters are fortnightly reports about the station written by Oastler for John Warren. The Oastler letters represent an almost complete collection of correspondence from June 1866 until 1868. In the same period there are only four letters from Warren to Oastler. Nearly all of these appear to be drafts, so the surviving communication is largely one-sided.

Jeffreys' departure from Strangways Springs in 1866 was a sign of change. In October 1866, Jeffreys and Bakewell sold their shares to Thomas Hogarth, who formed 'Hogarth and Warren'. John Warren had recently married Hogarth's daughter, Margaret. Thomas Hogarth (b. 1815, Scotland, d. 1893), an inventor and advocate of agricultural sciences, had arrived in South Australia in 1839. Hogarth was elected to the Legislative Council in 1866. He served two terms until 1885, representing the interests of the colonial pastoralists.¹⁰

In 1870, Strangways Springs station was entrusted to Thomas Hogarth's son, John Hogarth, 'under whose care and supervision the area was extensively worked and the property greatly improved' (Cockburn 1925, p. 99). The next four decades, until 1912, saw increased expenditure, with '£50,000 in fencing, well sinking, boring, and dam making [spent] until [the station] was capable...of carrying 50,000 sheep, 4,000 cattle, and 2,000 horses' (Cockburn 1925, p. 99). During the 1870s a new complex on the banks of Anna Creek was built as the head station, and some of the existing buildings at Strangways Springs were sold to the Overland Telegraph. During the 1880s construction of the railway a small settlement of workers lived near Strangways Springs, requiring a police presence. T.E. Hogarth replaced his brother John Hogarth as station manager in 1893. By this time the station was over 5,000 square miles in size. While still leased as 'Strangways Springs' the station had become known as Anna Creek Station. In this thesis I use both names to refer to the study area.

By 1891, Anna Creek Station was a 'famous property' (Cockburn 1925, p. 103). The *Pictorial Australian* devoted an article to the station, by then over 28 years old, highlighting the ingenuity of Mr Hogarth in 1882 for sinking the first artesian well in South Australia, and the property's use of bores which 'led the way in a system which is certain to be of vital importance in the development of this Far North country' (*Pictorial Australian* Feb. 1891, p. 30). John Warren was recognised as a great pioneer squatter, in particular for the perseverance he showed in keeping Strangways Springs stocked during the drought of 1864 to 1866. Although, this 'perseverance' resulted

¹⁰ An emphasis of legislative power to the 'squattocracy' was common to many nineteenth century colonial administrations in Australia.

from a decision by the partnership to keep the station running at a very low cost in an attempt to minimise their losses. Warren was a member of the Legislative Council for 25 years, where he was a legislator for pastoral interests and served on a Parliamentary Commission into the pastoral industry. That commission, in 1891, found that the 'Far North' of South Australia was a pastoral region in decline. This was seen to be a result of the high freight costs (even after the construction of the railway), rabbit plagues, and the continued overestimation by pastoralists of the potential of the artesian springs for supporting stock. John Hogarth stated that by 1891 he had spent £80,000 on Anna Creek station on fencing and well sinking, yet both he and Warren felt they had made very little profit in the 25 years (SAPP 77/1898-99). However, 'Hogarth and Warren' developed into a pastoral empire in northern South Australia. The descendants sold Anna Creek Station to Malcolm Reid and Leslie Taylor in 1918. Later it was sold to Sidney Kidman. It remains leased by Kidman Holdings and is one of the largest pastoral leases in Australia.

Written sources related to pastoralism

The most comprehensively used documentary sources were letters from station managers and owners of the pastoral settlement at Strangways Springs (MLSA, PRG 21 The Warren Papers). The bulk of which were restricted to the 1860s. The collection of letters is not complete. It is possible that the family removed material which they did not wish to have archived. However, for the period between 1864 and 1868, it is a valuable collection of written accounts of one of the earliest pastoral properties in arid Central Australia. In particular, the 84 letters from Jeffreys and Oastler provide insight into how the station managers attempted to maintain the pastoral venture during extreme drought, flood and the limitations of the remote station. Importantly, they also write about the Aboriginal people who they encountered during that period, and record what some Aboriginal people did on the station. From 1863 until 1868 John Warren controlled the finances and was the final authority on the station. By contrast, the collection of Warren papers contains few personal letters from the 1870s onwards. It appears that the number of papers relating to Strangways Springs station kept by John Warren declined after 1868, when the Hogarth family became increasingly involved with the station.

Another written source describing Aboriginal people in relation to Strangways Springs station is an address given by John Oastler in 1908 to the Justices Association in which he reflected on his career. This was published in *The Honorary Magistrate* as 'Administration of Justice in the Back Blocks' (transcribed in appendix D.) Oastler was appointed Justice of the Peace in 1871, and served in that capacity for 37 years. Importantly, his speech focussed on the 1860s, the same period covered in his earlier letters to John Warren. His speech included many observations of Aboriginal life at Strangways Springs Station, and is an important corollary to the letters written by Oastler forty years earlier. The reason that his speech focussed on this time and place was perhaps to please his audience. Oastler provided exciting stories of frontier life. He cited a poem by the Rudyard Kipling (which prefaces chapter 7) to describe himself as a 'pathfinder'. His dramatic explanation of the early years of the frontier began:

[A] man...carried his life in his hands. I have been surrounded as it was with half savage and very aggressive natives, who not only resented the approach of the white man but looked upon his herds and flocks as his, to provide him with food better than he had been accustomed to, and save him the hitherto trouble of hunting for lizards, snakes and rats, and bruising into meal a few seeds and berries of native plants. To break these wild tribes into something like obedience, and to teach them the law of ownership and property, and that their laws must give way to the white mans' law, were the most difficult task - today nothing is known of the trouble we had of instilling into them that the white mans' was not only superior, but that they must serve him, do his bidding, and observe his laws, and that then they themselves would be better for it. (Oastler 1908)

This recollection provides a far more comprehensive expression of colonial intention than that suggested in the letters written by Oastler during the 1860s. This quote expresses a colonial attitude of white superiority over indigenous people. Oastler describes himself as a colonist who, after having lived most of his adult life with Aboriginal people, represents the 'bloodless conquerors, of a vast domain' (Oastler 1908). Oastler's 1908 account relies on several long anecdotes, some of which cross-reference with events described in his 1860s letters. Thus, the authenticity of the stories seems secure. The credibility of this account has to be carefully considered. It would be safe to assume that Oastler is proud of his hard-working life, and his status as a 'bush magistrate' - he would not say anything to jeopardise that. This speech also provides insight into public opinions held by the settlers as they were in 1908, not just the 1860s.

Another important and unpublished written source used in this thesis is *The Four Warrens: 1838-1930: Recollections of Pioneering in Australia (by Number Three)*, held as a manuscript at the National Library, Canberra (NLA, MS 6120, Warren). This text was written by the son of John Warren, hereafter referred to as John Warren Junior. His recollections of station life describe station life during the 1880s when he worked at Anna Creek station for 'Hogarth and Warren', managing the sale of beef to the railway construction workers. His manuscript does not often refer to Aboriginal people, except those he met as a young boy. The primary contribution of the manuscript to this thesis is that it describes the station during the 1880s and 1890s, a period from which no personal letters survive. Certain inaccuracies occur in this manuscript. For example, he describes personal discussions with an Aboriginal man Tilbrook, which actually occurred between John Oastler and Tilbrook. I interpret this as resulting from an attempt by him to construct a cohesive narrative. Through cross-referencing this manuscript with events described in other sources the authenticity of the account is secured. Where I have used John Warren Junior's references to Aboriginal people, they have been verified by other written sources, to maintain credibility. In chapter 7, I use the settlers' written accounts to examine the evidence for Aboriginal people and their lives in relation to Strangways Springs station.

Chapter 3. Review of related research

Introduction

This chapter defines the approach adopted in this study through a survey of related current research. The review primarily draws on research within archaeology, however, I also refer to literature in the fields of history, anthropology and geography. This situation is most apparent in the first part of this chapter where, as the thesis specifically considers Aboriginal-European interaction in relation to nineteenth century pastoralism in the study area, I review current literature related to studies of Aboriginal people's role in Australian pastoral contexts. The review continues by evaluating studies of culture-contact, primarily reviewing literature from North America, South Africa and Australia. The final section summarises literature describing archaeological evidence for Aboriginal settlement in the study area; and overviews Australian historical archaeological research into semi-arid pastoral contexts similar to those reported in this study. The literature reviewed here is, of course, restricted and represents only some of an increasing number of publications dedicated to contact studies (*see* Thomas, D.H. 1989, 1990, 1991; Rogers & Wilson 1993; Gosden 1997), the use of supplementary evidence in historical archaeology (for example Beaudry 1988; Leone & Potter 1988a; Little 1992; Rogers & Wilson 1993; Small 1999a; Funari, Jones & Hall 1999; Johnson 1999) and landscape approaches in archaeology (Hirsch & O'Hanlon 1995; Ucko & Layton 1999). The issues raised here are pursued in later chapters.

Studies of interaction between Aboriginal people and pastoralists

The central topic of this thesis is indigenous people's interaction with pastoralists in the study area. This thesis builds on a body of research into cultural interaction in Australian pastoral contexts, the majority of literature to date written by anthropologists and historians. This review takes the writing of Rowley (1970, 1971) as a starting point, when Australian studies were demonstrating an increasing interest in Aboriginal life following European settlement/invasion. Rowley's contribution to Aboriginal history was to illustrate aspects of indigenous people's resistance to

European colonialism, and that the 'contact' period was far from peaceful, but characterised by violence (Rowley 1970). The decade following this saw increasing interest in Aboriginal histories; for example, as demonstrated in the writings of Reynolds (1972) and Beckett (1978). These studies highlight the increased of research. Using as his primary subject George Dutton, an Aboriginal drover, Beckett (1978) developed his earlier anthropological research (Beckett 1958) to demonstrate how Aboriginal people 'made the adaptation to pastoral settlement [by] grafting the institutions they valued onto station life' (1978, p. 6). The adaptive element of indigenous strategies to the presence of pastoralists provided an alternative to Elkin's (1951) earlier term 'intelligent parasitism', which bore 'unfortunate overtones' (Beckett 1978, p. 6). Beckett used evidence from mid-twentieth century western New South Wales to demonstrate that 'the pastoral industry, in New South Wales as elsewhere, could not have survived recurrent droughts, recessions and labour shortages without Aboriginal help' (Beckett 1978, p. 6). He termed the pastoral system 'internal colonialism', that is, 'a regime that preserves traditional institutions in order to maintain a supply of cheap labour' (Beckett 1978, p. 6).

Reynolds' *Aborigines and Settlers* (1972) was the first of several books by the author which were to make a significant contribution to studies of Aboriginal life following European settlement. Relying on historic source documents and oral histories for his analysis, Reynolds demonstrated the contribution of the discipline of history to an examination of Aboriginal society and colonial contexts. Reynold's frontier model relied on Aboriginal selection of aspects of new cultural material and technology, described as 'intelligent adaptation'. Recently, Kociumbas (1998, p. 41) criticised Reynold's use of the term 'frontier', as it presented a 'model of two equal, unified cultures' for whom colonialism was inevitable: 'Reynolds borrowed the old radical nationalist's concept of the 'frontier', transforming this into a kind of natural, neutral, structural zone where ideally, competing 'cultures' were said to 'interact', came into 'contact' and find new equilibrium through 'continuity' and 'change'' (Kociumbas 1998, p. 40). However, studies cited here demonstrate an increasingly flexible use of 'frontier' (see Rose 1998 below). Reynold's writing promoted a widespread recognition of revisionist studies of colonial era interaction throughout Australia (Reynolds 1978, 1983, 1989, 1990). Additionally, he called for increased diversity in

the sources used to examine to contact period (Reynolds 1994), including the use of archaeological evidence. By revealing the diversity of culture-contact contexts Reynolds provided, according to Murray, 'a great fillip to contact archaeology as well as contact history' (Murray 1993, p. 505).

Following Beckett (1978) and Reynolds (1972, 1990) several important studies highlighting Aboriginal people's 'intelligent adaptation' during contact focussed on Aboriginal labour, where indigenous people were described as making active choices, as demonstrated in studies of the pastoral industry. Rowse's (1987) *'Were You Ever Savages?' Aboriginal Insiders and Pastoralists' Patronage* is important to this thesis, for several reasons. Rowse uses historic documents, ethnographic observations, and oral histories to describe the decisions made by Aboriginal people who became allied with the pastoral industry in the Kimberleys, Western Australia, during the late-nineteenth and early-twentieth centuries. His research demonstrates the role of Aboriginal intermediaries between two cultural and labour systems. This societal distinction was structured as 'inside' and 'outside', with the inside position centred on the pastoral domain. Aboriginal labourers were divided into two groups: one group who regularly provided labour; and another group of long-term workers known more familiarly to the pastoralists, and described as 'servants' and 'trusted lieutenants' (Rowse 1987, p. 82). Rowse describes how the insider/outsider distinction was maintained by Aboriginal insiders: 'As the eyes and ears of the white pastoralists, the Aboriginal insiders had discretion in drawing the boundary between the safe inside and the dangerous outside of the pastoral order' (1987, p. 87). This condition finds parallels in this research, as described in relation to constructions of 'wild' versus 'station' Aboriginal people; as does the role of rationing in exchange for Aboriginal labour as described by Rowse. He later argues that rationing was a management technique 'learned' throughout Central Australia, and was an essential early stage of assimilation, which would see the transition from the rationing of goods to establishing a cash exchange system during the early to mid-twentieth century (1998). Rowse's writings demonstrate that: 'Rationing was a pervasive institution of Central Australian colonialism' (1998, p. 4), encompassing pastoralists' rationing in exchange for Aboriginal labour, and more widespread government rationing regimes.

Rowse describes a pastoral system based within 'the lasting ideology of pastoral responsibility...and cognate...with some Aboriginal nurturant traditions' (Rowse 1987, p. 97). The evidence for the pastoral order as an 'enclave of stability' provided a departure from generalist interpretations of colonial interactions as existing solely in a 'landscape of terror' (Rowse 1987, p. 82). This research into pastoralism contributed to earlier work by May (1994), which described colonial interactions in Queensland, and the relationship between Aboriginal labour and the cattle industry. May describes how early hostilities were replaced by selective use of Aboriginal labour (in exchange for rations). In this context, Aboriginal people provided a seasonal and inexpensive workforce.

Two other studies from northern Australia of indigenous interaction with pastoral domains are McGrath's (1987) *Born in the Cattle: Aborigines in Cattle Country* and Rose's (1991) *Hidden Histories: Black Stories from Victoria River Downs, Humbert River and Wave Hill Stations*. McGrath's research uses oral histories to stress the two-sided character of interaction between pastoralists and indigenous peoples, describing the mutual attempt by each group to exploit each other. According to McGrath Aboriginal people 'incorporated cattle life into their world, consciously adapting and integrating it' (McGrath 1987, p. x). Using historic sources and oral testimonies, McGrath documents a brief, violent period where Aboriginal people defended strategic centres (such as water resources) from the white pastoralists. She also documents labour relations, the distinction between men's and women's work, and Aboriginal women as sexual partners for white pastoralists.

Recent anthropological research by Rose (1991), also documents the post-European settlement history of the pastoral industry in northern Australia. Rose's research used Aboriginal oral histories to demonstrate the ways that working life on northern Australian cattle stations in the twentieth century did not necessarily conflict with the obligations of Aboriginal cultural and social life, rather inviting creative responses with new forms of ceremonial life and technology. Importantly, Rose demonstrates how the seasonal nature of station work has the positive result of allowing people to 'go bush' during the wet season, allowing time to maintain social and culture life. The evidence for seasonal aspects to Aboriginal-pastoral interaction in my research is

reviewed in chapter 8. The benefits of the wet season, in assisting the maintenance of Aboriginal life in the contact period, are also recognised by Head and Fullagar (1997). Rose's (1991) description of early contact in the Victoria River region (from 1890 onwards) accords with McGrath (1987), showing it to have been extremely brutal.

A more recent paper by Rose (1998) deals not with cultural interaction in pastoral domains, but with late-nineteenth century intercultural encounters between missionaries and Aboriginal people at the Daly River Mission. This research is important for its use of the term 'frontier' and evidence of how environments are negotiated between groups in contact. Rose describes culture-contact as a two-sided engagement in which each party attempts to socialise the other. With implications for this thesis, Rose focuses on how participants in cultural contact (in this case) share many of the same resources in the environment. In her study, Rose uses the missionaries' diaries to reveal how dependant the missionaries were on foods collected from the local region, and how this reduced food abundance in the locality. The inability of the missionaries to provide food all year meant that Aboriginal people at the mission maintained links with kin outside the mission, in order to ensure regular access to food. Rose shows the ways that the mission, and all the occupants were linked into wider social networks. Rose's use of the word 'frontier' is similar to way used in this thesis; where 'frontier' refers to a frame of reference for her study, and reminds that frontiers are also people's homes, yet does not imply a simple division of the world into two opposing groups (which responds, in part, to the position argued by Kociumbas above).

Watson (1998) uses biographies as data to examine pastoralists' perceptions of the European assumption of the country of Karuwali people in western Queensland, during the mid to late-nineteenth century. Unlike this study, in which the written sources are primary documents presumably never intended for publication, Watson's sources are all biographical.¹¹ Watson's research is relevant as the analysis of historic documents conducted in chapter 7 agrees with some of her description of a similar historic period

(mid-nineteenth century onwards); that is, her analysis illustrates how the pastoralists recognised the valuable contribution of Aboriginal labour. These pastoralists sometimes described the land as being Aboriginal, and described the continuity of some elements of cultural and subsistence life on these stations. However, using only historic sources, Watson is unable to move far beyond the 'homestead' as the centre of the pastoral domain. Watson's analysis demonstrates how the colonists attempted to mythologise the contact era in their writings. In this thesis, this is apparent in Oastler's (1908) recollections.

The study area in this thesis is positioned between two distinct colonial phases: early to mid-nineteenth century pastoral settlement throughout south-eastern Australia, and the late-nineteenth and early-twentieth century contexts described here for northern Australia. The low profile of understandings of Aboriginal involvement in pastoral enterprises in south-eastern Australia (as opposed to cattle stations in northern Australia) is raised by Davidson (1994), an economist, who describes the development of the pastoral industry in Australia during the nineteenth century. Using historic documents as evidence, Davidson focuses on New South Wales, where he states that Aboriginal people were 'reluctant to herd sheep and were seldom employed to do so' (1994, p. 89). This is not supported from the evidence presented in this thesis, which may suggest regional differences, or be a characteristic of the source documents texts Davidson used. Davidson suggests that the practice of providing Aboriginal people with food, but not wages, discouraged Aboriginal people from working. This runs contrary to evidence presented in this research, and from Rowse (1987, 1988, 1998), which see the regimes of provisioning Aboriginal people as having multiple results, one being to establish an Aboriginal work-force in colonial contexts. Rowse argues succinctly that the value of rationed commodities would have surpassed the value of cash in pastoral hinterlands (Rowse 1998), at least in the initial years of pastoral settlement. These issues are explored in chapters 7 and 8, where I present evidence for a far greater indigenous involvement in pastoral economies than that described by Davidson.

¹¹ There are two exceptions to this statement. The speech delivered to the Magistrates Association by John Oastler (1908), and the manuscript *The Four Warrens*, written by John Warren Junior. Both documents provide retrospectives of the study area in

Current Australian studies of culture-contact reviewed in the next section (Allen 1969, Birmingham 1992, Clarke 1994, Mitchell 1994) to date have not focussed on pastoral contexts, the exceptions being Murray (1993) and Head and Fullagar (1997, 1999). Another exception is archaeological research into the mid-nineteenth century Kinchega homestead in western New South Wales, where evidence for Aboriginal settlement in relation to the pastoral head station has been recorded (Rainbird, P. 1997, pers. comm.). An examination of archaeological studies of pastoralism in Australia suggests how little the issues described here have been explored in relation to material remains of pastoral industries. In fact, the small amount of archaeological research into pastoral contexts has had an utterly different research agenda to that described above. Archaeological research has focussed on the timing of technological changes (Cummins 1989), and material remains related to pastoral activities, for example shearing and wool-washing (Connah 1977; Pearson 1984). A recent Commonwealth publication (Australia ICOMOS 1995; Forrest 1995; Walker 1995) argues that research into the material remains of pastoral industries, should also include increased research into the interpretation of the role of Aboriginal participants in pastoral industries.

However, few archaeological studies have attempted to explore pastoralism in terms of a place and system of cultural interactions between Australian Aboriginal people's and European settlers, with the exception of Head and Fullagar (1997). Head and Fullagar (1997) have recently outlined some directions for an archaeology of hunter-gatherer and pastoral interaction. Many of their points find resonance with the evidence presented in this thesis. Head and Fullagar use archaeological and ethnographic evidence from the Kimberleys in north-western Australia, a region of pastoralism since the late-nineteenth century. They suggest that evidence of settlement location, rock art, stone tool assemblages and plant use can be used by archaeologists to examine differences between pre-contact and contact periods. An important point made in their paper is that the archaeological record can reveal abrupt changes at contact, with the introduction of new material culture and technologies, and changes in settlement location. Such change needs to be tested by other evidence, before being equated with

nineteenth century from early-twentieth century perspectives.

abrupt social change. For example, in the Kimberleys there is evidence for a strong continuity of Aboriginal attachment to places and people following contact. Drawing on research by K. Mulvaney (1996), the authors suggest that post-contact art traditions should not necessarily be only defined by the presence of images of elements of post-contact life, such as introduced animals. Rather there were strong continuities in the design and location for rock art as practiced by pastoral labourers with pre-contact art. Head and Fullagar are describing how rock art is used by Aboriginal people to reaffirm cultural traditions and attachment to places. The archaeological studies reviewed here demonstrate the potential of interpreting the contact period in relation to pastoral domains.

In their study, Head and Fullagar describe the difficulty in isolating post-contact settlement patterns from pre-contact. They propose that changes in items, material and relative ratios in archaeological assemblages at contact could be used to demonstrate contact period changes in trade, access to resources and subsistence patterns. They provide an example of stone tools, citing how the increased demand for a specific type of tool, 'Kimberley points', may be apparent in tool making assemblages. The authors describe how the pastoralists' provision of rations resulted in increased amount of consumption of foods provided by Europeans. This had the general effect of decreased reliance on bush foods, which the authors suggest would have an archaeological correlate in foraging and hunting tool kits. This study makes an important contribution to this thesis, as similar evidence is used in my research to consider a range of questions about the contact period. Importantly, Head and Fullagar's paper suggests that interpreting the contact period requires focusing on long-term transformations in a range of aspects of Aboriginal life, and by using several types of different data. This approach is mirrored in my research, which focuses on settlement and subsistence patterns, evidence for inter-regional exchange, technological adaptation and continuity. The importance of Head and Fullagar's (1997) paper is in supporting systematic studies which aim to critically examine the links between archaeological and non-archaeological evidence, by focussing on continuities and change over time as revealed by different forms of evidence. I pursue this point in relation to the results of this thesis in chapter 8.

A primary difference between this thesis and Head and Fullagar's article, is the relative absence of oral testimony in my study. In northern Australian contexts, where the period of contact is often little over a century old, research has focused on the life stories of Aboriginal people who lived and worked on pastoral properties in northern Australia during the late-nineteenth and early-twentieth century. However, very little research has been conducted on pastoral-indigenous interaction in earlier nineteenth century contexts. The pastoral settlement at Strangways Springs represents the first prolonged interaction between settlers and the indigenous people of the south-western Lake Eyre Basin and was an early step in the continent wide assumption of Aboriginal country by pastoralists. Some Aboriginal people's oral histories from the study region were documented by Shaw (1995) in *Our Heart is the Land: Aboriginal Reminiscences from the Western Lake Eyre Basin*. Nearly all the oral history compiled by Shaw is associated with twentieth century events. Consequently, to interpret the period before 1920, Shaw relies on historic written sources. However, the stories compiled by Shaw demonstrate that Anna Creek Station (the subject area) was acknowledged as a centre for Arabana culture for much of the twentieth century. They also demonstrate how the twentieth century brought great change to Aboriginal people with migrations into and out of the Lake Eyre Basin, increasing government involvement in Aboriginal life, and epidemics.

An important contribution to this study is Rose's (1991) and Rowse's (1987) attention to the pronounced seasonality of Aboriginal pastoral labour in northern Australia. This notion was developed by Head and Fullagar (1997), who describe a contact period landscape which accommodates both pastoral and hunter-gatherer seasons of settlement and subsistence. To support this the authors demonstrate that during the wet season, when there is little opportunity for pastoral work, there is an correlating increased occupation of rock-shelters in remote locations. The notion of seasonality in southern Australian contexts is argued in the present study, using the seasonal participation of Aboriginal people in punctuated pastoral labour, such as wool-washing and lambing.

In summary, my research follows from existing studies into Aboriginal involvement with pastoralists reviewed here. An important contribution of this thesis is the use of

archaeological evidence, particularly given the scarcity of similar archaeological research in Australia, with the exception of Head and Fullagar (1997, 1999). I make particular use of Rowse's work (1987, 1988, 1998), and build on his work and others (Rowley 1970, 1971; Reynolds 1972, etc; Beckett 1978; McGrath 1987; Rose 1991; May 1994; Watson 1998) by using archaeological and documentary evidence to demonstrate in this study:

- a) The importance of rationing by pastoralists in their gaining access to permanent and seasonal Aboriginal labour.
- b) That the pastoralists perceive of Aboriginal people as insiders/outsideers to the pastoral domain.
- c) The importance of Aboriginal labour in the success of early pastoral industries.
- d) The spatial organisation, and material correlates, of Aboriginal and European life in the early contact period.

Another important point demonstrated in this review is that the study period for this thesis (1860 to 1900) slightly predates studies of late-nineteenth and early-twentieth century pastoral-indigenous interaction, which as shown here, are largely restricted to central and northern Australia. This small difference is significant, as these studies focus on aspects of cattle pastoralism. As shown in chapters 5, 7 and 8, the pastoral industry based at Strangways Springs was based on sheep husbandry, which is differently organised, both spatially and in terms of labour demands, to cattle industries. This has implications for people's work and settlement during the contact period. In this respect, the study is situated at the extremities of the sheep industry based throughout south-eastern Australia, even though being located in within arid Australia.

Culture-contact studies

Culture-contact studies have been described as facing an 'explanatory dilemma' (Leonard 1993), for being provided with a range of explanatory frameworks of culture change, yet failing to develop an overarching model suitable to contact period studies. Whether this would be particularly healthy for contact studies is not the debate here. It is hardly surprising that studies of culture-contact provide a focus for theoretical dilemmas, being the meeting place of historic and prehistoric approaches, and provided with multiple strands of potential evidence (archaeological, historical, oral historic and ethnographic sources). Additionally, analysis using historic sources and ethnographic evidence has demonstrated that cultures interact in complicated ways, characterised by diverse interactions, and changing in quality at different rates over time. This correlates to a wider rejection of unilineal explanatory models, in particular acculturation, in archaeological studies of culture-contact. This model has been criticised for been perceived as ignoring variation, and minimising the role of indigenous strategies (*see* Deetz 1978; Birmingham 1992; Wilson & Rogers 1993). Whether such rejection is entirely appropriate is not the subject of this review. Rather, the approach adopted in this thesis is that, ideally, explanatory models interpreting culture-contact must accommodate differential rates and forms of interaction, and plural expressions of agency (both indigenous and settler). In a recent culture-contact study Clarke eschewed '*no universal unifying theory of contact*' (Clarke 1994, p. 11, emphasis mine). Similarly, rather than focus on a model which seeks to incorporate the ways of contact period interaction I seek no single model, such as centre and periphery, assimilation, acculturation, creolisation, or dominance and resistance, to explain the evidence in this thesis. Instead, I adopt a pluralist approach which attempts to highlight continuity and change over time. This confirms with positions advocated by Stahl (1993, 1994), Clarke (1994), Lightfoot (1995), Head and Fullagar (1997, 1999) and Murray (1996) and reviewed here. I consider that processual or evolutionary approaches to contact may mask the enormous diversity of human experiences of contact.

This thesis follows a trajectory within culture-contact studies (for example Trigger 1981, 1982a, 1982b, 1985, 1990; Fitzhugh 1985; Kirch & Sahlins 1992; Wilson &

Rogers 1993; Lightfoot 1995; Schrire 1995) which views culture-contact as being more than one-sided, and attempts to move beyond Eurocentric interpretations. That is, indigenous people's agency, explanations and strategies are understood to, in part, define the character of sustained culture-contact with non-indigenous people. Culture-contact studies interpret local expressions of indigenous agency, colonial practice and cultural interaction. In that regard, this thesis provides a local case study of culture-contact.

The studies reviewed here provide an overview of the diversity of research and approaches to culture-contact studies; most of the literature describing archaeological research. They are important in the context of my research, as they contextualise approaches which underpin my theoretical and methodological approach. The principle aims of this review of literature related to culture-contact studies are:

- a) To introduce existing approaches to contact period studies, relevant to this study. In particular, I highlight the different ways archaeologists utilise supplementary evidence (primarily written historic sources) in their research.
- b) To consider the contribution of prehistoric and historic archaeological approaches to contact studies.
- c) To highlight the role that measurements of continuity and change (sometimes termed 'transformations') through time play in studies of culture-contact. This highlights the contribution of approaches which consider multiple sites of contact in terms of landscapes.

The increased recognition that interaction between cultures in contact was complex, and bound into the forces that drove western imperialism as much as the social forces which dictate cultural decisions, derives from work such as Wolf (1982), Trigger (1982b, 1990) and Fitzhugh (1985). Wolf's (1982) *Europe and the People Without History* is important to culture-contact studies as it highlighted the wealth of indigenous-colonial interaction resulting from European expansionism. Wolf's central subject was the interaction of cultures, and the social and economic changes that arose from colonial interactions, for example, from the slave trade, or, from fur-trading in Northern America. His work synthesised existing research, including archaeology, to include 'the people without history' in his study, namely indigenous people and less

literate minorities. The global network described by Wolf, were what Wallerstein (1974) described as 'world systems theory', a framework sometimes used to explain the contact period in terms of imperialism being driven by capitalist expansion reacting to product demands of wealthy countries. A difficulty posed by this approach, is that the theory does not seek to explain individual agency, nor the role of material objects by societies. Global approaches, then, need to be tempered by interpretations of how goods were used locally over time. World systems theory has rarely been used to interpret Australian contact contexts, however Jeans, in an overview of world system theory, describes Australian colonisation and economic growth, comparing Australia to other 'peripheral' countries characterised by high wages and an internal bourgeoisie which overthrew the landowning gentry (Jeans 1988, p. 59). Jeans' analysis recognised that Aboriginal people 'provided cheap labour for adjacent capitalist areas' (Jeans 1988, p. 61), yet did not situate this in a longer history of fluctuations in labour.

Contact studies focussing on indigenous agency and strategies has seen a move away from monolithic explanations to more complicated notions highlighting 'rational and strategic indigenous response to contact' (Clarke 1994, p. 471). In this respect, Trigger's (1981, 1982a, 1982b, 1990) work represents an important theoretical direction within culture-contact studies. Trigger suggested that the contact period can be interpreted as being initially structured by cultural traditions, but that over time indigenous behaviour was increasingly characterised by rational decisions. Trigger was not suggesting that indigenous people's earlier decisions were irrational; rather, that early contact between people's could only be understood from each people's existing cultural perspective, a situation which would change as the contact process continues. An example of this condition is provided by Sahlins' (1981, 1985) interpretation of Hawaiian people's response to the arrival of Captain Cook in 1779. Cook's death at the hands of the Hawaiians was described by Sahlins as resulting from the Hawaiians interpreting Cook's arrival as the arrival of the god, Lono. By returning to Hawaii, Cook failed to act like Lono, resulting in the Hawaiian's response (Sahlins 1985). Trigger represents a move away from simple models of culture-contact, typified by acculturation models, to more complex models which recognise the potential for indigenous and settler strategic responses to contact.

An important feature of contact studies concerns the difficulty of interpreting the value placed on goods by different cultures, particularly during earlier exposure to new goods. The role of materiality in culture-contact is complicated, as suggested by Thomas, N. (1991, 1996) and Denning (1980, 1992, 1996), whose studies demonstrate that interaction, both between people, and between people and objects, is culturally bound. Both authors demonstrate that material culture, like other aspects of culture-contact, differs in being understood and rationalised by local people. Similarly, Sahlins' (1981, 1985) study of Hawaii at contact demonstrates the ways that each 'side' in initial cultural contact rationalises the other within their own cultural parameters. This important element of culture-contact, namely how each group may have rationalised the other, is developed by Thomas, N. (1991, 1996).

Another important aspect of culture-contact studies results from the introduction of diseases and introduced species, which have been shown to have significant social and physical affects. Crosby's (1986) *Ecological Imperialism* highlights the results of colonising humans for each other and environments. In particular, Crosby shows that colonists introduced foreign fauna and flora (not always intentionally) which caused irrevocable changes. Ramenofsky (1987, 1996) shows how viruses and bacteria which were relatively harmless to Europeans, became virulent pathogens at contact, often causing massive indigenous depopulation preceding the physical presence of European settlement. Contact studies describing biological impacts have to date been largely confined to the Americas (Doybyns 1983; Dunnell 1991) and Africa (*see* Schrire 1995). Similar research into this important area in Australia has been rare, although historic documents describe the affects of contact period epidemics. An exception is Dowling's thesis, which revealed that introduced diseases preceded a European presence in the Riverland of South Australia. He proposed this resulted in population collapse, and caused subsequent conflict between Aboriginal groups (Dowling 1990). The greater susceptibility of Aboriginal populations to disease remained a feature of colonial period. For example, an influenza virus in 1919 caused widespread loss of life in the study area (Basedow 1920).

A consequence of work such as Trigger (1982b, 1990) and Fitzhugh (1985) has been an increased number of contact studies in archaeology. Studies contributing to the

approach adopted in this study are reviewed here. They are geographically diverse: including North America (Spector 1993; Lightfoot 1995), Mexico (Gasco 1992, 1993), Hawaii (Kirch & Sahlins 1992), Africa (Stahl 1993, 1994; Schrire 1995), and Australian examples (Allen 1969; Birmingham 1992; Murray 1992, 1993, 1996; Clarke 1994; Mitchell 1994; Head & Fullagar 1997, 1999).

An important study to this research is Gasco's study of European-Indian interaction demonstrated at Ocelocalco, a village on the Pacific coastal plain in the southern Mexico (Gasco 1992, 1993). Gasco's research demonstrates how the contact period varied significantly from place to place, in this example affecting Indian communities not necessarily in physical contact with the colonists. The archaeological evidence from Ocelocalco reveals that during the sixteenth to eighteenth centuries a diverse range of material culture from European origins was being widely traded through the region, and were being used by villagers. However, the new material was used in similar ways to local items. For example, metal was used to make tools similar to those made locally in stone. Gasco's study is relevant to this thesis because it demonstrates that indigenous people adopt new material culture, yet adapt new commodities in response to existing technologies and societal needs. In a similar way in this study, glass was used by Aboriginal people to make flakes similar to tools made from stone. Gasco's study is relevant to this thesis because she uses supplemental evidence in addition to the archaeological data, like most of the other studies cited here (Birmingham 1992; Murray 1993; Spector 1993; Stahl 1993, 1994; Clarke 1994; Lightfoot 1995; Schrire 1995). Gasco used documentary evidence. Finding that the different evidence often contradicted each other, Gasco attempted 'to arrive at conclusions that can accommodate both the archaeology and written records' (Gasco 1993, p. 164).

Another important study of the contact period is Spector's (1993) *What This Awl Means: Feminist Archaeology at a Wahpeton Dakota Village*. Using archaeological evidence from a village site in Minnesota occupied during the nineteenth century, Spector interpreted the dramatic changes in subsistence and local life following increased European settlement in the region. Spector used a wide range of evidence in her interpretation of contact period village life, namely oral testimony, historic

descriptions and archaeological evidence. She also placed the contact period evidence in a longer time frame, predating the nineteenth century colonial presence, and exploring the evidence for cultural continuity and change into the contact period, similar to others (Schrire 1982, 1995; Stahl 1993, 1994; Clarke 1994; Head & Fullagar 1997, 1999). This is important, for as stressed by Schrire (1984b, p. 1), it is necessary to develop explanatory models which don't assume the pre-contact indigenous life was static, and that the contact period only heralded change. Models that stress agency in culture-contact contexts help circumvent this. In this thesis I have focussed on agency by using evidence of variable types of cultural transformation and interaction in the contact period, particularly related to decision regarding involvement in pastoral work. The role of people's agency in historic archaeology is advocated by Deagan (1987, 1988, 1990, 1991, 1996), a historical archaeologist studying early American colonial settlements. Deagan argues for the important role contact studies play in understanding the modern world:

It is a premise of this discussion that understanding lies equally in the daily individual and collective choices that nonelite (and for the most part nonliterate) [people]...exercised in the daily process of dealing with each other in households and communities. Furthermore, because information about these daily life choices is simply not available without their integration of both documentary and archaeological information, I argue that historical archaeology, perhaps more concretely than any other modern discipline, has the potential to better understand the origins of this modern...society by concentrating on the world created by the survivors of the contact period' (Deagan 1996, p. 136).

Schrire's (1987, 1988, 1991, 1992, 1995) research at the archaeological site Oudepost I, an early Colonial Dutch military outpost located on an isolated bay north of Cape Town and settled during the fifteenth century, contributes to her research into colonial period cultural interactions in southern Africa. Schrire uses material culture, historic accounts and oral histories to synthesis her research and contextualise the archaeological finds (1991, 1995). The archaeological material were largely restricted to excavations in the immediate vicinity of the outpost, and included evidence for shared occupation and trade between the Dutch soldiers and local Khoikhoi people. This was suggested by faunal remains documenting overlapping subsistence patterns (in terms of meat consumed), and evidence for patently indigenous artefacts with colonial objects: 'stone tools, coarse-tempered pottery, bone points, a tortoiseshell

bowl, and ostrich beads lie cheek-by-jowl with colonial hoes, bottles, and porcelains' (1995, p. 103). Schrire's research reminds us that contact period events are parts of longer-term social trajectories. By interpreting her source material over a broad length of time she studies cultural continuity and change from the pre-contact era to the present, as well as situating the study within global networks of movement of goods and people (1995). Schrire's stated aim to 'give voice to the pastoral foragers of the Cape' (1992) accords with general aims of historic archaeology (described above by Deagan). Her work is also important to my study for the way she provides context to the non-archaeological sources, particularly documentary sources. In an earlier study interpreting prehistoric occupation sequences in Arnhem Land, Schrire had considered how documentary evidence for continuity and change during culture-contact was relevant to her interpretation of prehistoric assemblages (1972, 1982). In this research she defined lines of inquiry (diet, technology, population size and distribution) to compare contact period observations with Aboriginal prehistoric behaviour (1982, p. 19). This approach suggested that contact period evidence could provide not only data to compare with other sites of culture-contact, but change over longer periods of time (Schrire 1984a). In the same tradition, in a recent paper, Head and Fullagar (1997) (described below at length) suggest establishing key lines of inquiry for interpreting sustained contact between Aboriginal people and (in their study in the Kimberleys) pastoralists. For example, in their study they propose: evidence of settlement location, rock art, stone tool assemblages and plant use to examine differences between pre-contact and contact periods.

Kirch and Sahlins's (1992) project is relevant to this research as it uses similar data (documentary and archaeological records) to examine the results of the colonial period in relation to longer time periods prior to contact, as demonstrated at the valley of Anahulu, Hawaii. This is described as an 'integrated history' (Kirch & Sahlins 1992, vol. 1, p. 1). The authors' separation of the different evidence into two volumes highlights the differences between the different data, although the extent to which the data is integrated could have been more extensive. The project focuses on the ability for archaeological evidence to inform on local regional levels, and for historic evidence to provide a more extensive (in terms of space) ethnographic history. Sahlins

states an aim of the project was to explore how Hawaii entered a world system, as stated by others in this review.

The notion of cultural change is central to the work of Lightfoot (1995), who studies culture-contact in northern California at the site of Fort Ross, an eighteenth century sealing settlement (*see also* Lightfoot, Wake & Schiff 1993). His research brings several key concepts to this thesis. Lightfoot advocates archaeological research which is 'holistic, diachronic and broadly comparative'. By 'holistic' Lightfoot is stressing that culture-contact involves complex interactions, best described as pluralist. Pluralism describes a theoretical approach which recognises systems which incorporates more than one substance or principle. This is an important notion, as the pluralist approach accommodates variation in the indigenous and settler populations. Similar to Australian settlements, Lightfoot notes that the population of American colonies were composed of a very diverse mix of people. In Australia the population of frontier and remote settlements included Aboriginal people, Europeans and people from non-English backgrounds. By 'holistic' Lightfoot is also advocating the use of multiple lines of evidence, as have others cited in this review. By 'diachronic' Lightfoot attempts to maximise the chronological range of the study by using different evidence, each covering a different (although not exclusive) time span. He visualises this as being 'temporally ordered in a series of 'windows' or points along a continuum spanning prehistoric, protohistoric and historic times' (Lightfoot 1995, p. 202). Lightfoot's 'broadly comparative' approach is demonstrated with his comparison between the Fort Ross archaeological assemblages, and contemporary indigenous settlements removed from Fort Ross.

The approach to comparing different data in this thesis is guided by Stahl (1993, 1994), whose research aims to use archaeological, ethnographic, documentary, and oral historic sources related to a nineteenth century West African village site occupied during the colonial period (1896-1957), to chart patterns of continuity and change in villager's lives during the colonial era. Stahl's approach to using multiple data is that:

A comparative approach is crucial, and requires that archaeologists concern themselves with points of congruence *and* divergence between ethnographic and archaeological evidence. (Stahl 1993, p. 182)

Comparative approaches have been advocated by other archaeologists (Hodder 1982, 1986, 1989; Wylie 1985, 1988). For example, Wylie states that archaeologists 'must be especially attentive to points of dissimilarity [between different and independent data sets] for these inform us as to how the past may have differed from the present' (1985, p. 107).

Stahl is particularly interested the role of historic ethnographies in archaeological interpretation, and her research aimed to demonstrate the ways that the direct historical approach can be used in a more 'historically-sensitive fashion...to chart patterns of continuity and change in the lives of [participants]...during the colonial era' (Stahl 1993, p. 182). I suggested in the previous discussion that archaeological studies of the colonial period provide an opportunity to demonstrate the potential contribution that archaeology can make in an interpretation of periods for which there is relatively little known in modern societies. In addition, archaeological studies of the period of culture-contact can demonstrate how quickly societies changed during culture-contact, as expressed by Trigger: 'European contact was so spectacularly disruptive that knowledge of what indigenous societies in North America were like immediately prior to this event is essential both for the study of acculturation and cross-cultural comparisons...[and this] is something that only archaeology can provide' (Trigger 1982b, p. 7).

Stahl's study considered archaeological sites which may (by some) be considered too recent to warrant archaeological attention. In her research (1993, 1994) this involved the sites of late-nineteenth and early-twentieth century (1896-1957) villages. Stahl became aware of problems with notions of contemporary societies living 'traditional' lives. At the outset of her research, Stahl recognised the opportunity to use comparative ethnographic evidence from those people living in the village of Makala. She states that 'the existence of traditions associating the archaeological sites with the current inhabitants...provides a strong temptation to use contemporary ethnography to supplement our understandings of the earlier occupations' (Stahl 1994, p. 187). Instead, Stahl adopted a comparative approach, with the goal of measuring continuity and change over the period of culture-contact with British colonial polities. Her results all indicated the value of archaeological evidence, even in studies of a very recent past

(in this case late-nineteenth and early-twentieth century contexts), principally as the archaeological evidence differed from ethnographic evidence collected from contemporary Bantu societies. Stahl was able to demonstrate changes in subsistence production, craft production, trading networks, settlement and domestic living patterns during the colonial period, which were dissimilar to aspects of modern Bantu life. Her results, in brief, suggest changes in subsistence in nineteenth century contexts (for example, an increased variable reliance on pigs). These subsistence trends were not apparent in the contemporary society. As well the archaeological record suggests changes in hunted/domesticated fauna and indigenous/introduced crops throughout the late-nineteenth and early-twentieth century, again with no bearing on variable use as demonstrated today. Furthermore, the archaeology in her research demonstrated changes in production, with increased ceramic homogeneity, and variable use of traded European goods, such as clay pipes. An important implication of Stahl's research, in relation to this thesis, is her evidence the rate of continuities and changes may shift significantly within short periods of time during contact. These results need to be considered in relation to Head and Fullagar's evidence for conservatism, as apposed to change, in certain contact contexts.

In Australia there have been fewer studies of culture-contact than in the Americas, although the subject is receiving increased attention. John Mulvaney's (1989) *Encounters in Place* provides a useful overview of the range of potential studies of interaction between Aboriginal people and 'outsiders'. Mulvaney summarises the importance of contact period studies, as they demonstrate aspects of Aboriginal economic and technological innovation, which helps refute stereotypes of Aboriginal life prior to European settlement being utterly static (Mulvaney 1989, p. 28). An early Australian study to consider contact between Aboriginal people and Europeans was Allen's (1969, 1973) doctoral research at Port Essington on the Cobourg Peninsula, the site of an early-nineteenth century British military outpost. Allen described some aspects of interaction between the remote settlement and local Aboriginal people. Allen described specific contact material culture, particularly glass tools, and explored textual descriptions of interaction. Much of the Aboriginal use of the short-lived settlement apparently followed European abandonment.

Shortly after Allen's study, Birmingham (1992) excavated the settlement of Wybalenna, on Flinders Island, home to Tasmanian Aboriginal people between 1835 to 1847. Birmingham used dominance and resistance models in her interpretation. Importantly, in her study, the Tasmanians were shown to select certain aspects of the European system, and reject others. Birmingham was able to use the distribution of material culture to explore whether the Tasmanians' rejected aspects of the European world; for example, European customs such as the use of houses, and Christian belief (1992, p. 176). In her analysis, the ways Aboriginal people used European consumer goods was used by her to represent indigenous people's decisions. Birmingham's study revealed a diverse range of indigenous responses to the Wybalenna settlement; and importantly, providing a richer interpretation than would have been provided without analysing the written records of the settlement's manager. Birmingham advocated the collaborative use of historic sources and archaeological evidence in her analysis. She concluded that:

The significance of [these results] can not be followed further in the documentary record alone: the interactive use of archaeological data is essential if a deeper level of meaning is to be achieved. (Birmingham 1992, p. 196)

Other than Birmingham (1992), studies of Australia missions as places of culture-contact have been rare (for exceptions *see* Massola 1970; Davison 1985; Rhodes & Stocks 1985; Travers 1986), although recent research documenting the archaeological record of Aboriginal-missionary interaction has been conducted at the nineteenth century Cooper Creek mission site of Killalpaninna (Birmingham 1996, n.d.).

The prolonged contact along northern Australia during recent centuries between Aboriginal people's and Macassan trepang harvesters has encouraged several important studies of Aboriginal-Macassan interaction (Macknight 1972, 1976). The seasonal Macassan expeditions predated European arrival in Australia, and continued in the nineteenth century, leaving material remains at settlements and trepang processing sites. Other evidence of the Macassans is found in rock art, and also in local Aboriginal languages, society and histories. Two recent theses on this subject by Clarke (1994) and Mitchell (1994), represent archaeological interest in culture-contact studies in this area. Mitchell's thesis explored the evidence for change in Aboriginal

people's subsistence, as demonstrated in middens along the Cobourg Peninsula, north-west Arnhem Land. Change in indigenous economies is seen as a resulting from the annual presence of trepang harvesting camps, who provided work and new goods which sometimes are found in archaeological deposits: such as metal hatchets and knives; clothing and glass; tobacco; alcoholic beverages; and new foods, such as rice. Clarke's thesis uses archaeological evidence from Groote Island (Northern Territory), historic accounts, and local indigenous knowledge to demonstrate the extensive changes resulting from different periods of cultural interaction, firstly the arrival of the Macassans, and then the arrival of the Europeans, represented by a twentieth century mission settlement. Clarke defined a three-part model of resource use and residence patterns for the pre-Macassan, Macassan and mission periods (1994, p. 19). Clarke's developed a concept of 'mediation' to discuss the 'active and negotiated relationship' between Macassans and Aboriginal people, and Europeans and Aboriginal peoples (1994, pp. 19-20).

Focussing on transformation in Aboriginal people's subsistence and settlement, Clarke eschewed simplistic models of interaction and develops an explanatory framework, divided by three cultural concepts of time, which she defines as components of the cultural landscape. They are 'real time past', 'Macassan era' and the 'older past'. Real time past is the twentieth century record since the mission, defined by evidence of 'oral testimony, ethnography, archives and archaeology' (Clarke 1994, p. 45). The Macassan era is 'beyond immediate community memory, but many places visited by Macassans are known and identified as such' (Clarke 1994, p. 45). It is defined by archaeological sites, places names, totemic locations, trees and stone arrangements. It is a rich past landscape in which interaction between Macassans and Aboriginal people is recorded in middens and rockshelters where the archaeological record reveals the introduction of exotic and imported artefacts such as ceramics, glass beads and metal items, as well as revealing changes in Aboriginal subsistence and settlement patterns as a result of the Macassan presence. Art sites document the presence, and Aboriginal perceptions, of the Macassans. The final construction of time is the 'archaeology of the older past', which is of a period prior to the Macassan contact, informed by archaeology. Aboriginal understanding emphasises a discontinuity between this and later periods, as the location of the archaeological material from this period is at places local people do

not use today. It indicates another transformation, as the contact with Macassan traders in the later stages of this period involves changes in subsistence strategies and the location of settlement. The strength of Clarke's research is in the explanatory model, which accommodates differing rates of change, both short-term and local, and also regional patterns of continuity and change over longer periods of time.

The relevance to this thesis of Clarke's and Mitchell's research is their use of multiple sites to provide regional case studies for changes in settlement patterns; for, as stated by Clarke: 'Individually, these sites exist as temporary camps, but collectively they provide a statement about regional patterns of post-contact land use' (1994, p. 458). The techniques employed to accomplish these studies (also Head & Fullagar 1997, 1999) are common to either historic and prehistoric archaeology, a situation which requires 'a departure from most other archaeological research projects which place themselves solely within the paradigms of ethnoarchaeology, prehistoric or historic archaeology' (Clarke 1994, p. 20).

Murray (1993, 1996), whose study of contact in Tasmania was introduced above, makes important contributions to the study of culture-contact in Australia, promoting the useful phrase the 'historical archaeology of Aboriginal Australia' (similar to Birmingham 1992, p. 24), which serves to promote archaeology's potential contribution to the growing body of research across the social sciences into largely hidden aspects of Australian history (as detailed above).¹² Murray's (1993) study at Burghley, northern Tasmania, was of a nineteenth century stock camp, with evidence for brief Aboriginal occupation sometime during European use, or following abandonment. This study is particularly relevant to my thesis as more ephemeral sites of contact, such as Burghley, are often poorly represented in studies of culture-contact. Similar sites are described in chapter 5. Also important is the way that Murray uses supporting data in a collaborative manner to interpret the chronology of Aboriginal use of the site. Murray aggregated his data which consisted of stone and glass tools, stratigraphic records, documentary sources and historic eyewitness accounts, stating:

¹² Murray also promotes the term 'contact archaeology and its aftermath', although he finds neither term satisfactory (1996, p. 200).

'each line of evidence when taken in isolation will fail to convince' (1992, p. 7). Murray is a strong supporter of historical archaeology, and while critical of 'the lack of attention paid to the historical archaeology of Aboriginal Australia', remains optimistic of the potential of 'contact' archaeology (1996, p. 206). Like Clarke, Murray states that he is cautious of theories, particularly theories of domination and resistance, acculturation, innovation and conservation arguing they have not been rigorously tested. He states that models based on these theories have had problems of 'identifying Aboriginal people after the initial phase of contact has occurred' (Murray 1996, p. 207). Murray is not proposing an atheoretical approach, rather, longer-term investigations of Aboriginal responses to contact, interpreted in terms of cultural landscapes (Murray 1996, pp. 207, 210-1). Murray sees the contribution of contact studies as: 'the real reason for undertaking the historical archaeology of Aboriginal Australia might be to document a process (i.e. survival) which many of our predecessors either thought was not going to happen or was simply uninteresting' (Murray 1996, p. 211).

As discussed in the previous section, recent articles by Head and Fullagar (1997, 1999) make important contributions to contact period research in Australia. Like Clarke (1994) and Murray (1996), Head and Fullagar (1997, 1999) argue that the contact period can be viewed as the extension of longer trajectories in Aboriginal life. All four authors employ the term 'transformation'. 'Transformation' in this sense is being used as a framework in which cultural trajectories are situated, and is interchangeable with 'continuity and change'. For example, the studies cited here include evidence for continuities and change over time in patterns of subsistence and settlement; labour patterns; seasonal movement; social landscapes and attachments to different places; and adaptation and adoption of material culture. This is particularly evident with Head and Fullagar (1997), who argue that the use of multiple strands of evidence is necessary to highlight the ways that at contact, archaeological records (for example the introduction of new material culture) changed at very different rates to other aspects of Aboriginal life, for example, Aboriginal people's attachments to places and between people. Head and Fullagar contribute to existing calls for more refined understandings of 'disaggregated' evidence for continuity and change (Head & Fullagar 1997, pp. 426-7). They cite Frankel (1995, p. 652), who calls for interpretation in archaeological

research which recognises 'conservatism' as opposed to 'change'; and support calls for studies which 'embrace non-linear systems of social transformations' (Cosgrove 1995, p. 188). Murray focuses on the meeting of different cultures in his use of the term, describing 'transformation' as an interpretive framework/vehicle to comprehend 'shared (but different) histories and shared (but different) identities' (Murray 1992, p. 200). Clarke (1994), Mitchell (1994), and Head and Fullagar (1997, 1999) all highlight the usefulness of landscape based approaches to structuring contact period studies.

Summary

Studies reviewed here (Kirch & Sahlins 1992; Stahl 1993, 1994; Clarke 1994; Mitchell 1994; Lightfoot 1995; Schrire 1995; Head & Fullagar 1997, 1999) demonstrate the importance of archaeological evidence from pre-contact contexts in interpreting the contact period, that is, the contact period is best interpreted as an extension of cultural trajectories which were in place prior to European presence. In this thesis, for example, this raises questions regarding the archaeological evidence for transformations in Aboriginal settlement, subsistence, technology, diet and regional trade at contact, as demonstrated in the study area.

Any locale of culture-contact can be interpreted in relation to a number of wider systems or forces; such as colonialism (Gasco 1992, 1993; Stahl 1992, 1993; Schrire 1995; Rowse 1998), extra-regional demand for products (for example, Macassan trepanning in Mitchell 1994; Clarke 1994), pastoral settlement (Rowse 1987; Head & Fullagar 1997, 1999) or christianisation (Birmingham 1992) to name some examples. This is relevant in this thesis, for the contact period is studied in relation to the demands of the pastoral industry based at the Strangways Springs Station, a system which involves both European settlers and Aboriginal people.

Many of these studies reviewed here demonstrate that although culture-contact can be interpreted at single sites, the use of multiple sites provides opportunities to interpret how cultural interaction was played out in the landscape. This project uses multiple-site data, which contribute to an enhanced understanding of the material correlates of contact period processes. Studies cited here (Clarke 1994; Head & Fullagar 1997,

1999) demonstrates that the location of settlement changes with different phases of culture-contact, making a landscape approach more necessary. Having stated this, I do not propose landscape as a form of theory, rather as a way of reconciling different scales of evidence. In this regard I agree with Julian Thomas, who states that:

It is interesting that at a time when the different aspects of archaeology...are drawing apart from each other and defining rather different research agenda, the notion of 'landscape' seems to reunite them on occasion. Whether this is because it presents a genuine horizon for integration and cooperation, or whether it is simply the concept is sufficiently vague...that it provides room for all is a question that could be debated...I will stress that landscape is not a universal concept, and thus cannot represent a definitive way of apprehending the world. (Thomas, J. 1994, p. 20)

In this thesis the different evidence is used to interpret pastoral landscapes, Aboriginal landscapes, and the ways these interact. In chapter 8 I present the results of the comparative analysis, by describing pastoral, Aboriginal and contact landscapes in the study area.

The archaeological studies reviewed in this section nearly all used some form of additional evidence to archaeological data. In terms of my approach, significant points raised here are:

- a) That each type of evidence has its own temporal range. Consequently, temporal frameworks are the sum of those ranges. For example, the accuracy of oral histories tends to orientate towards more recent periods (as demonstrated by research in northern Australia, where contact was a more recent event). Historic documents vary depending on who produced them (this issue is the subject for chapter 6).
- b) That synthetic archaeological projects using non-archaeological evidence in their interpretation require frameworks which involve a comparative methodology, that is, that any similarities and differences between different evidence in relation to different research questions can be used to develop a more comprehensive interpretation. As discussed in chapter 8 this approach agrees with those who argue for evidential independence in archaeological projects (cited here Wylie 1985; Leone & Crosby 1987; Beaudry 1988; Leone & Potter 1988b; Kirch & Sahlins

1992; Stahl 1993, 1994) and is the basis for the decision to analyse the archaeological and documentary evidence separately (the subject of the next four chapters) before conducting a comparative analysis (chapter 8).

Archaeological studies related to the study region

To date, archaeological research in the region of the south-west Lake Eyre Basin has focused on Aboriginal life prior to the period of European settlement. Evidence for Pleistocene occupation in arid Australia (which the study area falls into) currently dates indisputably from about 22,000 BP (Smith 1987, 1989). Hawker Lagoon in the Flinders Ranges (within 100kms south-east of the study area) indicates occupation about 15,000 BP (Lampert & Hughes 1987, 1988). During the late Pleistocene, settlement beyond 'refuges' such as the Flinders Ranges into more arid environments would presumably have been a dynamic process, requiring human adaptation to diverse arid environments (Veth 1989, 1993). Archaeological evidence indicates that in the Holocene there was a dramatic increase in the evidence for human settlement in regions bordering the study area, becoming increasingly intensive and widespread over the last 3,000 years, particularly during the last 1,000 years (Lourandos 1997, p. 184). Holocene sites from this period are found in the Simpson Desert (Davidson 1983; Hercus & Clark 1986; Wasson 1986) the Strezlecki Desert (Hughes & Lampert 1980) and Cooper Creek (Williams 1988). The archaeological evidence at these sites reveals new forms of tools, developments in the scale of seedgrinding, changes in settlements patterns and use of resources. Both environmental (Smith 1986, 1988, 1989) and social explanations (Lourandos 1997) have been proposed for this shift.

The majority of archaeological research in the south-west Lake Eyre Basin has focussed on the Holocene settlement of the region, particularly the last 500 years, a period in which the environment was essentially the same as the present (Florek 1993; Lourandos 1997). There have been relatively few archaeological studies, most being surveys conducted for mining development projects (Kinhill Stearns 1985; Hughes & Koettig 1989). The types of Aboriginal archaeological material found in the region include campsites, knapping floors, quarries, burials, rock engravings and stone

arrangements.¹³ Much research has focussed on the mound (artesian) springs, where the most concentrated archaeological assemblages in the region occur (Hughes & Lampert 1985; Lampert 1989; Florek 1993). For this reason the mound springs have been the focus of archaeological survey, and also as they have a broad range of conservation needs and recognised cultural heritage values (Kinhill Stearns 1985). As a consequence, however, other types of archaeological sites in the region have been given less attention, for example, sites at more ephemeral water sources (creeks, rock-holes, playa and lakes) and on sand dunes. By recording archaeological assemblages at both spring and 'non-spring' sites my thesis represents a rare systematic study of archaeological sites occurring at a range of different locations in the south-western Lake Eyre Basin, the principle exception being Florek (1989, 1993).

Important to this thesis are the results of archaeological surveys conducted at Roxby Downs, due south of the study area (Hughes 1981a, 1981b; Hughes & Hiscock 1981; Kinhill-Stearns 1985; Hughes & Lampert 1985). The environment and landscape in this region is similar to the south-west Lake Eyre Basin, but with no artesian springs. The studies cited above found that the largest archaeological sites were campsites and knapping floors located on sandy surfaces adjacent to creeks and ephemeral water sources. The archaeological material in dunefields occurred on the crest of dunes, the frequency of archaeological material being dependant on proximity to water and quarries. That is, the amount of archaeological material decreases with distance from key landscape elements for human survival: water, sand and shelter. The exceptions are at sources of raw material, such as stone quarries, which tend to exhibit the least diversity of material, compared to occupation sites.

Florek's (1993) research is especially useful in this research because it provides a model for pre-contact Aboriginal occupation in the western Lake Eyre Basin, and provides comparative data from archaeological sites located at mound springs (including those at Strangways Springs). The mound spring sites are habitation sites with dense surface scatters of stone artefacts (backed blades, tulas, thumb nail

¹³No burials were found during my research, which may be partially a result of the poor preservation qualities of bone in sand low in carbonates. Kinhill Stearns (1985, p. 8) also describe this as a probable cause. In chapter 5, the excavation of site N3.1 reveals

scrapers, grinding stones) derived from the late Holocene. Florek dates them to within the last 900 years, with a date of 560+/-75 BP¹⁴ for Strangways Springs (1993, p. 75, table 2). These dates accord with the increase in arid region settlement described above. Florek's research sought to explain the variability of the mound spring sites, the stone assemblages of which differ in frequencies of raw material, artefact sizes and tool types. Florek questioned the fact that the archaeological assemblages, which occur as exposed surface sites, are devoid of stratigraphic layering. Rather than questioning chronologies, Florek dealt with the abundance and diversity of archaeological material within a synchronic plane. He attributed inter-site variability to local environmental conditions, and suggested that the character of artefact assemblages was affected by the fact that resources were unevenly distributed throughout the region. Florek argued that variability resulted from different subsistence and economy tactics employed at each site by the local Aboriginal population. In his interpretation, seasonality is a defining element of human use of spring and non-spring water sources. That is, human use of mound spring environments were most probable during dry periods when more ephemeral water resources would not easily support human habitation. These results conform with Cane (1984) and Veth (1987, 1993), which reveal at other arid sites the most intensive occupation was located at permanent water sources demonstrated by the largest archaeological sites. These larger sites were characterised by increased discard rates, diverse ranges of raw material, and more complex tool kits (including tulas and grindstones). The principle identifiable change at these sites is an increasing reliance on seedgrinding technologies.

Aboriginal regional long-distance exchange continued into the contact period (Jones 1984; McBryde 1987, 1997). Anna Creek, north of Strangways Springs, was a valued source of grindstones and important to regional networks of formal group expeditions to acquire goods for exchange (*see* McBryde 1987, p. 260). The grindstones weighed up to 20 kilograms, and consequently were left at popular camping places, rather than moved (Florek 1993). Smaller grindstones were used to prepare native tobacco and to grind ochre pigment (McBryde 1997, p. 591).

in stratified contexts, bone is occasionally preserved.

¹⁴ Range of calibrated dates BP: 670 (616, 612, 547) 500. See Florek (1993, p. 308, table A1).

Florek's research, and the other literature cited here, provides a model for pre-contact Aboriginal subsistence and landscape use against which to compare changes to these elements of Aboriginal life brought about following European settlement in the study region, that is:

1. Archaeological material from late Holocene Aboriginal settlement is most commonly found on sandy surfaces near sheltering vegetation and water. Other sites are found at resource foci, such as sources for raw materials for tool making.
2. The largest archaeological sites are found at artesian mound springs; which were the most regular source of water in the study region. However, other water sources were extensively used, as will be discussed in chapters 5, 7 and 8.
3. Intra-site variability in artefact contents can be assumed to relate to distance from resources, with the least diverse sites (in terms of lithic material) being located at a source of raw material.
4. The archaeological material supports a model of human settlement and subsistence in which the interplay of habitation and resources in dry periods would require people access regular water and food, such as the mound springs. In wetter periods people able to live at different water resources than the mound springs.

The studies included here indicate a form of more intensive settlement and subsistence in the study area in the 500 years prior to contact. This has been assumed to equate to changes in Aboriginal society (Lourandos 1997).

All archaeological research into Aboriginal settlement in this region requires developing methodology to interpret surface sites. If, as stated by Florek, these sites can be understood as synchronic assemblages created during the late Holocene, then archaeological evidence from the last century of site use (namely the post-contact era) may be difficult to recognise. My research relies on site structuring and specific elements of European material culture as it was used by Aboriginal people to define and interpret post-contact archaeological assemblages.

The archaeology of European settlement in Central Australia

Archaeological research into European settlement of the study region has been limited, mostly restricted to describing European built structures for the purposes of reporting European heritage values and defining conservation priorities (Freeland & Stacey 1969; Berry & Gilbert 1981; Kinhill Stearns, Donovan & Associates 1984; Bell 1993; Gee 1995; A.N. Wilson 1986). There is little existing archaeological research into the European settlement of Central Australia. There have been historical archaeology studies which provide some comparative evidence in terms of material culture studies, and these are referenced in appendix C, although few have actually been in Central Australia. The exceptions are Holmes (1983, 1987, 1989, 1990), Davison (1985), Birmingham (1979, 1996, n.d.). Other studies related to archaeology have been broad social geographical studies considering cultural landscapes (Carment 1991, 1993; Woodhouse 1993).

PART II
RECORDING, ANALYSIS AND DISCUSSION OF
ARCHAEOLOGICAL EVIDENCE

Chapter 4. The archaeological research

Introduction

In order to interpret culture-contact I recorded archaeological assemblages in the study area. These had accumulated during the historic period (post-1858), or had been deposited by Aboriginal people during a much longer period of occupation prior to European settlement. In this chapter I present the methodology for locating and recording the archaeological material presented in chapter 5. I also present background information concerning how certain material culture was used by me to develop chronological frameworks and resolve function in contact contexts.

As stated in the previous chapter, studies of culture-contact need to take into account not just evidence from the contact period, but also from the period preceding contact, thus establishing a broader time frame of study to understand continuity and change over time. The detection of change over time in the archaeological record in my study area was made difficult, because the bulk of archaeological assemblages occur as exposed surface sites with no horizontal stratigraphy. Consequently, to develop chronological frameworks I have relied on:

- a) The presence of material culture which postdates European settlement, some of which can be dated (with varying degrees of precision) by manufacturer or manufacturing technique.¹⁵
- b) Assemblages where post-contact artefacts are spatially and contextually structured within European and Aboriginal living and other activity areas.

Research questions

My archaeological inquiry focused on two broad and related issues: firstly, how to determine Aboriginal versus European site use (or combinations of the two). In

¹⁵ Three key dates in the analysis of archaeological evidence were derived from regional historically known events. These are 1) the settlement of Strangways Springs in 1862; 2) the sinking of the first artesian bore in South Australia in 1882 on Strangways Springs Station (SAPP. 1898-9, No. 77); and 3) the opening of the railway in 1886.

particular I wanted to detect post-contact places of indigenous use. The second issue related to chronology: were sites from pre-contact or from contact eras? And, what chronologies, provided by the different types of European material culture, existed for contact period sites?

The research questions in the recording and analysis of archaeological material were:

- a) What features of the archaeological record can be used as evidence of Aboriginal and/or European-settler site-use?
- b) What evidence is there for continuity or change in human settlement and subsistence over time, particularly following European settlement in the study area?
- c) What evidence is there for change in the pastoral industry over time?
- d) What can archaeological evidence tell us about for relationships between Aboriginal people and pastoralists?

Terminology

Descriptive terms used in the archaeological study require defining. The term 'artefact' is reserved for any material item manufactured, utilised or modified by humans (Mignon 1993, p. 37). Unless otherwise stated this includes 'ecofacts', which refers to the remains of plants and animals included in archaeological contexts. A 'site' is an archaeological deposit within a bounded area. The boundary of a site is most commonly defined by a decrease in the frequency of archaeological material. At some sites the boundary is defined by more through distinct changes in the archaeological material, such as the head station at Strangways Springs where a complex of buildings (site S001) is distinguished from adjacent areas north and south (sites S401, S021 and S662) characterised by concentrated surface deposits. The term 'site' has been reserved for a locality where one or more artefacts or archaeological features occur. The term 'feature' is reserved for humanly manufactured structures' (Fagan 1992, p. 19). In this research the term describes built structures, surface scatters, and a range of less formal features such as fireplaces, knapping floors and stone alignments. The term often encompasses 'activity areas' which are defined as a 'patterning of artefacts in a

site indicating that a specific activity...took place' (Orser and Fagan 1995, p. 271), such as where tool making, cooking, or food processing occurred. Orser and Fagan state that activity area is a term that 'historical archaeologists often shy away from...in favour of more descriptive terms' (1995, p. 111). In this research, however, it is useful because it is used to describe Aboriginal features common to both pre and post-contact assemblages, and thus provides a continuity of terminology. Importantly the term is used in some cases to isolate single purpose activity areas (for example, a knapping floor) within (or separate from) occupation areas. By occupation I mean living areas, characterised by accumulated activities, characterised in this study by fireplaces and artefact concentrations. The term 'scatter' often describes artefacts forming an unstratified surface deposit. The term is used to describe deposits which are not distinct activity areas. The term 'dump' describes highly localised raised mounds found near to European settlements resulting from deliberate rubbish placement. The term 'occupation' encompasses evidence for past habitation and specific activities, for example, evidence of tool making, cooking or building. That is, occupation is a generic term to describe many of the archaeological sites in this region which have been formed from cumulative past activities.

Archaeological material in this research encompasses both European and Aboriginal contexts. 'European' material culture describes artefacts from a European-settler origin and are assumed to postdate 1858, which marks the beginning of European settlement in the south-west Lake Eyre Basin.¹⁶ 'Aboriginal' material culture describes artefacts and technologies characteristic of pre-contact Aboriginal people. These terms may be self-evident, but in contact period studies such descriptions become complicated. For example, an object described as of European origin draws attention to items which can be understood to be distinctly European, such as a glass gin bottle. However, such an artefact may also have a transformed function (and form) as a result of Aboriginal agency, such as when the glass from a gin bottle is used to make sharp blade of glass

¹⁶ There is evidence that European material entered Aboriginal trade networks prior to European settlement in this particular region (see Reynolds 1983). For example, in Central Australia cached European material was found by early explorers. The explorer Alfred Giles (1889) found a glass marble entwined in a ball of human hair and stored with a baler shell in a tree trunk close to present day Alice Springs. However, the amount of this material is, for the purposes of this research, assumed to be insignificant.

for shaving wood. This analogy eventually breaks down. For example, the glass bottle may have been used by Aboriginal people for drinking, or the glass blade made by a white settler for shaving. Where possible in this research, additional contextual evidence is cited to support these interpretations. For the purposes of this study, then, certain archaeological material, and modification of material culture, is understood to be *Aboriginal or European in character*. The reduction of a glass bottle to make sharp blades is more likely to be the result of Aboriginal agency than European, unless accompanying evidence suggests otherwise. The evidence to support these assumptions is provided in the presentation and discussion of archaeological evidence.

Archaeological methodology

The field work aimed to identify and record archaeological deposits to interpret human subsistence, settlement and material culture use. The procedure for field recording involved a) a survey program which recorded the distribution and character of archaeological material from pre and post-contact contexts, and their relation to topography and the local environment; and b) the detailed recording of archaeological assemblages at selected sites. In the following sections I describe the fieldwork seasons, field observations, field recording and cataloguing procedures.

Field seasons

Field work from 1994 to 1997 recorded a range of contact period and pre-contact archaeological sites throughout what had been known in the nineteenth century as Strangways Springs Station (now Anna Creek Station). Initial field work in 1994 and 1995 recorded archaeological sites in the vicinity of Strangways Springs. These sites included assemblages accumulated from Aboriginal occupation over the last 500 years, and historic sites deriving from both Aboriginal and European occupation. Field work in 1996 and 1997 was conducted over a wider area, recording a range of pre-contact and contact period assemblages. These sites included past activity located at more ephemeral water sources (compared to sites located at permanent artesian springs). Both Aboriginal and European pastoral occupations were recorded during these seasons. In addition to archaeological material, surveys tested the relationship between

the site and the physical landscape. This helped interpret the patterns of settlement and subsistence of Aboriginal people and European settlers.

Field observations

Reference has been made to the challenges posed by the archaeological assemblages in the study, that is, they consisted of surface finds with no vertical stratigraphy. Surface sites were commonly deflated onto hard surfaces, the loose upper sand being blown away. The extent of deflation was assumed to cause some horizontal movement of artefacts, resulting in increased homogeneity of deposits over time. Additionally, erosion in the study region was greatest at the places of past human occupation; the water and shelter that previously attracted humans now attracted animals: most destructive being cattle and rabbits. These animals are particularly destructive to local vegetation, resulting in destabilised sandridges. Consequently many places have seen erosion increase at the very places which are the focus of archaeological deposits.¹⁷ The erosive affect of cattle was observed at several sites over the three year period of fieldwork, causing breakage of artefacts, noticeably glass objects, and horizontal movement of artefacts.

For many surface sites there was less evidence of past structure in the deposits, that is, identifiable activity areas such as fireplaces, tool making areas and food preparation areas. The taphonomic process is presumably similar to that reported by Cameron et al. (1990) at Hawker Springs, describing how scatters of stone artefacts subject to deflation moved horizontally over time. The consequence of these processes over time is decreased structure. Thus, the older Holocene sites probably had the least structure, while more recent sites were presumably characterised by greater degrees of site structuring. This follows general principles which state that the structure in archaeological deposits moves from concentrated to dispersed (Florek 1993, pp. 9-10, citing Thomas 1989a; Foley 1981, p. 162). Accordingly, sites characterised by intact

¹⁷ Exceptions to this trend were observed. For example, at Emily Springs (site N1) most of the springs active last century had become inactive. Consequently the cattle were attracted to a nearby bore, and were causing intensive erosion adjacent to the old springs. This has resulted in increased levels of sand-blown deposits and extensive obscuring of late-nineteenth century deposits in some parts of Emily Springs.

Area	Site code	Description
Anna Creek	A6 & A9	Site of woolsheds (A6) and stock yards (A9) and bore on edge of <i>Anna Creek</i>
Warriner Creek	G3	<i>Beautiful Valley Bore</i> alongside <i>Warriner Creek</i> course
	H1	<i>Margaret Springs</i> - artesian springs with Aboriginal occupation deposits
Lake William & William Dunefield	N1	<i>Emily Springs</i> - artesian springs and remains of stock yards on edge of <i>Lake William</i> , with Aboriginal occupation material
	N2	Holocene occupation deposits at end of sandridge near <i>Lake William</i>
	N3	Pastoral out-station with shepherd's hut and brush yards in <i>William Dunefield</i>
	N4	Glass knapping assemblage and camping area on dune crest near site N3
Francis Swamp	I2	Pastoral out-station with post & wire yards and hut at northern end <i>Francis Swamp</i>
	I3	Extensive late Holocene Aboriginal occupation site at end of sandridge
	I5	Post-contact Aboriginal occupation site (abutting site I3)
	K1	<i>Leonard Bore</i> - artesian spring and bore with pre and post-contact occupation
	P1 to P11	Archaeological deposits, normally lithics and camping sites, located near springs in the southern part of <i>Francis Swamp</i> , located near to <i>Anna Creek</i> and <i>Warriner Ck.</i>
	Strangways Springs head station	S001
S021		Refuse deposits surrounding head station
S401		Refuse and occupation deposits immediately north of the head station
S201 & S226		Structural and occupation remains south-west of the head station interpreted as the site of a wool scour
S601		A concentration of material located off the south-eastern edge of the ridge
Strangways Springs railway station	S1626	Remains of railway station, siding, bore, hotel and stock yards
	S1751	Site of railway construction camp
Strangways Springs 'western sites' north ↓ south	S240	Aboriginal occupation site on sand hill north-east of main ridge, Strangways
	S1101	An Aboriginal occupation site west of site S240
	S1102	An Aboriginal occupation site west of site S240
	S1108	An Aboriginal occupation site west of site S240
	S251	Extensive occupation site on ridge due west of the head station
	S344	Small assemblage at mound on the western edge of ridge, immediately south of S251
	S305	Occupation deposits on residual sand hill to west of ridge
	S340	Occupation deposits on residual sand hill to west of ridge
	S349	Small glass working activity areas on isolated sand hill to west of ridge
	S350	Lithic assemblage on isolated sand hill at edge of ridge
	S354	Small occupation assemblage on isolated sand hill to west of ridge
	S355	Extensive occupation deposits on sand hill immediately north of scour (site S201)
	S361	Lithic deposits on sand hill at south-western edge of main ridge
Main north mound, Strangways Springs	S512	Extensive late Holocene occupation deposits and localised post-contact assemblages on 'main northern mound' sand dune extending north along <i>Warriner Creek</i>
	S1201	A large surface occupation site at northern end of 'main north mound' sand dune
North of main ridge Strangways Springs	S533	Set of small post-contact occupation sites north of the main ridge, Strangways Springs
	S539	A sand hill with occupation deposits extending north from site S533
	S561	An small sand hill with occupation deposit
Eastern ridge at Strangways Springs	S662	The eastern and southern parts of the main ridge (the area south of the head station), Strangways Springs
Other sites	C1	<i>Parkers Well</i> - Pastoral out-station located alongside road to Coober Pedy
	L2	<i>Mungyamarrilyna Swamp</i> - Aboriginal Holocene occupation deposits on sand ridge bordering swamp

Figure 4-1. List of sites by area. Italic names indicate existing locality names. Order follows presentation of sites in chapter 5.

fireplaces and knapping floors were generally considered to be most recent. Test pits were excavated to support the field impression that the archaeological assemblages on deflated surfaces had no significant underlying archaeological deposits (as stated in site descriptions).¹⁸ The above observations are general trends, and exceptions are included in the site descriptions.

Summary of site codes

Sixty-four sites are referred to in this thesis (fig. 4-1). Site codes use an alpha-numeric system. The alphabetical prefix indicates location (for example, 'S' for Strangways Springs) or transect (for example, site 'A1' for the first site recorded during transect A). The number in the 'S' site codes is the lowest feature number assigned during field recording (site S240 began at the 240th feature recorded at Strangways Springs). Features within a site were given a further numerical code (e.g. 'A1.1'). In figure 4-1 the sites are ordered by area, and follow the order of site presentation in chapter 5.

Survey

Approaches to survey for archaeological deposits varied slightly between the recording at Strangways Springs (1994 and 1995), and the field seasons (1996 and 1997) at locations throughout Anna Creek station. The survey locations are illustrated in figures 4-2 and 4-3. The survey at Strangways Springs aimed to locate all surface archaeological material at the locality. Archaeological deposits located during surveys were recorded. This recording involved site mapping, description and sampling of deposits, as described below.

Existing 1:100,000 maps of the study region are not accurate enough to be used to record detailed spatial relationships between the location of archaeological sites and features of the physical landscape. Consequently, an aim of the survey was to map

¹⁸ A limit of this project was set regarding the more substantial antiquity of the sites. Some of the archaeological assemblages were presumably more ancient than others, this being perhaps suggested by the size of some of the larger sites (assuming size results from duration of use). However, given the aims of this thesis, it was not a feature of the field survey to attempt to determine whether some sites were substantially more ancient than others. This would be a challenge on 'metachronous' surfaces.

topographical features, such as sand ridges, artesian mound springs and creek systems, as they related to archaeological sites. Other features recorded were cultural features (most not marked on maps for this remote region of Australia), such as the route of old roads and location of artesian wells and bores. The archaeological survey involved recording along transects (varying in length from several kilometres to 40 kilometres). Transects were either 'linear' or 'non-linear', as described below.

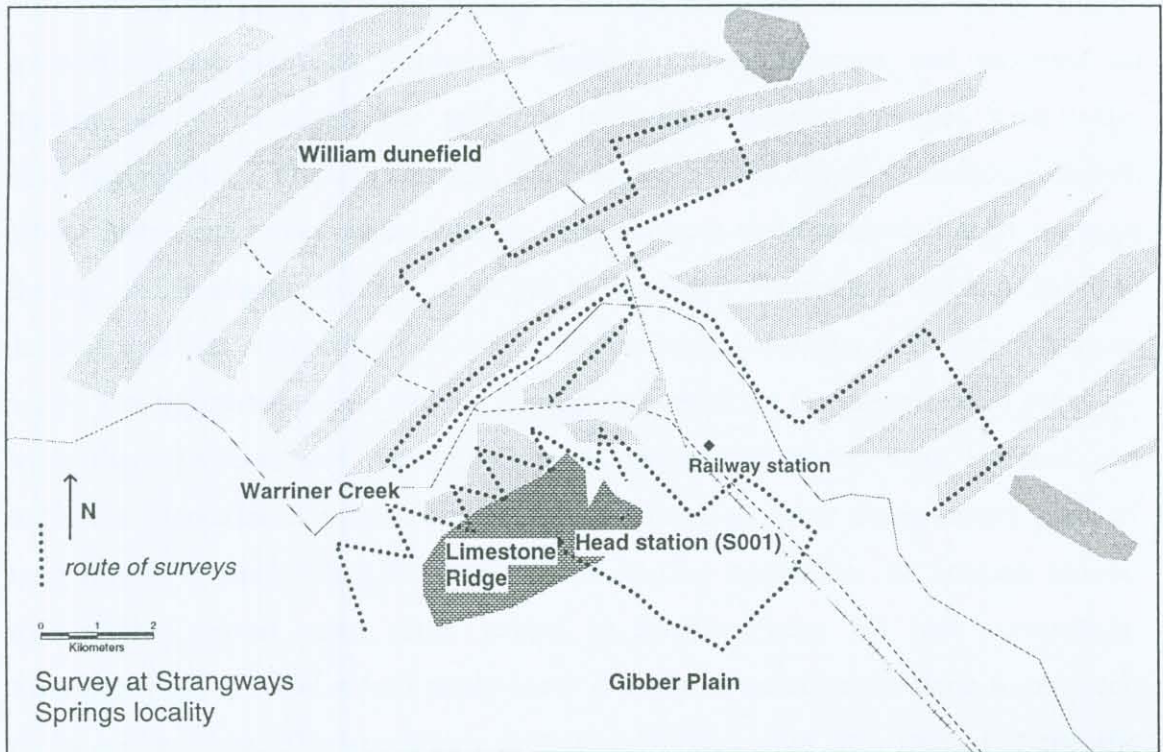


Figure 4-2. Location of archaeological survey at Strangways Springs locality

The survey used both electronic distance measuring (EDM) equipment and global positioning systems (GPS) to record locations. The survey at Strangways Springs (all sites with an S prefix) was conducted with EDM survey equipment. For more widespread survey, GPS receivers were used. With locational errors between 100 and 500 metres (Kilvington 1997 cited in Frederickson et al. 1997, pp. 126-7). GPS are inappropriate for certain archaeological recording. To obtain greater precision,

especially with no support for organic material. Perhaps the extent of patination on stone artefacts would be a measure of antiquity, in future studies of these sites.

differential GPS receivers were used, as they had locational errors of less than one metre.

Testing the landscape for the distribution of archaeological material

To ensure that the archaeological survey was efficient and representative I established a testing program to establish the distribution of archaeological sites. The program tested the distribution of sites through different landscape elements, using 'linear' transects. These transects followed a single compass direction, and recorded all material along the route. The principle landscape elements surveyed were water sources (creeks and artesian springs), sandy surfaces (sand ridges and residual dunes), gibber plains and raised rocky outcrops. The transects were conducted at Strangways Springs and in Francis Swamp, as shown in figure 4-3. From these it was possible to develop and test a hypothesis of where archaeological deposits were most likely to occur. The hypothesis stated that the principle variables for the presence of occupation areas (both pastoral and Aboriginal) were presence of water, sand surfaces and sufficient vegetation for shade and fuel. Sites tended to occur along certain parts of sand ridges, in areas close to water and sheltering vegetation. At artesian mound springs the nearest sand ridge tended to be the focus for past occupation. Archaeological material would rarely occur in exposed areas remote from water, such as the gibber plain. The exceptions to these principles were sites located at specific resources, such as quartzite and silcrete outcrops which were quarried by Aboriginal people for lithics. Another exception were European settler sites clustered along the route of roads and the railway. These were mainly late-nineteenth century sites and are not considered relevant in this study.

On the basis of the testing program I set out to determine the extent of occupation evidence through archaeological surveys in Francis Swamp, along Anna and Warriner Creeks, at Lake William, in the William and Francis Dunefields, and at artesian springs. The original hypothesis regarding site location was further tested by a series of 'non-linear' transects. These transects did not necessarily follow an exact compass direction, but followed either cultural or natural features, such as roads or a sand ridge. For example, to determine local spatial patterns of archaeological material, transect

'N' followed inter-dunal valleys between Lake William and Francis Swamp. Transect 'T' involved crossing and following dunes alongside Francis Swamp. These transects were principally designed to find the principle places of human activity in the survey locality.

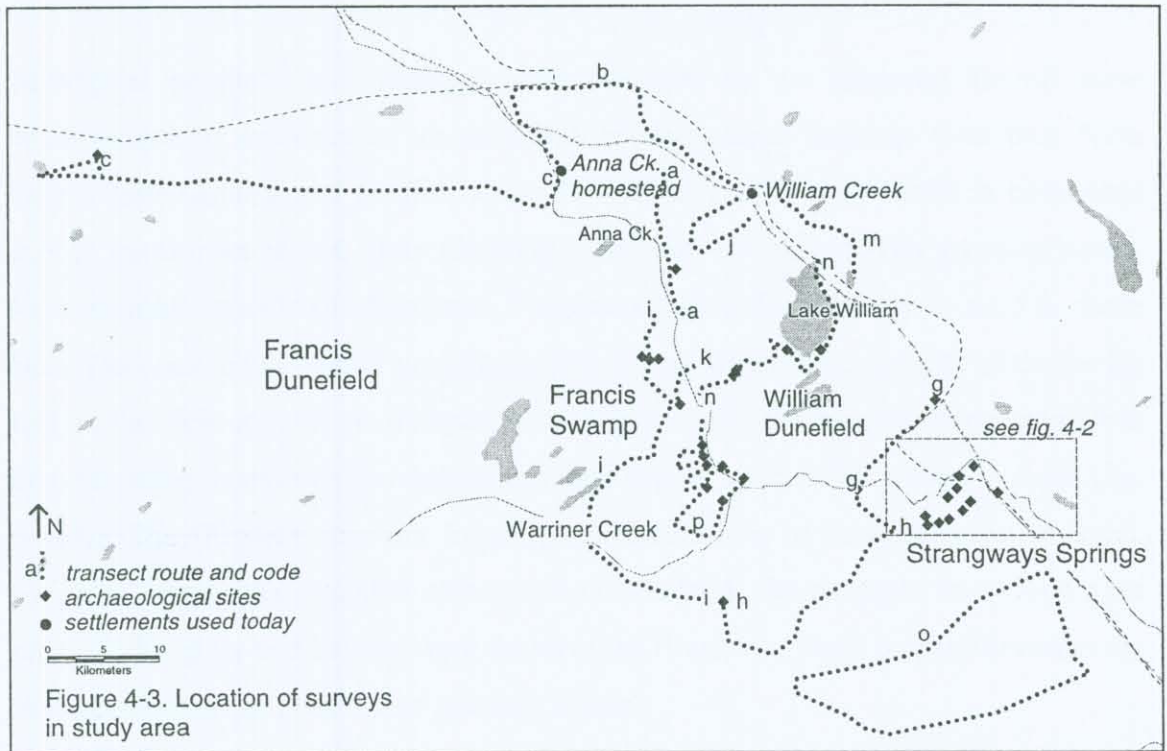


Figure 4-3. Location of archaeological survey in study area

Feature mapping

Having surveyed the location of archaeological deposits, field recording involved planning the distribution of the archaeological material. A compass and tape method was used to produce site and feature plans which mapped the distribution of archaeological features within sites and the density of different classes of archaeological material. Linked with the site plan was an inventory of artefacts (described in the next section). Artefacts were described using qualitative terminology. Quantitative measurements were made for certain artefacts (these terms and measurements are also explained in following sections). Certain artefacts were described on record forms, and if necessary drawn and/or photographed. These were artefacts which required further analysis (e.g. inscriptions on clay pipes).

To establish trends in the spatial distribution of archaeological deposits and to interpret activity areas, other characteristics of archaeological deposits recorded included: the relative ratios of European and Aboriginal artefacts, the relative extent and densities of deposits, and evidence from activity areas. Activity areas included tool making areas, cooking area and food preparation areas.

Aboriginal people's tool making areas (referred to as knapping floors) were characterised by evidence of the reduction process, small debitage (less than 5mm long), waste material and finished tools. Tool making areas were found in both stone and, in the contact period, glass. Cooking areas were characterised by grinding stones, food remains, utensils and fireplaces. Fireplaces were defined by stones used to retain heat. The need to use stones would have arisen from the relative sparsity of timber for fuel in this arid region. At many sites in this research the heat-retaining stone was mound spring travertine. The fireplaces today appear intact or as eroded mounds (fig. 5-33A). The fireplaces are the focus for concentrations of archaeological material, which in some sites included contact period artefacts, for example, at several sites pipes, forks, glass and buttons were found at the fireplaces. Food preparation areas are characterised by the presence of grinding stones.

Excavation and sample

Certain archaeological deposits were sampled to provide comparative data about trends in the distribution and relative ratios of material culture. 'Frequency analysis' recorded the frequencies of artefacts, including artefact type, raw material, the amount and condition of organic material, in a square metre of a surface deposit. These analyses allow comparisons with results from Florek (1993). Frequencies at sites both with, and without, European artefacts were recorded.

Excavations were conducted to map in detail the sub-surface distribution of artefacts at targeted archaeological sites. Excavation were located at features such as hearths, knapping floors of glass and stone, and household deposits. The material was categorised according to class (described below).

At most of these sites, with the exception of site N3, it would be more accurate to describe the excavation as surface sampling (for example, at sites S240 and S251), as the process of excavation required moving very small amounts of aeolian sand of 2 to 5 cm depth before reaching a basal layer of hardened sand, clay or stone. The process involved gridding the site into metre squares and recording all the material within each. The one metre grids were coded alpha-numerically (A, B, C etc. along the north-south axis, and 1, 2, 3 etc. along the east-west axis). Using 2.5, 5, and 10 cm sieves, recorded a greater quantity of small artefacts than the frequency analyses did, as this smaller size of artefact was more easily obscured by sand than larger artefacts.

One important class of smaller artefact revealed through excavation was debitage from glass and stone working. This helped define knapping floors, and whether certain finished tools were made on site, or were imported into a site. Other small artefacts which were not necessarily recorded in feature plans and frequency analyses were pieces of corroded metal, ochre fragments, emu shell, shoe nails, needles, buttons and clay pipe fragments. Finds were separated by 5 and 2.5 mm sieves and bagged for post-excavation analysis.

Excavation at site N3 (a shepherds hut) was on a larger scale (*see* site description) being 30 metres long and ten metres wide. A series of 10 cm spits were used to excavate to a depth of 800 mm, to a basal layer of sterile sand.

Faunal analysis

Faunal remains were very rare as bone was poorly preserved. However, dietary and food refuse patterns were recorded at site N3.1 (*see* site description). The identification of the excavated bone used reference collections¹⁹ and literature: including Flower (1966), Jones (1968), Merrilees and Porter (1979), Trigg (1996); for rabbit (Barone et al. 1973; Myers et al. 1994); and specifically European mammals (Sisson & Grossman 1961). The approach (adopted from Cornwall 1968; Chaplin 1971; Grigson 1981;

¹⁹ From collection at the Department of Archaeology and Anthropology, Australian National University.

Hope 1983) recorded relative frequencies of different types of animals, and evidence for butchery and cooking.

Database management system

Having mapped the sites and the finds a database management system (DBMS) was used to organise the archaeological material.²⁰ Artefacts were assigned a database identification numbers (DBID). In Appendix B is an inventory of artefacts by site (including descriptive attributes and weights where available) and an inventory summarising the archaeological features by site. The DBMS includes archaeological material catalogued post-excavation. The DBMS is a classificatory system to facilitate spatial analysis.

Spatial analysis

The DBMS was linked to a mapping program to conduct spatial analysis.²¹ The analytical decisions questioned:

- a) the relationship between sites and landscape elements
- b) the distribution of artefacts across sites
- c) the distribution of artefacts within sites
- d) relative frequencies of different classes of artefacts

These analyses are used as a basis for the interpretation of archaeological assemblages.

Artefact classification

The archaeological assemblages in this study consist of different classes of artefacts. The classificatory system used for artefact analysis in this research was designed to interpret past activities at a site (function) and to establish when the site was occupied (chronology).

²⁰ The QuattroPro program was used as a DBMS.

²¹ MapInfo Professional 4.0.

Class of archaeological material	Description
Lithics ²²	Stone tools & remains of tool making
Food processing tools	Food processing tools
Ochre	Traded from outside study area
Organic material	Faunal remains, shell, charcoal
Pastoral equipment	Horse saddlery, yards, fencing wire, tools & shears
Structural equipment	Corrugated iron, nails and structural fasteners, cut stone
Overland telegraph equipment	Telegraph line and repeater station equipment
Munitions	Guns, bullets and shot
Personal items	Watches, jewellery, toys, instruments
Clay pipes	Stems and bowls from pipes, including makers' marks
Buttons and fasteners	Glass, metal, shell and porcelain fasteners
Matchboxes	Metal boxes for wax matches
Glass vessels	Vessels for alcohol, foods, medicines and chemicals
Ceramics	Earthenware, stoneware and porcelain
Tin cans	Tin cans for preserving foods

Table 4-1. Classes of archaeological material

This classes of archaeological material listed in table 1-1 highlight trends in the archaeological record; as each class tends to provide specific information to the interpretation of assemblages. The classes of artefacts and their interpretation are more fully described in appendix C. The treatment of each artefact class in appendix C provides a set of material culture studies. These studies focus on functional or temporal information, and highlight the potential and difficulties encountered in the course of this research. Appendix C demonstrates the results and analytical tools I developed, and allows later comparison with other archaeological contexts.

The classes of artefacts listed in table 4-1 are used to interpret the timing and use of a range of historic sites: such as, pastoral settlements; pastoral activity areas, for example, out-stations, yards, wool-scouring (washing) sites, shearing sites, lambing stations, watering places, artesian wells and bores; Aboriginal occupation sites; and Aboriginal pastoral work sites.

²² Following recording procedures for lithic material developed by Wright (1983), Hiscock (1989) and Smith (1995).

Aboriginal people's modification of material from European sources: glass tools

An important feature of site analysis was evidence for the modification of European material culture by Aboriginal people, in particular glass artefacts. This evidence demonstrates Aboriginal site-use in the contact period. Evidence for the use of glass in ways similar to that practiced on stone by Aboriginal people suggests both continuity and change into the period of contact: continuity in technology, and adaptation to a new material. I refer to glass, although the evidence also applies to other vitrified material, such as ceramics. Equally, it appears that this class of evidence is applicable outside Australian contexts; anywhere that stone tool manufacturers encounter new forms of vitrified objects. Additionally, there are rarely historical descriptions of Aboriginal people's uses for glass in Australia.

Australian examples of glass tool making

Research into Australian Aboriginal people's use of glass focuses on how glass was broken by percussion or pressure to make tools, with different practices highlighting regional differences.²³ For example, the versatility of glass as a medium is demonstrated by the production of elaborate 'Kimberley points' (traditionally a stone tool) in northern-western Australia. These long blades of bottle glass were provided with a faceted surface and edge through pressure flaking (Fullagar, R. 1996, pers. comm.)²⁴ and were widely traded as commodities (Head & Fullagar 1997). Other studies provide regional case studies: for example, for South Australia (Freeman 1993) and Western Australia (Harrison 1996). Murray (1993), in his interpretation of the excavation of a contact period hut at Burghley, Tasmania, stated that the '[g]lass tools [that] emulate classic Tasmanian forms made on stone...were decisive...material culture evidence... [for the reoccupation of the site] by Aboriginal people' (1993, p. 513). In western Victoria glass flaked tools and new metal tools were reported by Coutts et al. (1977, pp. 39, 42) to replace stone tools. O'Connell (1974) reported the

²³ Glass was also used in other ways in Aboriginal society. For example, in western NSW broken glass marks the location of Aboriginal graves (Rainbird, P. 1997, pers. comm.).

²⁴ These comments were made at a workshop on the manufacture of glass tools organised by Sydney University, the Australian Museum and the South Australian University held in June 1996 at the South Australian University.

twentieth century uses of glass in Central Australia Aboriginal communities. Allen's (1969, 1973) analysis of glass artefacts from Port Essington, Northern Territory, demonstrated the systematic exploitation and modification of glass bottles by Aboriginal people.

This was used as a basis for the analysis of glass tools from Oyster Cove, Tasmania (Allen & Jones 1980). The guidelines proposed by Allen and Jones for the identification of flaked glass implements were that qualitative and quantitative differences should be sought between tools and other unmodified glass fragments. They cite the presence of bulbs of percussion on modified flakes, the use of the thickest parts of bottles to make tools, and recommended analysis of bifacial versus internal and external unifacial flaking. They take into account the extent of other agencies which may produce flakes (for example, road work): 'the location of the objects coupled with commonsense still provided the best guide to validity' (Allen & Jones 1980, p. 231). More recently, Cooper and Bowdler (1998) discuss glass artefacts from the Andaman Islands and Western Australia.

From these studies, the most distinctive stage in the glass tool making process is the preference for the thickest parts of bottles for the production of glass flakes through sequential percussion flaking, correlating to cores of stone (Cooper & Bowdler 1998, p. 80). Less well documented are systematic spatial studies of the stages in the glass tool making process: that is, evidence for selectivity; form selection; primary and secondary processing; and eventual distribution of tools. This thesis adds to existing work by presenting archaeological evidence for such spatial distribution.

Approach adopted in this study

The two main areas of inquiry conducted in this research related to how glass tools were made (the stages of the tool making process) and whether it was possible to establish how glass tools were used (residue and use-wear analyses). 1) selection of specific bottle types and bottle parts (primary reduction and form selection); 2) transportation of raw material; 3) knapping floors (secondary reduction); and 4) movement of tools away from knapping floors. The first line of inquiry aimed to locate

evidence for: 1) selection of specific bottle types and bottle parts (primary reduction and form selection); 2) transportation of raw material; 3) knapping floors (secondary reduction); and 4) movement of tools away from knapping floors. This type of evidence has the potential to demonstrate selectivity and spatiality in glass tool making. This is discussed in the section 'Glass working' (chapter 5).

In summary, glass tools were recognised by: 1) being located in knapping floors: characterised by cores, flake or debitage; 2) qualitative differences between tools and other unmodified glass fragments; 3) presence of bulbs of percussion on modified flakes; 4) presence of sequential flaking, edge modification and striations on used flakes; 5) the absence of other agencies which may produce flakes, such as road work.

Artefacts were described as 'cores', 'flakes' and 'debitage', and as exhibiting 'sequential flaking' and 'bulbs of percussion'. The term 'core' describes glass from which flakes had been struck. In association with this were often percussion scars from the striking process. Some cores exhibited several flake scars, described as 'sequential flaking'. The term 'flake' described a piece of glass which has been struck from a glass source. 'Flakes' tended to be defined through a 'bulb of percussion' (BOP), and sometimes evidence for percussion marks bottle cortex. 'Debitage' describes the material resulting from the reduction process, and was reserved for in situ knapping floor remains. Glass which exhibits no evidence for being part of a reduction process is described as 'glass fragments'.

Residue and use-wear analyses

Little is currently known concerning how glass artefacts were used by Aboriginal people, a condition which may have depended on the availability of the raw material. Residue and use-wear analyses offer potential directions for inquiry. In this study the poor retention of residues on glass tools made a determination of tool function difficult.

Use-wear and residue analyses were conducted to attempt to determine how tools were used. I selected approximately one hundred glass artefacts which, through context or appearance, were thought to be tools. These were either examined under low powered

magnification (X10 hand lens) or with a scanning electron microscope (SEM). The informative potential of this analysis was reduced due to the high degree of abrasion resulting from the exposure to windblown sand, which has resulted in a high degree of etching and pitting of the surface of the glass. This abrasion removed residues and much evidence of use-wear. These impressions were supported by Richard Fullagar (1997, pers. comm.), who examined a sample of glass artefacts from this research, and concluded that the absence of residues resulted from the high degree of artefact exposure to sun and wind.

Artefacts protected from exposure, either through being incorporated in a stratified deposit, or collected in the nineteenth century, may provide microscopic evidence of the character of glass artefact usage, although that potential remains outside the scope of this study. As stated earlier, the majority of the archaeological deposits in this research exist in surface assemblages and are exposed to windblown sand, the effects of light radiation, water and wind, and treadage from animals. The result is that any potential for residues on the artefacts tested was minimal.

There remained, however, evidence for use-wear on some glass artefacts. (This was not tested under high magnification.) In the description of artefacts during the field recording the term 'use-wear' was used for artefacts which had serial striations along an edge (visible under 10X magnification).²⁵ The main physical evidence for the use of an edge are rounding, striations, scarring and polish. Evidence of edge treatment can be seen in the form of multiple flaking episodes and multiple scarring episodes along specific edges. Evidence of polish and rounding are less visible on these highly abraded artefacts. Striations at a regular orientation to the angle of use are still visible along side certain edges, yet it was not possible to interpret how they were used. The significance of use-wear was not fully realised in this study, as it was reported for a very small number of artefacts (less than 50) in contexts where it was clear that the glass flake was a tool (normally being found at sites distant from reduction sequences). It was not determined what produced the use-wear patterns.

²⁵ In appendix B a question mark indicates uncertainty, to isolate material which provided strong evidence for use-wear.

Glass vessels offer interpretive potential for contact period studies as they demonstrate quantifiable changes in form over time. This increases the potential of developing local chronological frameworks for the introduction and use of glass tools. For this reason the corpus of glass vessels recorded in this study was divided into types, some of which were earlier than others.²⁶

Summary

The aim of this chapter was to contextualise the archaeological project and some key aspects of the archaeological record prior to the presentation of archaeological evidence. The archaeological methods and research responded to the aim to conduct a comprehensive archaeological interpretation of colonial era interaction, as demonstrated in the study region of the south-western Lake Eyre Basin. This was done by:

- a) developing a field survey system which comprehensively located sites of pre-contact and contact period occupation
- b) mapping, sampling and excavation techniques to interpret a wide range of assemblages
- c) refining chronologies for European material culture
- d) isolating particular past activities, for example, pastoral activities, tool making (in glass and stone), food preparation, and camping occupation.

This methodology aims to allow focus on the material evidence for continuity and change in contact contexts. The demonstrable changes apparent in the archaeological record studied in this research concern the relative amounts of individual artefact classes in archaeological assemblages, that is, increases or decreases in classes of artefacts, and the introduction of new materials and artefacts. This is the basis for the next chapter.

²⁶ Another related issue concerns ethnicity: the innovative modification of material culture is of course not restricted to Aboriginal people. For example, Wilkie (1996), in her attribute analysis of 35 glass shards from Oakley Plantation in Louisiana, found they derived from African-American contexts and defined them as either un-retouched knives or as retouched scrapers. Ritchie and Bedford (1983, p. 250) state that in late-nineteenth century New Zealand bottles were commonly re-used as jars by cutting off the top third, and that the Chinese reused bottles as lamps. Context is an important condition for the interpretation of glass artefacts, as provided here in the site descriptions and discussion.

PART III

**RECORDING, ANALYSIS AND DISCUSSION OF
ARCHAEOLOGICAL EVIDENCE**

Chapter 5. Distribution and analyses of archaeological material in the study area

The presentation of archaeological evidence in this chapter is divided into a discussion of separate sites and inter-site comparisons. Part one presents the archaeological assemblages recorded in this research. The second part of the chapter involves inter-site comparisons of the evidence for Aboriginal pre-contact (Holocene) and post-contact settlement, and for distinct phases of pastoral activity based on European material culture and settlement patterns.

Archaeological sites

The presentation of these sites is organised by these areas: Anna Creek, Lake William and William Dunefield, Francis Swamp, Warriner Creek and Strangways Springs (fig. 5-1). As listed in figure 4-1 several sites were recorded in each of these areas: Anna Creek (sites A6 and A9), Lake William and William Dunefield (sites N1 to N4), Francis Swamp (sites I2 to I5, K1, P1 to P11), Warriner Creek (H1, G3). The sites at Strangways Springs are discussed in terms of the 'head station', the 'western occupation sites', the 'main ridge', and the 'main north mound' sites. Two additional sites outside of these areas are discussed at the end of the chapter: Parkers Well (site C1) and Mungyamarrilyna Swamp (site L2).

As discussed in chapter 4, the level of site recording varied, with the greatest attention paid to the sites interpreted as being places with evidence for post-contact by Aboriginal people. The discussion in this chapter refers to the artefact classes presented in appendix C, and where necessary I signpost the relevant reference or supporting analysis. The inventory of artefacts (with a DBID number) and archaeological features (either with the prefix 'F', or as a subset of a site code, for example, N3.1) referred to in this chapter are included in appendix B.

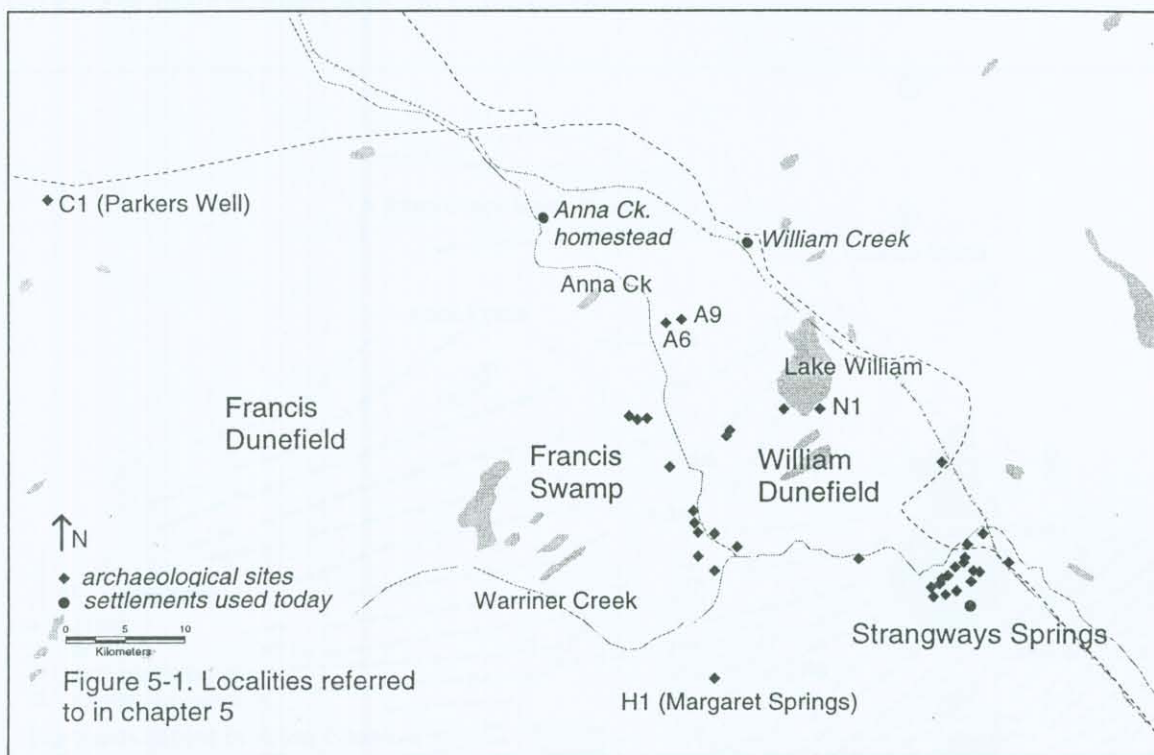


Figure 5-1. Map showing localities referred to in chapter 5

Anna Creek sites

The largest sites between the northern end of Francis Swamp and Anna Creek head station are related to pastoral activity (fig. 5-2). Locally, site A6 is known as the ‘Old Anna Creek Woolsheds’, also known in the nineteenth century as ‘Adlalawalla’.¹ This place, and other deposits associated with nearby yards (site A9), were the largest sites of pastoral activity found outside Strangways Springs and the current head station at Anna Creek. In 1882 this locality became significant as the site of the first artesian bore in South Australia.² That bore was presumably replaced by a twentieth century well at site A8, several hundred metres south (fig. 5-2). The nearest artesian springs are south in Francis Swamp, or east near Lake William. Thus, prior to 1882, to use this area pastoralists would have relied on waterholes in the creek or claypans when they filled after rain. A survey for archaeological deposits (Transect A) showed that

¹ *The Pictorial Australian*, Feb. 1891, p. 30. It was not established in this study whether ‘Adlalawalla’ is a local Arabanna name.

² During the 1860s the pastoralists recognised the potential of Anna Creek as the site for an artesian bore, and John Warren was the first person, private or government, to sink an artesian bore in the Far North (*The Pictorial Australian*, Feb. 1891, p. 30).

the area was occupied by Aboriginal people prior to contact, as suggested by occasional lithic scatters adjacent to the creek.

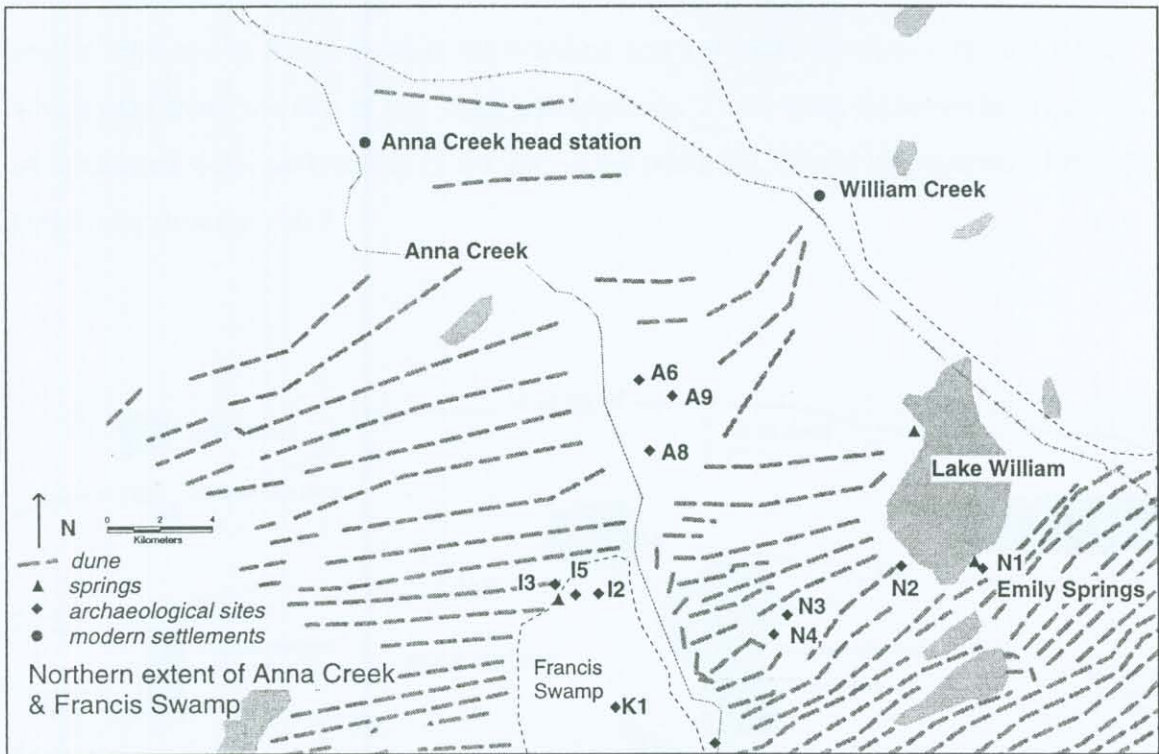


Figure 5-2. Map showing Anna Creek and northern extent of Francis Swamp, including site of woolsheds (sites A6 and A9)

'Old Anna Creek woolsheds' (Site A6)

Site A6 is close to the Anna Creek, and consists of several built stone structures, a windmill and surface occupation sites (figure 5-3). As shown in figure 5-4A, the local environment in the vicinity of Anna Creek was a sandy area with desert grasses, small acacias and eucalypt trees. Throughout this area were scatters of lithic material, with little evidence of structure. The lack of structure could result from the age of the deposits, and from disturbance following European settlement.

A track cut through site A6, eroding the surface and resulting in movement of artefacts. Most of the buildings have been dismantled following abandonment (presumably in the early-twentieth century). The remains of the largest structure consisted of the end of a stone building, with large chimneys and a brick oven (feature

A6.1), with no floor or other walls surviving. The building stones were typical of the Anna Creek area, and the walls were applied with a thick render. The structure was solidly built, and included decorative elements, such as tuck pointing in the chimney render. Pictured in figure 5-4A is the building and a wooden windmill (feature A6.2), which may mark the site of the 1882 artesian bore. There were no surviving remains of associated water tank stands or troughs at the windmill, except the remains of metal tanks near structure A6.1.

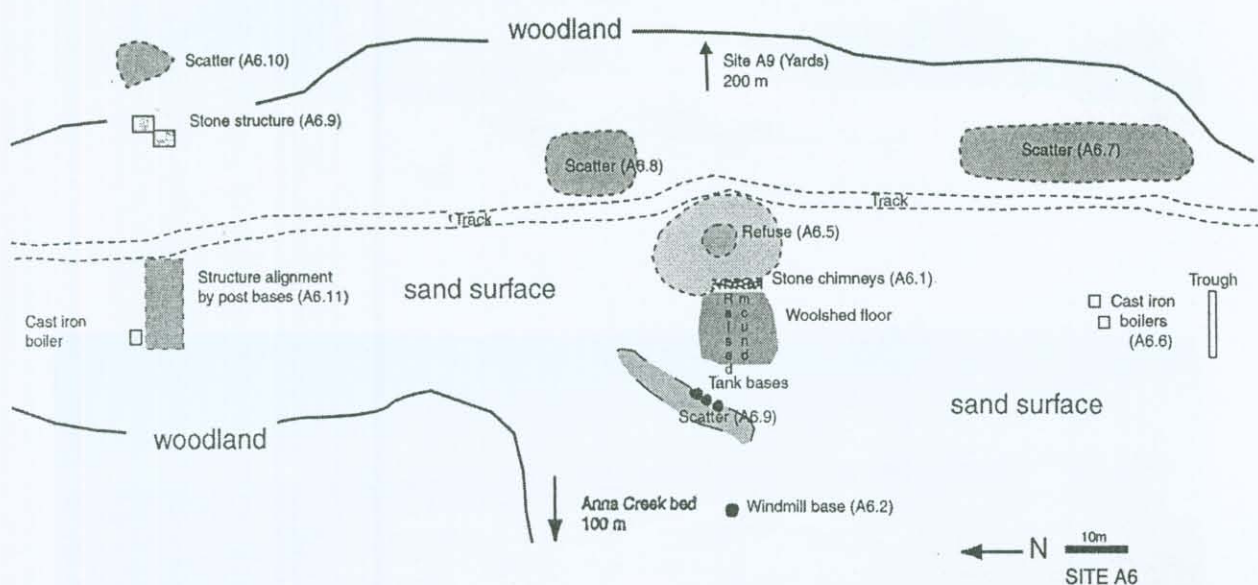


Figure 5-3. Plan of 'Old Anna Creek Woolsheds' (site A6)

Other evidence of machinery at the site included a cast-iron steam boiler (feature A6.6) with associated metal troughs. The remains of a second stone structure (feature A6.9) included a large fireplace, a cast-iron front-piece from a range, and another cast-iron water boiler (feature A6.11). Features A6.6, A6.11 and A6.9 have post-bases demonstrating the extent of associated wooden structural elements. The key elements of this site are: the construction of permanent structures (presumably as a shearing shed) in association with artesian bore water; wool scouring facilities with the technical capability to heat water under pressure, and tanks to hold the water; the internal fireplaces and ovens capable of preparing food for a large work-force. The assemblages can be assumed to postdate 1882 (when the first bore was sunk at this



Figure 5-4. A. Photograph at site A6 showing the topography and vegetation cover of the Anna Creek area, and with the remains of a stone structure (feature A6.1) facing a wooden windmill (feature A6.2). Occupation deposits (features A6.3 to A3.11) were located close to these features. B. Photograph of William Dunefield.

Site Feature	Type	Site A6					Site A9						
		F4	F5	F7	F8	F10	T	Yard	F1	F2	F4	F5	T
Glass artefacts ³													
Dark-olive	10											1	1
N&CO	14	1					1						
Light-olive (L/O)	20	1	1	1	1		4		1			1	2
L/O domed base	21			2			2						
L/O concave base	22	1	1				2	1					1
L/O closures	23	1					1	1					1
Tint (inscribed)	32		2	2			4						
Tint (not inscribed)	33	2	1	1			4	1	2		2	1	6
Tint (non-circular)	36										2		2
Lea & Perrins	38		1				1						
Glass stoppers	39	1					1						
Medicinal bottle	47	1	3	2			5		1		4	1	6
Clear glass bottle	50			1			1	1					1
Pickaxe stubby	53		3				3						
Amber bottles	55	2	5	2			9	2	4		2		8
Window glass								1					1
Core	60			1			1					1	1
Flake	61	1			y		1						
Debitage	64				y								
Ceramics					1	1	2	3				1	4
Fine earthenware		1	4	3			8	1				1	2
Course earthenware			1				1						
Porcelain			1	1			2						
Stoneware			1	1			2						
Clay pipe				2			2	2					2
Buttons		2					2						
Buckles												1	1
Metal cans											5		5
Matchboxes												1	1
Shear-blades								2		1	2	2	7
Portable pastoral equipment									y	y	y	y	y
Structural metals (corrugated iron, nails)				y			y	y	y		y		y
Lithics (tools)					y		y		y			y	y
Grinding stones (Aboriginal)				y			y						

Table 5-1. Table of cultural material at sites A6 and A9, with MNI counts where possible. 'Type' refers to classification of glass artefacts in appendix C. 'T' indicates a total for each site. 'y' refers to the presence of an artefact or feature where a numeric value would be misleading.⁴

³ Description of glass bottles by 'type' is listed in appendix C.

⁴ This table refers to artefacts described in appendix C; specifically to DBID 3008 & 3009 (A6) and DBID 3010 & 3011 (A9) discussed with clay pipes; DBID 3088 & 3089 discussed with buttons; DBID 3118, discussed with buckles; *see also* discussion of glass bottles and ceramics.

assemblages can be assumed to postdate 1882 (when the first bore was sunk at this location), while after 1900 the use of the woolsheds decreased (*The Pictorial Australian*, Feb. 1891, p. 30). According to local informants, the structures were removed when the shearing was relocated to Anna Creek head station.

Occupation deposits were distributed throughout site A6 (features A6.4, A6.5, A6.7, A6.8, A6.10) (fig. 5-3). A summary of cultural material found in these deposits is provided in table 5-1. The assemblages included artefacts related to domestic activities such as food preparation (cooking equipment), food consumption (salad oil and pickle vessels, sauces, ceramic plates and bowls), alcohol consumption (light-olive 'champagne beers' and other beer bottles), smoking (clay pipes), and personal garb (buttons and buckles). Compared to other assemblages in this study there were many medicinal vessels, most found in feature A6.4. The small amount of dark-olive glass bottles is taken to be indicative of post-1880 assemblages, as these bottles are an older variety than other bottles found in this study. The range and frequency of household ceramics at site A6 was greater than at other sites in this region, and included fine earthenware with several designs, 'banded' coarse earthenware and porcelain. Metal items included a range of architectural elements and buttons, but surprisingly few hand shears were found.

The modification of glass bottles to produce glass flakes was evident at features A6.4 and A6.8, where 20 to 30 percent of the light-olive glass was worked: demonstrated by base-flakes and debitage. One ten centimetre long glass blade had bifacial treatment. All flakes found at site A6 were produced from light-olive glass.

As indicated in table 5-1, a low-frequency distribution of lithics was present across the site A6, especially exposed within more eroded areas. Lithics were found to cluster with certain deposits of European material, especially at feature A6.5, directly behind the main structure.⁵ Some of the lithic raw material derived from nearby Anna Creek

⁵ As stated in chapter 4, the quantitative measure of lithics were categorised according to number of artefacts per square metre (psm) as follows:

Low-frequency (LF) = 1-10 psm

bed, demonstrated by quartzite river pebble fragments, one of which was greater than five kilograms in weight. The lithic material included weak-red and grey quartzite, grey silcrete and chert.

Interpreting the assemblages at site A6 was made difficult by cattle and vehicle disturbance. However, there remain strong elements of site structuring in the archaeological assemblages of obviously settler cultural material which are not mirrored in the lithic material (assumed to be indigenous). That is, there are no distinctive activity areas such as lithic knapping floors or fireplaces. This suggests that the lithic material originates from an earlier pre-European context, which has been disturbed by later settlement. The presence of flaked glass is noteworthy, as this suggests Aboriginal post-contact activity, either contemporary or following site abandonment.

Yards at 'old Anna Creek woolsheds' (Site A9)

Site A9 is the remains of a complex of yards located 200 metres north-east of the old Anna Creek woolsheds (site A6). The topography and vegetation is similar to that described for site A6. The yards are located on a flat sandy surface with low dunes to the immediate south-east, and amongst a stand of medium sized acacias. The yards were of post and beam construction (tail and slot design) reinforced by large metal bolts at corner posts. There were also post and wire yards to which mesh had been added, possibly to prevent access by dingoes.

Occupation deposits at site A9 consisted of assemblages of European cultural material and smaller deposits of lithic material, as summarised in table 5-1. The European material culture was located around the southern and eastern perimeters of the yards, with a small amount of material present within the yards. Much of the material was similar to that recorded at site A6, although there was more pastoral equipment and less domestic material at the yards. Artefacts included architectural remains (window

Medium-frequency	(MF)	= 10-50 psm
High-frequency	(HF)	= >50 psm

In addition to lithic artefacts these categories are used throughout the site description to describe frequency of other artefacts.

glass, nails, wire and corrugated iron), alcohol bottles ('champagne beers', amber glass), material related to food consumption (salad oil, sauce and chutney bottles), other domestic material (ceramics - predominantly fine earthenware tableware - and clay pipes) and pastoral equipment (shear-blades and metal drums).

Distinctive features were assemblages deriving from pastoral activities. Feature A9.1 occurred in a low depression and included glass, lithics (low-frequency) and three metal drums (possibly for tar or fuel). Feature A9.2 (20 metres east of A9.1) also had three drums (one with a solid black tar-like residue which may have been being used to cover cuts on the sheep incurred during shearing, crutching and dagging), shear-blades (English made) and half a grinding stone (possibly for sharpening shearing blades) (*see* table 5-1). The numbers of shear-blades found at site A9 exceeded that found at the woolsheds. This may have been because mechanical shearing devices were used at the woolsheds, and hand-held shears were used at the yards for crutching the sheep. The hand shear-blades eventually broke into two blades, as found throughout this study.

Feature A9.3 (five metres east of A9.3) consisted of three circular deposits of burnt bone. All the bone was non-diagnostic being highly fragmented. Feature A9.4, located thirty metres east of A9.3, had a wider range of food storage and consumption artefacts, including sauce and chutney bottles, 'dot and spot' sealed cans were also present, and medicinal bottle types. This suggests a nineteenth century occupation, on the basis of the canning technology which predates the 1890s.⁶ Features A9.3 and A9.4 are interpreted as camping and food consumption areas for the pastoral workers based at the yards.

A site (feature A9.5) located in a deflated area of a dune 100 metres south of the yards provided the strongest evidence for post-contact Aboriginal occupation. The assemblage included a similar range of glass and ceramic artefacts as elsewhere at site A9, as well as clay pipes and shear-blades. These artefacts occurred amongst a scatter of lithics. One interpretation is that the lithics were exposed by erosion into the low

⁶ The 'dot and spot' sealing technology for cans is described in appendix C. These pre-automated canning techniques predated new automated techniques used after 1897.

dune and originate from pre-European site-use. This is plausible, as at sites A9 and A6 there is a distinct relationship between low-frequency non-structured lithic deposits and erosional features. However, other evidence at feature A9.5 suggests Aboriginal agency, as light-olive glass present had been flaked. The camp would have been hidden from the yards by a stand of trees.

Lake William and William Dunefield sites

The relative difficulty in demonstrating relationships between lithic assemblages and European material at sites A6 and A9, was easier in the Francis Swamp and the William Dunefield. The sites N1, N2, N3 and N4 were located during exploratory transects in the vicinity of Lake William (fig. 5-2). The archaeology of the William Dunefield demonstrated that pre-contact occupation by Aboriginal people tended to focus at the ends of dunes close to Lake William (N2) and at artesian mound springs (N1). Elsewhere archaeological material tends to be infrequent, excepting small deposits near to claypans and sources of ground water. The dunefields were also used by the pastoralists as demonstrated at a shepherding out-station and associated campsite (sites N3 and N4).

Emily Springs is located on a small peninsula extending into the southern end of Lake William, a salt lake. This area includes evidence for pre-contact Aboriginal occupation and pastoral activities from the 1860s onwards. Last century, Emily Springs was described as a complex of separate active springs and an important resource for the pastoralists during the 1860s. In particular, the saltbush and dry grasses were highly regarded for grazing sheep. In 1865, the Emily Springs were used to water bullocks and horses, and the main spring was cut at that time. The cut was 'eight to ten feet deep, twelve feet long and five feet wide with gradual approach logs placed side by side and about six inches of red stones on the top of the logs, it is like a good metal road to the edge of the water, to prevent anything going into the water [there is] a substantial fence a bullock or a horse could put his head through and drink easily.' (Jeffreys, 10 June 1865, 15 Oct. 1865, & 26 Jan. 1866). However, within six months the water turned putrid. The pastoralists describe building a well, and using 300 feet of troughs to run the water away from the cut spring. The troughs would have been made

of wood (as found at sites I5 and K1). However, during the next two years the water improved, and pastoralists describe running sheep at the Emily Springs.

The archaeological recording revealed only one active water source, a 50 metre wide muddy expanse. The apparent extinction of the other springs in the complex may have resulted from the pastoralists' water management regime. The inactive spring mounds are being increasingly covered with the sand and salt blown from Lake William. Consequently, the topography and water regime has changed since European settlement, and nearly all evidence for past occupation is obscured. Cattle traffic erodes sections between the rising sandridges, cutting through layers of past Aboriginal and settler occupation, exposing medium-density lithics and a small amount of European cultural material. The combined erosion and covering over made site location difficult.

The presence of troughs and fences immediately north of the cut spring (feature N1.1) was demonstrated by two rows of in-ground posts extending east. There were also three metal pickets and pieces of metal, possibly fragments of metal troughs. Feature N1.2 was an exposure of lithics in an eroded section, located due south of the cut spring. One piece of fine earthenware was found in this deposit. Feature N1.3 was a horizon of artefacts eroding from the side of a sandridge. The deposit was three metres square and included burnt bone, charcoal, and one green tint glass fragment. The same erosional event had exposed features N1.4 and N1.6. Feature N1.4 was a two square metre deposit including lithics, a ceramic insulator fragment and a light-olive glass fragment.

Feature N1.5 was a larger deposit in a similar eroded depression created by cattle traffic. It extended from a point two metres south of N1.4 and was twenty square metres in extent. The artefacts were low-frequency lithics (including cores and grinding stone fragments), glass fragments (light-olive, green tint), two complete small light-olive 'champagne beer' bottles, pieces of metal containers, emu shell, burnt bone and ash. Feature N1.6 was the remains of a construction at the base of an inactive mound spring covered by sand, twenty metres west of feature N1.5. The structure was

shown by three in-ground posts and small fragments of curved metal. This feature was interpreted as a trough situated below a spring.

In summary, the mixture of material at site N1 show strong degrees of clustering by certain pastoral activities (remains of metal troughs, posts), yet the majority of occupation deposits are presumed to be obscured by soil movement and dune movement, excepting those exposed through erosion. The European use of the site presumably began in the 1860s, while the metal (rather than wooden) troughs suggest ongoing attempts to use the springs. The Aboriginal cultural material could all derive from pre-contact contexts, as spring complexes in this region all have evidence of past occupation. There is no evidence of post-contact Aboriginal artefacts, such as glass tools, or other Aboriginal activity areas.

An occupation site at edge of William Dunefield (site N2)

Site N2 is one of the larger Aboriginal occupation sites recorded in this locality, and was one of several occupation sites located at the eastern extent of the William Dunefield. These sites are located at the meeting of several different environments: the dunefields, the open valleys between the dunes, the nearby artesian water at Emily Springs and William Springs. The locations at dune ends offer surveillance of the region around Lake William, and the inter-dunal swales (fig. 5-4B). Site N2 consisted of occupation deposits along the crest of a dune. The side of the dune was eroded by a water gully, throughout which were medium to high-density lithic deposits. Lithics were located both on the dune and on the gibber floor suggesting that archaeological material located initially on the dune had moved to the lower level of gibber as a result of erosion processes. The lithic assemblage on the lower surface was homogeneous, with no discernible activity areas (as found along the dune crest). That is, the vertical (and horizontal) movement of artefacts has obscured evidence of past activity. This site demonstrates that prior to European settlement Aboriginal people preferred to live at the ends of the dunes in localities with access to a diverse range of resources and environments. There was no evidence of post-contact cultural material at this site. The evidence from site N2 differs from the pattern of material further west into the William

Dunefield (as demonstrated at sites N3 and N4) where evidence for past Aboriginal occupation was rarer.

Excavation of shepherd's hut and contact period campsite (sites N3 and N4)

Sites N3 and N4 are located in the William Dunefield between Lake William and the northern end of Francis Swamp, two kilometres east of Anna Creek and three kms west of Lake William (fig. 5-2). Sites N3 and N4 are presented together as they are spatially proximate (fig. 5-5). The feature excavated at N3.1 is interpreted as being the remains of a structure built to accommodate shepherds during the 1860s and 1870s. The evidence from these sites suggests contact period of Aboriginal-settler interaction.

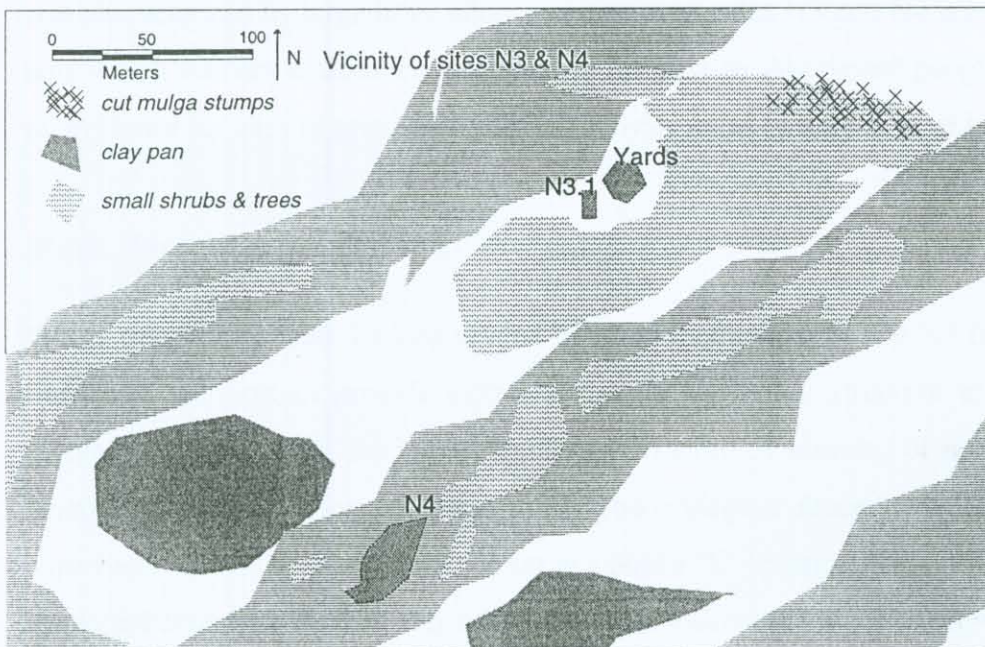


Figure 5-5. Spatial relationship of sites N3 and N4, showing source of mulga timber, the extent of yards (N3.2), and location of shepherd hut (N3.1).

The local topography consists of sandridges, each stabilised by small to medium sized vegetation. Between the sandridges are wide inter-dunal valleys, with floors of siliceous gibber (fig. 5-4B). The sites are located in an area where the sandridges converge, and become increasingly irregular, as characterised by sand extending across the inter-dunal valley to effectively 'block' the valley, forming a 'dead-end'. Many of the 'dead-ends' near sites N3 and N4 contain playa, which fill after prolonged rain.

Site N3 is located in an inter-dunal valley amongst a stand of acacia trees. The concentration of trees is rare in the William Dunefield, and indicates the presence of local ground water. Grazing animals could feed on grasses and herbage, which are relatively rich in the area. The remains of a pastoral out-station were found at site N3, consisting of yards and a hut.

The closest occupation assemblages to site N3 were infrequent scatters of archaeological material (predominantly lithics) along the crests of the sandridges. Most local sites were characterised by small scatters of lithics, with little evidence for activity areas or site structuring. The amount of occupation material increased towards Lake William, as demonstrated at site N2, described earlier. Thus, while the dunefield was characterised by large lithic sites in certain areas, sites N3 and N4 are located in an area which was not extensively occupied in the past by Aboriginal people. There was no evidence for sites of proximate pastoral activity areas (within several kilometres).

Mulga sheep yards (feature N3.2)

Mulga tree stumps were located several hundred metres east of site N3 (fig. 5-5). The trees had been cut to provide timber for yards and a hut structure at site N3. As pictured in figure 5-6A, the yards (feature N3.2) were constructed of mulga posts and beams, and no metal or wire was used. The collapsed fence revealed the fence's construction: each beam of the fence sat in a post's 'Y' junction, formed where the tree trunk had branched. Bushes may have been piled against the fence to prevent the sheep from escaping. The fence formed a five sided yard, the fence line marked by a raised sandridge two metres wide and a half metre high. The area of the yards was approximately 2800 square metres (40 by 70 m). While the periphery of the yards was vegetated, inside the yards there were no trees. Few artefacts were recorded within the yards, with the exception of a chert flake in the north-east corner. The two stumps in the yards may have been posts for restraining animals. These yards are interpreted as sheep, rather than cattle, yards because their construction would not have restrained larger animals. In addition, a hut (feature N3.1) was located adjacent to the yards from where it was possible to watch the sheep. The need for constant surveillance of the sheep suggests that site-use predated the construction of dingo-proof fences.



Figure 5-6. A. Photograph of mulga yards (N3.2) facing south along axis of fence line, shown by fallen poles and ridge of sand. B. The structure excavated at N3.1, with the mulga poles in situ. The deposit extends into the background, and the yards were to the left.

Shepherd's hut (feature N3.1)

A structure adjacent to the yards was revealed by a raised mound covered with parallel mulga branches and in situ nails. The extent of the excavation was 10 by 10 metres, excavated in one metres squares (pictured in fig. 5-6B). The excavation was in 20 centimetre spits. Cultural deposits extended beyond the excavation area, as marked on the site plan (fig. 5-7). The stratigraphy consisted of one unit consisting of a matrix of red sand with little discernible variation. The basal level was characterised by highly compacted sand with no cultural deposits. The excavations yielded an assemblage of material, which is summarised in table 5-2.

Cultural material	Number of items	Weight (g)	Percentage of weight ⁷
Nails	116 (MNI)	422.5	15.4
Flat metal	262	234.6	8.5
Melted metal	12	35.6	1.3
Galvanised metal	63	102.6	3.7
Metal rod	3	10.8	0.4
Wire	1	0.3	0.0
Other metal	21	396.7	14.4
Unidentified metal	315	428.3	15.6
Glass	36	288.2	10.5
Ceramic vessel	7	18.2	0.7
Clay pipe	9 (MNI=4)	7.8	0.3
Button	2 (MNI)	4.9	0.2
Shell	4	3.5	0.1
Bone - unburnt	1471.2	520.1	18.9
Bone - burnt	43	5.2	0.2
Quartzite	6	63.1	2.3
Silcrete	2	39	1.4
Grindstone	6	101.7	3.7
Ochre	11	62.4	2.3

Table 5-2. Summary of finds from site N3.1 by weight and number (MNI included where determined).

The stratigraphy suggested that the structure had been covered by later vegetation, as several layers had small sized foliage preserved in the upper 20 centimetres. The position of tree roots suggested that the structure had been located amongst mulga trees which had acted (post abandonment) to trap windblown sand, forming a raised mound. The mound was within squares E6 to E9, and H6 to H9, where most of the

⁷The percentage value is determined from the total weight of cultural material, not including timber, charcoal, conglomerate and pebbles.

assemblage was concentrated. These squares were excavated to 80 centimetres (four spits). While spatial trends are marked on the site plan, it was difficult to determine any significant horizontal sequence for the structure. It was assumed the deposit represents the building contents at abandonment.

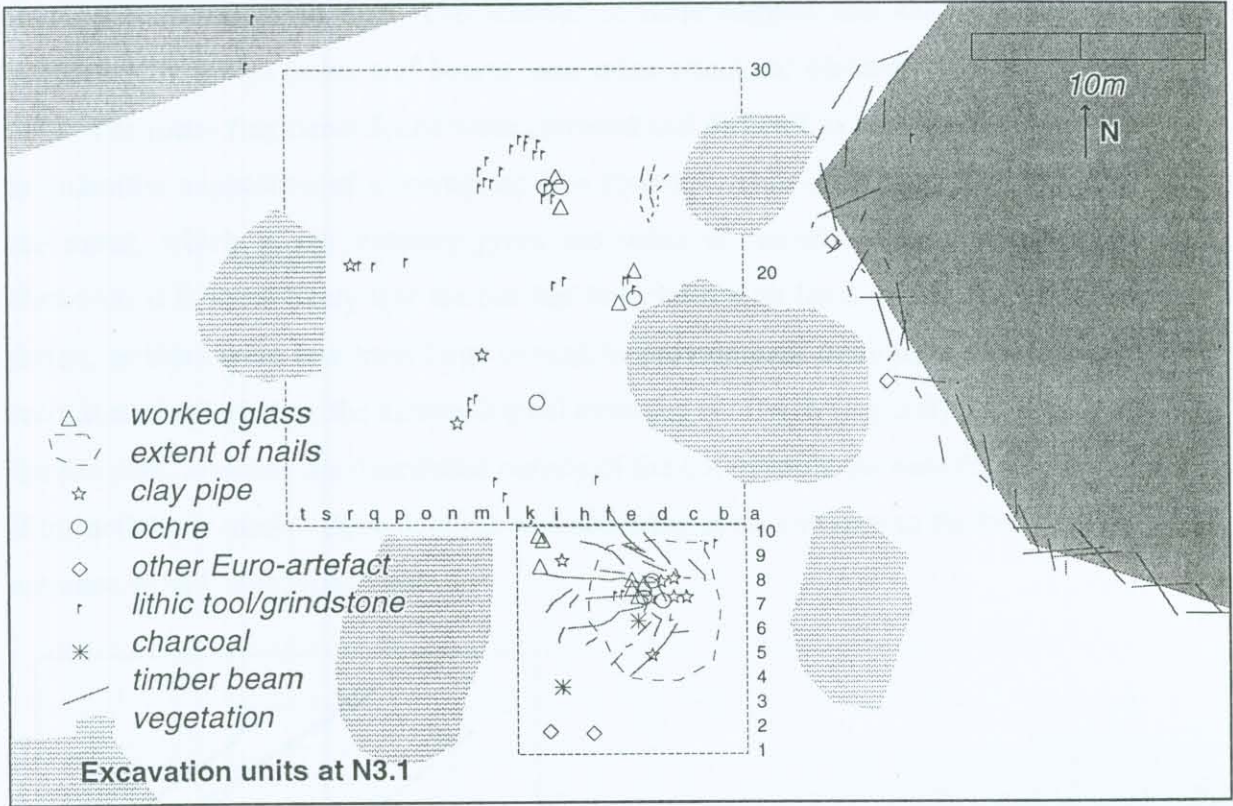


Figure 5-7. Plan of excavation of shepherd's hut (feature N3.1) showing excavated units, archaeological material west from hut, and distribution of structural remains.

The occupation deposit was mixed with structural material from the hut, consisting of metal nails and mulga beams. Their distribution suggested the size and orientation of the hut. The 116 nails were hand-wrought and predated 1880.⁸ The nails were concentrated in the central mound of the excavation, with a smaller concentration in squares H9 to J10 (inclusive). Below the first spit, 90 percent of nails were clustered in between squares E6-G8. The distribution of nails conformed strongly with the distribution of mulga timber used as structural elements, which tended to be aligned north-south. The mulga was roughly dressed to form supporting faces for other beams,

⁸ The description in appendix C show the nails accord with Varman's Type 'F' nails (Varman 1987), used until ca. 1880.

which had been nailed together. The average length of the poles was two metres (ten poles of that long), while one larger beam was four metres long, although other poles from the hut may have disintegrated, given the amount of excavated wood. The timber elements indicate that the natural 'Y' fork in the trunk was used to support the roof beams. The spatial distribution of these elements suggests a structure approximately four by four metres in size. The number of nails suggest that the structure was supported by mulga poles and beams, and other structural elements which required nails. The metal fragments found were corroded and difficult to identify, but were not in quantities suggestive of a corrugated iron structure. This could suggest removal of the metal, which is not unlikely given the value of reusable structural materials. However, it is more likely that the hut had been built with local vegetation, probably thatch, as there were few trees large enough to provide bark or shingles.⁹ A tentative reconstruction based on the archaeological evidence is offered (fig. 5-8). As shown on the site plan, artefacts are distributed outside of the hut towards the west for 25 metres. If the activity related to these deposits was occurring at the entrance to the hut, then the entrance would have faced west.

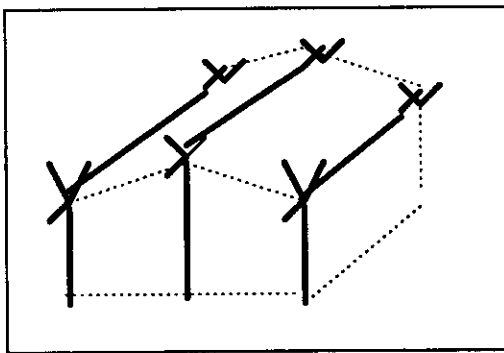


Figure 5-8. A tentative reconstruction of the shepherd's hut (feature N3.1).

Cultural material from the shepherd's hut (N3.1)

The shepherd's hut is significant because the cultural material included both European settler material culture, and artefacts typical of Aboriginal occupation assemblages. The improved preservation of this site, compared to others in this study, makes a

⁹ Structural material common to simple huts in frontier Australia were thatch, shingles, bark, or metal sheets and corrugated metal sheet (Roberts 1964, p. 283). The evidence for thatching at feature N3.1 is indirectly supported by descriptions by the

detailed consideration of spatial relationships between different material culture possible, plus preservation of metal artefacts was greater than surface sites. More than half the artefacts were metal, many being nails. Other identifiable metal artefacts were a horseshoe, fragments from metal vessels (probably cans) and small fragments of metal sheet. The thick rimmed cans were greater than five millimetres wide, a size common to nineteenth century cans. Melted metal and charcoal in units G8 and G9 suggest a fire in the central part of the structure. The only wire found was a small piece of thick gauge corroded wire. The small amount of wire at N3 (notably in the yards) may demonstrate that wire was not used by the pastoralists in the early years of the station, as wire would probably postdate the introduction of fencing wire (Kerr 1984). Two identical clothing buckles were excavated from the hut at site N3, and may have come from the same garment.¹⁰ These types of buckles were found at Francis Swamp (site I3) and at Strangways Springs (site S1101). Another clothing fastener was a small copper hook from a 'hook and eye' latch for a shirt or undergarment. Other metal fragments were from a razor and a shear-blade.

Of the nine pipe fragments found at the site, two pipes were made by 'Thomas White and Co.', Edinburgh between 1825 and 1870.¹¹ No stamped metal buttons were found at site N3, only a shell and composite button.¹² The most common vessels found were for medicines, as indicated by a jar for ointment and by glass bottles, one a brand name pain killer ('Perry Davis Vegetable Pain Killer').¹³ Glass containers also included three sauce bottles, and one tinted spirit bottle fragment.¹⁴ A small glass fragment was possibly from lamp glass. Fragments of conglomerate stone found may have been structural, and was presumed to have been quarried locally (squares E7, E8, E9, G8, G9, G10).

pastoralists in their letters of treating thatch with salt and soda (carbonate) for roofing at the head station, and by a description of building 'grass' huts for the shepherds in during 1865.

¹⁰ Buckles are DBID 3073 and 3084 and described in appendix C. Copper hook is DBID 3075.

¹¹ These two pipes (DBID 3002, DBID 3005) are illustrated in appendix C.

¹² These buttons (DBID 211 and DBID 3072) are illustrated in appendix C.

¹³ DBID 3206, 3207, 3209, 3209 and 3210. Inscribed: HOLLOWAYS / OINTMENT / FOR THE CURE OF INVETERATE ULCERS / *Bad Legs Sore Breasts Sore Heads / GOUT AND RHEUMATISM* / in pots 1½d 2/9 4/6 11/ & 33/ each / BY THE PROPRIETOR / 244 Strand London. Illustrated in appendix C.

¹⁴ The brand is 'Lea and Perrins', which is type '35' in the discussion of glass bottles in appendix C.

Lithic material in the structure included four fragments of grindstone (Aboriginal), six flakes of silcrete and quartzite, and three pieces of ochre with defined rubbed edges. The 13.5 grams of purple ochre were compact and soft, with no granular or mineral inclusions. As detailed in appendix C, the probable source of this ochre was the northern Flinders Ranges (Smith, M. 1998, pers. comm.).

Extending 20 metres west of the site, adjacent to the alignment of the yards, were localised surface deposits, representing activity outside the hut. Stone tool manufacture was demonstrated by small cores and waste flakes in quartzite and silcrete, and fragments of quartzite grinding stones (also flaked). The grindstone fragments were small, and possibly had been selected from existing occupation sites to produce stone flakes. Also located outside the hut were yellow ochre, two fragments of clay pipe and two glass stoppers, as well as small scatters of bone and metal fragments. Mulga poles suggest that a second small wooden structure may have been located at squares F20 to F21. This may have been a small 'watch-box' from where to observe the sheep at night, although with no visible artefact concentration. If these deposits were contemporary with the use of the hut, they suggest discrete activity areas rather than evidence of rubbish dispersal, given that the knapping floors were structured.

The artefacts suggest that the hut structure was occupied in the early phase of the Strangways Springs pastoral station. The absence of manufactured nails indicates technology which was rare by the 1870s. The clay pipe predates the 1860s, but assuming manufacturing-deposition lag accords with a slightly later site-use. The hut could have been in use during the 1860s, and given the absence of evidence for a long period of use, probably was not used long into the 1870s.

Faunal material

Faunal material constituted almost 20 percent of cultural material from the hut (table 5-2). These results are important as very few bones have survived at the other sites in this study. As shown in table 5-3, some of the bone fragments were diagnostic - either being from an identified animal or having distinctive marks indicating butchery. Burning is interpreted as resulting from food preparation or disposal, as the evidence

for burnt material in the hut (bone and other artefacts) is localised, suggesting a fireplace rather than a more extensive fire event. For the purposes of clarity bones are described by one diagnostic category. However, several of the sheep and lamb bones were identifiably butchered, as were many of the burnt bones.

Animal or diagnostic element	Weight (g)	Percentage of weight
Sheep	33.2	18
Lamb	17.7	9
Large quadruped/mammal	22.2	12
Macropod	20.9	11
Rat & mouse	4.4	2
Horse	3.1	2
Bird	2.4	1
Rabbit	2.3	1
Reptile (lizard)	2.1	1
<hr/>		
Burnt bone	26.8	14
Mammal - cut bone fragments	54.5	29
<i>Weight of diagnostic bone</i>	<i>189.6</i>	
<hr/>		
Total weight bone	525.2	

Table 5-3. Summary of diagnostic faunal material from excavation of shepherd's hut (site N3.1).

The total weight of diagnostic bone was 189.6 grams. Post-excavation analysis revealed that 36 percent of the bone was diagnostic, indicating either the type of animal or whether the bone had been cut and burnt. The most common identifiable bones were sheep and lamb (27%), followed by large quadrupeds (probably also sheep 12%), then macropods (11%). The bones from larger animals were largely confined to the central excavation units and increased in quantity with depth. This suggests a focus for food preparation and consumption inside the hut. Negligible amounts of bones from small animals included birds (1%), reptiles (1%) and rats/mice (2%). The distribution of bones from small animals was even throughout the site. The rabbit bone (1%) is a mandible fragment. Rabbits were present in Central Australia after 1890 (Myers et al. 1994, p. 109, fig. 5.1). However, the one individual rabbit is assumed to derive from post-occupation contexts.

The faunal results indicate that the primary meat source was sheep and lamb (54 to 77 percent of meat consumed). The amount of macropod consumed was also relatively high (wallaby and small kangaroo 22 to 45 percent). The evidence for butchery is

present on 29 percent of the diagnostic bone, predominantly on medial fragments from bones from medium sized animals. The marks are suggestive of sharp edged knives. Superficial impression suggests that the most common cut were to remove the hock. Burnt bone was largely confined to the third spit, square F8, one metre from the concentration of charcoal. This evidence suggests a focus area for food cooking. These finds suggest that bone was discarded inside the hut while it was occupied.

Contact period knapping site (site N4)

Site N4 was a small assemblage of artefacts (described below) located in a depression at a dune crest, 300 metres from site N3 on a dune crest which effectively 'overlooks' site N3. A survey of the locality revealed no other occupation deposits except site N4. This was a small site, with an artefact scatter 30 metres long and 10 metres wide (fig. 5-9), from a small Aboriginal campsite containing contact period cultural material. The longest length of the site followed the axis of the sandridge crest. The surface of the site was exposed sand, with no covering vegetation. The absence of grasses may have been due to an animal pad crossing the site. Even with the disturbance of animal traffic, the assemblage exhibited a high degree of clustering of related artefacts, for example knapping floors, indicating that the surface exposure has not resulted in dramatic movement of artefacts.

A fireplace (feature N4.1) ten metres from the main artefact cluster contained burnt bone eroding out from the fireplace for a distance of five metres. Unlike sites located close to stone sources, there were no heat-retaining stones. As shown on the site plan, the main part of the site (feature N4.2) contained distinct activity areas related to tool making, with the reduction of a dark-olive bottle, a green tint bottle, a core of weak-red quartzite (part of a grindstone) and a core of grey silcrete.

The dark-olive bottle had a domed base, which provided the thick platform from which flakes were struck. A bottle neck with closure was found, presumably from the same dark-olive bottle. The green tint bottle was a spirit bottle marked '6 to a Gallon' on the base, a type of bottle common at Strangways Springs. (These conform to bottle types 10 and 25, described in appendix C.) Both are nineteenth century bottles. The only

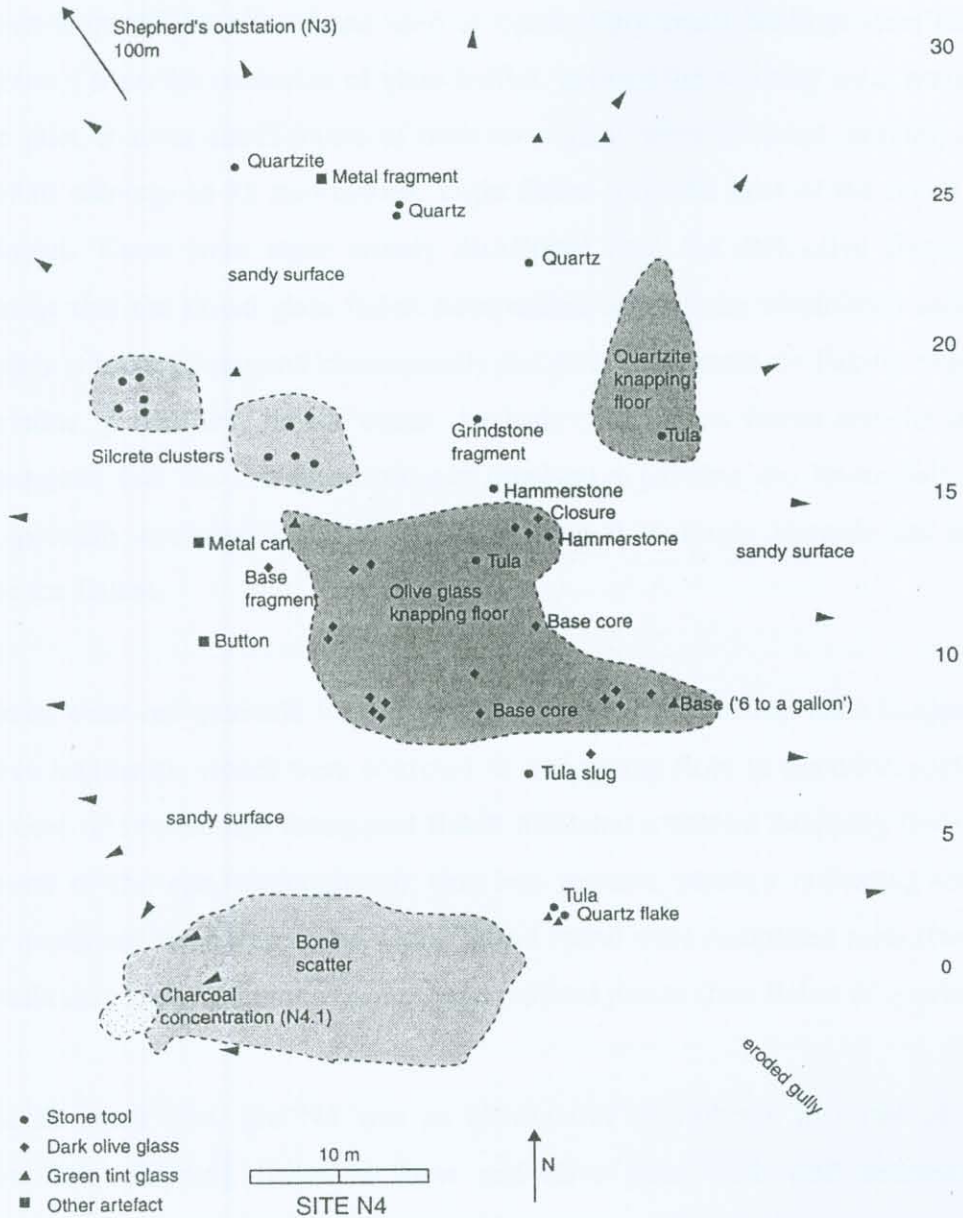


Figure 5-9. Plan of site N4.

other artefacts in site N4 were a metal can, a metal button, sheep bone fragments and a dogs canine.¹⁵

Similar to other assemblages in this study, the glass from the thick bases of bottles had been used to produce flakes, and consistently sized flakes were produced. Three

¹⁵ The button (DBID 3087) was a metal stamped button, of a type often termed 'sinkie', and which could date from the 1860s through until the late-nineteenth century, as discussed in appendix C. The metal can was not automatically manufactured, so predated circa 1896.

fragments from the base had been used as cores. Very small debitage (less than ten millimetres), from the reduction of glass bottles, defined the working areas marked on the site plan. Sixteen small flakes of dark-olive glass were recorded, ranging in size from small debitage to 25 millimetres. Eight flakes from the base of the tinted bottle were found. These were more widely distributed than the dark-olive flakes. It is noteworthy that the tinted glass flakes have dulled edges from windblown sand. The olive glass is more robust and consequently the scars from multiple flaking events are more visible, particularly on the cores. Analysis of the glass flakes and the striking scars suggests that the reduction process involved separating the lower half of the bottle (possibly executed elsewhere) and striking downwards towards the base to produce the flakes.

A piece of weak-red quartzite with a previously ground surface had been knapped into forty-five fragments, which were confined to a knapping floor in the north-east of the site. A core of silcrete and associated flakes indicated a second knapping floor in the north-west of the site, although this was less worked, perhaps indicating the poor flaking quality of the raw material. Other lithics found were completed tools (two chert tula, a tula slug and two hammerstones) and isolated pieces (five flakes of quartz).

Despite its small size, site N4 was an informative assemblage in terms of spatial features. The knapping floors in stone and olive glass were well defined, some overlapping others. The distribution of glasses revealed that knapping floors in glass correspond in size and character to lithic reduction floors. Again, the absence of residues on the artefacts makes it impossible to determine whether the fragments of stone and glass were actually used at this site. Yet, we can assume that they were all worked here. There was no evidence for sustained (or even multiple) occupation, given the presence of only one hearth, and the relatively small amount of artefacts.

Discussion of sites N3 and N4

The archaeological evidence from sites N3 and N4 documents a pastoral out-station, how it was built and the types of material culture the shepherds brought with them. Activity areas and artefacts related to Aboriginal people are present within and next to

the hut (ochre, stone tools), while definitive post-contact activity is indicated by the glass tool reductions at site N4. All of the raw material and artefacts were imported into the site, as the survey failed to locate any local sources of quartzite, silcrete or chert.

The absence of evidence of pre-contact occupation in the locality indicates that (unlike other places of pastoral settlement in this study) the pastoralists did not locate this settlement at the places where Aboriginal people had lived previously. Their selection was motivated by the presence of grasses for sheep grazing, ground water and the possibility of rainwater in clay pans. Unlike other localities, there were sufficient mulga trees to build a set of simple yards, and a small shepherd's hut. Given the descriptions by the pastoralists, simple huts for shepherds could be expected to be used for several years without requiring repair (Jeffreys, 10 July 1865). This hut was built next to the sheep yards, as during the night attacks from dogs were common, requiring that one shepherd stayed awake. The shepherds would stay as long as the water and grasses were sufficient for the sheep, which may have been several months, depending on the size of the flock. The yards would have accommodated the larger flocks reported by the pastoralists. The cultural material all derived from the nineteenth century, and all could date from the 1860s. The absence of large quantities of metal wire, the use of only handmade nails and the pre-1860 clay pipes all support a date for site use in the 1860s. The small quantities of occupation deposit suggest that the site was not used in many seasons. I interpret this as being one of the out-stations built for the lambing during the 1860s. To support this interpretation, a hand-drawn map from 1867 marks the location of a lambing out-station in this part of the William Dunefield (Oastler 27 Dec. 1867). Consequently, this site represents an example of a historically known element of early pastoralism that rarely survives, given its size and low quantity of material culture. This relationship is used in the second part of this chapter to interpret the earliest phase of pastoralism in this region.

The interpretation of contemporaneous European-Aboriginal site-use relies on the patterning of material culture. When the pastoralists occupied the hut (N3.1) they left a range of items (bottles, jars, sauces, medicines, pipes and tools). Artefacts common to Aboriginal occupation were distributed in activity areas outside the hut (stone tool

reductions, ochre), inside the hut (ochre) and at site N4. Given the pattern of local pre-contact occupation, it is unlikely that the hut was built at the exact site of earlier pre-contact material. Some settler material entered into site N4, presumably from the hut. The position of this campsite suggests location close to the hut (a source of goods) but not at the hut. Either functional or social explanations for the distance between the two sites are difficult to interpret from the archaeological record alone.

Francis Swamp sites

Francis Swamp is characterised by the meeting of several different environments: dunefields border the west, north and east, Anna Creek and Warriner Creek border the east and south, and artesian springs occur throughout the region (fig. 5-10).

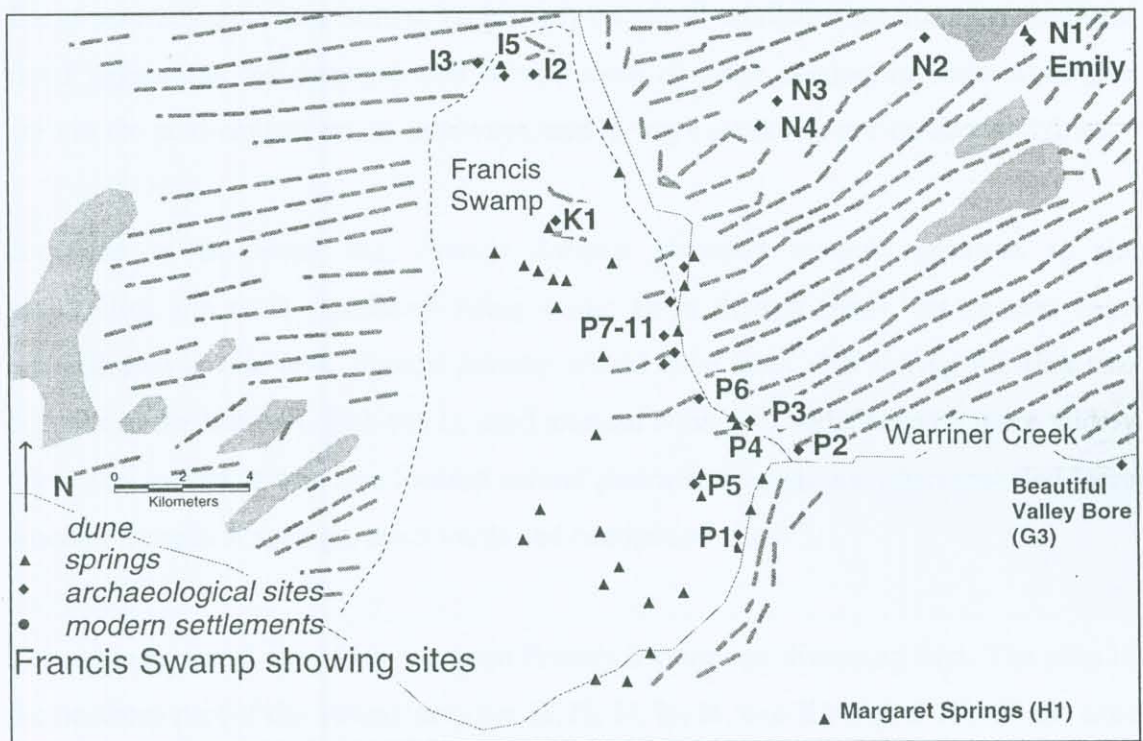


Figure 5-10. Map of Francis Swamp showing sites.

The northern extent of Francis Swamp is the thinnest section of the swamp, and is bordered in the west and north by Francis Dunefield, and in the east by Anna Creek. The banks of Anna Creek are characterised by broken sand mounds and low scrub. The floor of the swamp is a flat hard clay, with a white crust composed of the soluble minerals in artesian waters. The swamp has many active artesian springs, most of

which are small, rarely forming raised mounds higher than three metres. The swamp floor is inhospitable, offering no shelter from wind and sun. However, there are more accommodating landscape elements in the swamp. For example, there is extensive vegetation within the dunefield, providing potential shelter, fuel and food. The bulk of the evidence for past human occupation was found at the northern end of the swamp, both for pre and post-contact periods. The southern sites demonstrate patterns of past human use of springs, but with far smaller amounts of post-contact cultural material.

Past Aboriginal occupation was focussed at places with sand, shade and access to water. Many of the Aboriginal assemblages were extensive, probably deriving from long periods of accumulative occupation, and characterised by deposits of lithic material including tool manufacturing areas, fireplaces, faunal remains and ochre. These assemblages occur almost exclusively on raised sand surfaces amongst medium-sized vegetation. As demonstrated below, some of these occupation sites were also used in the post-contact era in new ways, and in ways similar to pre-contact activities.

In terms of European use, Francis Swamp provided several resources to the pastoralists, the most significant being water. Even though small, the springs were concentrated in one area. Francis Swamp would have been vital during the first two decades of the station (1862-1882), until artesian bores and wells became more widely used. The survey of this area located several pastoral out-stations, often revealed large wooden troughs at springs, stock yards and occupation sites.¹⁶

The archaeological sites from northern Francis Swamp are discussed first. The sites in the northern part of the swamp are sites I2, I3, I4, I5, I6, and K1 (fig. 5-10). These sites provided evidence for pastoral activities (sites K2, I4 and I2), human use of artesian springs (sites K1 and I5), Aboriginal occupation predating contact (sites I3, I5, I6, I2, K1) and evidence of post-contact Aboriginal settlement (sites I3, I5, K1). A summary

¹⁶ The presence of European-made troughs at certain springs in Francis Swamp was reported in conjunction with biological surveys of the artesian springs conducted by South Australian Outback Research. The survey revealed that 16 springs had some elements of pastoral use, some recent, but most dated 1862 to 1918 (Gee 1995).

of cultural material at these sites is included in tables 5-4, 5-5 (sites I1, I2, I3, I4 and I5) and table 5-6 (site K1).

Site Feature	I1			I2			I3				I4		I5								
	T	F1	F2	T	F1	F2	F3	F4	T	T	F1	F2	F3	F4	F5	F6	F7	F8	F9	F12	T
<i>Cultural material</i>																					
Glass artefacts																					
D/O generic	11										1				1						2
L/O no inscription	20				1				1		1	1						1	1		4
L/O con	22					1			1			1									1
Tint, inscription	32		1	1	2												1				1
Tint - no inscription	33	1	3	4	7						1	1					2			1	5
VEGETABLE	43					1			1												
Multi-faced bottle	48													1							1
Clear glass	50	2		2	2																
Other glass	51								1	1											
Amber total	2		2	2					1	1											
Core	60					1			1												
Flake	61					y		y	y		y	y		y	y			y	y		y
Sequential flaking	62					y			y						y						y
BOP	63					y			y						y						y
Debitage	64					y			y				y					y			y
Usewear	65					y			y				y								y
Pipe				1	1	1			1			1									1
Button																			1		1
Clothing buckle									1							1	1				2
Can	1														1		1	1			3
Shear-blades					1				1		1	1									2
Bullet								1													
Chains							1	1													
Horseshoe																		1	1		2
Structural remains		y	y	y						y											
Yards	y	y																			
Spring									y												y
Troughs									y	y											y
Ochre																			1		1
Hearths																y					y
Lithics		y			y	y	y	y	y	y	y	y	y		y	y		y			y
Grinding stones		y				y		y	y							y					y

Table 5-4. Table of cultural material at sites in northern end of Francis Swamp (I1 to I5) with MNI counts where possible. 'Type' refers to description of glass artefacts in appendix C. 'y' refers to the presence of an artefact or feature where a numeric value would be misleading. 'F' stands for feature, and 'T' stands for site total.

Site I2

Site I2 was abandoned pastoral yards at the northern end of Francis Swamp, located near an artesian spring (fig. 5-11). The topography consists of sandy surfaces, with raised tussocks of salt bush. This site is south of low sandhills covered with more extensive vegetation. The site plan shows the remains of a complex of animal yards

(feature I2.1), a residential structure (feature I2.2) and artefacts exposed in a vehicle track eroding the swamp floor (feature I2.3). The cultural material found at the site is summarised in table 5-4. The closest archaeological sites were sites I3 and I5. The extent of yards marked on the site plan were determined from surviving post bases. There were shrubs and sand mounds within the confines of the yard suggesting an extended period of non-use following abandonment, which, given the material culture, predates the twentieth century. The yards were solidly built: the corners used timber rails slotted into posts made from thick tree trunks. The remainder of the yards may have used posts and rails, or posts and wire. There was little evidence for either, indicating the yards were dismantled and removed. The yards may have held either sheep or cattle. Feature I2.2 was interpreted as a hut located adjacent to the yards, as suggested by four wooden posts in the ground and a concentration of cultural material (sauce, pickle and salad oil bottles, clay pipe and fragments of metal). There were also concentrations of charcoal and bone fragments suggesting food preparation. European cultural material was distributed within and outside the yard complex, and consisted of glass artefacts (sauce, alcohol and medicine bottles), clay pipe, fragments of metal and concentrations of charcoal and bone. Although one glass bottle postdated 1920, the artefacts were otherwise nineteenth century.¹⁷ Lithic material was widely spread throughout the site and included quartzite and chert tools, fragments of grindstones, quartzite and silcrete artefacts.

The distribution of lithic material suggests the pastoral occupation overlaid an older Aboriginal occupation site, as there is no observable increase or decrease of the lithics material in relation to the yards. As shown on the site plan, nearby sand dunes had higher frequencies of lithic material concentrated in areas protected from erosion by larger vegetation. This material exhibiting a greater level of structuring, as defined by knapping floors. It appears that past Aboriginal occupation had been located on sand dunes, which had since eroded leaving a homogenous scatter of low-frequency lithics. The pastoral activity at the yards would have had the effect of disturbing these assemblages.

¹⁷ This date is proposed as the bottle was machine-made, made of clear glass, and had an external screw closure. These characteristics imply automated manufacturing techniques which existed only after 1920 (Boow & Byrnes 1991).

In summary, site I2 was interpreted as a set of stock yards, associated hut and a range of material indicative of nineteenth and early-twentieth century deposits. There was little archaeological evidence for post-contact Aboriginal occupation in terms of Aboriginal use of settler goods, or presence of contact period material in nearby occupation areas.

Site I3 and the results of transect J

Site I3 exists at the meeting of several landscape elements. The site was located at the eastern end of a high sandridge where the Francis Dunefield meets the northern extent of Francis Swamp (fig. 5-11). The site neighbours and overlooks site I5. The archaeological deposits comprised an extended distribution of lithic material, with some post-contact settler material. The cultural material is listed in table 5-4.

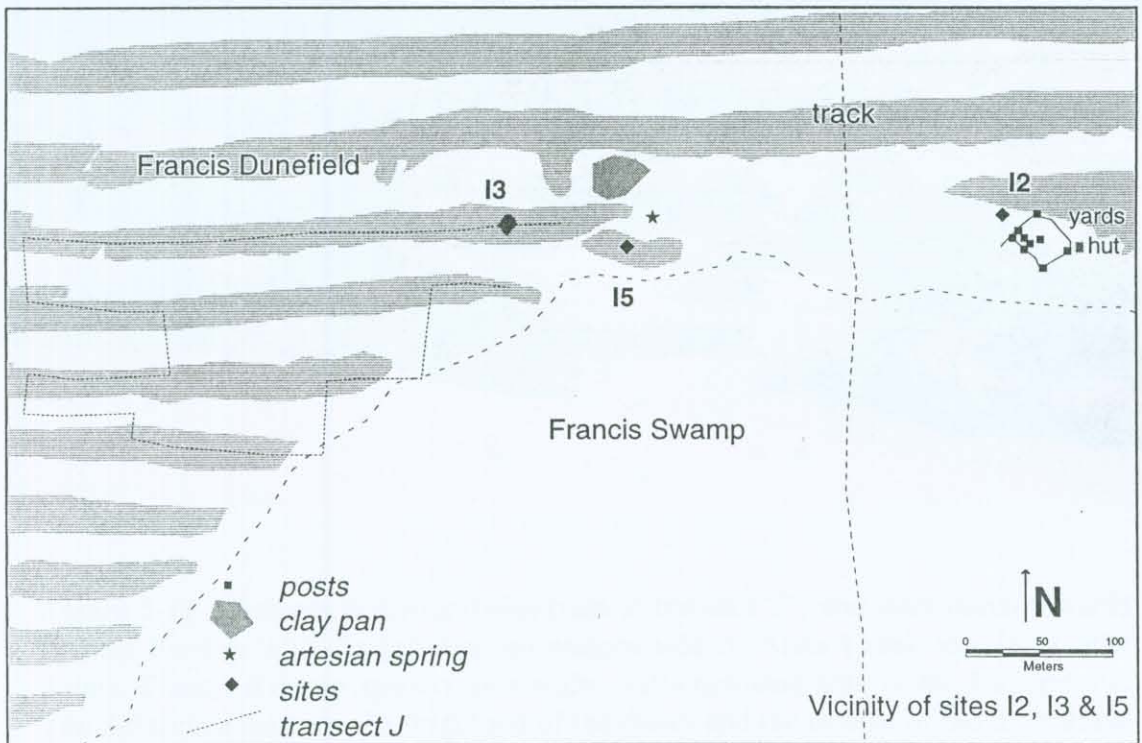


Figure 5-11. Plan of site I3, I5 and I2.

The bright red sand surface was typical of sandridges in the Francis Dunefield. The flat crest of the dune was several hundred metres wide. Along the sandridge grow saltbush, small trees and occasional eucalypts, except in eroded gullies formed from animal

traffic. Stands of acacias grow in the inter-dunal valleys, which have an orange clay floor. In comparison to the relatively exposed and treeless environment of Francis Swamp, this part of the dune system would better suit human occupation, providing vegetation and shelter. This environment is pictured in figure 5-12, which is a photograph taken from a sandridge crest showing the difference between the dunefield and the exposed swamp in the extreme background.



Figure 5-12. Photograph across dunes (part of transect 'J') and inter-dunal towards Francis Swamp with distant dune on eastern side of Anna Creek visible as high points. Francis Swamp appears as a white, salt-encrusted area in the background. The difference between the bright red of the dunes and the orange of the inter-dunal swales is visible. The vegetation of the dunes, inter-dunals and swamp floor is also defined.

Site I3 was located between two environments, that is dunefield and swamp, and was close to a small spring and claypans between the sandridges. The site provided evidence for prolonged occupation, and it was the largest assemblage recorded outside a major spring complex in this study (such as Strangways Springs or Margaret Spring).



Figure 5-13. Photographs of site I3. A. Shows light-olive glass fragments from which flakes have been struck, and the small flakes (feature I3.2). B. Shows the floor of site I3 as a homogenous scatter of lithic material. C. Shows concentration of grinding stones at the edge of the site I3 (feature I3.2).



The site was located in a blow-out extending south-west along the axis of the sandridge. It was characterised by medium to high-frequency lithics distribution (ranging between 20 to 60 artefacts per square metre). As the site was 600 metres long and 200 metres wide, there were approximately five million artefacts. Figure 5-13B shows the density of lithic material.

<i>Site</i>	I3	I5
<i>Cultural material</i>		
Quartzite (weak red)	52 (42)	48 (50)
Quartzite (other)		
Silcrete (grey)	56 (46)	28 (29)
Silcrete (other)		
Quartz	8 (6)	12 (13)
Chert	8 (6)	8 (8)
Grindstone (fragment)		
<i>Artefacts psm</i>	<i>124</i>	<i>96</i>
Heat-retaining stone fragments		y
Emu shell		y
Bone	y	

Table 5-5. Frequency analysis (FA) of artefacts per square metre at sites I3 and I5 (FA locations marked on site plan) with percentage of material in brackets (average of two separate recordings). The percentage (rounded to whole numbers) is calculated from the number of artefacts.

As shown in table 5-5 the lithic artefacts at site I3 included quartz, quartzite, chert and silcrete, with knapping floors predominantly of quartzite and silcrete. Frequency analysis demonstrates the prevalence of silcrete and quartzite artefacts (45% and 40% respectively), with lesser amounts of quartz and chert (both 6% of the assemblage). Tools included grinding stones, hammerstones, pirri points, blades and tulas. There was a greater diversity of stone types and relative proportions of quartz and chert than at other sites. This probably suggests that there are local silcrete and quartzite sources, but that chert and quartz were a rarer raw material and may have been imported further to the site than the silcrete and quartzite.¹⁸ For example, quartz blades with well-worked edges were recorded, which was rare for the sites reported in this study. Relatively exotic chert (banded and spotted) artefacts were found, which were not recorded at other sites. This included some small cores (less than ten centimetres), in addition to finished tools.

¹⁸ The sources for the silcrete and quartzite were not located, but these materials consistently comprise the majority of lithic material at occupation sites. The quartzite tends to be a weak-red colour, and the silcrete a grey with lighter inclusions.

Much of the assemblage was homogenous, especially at the western end. That is, there was little evidence for structured spatial evidence of past activities, such as knapping floors and fireplaces. An exception at the north-eastern extent of the site were two concentrations of grinding stones (feature I3.2). Originally, these may have been located under a tree, perhaps as a cache (fig. 5-13C). Other structured deposits, demonstrated by knapping floors and evidence of fireplaces, at the north-eastern end of the site suggest this area was occupied the most recently.

Post-contact cultural material at site I3

Small quantities of European material were located in site I3 (table 5-4). Glass artefacts were the most common, including light-olive bottles and a brand name vegetable pain killer located with the grindstone 'cache' (feature I3.2). Flake scars on the olive glass showed some flake production, supported by the presence of very small glass debitage (fig. 5-13A). Both cortex and other surfaces of the glass flakes were equally highly abraded, suggesting that the flaking occurred soon after the bottle was broken. The bottle had a high-dome base, resembling a mould-made nineteenth century beer bottle. Other European-settler cultural material at site I3 included a suspender buckle and shear-blade (feature I3.1); a bullet and chains (feature I3.3); and corroded metal, links from a hobble chain and more glass artefacts (feature I3.4).¹⁹ The extent and distribution of metal flakes at feature I3.4 may have resulted from a corrugated iron sheet.

The amount of European material located in site I3 is significantly less than that found in neighbouring site I5 (table 5-4). It does, however, represent a very similar range of nineteenth century material. The site was patently the scene of long-term Aboriginal occupation, as the density of material is equal to the larger assemblages recorded in the western Lake Eyre Basin in this study or by Florek (1993). The location is ideal for human occupation, being situated at the meeting of spring and sandridge environments. The assemblage demonstrated that a wide range of lithics (both raw materials and finished tools) were imported into the site. A survey (Transect J)

¹⁹ The buckle (DBID 3120) is discussed in appendix C.

demonstrated that this was the largest and most dense site of Aboriginal occupation in the area.

Occupation trends in the locality of sites I3, I5 and I6 (Transect J)

Site I3 was located in a large blow-out which extended further than the distribution of cultural material, suggesting that the extent of the site was not strictly the result of erosion of the sandridge. Parts of the site are less deflated, as demonstrated by structured activity areas. An exploratory transect (Transect J) was conducted to determine whether site I3 was typical of local settlement patterns by testing the distribution of cultural material in the locality (fig. 5-11). The transect surveyed the extent of occupation deposits along the sandridges adjacent to that supporting site I3. To the south-west the blow-out at site I3 was replaced by regular vegetation, and the sandridge was intermittently cut by deep gullies. This pattern continued for the sandridges surveyed. Occupation sites were restricted to the extreme eastern end of the sandridges. None were as large or as dense as site I3, as artefact frequencies ranged from 1 to 20 artefacts per square metre. The transect revealed that in the surveyed area occupation deposits:

- a) occur largely on sand surfaces
- b) decrease along dunes in relation to distance from Francis Swamp

The explanation of these distribution trends may be that the ends of dunes offered the most desirable occupation locales, or, that past occupation sites exist throughout the dunefield, but are obscured by sand. Certainly the ends of the dunes tend to suffer from erosion, resulting in demonstrable deflation of archaeological material. But the evidence from transect J largely refutes the second explanation, because where erosion does occur throughout the sandridges there is not necessarily corresponding exposure of archaeological material. Additionally, there appears to be a fall-off of material further into the dunefield, characterised by small, low-frequency sites, indicating that past occupation is not being obscured. This evidence serves to demonstrate the significance of sites such as I3. During the transect no European settler cultural material was found. For example, site I6 resembled site I3 and the north-eastern extent

of site I3. It had lithic material, with activity areas (knapping floors and fireplaces), but no definitively contact period material culture.

Site I5: a contact period Aboriginal settlement

Site I5 is located on a low sand hill between the edge of Francis Swamp and the William Dunefield (fig. 5-11). The cultural material found is summarised in table 5-4. Site I5 is proximate to an artesian spring, site I3 (100 metres) and the stockyards at site I2 (400 metres). The surface of site I5 is a thin layer of light orange sand overlaying a harder clay surface. There was a large amount of vegetation at site I5, mainly small shrubs and trees. The distribution of archaeological material accorded with the vegetation coverage. The site was composed of a continuous scatter of occupation deposits, much of which demonstrates high degrees of site structure (unlike the majority of occupation deposits at neighbouring sites I2 and I3). This structuring included fireplaces (defined by eroded heat-retaining stones), concentrations of grinding stones and knapping floors (fig. 5-14B). The site contained European artefacts, including the consistent presence of flaked glass tools (table 5-4). The settler material included complete medicinal bottles, sauce and pickle bottle parts, olive spirit bottle parts, shear-blades, clay pipe, horseshoes, 'dot and spot' can parts (pre-1897), buckles, buttons and metal tools. Worked glass in light and dark-olive included tools which had been removed from primary reduction areas and had possibly been used as scrapers or small knives.

The spring formed a hardened raised cap containing the artesian water. The pastoralists describe cutting timber troughs in this vicinity to collect artesian spring water for stock. This practice was demonstrated at this spring, which included the eucalyptus trough pictured in figure 5-14A.

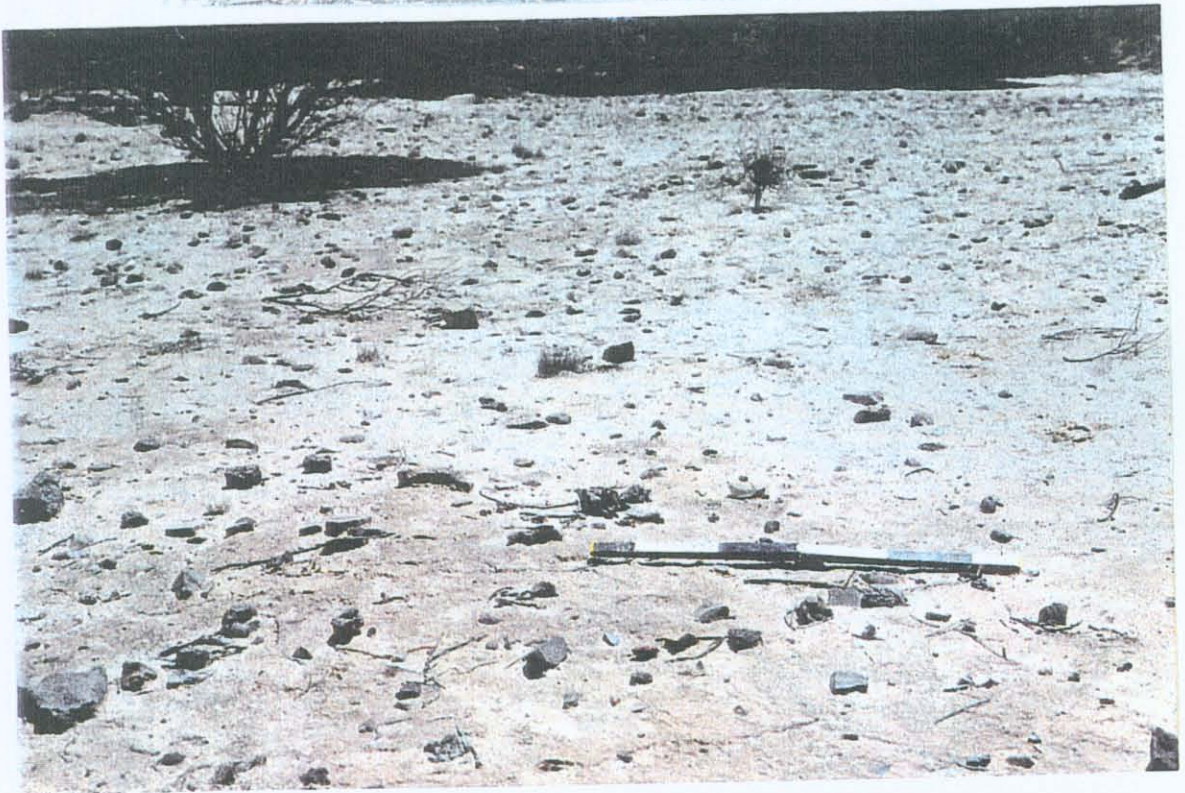
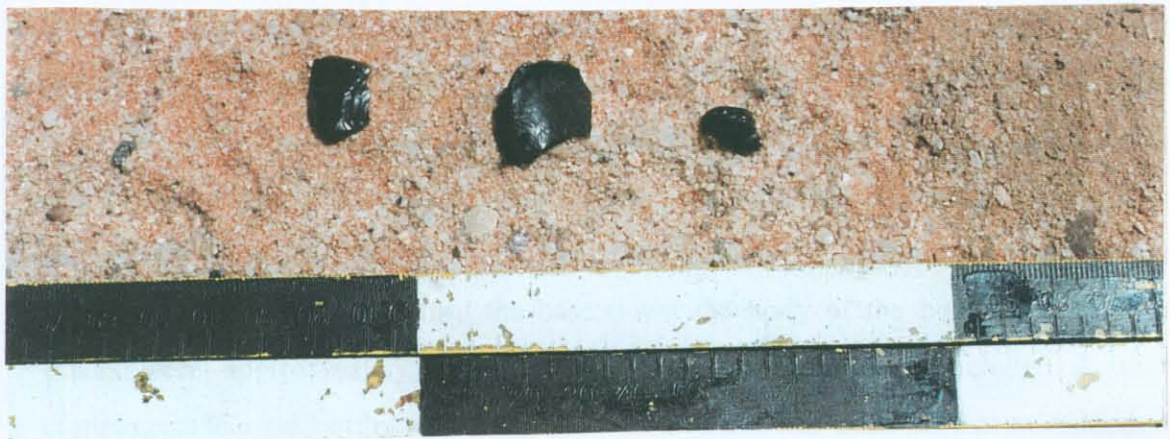


Figure 5-14. Photographs of site I5. A. The artesian spring, with a timber trough resting against the spring crown. B. Surface scatter of archaeological material at site I5, containing knapping floors and eroded fireplace in the foreground, and surrounding vegetation shown in the background. C. Site I5: close-up of a knapping floor of dark-olive glass, red and grey quartzite, amongst fragmented grindstones and heat-retaining stones. D. Site I5: Flakes from the base of a dark-olive bottle, showing the bulb of percussion. E. Site I5: Two grinding stones and anvil at I5.9.



Discussion of features at site I5

Certain features at site I5 indicated discrete concentrations of European material, which are described here to demonstrate the relationship of post-contact material and structured activity areas. Feature I5.1 (20 meters west of the spring) was located amongst low-frequency lithics and included a scatter of corroded iron, a shear-blade, light-olive and tint glass fragments, and olive glass debitage flakes. Feature I5.2 included a clay pipe fragment made by William White and Sons, Glasgow.²⁰ Unfortunately, the pipe provided little precise temporal information, as it was of a type manufactured sometime between 1806 and 1955. Feature I5.3 was a knapping floor of olive bottle glass located within a medium-frequency lithic scatter. The feature included knapping floors of silcrete and quartzite, fragments of heat-retaining stone from fireplaces, grindstone fragments and a shear-blade (fig. 5-14C). The thirty fragments of olive glass found at the feature were flaked from the thick base of a bottle (typical nineteenth century bottle type). While highly abraded, some of the base-flakes suggest use-wear as the edges are consistently fractured. The flakes appear to have been produced by striking from the base down the body of the bottle. Most of the flakes were approximately two centimetres long. Feature I5.4 included a small complete medicinal bottle, signifying that not all glass has been subject to reduction. Feature I5.5 also contained worked glass, and a 'dot and spot' can (pre-1897 technology). The three glass flakes were from the base of a dark-olive bottle. Some of the debitage was very thin, and the flakes clearly showed percussion scars (fig. 5-14D).

Feature I5.6 consisted of a fireplace, defined by fragmented travertine from local artesian springs used as a heat-retainer. Located near the hearth were in situ grindstones and a buckle from suspenders which was similar to that found at site I3.²¹ The presence of emu shell at this hearth and throughout site I5, document that emu eggs were eaten. Feature I5.7 contained a range of post-contact material amongst low-frequency lithics: including a horseshoe, a copper grommet from a tarpaulin, metal cans, a copper clothing buckle and fragments of Worcestershire sauce and salad oil

²⁰ The pipe (DBID 1038) is illustrated and described in appendix C.

²¹ The two buckles at I5.6 and I5.7 (DBID 3121 and 3119) are catalogued in appendix C.

bottles.²² Feature I5.8 consisted of a scatter of lithic artefacts, including yellow ochre and post-contact material, specifically a horseshoe with related square-section nails (possible pre-1880s hand wrought nails), a metal soldered can and a 'dot and spot' can (both pre-1897), light-olive base-flakes and related small glass debitage from reduction. Feature I5.9 included a solitary glass flake, apparently from the same reduction as the flakes found at feature I5.5. As pictured (fig. 5-14E) feature I5.9 also contained a shell button (pre-1900)²³, two large grindstones and quartzite anvil. Feature I5.11 was a metal artefact (perhaps a mattock head) and feature I5.12 was a tint bottle. These two artefacts differed from others because they were located beyond the periphery of the assemblage.

Table 5-5 shows relative ratios of lithic artefacts at site I5, with its high levels of quartzite and silcrete (50% and 29%), and lesser amounts of quartz and chert (12% and 8%). This conforms with the assemblages at neighbouring site I3, with the main inter-assemblage difference being a site-wide reduction in silcrete (from 46% at site I3 to 29% at site I5). This trend may plausibly be a result of post-contact changes in use of raw materials, as site I5 appears to have been more intensely occupied in the post-contact period than site I3, as demonstrated by the amount of European goods. This explanation is difficult to verify with reference to these two sites alone.

In summary, site I5 provides strong evidence for post-contact occupation which conforms to pre-contact patterns of Aboriginal settlement. The extent of structuring at site I5 was greater than at site I3, with fireplaces, clustering of grinding stones and discernible knapping floors. The distribution of post-contact cultural material correlated with the structured activity areas. This was best demonstrated by the knapping floors of olive glass and the secondary movement of glass tools to other parts of the site. The closest sources for the European goods at site I5 may have been the nearby yards and structure at site I2, or other sites in the northern extent of Francis Swamp (for example, site K1). Site I5 conforms to the pattern of settlement observed in transect J: the site is located at water (in fact, it almost surrounds a water source), on

²² The pastoralists described in their letters their use of using tarpaulins to cover residential structures, to protect cut grass and wool fleeces. The buckle (DBID 3121) is included in appendix C.

a sand surface amongst medium-sized vegetation. The archaeological evidence demonstrates that the site was occupied by Aboriginal people before and after European settlement. Like neighbouring sites (I2 and I3) site I5 includes European material common to 1860 until the 1890s, although certain artefacts such as the handmade nails suggest occupation during the earliest phases of the pastoral settlement.

Site I4 (Fercies Bore)

Site I4, referred to on modern maps as 'Fercies Bore', is located in the Francis Dunefield, north of Francis Swamp. The site consisted of an above ground iron tank on a concrete pad that directed water into a metal trough supported by hewn timber supports, and capped by railway sleepers. No portable European cultural material was present at the site. Located on the adjacent dune was a lithic scatter consisting of chert, silcrete and quartzite present in a deposit 100 by 50 metres in size. The lithic assemblage was unstructured, and was assumed to predate European settlement. The concrete and railway sleepers (post-1889), and absence of older artefacts, suggest that the bore is more recent than other sites found in this study. There is no evidence of occupation related to the bore. The site, however, demonstrates two features of artesian bores. Firstly, artesian bores are not necessarily positioned at existing water sources, such as artesian springs. Secondly, the artesian bores were not necessarily places where people lived.

Site K1 (Leonard Bore/spring)

Site K1, known on modern maps as 'Leonard Bore', is located in the northern portion of Francis Swamp directly between Anna Creek to the east and the dune fields to the west and north (fig. 5-10). The bore occurred as a large pool of water. There was no evidence of a windmill or any other pumping machinery. This was presumably an active spring that was opened ('cut') by the pastoralists, and consequently one could assume the presence of material culture from the 1860s onwards.²⁴ Unlike other springs used for pastoralism, the water flow continued. Cattle visitation was high,

²³ The button (DBID 3090) had been hand bored, which suggests it was made prior to 1900, as argued in appendix C.

disturbing archaeological deposits near the spring. The spring abutted a low dune running north-south that partially encloses the bore (fig. 5-15). As marked on the site plan, the less disturbed deposits occurred on a sand hill south-east of the bore, and along a dune located below a raised ridge to the north-east.

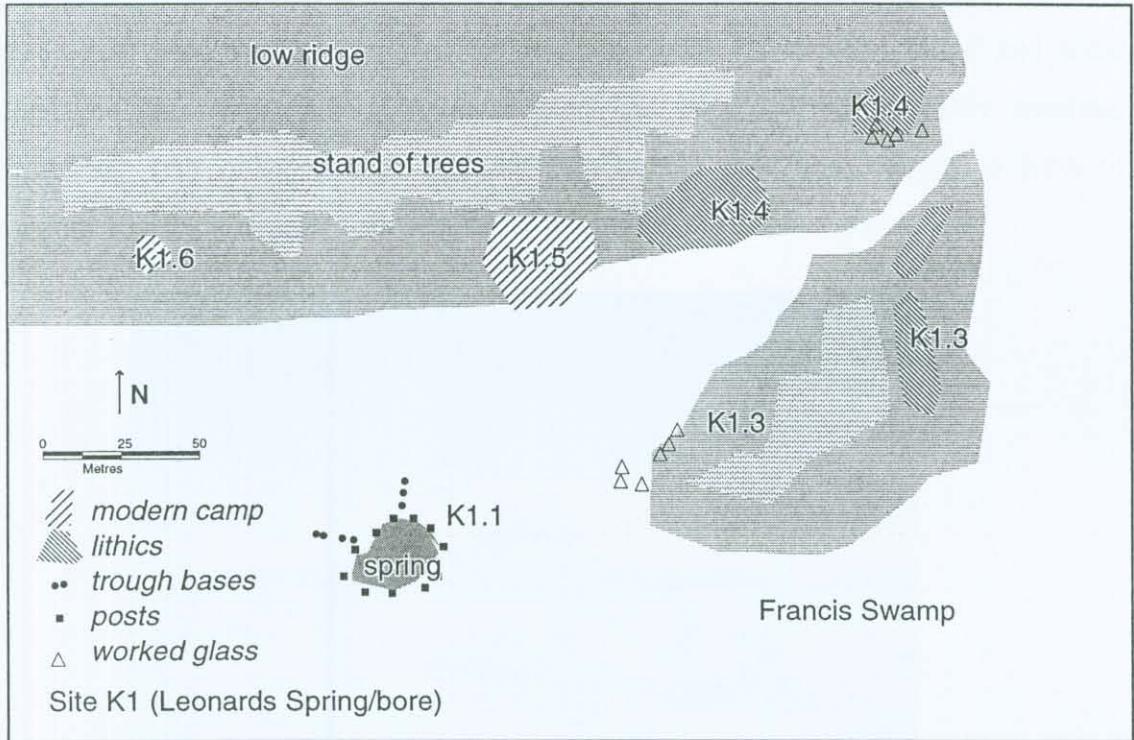


Figure 5-15. Plan of site K1 (Leonards Bore)

Occupation by Aboriginal people at this spring was demonstrated by the extensive medium-frequency deposits of occupation material. Elements of site structure remain in these deposits, despite the disturbance of cattle. The cultural material found at site K1 is summarised in table 5-6. As pictured in figure 5-16, remains of European structures to manage the outflow of water were found at the bore (features K1.1 and K1.2). Remains of posts and a eucalyptus trough showed that there were three troughs radiating from the bore, and a post and rail fence around the spring. The remains of metal supports documented later additions to the troughs.

²⁴ This accords with references by the pastoralists in their letters to the 'Leonard Spring' during the 1860s.

On the raised sand surface to the south of the spring there was evidence of glass reduction and localised assemblages containing European material amongst low to medium-density lithic deposits (feature K1.3). At this feature there had been extensive cattle traffic, causing the 'churning' of material into the soft sand. The low-frequency lithic distribution contained quartzite, quartz, silcrete and grinding stone fragments. Past glass knapping was documented by a dark-olive bottle base core from which six flakes had been struck. Some of the resultant glass flakes were found and these displayed percussion scars. The base core had been scarred by cattle treading, producing very different edge patterns than human reduction, namely, a form of random 'crushing' (rather than sequential flaking) along artefact edges.



Figure 5-16. Photograph of Leonard Spring (feature K1.1), with line of trough poles and part of trough in situ. In the background is a low dune where occupation deposits were recorded (feature K1.3).

		Site K1						
Feature		F1	F2	F3	F4	F5	F6	Sum
<i>Cultural material</i>								
Glass artefacts								
D/O no inscription	10	1						1
L/O no inscription	20		1					1
Tint, inscription (other)	32				1			1
Tint - no inscription	33	1	1		1			3
Clear glass	50	1		1				2
Other glass	51	1		1				2
<i>Pickaxe-Cooperative</i>	52	1						1
Other amber glass	54			1				1
Amber total		3		3				6
General	56					1		1
Core	60			y				
Flake	61		y	y	y			y
Sequential flaking	62			y				
BOP	63		y	y	y			y
Debitage	64			y	y			y
Can						1	12	13
Wire				1				1
Structural remains		y	y					y
Spring		y						y
Troughs		y						y
Fireplaces								
Lithics		y		y	y		y	y
Grindstone				y				y

Table 5-6. Table of cultural material at site K1

Further along the small sandridge (feature K1.3) were less disturbed deposits, including knapping floors (most of weak-red quartzite or silcrete), hammerstones and a small number of quartz artefacts. There were few chert artefacts at site K1 (unlike sites I3 and I5). The remainder of features were located along the sandhill below the ridge (*see* site plan). One occupation deposit, feature K1.4, exhibited a greater range of finished stone tools, such as tulas which were not found elsewhere at this site. Amongst the medium-frequency lithics were several glass flakes from green tint and olive coloured bottles (both nineteenth century types). As site K1 is exposed to prevailing winds the flakes were highly abraded. All flakes were from the base of bottles and displayed percussion scars. The size of the flakes was regular, between 15 to 20 mm long and eleven to one mm wide.

Twentieth century campsites at site K1 illustrated the continued use of the spring. For example, feature K1.3 included bottles dating from 1920 to 1950 (indicated by presence of clear glass bottles and modern closures). Feature K1.5 was a modern camp, with clear glass bottles and aluminium cans. Feature K1.6 was a camp containing cans and bottles from the early-1970s. These camps presumably resulted from the spring being located adjacent to the only vehicular track through Francis Swamp. The evidence of recent camping at site K1 emphasises how little evidence there is at most other sites in this study for twentieth century site-use.

Sites in the southern part of Francis Swamp

Sites P1 to P11 were recorded in the southern and central areas of Francis Swamp as mapped in figure 5-10. The cultural material at these sites is summarised in table 5-7. Certain differences justify considering the southern sites separately from the northern sites because the latter represent a cluster of sites where swamp, springs and dunefield meet, while the southern sites were smaller, widely distributed, and some sites were located long distances from dunefields. The principle dunefield in the southern section is the William Dunefield, which abuts the eastern bank of Anna Creek. There are also isolated sandridges within Francis Swamp, most on the western bank of Anna Creek. Warriner Creek marks the southern extent of Francis Swamp. The lower reaches of Anna Creek, before joining Warriner Creek, incorporate several springs, either on its banks or in its bed. These springs serve as important elements in the location of past human occupation. Much of Francis Swamp is extremely inhospitable. Springs located in Francis Swamp distant from Anna Creek and Warriner Creek have much less evidence of past occupation. There were no sites found in the western reaches of the Francis Swamp.

Site P1

Site P1 was a low raised mound 150 metres in length located on the western bank of Warriner Creek (fig. 5-10). A small spring at the south-west end of the mound bordered a stand of eucalyptus trees on the creek bank. Near the spring was a fireplace consisting of river pebbles as heat-retainers. The predominant element was a knapping floor of weak-red quartzite amongst a low-frequency lithic artefact deposit. No

European artefacts were present at site P1. Faunal remains included a group of bones, interpreted as a recent bovine death. This small site represents a small occupation site of an undetermined age with evidence for cooking and tool making. Many of the sites in Francis Swamp were similar to site P1, being small occupation sites with few artefacts.

Site	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
<i>Cultural material</i>											
Structural remains		y			y					y	
Yards				y							
Spring	y		y	y		y		y	y	y	y
Troughs				y							
Fireplace	y										
Lithics	lf	mf	mf	lf	hf		lf		lf		
Grinding stones			y								

Table 5-7. Summary of cultural material recorded at sites P1 to P11. Lithic frequencies were low.

Site P2

Site P2 was located to the north-west of the confluence of Warriner and Anna Creeks, on the side of a dune where the Warriner dune field meets Anna Creek. The surface sloped towards the creek and contained medium-frequency lithics covering an area of 50 m². Lithic artefacts included two hammerstones, an anvil, and small grey silcrete and weak-red silcrete knapping floors. There was no evidence for past food processing or fireplaces. Other artefacts recorded included three large pieces of 'two by four' plank (about three metres long), an iron spike and a square metal artefact similar to those recorded at Leonard Bore (Site K1). These objects may suggest that a structure was located at this site, although there is very little site structuring or other artefactual evidence to support this. The nearest site was site P3, also located on the eastern side of Anna Creek.

Site P3

Site P3 was located on the eastern bank of Anna Creek, one hundred metres west of springs located in the creek floor. Only lithic artefacts were found, including grindstones, hammerstones, cores and other tools. There was a predominance of quartzite. There was a greater amount of large manuports than at other southern sites, signifying that past activities included food grinding and tool making. No European

artefacts were recorded at site P3. Today cattle still water at the spring, resulting in erosion and movement of artefacts. Given their spatial proximity, site P3 should be considered in relation to site P4, located on the opposite side of Anna Creek.

Site P4

Site P4 was located on the southern bank of Anna Creek, directly opposite the spring at site P3. The site was located at two active springs, whose run-off formed a small pool of water in the bed of Anna Creek. They had been previously 'cut' by pastoralists. The first spring was fifteen meters in diameter, with standing posts in it, and was a cattle watering place. The second spring had a strong water flow, and had been fenced off in the past for protection from cattle. The remains included a post and wire fence and three wooden troughs. The troughs were quite large, the largest being 1200 cm wide. There were also fragments of a cast iron pipe and unidentified ferrous material. A low-frequency deposit of lithics extended towards the south-east. Another deposit of lithics occurred 200 metres south of the site on the raised sand hill bordering the creek. These deposits may have been revealed by cattle traffic cutting into lower occupation horizons. The absence of any European artefacts (other than the troughs and fence) suggested that the lithic assemblages predated pastoral use of the springs.

Site P5

Site P5 was an extensive series of lithic deposits along a low sandhill extending 150 metres from Anna Creek south-west into the Francis Swamp. The sandhill is 50 metres upstream from sites P3 and P4, and near a small cluster of active springs in the floor of the swamp. The sandhill supported a variety of shrubs and small trees, predominantly acacias. The lithic artefacts occurred throughout the dune in densities of up to 80 lithics per square metre. The artefacts were predominantly tools, knapping floors and a small quantity of grinding stones. Stone types recorded included weak-red quartzite, silcrete and a red chert. No evidence for fireplaces was discernible. No European cultural material was recorded at this site, except for a fragment of corrugated iron. This small fragment does not provide evidence for post-European site-use as it may have been blown into the site. Site P5 represents the largest Aboriginal occupation site in the central part of Francis Swamp.

Site P6 (Two Sisters Spring)

Site P6 is a double spring on a stony ridge overlooking the confluence of Anna and Warriner Creeks in the eastern corner of Francis Swamp. The 'Two Sisters' spring complex was one of the earliest named springs in the Francis Swamp, yet no cultural material, either Aboriginal or European, was found. It thus remains uncertain if site P6 corresponds with the historically known 'Two Sister Springs'. The absence of pastoral equipment may have resulted from moving equipment to other springs. The location of the 'Two Sisters Spring' is open to conjecture, but the two springs represented by site P6 accorded with map references for this complex.

Site P7

Site P7 was a series of occupation deposits, characterised by lithic artefacts. The assemblage was located on a low sandhill extending west from Anna Creek. The dune extends approximately two hundred metres into Francis Swamp, terminating at a stony outcrop. There were stands of small trees along the dune. The lithics occurred predominantly in eroded sections of the low dune and were similar in content to those described at site P5, although were only medium-density. There was no evidence for post-contact occupation.

Site P8 and P11 (Wishart Spring)

Sites P8 and P11 mark the location of the closest two springs to the approximate location of Wishart Spring (Gee 1995). The name 'Wishart Spring' occurs in early pastoral descriptions of Francis Swamp as a pastoral activity area. However, no Aboriginal or European cultural material was found at either of these springs. The place referred to as 'Wishart Spring' in historical documents may be either another spring or a reference to a more extensive area. As for Two Sisters Springs (site P6), portable pastoral equipment may have been removed by the pastoralists.

Site P9 (Tom Tom Spring) and site P10

Site P9 was a spring in the bank of Anna Creek at the approximate location of Tom Tom Springs, whose location is reported in previous biological surveys. No Aboriginal

or European artefacts were found at this site, despite the fact that biological surveys made reference to troughs. Site P10 is a spring located several hundred metres from P9 and P11 where a post base was the only evidence of past site-use.

Summary of sites P1-P11

The evidence from sites P1 to P11 demonstrates that occupation in the southern parts of Francis Swamp was less intense than at sites in the north. The key trends observed were that the largest sites (P5, P7 and P3) occurred where sand dunes met Anna Creek. Given the inhospitable environment of most of the swamp it appears that past Aboriginal occupation focussed on Anna Creek. This is supported by the distinct absence of evidence for past occupation at most springs located away from the creeks (P6, P8, P9, P10 and P11). The sites provide almost no evidence for post-contact Aboriginal settlement. That is, there are no typically Aboriginal occupation sites which include European artefacts, nor any European artefacts modified in Aboriginal ways. The evidence for past pastoral use in the southern part of the swamp includes troughs at springs. There is, however, no evidence for European occupation at these places. Another outcome of this survey is that while springs were named by the Europeans from the 1860s onwards, the current names may actually be for other springs. That is, the current maps should not be considered reliable guides to springs named in the nineteenth century.

Warriner Creek sites

This section presents sites located south of Warriner Creek, namely Margaret Springs (site H1) and the Beautiful Valley Bore (site G3), as shown in figure 5-10. These sites are located in a different type of landscape than the sites described previously in this chapter. While the areas north of Warriner Creek are characterised by large dunefields, to the south are flat open plains covered with gibber. These plains are broken by low ridges and creek systems, such as Teepena Creek on which Margaret Springs is located. The Warriner Creek bed becomes wider below the confluence with Anna Creek, where it becomes a sandy flood plain with occasional eucalypts. As a result, the potential amount of archaeological material preserved in the creek bed was presumed to be low. Beautiful Valley Bore was located at the very edge of Warriner Creek. The main sandridges on the southern side of Warriner Creek are found in the Strangways Springs locality and along Warriner Creek above the junction with Anna Creek. Consequently, following the trends in human occupation demonstrated by sites described previously in this chapter, the main past Aboriginal occupation sites are located at Strangways Springs and at Margaret Springs. Again, the presence of water (both artesian and creek water) and sand surfaces with sheltering vegetation are key habitation elements of these places. There were few archaeological sites found outside of these places. The principle site types on the gibber plain were small (less than 100 square metres) Aboriginal quarries for silcrete and quartzite. These primary reduction sequences included several large stone pieces and some preparatory flaking to produce cores. No quarries larger than this were found in this region. The major source of silcrete and quartzite would have thus been river pebbles from Warriner Creek (or other smaller creeks).

Margaret Springs (site H1)

The Margaret Springs (site H1) were located on Teepena Creek, one kilometre south of Warriner Creek (fig. 5-10). The archaeological material consisted of several hundred square metre scatters of medium-frequency lithic material, located on low sandridges bordering Teepena Creek. The covering vegetation consisted of grasses and small trees. The ground level artesian water seepage had caused distinct white surfaces. The

absence of mounds, as formed at other springs, may indicate that the springs are young (in geological terms). There were several distinctive characteristics of the Margaret Springs assemblage compared to other spring sites in this study. There were very high levels of quartzite, very low numbers of grinding stones, no travertine heat-retaining stone and no European settler cultural material.

The relative ratios of lithic materials were quartzite (78%), silcrete (15%), chert (5%), other material (2%). At site I3 quartzite and silcrete were found in similar quantities, while at site I5 quartzite constituted half the lithic assemblage. The higher percentage of quartzite at site H1 indicated that there was a nearby source of weak-red and grey coloured quartzite. The source was probably the adjacent creek bed, where large quartzite pebbles are found. Florek's thesis argued that artefact size was directly related to the proximity of the raw material source (1993). This proposition is supported at Margaret Springs, where many of the quartzite flakes are more than 12 centimetres long, while no chert, and few silcrete, artefacts were larger than five centimetres long. Not surprisingly, the lithic knapping areas were almost exclusively quartzite reductions, while silcrete and chert artefacts tended to be finished tools with little evidence for on-site reduction of these materials. As the springs do not form travertine, the quartzite was also used in fireplaces as a heat-retaining stone. The low number of grinding stones may have resulted from distance to grindstone quarries. This seems an unlikely explanation, as elsewhere in the study region grindstones were imported longer distances. A second more likely explanation is that food processing using grindstones did not occur at Margaret Springs with the same frequency as at other Aboriginal occupation sites.

Unlike most spring sites with past Aboriginal occupation deposits, there was no European settler cultural material at Margaret Springs. Either the site was never occupied in post-contact era, or any occupation was by Aboriginal people not using settler material culture.

In summary the evidence from Margaret Springs demonstrated past Aboriginal occupation, reinforcing that the preferred habitation was at places with water, sandy

surfaces and sheltering vegetation. The relative ratios of lithic material indicate that the springs were a source of quartzite. The smaller size and quantity of other material (in this case silcrete and chert) is assumed to relate to distance from lithic sources. The absence of settler cultural material is an exception to trends reported in this research.

Beautiful Valley Bore (site G3)

Beautiful Valley Bore (site G3) was located on the southern bank of Warriner Creek. It provides evidence for pastoral activity in Warriner Creek, an area used from the earliest years of the pastoral property.²⁵ Yet, as shown here, the Beautiful Valley Bore dates only from later phases of pastoralism, and is still used for watering cattle. The troughs were 20 metres long and constructed of concrete. There was no windmill or pumping equipment, so the bore must be fed by the pressure of artesian waters. The ground surface within 100 metres of the trough was highly disturbed by cattle, but no artefacts had been exposed. A survey of the area within several hundred metres of the bore failed to locate any artefacts, nor has Beautiful Valley Bore evidence for past residential structures. The lack of evidence for past Aboriginal or settler occupation suggests that the bore had been sunk at a place where previously very little naturally occurring water was available. This bore would postdate 1882, perhaps by many years.²⁶ There was no cultural material suggestive of nineteenth century technologies, unlike other pastoral sites in Francis Swamp and at Anna Creek.

²⁵ Letters from the pastoralists describe stock being located at Beautiful Valley during the 1860s.

²⁶ As stated in the site description for site A6 ('Old Wool Sheds' on Anna Creek), the first bore on Strangways Springs Station was sunk in 1882 (*The Pictorial Australian*, Feb. 1891, p. 30).

Strangways Springs sites

The archaeological sites at Strangways Springs are described by area (fig. 5-17). The description begins with the principle areas for European pastoral settlement and activity from 1862 onwards. Firstly, sites at the head station are presented (sites S001, S021 and S401), then the assemblages interpreted as a wool 'scour' (washing area) and blacksmith (sites S201 and S601), and the railway construction camp (site F1626 and S1751). Following this, occupation assemblages at Strangways Springs interpreted as resulting from pre-contact and post-contact Aboriginal occupation are presented. These are the 'western sites' located off the edge of the main ridge (from north to south: sites S240, S1101, S1102, S1108, S251, S344, S305, S340, S349, S350, S354, S355 and S361), the sites extending north from the 'main north mound' (sites S512 and S1201), the sites on the eastern and southern areas of the main ridge (site S662), and the sites north of the main ridge (sites S533, S539 and S561).

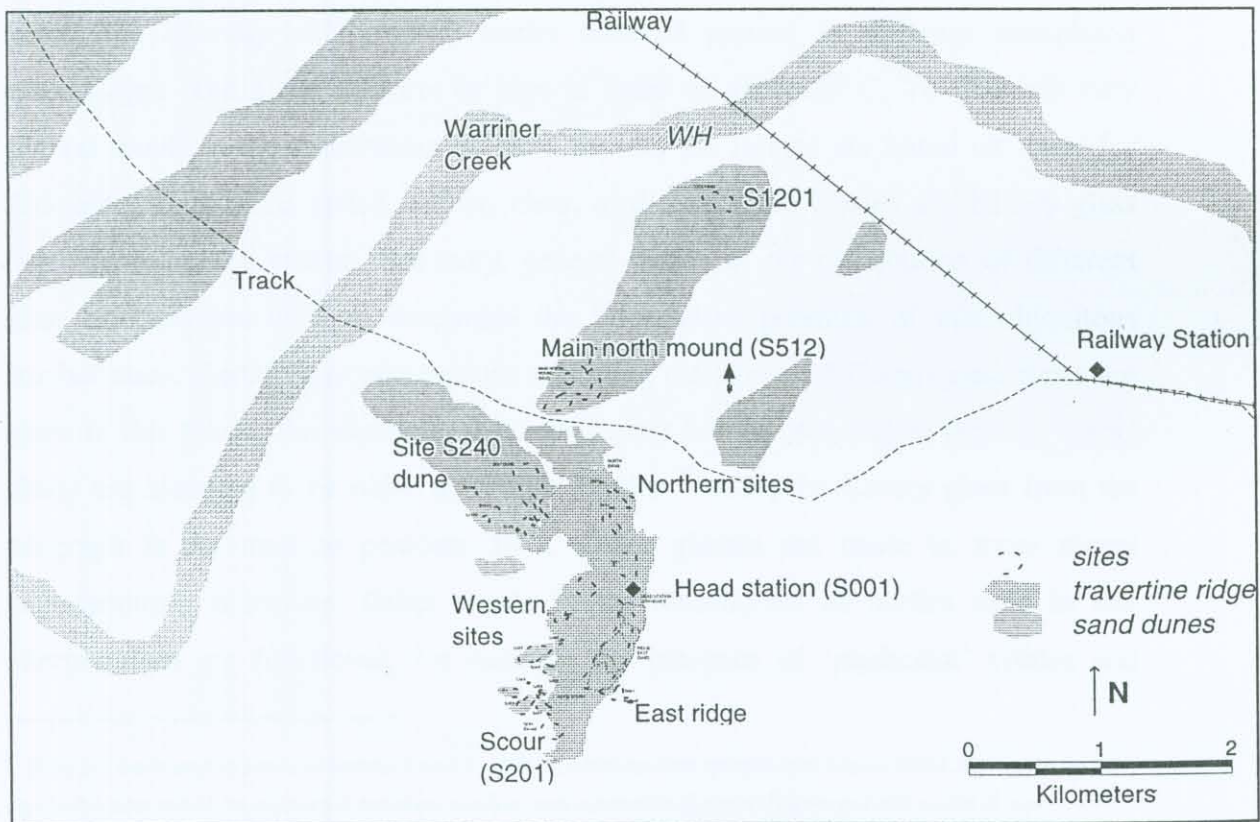


Figure 5-17. Map of main areas described at Strangways Springs.

The archaeological features recorded at Strangways Springs are numbered between 1 and 2501, and listed in appendix B, table B-2.²⁷ As described in chapter 4, the diagnostic artefacts described in the Strangways Springs site descriptions were entered onto a database, as indicated by their identification number (DBID). The database is summarised in appendix B, table B-3. Abbreviations used in these two tables are explained in table B-1. As with previous site descriptions, the description and interpretation of archaeological assemblages from Strangways Springs relies in part on the interpretation of cultural material classes, which are included in appendix C. Again, where necessary, the relevant sections of appendices are signposted in the site description.

Glass artefacts present at Strangways Springs sites.

A distinctive feature of the Strangways Springs sites was the quantity of glass artefacts (predominantly bottles) at many sites, as summarised in figures 5-19 to 5-23. This provides two types of evidence. Firstly, the amounts of glass demonstrate (in broad terms) the quantity of European settler material present in different occupation assemblages. The glass artefacts by type is listed in appendix C. To illustrate very general trends in the distribution of glass by site, the figures are based on totals for dark-olive, light-olive, tinted, amber, clear, medicinal types bottles and battery glass from the telegraph station. Secondly, general trends in the distribution of different glass artefacts are used to determine the informative potential of this ubiquitous artefact class. Certain key assumptions regarding the ages of different glass types are made in this thesis. For example, dark-olive glass bottles (sometimes termed 'black' glass) are assumed to be older than other bottles.²⁸ Also, the battery glass from the telegraph is assumed to postdate 1872. Other glasses are made in more recent manufacturing processes. Other trends in the distribution of bottles used in site interpretation are functional; for example the presence of 'medicinal' bottles and

²⁷ There is a continuous sequence of features from F1 to F1003, which are then sporadic until feature F2501. The reason for the gaps in the latter part of the sequence is that blank numbers were reserved to accommodate the potential results of later archaeological surveys into the database.

²⁸ This generalises a more complicated situation. Dark-olive bottles found in this study were handmade, by technologies which left distinctive characteristic marks. These technologies were superseded by automated bottle manufacturing, characterised by distinctive marks, use of thinner glass, and other coloured glasses, such as clear and amber glass. A more complete reference to literature detailing manufacturing techniques as a basis for dating glass bottles is presented in appendix C.

bottles designed for specific foods.

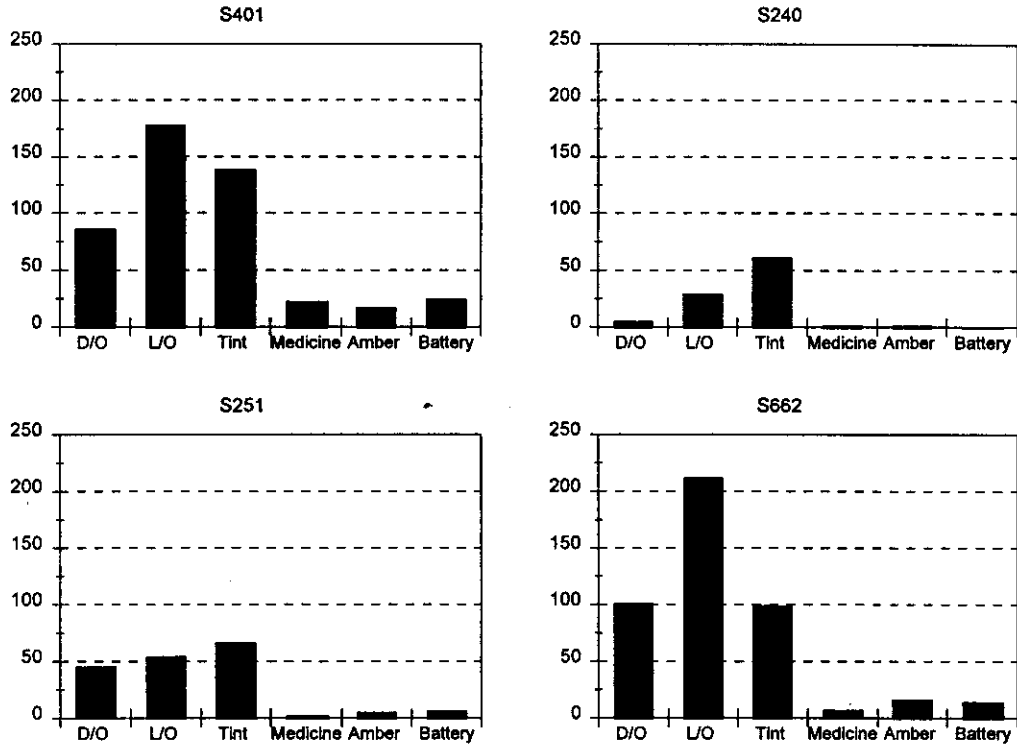


Figure 5-18. Glass artefacts at largest glass assemblages: sites S401 (head station), S240, S251 (western sites) and S662 (eastern main ridge).

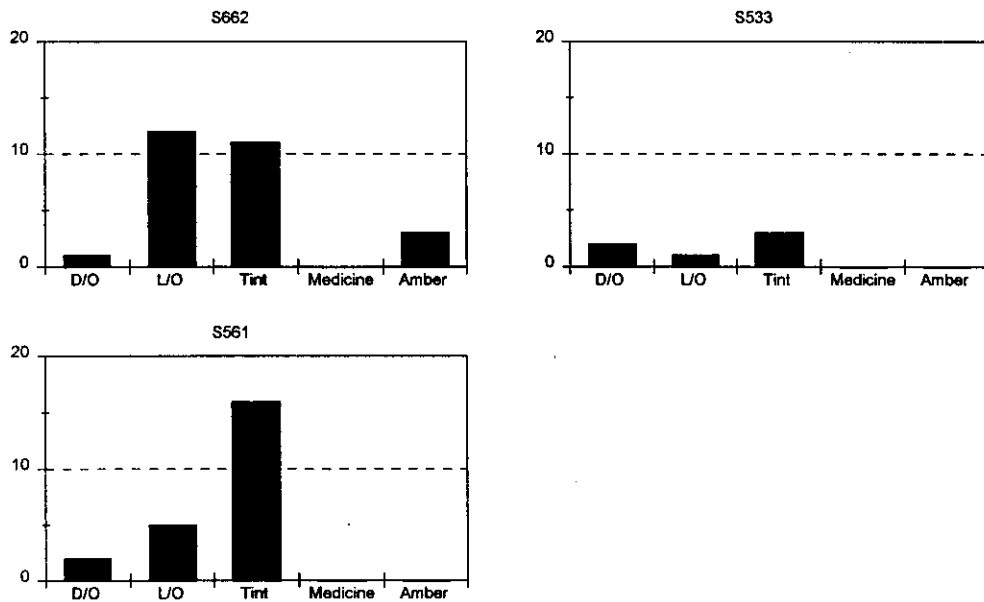


Figure 5-19. Glass artefacts at the European settler activity areas south of the head station (sites S201, S226 and S601).

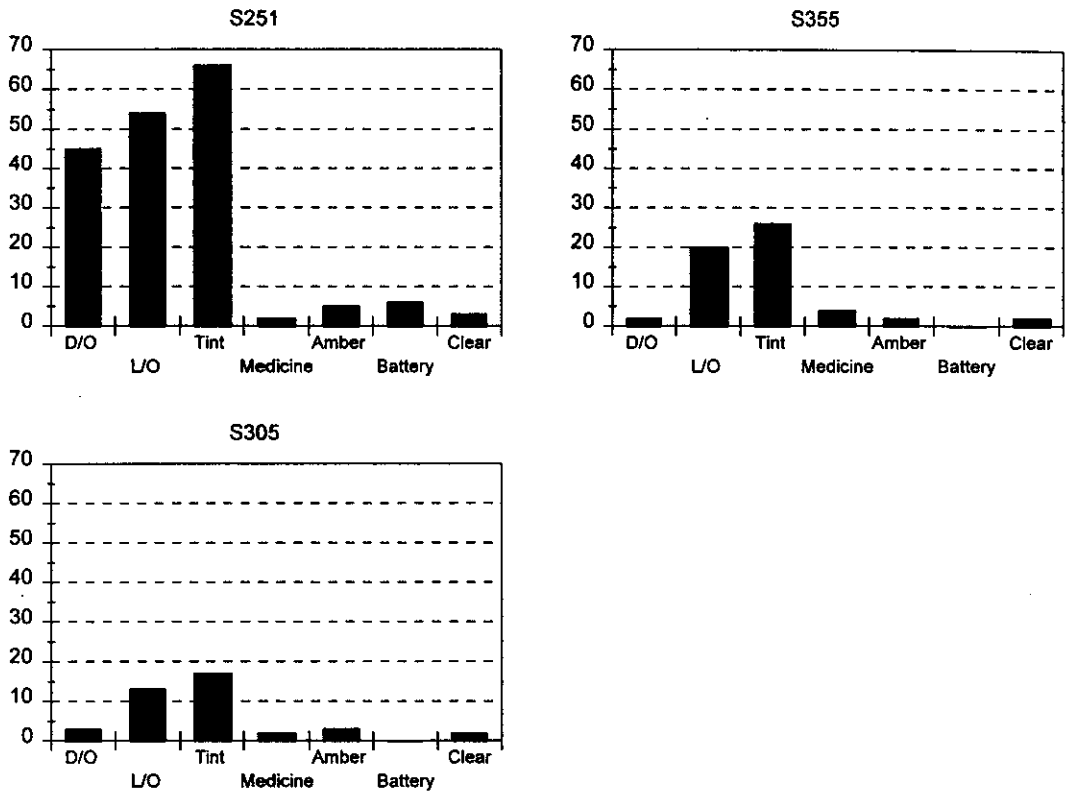


Figure 5-20. Glass artefacts at large western sites: sites S251, S355 and S305.

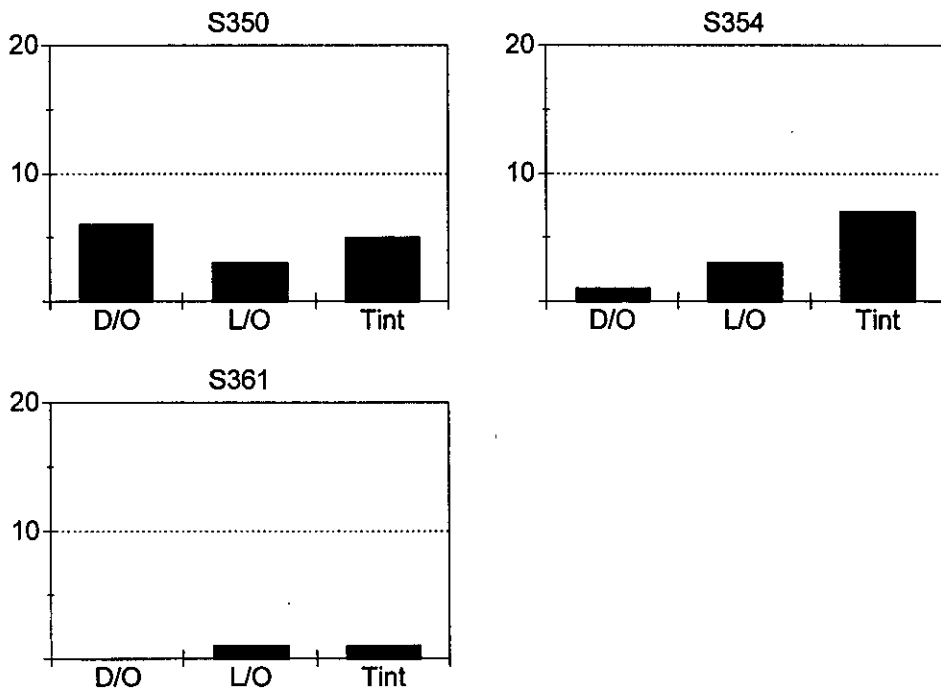


Figure 5-21. Glass artefacts at western sites S350, S354 and S361. The nearby site S349 contained only battery glass.

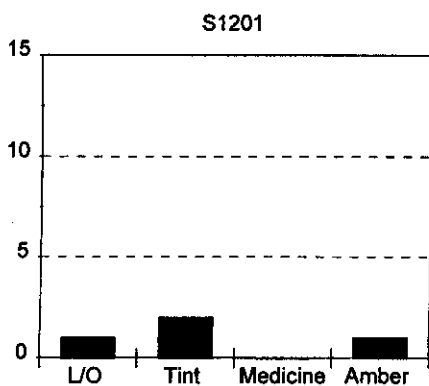
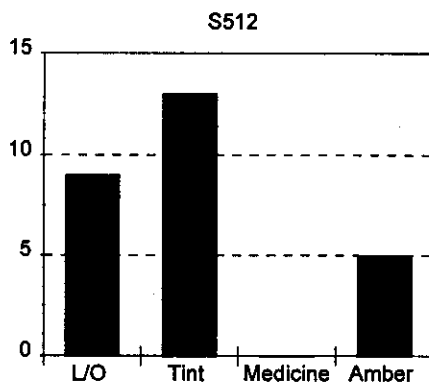


Figure 5-22. Glass artefacts at 'main north mound' sites S512 and S1201.

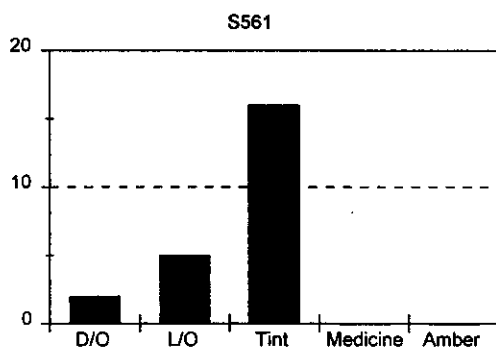
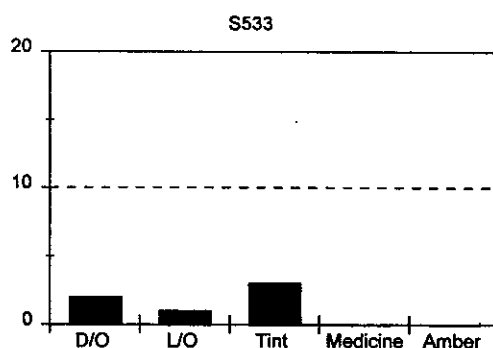
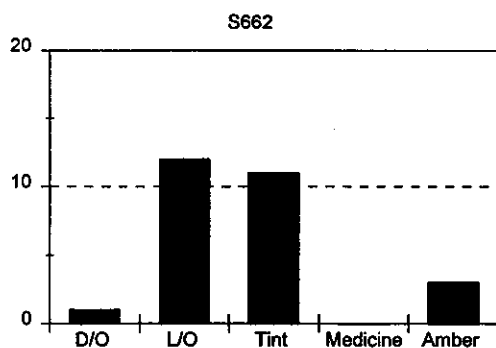


Figure 5-23. Glass artefacts at small assemblages north of main mound: sites S662, S533 and S561.



Figure 5-24. A. Aerial photograph of Strangways Springs looking west along main ridge, with springs visible as mounds. East ridge (site S662) in foreground, head station in middle ground, 'western sites' (S240 and neighbours) in background, 'main north mound' at far right in extreme background. B. Close-up aerial photograph of head station. Head station at right, stockyards at left. Vehicular damage is visible.

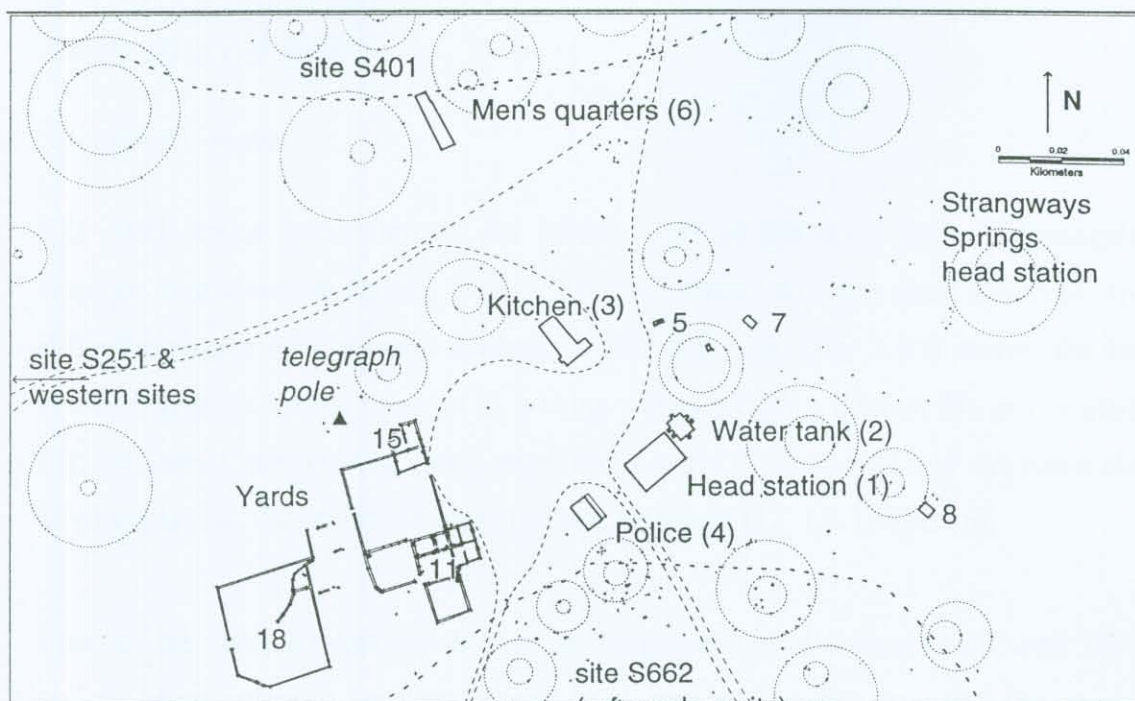


Figure 5-25. Plan of head station showing structures, watertank, yards, associated archaeological surface deposits and mound springs (as concentric circles).



Figure 5-26. Head station at Strangways Springs after 1872: *from left*, telegraph repeater station (feature 1), the kitchen (3), wood pile, the men's quarters (4) and building within stock yards. (Courtesy of the Mortlock Library of South Australia, S211.)²⁹

²⁹ The pictured photograph is MLSA, S211. Other photographs from the MLSA archives used in the interpretation of the head station include MLSA, B1496, B957713, S116, B1487, B3399, B3401 and B11945.

Head station (site S001)

Structural remains

The head station is located on the eastern edge of the main ridge at Strangways Springs, as pictured in figures 5-24A. The head station includes stone structures from different phases of European settlement. The site plan (fig. 5-25) shows the head station/telegraph station (feature 1), a stone watertank (2), a kitchen (3), police station (4), the men's quarters (6), other structural remains (5, 7 and 8) and extensive stone stockyards (14, 17, 18 and 19) with internal buildings (12, 13, 15 and 16).

Most of the complex was constructed as the pastoral head station (1862 until 1870s) before being replaced by Anna Creek head station. The site was also the repeater station for the overland telegraph (1872 to 1896), police station for the railway construction camp at railway station (1886 until 1888) and distribution point for

Aborigines Stores (1867 until 1897).³⁰ The settlement remained occupied until 1897, when the telegraph station and rations depot were closed. The head station is one of the largest complex of structures surviving from the 1860s and 1870s in northern South Australia.

As pictured in figure 5-24B, the buildings are located amongst mound springs, which were more active during nineteenth century settlement than they are today.³¹ There is very little protective vegetation, except to the north and west of the main ridge. The ridge at this point provides uninterrupted views of the gibber plains to the east and north, but no view towards the west and north-west. A photograph taken after 1872 shows the principle buildings, with the exception of the watertank and eventual police

³⁰ Strangways Springs Police Station notebooks from 1886 to 1888 (SRSA, GRG 5/5/314) indicate that Mounted Constables (MC) Bailey, MC Bisley, MC Whitters, MC Bennet and Inspector Hewish were located at Strangways Springs during that period. There were normally two to three men present at any one time.

³¹ This observation is based on photographs taken in the 1920s which show a greater amount of plant growth around the spring tops, indicative of a greater outflow of artesian water.



Figure 5-27. Remains of stone stock yards at Strangways Springs with associated buildings in foreground and middle ground.

Figure 5-28. Aerial photograph of eastern ridge at Strangways Springs. Site S662 is located on the ridge surface. The head station is visible to the extreme right background. The western sites are located amongst the vegetation visible in the background. Site S601 is located on the desert floor at the base of the escarpment.

station (fig. 5-26). The photograph reveals that the most buildings were roofed with thatch (for the kitchen, men's quarters and for the buildings throughout the stockyards) while the telegraph repeater station had a corrugated iron roof. The structures were solidly built from travertine, with very small windows. Only the head station and kitchen had chimneys. Smaller structures may have been residential or storage buildings (features 5 and 7). The small structure (feature 8) to the west of (and below) the watertank may have been a bathhouse. The watertank was buttressed with stone and presumably collected rainwater or was filled from a nearby spring.

As pictured in figure 5-27, the extensive stockyards built during the 1860s were constructed from travertine and capped with a herringbone pattern.³² The structures attached to the yards were presumably originally built for shearing and wool storage.³³ Following the relocation of the head station, the yards would have held stock, particularly horses, for the telegraph station. Settlement residents at that time included telegraph employees and their families, a justice of the peace and mounted constables. The station grave yard is located several hundred metres west of the head station and contains the graves of Walter David Randall (died 1893 aged 41 years), Mary Hewish (died 1895 from snakebite aged 32 years, wife of Inspector Hewish) and three unmarked graves.

Cultural material proximate to head station (sites S401, S201 and S662)

The archaeological deposits surrounding the head station were disturbed by visitors to the site, particularly immediately adjacent to the buildings, where vehicular traffic had crushed and moved cultural material. The interior and surrounds of buildings were not excavated, as recent conservation workers had 'cleaned' the buildings, removing occupation deposits. For these reasons it was difficult to make quantitative comparisons between sites S001 and S021 and other less disturbed sites at Strangways Springs. However, in general terms, there exists a large amount of European artefacts

³² The stone walls are pictured in the earliest known photograph of Strangways Springs Station (MLSA, B1491) titled 'Circa 1870. Wool-scouring at the station'.

³³ Both rooms built by the pastoralists between 1862 and 1867.

at the head station. Much of this occurs as scatters of artefacts, although there are refuse deposits and possibly occupation deposits. There are two distinct areas containing the majority of cultural material in the vicinity of the head station. To the south of the head station are several large assemblages (northern extent of site S601), and to the north (site S401) are other deposits.

The features south of the head station are marked on the site plan (fig. 5-26). I will describe some of these features to provide an overview of their contents and appearance. All are within 100 metres of the head station. The larger concentrations of artefacts were interpreted as refuse deposits. Apparently, no attempt was made to conceal the rubbish, which would have been visible to the station occupants. These highly concentrated deposits contained a wide range of different artefacts, including bone, ceramic, glass, technical equipment and metal cans. Some of the refuse deposits had been burnt, for example refuse deposits at features F941, F942 and F943 (24 metres south-east of building 4). The fire may have been intended to destroy food waste, as many included burnt bone. Other deposits were dominated by technical equipment from the telegraph station: glass vessels from batteries, zinc plate, copper rod and ceramic lids. Interestingly, some artefacts were removed from the refuse deposits, while others were never removed. For example, the battery glass occurs at other sites (sites S251, S249 and S561) but the zinc and copper was not found outside of the refuse heaps. Presumably these refuse deposits were the source of many artefacts found at occupation sites in the vicinity of Strangways Springs. Certain deposits demonstrate that the selectivity and removal of artefacts involved primary reduction of glass. For example, feature F912 contains many glass fragments, but almost no bottle bases and closures were found. There was however, very little evidence for glass working at these features, such as glass debitage, flakes or tools with use-wear.

An exception to the pattern of refuse disposal within sight of the head station, was observed at feature F817, located 500 metres south of the head station. At this feature many glass bottles had been deposited in a gully at the edge of the main ridge. This is assumed to have been a deliberate attempt to privately dispose of alcohol bottles. The bottles were nearly all dark-olive (black) glass bottles, suggesting that at one point in time these were the most common bottles. Given that these are the older bottle types

found in the study, this deposit presumably dates from the earliest years of the European settlement.

Site S401: Assemblages immediately north of the head station

Figure 5-18 shows the large amount of European cultural material (in terms of glass artefacts) recorded at site S401, a set of assemblages immediately north of the head station. The extensive site disturbance and removal of the archaeological material at the head station appears to have been less dramatic at the features in site S401, although there is evidence of recent camping and movement of artefacts. Even so, the features in site S401 demonstrate the nineteenth century disposal of refuse from the head station, and the clustering of activities adjacent to the station. The area is far more sheltered than the areas south of the head station, being protected by bushes and mound springs.

The site consists of concentrations of archaeological material extending from 20 to 170 metres north-west of the men's quarters (feature 6). Some features were interpreted as refuse deposits, with secondary sorting (natural and human) of artefacts. The largest refuse deposits were located near to the men's quarters and contained the majority of bottles and ceramic fragments (features F435, F436, F434, F440). The majority of artefacts were glass. A minimum number of 24 glass battery artefacts, 86 dark-olive, 178 light-olive, 138 tint, 22 medicinal and 17 amber glass bottles were recorded. There was evidence for regular structures (features F412, F416, F417, F420, F474), all of which were indicated by linear rows of stone. A range of possible occupation deposits were found at these structures, including cartridges, iron, buttons, cans and ceramics. Unfortunately, these features have been disturbed recently, possibly by bottle collectors. There is some evidence at certain features for glass flaking (features F413, F407, F410, F413, F416, F428, F431, F437, F449, F452, F453) and selective removal of glass bottle parts. For example, feature F409 contained four light-olive necks (no bases) and 2 dark-olive bases (no bodies).

In summary, the deposits in the vicinity of the head station show evidence of having been disturbed and robbed, possibly through to the present day. This provides some

contrast with other sites in this study which are less disturbed. There is evidence that the refuse deposits were sources for glass bottles and other artefacts, which were found at more distant sites (as described below). The evidence shows that most refuse disposal was conducted within 100 metres of the head station. This evidence suggests that the head station was the focus of European structures and disposal of goods, with the exception of two distinct sites south of the head station and the railway station.

European activity areas south of the head station (sites S201 and S601)

Sites S201 and S601 are interpreted as secondary focuses of European activity at Strangways Springs. The cultural material found at these sites suggests pastoral-related industry. Both sites are located at the southern end of the main ridge at Strangways Springs (fig. 5-17).

Site S201 and S226 (wool scour³⁴)

Site S201 comprises structural remains with concentrations of associated surface deposits, characterised by European technical and occupation artefacts. These remains were confined within an area of 100 m², as shown in figure 5-29. A low-frequency scatter of European cultural material extended south for 200m (site S226). Site S201 is 1130 metres south-west of the head station, and the closest site is S361, a lithic assemblage 200 metres north. The topography is characterised by travertine rocky ground and spring mounds, with little covering vegetation. Immediately west is a soft clay surface with saltbush cover. The fenced spring marked on the plan is today the only active spring in the southern part of the ridge. A rocky gully below this spring appears to have been water eroded, suggesting a previously high water outflow. European activity probably relied on the artesian water from the spring.

³⁴ The technology of wools scours is understood, in part, from Menzies (1892), Hawkesworth (1911), Smith (1914), Jack (1979), Cummins (1989).

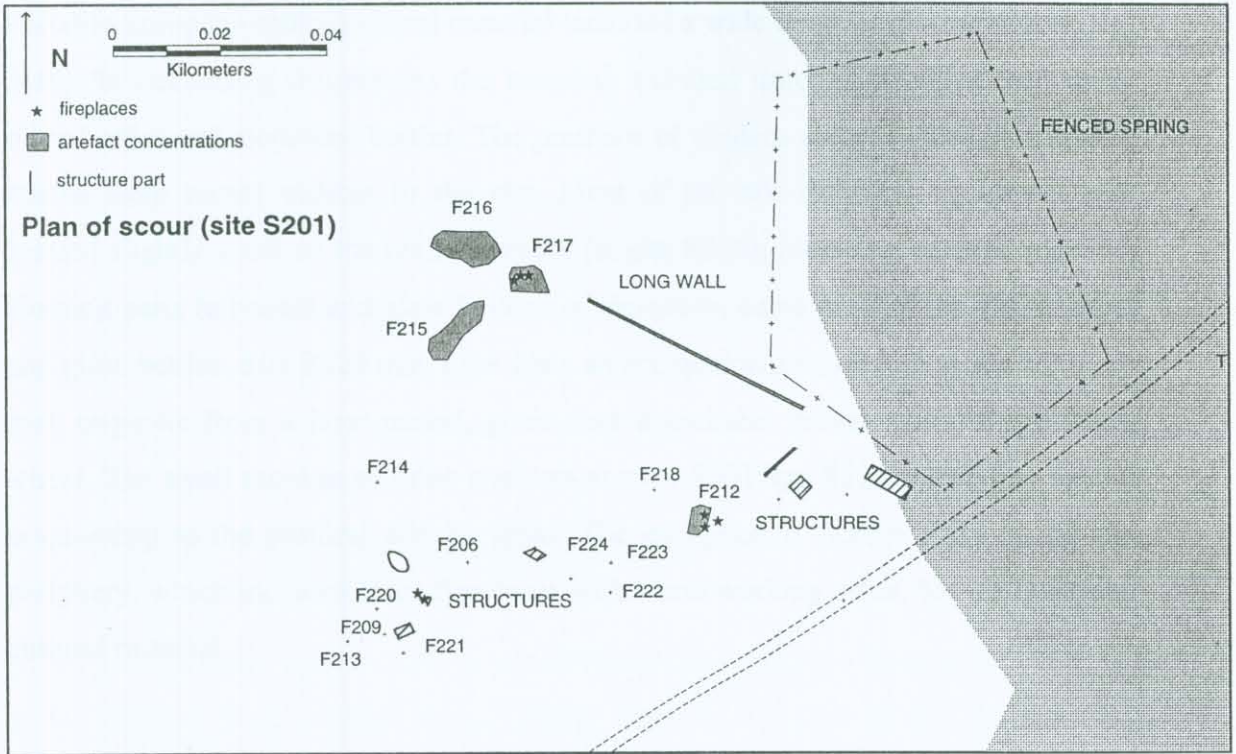


Figure 5-29. Plan of S201 (wool scour), Strangways Springs.

The remains at site S201 suggest the presence of a water trough, hand powered agitation and water reuse. These elements are the basis for the interpretation of the site as a wool scour, probably used during the 1860s and 1870s.³⁵ The built structures include a 40 metre low stone wall (features F202 and F203) which may have acted as a water race. Wooden beams in the upper part of the structure were very light, with holes that may have held an upper element, possible a trough. Other built elements were a rectangular stone building (feature F201), stone structural remains possibly of fireplaces (F205, F207 and F208) and the base of a larger fireplace (F203). Technical equipment included an iron wheel (feature F206) with a diameter of three metres. The wheel used metal buckets positioned on the outer rim to move water. Other equipment included hand winches which would have been appropriate for thrashing or churning. This supports the interpretation of a wool scour, as cleaning dirt from the fleece required water and agitation.

³⁵ The pastoralists were very economical in use of technical equipment until circa 1867, when expenditure began to increase. The earliest descriptions of wool-scouring (1862 to 1867) at Strangways Springs suggest using tubs of water, and the long trough may be the result of that technology.

Portable European settler cultural material included a wide range of glass artefacts (fig. 5-19). In decreasing frequencies the material included tinted, light-olive then dark-olive bottles and medicinal bottles. The presence of modern amber bottles presumably results from recent visitors to the site. Most of the non-technical equipment was located slightly south of the main complex (at site S226), including ceramic remains, clothing parts (a buckle and glass button), a horseshoe, some parts of the water wheel and glass bottles. Site S226 may have been an occupation area related to site S201, or may originate from a later period, given that it includes broken parts of the water wheel. The small number of lithic artefacts at sites S201 and S226 showed no spatial relationship to the pastoral activity areas. The exception is feature F217 at the site periphery, which included three fireplaces with stone working areas, but no European cultural material.

Sites S201 and S226 were pastoral activity areas with evidence of early attempts to hand wash wool, prior to the more elaborate equipment being used at Anna Creek (site A6). The artefact assemblage suggests site use during the 1860s and 1870s, with some recent visitors accessing the site. There is no strong evidence of the reuse of European artefacts by Aboriginal people, although the area had been a site of Aboriginal occupation. Site location here is assumed to derive from the active spring, providing water for the cleaning of wool.

Site S601

Site S601 is located below the edge of the main ridge (figs 5-17 & 5-37) on a sand and clay surface amongst saltbush. This site represents the only archaeological material located off the southern or eastern ridge escarpment, which at this location is steep and rocky, as pictured in figure 5-28. The material is clustered at several features (feature 601 to 651) within an area 165 by 65 metres. Given the amount of metal contained at this site, particularly horseshoes, the site may have been a working area for metal. For these reasons it is tentatively described as a blacksmith, although if so it was extremely rudimentary. If so, the raised stone platforms may have been working surfaces, or fireplaces. There are however, no remains indicative of a well constructed forge.

Alternatively, the site may have been a small settlement, at which pastoral equipment was stored.

Two regular structures with stone layered walls were found, both constructed from local travertine (features F601 and F604). Feature F601, which is one metre high, but only two metres square, may have been the base for a small forge. Feature F604 is larger, two metres square and one metre high. Four structures which were more difficult to interpret were non-linear stone arrangements, the surviving height being 500 centimetres. No significant clustering of cultural material was found at the structures, except highly fragmented burnt bone and charcoal.

There were personal and domestic artefacts indicating residential occupation, and more metal artefacts than at other sites.³⁶ Metal artefacts included hoops from wooden barrels, nine complete horseshoes (far more than other sites), an axe-head, corrugated iron sheet, iron strips, fragments from metal containers and clusters of unidentifiable metal fragments. The amount and range of metal items implies pastoral equipment was either stored, or maintained at this site. Personal items included clay pipes, clothing buckles (two), match boxes (five) and tobacco containers (two). Domestic items indicating a nineteenth century occupation included vitreous stoneware and six 'dot and spot' cans. The cultural material included light-olive (16) and tinted glass (38) bottles, but only three dark-olive and two medicine-made bottles (fig. 5-19). Chutney, salad oil and liquor bottles constitute the glass vessels. The technology of bottle manufacture supports a nineteenth century occupation date.

In summary, site S601 was interpreted as being occupied during the late-nineteenth century, with residential occupancy (possibly in tents) and with cultural material related to horse-husbandry. There is no evidence for Aboriginal use of this site, in terms of Aboriginal cultural material or modified European artefacts.

³⁶See appendix B and C for DBID numbers.

Remains of railway station and construction camp (sites S1626 and S1751)

Archaeological material at the remains of the railway provide a comparative set of material culture for the interpretation of occupation sites at Strangways Springs (specifically Aboriginal post-contact sites), as the railway camp was only occupied during the 1880s (1884 to 1886). The railway remains are several kilometres north of Strangways Springs as marked on figure 4-2. Physical remains at the railway station included the station, railway siding, an artesian bore, a hotel, a graveyard³⁷, stock yards and occupation sites. The camp sites were all proximate to the railway station, or adjacent to the route of the railway. The largest camp was close to the station (site S1751). Site S1751 included the remains of several substantial structures and rudimentary structures. Several large deposits of artefacts were refuse dumps. While distinctly nineteenth century in content, certain differences between this post-1884 assemblage and other sites were observed. An important trend is the absence of thick dark-olive bottle glass, supporting the impression proposed throughout the thesis that this material occurred at early sites (ca. 1860s and 1870s) and becomes less common after in later years. Consequently only light-olive, tinted and clear glass bottles were found at site S1751. Given the distance to the telegraph station it was not surprising that telegraph battery glass was not present at site S1751. The extremely localised dumping of refuse close to the settlement is similar to that described for the head station. There was no evidence of selective reduction at these refuse deposits, with the exception of several glass tumblers which had been flaked.

Occupation sites located to the west of the Strangways Springs' main ridge

As shown in figure 5-17, the 'western sites' at Strangways Springs are occupation deposits located on sandy surfaces below the western extent of the rocky escarpment of the main ridge (sites S361, S355, S354, S350, S349 to S350). The southern sites tended to be located amongst trees, although several of the less structured assemblages were more exposed. Two sites were located on the edge of the main ridge (sites S344 and S251), almost due west of the head station. The more northern of the 'western sites' (sites S240, S501, S1101, S1102, S1108) were located north-west of the main

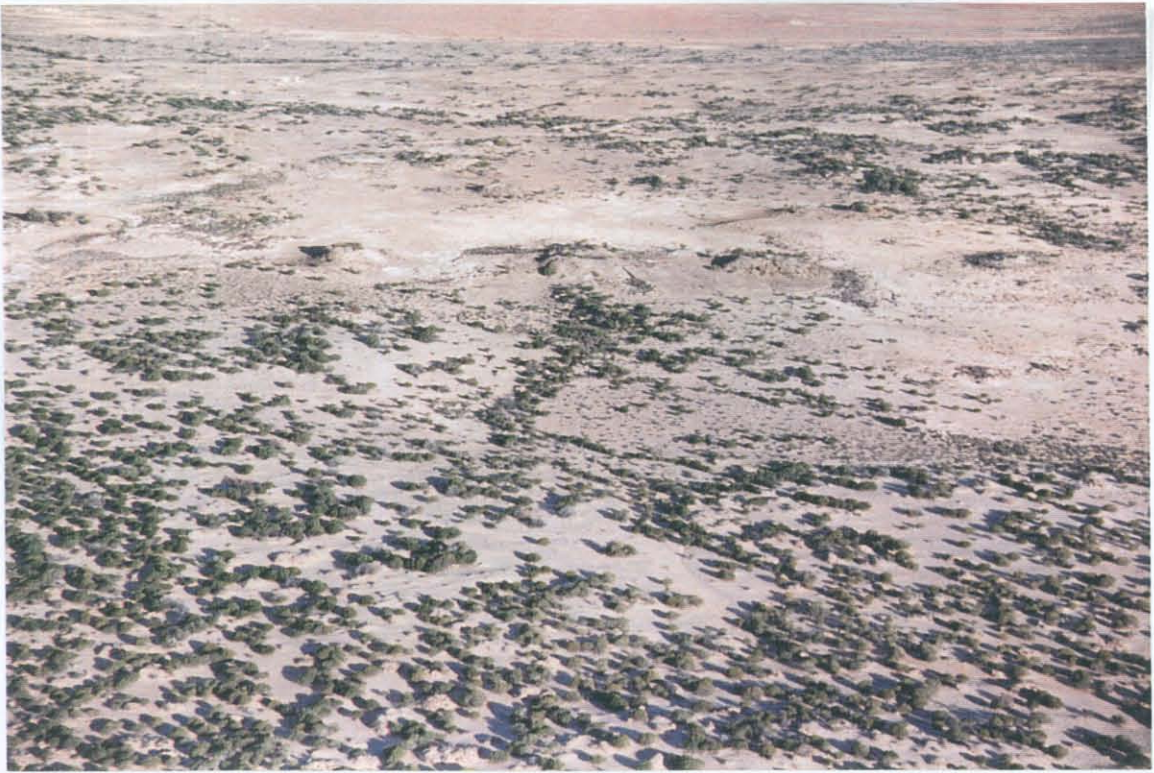


Figure 5-30. Photographs of site S240. A. Aerial photograph facing south-east with site S240 in foreground (defined by concentration of trees) and the head station in background with the gibber plain beyond. B. Close-up of spring at S240 showing extent of associated vegetation.

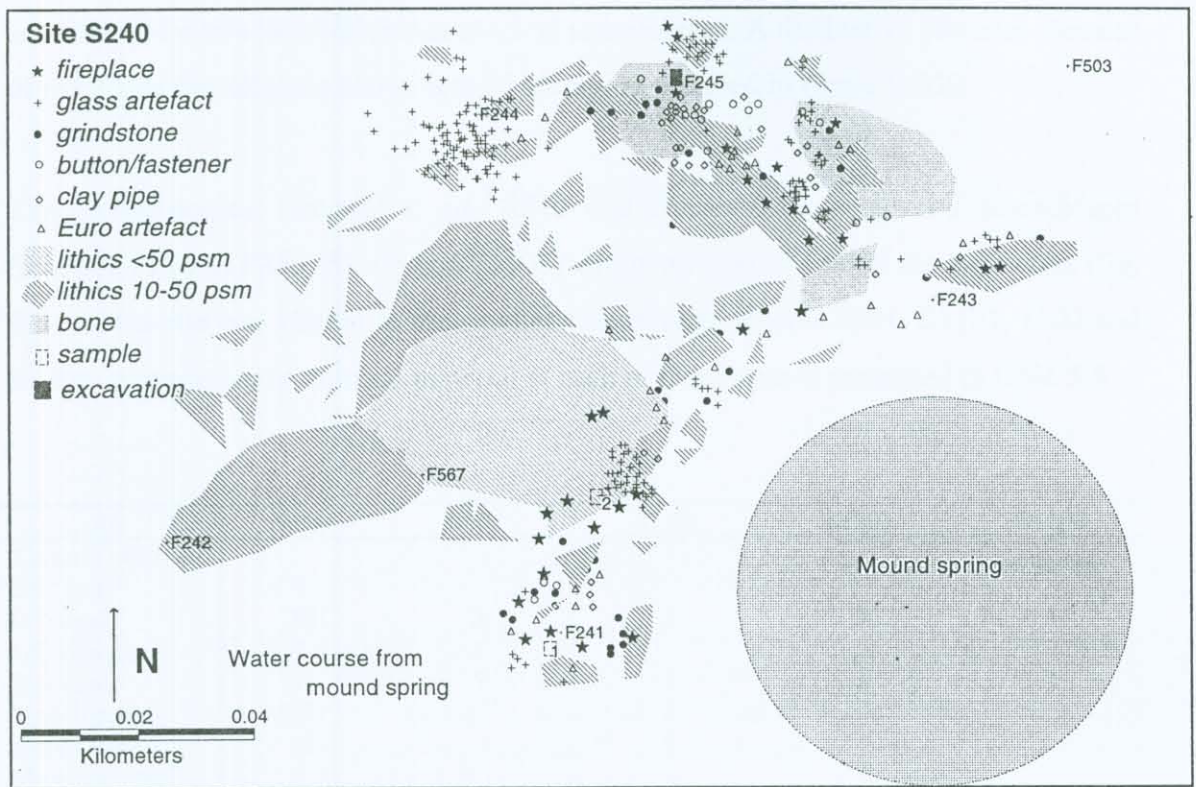


Figure 5-31. Plan of site S240.

ridge, and include occupation deposits on a sandhill bordering active artesian springs. (The largest active springs at Strangways Springs occur to the north and west of the main ridge.) All the 'western sites' demonstrate strong spatial relationships between lithic material and post-contact settler material, which is the basis of the interpretation of these sites as post-contact Aboriginal occupation areas. In keeping with this general assumption, the site descriptions focus on evidence for activity areas, clustering of like artefacts, and the range of post-contact cultural material. The largest assemblages, in terms of evidence of post-contact occupation, were S251, S240 and S355. Assemblages assumed to derive largely from pre-contact Aboriginal occupations, as indicated by substantial quantities of lithic material, are particularly evident at sites S240, S361 and S305.

Site S240 - contact period occupation site

Site S240 was located north-west of the main ridge at Strangways Springs, 900 metres from the head station. An aerial photograph (fig. 5-30A) shows the spatial relationship between these areas. Site S240 was located on a low sandhill extending to the north-

east which contains several archaeological assemblages. A distinctive physical element of the site is the adjacent active mound spring, as pictured in figure 5-30B.

The archaeological material at site S240 was concentrated in several assemblages (features F240 to F250, F1106 and F1107) within an area of 13,000 square metres (fig. 5-31). This site was closest to the smaller assemblages at sites S501, S1101, 1102 and S1108. A summary of cultural material at each of these sites is presented in table 5-8.

<i>Site</i>	S240	S501	S1101	S1102	S1108
<i>Cultural material</i>					
D/O total	5				
L/O total	29	2	5	5	1
L/O closures	5	1			
Tint total	61	5	7	3	1
Tint closures	17		3		
Stoppers total	17		4		
Medicinal total	1				
Clear glass	1				
Amber total	1				
General	1				
Battery glass	none	none	none	none	none
Clay pipe fragments (MNI)	36		3 (2)	y	
Ceramics	none		3		
Buckles	2		1		
Buttons	24		5	2	
Nails	19				
Structural Eq.	y				
Bullet	1				
Shears			2		
Horse Eq.	1				
Tobacco can			1		
Utensils	1 (fork)		teaspoon + unidentified		
Cast iron vessel	1				
Food can	17		6		1
Metal containers	4		1		
Matchbox	1				
Harmonica	1				
Zinc			1		
Corroded metal	y		y		y
Ochre	y				
Lithics	y		y	y	y
Grindstone	y				y
Fireplaces	y			y	y

Table 5-8. Summary of cultural material at sites S240, S501, S1101, S1102 and S1108.

Site S240	F242	F242	F242	F242	F243	F244	F244	F1107	F1107
	FA#1	FA#2	FA#3	FA#4	FA#1	FA#1	FA#2	FA#1	FA#2
<i>Cultural material</i>									
Quartzite (W/R)	10 (22)	2 (13)	22 (20)	49 (40)	41 (34)	55 (64)	8 (29)	33 (26)	64 (32)
Quartzite (other)	6 (14)	7 (47)	10 (9)	14 (12)	6 (5)		4 (14)	14 (11)	26 (13)
Silcrete (grey)	24 (55)	3 (20)	51 (47)	44 (36)	51 (42)	11 (13)	7 (25)	47 (37)	67 (33)
Silcrete (other)				1 (1)	12 (9)			11 (8)	3 (2)
Quartz			8 (7)	7 (6)		11 (13)			23 (11)
Chert	4 (9)	3 (20)	18 (17)	6 (5)	9 (7)	9 (10)	8 (29)	16 (13)	18 (9)
Glass tools					3 (3)				
Other stone							1 (3)	6 (5)	
Grindstone (fragment)					3				
<i>Artefacts psm</i>	44	15	109	121	122	86	28	127	201
Heat-retaining stone fragments	y	y	y	y	y		y	y	y
Emu shell					y		y		y
Bone					y				

Table 5-9. Frequency analysis (FA) of artefacts per square metre at features in site S240 (FA locations marked on site plan) with percentage of material in brackets. Counts for non-artefact material excluded (including gibber and nodules of carbonates). The presence of emu shell and heat-retaining stone fragments is included. The percentage figure is calculated from numbers of artefacts and rounded to one.

Artefact frequency counts throughout site S240 are shown in table 5-9. These results indicate changes in density, for example 1107/FA2 was of a high-frequency deposit. It also shows that the make-up of the lithic assemblage was not homogeneous across the site. This supports observations made during field recording that the internal variation within the assemblage derived from activity areas. Inter-site lithic variation result from individual knapping sequences.

Throughout site S240, clustering of artefacts defined activity areas, particularly fireplaces and knapping floors (fig. 5-31). Concentrations of bone fragments were spatially proximate to clusters of cultural material, suggesting that they derive from past food consumption (rather than post-site abandonment death of an animal).

Excavation of contact period fireplace in site S240, at feature F245

As shown in the site plan, post-contact artefacts clustered together. Feature F245 was excavated with the aim of providing an insight into the small scale trends in the distribution of artefacts. The excavation revealed that the fireplace (feature F245)

followed a trend recorded throughout the site, that is, clustering of settler cultural material within extensive lithic scatters. The excavation strategy was to excavate the main observable surface cluster of artefacts (six by three metres) in one metre squares. The finds were all within several centimetres of the surface and excavated as one spit. Finds were sieved and catalogued in four sizes: >10, 5-10, 2-5 and <2 millimetres. Related artefacts extended outside the excavation area, as shown on the site plan. The range of material (appendix B, table B-4) included pipe fragments, eroded parts of cans, fragments of glass, a fork, buttons, pins and shoe nails. The excavation showed that the trends recorded for larger artefacts (larger than 5mm) were replicated for smaller artefacts (less than 5mm). For example, fragments of quartz, silcrete and chert were found in the 2-5 millimetre sieve, from stone tool retouch. Similarly, small fragments of glass debitage were present. Emu shell and ochre was present in the assemblage. Bone fragments (some burnt) suggest consumption of meat, although the animal could not be determined. Importantly, this excavation revealed small artefacts such as buttons, pins and shoe nails often obscured by sand in surface deposits.

Discussion of cultural material at site S240

Site S240 was characterised by a continuous distribution of lithic artefacts with evidence of fireplaces and activity areas (fig. 5-31). Grindstones were most common at features F1107 and F243, seemingly associated with several fireplaces (worn grindstone pictured in fig. 5-33B). Also shown on the site plan are clusters of bone (much burnt) at fireplaces. Site S240 provides evidence of post-contact living areas with 'European' cultural material. Certain artefacts suggest that clothing was present at the site, in particular, the seven metal buttons marked with the same 'Axe' design, glass buttons (four) and shell buttons (five).³⁸ The range of glass and shell button forms suggest several different items of clothing. Buckles from clothing were found, as were ten boot nails at feature F240.³⁹ There were 36 fragments of clay pipe found at

³⁸ The marked metal buttons are all single or two piece stamped buttons, often termed 'sinkies'. These included DBID 3077, 3097, 3133, 1916, 3111, 3110 and 2030 found at features F242, F245 and F1107. Other stamped metal buttons were marked 'G&W Shierlaw, Adelaide' (DBID 3076), 'Best Ring Edge' (DBID 1747) and 'T.G. Brown & Son' (DBID 210). Appendix C states the difficulty of dating these buttons, beyond stating they are nineteenth century buttons. The glass buttons (DBID 3091, 1760, 3116 & 1916) and shell buttons (DBID 211, 3095, 3098, 3094 and 3115) are described in appendix C.

³⁹ Ferrous buckles (DBID 3124 and 3125) are described in appendix C.

the site, although the excavation of feature F245 indicates that smaller unrecorded fragments would exist across the site. All the pipes were nineteenth century varieties, most made in Scotland, with one inscription indicating a pipe manufactured in Liverpool prior to 1857.⁴⁰ The dated pipe would support site-use from the earliest period of the pastoral property (1862 onwards). With the exception of some metal brackets and a grommet from a tarpaulin, structural material other than nails was rare. Other metal artefacts included one horseshoe, a bullet casing, a harmonica part (at feature F245 - these were also found at the hill camp, S344), a metal hip flask, a matchbox and a razor.

The metal containers were diverse in terms of their manufactured function, including 15 food cans, all of the 'dot and spot' style. Other containers included the base of a cast-iron cooking pot (at feature F242) and a metal washing basin. Metal (and glass) containers were presumably reused as containers, for example, for carrying water from the nearby spring.

Unlike most other 'western sites', site S240 included nails, two handmade nails similar to those found at the shepherd's hut (site N3) and fifteen unidentified iron points.⁴¹ The presence of handmade nails suggests an early (1860s or 1870s) period of site-use. Unlike other western sites (S251 and S355), no ceramics (other than clay pipes) were found at site S240.

Figure 5-18 shows that the most common glass bottles at site S240 were tinted bottles (62% of bottle assemblage), then light-olive (29%) and dark-olive (5%). No battery glass, and only one medicinal type bottle, was found. A significant difference between site S240 and other sites was the high percentage of glass stoppers, showing that 17 percent of the bottles were originally for sauces. The presence of the stoppers suggests that these bottles were used for their original contents, or were reused as sealable

⁴⁰ The pipes are listed in appendix C. The dated pipe had the partial inscription 'J.G.:' on one side of the stem fragment and ':TT:' on the other side. This was interpreted as being a 'Cutty' pipe made by J.G. Jones in Liverpool prior to 1857.

⁴¹ The nails and iron points are discussed in appendix C. The hand made nails were DBID 1826 & 1643.

bottles. Many of the complete glass bottles were clustered at features F244 and F1106, differing from the remainder of the site, where glass tended to be fragmented.

<i>Site S240, feature F1106</i>		Area 1	Area 2	Area 3	Area 4	Sum
<i>Bottle</i>						
Complete	Base	2	9	4	2	17
	Closure	2	6	2	2	12
Partial	Base	3	7	1	1	12 (MNI 6)
	Closure		2			2 (MNI 2)

Table 5-10. Ratio of bottle bases to closures at feature F1106, site S240.

Feature 1106 was the largest deposit of glass at sites S240, with an average of six glass artefacts every metre over 900 square metres.⁴² Table 5-10 shows that in feature F1106 there were a greater number of bottle bases relative to closures (the upper part of the bottle). This suggests that either the closures were removed from feature F1106, or some bottles were incomplete when they were brought into the site. No large quantities of closures were found elsewhere at the site, as most of the glass fragments were from the bottle base. This suggests that bottles were arriving at the site without closures, that is, that glass was selected as potential raw material for tool making, rather than just as a container. There were however, sufficient numbers of closures to suggest that complete bottles were present, particularly given the number of stoppers described above.

There were several lines of evidence for pre-European settlement occupation at site S240. Firstly, there was evidence the springs at site S240 were active prior to contact. Throughout the study area, the trend since European settlement has been for diminishing water output from artesian springs. This means that springs active today, particularly with large raised mounds which take a long period of time to form, are assumed to have been active in the recent geological past. Secondly, the occupation deposits were all located on sandy surfaces within well vegetated environments. This choice of site location accords with pre-contact settlement patterns demonstrated at other assemblages (for example, the neighbouring sites at the 'main northern mound'). Thirdly, the assemblage is very rich in lithic artefacts suggesting a long period of site use. The average density was 95 artefacts per square metre, which would mean

⁴² Range {0, 1, 2, 5, 6, 10, 12, 12}.

1,235,000 artefacts were present at site S240.⁴³ At other larger Holocene occupation sites in the south western Lake Eyre Basin, Florek (1993, p. 61, table 1) found an average density of 24 artefacts per square metre, at sites which had been occupied for upwards of 500 years.⁴⁴ Finally, site S240 had differing extents of structure, in terms of clustering of material from specific activities. This suggests that some material is more recent than others and could thus predate European settlement (although there is no calculation proposed for the rate at which site structure moves from highly structured to homogenous in structure).

Results of transect of sand dune extending north-west from site S240

The spatial relationship between site S240 and other archaeological deposits on the same sandridge was recorded by a set of transects, reported in table 5-11. The 1000 pace transects (1 & 2) were conducted by two people (a & b), separated by 50 metres.

No. of steps	Lithics	'European' artefacts	No. of steps	Lithics	'European' artefacts
<i>Transect 1a</i>			<i>Transect 1b</i>		
150-151	LF	481	140-150	LF	106
740-750	LF	980-985	182-190	LF	
790-796	LF		522-530	LF	
912-920	LF		612-640	LF	
920-936	MF		700-712	LF	
936-1000	LF				
<i>Transect 2a</i>			<i>Transect 2b</i>		
1-10	LF	870-873	180-200	LF	260
10-20	MF		260-265	LF	510
50-56	HF		310-315	LF	
270-298	LF		355-360	LF	
370-371	LF		430-500	LF	
866-868	LF		500-510	MF	
924-940	LF		510-570	LF	
			660-700	LF	

Table 5-11. Results of transects of dune near site S240.

The results show that occupation assemblages outside of site S240 tend to be small, localised and of low-frequency (table 5-11). On average, 11 percent of the dune surface is covered with a low-frequency (less than 10 artefacts psm) distribution of

⁴³ The average of 95 artefacts per square metre was determined from frequency analysis, and then multiplied by site area (13'000 square metres) to obtain this number of artefacts.

⁴⁴ These figures are summarised in Florek (1993, p. 61, table 1) where the estimated number of artefacts per site at the mound springs is 2,620, 840.

lithic artefacts. The only high-frequency deposit was a small lithic knapping floor. The results also show how little European cultural material was located away from the sites described here. The European artefacts all consisted of parts of nineteenth century bottles. The heat-retaining stone was travertine from the mound springs, indicating this material is being transported into occupation sites for fireplaces. The results show that site S240 is significantly larger in both lithic assemblages and settler artefacts than the other sites on the dune (sites S1101, S1102 and S1108).

Sites S1101, S1102 and S1108 - small contact period occupation sites near site S240

The results of transects along the dune north-west of site S240 revealed three smaller sites described here. The topography is very similar to site S240: sandy surface, well vegetated and sheltered environment, with nearest access to water being the springs 350-500 metres away. The sites are all marked on figure 5-32 and a summary of cultural material provided in table 5-8. There was very little erosion or disturbance at these sites.

Site S1101

Site S1101 was located 200 metres west of site S240. The artefacts were distributed in an area 70 metres long and 50 metres wide, although the distribution of material was highly clustered, and some areas contained very few artefacts.

Even though site S1101 was a relatively small assemblage, it contained strong evidence for post-contact activities, with a wide range of post-contact artefacts, and glass knapping areas. The results of two frequency analyses indicate that the lithic artefacts at this site were not as dense as at site S240, instead ranging from medium to low frequencies (table 5-12). The lithic material included several cores and hammerstones, including a chert core, which was rare in this study, as chert normally occurred in assemblages as a finished tool.

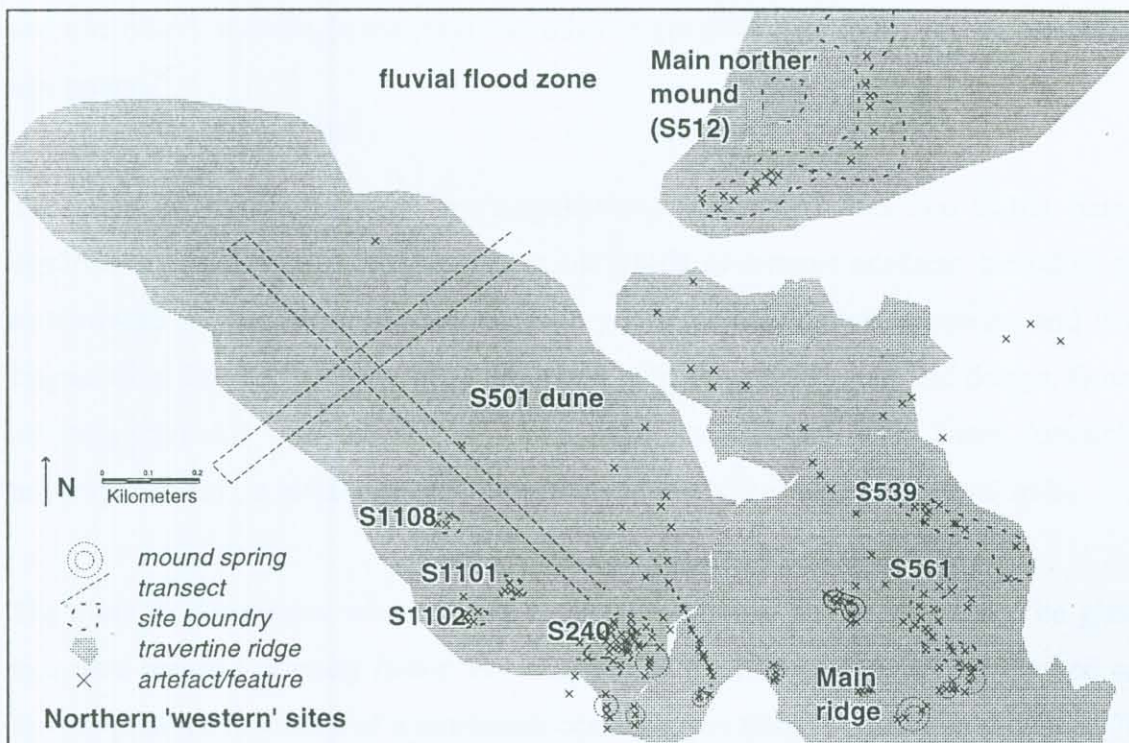


Figure 5-32. Sites neighbouring S240: including site S1101, S1102 and S1108

Site & frequency analysis number	S1101 FA1	S1101 FA2	S1102 FA1	S1102 FA2
<i>Cultural material</i>				
Quartzite (weak red)	2 (9)	3 (13)	5 (29)	5 (29)
Quartzite (other)	5 (22)	1 (4)		
Silcrete (grey)	12 (52)	4 (17)	7 (41)	8 (47)
Silcrete (other)		1 (4)		
Quartz	4 (17)	7 (29)	3 (18)	2 (12)
Chert		8 (33)	1 (6)	2 (12)
Hammerstone			1 (6)	
<i>Artefacts psm</i>	23	24	17	17
Heat-retaining stone fragments		y		y
Emu shell		y	y	y
Bone (burnt)		y	y	

Table 5-12. Frequency results for sites S1101, S1102, S1108 (percentages in brackets derived from number of artefacts). Locations marked on site plans.

There were strong similarities in artefact range between site S1101 and nearby site S240. For example, there were glass stoppers (four) from sauce bottles, fragments of clay pipes, parts of clothing (including a suspender buckle), buttons with the same name brands as at site S240 (metal stamped buttons marked 'Axe' trade mark and 'Best Ring Edge'), a glass button, a high number of metal cans (seven 'dot and spot' type

and one other), utensils (a teaspoon and other larger melted utensils) and no structural equipment.⁴⁵

The main differences between the neighbouring sites, other than site S1101 being significantly smaller, was the presence at site S1101 of ceramic artefacts, including an earthenware jar similar to nineteenth century jars for rheumatism ointment, and two fragments of fine earthenware plate decorated with an applied green leaf design. Other artefacts included one tobacco tin, two hand shear-blades, zinc sheet (possibly telegraph related), a metal threaded flask rim and a 20 centimetre long metal spike.

The glass working areas were in three clusters, as marked on the site plan. The glass reduction resulted in many flakes. For example, at the first knapping floor marked on the site plan the reduction of a nineteenth century green tinted bottled had produced 70 glass fragments (feature F1101.3).⁴⁶ Most fragments were debitage from the base and lower parts of the bottle, with very few flakes present. Other glass knapping floors at the site are marked on the site plan. Many had multiple glass fragments with no evidence of use-wear. For example, feature F1101.5 contained the reduction of a light-olive bottle base to produce 25 flakes from the base and four neck fragments, none of which showed evidence of use. The glass distribution tended to be highly localised, for example two green tint bottles also at 1101.5 had been knapped to 170 fragments within ten square metres. The distribution of knapping floors was highly localised, that is broken glass did evenly cover the site. Exceptions to this were glass flakes characterised by distinctive bulbs of percussion, struck from the base of an olive bottle, which were removed from their knapping floors (features F1101.14, 15 and 24). These had edge striations suggesting past use-wear. These flakes occurred amongst occupation deposits characterised by clay pipes and metal cans.

⁴⁵ Pipes are DBID 3064, 3065, 3066, 3067, 3068 and 3069. Suspender buckle is DBID 3122. Metal stamped buttons are DBID 3086, 3105, 3108 and 3107. Glass button is DBID 3104. Ceramics are DBID 3313, 3314 and 3312. All are listed in appendix C.

⁴⁶ The bottle was a mould made bottle with an applied closure, dated between 1860-1900, being a two piece mould for the body, with the closure finished by hand.



Figure 5-33. A. Fireplace at site S1102 defined by fragmented travertine used as a heat-retainer. B. Grindstone at site S240.

Five bases from light-olive glass bottles were found, but no closures. The tint glass bottles included seven bases and three closures. This supports the observation that glass bottles were transported into sites already broken, with the preference being for the bottle base.⁴⁷ Other modified material included secondary modification of a can by adding a wire handle to make a small 'billy'.

In summary, this site was a contact period campsite, whose occupants had access to artefacts from the head station, including metal containers, bottles and clay pipes. The lithic and glass reduction areas show Aboriginal people used the site. The lithic assemblage was very similar to that at nearby site S240, with grinding stones and tool making. The similarities between the two sites is high, with S1101 being interpreted as a smaller, but related, occupation.

Site S1102 and site S1108

Sites S1102 and S1108 were small occupation sites within 200 metres of sites S240 and S1101. Site S1102 had two raised fireplaces defined by heat-retaining stone (pictured in fig. 5-33A). The fireplaces were well preserved and several metres wide. The lithic assemblage was similar to site S240 (table 5-12), but less dense (mean of 17 artefacts per square metre). Similar to site S1101, were knapping floors of bottle glass, with relatively high numbers of flakes and fragments. Once again, occasional flakes occurred away from the glass reduction areas. The bottles were light-olive and green tinted nineteenth century bottles. This suggests a similar pattern of reduction of bottles, particularly the bases, to produce flakes. Similar to site S1101, the only flakes with evidence of use-wear were light-olive glass flakes. At one fireplace (feature F1102) the only artefact was an olive glass flake. Other similarities to site S1101 include other post-contact cultural material, such as clay pipe, metal cans and two glass buttons. Site S1108 was smaller, yet similar to the site S1102, being characterised by low-frequency lithics, a fireplace, some worked olive glass and a metal food can.

⁴⁷ Another interpretation is that the bottles entered the site as complete bottles, and that closures were removed from the assemblage after breakage. This interpretation is weakened by the fact that the bases are consistently used as cores for the

Site S251 and S344 - two contact period hill camps

Sites S251 and S344 are described here together due to their close proximity, and the fact that they were presumably related occupations (fig. 5-37). They were the closest of the western sites to the focus of European settlement at the head station, located 445 metres to the east. Site S251 was a 140 metre long complex of archaeological deposits on sandy surfaces amongst the inactive mound springs on the main ridge, while S344 was much smaller set of occupation deposits (1454 square metres) on a high mound with an aspect to the north-west. The cultural material is summarised in table 5-13, and frequency analysis shown in table 5-14.

The location is less vegetated than most of the western sites, but site S251 was one of the closest points to the head station with a relatively sandy surface and sheltering vegetation. The main ridge surface tends to fall away to the west, which has seen some artefacts transported by water, particularly any deposited on rock surfaces which funnel the water. The lithic assemblage at S251 varied throughout the site, with a mean of 24 artefacts per square metre (table 5-13). Lithic assemblages includes knapping floors, and grindstone fragments occurred at some of the eastern features in the site. Site S251 was the largest of the western sites in terms of European cultural material, as indicated with the glass artefacts summarised in figure 5-20, the next largest being sites S240 and S355.

Glass artefacts dominated the diverse range of cultural material which included clay pipe fragments (none dated), buttons ('Axe', 'Our Own Make' and 'Best Ring Edge' trade mark), shears, a tobacco tin and a bullet. The ceramics were equally diverse, including fine earthenware (brown transfer print bowl, green transfer print bowl, black transfer print plate), stoneware, fragments from green transfer print, and blue green transfer print & unglazed items, including plates and a cup. Medicine brand bottles included 'Mrs Winslow's' and 'Floriline, London'.⁴⁸ Metal artefacts included a

production of glass flakes, suggesting they were the focus of a flake production system rather than the closure, which throughout this study were rarely found to have been used for glass tools.

⁴⁸ Another partial inscription on a medicinal bottle was 'scing Salt'.

<i>Site</i>		S251	S305	S340	S344	S349	S350	S354	S355	S361
<i>Cultural material</i>	<i>Type</i>									
'S&G' mark	3						1			
Schnapps bottle	8	2								
D/O total		45	3				6	1	2	
'H.Heye' mark	13	2								
'N&Co' mark	14	5							3	
L/O total		54	13	2	1		3	3	20	1
'JLD 6 to a gallon' mark	25	7						1	1	
'N[number]' mark	28							2		
'CS&Co' mark	29								1	
Tint total		66	17	1	3		5	7	26	1
Stopper	38	1							1	
Medicinal bottles		2	2						4	
Clear glass	50	3	2						2	
Amber total		5	3						2	
Battery glass	57	6				y				
Tectite	59		1				1			
Window glass	58	2								
Pipe		4	7		2		1		3	
Buttons		6	1	1	2			1	3	
Buckles			1						2	
Axe				1						
Grommet		1	1	1						
Watch								1	1	
Eating utensils					2					
Harmonica		1	1							
Rivet/ nail		3							1	
Bullet		1								
Shear		1		1			1		4	
Wire		3	2							
Food cans		3	8		1		1		2	1
Metal containers		4	2	2	2		1			2
Metal rings			1						1	
Tobacco cans		1								
Metal personal objects									2	
Ceramics		12	1						7	
Lithics		MF	MF	MF	LF	LF	MF	LF	LF	MF
Grinding stones		y	y	y			y		y	
Fireplaces		y	y	y	y	y	y		y	
Bone (burnt)		y			y		y			

Table 5-13. Summary of cultural material at sites S251, S305, S340, S344, S349, S350, S354, S355 & S361.

Site & frequency analysis number	S251 FA1	S251 FA2	S305 FA1	S305 FA2	S350 FA1	S350 FA2	S355 FA1	S355 FA2	S361 FA1
<i>Cultural material</i>									
Quartzite (weak red)	3 (38)	25 (62)	15 (25)	13 (48)	12 (44)	4 (19)	3 (18)		5 (16)
Quartzite (other)	1 (12)		11 (19)	5 (19)	4 (15)	3 (14)	4 (24)		17 (58)
Silcrete (grey)		14 (34)	19 (32)	5 (19)	6 (22)	10 (48)	2 (12)		
Silcrete (other)		1 (2)	3 (5)		2 (8)		2 (12)		
Quartz	3 (38)	1 (2)	7 (12)	3 (11)		4 (19)	5 (28)		5 (16)
Chert			4 (7)	1 (3)	3 (11)		1 (6)		2 (7)
Hammerstone									
Metal	1 (12)							4 (80)	1 (3)
Glass								1 (20)	
<i>Artefacts psm</i>	8	41	59	27	27	21	17	5	30
Heat-retaining stone fragments	y (95)	y	y (70)	y	y	y	y	y	y (70)
Emu shell									
Bone									y

Table 5-14. Frequency results for sites S251, S305, S350, S355, S361 (percentages in brackets derived from number of artefacts). Locations marked on site plans. Heat-retaining stone percentage is of whole weight of sample.

horseshoe, zinc battery plate and other fragments of technical equipment from the telegraph.⁴⁹ Metal containers included a cooking basin, cast iron kettle, metal bucket and metal can. The can had been modified with over 100 punctured holes on the bottom and sides and may have sprinkled water or been a colander. Food cans were localised to certain features (feature F257), with other similar vessels being 'billies' with handles for cooking. The assemblage at feature F271 was relatively rich, and included a harmonica and trumpet fragment, as well as the cooking basin and a grommet from a tarpaulin. Structural remains at one feature were indicated by lines of stones, possibly a wall base. No other structural material was found, excepting a screw, nail and metal rod with threaded end. European artefacts were largely restricted to certain features, rather than equally distributed. For example, feature F257 covered approximately 625 square metres and contained several large clusters of glass reduction, bone, metal artefacts and lithics. These were interpreted as glass working areas and living areas. The number of modified metal artefacts was noteworthy, and included the 'colander' described above, metal cans with knife puncture marks on the side, and possibly several cans with wire handles added.

⁴⁹ Clay pipe fragments (DBID 3042, 3043, 3044 & 3045), buttons (DBID 267, 289, 290, 291, 287 & 514), bullet (DBID 236) and ceramics (DBID 257, 257, 257, 257, 266, 271, 288, 290, 292, 292, 293, 296 & 302).

A four by four metre excavation at feature F251 (sometimes to a depth of only one centimetre until meeting rock surface) was of a fireplace and knapping floor. Most raw material was stone, in similar ratios to other western sites (table 5-9), and dominated by silcrete reduction. It also showed that red quartz was knapped on site (as apposed to being imported in as a finished tool as was common with more exotic stones). Traces of ochre were present on the quartz core, representing the only ochre found at site S251. Glass flakes with defined bulbs of percussion and edge wear (indicated by edge shattering) were found. The glass flakes may have been imported into the site, as no cores were present. The flakes were of different coloured glasses, including olive, tint and amethyst. Most of the artefacts were greater than ten millimetres wide, yet some of the glass artefacts were the smallest in the assemblage, between 2-5 millimetres.

While glass artefacts were present throughout the site, the majority were found in glass knapping floors. Dark-olive bases and glass battery jars from the telegraph station provided the most intensively worked cores for glass flakes. At feature F257 a thick stoneware vessel base was also flaked. While glass bottles were worked, unlike other sites in this study (sites S240, S1101, S355, I5, K1, N4), glass flakes were not found in the same quantities. Those that were present reveal the movement of dark and light-olive flakes away from knapping floors.

In summary, there were no directly dated artefacts at site S251, although the material was nineteenth century, and presumably dates from the pastoralist's arrival in 1862 onwards. As stated elsewhere, the presence of relatively high proportions of dark-olive glass may indicate site-use during the earlier years of European settlement. The assemblages consistently demonstrated a spatial relationship between lithic assemblages and other 'European' artefacts. Activity areas included food preparation and consumption (with cooking vessels, ceramic wares, fireplaces and fragmented bone), tool making (reduction areas for glass and stone, plus finished tools) and evidence for clothing (buttons).

Site S344 - the smaller hill camp

Site S344 was comprised of fireplaces and stone alignments at the edge of a mound due south of site S251 (table 5-13). One fireplace included burnt bone, a spoon and fork (melted and broken), a clay pipe fragment and some metal fragments, possibly from a small 'billy' (feature F345). Another fireplace was amongst a lithic scatter (five artefacts psm) and included 18 glass fragments (many with use-wear), 12 square metres of bone fragments, a hammerstone, a button, a clay pipe and a pre-1890s technology food can (feature F346). A four by four metre stone arrangement at the fireplace may have been a wall base for an ephemeral structure. Two other stone alignments were recorded at the site (one three courses high and eight metres long) representing the only stone alignments on the western sites (other stone alignments on the eastern ridge are described below). On the mound peak was a small lithic assemblage and a glass fragment. The small amount of localised material suggests short-term occupation, and demonstrates that fireplaces were places of high artefact discard.

Sites S305 and S340 - two lithic assemblages off the main ridge

As the assemblages are spatially close and similar in content, sites S305 and S340 are presented together (fig. 5-37). The summary of cultural material is provided in table 5-13. The sites are approximately 700 metres south-west of the head station and are separated by a 45 metre wide gully. Both sites are on sand dunes surrounded by flat gullies. Site S305 was on a larger dune (23,000 square metres) than site S340 (3602 square metres). Artesian springs located immediately east may be active, as indicated by vegetation and large numbers of fauna.

Both sites were predominantly lithic assemblages, with small amounts of artefacts from European origins. In particular, site S340 had only very small amounts of settler artefacts. This differs from neighbouring sites with far greater relative ratios of European artefacts (sites S251 to the north-west, sites S354 and S355 to the south). As presented in table 5-14, the mean lithic frequency was high for site S305, being 43 artefacts per square metre. Site S340 had a similar, or slightly higher, lithic frequency.

The assemblages were similar to those recorded at other mound spring assemblages (for example, site S512) as they were dominated by quartzite and silcrete, with smaller quantities of quartz and chert. The assemblages contained a wide range of tool types, demonstrated by grindstone fragments, hammerstones, cores and reduction areas. Past fireplaces were defined by highly fragmented heat-retaining stone, some very broadly distributed demonstrating horizontal movement of artefacts.

The lithic deposits at site S305 were concentrated to the eastern edge of the site, while the European period artefacts were at the western extent of the site. This distribution was not common at other post-contact sites, where European artefacts tended to cluster at the most concentrated lithic assemblages. The fireplaces were located at the eastern extent of the site. Artefacts are marked on the site plan and included seven clay pipes (one marked 'Dublin' but not dated), a glass button (but no metal buttons), a copper stud (possibly a grommet from a tarpaulin) and a stoneware plate (marked 'Asiatic Merchants AF&S').⁵⁰ Metal artefacts at the site included a wire handle for container (possibly for cooking), an axe head, iron bar, a small funnel, nine 'dot and spot' cans, a piece from a harmonica and an iron basin.

As shown in figure 5-20, the glass assemblage at site S305 was the fourth largest of the 'western sites' and resembles others in relative ratios of glass (particularly site S355), with the main varieties being olive and tint bottles, with a small number of dark-olive bottles and medicinal bottles (including the 'Floriline' brand at sites S251 & S355). Several of the bottles were for chutneys. As marked on the site plan there was evidence for glass working (features F306, F310, F328 and F333) with flakes struck from dark and light-olive bottle bases. In several areas the olive flakes were found removed from glass reduction areas (features F314, F317, F318 and F331).

At site S340, artefacts included a clay pipe (made by 'William White & Son' between 1805-1955), two glass buttons (which may be from the same garment, as they were the same weight and diameter), a copper stud, a shear-blade, pieces from a metal

⁵⁰ Clay pipes (DBID 3046, 3047, 3048, 3049, 3050, 3051 & 3052), glass button (DBID 197), copper stud /grommet (DBID 3126), ceramic VSW plate marked: ASIATIC MERCHANTS AF&S' (DBID 3231).

container, a metal container, a cooking pot with handle and a 'dot and spot' can.⁵¹ The number of different glass vessels at site S340 was difficult to determine, as the glass artefacts were small flakes from olive (four flakes) and tinted glass (17 flakes). This suggests a local glass reduction, or perhaps movement of glass from a neighbouring site. Although highly weathered, several flakes at feature F346 had repeated regular striations on one edge, consistent with use-wear.

In summary, these two sites suggest pre-contact occupation near active springs, and possibly short (S344) and more sustained (S305) post-contact occupation in ways consistent with Aboriginal patterns of occupation and tool making. The range of European artefacts at sites S344 and S305 were similar to sites S512 and S355, but smaller in quantity.

Site S349 - battery glass knapping area

The smallest assemblage of the 'western sites' was site S349, located close to site S350 114 metres south-east, and 1200 metres south-west of the head station (fig. 5-34). The site was located amongst a stand of acacias on a low sand mound, a similar environment to that described for site S305. The artefacts were located in knapping floors, with the exception of a scatter of corroded metal. The knapping floors were of grey quartzite, the ubiquitous weak-red quartzite (found at many of these sites) and amethyst glass. The glass fragments were from the telegraph repeater station (thus postdates 1872), and originally were containers for battery acid. It is reported throughout this study that thick glass is preferred for producing glass flakes, that is, the bases from nineteenth century dark-olive (black) and lighter olive bottles. The battery glass is also very thick. However, unlike bottle glass, the battery glass has only one source: the telegraph station. As shown in figures 5-18, the battery glass was found in refuse deposits adjacent to the head station (sites S021, S401 and S662). Site S349 represents the transport of batteries, presumably by Aboriginal people, from these dumps to a more isolated place for reduction. As no amethyst glass flakes have been found in other assemblages at Strangways Springs, perhaps the results of this

⁵¹ Clay pipe (DBID 1038), buttons (DBID 198 & 199) and axe head (DBID 2575 to 2571).

'experimentation' with new material were not successful. Site S349 is interpreted as a single purpose reduction site with little evidence for use of tools or sustained occupation.

Sites S350 and S361 - lithic assemblages north of the scour (site S201)

The sites S350 and S361 were lithic assemblages with relatively few demonstrably post-contact artefacts (summarised in table 5-13). As marked on figure 5-34, they are located between S354 and S355 and the main ridge, and within 200 metres of the wool scour (site S201) (S350 is immediately east of S355). Sites S361 and S350 were located on sandy surfaces below the rocky low escarpment of the ridge. The lithic assemblages were similar to other medium-density deposits at Strangways Springs, being dominated by red quartzite and grey silcrete knapping floors, and with rarer raw materials (quartz and chert) comprising up to 25 percent of the assemblage (table 5-14). Lithics included rarer raw material, including pink and white quartz, and white and cream chert. Relatively high amounts of grindstone fragments were present. Density varied between a mean of 24 artefacts per square metre (site S350) and 30 per square metre (site S350).

Site S350 was located on a dune, and consists of artefact concentrations within an area of 3000 square metres. The location of fireplaces coincided with lithic knapping floors. Small amounts of highly fragmented burnt bone were present in the deposit. The range of artefacts from the European settlement was similar to other western sites, including a clay pipe, shears, a metal food can and unidentified metal bar (table 5-13). The few glass artefacts in site S350 included small clusters of glass fragments (none with convincing evidence of past Aboriginal use, or systematic reduction) and one olive flake. A black tektite (meteorite) was found, and had been struck to remove a flake in a way that resembled dark-olive glass artefacts found at other sites.

Site S361 was an extensive occupation deposit 6200 square metres in area, and 120 metres north of the 'scour' (S201). The assemblage was dominated by lithic artefacts the frequency of which may result from erosion, as the high-frequency lithic deposits occurred at the lower western edge of the site, where there was no protective

vegetation. An extensive spread of highly eroded travertine indicated past fireplaces. Glass artefacts included three flakes with use-wear, and an unrelated bottle base. Given its proximity to the wool scour, this site had surprisingly few European artefacts, in contrast to the neighbouring site S355.

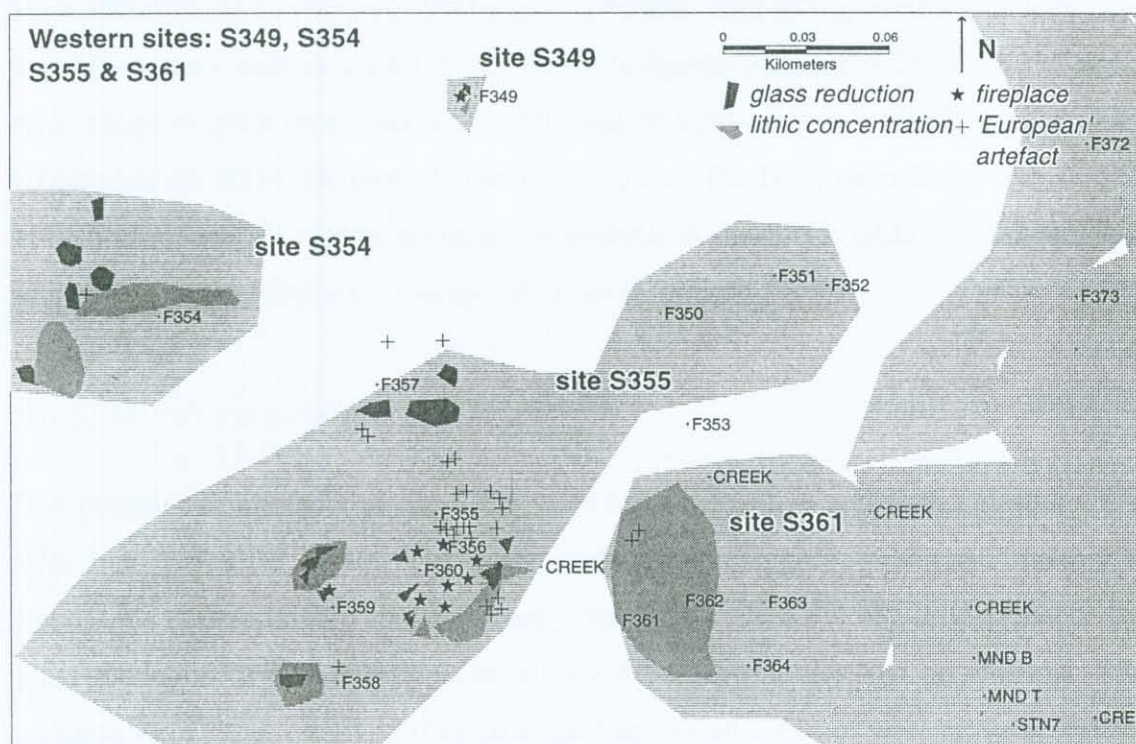


Figure 5-34. Plan of sites S349, S354, S355 and S361

Site S355 and S354 - post-contact occupation sites

Site S355 and S354 were the most western of the sites described as 'western sites' and are sufficiently similar to describe together (fig. 5-34). The main similarity was the relatively high amount and diversity of 'European' artefacts, compared to neighbouring sites. In this respect, site S355 resembles sites S512, S240, S1101, S1102 and S1108. The cultural material is summarised in table 5-13. Site S355, covered an area of 11,500 square metres, and was located 1070 metres south-west of the head station and 230 metres north of the wool scour (site S201). Site S354 was 35 metres west of site S361 and covered an area of 3500 square metres. Both sites were on 'islands' of sand located on a flat rocky shelf formed from artesian waters. Both sandy areas supported medium-sized vegetation, which contrasted with the total absence of vegetation on the rock shelf. The rock shelf drains water away from the

ridge, as shown by eroded drainage channels. A very small number of artefacts had been moved by water from the periphery of the sites. Site S354 was a more disturbed site, with a vehicle track running through it.

Both assemblages were dominated by glass artefacts, with strong evidence of reduction and use of glass tools at site S355. As shown in figures 5-20 and 5-21, site S355 had a wide range of glass types, but was dominated by light-olive and tinted glass, a trend repeated at site S354. Neither site had battery glass. The lithic assemblage was similar at both sites, and the results of frequency analysis at site S355 (table 5-14) reveal low to medium-density deposits (average of 11 artefacts psm).

Site S354: cultural material

The majority of artefacts at site S354 were from light-olive and tinted glass bottles, with one dark-olive bottle. The glass artefacts were highly weathered, making it impossible to determine if they had been used. While site S354 had little evidence for glass reduction, it is interesting that all the light-olive bottles had no closures. The closures were either removed at the site and transported away, or were removed before entering site S354. The latter interpretation accords with the evidence for other sites. That is, the bases of bottles were preferred over the necks and closures for glass knapping. If so, then site S354 may be a collection of bottles intended for later reduction. Interestingly, there is very little evidence for fireplaces, which may suggest the site was not an occupation site. The other artefacts included a solitary glass button and a small copper plate from an unknown item.⁵²

Site S355: cultural material

Unlike S354, site S355 had a wide range of artefacts, and a spatial distribution of material in relation to fireplaces and knapping floors. The lithic assemblage was slightly more diverse, as it included grindstone fragments. As shown on the site plan,

⁵² Glass button (DBID 213).

the assemblage is focussed in the centre and western parts of the site.⁵³ The assemblage included clay pipes (none dated), three different types of buttons, two glass, one celluloid (manufactured between 1865 and 1930) and no metal buttons. Other clothing was indicated by suspender buckles. Four hand shears were found at this site, similar to site A9 and S1101. A characteristic of this site were ceramic artefacts, including a vitreous stoneware ointment pot ('Holloway's Ointment'), plus imported table ware: a vitreous stoneware plate inscribed 'Asiatic Merchants AF & S', another inscribed 'Bedford', another fine earthenware platter with an applied maroon rim decoration, and a fragment with an Asiatic-type applied decoration (possible from the above plate). Other artefacts included scissors, a metal cooking vessel with a handle and a washer. There was little evidence for structural material, not were many meat cans found (two). The bottles were mainly alcohol bottles, excepting four medicinal brand bottles, and few sauce bottles. Burnt bone was recorded at feature F355.

The glass reduction areas at features F355, F356, F360, F357, F358 and F359 were of light-olive and tinted glass (not the medicinal bottles). The preferred parts of the bottles were bases, which were often highly fragmented. For example, the glass at feature F355.2 included the six bottles, with 91 fragments. Many of the small flakes had multiple scar surfaces indicating they were part of a sequence of flaking events. The light-olive glass apparently flaked better than the tinted glass, as most flakes from the base had bulbs of percussion. Similar to site S1101 the flakes most likely to be found away from their reduction areas were light-olive glass.

The site plan shows the strong relationship between fireplaces, stone tool reduction and 'European' cultural material (for example, at features F360 and F359). Being located close to the wool scour (site S201), site S355 could be interpreted as a campsite for pastoral workers. The presence of Aboriginal people is suggested by the stone and glass reduction areas, many at fireplaces defined by heat-retaining stone. The

⁵³ Pipes (DBID 3053, 3054 & 3055), glass buttons (DBID 2454, 2455 & 2516), buckles (DBID 2448 & 2444), shears (DBID 2450, 2451, 2453 & 2452) and ceramics (DBID 3232, 3233, 3234, 3235, 3237, 3236 & 2519). Medicinal bottles with partial inscriptions included: 'Floriline/London', 'xford's Elixir' and 'ising / :salt'.

evidence from these sites indicates several different (but spatially proximate) post-contact activities.

Main northern mound

The 'main northern mound' refers to a large sandridge which extends 800 metres north from an inactive mound spring (figs 5-10 & 5-32). As pictured in figure 5-35A it is separated from the 'main ridge' by a low flood plain. The majority of archaeological deposits were located at the southern end of the sandridge at site S512. The dune runs parallel to Warriner Creek, until meeting the creek, as shown in figure 5-35B. At the northern end was site S1201, which in the aerial photograph is located on the open surface right of the pool of water. The archaeological assemblages found here represent the accumulation of at least 500 years of human occupation, including evidence for post-contact Aboriginal occupation.

As described by Florek, the 'main north mound' deposits were amongst thick scrub, and about 3 million stone artefacts cover 30,000 square metres (Florek 1993, p. 118). As shown in table 5-15, the mean lithic assemblage is 44 artefacts per square metre, predominantly silcrete. These deposits also include evidence of fireplaces and grinding implements. A fireplace at this site was dated to 560 years BP.⁵⁴ More recent use of the sites was demonstrated by occupation deposits with 'European' artefacts clustered around hearths, for example feature F514. The focus for post-contact occupation appeared to have been the southern extent of the main north mound.

Feature F514 was located amongst a scatter of lithics typical of the 'main north mound' area. A fireplace (feature F514.4) defined by 155 fragments of heat-retaining stone was excavated (to one centimetre), and within it were quartzite and silcrete flakes, small amounts of bone and some melted metal. A second excavation at another fireplace (feature F514.1) also revealed evidence for the reduction of glass (ten flakes of olive and tinted glass) in addition to silcrete and quartzite flakes, two chert tools,

⁵⁴ Florek (1993, p. 75, table 2), Laboratory number Wk - 1730, collection unit ST/F1/90, using conventional calibrated radiocarbon dating techniques on charcoal.



Figure 5-35. A. Photograph of main northern mound dune in foreground (defined by trees on white sand surface) with the head station in the background. B. Photograph of northern end of the dune which extends from the main northern mound, where it meets Warriner Creek. Fewer trees grow on the dune at this point. Site S1201 is located on the dune immediately adjacent to the water pool. In the middle ground are the train bridge and the modern track.

Site & frequency analysis number	S512	S512	S1201	S1201
	FA1	FA2	FA1	FA2
<i>Cultural material</i>				
Quartzite (weak red)	5 (9)	2 (7)		1 (4)
Quartzite (other)	9 (15)	5 (17)		
Silcrete (grey)	39 (66)	16 (56)	2 (33)	14 (61)
Silcrete (other)		2 (7)		5 (22)
Quartz	3 (5)	3 (10)	3 (50)	(73)
Chert	2 (3)	1 (3)	1 (17)	3 (13)
Grindstone fragment	1 (2)			
<i>Artefacts psm</i>	59	29	6	23 ⁵⁵
Heat-retaining stone fragments	y			
Emu shell				
Bone				

Table 5-15. Frequency results for sites S512 and S1201 (percentages in brackets derived from number of artefacts). Sample locations are marked on site plans.

melted metal, metal and glass buttons⁵⁶, a tobacco can lid, emu shell and bone. These deposits demonstrate post-contact activities. The flaking of glass and the location of the deposits at fireplaces suggest Aboriginal occupation. Also in the vicinity were other glass flakes with evidence of use-wear, metal wire and box, fragments of a spoon, fragments of a metal cooking vessel and a matchbox. The fireplace (feature F514) was the best preserved post-contact occupation camp at site S514. As marked on the site plan, there were several other assemblages containing post-contact artefacts. These included isolated groups of glass flakes and fragments (few had evidence for use), shear-blades, fragments of clay pipe and metal cans. Similar to feature F514, these appeared to suggest post-contact occupation, but with much lower presence of European cultural material.

Site S1201 - Aboriginal campsite at northern end of 'main north mound'

Site S1201, located at the northern end of this dune, contains the other main evidence for past occupation on the dune, as a survey along the dune provided little evidence for occupation between sites S512 and S1201. Local Aboriginal people stated that their families camped at this location earlier in the twentieth century (Dodd, R. 1996, pers.

⁵⁵ This total does not include the 73 small pebbles of quartz in this sample, as none were worked. They were probably not naturally occurring however.

⁵⁶ Buttons (DBID 3082 and 3083).

comm.). The site is visible in the aerial photograph figure 5-35B, on the sand surface adjacent to a pool of water and large eucalyptus trees, and near the railway bridge and modern vehicular track. There is less vegetation than in the main part of the dune, and consequently a greater movement of windblown sand had obscured the surface scatter of archaeological material.

As shown in table 5-15, low to medium-frequency homogeneous scatter of artefacts covered the site. The presence of large stones (between 0.5 and 1 kg), with only partial working suggested a local silcrete source. Unworked quartz pebbles may also occur locally (they throw the frequency analysis presented in table 5-15). There was very little evidence for site structuring, except at three large fireplaces close to the creek, surrounded by higher frequency deposits. Post-contact artefacts were restricted to the northern part of the site and included clusters of fragmented glass, a clay pipe fragment, a metal cooking pot, utensils, a shear-blade, a barrel hoop and two food cans. The cans, pipe and bottles all suggested a late-nineteenth century occupation date, however charcoal and a plastic bag indicate recent camping. The site was certainly a focus for pre-contact Aboriginal life, although the amount of post-contact cultural material does not suggest any sustained occupation.

Eastern and southern part of main ridge

One of the largest continuous areas of archaeological features at Strangways Springs was located on the eastern edge of the main ridge at Strangways Springs, extending from the head station 900 metres south (fig. 5-36). I have already described sites S201, S601 and refuse deposits close to the head station, all of which either neighbour or occur within the extent of archaeological material termed site S662. The features tend to be confined to the environs of the inactive mound springs, which are clearly visible in the aerial photograph in figure 5-28.

The eastern sites do not provide insight into past occupation in the same localised ways that other occupation sites do. The assemblages contain low-frequency deposits which extend over large areas, and little site structuring. There are however, several elements of this area which require consideration.

The eastern extent of the main ridge is more barren and rocky than other site locations described in this study. The distribution of active springs in the region suggests that the oldest springs are those at the eastern ridge, and that access to water in the past would have been more limited. Much of the area is covered with a scatter of lithic artefacts. Table 5-16 suggests an average density of 72 artefacts per square metre, although there are areas with extensive low-frequency (<10 psm) densities. There was very little evidence for site structuring with the lithic material.

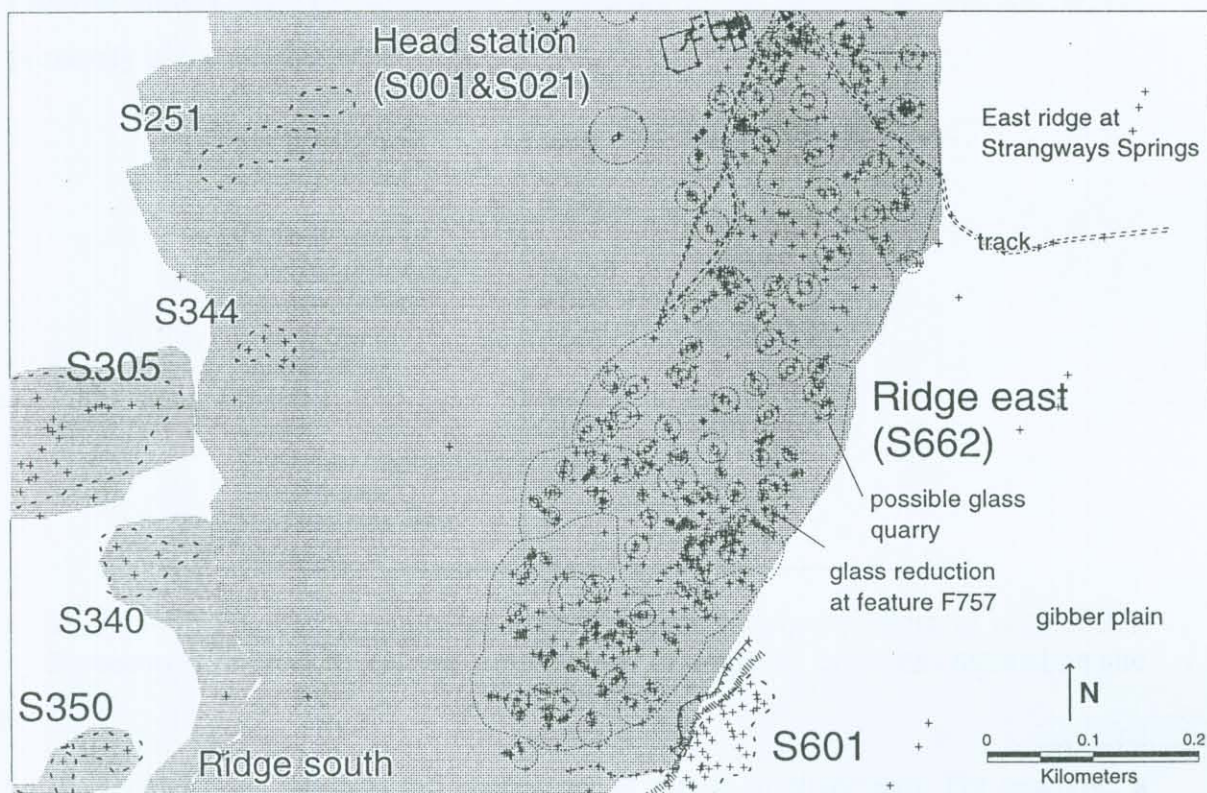


Figure 5-36. Plan of eastern ridge at Strangways Springs showing feature F757 (plus site S601 and head station). Mound springs are indicated with concentric circles, and artefacts and features by crosses.

Distinctive features of the eastern ridge were 44 stone alignments.⁵⁷ The most elaborate consisted of several courses (between one and five courses high) of flat travertine in a semicircular arrangement with a small opening, and a diameter between one to two metres. Some of the arrangements were far less elaborate, and consisted of fewer stones. Many of the more elaborate alignments occurred in complexes including

⁵⁷ Stone alignments were recorded at features F652, F662, F663, F664, F665, F668, F675, F686, F688, F692, F694, F704, F711, F712, F722, F725, F735, F761, F777, F794, F795, F804, F807, F808, F809, F810, F821, F823, F825, F828, F831, F833, F834, F838, F842, F844, F845, F846, F847, F848, F849, F850, F851 and F858.

two to four arrangements, and were situated on top of inactive mound springs (fig. 5-37). Nearly all the stone alignments were located on the hard rocky ridge surface, and had no stratified occupation deposits. The spatial relationship between the arrangements and the distribution of cultural material suggests that many of the alignments predate European settlement, and additionally, that some of the alignments were the site of post-contact Aboriginal activities. In the first case, about half of the arrangements appeared to have no relationship between the general distribution of material culture. That is, there was no increase in the density of artefacts in the proximity of the arrangements.

Site & frequency analysis number	S662 FA1 (F1501)	S662 FA2	S662 FA3
<i>Cultural material</i>			
Quartzite (weak red)	10 (20)	24 (19)	4 (9)
Quartzite (other)	5 (10)	11 (8)	5 (12)
Silcrete (grey)	29 (60)	75 (61)	28 (65)
Silcrete (other)			2 (5)
Quartz	2 (4)	11 (9)	3 (7)
Chert	2 (4)	4 (3)	1 (2)
Grindstone fragment	1 (2)		
<i>Artefacts psm</i>	49	125	43
Heat-retaining stone fragments	y		y

Table 5-16. Frequency results for eastern ridge at Strangways Springs (site S662). Percentages in brackets derived from number of artefacts. Locations marked on site plan.

In the second case, artefacts did concentrate at certain arrangements. For example, a cluster of stone semicircles (features F662, F663, F664, F665 and F668) shown in figure 5-37, were the focus for artefacts, which included evidence of glass working, a copper clothing buckle⁵⁸, and corroded metal from three food cans. The glass reduction was localised to the stone structures, and conducted almost exclusively on dark-olive (black) bottle bases. At feature F662 the evidence for glass reduction included a dark-olive base from which ten glass flakes had been struck, all with distinct bulbs of percussion. Feature F663 included an aqua glass flake and a dark-olive glass reduction area (this time including the closure). Feature F664 included three dark-olive base cores, one of which had 18 flakes struck from it. Feature F665

⁵⁸ Buckle is DBID 203.

included the reduction of a dark-olive glass base, with some use-wear visible on one base-flake. The artefacts found at the stone alignments in this example almost exclusively derived from glass reduction, with little evidence for other occupation related activities. Several possibilities were considered in relation to the stone alignments, namely, that they were natural features, animal hides, bases of residential structures, built for ceremonial purposes, European structures, or Aboriginal imitations of European structures. I argue that some structures predate European settlement, which makes the last two explanations unlikely.

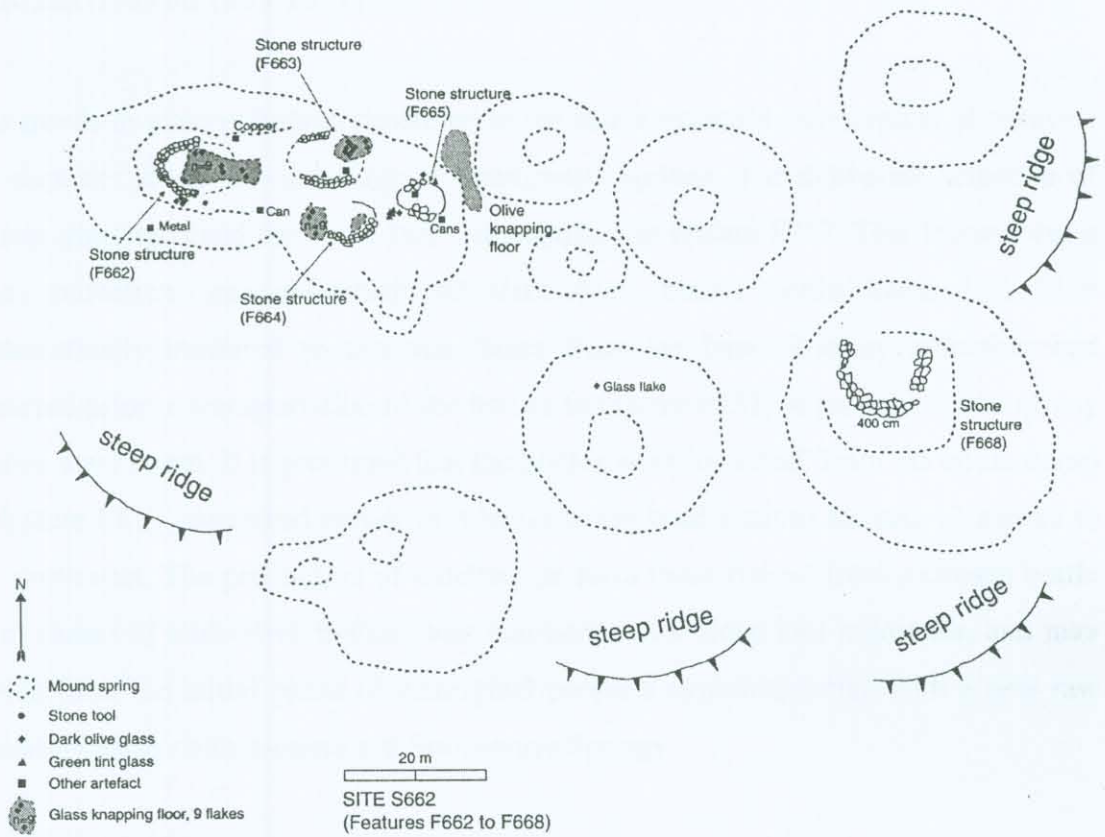


Figure 5-37. Plan of some stone alignments on eastern ridge (site S662) at Strangways Springs with associated artefacts.

A close examination indicated that many were not natural formations, as they required selection and placement of stones to form raised walls. The lack of evidence for occupation activities, such as fireplaces and grinding stones, seems to suggest that they were not occupied in the recent past. However, if occupied at a distant past, then the associated deposits would probably resemble the homogeneous distribution of lithic material reported at the eastern ridge. The evidence suggests that these structures predated European settlement, but were used after contact for the purposes of glass

knapping and possibly observation (the raised aspect from the mound springs offers a clear view of the head station). The fact that the oldest glass type (the dark-olive/black bottles) was selected for glass knapping may suggest that these were used at the earliest phase of culture-contact at the station. The concept of aspect supports the interpretation of these structures as hides for hunting animals. From the east ridge there is a clear view in many directions, and this may have assisted planning hunting for animals. While stone hides have not been reported in this region, they have been reported in northern Australia (Mountford 1940), and stone structure in south eastern Australia (Frankel 1993, ch. 7)

The trends in glass reduction described in the above example were typical of many of the deposits along the east ridge at Strangways Springs. The deliberate selection of certain glass type and form was best demonstrated at feature F757. This feature was a glass reduction area at which 42 dark-olive (black) bottle bases had been systematically modified to produce flakes from the base. Primary reduction had occurred prior to transportation of the bottles to feature F757, as no upper parts of any bottles were found. It is presumed that the bottles were 'quarried' from the bottle dump at feature F817 (described earlier in relation to the head station) located 42 metres to the north-east. The production of a deliberate form (base-flakes) from a chosen bottle form (bases of dark-olive bottles) was consistent with stone tool industries, and may derive from the initial phase of Aboriginal people's experimentation with a new raw material during culture-contact at Strangways Springs.

North of the main ridge

Compared to the archaeological evidence described for other areas at Strangways Springs, there was less evidence for occupation in the area north of the head station, with the exception of sites S533, S539 and S561 (fig. 5-32). The trends in pre-contact Aboriginal occupation observed throughout this study are followed at these sites, that is, past occupation was demonstrated by lithic assemblages on sandy surfaces near active mound springs. There were few sandy surfaces in this area, and consequently smaller occupation sites. This area is surrounded by a low flood plain with a rocky floor, as visible in figure 5-34A. The most extensive of these sites was S561, with a

strong spatial relationship between lithic assemblages and 'European' artefacts. Both sites S533 and S539 contained post-contact artefacts. They were both sufficiently similar in content and character to site S561 to be represented in a description of that site. Site S561 was located 600 metres north of the head station, next to the original track onto the main ridge which the telegraph line followed.

Site S561 contained medium to high-frequency lithics, which included grindstones and knapping floors. Several past fireplaces were evident from the presence of heat-retaining stones (*see* site plan). The distribution of European artefacts conformed to the location of fireplaces, suggesting post-contact features. The most extensive post-contact artefacts were glass fragments, with some evidence for glass knapping. Also found were flakes from ceramic insulator from the telegraph. Many of the flakes with evidence of use were found away from knapping floors, suggesting movement of these artefacts. Other artefacts included 'dot and spot' cans, matchbox, stirrup, fragments of a stoneware plate and clay pipe fragments.⁵⁹ The assemblages at these sites closely resembled other sites described at Strangways Springs, particularly site S512.

More distant archaeological sites

Several archaeological sites recorded in this study were located outside of the areas discussed in this chapter. These were site C1 (Parkers Well) and site L2 (Mungyamarrilyna Swamp).

Site C1 (Parkers Well)

Parkers Well (site C1) was a bore located in an inter-dunal valley 40 kilometres west of Anna Creek Station, on the Coober Pedy road (fig. 1-1). The evidence from this site provided some insight into pastoral out-stations, and associated occupation. According to local knowledge, Parkers Well was built over a natural soak, and Aboriginal people had camped there in the earlier parts of the twentieth century.⁶⁰ The site consisted of a

⁵⁹ Clay pipe (DBID 3058, 3059, 3060, 3061, 3062 and 1036). From site S533 (DBID 3057, 3053, 3054 and 3055). From S533 a button (DBID 3103) and buckle (DBID 3129).

⁶⁰ As informed by a member of the Arabanna community (1996, pers. comm.) By 'Parkers Well' the informant may be referring to the greater locality within which a soak may have occurred previously.

tank, well, troughs, yards, and occupation deposits (feature C1.1), a concentration of occupation material (feature C1.2) and a small camp in an adjacent dune (feature C1.3) (fig. 5-38).

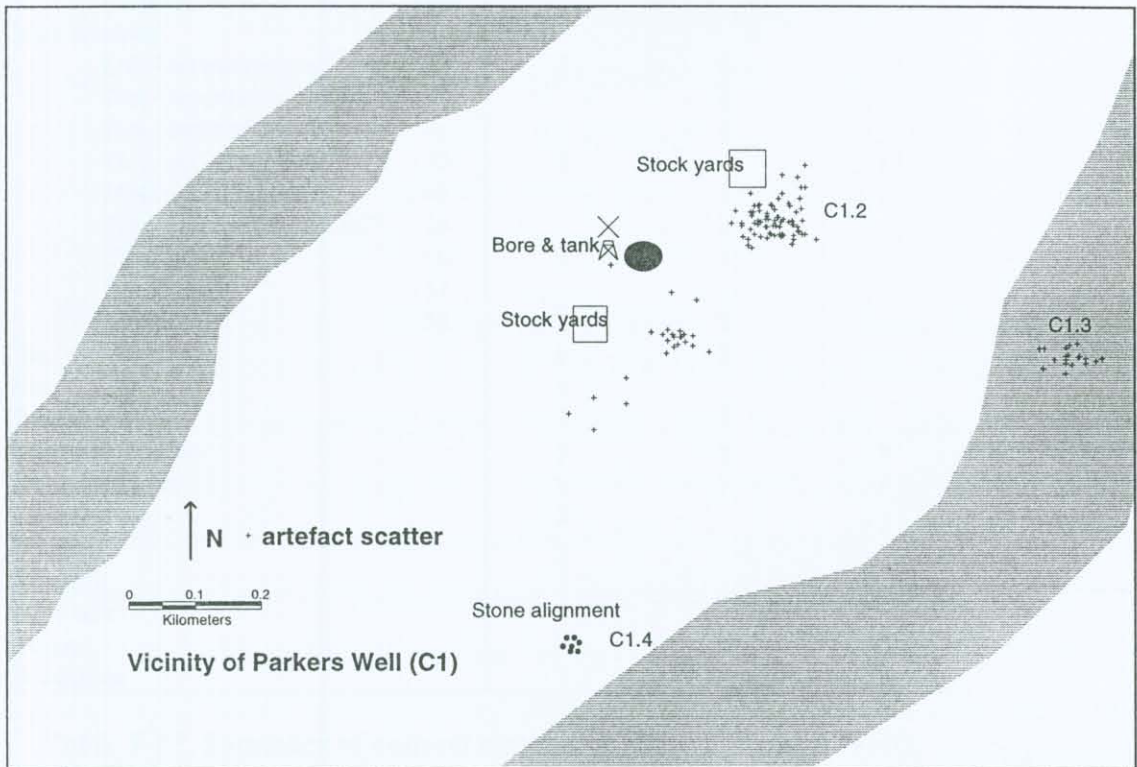


Figure 5-38. Plan of site C1 (Parkers Well).

The cultural material was post-contact in origin, as summarised in table 5-17. There was little evidence for extensive pre-contact Aboriginal occupation in the immediate locality. There were quartzite exposures along the inter-dunal plain, but these were not quarried. The absence of lithics in the inter-dunal plain and on the adjacent dune surfaces suggested that any people camping here used cultural material from settler origins.

The main taphonomic process is wind. This was demonstrated by a horseshoe which had been covered by windblown sand, and was eroding out of a solidified layer. This suggests that if lithics were present they would be just as likely to be revealed as the European material, yet none were found. Most artefacts were in situ and clustered in

activity areas, except for light fragments of thin metal (such as corrugated iron and metal food containers), which may have been moved horizontally by wind.

<i>Site C1 (Parkers Well)</i>					
<i>Feature</i>			C1.1	C1.2	C1.3
<i>Cultural material</i>	<i>Type</i>				
Glass artefacts					
L/O - no inscription	20	2	3		
Tint - inscription (other)	32		2		
Tint - inscription 'A'	24		3		
Tint - no inscription	33	1			1
Multi-faced bottle	48		1		
Tint - inscription 'ACBC'	34		2		
Clear glass	50	1	1		
Other glass	51		1		
Amber	55	2	2		
Can		y	3		
Wire		y			
Horseshoes		1	4		
Structural remains		y	y		y
Corrugated iron		y	y		y
Yards		2			
Troughs		y			
Windmill		1			
Ships tank		1			
Lithics		N	N		N
Grindstone					2

Table 5-17. Summary of cultural material at site C1 (Parkers Well).

Feature C1.1 included a well with wooden beams to reinforce the sides with a windmill and an above ground metal tank. A metal trough with a hewn timber frame was located twenty metres west of the tank. In the immediate vicinity were clear glass and mid-twentieth century amber glass. Located fifty metres south-east of the well was a ship's tank, a ubiquitous feature of many pastoral sites. The tank was surrounded by light-olive glass and grey tint glass. A post and wire yard was located 100 metres south of the windmill. This complex was located in the middle of the inter-dunal plain, which is 440 metres wide.

Feature C1.2 was an occupation deposit, predominantly glass bottles. The glass bottle corpus included sauce bottles (type 34 - 'Lea & Perrins Worcestershire Sauce' brand; and 'Holbrook' brand), a pickle jar, spirit bottles (type 24), medicinal bottles (type 48)

and light-olive glass 'champagne' beer bottles (type 20).⁶¹ There was also a fragment of a glass vase. There was flat metal and corrugated iron fragments suggestive of simple structures built using local material from the windmill. Other structural equipment included a metal hinge. Food cans included two large herring cans, and a 'dot and spot' type can. Pastoral equipment included a metal bucket, four horseshoes, and parts of a 24 gallon drum. The spatial distribution of these artefacts suggests a small occupation area, possibly with simple structures made from corrugated iron. The occupants had access to a range of settler material culture. None of the glass bottles appear to have been worked.

Feature C1.3 was located on the side of the dune bordering Parkers Well. The small assemblage included three fragments of grinding stone, the largest sitting on top of a large piece of metal sheet (1 by 0.5 m), two metal star pickets, and a glass bottle (light-olive glass) from which the closure had been removed to produce a jagged edge. (The sharp surface which can indicate use-wear had been dulled.) There was no evidence that the breakage served any purpose, and it was not seen elsewhere in this study. Feature C1.3 is a small occupation, probably related to C1.2, an assumption supported by the types of cultural material. This peculiar mix of two European items and Aboriginal manuports does not necessarily suggest contemporary use, especially given the absence of evidence for any other activity such as tool making or camping.

Feature C1.4 was an arrangement of stone located south of the site. Approximately a hundred stones were arranged in a circular design. No stone overlay another. Similar stone arrangements have been observed at Aboriginal sites in western Queensland (Barton, H. 1999, pers. comm.), however they were not found elsewhere in this study.

There are several trends in the cultural material at site C1. The fact that no dark-olive glass bottles were found, suggests, in broad terms, that the assemblage dates from the late-nineteenth century onwards, as the sites of earliest pastoral occupation are characterised by the dark-olive bottles. This is supported by the fact that artesian bores, such as this, were not built before 1882. There is a broad range of possible past

⁶¹ Each of these types is defined in appendix C. The champagne beer is also described as type '22'.

functions indicated by the glass bottles: demonstrating food flavouring, alcoholic consumption, and use of medicines (although there were few medicinal bottles). The presence of light-olive 'champagne beers' may be significant, given the wide distribution of this glass type in the region. Examples of these bottles at site C1 were all very thin walled vessels, suggestive of automated bottle manufacturing processes. The presence of clear glass, and thin-walled glass bottles indicates post-1920 use, which is supported by much of the cultural material. The oldest material may be the two 'dot and spot' cans, which could predate 1900. This suggests that the site was occupied sometime after 1882, and perhaps until the early-twentieth century. The site was not overly extensive, so may have been occupied only occasionally. If this were an Aboriginal site (as local Aboriginal people believe), the absence of any glass reduction represents a change in use of this raw material.

In summary, Parker Well (site C1) was constructed as a bore and pastoral out-station. There is evidence of sustained and localised occupation at the site, some possibly of Aboriginal people. Feature C1.2 is interpreted as a camp at which the dominant architectural elements have been deliberately or naturally removed (such as corrugated iron sheets being moved by the wind). The lack of evidence for posts or structure bases suggests structures akin to 'wurleys'. The material culture was both domestic and alcohol related, and highly localised, supporting the interpretation of the area as a place of occupation. The artefact evidence suggests the site was occupied during the late-nineteenth and early-twentieth century.

Site L2 (Mungyamarrilyna Swamp)

Mungyamarrilyna Swamp was located 45 kms north-west of Anna Creek head station, and was the most distant site recorded from Strangways Springs (fig. 5-39).⁶² The evidence from this site provides comparative data regarding Aboriginal settlement. During the site recording, the swamp was a dry claypan with reeds, which would occasionally form a small shallow lake after sufficient rain. The claypan was bordered by a large sandridge on which occupation deposits were recorded at the end between

⁶² The swamp was targeted for archaeological survey following references to a Strangways Springs out-station in the vicinity of Mungyamarrilyna Swamp during the nineteenth century, although the survey failed to find any evidence for pastoral settlement.

two arms of the swamp (site L2). Other less dense assemblages of lithic material were located along the dunes adjacent to the lake. No European cultural material was found at site L2. A survey along local sandridges and inter-dunal valleys revealed no European material or structures.

The occupation deposits support evidence provided elsewhere in this chapter that past Aboriginal occupation was regulated by access to water, sandy surfaces and timber for shelter and fuel. Mungyamarrilyna Swamp is not an ephemeral source of water, used after local rain, when the claypan would attract animals, and the local area would be richer in plant resources. The lithic assemblage at site L2 was very dense, ranging up to 160 artefacts per square metre. The site was approximately 900 square metres in area. The assemblage comprised material similar to that recorded at the other sites in this study: silcrete, quartzite, chert and quartz. A local source of silcrete and quartzite was probable, as many large (greater than 20 centimetres) stones were present. Some were cores, some had yet to be worked. One likely source of this material is from the floor of a creek system located east of the site, as many of stones are water worn. Also present at the site in much lower amounts were fragments of grinding stone, and finished chert tools. These were presumably imported into the site.

The absence of European cultural material suggests that the site was not used after contact. This is supported by the absence of strong elements of site structuring (there are few discernible knapping floors and no fireplaces), as these elements are presumed to be present at more recently occupied sites.

In summary, the occupation deposits recorded at Mungyamarrilyna Swamp demonstrate trends in Aboriginal occupation recorded at other sites in this region, in particular the tendency for occupation sites to be located at the meeting place of different landscape elements: in this case, claypan/swamp, sandridge and lithic source.

Discussion of archaeological evidence

The archaeological material presented in this chapter documents past human occupation in the south-western Lake Eyre Basin. At a site level the minutiae of activity and settlement is established: providing evidence for European settlement and the earlier pre-contact Aboriginal use of the landscape. In presenting the evidence for these two broad periods of human occupation I have attempted to highlight the evidence for Aboriginal life following European contact: as demonstrated at sites where post-contact activities and use of goods are characteristic of Aboriginal, not European, occupation. Boundaries between Aboriginal and European, post-contact and pre-contact, were not absolute but blurred, particularly given the absence of vertical stratified sequences.

Consequently, the relationship, and ability to differentiate, between pre-contact and post-contact Aboriginal assemblages have been central to my interpretation of many of the sites in this study. The key interpretive elements in achieving this were:

1. regional settlement patterns (the relationship between landscape elements and past occupation).
2. site structure, specifically evidence for activity areas (for example, fireplaces and reduction sequences).
3. the presence of post-contact artefacts with known temporal ranges and/or function.
4. evidence of regional and longer-range movement of goods, supported by reduction sequences, and inter-assemblage variation.

My approach to these lines of evidence follows from approaches to surface archaeological deposits which state that 'patterning in surface archaeological data provides an essential perspective on regional land use, community organisation, and intra-site spatial structure' (Bayman & Sanchez 1998, p. 75). The following discussion uses patterning in the archaeological record to interpret inter-assemblage trends, and to provide an enhanced intra-site interpretation of key sites of Aboriginal and European post-contact occupation. This interpretation considers the archaeological evidence for phases and changes in pastoral practice; secondly, the evidence for pre-contact and

post-contact Aboriginal deposits; and thirdly, evidence for Aboriginal-European interaction.

Without the luxury of stratified sequences the key elements in determining relative chronology in this study were, firstly, the presence of artefacts of a known date ('European' artefacts) and secondly, evidence of site structuring. Generally, assemblage structure was assumed to decrease over time, tending towards homogeneity. That is, evidence for activities becomes less apparent over time. Within the late Holocene assemblages in this locality, there are no known elements, such as the introduction of new tools, which make it possible to interpret a site as 'very' old, or more recent. Thus, to develop a temporal framework, the highly structured activity areas were assumed to derive from more recent occupation, either close to contact, or post-contact. The combined interpretive potential of these two elements - structure and artefacts of known ages - was best demonstrated at sites where European goods were found in meaningful spatial relationships with highly structured assemblages.

Archaeological evidence for pastoralism and core European activities (1862-early-twentieth century)

The analysis of archaeological evidence enabled the identification of changes in pastoral practice over time in the study region, within two distinct phases defined by the practice (post-1882) of sinking artesian bores. The earlier phase (1862 to 1882) was characterised by the pastoralists' total reliance on naturally occurring artesian waters (mound springs) and more ephemeral water sources. The later phase (1882 onwards) was characterised by an increasingly regulated pastoral system in which the risk of stock loss during drought was minimised by the use of large fenced areas, ideally each with an artesian bore or well. The later phase required equipment to make 'improvements' (introducing windmills, fencing wire, metal troughs and tanks to the archaeological record), made easier to transport into the remote south-western Lake Eyre Basin following the railway construction (post-1889) which ran through the pastoral station.

Consequently, the earlier and later pastoral phases were each defined by changes in technology, and changing patterns of pastoral resource-use and location of pastoral activities. During the earlier phase of the pastoral station the head station complex at Strangways Springs - which comprised the manager's residence, stables, yards, sheds, working men's quarters, kitchen and blacksmith - was the administrative centre for managing out-stations. Site N3 provided the best evidence for the technology and design of early out-stations. The technology at site N3, and at other early out-stations, was simple and signified a dependence on local materials. For example, hand made nails were used rather than imported manufactured nails; timber and brush yards, or simple post and rail yards were built rather than using wire, metal or mesh; local timbers (such as mulga and eucalypt) were used rather than imported timbers (such as oregon). The earlier yards were either stone (at Strangways Springs head station), post and rail or beam (sites N3 and I2). Thus, this early phase is characterised by frugality in structural material culture and technical equipment.

Residency at pastoral out-stations was an attribute of the earlier pastoral system. For example, at site N3, the shepherds were provided with a hut (feature N3.1), which with the watch-box adjacent to the yards, would have helped shepherds to protect the sheep from dogs. Similarly, the more substantial post and rail yards at site I2 also had an adjoining residential structure (feature I2.2). The archaeological record demonstrates that out-station residents had access to the same range of consumer goods as recorded at Strangways Springs. The excavation of the shepherd's hut at site N3 showed that the hut was the focus for much residential activity, including preparation and consumption of food. The pastoral workers diet, not surprisingly, comprised of their flock, both young lambs and older sheep, and to a slightly lesser extent, native macropods. The size of the hut, and its reasonably solid construction requiring many nails, suggest that the out-station huts were intended to be used for several seasons, presumably depending on the local availability of grasses and water. Thus, a key to the early out-stations was having permanently based shepherds to protect the sheep.

Not surprisingly, spatial trends demonstrate that the earlier sites of pastoral out-stations were located proximate to naturally occurring waters, primarily artesian

springs. For example, the yard complex at site I2 was able to take advantage of several close natural springs (sites I5 and K1). The evidence for wooden troughs at artesian springs (Emily Springs, Francis Bore/Springs, site P4 and site I5) document early attempts to control this invaluable resource. The technology of early spring management was demonstrated at sites I5, I2 and P4, indicating that large eucalyptus troughs were constructed to water stock. Another significance of site N3 was that it demonstrates that early pastoral out-station relied on ephemeral environments, not just the vicinity of artesian springs. The location of site N3 is possibly better suited to sheep pastoralism than most mound springs environments reported in this study, as there were extensive grasslands within the sheltered inter-dunal valleys. This evidence suggests that the pastoralists moved between springs (a very reliable water source surrounded with inevitably limited grasses) and, following rain, more ephemeral waters with resultant access to new pastures.

A consequence of the pastoralist's reliance on artesian waters was that sites of early pastoralism were located proximate to sites of longer-term Aboriginal occupation. Correspondingly, on a macro level, this creates a strong element of patterning in areas of artesian waters, like the northern parts of Francis Swamp and major spring complexes, where Aboriginal occupation and pastoral settlement share a similar spatial relationship to resources and landscape elements. On a site level there are essential differences, chief amongst them being that early European activity areas rarely 'overlay' pre-existing Aboriginal sites.

A prominent exception to these spatial trends was Margaret Springs, where there was no evidence for pastoral use of springs, yet occupation sites showed that the springs had supported Aboriginal people previously. The absence of pastoral activity may have resulted from the smaller water outflow, although it is unclear whether this was also true in the nineteenth century. At areas away from springs the spatial relationship of pastoral sites to pre-contact Aboriginal sites becomes weaker. For example, at site N3, the out-station with the least evidence for any sustained pre-contact Aboriginal settlement. This suggests that Aboriginal people's and pastoralists' use of the William Dunefield was dictated, and limited, by the more ephemeral nature of water resources in that locality.

It is clear that artesian waters dictated the timing of changes in pastoral settlement. The artesian bore sunk near site A6 ('Old Wool Sheds') in 1882, was the first sunk in South Australia, and only four years later than the first bore sunk in Australia (Forrest 1995, p. 38). Site A6 demonstrates increasing pastoral expenditure at that time, with technical equipment for cleaning (scouring) and shearing wool, and for drawing water. In comparison, the earlier scour at Strangways Springs (site S201) had evidence of stone built structures, but much less technical equipment, with the exception of the metal water wheel.

Consequently, the archaeological record demonstrates a significant increase in technical and work-related pastoral equipment from sites of early pastoralism to later sites. However, as shown later in figure 5-41, the cultural deposits associated with early and later phases of pastoralism do not reveal a matching increase in the range of artefact classes over time. For example, while site S201 is less rich than later sites A6 and A9, one of the earlier out-stations (site N3) remains one of the richest assemblages. This result is largely due to the large amount of domestic classes of artefacts, specifically consumable items such as canned and bottled goods, tableware, utensils, clothing, personal items and smoking equipment. Thus, the access to consumable goods by pastoral workers did not change significantly over time. This suggests that pastoral worker's demand for consumer goods was as likely to be met during the early years of pastoral station as later (even though the station was very isolated until the railway construction in 1889). The principle exception to this observation is an increase in the use of ceramic tableware over time, demonstrated at site A6. It is likely that ceramic wares became more widely available after the railway construction, even though railway cartage remained expensive.

Thus, the presence of expensive artesian bores from the 1880s onwards indicates increased financial commitment by the station owners. Similarly expensive, wells drawn by windmills became more popular in the same decade (Jeffrey 1907; Forrest 1995), for example Parkers Well (site C1). The archaeological record demonstrates changing patterns of pastoral activity related to the increased use of artesian bores and wells. The bores and wells did not necessarily have evidence for contemporary occupation associated with them, for example, Fercies Bore (site I4) and Beautiful

Valley Bore (site G3). Significantly, these sites demonstrate that wells and bores were not necessarily located at pre-existing artesian waters. Consequently, they do not mimic Aboriginal pre-contact settlement patterns, as the earlier phase of pastoralism by necessity did. The archaeological correlate is that after the 1880s any associated pastoral occupation is not necessarily proximate to pre-contact Aboriginal occupation sites. An exception is Leonards Bore (site K1), which had associated occupation deposits, yet these may derive from pre-bore occupation at a pre-existing artesian spring.

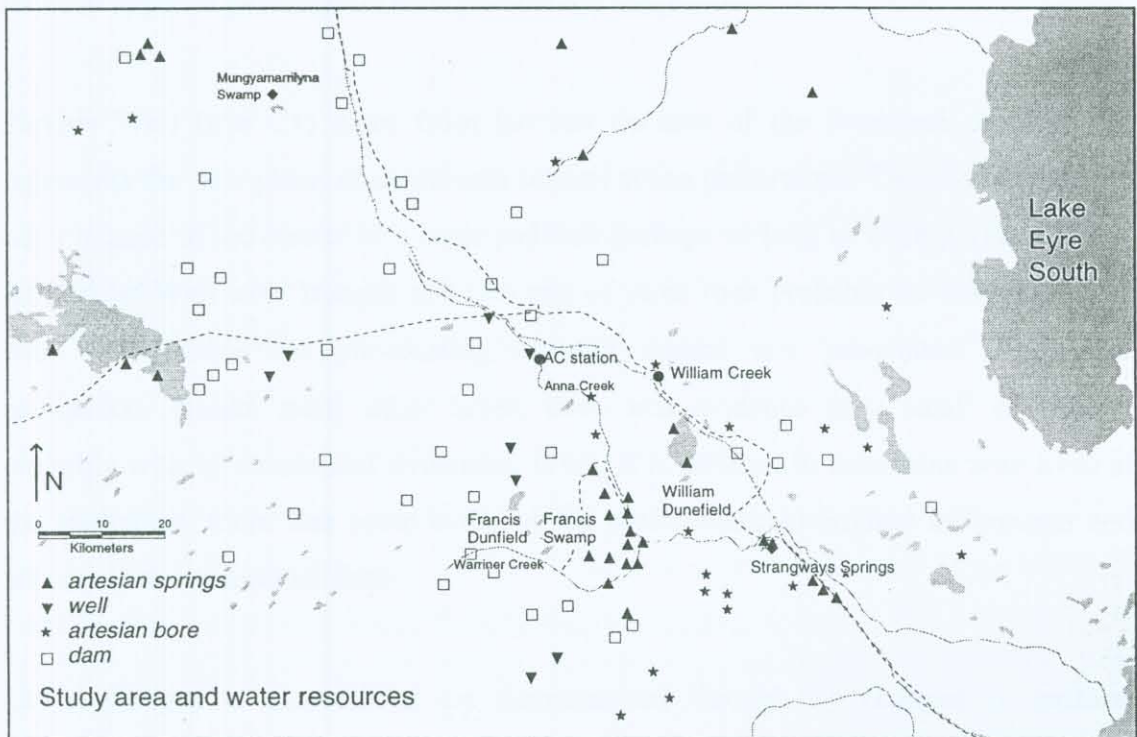


Figure 5-39. Map of study area showing naturally occurring artesian water (mound springs) and the location of bores, wells and dams (post-1882).

As stated above, many wells and bores in this study have no associated occupation deposits. This presumably resulted from the construction of large fenced paddocks, in which the bores were located. Consequently, no yards and shepherding huts were required for the sheep at night, as the fences kept out native dogs, and reduced the need for shepherds. Remains of shepherding (for example, site N3) thus predate the division of the pastoral property into large paddocks, which occurred from the 1880s onwards. The location of artesian bores and wells resulted in a significant change in the pattern of pastoral activities. Figure 5-39 reveals that the later phase of pastoralism saw the

sinking of bores at areas where previously pastoral activity was of high risk. The figure demonstrates the pastoralists shifted from the mound springs into the dunefields and grasslands. These areas surrounded the new location of the head station at Anna Creek.

Most of the sites presented in this study had very little evidence for twentieth century occupation. The evidence presented here helps interpret this as a result of the cessation of pastoral activity at springs and ephemeral waters sources in favour of artesian bores and wells. Consequently, remote occupation sites become less common, as there is a reduced need for pastoral workers, particularly shepherds.

Parkers Well (site C1) dates from the last decades of the twentieth century, and represents the later phase of nineteenth century sheep pastoralism. The site would have been located in the corner of a large paddock perhaps as long as twenty kilometres.⁶³ At Parkers Well were troughs and two sets of yards (one probably for horses). There was no evidence for pre-existing artesian waters, nor pre-contact Aboriginal occupation. Unlike many other bores, there was evidence of a small settlement, probably with no substantial structures. While it is difficult to determine who lived at the settlement, there was some evidence for post-contact Aboriginal settlements and activity in the associated dune.

Other changes in pastoralism are demonstrated through by changes in pastoral practices, particularly cleaning (scouring) of wool. Evidence from site S201 suggests that early techniques for wool scouring involved trapping water from mound springs in a trough, with some water management using a water wheel, probably powered by horse. The wool was probably cleaned through hand agitation. Later phases of pastoralism used more technical equipment, as demonstrated at site A6, where that large boilers were used to heat water, presumably to clean the fleece with pressurised water. This represents a significant improvement in wool scouring.

⁶³ The measurement is based on a hand-drawn map of Strangways Springs Station from the early-twentieth century, held by Kidman Holdings. This map shows the existence of nine large paddocks, each circa twenty kilometres long and ten kilometres wide.

The archaeological evidence from the main centres of pastoral activity demonstrate that cultural material was concentrated in occupation deposits (with structures and camps) and in refuse deposits. Rubbish was rarely transported more than 100 metres, and normally was within 20 metres of residential structures, as demonstrated at the Strangways Springs head station and railway station. Therefore, the archaeological signature of European activities tends to be for highly localised settlements with structures, and discrete concentration of rubbish. An exception to this trend was evidence from the earliest phase of European settlement at Strangways Springs for disposal of spirit bottles in 'hidden' dumps.

In summary, the archaeological record accessed in the study region using multiple site data demonstrated distinct phases in pastoralism, with the shift from frugality to increased expenditure marked by the development of a new pattern of pastoralism based on artesian bores. The material record demonstrates that new technology and increased expenditure drove the change. The later phase replaces an earlier phase of pastoralism, characterised by use of naturally occurring artesian waters, with a more regular and widely distributed pattern of land use. The archaeological record demonstrates early pastoral activity was based at mound springs and ephemeral waters, with evidence for shepherding and high levels of surveillance, and which has little material evidence for continuing beyond the nineteenth century.

Evidence for post-contact and pre-contact Aboriginal occupation

The ascription of sites regarding their use by Aboriginal people following European settlement in this study largely relies on the presence of European goods. Furthermore, these goods needed to be spatially related to recent activity areas distinctly 'Aboriginal' in character. This distinction is based on assumptions that Europeans did not, for example, flake glass bottles as a raw material for blades, or prefer to use large hearths located in long-term Aboriginal campsites when other equally suitable camping locations were available. Inter-site comparisons presented in this section demonstrate that archaeological evidence of activity areas is consistent throughout the study area, and that there are features which reliably indicate Aboriginal and European

activities. This serves to demonstrate that descriptions of sites as 'Aboriginal' and 'European' have been justified.

Consequently, my interpretation of past Aboriginal occupation, both pre-contact and post-contact, has relied on detectable activity areas. Chief amongst these were evidence for different stages of glass reduction, evidence for living areas located near fireplaces, and evidence for stone tool manufacture.

Ethnographic parallels for site structuring related to past activity

Ethnoarchaeological studies demonstrate a range of material correlates between past activities and the archaeological record (Binford 1983, 1984, 1985; Kent 1984; Gould 1969, 1973, 1978a, 1978b, 1980). In chapter 4 I defined activity areas as the locus at which a particular human event occurred (Kent 1984). A key interpretive element of the presentation of Aboriginal sites in this chapter has been that activity areas can be discerned by spatial patterning of archaeological material and represent a specific past activity. It has been assumed that activity areas provide site structure, and that evidence for past activities decreases over time. Consequently, highly structured activity areas within sites have been assumed to be the most likely evidence of post-contact activities. Inter-site trends discussed in this section support this, as fireplaces and knapping floors containing demonstrably post-contact artefacts have tended to be the most structured features within assemblages. Before considering the archaeological evidence for past Aboriginal activities it is worthwhile summarising the results of O'Connell (1987), as my interpretation of past settlement and the chronological sequence of site-use relies on using the evidence of specific activity areas, an issue considered by O'Connell.

In Central Australia, O'Connell (1987) recorded the settlement patterns for the Alyawarra, to present the archaeological implications of settlement. O'Connell defined several types of household: men's, women's and nuclear. The size, composition and behaviour of the household affected activity areas, which O'Connell defined as 'household activity areas' (defined by shelters, hearths, refuse disposal zones) and 'special activity areas' (defined by shady locations, roasting pits, working areas and

defecation areas⁶⁴). The archaeological result of Alyawara behaviour was the concentration of refuse in clusters related to households or special activities. The size of the clusters was a product of the size of group and length of occupation. Repeated occupation over time had the effect of coalescing the material record, and obscuring separate activity areas within an increasingly homogenous assemblage. O'Connell found that activity areas were more defined at the extremities of sites. Time also was a factor in the visibility of activity areas, with the most recent occupation sites the most visible.

Glass working

As stated earlier, the use of glass by Aboriginal people as a raw material for tool making is a distinctive characteristic of post-contact assemblages. Following O'Connell, tool making areas are 'special activity areas'. That is, they are spatially and physically distinguishable from other activity areas, specifically what O'Connell terms 'household activity areas'. The evidence for spatially separate stages in glass working in this study requires inter-site comparison, as well as intra-site analysis. These stages may include 1) selection of specific bottle types and bottle parts (primary reduction and form selection); 2) transportation of raw material; 3) knapping floors (secondary reduction); and 4) movement of tools away from knapping floors. In most cases European refuse deposits were the likely source of the raw material. The results of selectivity are clearly demonstrated at the Strangways Springs, where glass batteries and other glass bottles were transported to knapping floors, while other materials were never found outside of refuse deposits (for example, zinc sheeting, copper dampers and graphite rods).

Selectivity, primary reduction, transportation and secondary reduction of glass were best demonstrated at feature F682, on the eastern ridge (site S662) at Strangways Springs. As stated in the site description, the site contained 42 bottle bases demonstrating the 1) selective procurement of a form (bases from dark-olive bottles) from a nearby bottle cluster (feature F817), 2) primary reduction according to desired

⁶⁴ In this treatment of O'Connell's research I have substituted the activity area 'auto-repair stations' with the less specific 'working areas'.

form (removal of closures prior to transporting bases to knapping floor), and 3) secondary reduction of bases to produce consistently formed base-flakes. A base core is pictured (fig. 5-40A). The sequential flaking scars are visible as knapping progressed around the edge. The base is the thickest part of dark-olive (black) hand-manufactured nineteenth century bottles, and consequently provided the thickest platform for glass knapping. The resultant flakes were all consistently sized and shaped (average length of 25mm and width 15mm). Four characteristic flakes are shown (fig. 5-40B). The bulb of percussion is clearly visible, demonstrating that the striking platform was the rim of the bottle base. The rejoin (fig. 5-40C) reveals that raw material was easily sequentially reduced. Either flakes or bases may have been used, although the artefacts at feature F682 provided no evidence for use-wear.

The selection of specific bottle types and bottle parts as a component of primary procurement in preparation for secondary reduction was demonstrated at other assemblages. This evidence was provided by comparing the numbers of bottle closures with bases. For example, at site S354 the assemblage of olive bottles had only bases and no closure. Site S354 was interpreted as a site of glass storage, similar to feature F1106 at site S240, where, as shown in table 5-10, the number of bottle bases was consistently higher than closures. This trend was interpreted as evidence for the selection of bottle bases for transportation to occupation sites. Corroborating evidence for the form selection process was included in the description of head station assemblages (the probable source of the majority of bottles), where at site S401, certain assemblages contained more closures than bases (for example, feature F409). Conversely, the absence of bottle closures in knapping floors could be interpreted as a result of closures being a final tool product, which have been consistently removed from knapping floors. This, however, is not supported from the inter-assemblage evidence which indicates that the primary preference was for bottle bases as a raw material for glass flakes.



Figure 5-40. Glass knapping at site S662, feature F757 (mm). A. Glass bottle base used as a core for the sequential production of flakes. B. Four base-flakes. C. Same four base-flakes rejoined.

Transportation of glass would have been assisted by removing the upper part of the bottle, as the weight and size of the core would be reduced by up to 50 percent. A particularly specific set of evidence for glass working is provided by analysing the distribution of battery glass at Strangways Springs, which initially would have only been present in the 1872-1880s telegraph-station refuse deposits (site S021). The battery glass was transported to two sites, an occupation site (S251) and glass knapping floor (S349). The reduction at site S349 indicated that the thick amethyst battery glass was knapped in a similar manner as thick dark-olive bottle bases. Like feature F757, site S349 indicates that glass was selected for its form, and then transported to areas for secondary reduction. The site also reveals that knapping floors were spatially separate from larger occupation sites.

Knapping floors were the data most likely to indicate glass working and its primary context. Excavations demonstrated that very small glass debitage was the most spatially resolute evidence to define knapping areas. For example, the excavations of features F245 (site S240) and at feature F291 (site S251) revealed the large amount of small glass chipping debris present in the 2-5mm size range. At sites with hard surfaces the smaller debitage was more visible, for example at site N4 and site I5. The number of artefacts (other than small debitage larger than 5mm) produced in a knapping event was demonstrated at site N4 to be between 5 and 20 fragments, and to cover approximately 25 square metres. In another example, at site S1101 each bottle produced between 25 and 85 fragments, yet were restricted to ten square metres. This size variation in the number of resulting fragments, and the size of knapping floors, was recorded at other sites (for example sites I5, S240, S355, S1108, S1101, S1102 and S662).

A distinguishing feature of glass reduction at occupation sites was the tendency for a separation of glass working areas from living areas. This separation conforms with O'Connell's (1987) evidence for spatial patterning of archaeological material according to different activities. For example, at site S355 and S240 the glass reductions tended to cluster to the western part of the occupation site, while other

living spaces were in the eastern part of the site (figs 5-31 and 5-34). Also at sites S1101 and S1102 knapping floors were separate from the remainder of the site.

Glass artefacts were moved from knapping floors to other occupation assemblages where they were presumably used as tools. For example, at site I5 there were several features which contained small well-worn flakes of dark-olive (black) glass, yet there were no knapping floors of this glass at site I5. Also, at site S1101, the spatial separation between knapping floors and small flakes was clearly defined. In particular, the 'base-flake tool' was transported away from reduction floors.

As stated earlier, analysis of glass artefacts for evidence of residues and use-wear was unrewarding, as the artefacts had been exposed to extreme environmental conditions. However, there is often tentative evidence for artefact use. At certain assemblages the size of glass flakes accords with studies of lithic assemblages which suggest that tool size decreases (due to use and retouch) with distance from the raw material source (Hiscock 1994). Comparative analysis of the sizes of glass artefacts at site I5 and artefacts in other reduction sequences provides evidence for size reduction of glass tools. For example, the glass tools at site I5 were 65 percent the size of similar unused glass flakes in knapping floors. This is calculated from the average longest axial length, which for site I5 was 13mm. This can be compared with the artefacts at the largest reduction site of similar black glass, which was feature F757 (described above), where the average axial length was just greater than 20mm. This suggests that the dark-olive (black) glass artefacts at site I5 (fig. 5-14D) may be smaller as a result of use and retouch. The 'base-flake tool' probably was utilised similarly to retouched stone flakes, where the edge becomes increasingly steeper with retouch (Veth 1993, p. 16). This evidence tentatively suggests that the very dark-olive (black) glass was best suited to produce small steep-edged flakes, which may have been utilised for processing of organic substances. The thinner glass bottles made from lighter olive and tinted glass did not produce the same shaped flakes as the dark-olive (black) glass. For example, at site I3, (feature I3.2) glass artefacts in light-olive reduction floors had an average axial length of 38mm (pictured in fig. 5-13A).

The glass distribution pattern is commensurate with a resource which was easily accessible. The glass discard rates in knapping floors such as at site S662 (feature F575) without high levels of working may seem counter-intuitive. The glass results corroborate trends observed at lithic assemblages located at raw material sources (for example, Margaret Springs with easily accessible quartzite) where the quantity of unused artefacts is very high.

In summary, this analysis suggests that the process of selection of raw material form and the reduction process was designed to use the thickest possible bottle glass (the very dark-olive bottle base) to produce short glass flakes. However, at several sites, glass fragments from other parts of the bottle exhibited use-wear. Thus, similar to evidence of stone tool artefacts (Fullagar 1982), glass fragments other than the 'base-flake tools' were used in an expedient manner. Additionally, the use of glass bottles as containers makes the analysis of glass working difficult, as this increases the quantity of unmodified bottles. Finally, given the evidence presented in the previous discussion for two phases of pastoralism, it is worthwhile to note the relative absence of evidence for glass working at the later pastoral sites, for example at Parkers Well. The principle exception is reduction sequence at site A6 (feature A6.9) and the peripheral camp at A9 (feature A9.5).

Living areas - fireplaces

Post contact Aboriginal sites tended to contain varying amounts of 'European' material culture. By this I mean the quantity of artefacts, not necessarily the range of different types of artefacts. This fact reminds us that post-contact assemblages were defined by the presence of European goods, but also included elements characteristic of pre-contact assemblages, such as stone tools, food remains and residential structures. The ascription of the use of these artefacts and features as post-contact is based on site structure: only goods spatially and functionally related to post-contact activity areas are used to interpret post-contact Aboriginal subsistence. This is best demonstrated with fireplaces. For example, a fireplace excavated at site S240 (feature F245) contained bone and emu shell, was surrounded by clay pipes, glass fragments, food container fragments, shoe and clothing parts, as well as stone tools and ochre.

The 'Aboriginality' of the feature relies on the fireplace (large fireplaces defined by heat-retaining stone were only found in relation to lithic assemblages, but never in distinctly European occupation sites) and glass tools (a practice using Aboriginal technologies). The only clear examples of European fireplaces were located inside buildings - either at the head station, at the woolsheds (site A6) and the scour, and in a shepherd's hut (site N3.1).

Fireplaces in camps, defined by travertine and artefacts from a European source, were a feature of many Aboriginal occupation assemblages in this study (for example, site I5, S512 and S561) and particularly the 'western sites' at Strangways Springs (sites S240, S1102, S1108, S251, S355, S305, S340, S344, S349, S350 and S355). Inter-assemblage comparison demonstrates that fireplaces provide good evidence for a range of post-contact Aboriginal activities. Food preparation and consumption was defined by eating utensils, cooking vessels, ceramics, food cans, charcoal and food remains (emu shell and burnt bone). Other activities conducted near to fireplaces included smoking (clay pipes), retouching stone and glass tools, and the use of ochre. Contact period living areas also saw clothing parts near fireplaces (for example, buttons, buckles, pins and shoe nails at feature F245, site S240). Typically, grindstones signifying food preparation were found within 20 metres of fireplaces (for example at site S240), although these were not found at all sites (as discussed below).

Material culture

In this section I consider the diversity of artefact assemblages, and discuss the inferential potential of different types of material culture and archaeological features. Without well-stratified contexts it is difficult to make direct quantitative comparisons between artefacts from European contexts and other types of Aboriginal artefacts, as most of the Aboriginal contact period campsites may have been formed over quite long periods of time prior to contact. It is, however, possible to demonstrate the *range* of exotic items used in Aboriginal living areas, what is termed 'assemblage richness' by Kirch (Kirch 1992, p. 180). Kirch described 'richness' as the increased range of foreign artefacts over time in Hawaiian historic period indigenous households. (Essentially Kirch employs an acculturation model, although he explores the individual

implications of different classes of material culture in contact contexts.) In figure 5-41 I summarise the relative richness of assemblages in this study.

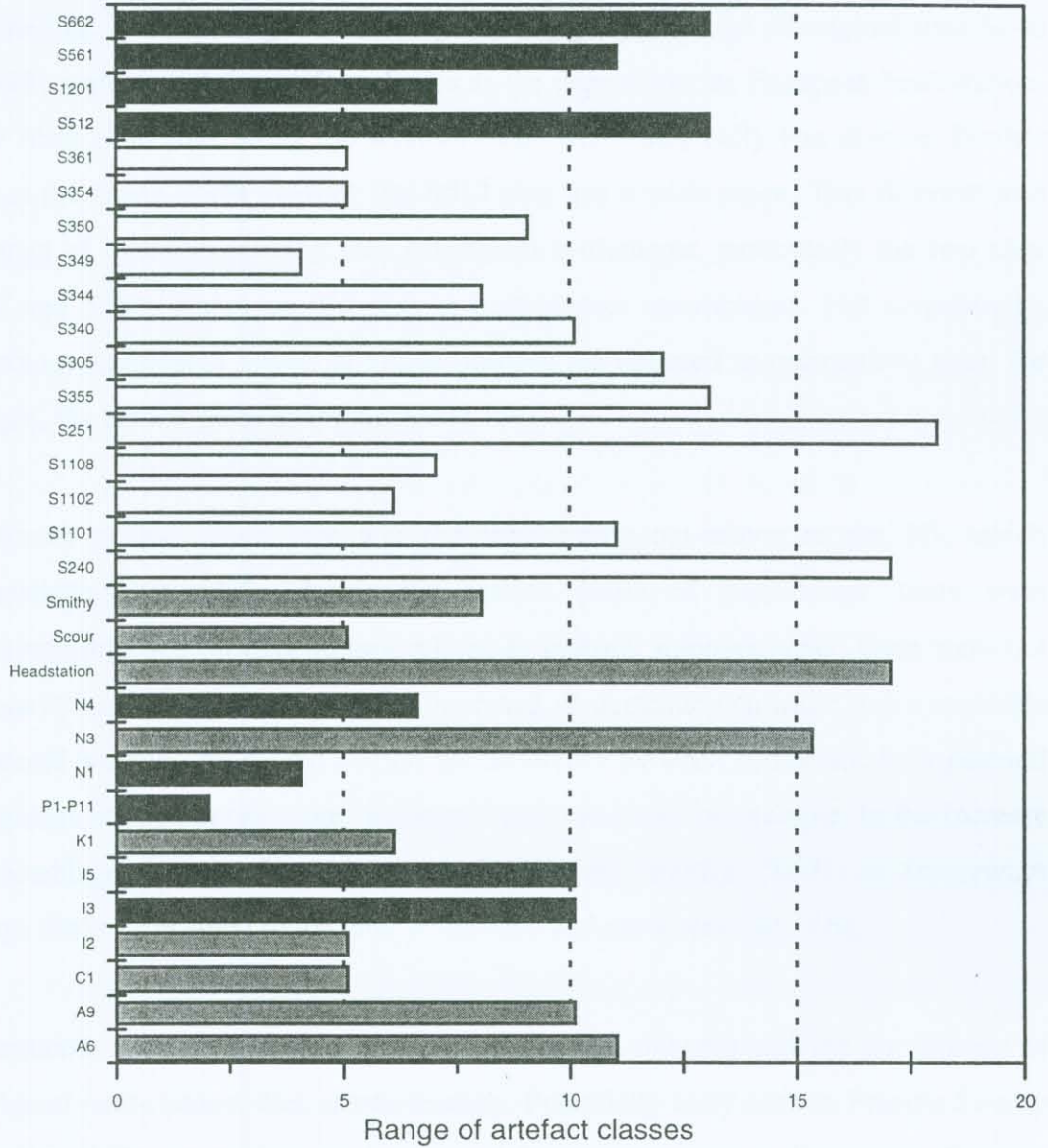


Figure 5-41. Assemblage richness by site. 'Range' is the number of different artefact classes. The grey infill indicates sites with a primary role as pastoral sites, the white infill indicates the 'western sites' at Strangways Springs, and the black infill indicates all other occupation sites. The sites are ordered geographically, from Strangways Springs to the greater study area (see fig. 4-1).

As described in chapter 4, classes of European artefacts included bottle glass, telegraph glass, window glass, glass tool making, clothing, clay pipes, nails, food containers, other containers, cooking equipment, ceramics, pastoral equipment, bullets, horse equipment, miscellaneous metal; other classes include lithics, food processing equipment, fireplaces and ochre. Figure 5-41 indicates that occupation assemblages contained the greatest range of artefacts: at Strangways Springs Aboriginal sites S240 and S251 were as rich in artefact classes as the deposits at the European head station. Other Aboriginal sites along the western ridge were marginally less diverse. Further north at the 'main north mound' site S512 also had a wide range. This demonstrates the range of material entering into Aboriginal settlements, particularly the two sites (S240 and S251) which are the largest post-contact assemblages. Not surprisingly, assemblage richness is lowest at single purpose (as opposed to occupation) sites; for example, the battery glass knapping site (S349).

The fourth richest assemblage was the shepherding out-station at site N3, which demonstrates that while, during the earliest phase of pastoralism, there were limitations imposed on expenditure related to pastoral improvements, there were not necessarily correlating limitations on the range of domestic consumer items available to pastoral workers. As shown earlier, the difference between earlier and later pastoral expenditure is apparent at more 'technical' pastoral sites: for example, in the increase in assemblage richness from the scour (S201) and 'smithy' (S601) at Strangways Springs (both early sites) to the later woolsheds at Anna Creek (site A6).

Consequently, any relationship between assemblage richness and the chronology of Aboriginal post-contact sites seems tenuous. Potentially early sites in Francis Swamp (sites I3 and I5) are as diverse as many of the western sites at Strangways Springs. Sites remote from pastoral head stations, such as sites N3, I3 and I5, demonstrate that an explanatory model of distance decay - where European goods decrease in quantity according to distance from the pastoral head station - do not explain the distribution of European goods in this study.

Artefacts from a European source were focussed at places of pastoral occupation, then to a lesser extent, pastoral work sites (for example, the scour or out-stations), before entering into Aboriginal sites, most of which had been occupied prior to European arrival. It is worthwhile to consider the function and timing of the European goods present in these sites, and inter-site trends in the distribution of different cultural material. Detailed lists of artefacts are presented in appendix B and appendix C. Table 5-18 summarises the presence of classes of goods found at selected sites in this study.

There is very little evidence for residential structures at most occupation sites in this study, an observation made more potent by evidence from site N3 which demonstrated that even a simple hut contained 116 nails. Those Aboriginal occupation sites containing nails (S240, S251 and S355) had only a few nails (insufficient amounts for structures built with nails) suggesting that post-contact Aboriginal residential structures probably resembled 'wurleys', which used tree branches to construct shelters. If so, few durable components would survive in the archaeological record. These may have incorporated tarpaulins as a common artefact were grommets, used in canvas tarpaulins. Grommets were found at several 'western sites' at Strangways Springs (S240, S251, S305 and S340), particularly at sites S512 and S240. Similarly, at site I5 in Francis Swamp a grommet was located near fireplaces and amongst household and personal goods (feature I5.7). There is very little archaeological evidence for use of metal sheeting in Aboriginal residential structures, although high rates of metal corrosion made assessment difficult at earlier sites, unlike later sites such as Parkers Well. It appears that some corrugated iron sheet was present at sites S240, and neighbouring sites S1101 and S1108. Given the difficulty in carrying heavy goods by wagon iron sheeting probably did not arrive in large quantities until after the railway (1889).

The only other evidence for Aboriginal residential structures may have been the 44 stone alignments found at the east ridge (site S662). However, the absence of similar alignments at other sites in this study supports the interpretation of these as special purpose structures, for example hunting hides, rather than residential structures. This is supported by descriptions of Aboriginal people hunting hawks from hollow stone buildings throughout Central and Western Australia in the late-nineteenth century

Area/Site	Bottles	Telegraph	Window glass	Glass tool making	Clothing	Clay pipes	Nails	Food containers	Other containers	Cooking equipment	Ceramics	Pastoral equipment	Bullets	Horse equipment	Miscellaneous metal	Lithics	Food remains	Food processing	Fireplaces	Ochre
<i>Anna Creek</i>																				
A6	y			y	y	y	y		y	y	y	y			y	y				
A9	y							y	y		y	y		y	y	y	y			
Parkers Well	y							y				y				y		y		
<i>Francis Swamp</i>																				
I2	y											y				y	y	y		
I3	y			y	y	y						y	y			y	y	y	y	y
I5	y			y	y	y		y				y				y		y	y	y
K1	y			y				y				y				y		y		
P1-P11															y	y				
<i>William Dunefield</i>																				
N1	y	y															y		y	
N3	y		y	y	y	y	y	y			y	y		y	y	y	y	y	y	y
N4	y			y	y											y	y		y	
<i>Strangways Springs</i>																				
Headstation	y	y	y	y	y	y	y	y	y	y	y	y	y		y	y	y		y	
Scour	y				y							y			y	y				
Smithy	y				y	y		y	y			y			y					y
<i>Western sites</i>																				
S240	y			y	y	y	y	y	y	y		y	y	y	y	y	y	y	y	y
S1101	y			y	y	y		y	y	y	y	y			y	y				
S1102	y			y	y	y										y				y
S1108	y			y				y							y	y			y	y
S251	y	y	y	y	y	y	y	y	y	y	y	y	y		y	y	y	y	y	y
S355	y			y	y	y	y	y			y	y			y	y	y	y	y	y
S305	y			y	y	y		y	y		y				y	y	y	y	y	y
S340	y			y	y			y				y			y	y	y	y	y	y
S344	y			y	y	y		y	y							y				y
S349	y			y												y				y
S350	y					y		y				y			y	y	y	y	y	y
S354	y			y	y										y	y				
S361	y			y				y	y							y				
<i>Main northern mound</i>																				
S512	y			y	y	y		y	y	y		y			y	y	y	y	y	y
S1201	y					y				y		y			y	y				y
<i>North of main ridge</i>																				
S561	y	y		y	y	y		y	y		y			y		y				y
<i>East extent of main ridge</i>																				
S662	y	y		y				y	y	y	y	y			y	y	y	y	y	y

Table 5-18. Summary of classes of artefacts in study area assemblages. Grey infill denotes pastoral sites.

(Mathews 1901, cited in Mountford 1940), and descriptions of stone alignments built by adolescents for amusement (Mountford 1940, p. 286). Non-residential explanations of the stone alignments confirm with their location on exposed high rocky outcrops, as there is no evidence of a preference at other sites for such exposed habitation, with the

exception of the small 'hill camp' (site S344). This interpretation does not conflict with the Aboriginal construction and/or use of the stone alignments following European settlement; as their post-contact use is demonstrated by glass knapping floors (*see* fig. 5-37 picturing features F662, F663, F664 and F665). Certainly these points offered surveillance of the European head station. Whichever, this is a large complex of stone alignments (either ancient or recent) for northern South Australia, and possibly the only reported evidence for purpose-built hawk hunting structures.

The presence of clothing in Aboriginal occupation sites is suggested by finds of buttons and buckles (table 5-18 and appendix C). This assumes that the buttons and buckles were not collected for other purposes, for example ornaments. Metal, shell, glass and porcelain buttons were all common in post-contact assemblages. The most distinctive buttons for inter-site comparisons were embossed metal buttons, as certain buttons may have come from the same (or similar) garments. For example, at site S240 five of the eight embossed buttons were 'Axe' brand name. These were found at other western sites (site S1101 and S251). The brand 'Best Ring Edge' was found throughout Strangways occupation sites: at the 'main north mound' (site S512) and at western sites (sites S251, S240 and S1101). Inter-site distribution of common brands may indicate the bulk purchase of clothing items for distribution to pastoral workers and/or Aboriginal ration recipients. The evidence for distribution of garments to Aboriginal people is supported by the absence of similar buttons in the head station assemblages. The brand names found at the campsites at Strangways Springs were not found at post-1882 assemblages (sites A6, A9 and Parkers Well), suggesting the western sites belong to an earlier occupation phase. The metal buttons are from trousers (Allen 1969, Egloff 1991), while other buttons suggest shirts and coats were present. Other clothing fasteners were buckles, probably from suspenders or belts. These were more widely distributed at Strangways Springs than buttons, being found both at the head station, along the eastern ridge, and in certain western occupation sites. They also date to earlier assemblages (for example, site N3). While buttons were common at many Strangways Springs sites they were almost absent from other post-contact assemblages, suggesting that clothing was much more ubiquitous at Strangways Springs campsites. The exception was site I5 in Francis Swamp, which contained a button, buckles and a clothing hook.

The popularity of smoking was demonstrated by the presence of clay pipes at nineteen sites in this study, as listed in appendix C. Most Aboriginal post-contact assemblages contained pipes, indicating access to European tobacco. Similar to the trends observed for clothing, most evidence for Aboriginal smoking was from Strangways Springs, the only exceptions again being sites I3 and I5 in Francis Swamp. Smoking occurred both within and outside the shepherding hut at site N3. Pipe fragments were found at most 'western sites' at Strangways Springs. For example, at site S240 thirty-four fragments were found, at site S1101 six fragments were found, and at site S305 seven fragments were found. Determining the clay pipe manufacturers provided temporal information for site N3.1 (1825 to 1870) and site S240 (1850-1860), although some manufacturing ranges were too wide to be useful; for example, a range of 1805 to 1955 for sites I2 and S201. Importantly, these dates support the interpretation of sites N3 and S240 being occupied in the earliest phase of European settlement. The distribution of tobacco tins was restricted to the 'smithy' (site S601), western sites S1101 and S251 (one each) and a fireplace at the 'main north mound' (site S512, feature F514). The relative absence of tobacco tins, compared to the distribution of pipes, suggests that most tobacco was not packaged in tins. Australian production of safety matches, with a characteristic metal box, began during the 1890s by when matchboxes were 'probably a normal part of a shearer's material culture' (Egloff 1991, p. 68). This accords with the presence of matchboxes at the later pastoral site of A6. There were few other safety matchboxes found (one at sites S240, S512 and S561) which may suggest that prior to the 1890s very few imported matchboxes entered the pastoral system.⁶⁵

The inter-site distribution of hand shear-blades indicates they were used as tools by Aboriginal people. Through use, hand shears inevitably separated into two blades after which they may have been discarded by shearers. However, the metal blades could be used as knives. Shear-blades were most common at the yards at Anna Creek woolsheds (A9) and were also present in the shepherd's hut at site N3. However they moved beyond strictly pastoral sites into Aboriginal occupation sites: in Francis Swamp (I3 and I5), at Strangways Springs' 'western sites' (S1101, S251, S340, S355 and S350)

⁶⁵ Other literature consulted as a basis to the analysis of matchboxes included: Dixon (1925), Miller (1926), Spring Rice (1982a, 1982b), Anson (1983), Bedford (1985a) and Bryant & May (n.d.).

and at the 'main north mound' (S512 and S1201). Of these, site S355 had the highest number of blades (four), which may relate to its proximity to the scour (S201), although no blades were found at the scour. Unfortunately the level of corrosion of the blades offers no opportunity for analysis of residues or use-wear patterns. However, they did tend to be located close to fireplaces, and thus may have been used during food preparation and consumption.

The inter-site distribution of metal food containers was particularly widespread. Metal food containers offer little chronological information of use to this study as the production in Australia of canned foods, mainly meats, predates the study period and the technical shift from 'dot and spot' to 'sanitary' cans occurred in the late-1890s. Consequently the cans identified throughout this study are almost exclusively the earlier 'dot and spot' type. They are present at pastoral sites (N3, A9, C1, S601), European settlements (head station, S662) and in most other occupation sites (I5, K1, S240, S1101, S1108, S251, S355, S305, S344, S361, S512 and S561). The only notable exceptions were a pastoral out-station (site I2) and the scour (S201). This, and the small amount of evidence for cans at site N3, tentatively suggests that the use of preserved foods was much less during the earliest phase of pastoralism, but increased quickly. Presumably the canned products added variety to the diet of a pastoral station, as did the range of sauces and pickles found throughout the study. Cans are a less reliable spatial indicator of activity, as they tend to be moved by wind. At certain sites they were modified. For example, at site 512 they were punctured to make colanders or sprinklers. This reminds us that the cans (and bottles) were probably reused as food and water containers, and may not necessarily indicate the Aboriginal use of tinned goods.

Table 5-18 demonstrates that the distribution of ceramics was more restricted than other classes of European artefacts (*see* discussion of ceramic corpus in appendix C). Inter-site comparison suggests that ceramic tableware was characteristic of a later phase of European settlement, as ceramics were present at post-1880s sites (A6 and A9), and the Strangways Springs head station (occupied until 1896), yet were not present at several earlier sites. As discussed in appendix C, none of the ceramic wares can be accurately dated. Another possible explanation is that the earlier sites (such as

N3, I2 and the scour - S201) were not likely to have tableware as they were primarily sites of pastoral labour.⁶⁶ The ceramic wares present at two of the 'western sites' at Strangways Springs (S251 and S355) reveal a range of wares and form: including white-bodied transfer printed earthenware plates and cups, red earthenware vessels and stoneware jars. Birmingham (1992, p. 87) suggests analysing the distribution of pattern sets, to provide a measure of whether ceramic sets, or isolated pieces, were used. This was not viable with this small corpus, although it is clear that isolated pieces and not complete sets were present at sites S251 and S355. The absence of ceramics at other large 'western sites', most distinctly at site S240, suggests that they are either earlier, or the occupants were unable to access the same goods as residents of sites S251 and S355. I think, given the large quantities of ceramic wares readily available in refuse and occupation deposits at the head station (particularly site S401), that the first explanation is more likely.

These inter-site trends create a temporal horizon before which ceramics were absent (or at least rare). And, this horizon strongly correlates with the sites described to date in this study as belonging to the earlier phase of European settlement (ca. 1860 to 1880): specifically the out-station (site N3), the scour (S201), all the sites in Francis Swamp (I2, I3, I5, K1 and P1 to P11), and at Strangways Springs many 'western sites' (sites S240, S1102, S1108, S340, S344, S349, S350, S354 and S361) and sites at the 'main north mound' (S512).

The distribution of glass bottles was used earlier in this chapter as a general guide to the size of different assemblages. That discussion states that glass bottles (especially highly fragmented bottles) from mid to late-nineteenth century contexts present few reliable temporal indicators. Throughout the site descriptions I proposed that certain glasses were considered to be older than others. Specifically that the dark-olive (black) glass bottles and thick olive bottles were more common in the earlier phase of settlement, and later phases were dominated by increasing quantities of tinted and light-olive glass bottles. Using the evidence for an early and later phase of pastoral settlement, then this proposal is only partially supported. While certain 'western sites'

⁶⁶ The entry for ceramics for site N3 refers to a ceramic ointment pot, not tableware.

at Strangways Springs without ceramics have relatively high proportions of dark-olive glass (sites S240 and S350), so did assemblages with ceramics (sites S251 and S355). However, this may demonstrate that the latter assemblages were occupied for a longer length of time, and that sites S240 and S350 were abandoned *before* any influx of ceramic wares. At later pastoral sites such as A6, A9 and C1 there were almost no darker glasses, which supports a general trend from very dark to lighter olive bottles across the study period. The darkest of the olive glass, normally from very thick hand made spirit bottles, was found at several locations: sites I5, K1, N4, at the head station and east ridge, the scour and at 'northern' sites (S561). All of these places were scenes of the earliest phases of pastoralism. Another temporal indicator was the introduction of telegraph battery glass after 1872. Only one large occupation site contained battery glass, namely site S251.

Another trend in glass bottle distribution was the absence of medicinal bottles from most post-contact Aboriginal camps except sites S251 and S355 (exceptions being one bottle each at S240, I5 and I3). Conversely, medicinal bottles were more common at the head station, and at pastoral camps, both early (in the shepherd's hut at site N3) and late (woolsheds and yards at A6 and A9). This suggests that few medicinal products were available to Aboriginal people until perhaps the later years of European settlement.

While very little evidence for post-contact diet survived in the archaeological record, certain trends were observed. At the shepherd's hut (site N3) the faunal record demonstrated that the occupants of the hut consumed mutton, lamb and kangaroo in fairly equal proportions, and flavoured their meat with sauces and chutneys. As stated above, flavourings and tinned meats added some variety to their diet. Many of the post-contact Aboriginal sites contained fireplaces with emu shell, suggesting that emu eggs were consumed. Emu shell was consistently proximate to the most recent fireplaces, indicating its post-contact provenance.

Other evidence related to post-contact Aboriginal diet is the relative absence of complete grinding stones at most campsites at Strangways Springs, suggesting the

cessation of seed grinding (at some point) during the contact period. Many assemblages contained grinding stone fragmented in ways suggestive not just of accidental breakage, but of systematic reduction. The reduction of wasted grinding stones occurred in older pre-contact assemblages, but was also accompanied by complete grinding stones. For example, at site I5 where there was a cache of complete used and unused grinding stones. The principle exceptions at Strangways Springs were site S240 and sites at the 'main' north mound' (S512), where there were well-used grindstones in post-contact assemblages. This spatial distribution of seed grinding tools may be chronological, indicating that site S240 was used earlier and seed grinding was still practiced - or contextual - indicating that the occupants at site S240 did access new foods, specifically flour, from the head station. The evidence for changes in Aboriginal diet, and the consumption of traditional 'bush foods', is explored in chapter 8. Grinding stones were also used by Aboriginal people to grind ochres, demonstrated by ochre residues on grindstones from the interior of the shepherd's hut at site N3.

Summary and discussion

Several key outcomes of the analysis of archaeological material in the study area were:

1. *There were identifiable earlier and later phases of nineteenth century pastoral practice.* The earlier phase (1862 to post-1882) was characterised by a pattern of European resource use which relied on permanent artesian waters, with out-stations located at these, and more ephemeral, water sources. As a consequence of the common need for water, the pastoral settlement resembled existing patterns of Aboriginal settlement distribution, although there existed a local spatial separation between out-stations and Aboriginal occupation sites. Structural remains demonstrate that out-stations were permanently occupied by shepherds when in use. Despite being remote, the occupants had access to as many consumer goods as at the Strangways Springs head station. The later phase (from 1882 onwards) was characterised by the increased use of artesian bores and wells. The pastoral settlement significantly changed, as more remote regions of the station were made available to the pastoralists. In this period the railway was constructed (1889), making transport cheaper. Consequently, the later phase saw new materials introduced into the archaeological record, such as fencing wire, windmills, metal troughs, boilers, construction items and machine made nails. The wire and man-made bores facilitated the construction of large fenced paddocks, removing the need for shepherds and residential settlements at out-stations.

2. *Post-contact Aboriginal settlement was defined by distinctly 'Aboriginal' elements in the archaeological record, located in highly structured activity areas.* Chief amongst the archaeological elements were evidence for living areas defined by fireplaces, and glass working. The presence of these elements consistently occurred in relation to lithic knapping floors, and often amongst large pre-contact assemblages. Spatial separation of living areas and special activity areas supported evidence from ethnoarchaeological studies (for example, O'Connell 1987), which suggest functional reasons (for instance, keeping fragmented glass out of living areas) and social explanations (division of labour according to gender) for spatial patterning. More substantial contact period occupations were demonstrated by large quantities of

archaeological material. Large occupation sites (for example, site I5, S240, S251 and S355) provided evidence of highly structured sites with a diverse range and substantial quantity of 'European' items. The most consistent evidence for detecting the location and extent of past activities were very small artefacts (micro-artefacts) as they were found in their primary depositional context.

Short-term occupations (for example, sites N4, S344 and S1108) and single activity sites (site S349) indicate that not all past occupation occurred at larger assemblages, and highlight activity differentiation. This was seen at special activity areas, as demonstrated by stages in glass working (for example feature F757, site S662).

Post-contact trends regarding assemblage size were assumed to derive from the duration of occupation (which may have been intermittent). An alternate (and complementary) explanation is differing access to European goods. This is supported by evidence for greater use of grindstones at certain early occupation sites (site S240) suggesting differing access to flour (and assuming consistent rates of adoption of this new food).

Differentiation in the timing of Aboriginal site-use was indicated by different 'European' cultural material. For example, based on assumptions regarding the introduction of ceramics and certain glass types in the study region, certain sites were occupied earlier in the contact period (for example, sites S251, S1102, S1107 and S251) while other sites were occupied in later years (sites S251 and S355). No general spatial trend explains this distribution, although later years at Strangways Springs see the largest sites (S251 and S355) located close to the head station.

Additionally, the distribution of material culture demonstrates that Aboriginal occupation, both early (1860s to 1880s) and later (1880s to 1890s), accessed a diverse range of cultural material. This diversity may result in part from the Aboriginal reuse and modification of European items, such as glass and metal containers. Other activities were the presence of clothing, smoking and the increased use of cooking vessels and metal implements in food preparation. In later years the Aboriginal use of

single items from ceramic sets (sites S251 and S355) complemented the pastoralists' increased use of ceramic wares (sites S401 and A6).

3. *There were recognisable differences and continuities between pre-contact and post-contact Aboriginal settlement.* The sense of continuity between lithic and glass technologies is an important outcome of the archaeological research. The adaptation to the new raw material suggests the introduction of a general tool (the 'base-flake tool') in combination with wide scale expedient use of glass fragments. Stages in stone tool production are similarly demonstrated in glass working, including primary reduction and form selection, transportation of raw material, knapping floors, and movement and retouch of finished tools. Other modification of post-contact artefacts, such as metal cans, demonstrates Aboriginal people's adoption of - and adaptation to -new material culture.

Whether glass tools affected existing elements of Aboriginal tool kits was difficult to measure, as lithic contents recorded throughout this study present inter-site variations which would mask any small-scale local changes in assemblage make-up. Added to this were the large quantities of pre-contact late Holocene lithic material which overwhelm post-contact assemblage trends. However, there appears to be a tendency for the increasing use of grindstones as a cores for lithic material (which may suggest decreased use of grinding in food preparation or reduced access to raw material sources). Another tentative trend is for low quantities of chert at 'western sites' at Strangways Springs, which may indicate the cessation of trade in rarer lithic raw materials. Overall, in the absence of stratified sites, changes in lithic assemblages were difficult to discern between contact and pre-contact contexts.

The results presented here support existing research from the Lake Eyre Basin region (Florek 1993, Hughes & Hiscock 1981, Hughes & Lampert 1985) which state the largest Holocene occupation sites were located at permanent water sources, and reinforces that preferred habitation was at places with water, sandy surfaces and sheltering vegetation. This held true both for large spring complexes (Strangways Springs) and very small springs (Margaret Springs, sites I2 and I5). Sustained

Aboriginal use of ephemeral waters in wetter periods was demonstrated at Mungyamarrilyna Swamp (site L2). A strong preference for habitation at the end of sandridges was demonstrated at sites N1 and I3. Unlike existing research (Florek 1993) which assumed that Aboriginal use of mound springs ended at contact, the evidence presented here demonstrates an archaeological record of post-contact Aboriginal settlement.⁶⁷ Importantly, the post-contact archaeological record included archaeological material common to pre-contact assemblages (stone tools, fireplaces, ochre and food remains), thus blurring distinctions between 'traditional' and 'post-contact' evidence.

Following European settlement two settlement trends in Aboriginal occupation were apparent. Firstly, continued use of sites assumed to derive from Holocene occupation, given the large amounts of homogeneous lithic deposits (for example, site I3, S512, S240, S305, S340 and S350). Secondly, the increased use of certain sites (sites I5, K1, S240, S512, S355 and S561) many located along the western extent of Strangways Springs or in the northern end of Francis Swamp.

Continuity in the site of settlement is consistently demonstrated by the overlay of post-contact material and extensive lithic deposits. Thus, from all possible surfaces, Aboriginal people often chose to live in the same place, even when many ideal places for occupation were not intensively occupied. Overall, the amount of post-contact material at the 'western sites' compared to other sites of pre-contact settlement indicates that Strangways Springs was a primary regional focus for Aboriginal post-contact settlement.

4. *There were demonstrable relationships between European activities and Aboriginal settlement.* I stated above that during the earlier phase of pastoral settlement there were

⁶⁷ Florek was interested in the long period of Aboriginal occupation prior to contact, and not the period afterward. Elsewhere The evidence presented throughout this thesis complicates Florek's (1993, p. 68) statement that 'inferences...made from oral records, written documents and historical archaeology' indicate 'the rapid influx of European settlers to the mound spring country in the late-1850s and 1860s forced the local Aboriginal population to abandon traditional camping sites near the springs'. This statement is true, as the springs do become the centre for pastoral economies. However, continued Aboriginal occupation of mound spring country is demonstrated in the archaeological record. Elsewhere, this is recognised by Florek in his treatment of archaeological evidence for Aboriginal post-contact settlement (Florek 1988a, 1988b).

strong similarities between the location of pastoral activities and evidence for Aboriginal settlements, most of which derived from pre-contact occupation. Additionally, certain evidence suggests Aboriginal people's presence at pastoral work sites. For example, at site N3, there was evidence for Aboriginal people inside, and immediately in front, of the shepherding hut, and at glass knapping areas 'overlooking' the out-station (site N4). At site A9, glass tools suggest an Aboriginal camp was located at the periphery of the yards. Site S355 resulted from a post-contact Aboriginal occupation immediately adjacent to the Strangways Springs scour (site S201). Despite this evidence, the archaeology of the processes of the contact period was not clear, the primary difficulty being establishing whether Aboriginal residency was contemporary with European. This evidence could equally result from interracial interaction *or* avoidance.

These four outcomes demonstrate an archaeological record characterised by what Tainter (1998), in his study of surface archaeology, terms 'weak patterning':

Strong patterning is exemplified in remains which are highly structured and redundant, that are deep and stratified, that consist of abundant formal tools, or that contain architecture...Weak patterns...are exemplified in remains that superficially show little structure or analytical redundancy; that consist only of broken, undiagnostic artefacts..., unretouched lithic implements, or tool-manufacturing debris; or that lack architecture (and) are often surficial. (Tainter 1998, p. 170)

However, as summarised here, through focussing on inter-site variability and by using 'activity areas' as a structuring element to site interpretation, these 'weak patterns' provided several key outcomes. As suggested in Tainter's quote, certain limitations to the analysis of archaeological material were clear.

1. *A limitation of this analysis was the reliance on 'European' material culture to isolate post-contact Aboriginal occupation.* This problem is common to archaeological studies using unstratified deposits. The arguments of association used in this analysis, whereby the presence of post-contact 'European' artefacts within highly structured assemblages is extrapolated to include spatially associated archaeological material, suggests that many elements of post-contact Aboriginal life were common to pre-contact sites, such as fireplaces, stone tools, lithic tool making and grinding stones.

Consequently, a site with very little (or no) 'European' items was difficult to identify in terms of post-contact occupation. Is the absence of evidence evidence of absence?

2. *The range of possible variations in post-contact Aboriginal settlement were difficult to clearly define.* For example, O'Connell's ethnoarchaeological results provide reasons for changes in site location, such as social reasons (death, dispute), weather, need to access new resources, build up of refuse and deterioration of main shelters (O'Connell 1987). However, whether the sites presented here were occupied for long period without break, or occupation was intermittent was not clear from the archaeological data.

3. *The exposure of artefacts to natural elements in archaeological surface deposits meant poor retention of plant micro-fossils and other residues.* As shown with glass artefacts, this often limits widespread interpretation of use. To some extent this is countered by evidence of stages of glass working, and evidence for tool retouch. Of unknown effect was site destruction by twentieth century tourists and collectors, invoking secondary human movement of manuports and other artefacts.

In the following chapters I present the analysis of historic sources. Following these the outcomes presented here will be tested and discussed comparatively with the historical data.

PART III
SELECT ACCOUNTS FROM HISTORIC SOURCES

Chapter 6. Contextualising historic sources

There's a legion that never was listed,
that carries no colour or crest,
but, split in a thousand detachments,
is breaking the road for the rest.
Some of us Chivvy the Slayer,
and some of us Cherish the Black,
and some of us hunt on the Oil Coast,
and some on the Wallaby track.
We preach in advance of the Army
We skirmish ahead of the Church,
With never a gun-boat to help us
When scuppered and left in the lurch.

Rudyard Kipling

(Quoted in the memoirs of Strangways Springs station manager, John Oastler)

Introduction

In 1894 the Horn Scientific Expedition travelled from Adelaide through far northern South Australia, a remote region then having been settled by European settlers for 34 years, to Central Australia. Tim Rowse refers to the expedition's anthropologist, E.C. Stirling, by stating that:

[Stirling] began his report by reflecting on the inadequate conditions for ethnological observation provided by a short visit to the region. Other white men who had not just passed through must know so much that he, Stirling, wished to know, but they had not been writers or keepers of records. How wonderful it would be, he wistfully reflected, to access the memories of 'those early pioneers and settlers who for years lived in close association with the natives at a time when their customs were still uninfluenced by general contact with the Europeans'. (Rowse 1998, p. 16, citing Stirling 1896)

Accordingly, the next two chapters are about the process and results of European settlement in northern South Australia, specifically the south-western Lake Eyre Basin local to Strangways Springs, as determined through examining the surviving written accounts from that period. For, some settlers did keep written records. Perhaps these do not constitute ethnographic writing as Stirling would have wished. Yet, I have selected historic accounts that contribute to an interpretation of the topic of my thesis:

the processes of interaction between Aboriginal people and European settlers in this region. In some cases the relatedness of the Europeans' accounts to the interpretation of cultural interaction is indirect, as I have used historic sources to examine colonial processes which did not necessarily appear to directly relate to Aboriginal people. In particular, I focus on accounts of the pastoral settlement at Strangways Springs Station. To do this, I explore an array of colonial practices, such as the spatial organisation of the pastoral industry, fluctuations in the numbers of stock and station employees, the role of rationing as a frontier strategy, the level of pastoral technology, and descriptions of material culture. These accounts, taken together, relate to the landscape, its resources, and Aboriginal people in the region who were involved with the pastoral presence, and vice versa. These processes are partially captured in the records of the station considered here. Other sources, like those of explorers, government officials, the police, and visiting anthropologists, provide additional accounts of the region. In summary, the accounts used in this study can be considered as four groups, according to their temporal and thematic relatedness. They are:

- a) correspondence and reminiscences from managers and owners of Strangways Springs station (which became known as Anna Creek station) with particular focus on the 1860s and 1870s
- b) accounts of European explorers of the western Lake Eyre Basin and Central Australia from the late-1850s until later that century
- c) records from Government agents, in particular from the Protector of Aborigines Department (1865-1919), the overland telegraph line (1870 onwards), from the police station at Strangways Springs during the 1880s, ration distribution depots, and from the construction and management of the railway from the 1880s onwards
- d) travelogues and other accounts by visitors to Strangways Springs Station and the region, in particular Baldwin Spencer (1890s) and Basedow (1920)

This chapter discusses key issues related to the critical use of historical accounts in interpretations of past cultural interaction. The direction of this discussion is influenced by archaeologists (Galloway 1991; Stahl 1993, 1994; Parker Pearson 1996), historians (Vansina 1985, 1989; Denning 1980, 1992, 1996; Greenblatt 1993; Wood 1993; Rowse 1998) and anthropologists (Sahlins 1985; Thomas, N. 1991, 1994). These approaches can be understood to inform my perspective because they all

share an interest in colonial contexts, in particular how colonial processes were realised in indigenous worlds. Following this I introduce the types of historic documents used in my research. I then explain the dual concepts of 'authenticity' and 'credibility', which are used to help establish the social and physical contexts in which the different accounts were produced.

As discussed earlier, establishing critical ways of using historic sources has been an interest not only for historical archaeologists, but archaeologists more generally, as well as historians and anthropologists. My purpose here is to introduce some ideas about using historic accounts. In this section I refer in particular to anthropologists and ethnohistorians. While I do not pretend to do 'historical anthropology' or 'ethnohistory', I do use these authors to introduce some concepts central to my use of historic sources. For the purposes of this research I adopt the definition for ethnohistory proposed by Raymond Wood: '*the use of historical documents and historic method in anthropological research*' (Wood 1993, p. 81, emphasis in original).

Stephen Greenblatt, a historian who considers early colonial encounters with people of the New World, argues for the need to identify the contexts in which surviving accounts of these colonial encounters were produced. He draws our attention to Marshall Sahlins (1985) who, in *Islands of History*, applies Fernand Braudel's 'structure of the conjuncture' to:

the historical intersection of radically divergent cultural categories. Each side in an encounter between peoples who do not understand each other tries to make sense of the other's actions, and the particular meeting of these interpretations - the way they happen to fit together or to clash in a given historical situation - has profound consequences. In the conjuncture of Europeans and New World peoples not only were respective cultural understanding vastly different, but the historical situations on each side, though superficially identical (ships arrive, objects are traded, blows are struck), were in fact equally far apart. For a historical situation is never simply that of the moment: it is an expression of long-term trajectories, material necessities, social structures, enduring, largely unconscious patterns of will and constraint, not necessarily identical with the culture's own understanding of itself or others. (Greenblatt 1993, p. x)

How then can we best define the context in which text is produced? Greenblatt (1993, pp. xvi-xvii) does not propose 'a unified or prescriptive program...(but) certain shared critical principles that bring together the very different enterprises of history, ethnography, and literary criticism' (and for our purposes, archaeology). It is worth outlining these principles before explaining the conventions adopted in this research when using historic documents.

Greenblatt's first principle concerns 'textual opacity' which he describes as 'the conviction that discourse can not be rendered transparent' (Greenblatt 1993, p. xvi). By this he means that there is no 'naked truth' waiting for the scholar behind the text, and that the 'truth' is also part of the colonial process that produces the text. This concept of inseparateness is central to many contemporary studies of colonial contexts, particularly Nicholas Thomas who demonstrates in *Colonialism's Culture* (1994) how written texts can be understood as parts of colonial processes. An example of this relationship between text and colonial context is demonstrated in my research. For example, the letters written from 1860 to 1866 by Julius Jeffreys, then the manager of a sheep station located at the tiny frontier settlement of Strangways Springs, are used extensively in this research. Jeffreys writes that he was granted by the Attorney General the right to deal 'in a summary way...against the aboriginal natives' (MLSA, PRG 21, Jeffreys, Jan. 1866).¹ He should then be considered as part of a program of installing colonial law along a remote frontier. His letters need to be read with this in mind, one example of colonial contexts which affect the running of this pastoral station.

Greenblatt's second principle is to 'recognise textual complexity', meaning that historic accounts 'are not monolithic or single minded'. He expresses the need to be 'concerned with the half-hidden stress points in the official structures, the tensions, ideological negotiations, and rifts' (Greenblatt 1993, p. xvi). This is particularly relevant to my research which makes available a range of historic sources that can be seen as establishing networks. This makes an examination of discontinuities between them possible. For example, the correspondence between the Protector of Aborigines

¹ Hereafter all communication from the 1860s by Jeffreys, Oastler, Warren and Bakewell in this chapter is from MLSA, PRG 21.

Office and Strangways Springs pastoral station (1860-1896) is examined. In this correspondence the competing understandings of why rations were distributed to Aboriginal people can be seen, with the government willing to restrict distribution to the sick and elderly, while the station distributed rations as an ancillary to Aboriginal workers. Rowse highlights the importance of rationing, describing it as 'a pervasive institution of central Australian colonialism' (1998, p. 4). Rationing, as explained by Rowse, provides an example of Greenblatt's 'textual complexity'.

Greenblatt's final principle regards the difficulties of establishing 'textual authority', namely that the authors are who they claim to be. This issue, pursued below, is not as problematic in Central Australian colonial contexts as it is for scholars of the early colonial period in the Americas, a time for which it is more difficult to establish authorship.

Wood's definition of ethnohistory cited above stressed the need for 'historic method', namely 'a systematic body of principles for gathering, critically examining, and presenting the source material of history' (Wood 1993, p. 82, citing Garraghan 1946, p. 33). This is central to Wood's argument that 'all too many [archaeologists] use historical documents naïvely' (Wood 1993, p. 101). Wood draws on authors who make analogies between archaeological methods and historic methods. For example, Dincauze (1984, pp. 7-9) supports this analogy, stating 'documents are artifacts, not authorities' and that historic method is parallel to contextual analyses in archaeology (cited in Wood 1993, p. 82). Schiffer (1976, 1987) and Galloway (1991) both compare 'text formation processes' to 'site formation processes'. These studies are referred to here to keep the archaeological intent of my thesis to the fore.

Conventions for contextualising source documents

I describe here the approach adopted to transcribe, edit and contextualise written sources. Two central tenets for contextualising historic documents are 'authenticity' and 'credibility' (Wood 1993; Kline 1998). Most of the documents in this study are 'written primary sources - those documents (manuscript or published) that were produced by eyewitnesses to an event by those who were directly involved in the

events under study' (Wood 1993, pp. 82-3). Secondary sources, such as those discussed by Galloway (1991), are those accounts written by non eye-witnesses, and are rarely used in this research. Wood (1993, p. 84) and Gottschalk (1958, p. 28) propose a four stage historical method for establishing the context of historical sources, namely:

- a) formulation of a problem for which relevant documents are sought,
- b) determination of which documents or sources are authentic (external criticism),
- c) determination of which details in a source are credible (internal criticism), and
- d) organising the reliable information into a narrative in which the problem is resolved or refined.

The formulation of the problem was stated in chapter 1. Credibility and authenticity are discussed below, and are central concepts in this chapter. The last point is the aim of chapters 7 and 8.

Selecting and presenting source documents

This section is designed to make the reader aware of my strategy for selecting documentary sources. My recording method aimed to locate any historic accounts and images that referred to Strangways Springs and the western Lake Eyre Basin, especially prior to 1920. More generally I aimed to locate historical documents relating to Aboriginal people in northern South Australia, in particular official Commonwealth and State records, and personal accounts.² (See appendix D for transcriptions of the unpublished written sources.)

Kline's (1998, p. 96) policy is to select the original manuscript of written sources (or a photocopy of them), and if this is impossible, then contemporary copies of the original rather than later copies. In this research, many of the personal records (letters and

² Archival institutions referred to include the Mortlock Library of South Australiana, State Records of South Australia, Department of Aboriginal Affairs, State Heritage Branch (South Australian Department of Environment and Natural Resources), Australian Archives in South Australia, Telstra archives, Kádmán Holding archives, South Australian Museum, State Library of South Australia, LaTrobe Library (Melbourne), National Library of Australia, Australian Heritage Commission library, Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) library, National Trust libraries (Alice Springs), Conservation Commission of Northern Territory library (Darwin) and the Strehlow Institute (Alice Springs).

journals) and government records used are original documents, or carbon copies made at the time (as with the correspondence from the Protector of Aborigines Office). The most extensively used collection of personal correspondence are the letters held in the 'Warren Papers' at the Mortlock Library of South Australia, which includes letters from several station managers and employees, many of which have been transcribed here for the first time and are consequently included as appendices. This is also true of other documents, such as the journal kept by Howitt in his visit to the Lake Eyre Basin, which is also unpublished.

The transcription of handwritten source texts is an important step: 'because it silently incorporates dozens of editorial judgements and decisions' (Kline 1998, p. 104). The editing conducted here has been kept to a minimum so as to not unduly jeopardise meaning. The most crucial research decision was to focus on those texts, and parts of texts, which are particularly informative to the central themes of this thesis. Consequently my strategy was to give priority to descriptions of Aboriginal life, station employees, descriptions of pastoral activities and settlements, individuals, the environment, landscape, and material culture, over other observations.

My methodology has led to the transcription of draft documents which were probably never meant to be made public. The method adopted in this research was to dictate any text onto a dictaphone. The tapes were then later transcribed. (See appendix D for transcriptions of unpublished sources.) The notation system employed derives from Mulvaney, Morphy and Petch (1997) and Mulvaney and Green (1992). To maintain the subtleties of the text, errors in the primary source, such as incorrect spelling and punctuation are included. This follows the conventions developed by Kline (1998). Many of the texts were difficult to read, or partially destroyed. Illegible words are indicated by a question mark within square brackets. An uncertain word is terminated by a question mark in square brackets. Guessed words or editorial explanation are also included in square brackets. Any break in the transcription of the text is indicated by three full stops in square brackets. I have elected to maintain the original characteristics of the text, including irregular capitalisation and spelling. For many accounts I have added punctuation to make the texts more readable. This largely

involved adding full stops to sentences from personal letters. Additional background information relevant to a reading of the account is included in footnotes.

Published documentary sources are also used, in particular the accounts of exploration by McDouall Stuart, Warburton and Babbage, the ethnographic accounts of Spencer and Gillen, and reports to the South Australian Government. In these cases the version which is most similar to the original edition has been used.

Indigenous oral histories are treated similarly to text documents, as has been practiced by other researchers (Vansina 1985, 1989; Parker Pearson 1996; Wood 1993, p. 82). There are very few oral histories recorded for this region, the majority collated by Luise Hercus (1971, 1977, 1980, 1981, 1982a, 1982b, 1984, 1987, 1990; *see also* Hercus & Sutton 1986; Jones & Sutton 1986) and by Bruce Shaw (1995). As stated above, the vast majority of the historic sources used in this research are non-indigenous.

I will now consider source-side criticism as a means to critically evaluate 'the formation processes...of ethnographic or historical accounts' (Stahl 1993, p. 247). For, as Stahl states, '[d]ocuments must be assessed from two perspectives: external criticism assesses the authenticity of a document; and internal criticism evaluates the credibility of individual statements within a document' (Stahl 1993, p. 247).

Authenticity

Determining the authenticity of a document requires asking: is this document what it claims to be? The process of establishing this is termed 'external criticism' (Wood 1993, p. 85). It aims to establish the most accurate version of a text by considering the history of the document. As stated above, whenever possible, the original versions of documents are used. In instances where a historical account differs significantly from another account, then part of the attempt to explain this requires questioning the authenticity of both documents. For example, the original journals kept by the police stationed at Strangways Springs during the late-1880s differed from other descriptions of that settlement as they do not mention Aboriginal people. Other documents, such as

receipts for medical services presented to the Protector of Aborigines, and personal letters, suggest an Aboriginal camp at the station. The authenticity of the police journals was established by corroborating evidence for key elements of the journal narrative from other sources. In seeking an explanation for why the journals did not mention Aboriginal people I suggest that there was an official policy to not mention issues related to the Aboriginal population in the daily police journal. Perhaps any events related to Aboriginal people went in a separate journal which was not found.

Some studies of colonial contexts questions the authenticity of early European accounts of exploration, as fraudulent narratives were common (for example Galloway 1991). Even in mid-nineteenth century northern South Australia, where official accounts were scrutinised by colonial administrators, a consideration of authenticity remains important. In the case of the private correspondence that is relied upon heavily in this research it is essential to cross-examine the sources with authenticity in mind. The example cited above also suggests that even published and official historic accounts are not always totally accurate.

Credibility

Determining the credibility of a document is a crucial stage which requires establishing much of the context in which it was produced. This 'internal criticism' is concerned 'with the individual statements within a document, not with the entire source' (Wood 1993, p. 88). Establishing credibility requires determining whether the account is that of an eyewitness, or is based on an informant(s), the assumption being that an eyewitness account is more credible. However, this assumption does of course depend on the ability of the observer to accurately report what they saw. As stated above 'long-term trajectories, material necessities, social structures, enduring, largely unconscious patterns of will and constraint, not necessarily identical with the culture's own understanding of itself or others' (Greenblatt 1993, p. x) must be considered as influencing accounts. Wood describes these influences as 'cultural biases and ethnocentrism' and 'the prevailing ideology of the period' (Wood 1993, pp. 88-9).

To make the determination of credibility (and authenticity) more transparent requires discussing the social and physical context in which the account was made (provided in chapter 2). There are several key principles which comprise the investigation of a document (Wood 1993, p. 89), namely the:

- a) temporal context,
- b) intended audience, and
- c) competency of the witness.

The first principle considers when the document was produced in relation to a reported event(s) (for example, immediately afterwards compared to many years later), and any other temporal issues which affect the way in which the document is interpreted. For example, an important early account of the western Lake Eyre Basin is provided by Howitt (1859), who would later become famous for his accurate observations of Aboriginal life and his role in the beginnings of Australian anthropological research. There is, however, a danger in reading this document with this in mind, as it is made when he is 29 years old, well before his work on Aboriginal society. The journal he produced maintains a strict focus on the pastoral potential of the region, and makes only limited observations on Aboriginal settlement at that time. This example also concerns the third principle, namely being aware of the competency of the witness.

The second principle requires establishing the type of document and for who it was intended. Kline (1998, pp. 122-32) defines seven types of documentary record (all of which are found in this research), namely correspondence, business and financial records, professional and technical reports, government records, an author's work, journals and diaries, and records of oral communications. In this study for example, there are differences between documents produced by one individual. John Oastler's weekly reports as the Strangways Springs station manager, written during the 1860s and 1870s, can be compared with his memoirs presented as a lecture to fellow magistrates in Adelaide thirty years later (Oastler 1908). The same events that Oastler relates in both accounts take on different meanings. This is particularly evident when he describes the Aboriginal people at Strangways Springs, who become (in Oastler's later retrospective) more akin to 'noble savages'.

The third principle is the most extensive, as it requires considering the physical and social contexts in which the document was produced. Determining the physical context of production requires asking questions such as: Was the witness proven competent at observing other events? Were they familiar with the events being described? Was the author incapacitated in any way at the time of observation, for example, by heat or cold, or through exhaustion? Did the author have a known economic or emotional involvement in the events being described? Determining the social context of production is the next stage of contextualisation and requires an 'empathy for past values, beliefs, and behaviour' (Wood 1993, p. 92), or, as discussed above, understanding the 'structures of conjuncture', the historical forces and cultural backgrounds involved. This is of course an infinitely complicated task, and an ongoing process, for an understanding of the social milieu in which a document is produced is changed by studies such as this. The aim is, however, to attempt to situate the document within what is known of the social context, and to avoid problems deriving from a lack of contextual knowledge. For example, a potential hazard of studying a recent historical period, such as mid-nineteenth century Australia, is that it is sometimes difficult to recognise that past as a very different world than from the present. This is a potential problem stressed by Deetz who, in discussing studies of the American colonial period, states '(w)e mistakenly think of Americans in the seventeenth century as ourselves...(as) people with whom we would feel an instant empathy...Recognising this fundamental difference permits us to consider the people of that time in more their own terms, rather in those categories we impose upon them' (Deetz 1977, p. 156, cited in Wood 1993).

Finally, questions of motivation are important: why was the author there? What did they hope to gain? Was the author able to (or likely to) tell the truth? These types of questions form the basis for the discussion of the documentary sources. The most important concept derived from this discussion, is that historic text is produced in a social and historic context (*see also* Denning 1992, 1996). To critically use historic sources we must attempt to define the context in which they were made. The historic accounts used in my research were produced in colonial contexts almost exclusively by literate European explorers and settlers, government employees and ethnographers. These contexts are described in greater detail in the next chapter.

Chapter 7. Analysis of source documents

I cannot think we quite deserve being called, as we were by Sir K.C., 'a lot of irresponsible fellows', appointed at the whim of a Government, and although not qualified to finer silk in Supreme Courts, still - away in the far interior, have done our best to maintain and uphold the law, albeit clad only in the bushman garb, and I trust you will not think us pioneer way-back settlers, justices, and managers, egotistical if we call ourselves conquerors - yes, bloodless conquerors, of a vast domain.

Strangways Springs station manager, John Oastler (1908)

Introduction

This chapter compiles historic accounts from the western Lake Eyre Basin and critically examines colonial events and processes that, in part, structure cultural interaction in the study area during the first 50 years of contact. Much of the discussion in this chapter should be read as 'open-ended', that is, intended 'to make ... colonial meanings problematic, rather than take them for granted' (Rowse 1998, p. 4). I argue that cross-cultural interaction (as understood by the pastoralists) was structured by rationing practices, and the seasonality of pastoral and indigenous work processes.

To do this I make use of the written sources produced by settlers in the region known in the nineteenth century as the 'Far North', a colonial period remembered in the above quote by Oastler, as 'conquering a vast domain'. Rowse, as an historian examining similar types of evidence for rationing practices in Central Australia, described this type of evidence succinctly:

[It] follows that this [research] should not be mistaken for 'Aboriginal history': it is a critical history of the culture of the colonisers, using non-Indigenous sources, mostly written but some oral, to comment not only on what the colonists did but also on what they thought they were doing. (Rowse 1998, p. 4)

In this discussion I make particular reference to Rowse, for the reason that his research (1987, 1998) focuses on the role of rationing as a master strategy in colonial

contexts, including pastoral domains in Central Australia. The discussion here supports many aspects of that research.

Using the settlers' written accounts, the discussion focuses on the evidence for Aboriginal people, and their lives in relation to Strangways Springs station. The order of exposition is firstly 'rationing regimes', followed by 'pastoral labour processes', in particular the various ways that Aboriginal people contributed to the pastoral industry. Rationing was conducted both by the pastoralists and on behalf of the government, and was a practice which institutionalised the pastoral domain in this study. To demonstrate this I present the evidence for transformation in Aboriginal people's subsistence and settlement, which were directly affected by the introduction of new foods sources, environmental change and competition for resources. Also discussed are evidence for aspects of Aboriginal social and ceremonial life, and communication between local Aboriginal residential groups and Aboriginal people 'outside' the pastoral domain. I argue that the pastoral domain and rationing regimes were initially structured both spatially and socially by seasonality; that is, in terms of Aboriginal people's patterns of subsistence and social life, and by the seasonal demands of the pastoral process. This discussion seeks to answer the question: How do pastoral labour processes, rationing regimes, patterns of indigenous subsistence and social life, and seasonality structure the early period of interaction between pastoralists and Aboriginal people in the study area? To answer this requires considering under what circumstances these different elements accommodate each other. Accordingly, aspects of dispossession and evidence for conflict are also explored.

As an introduction, it is worth stressing that even though these excerpts provide the basis for an analysis of Aboriginal life they should not be considered as comprehensive descriptions of Aboriginal people. They only provide fragmentary insights, and presumably fail to mention most aspects of settler-Aboriginal interaction. I will provide an example. In January 1866, the three-year drought in the Far North ended with a huge flood. Oastler recollected that during the flood he was stranded for several days on an island with an Aboriginal family (Oastler 1908). The family saved him from starvation by chewing acacia seeds into a paste and feeding it to him (as he apparently had poor teeth). Jeffreys was the station manager at that time. He wrote to

Warren in February 1866 describing the flood, stating: 'Oastler nearly died of starvation. He was on an island for four days. I could not get to him' (Jeffreys, 1 Feb. 1866). The contribution of Aboriginal people to Oastler's survival is not mentioned in Jeffreys' letter. This reminds us that there were many incidents which involved Aboriginal people which were not included in written accounts. In addition, many sources have not survived. For example, John Hogarth (station manager in the 1880s) was a primary informant to Alfred Howitt's important work *Native Tribes of South-East Australia*. Hogarth collected ethnographic data detailing the *Yendakarangu*, a matrilineal subgroup of Arabana people residing on Anna Creek Station (Howitt 1996, p. 187). Yet, nothing survives of his correspondence with Howitt, nor indeed any of his correspondence relating to Aboriginal people.

Even though I stress the limitations of the written accounts, the sources presented in this research represent a valuable set of data to analyse settler-Aboriginal interaction in the western Lake Eyre Basin. Many of the events described in the accounts are cross-referenced, which supports the credibility and accuracy of the sources. As much of the material dates from the 1860s, my analysis focuses on the inception of pastoral industry in the study area.

Rationing regimes

The practice of rationing goods to Aboriginal people is an essential component to understanding indigenous-settler interaction, as demonstrated by Rowse (1988), who researched rationing regimes in colonial Central Australia. Rowse describes rationing as 'a pervasive institution of Central Australian colonialism [which from the 1890s onwards began] to replace violence as a mode of government. Pastoralists and missionaries were learning the value of rationing as a way of rendering cross-cultural relationships peaceful and predictable' (Rowse 1998, p. 7; 1987). There are descriptions in the letters of the pastoralists of rationing occurring at Strangways Springs station from its inception. Thus the evidence from Strangways Springs predates rationing that occurred 30 years later in Central Australia. This section emphasises the location of the rationing, how it existed in pastoral labour processes, and related to indigenous patterns of work and subsistence. Rowse defines rationing

as 'the non-Aboriginal practice - whether based on custom or on policy - of providing food, clothing and other goods (such as blankets and tobacco) to Indigenous people.' He demonstrates that the 'colonists rationed for a variety of reasons, with a variety of expectations about the mentality and behaviour of recipients' (Rowse 1998, pp. 3, 4). Rowse uses Foucauldian concepts to demonstrate 'that certain techniques of behaviour management are transferable from one institution to another', which Rowse describes as 'the mobility of technique' (Rowse 1998, p. 4). By contrasting missions, pastoral leases and welfare settlements Rowse showed that the social significance of rationing varied according to its immediate institutional environment. This is important as the rationing as conducted at Strangways Springs Station can not be separated from concepts of payment for work. Consequently this section begins by considering government rationing regimes, then pastoral rationing regimes. As demonstrated in an analysis of the written accounts from Strangways Springs Station. Rowse observes that this transfer of goods did not require 'congruity of understanding between donors and receivers' (Rowse 1998, p. 5), which is important to keep in mind when describing rationing, which tends to sound simple when described by the settlers.

Government rationing regimes at Strangways Springs

There are two distinct descriptions of rations, those kept at the station in payment for work, and Government rations, often called the 'Aborigine stores'. The words 'store' and 'ration' are interchangeable in the pastoralist's letters. The colonial administration had begun rationing by the 1840s and established the Far North district, which was run by the Chief Protector of Aborigines. Oastler was aware that the government could supply rations, as indicated in April 1867, when he wrote to Warren:

Could you not get the Government to send some stores up here for the natives? I see they do it at Mount Deception and it is more necessary up here now all the other stations are deserted and consequently all their Blacks are flocking up to the Strangways and I can not employ more than is necessary for the lambing. (Oastler, 8 Apr. 1867)

This request was granted, the Government paying for rations and cartage costs. The orders for distribution of rations were to restrict the items to the old, infirm and sick.

The station manager was to submit forms stating who had been granted rations. In November 1868 Oastler was reminded by the Aborigines Office:

Sir...I am desired to remind you of Clause One of General Instructions...It is earnestly requested that in future you will be more particular in the distribution of rations: and not encourage idleness, by giving rations to able bodied natives who are able to provide their own food. (SRSA, GRG 52/7/3, p. 697. 26 Nov. 1868)

The rations included flour, sugar, tea, tobacco and blankets. By the 1880s the rations included serge for clothing, and shirts. When the pastoral station moved their head station to Anna Creek, the government rations remained at Strangways Springs, although there was pressure for this to change, so that by 1886 government stores were sent to both depots (GRG 52/7/6-78/86, 7 Apr. 1886). At that time the Aboriginal people receiving rations at Strangways Springs were described as destitute, and may have been those older people who did not wish to leave the station (GRG 52/7/6, p. 211, 91/86, 5 May 1886). During the 1880s the rationed camp was near a camp for railway workers (site x), which was a cause of concern, as expressed in 1886 to Hewish (Strangways Telegraph Station) by the Protector's Office:

Sir, I should be glad ... that your influence over the natives will succeed in keeping them away from the camps of the railway navvies, contact with which is sure to be very injurious to them. (GRG 52/7/6, p. 232, 126/86, 7 June 1886)

Ten years later, the Aborigines depot followed the indigenous population, as stated in a newspaper article in 1897:

One depot has been closed during the year, viz: Strangways Springs, and the balance of stores removed to Anna Creek where there are between sixty and seventy natives, who are well looked after by Mr. Hogarth . Most of the young men are employed on the run, some stock-riding, others rabbiting, etc. Mr. Hogarth states that they live a nice quite life there, there being no intoxicating drinks available.' (GRG 52/1/1867/123)

The remaining stores and people were relocated:

I interviewed Mr. Hogarth who is quite willing to cart the rations...to the Anna Creek Depot free of costs, and look well after the old and infirm natives, who where quite delighted at the idea of removing to Anna Creek. (GRG 52/7/5, 5, 23 Apr. 1896)

By 1902 the Office reported there were 20 Aborigine Depots in the Far North, which distributed 62 tonnes of flour, as well as tea, sugar, tobacco and medicine in that year. Hogarth and Warren 'were noted for the special interest shown [in the] condition and treatment' of Aboriginal people at Anna Creek (GRG 52/7/6, p. 720, 137/1902, 3 Nov. 1902). By the turn of the century the office was still eager to reduce costs, and stressed that Aboriginal people find work as rabbit and dingo hunters, and supplement the rations with bush food (GRG 52/72 - 790, 78/03, 28 Nov. 1903).

Pastoral rationing regimes at Strangways Springs

The most extensive rationing at Strangways Springs was payment for pastoral labour. While both white and Aboriginal workers were provided rationed food, Aboriginal workers were paid in food and products. We have very little knowledge about what these were. There was a common concern expressed by station managers that rations were severely depleted after the lambing and after wool-washing, as they were distributed to the Aboriginal workers. Another source of payment was in meat, as provided through the rations flock, called 'culls'. In January 1868, for example, there were 750 'culls for natives to be shepherded by Blackfellows'. In December 1967 Oastler wrote to Warren requesting 1000 wethers for ration sheep, to be used during the lambing and shearing. The ewes used for lambing were sometimes the poorest quality. In 1868 Oastler had 'sixty ration ewes [and] old ram stags [and] three Bulls which will do for the Blacks at lambing time' (Oastler, 18 Mar. 1868).

An important feature of Australian frontiers was a shortage of labour. Rowse argues that the regime of rationing aimed to overcome this problem (Rowse 1998, p. 17). Certainly the multiple regimes of permanent and seasonal rationing, coupled with government rationing for the elderly, young and infirm, suggests significant changes to Aboriginal social life and subsistence. It also facilitated the support of a semi-permanent Aboriginal work-force, and their families. Rowse describes how rationing was a supplement to bush food (Rowse 1998, p. 36). A commonly expressed result of rationing was that the practice undermined traditional hunting and gathering lifestyles. A diet solely of flour, sugar and tea, was certainly not nutritious. The Aborigines Office during the 1870s and 1880s suggested that Aboriginal people maintain hunting

and procurement of bush foods, rather than depend on rations. From that office however, no such concerns were made to Strangways Springs, suggesting that this may already have been the case, and that access to traditional hunting was to some extent possible, or else dietary needs were largely met through ration flocks. Whatever the diet, the evidence from these written accounts suggests that rationing, both government and station, provided the basis for access to an Aboriginal work-force.

This analysis of the regime of rationing at pastoral stations in the western Lake Eyre Basin is important as it focuses on the inception of a practice which 'by the Second World War, had evolved on missions, pastoral properties and government ration depots' (Rowse 1998, p. 3) and was an essential component within assimilation practices in Central Australia. As sites for the earliest pastoral activities in Central Australia, from 1858 onwards, these places see the inception of government ration depots from 1867 onwards. Following Rowse, this evidence can be seen as focussing on the earliest (pre-modern) period of rationing, from pastoral settlements, to the stage of rationing as 'rendering cross-cultural relationships peaceful and predictable' (Rowse 1998, p. 7). It also captures the earliest period where rationing is 'learnt' by the pastoralists, suggesting that the practice was familiar to the pastoralists, as predicted by Rowse's notion of the 'mobility of technique'. In fact, the estimated ratio of Aboriginal workers to white increases dramatically after 1867 when Oastler replaces Jeffreys, and introduces government supplied rations. It seems that Oastler used these rations, and the station rations, to reduce costs from wages and consequently increase their reliance on a both permanent and seasonal Aboriginal workers. Rowse describes the rationing relationship as 'an historic achievement' heralding the end of debate and experimentation along Australian pastoral frontiers, and 'reduced frontier danger' (Rowse 1998, p. 17). The evidence provided here supports Rowse, suggesting that rationing assisted in creating a stable set of interactions between certain Aboriginal people and the pastoral order.

References to Aboriginal people: different terms and their semantic ranges

This section attempts to quantify the letters written by settlers, and to explore the semantic range of terms which they used to refer to Aboriginal people. The analysis of letters is intended to establish the identity of Aboriginal people working for the pastoralists, and to examine where they worked and what they did. In addition, the letters contribute to an interpretation of how the station worked overall. Where necessary I provide supporting information; for example I describe the running of sheep station as this is an integral element of pastoral labour processes. In this section I discuss different types of work conducted by Aboriginal people.

The number of direct references to Aboriginal people in the letters from managers Jeffrey's and Oastler during 1863 to 1868 includes many references to individuals by name (there are nine Aboriginal individuals discussed here). I focus on the named individuals in: 'Individual Aboriginal workers'. Where references to Aboriginal persons in the written sources were not name specific, a series of more general terms were employed. These include the 'Blacks' (16 references), 'Blackfellows' (4), 'Wild Blacks' (3), 'natives' (2), 'shepherdesses' (2), 'Aborigines' (1), 'aboriginal natives' (1), 'tame-boys' (1), 'Blackboys' (1), and 'lubras' (1). It is worthwhile to explore the semantic range of these terms, particularly those used often. For example, the term 'Blacks' has several different possible connotations, depending on context.

The semantic ranges of settler terminology for Aboriginal people

Station managers referred to Aboriginal people using different terms. An exploration of the inferred meanings of these terms provides an understanding of how different Aboriginal people were perceived by the station managers. Different connotations of these terms are demonstrated by an consideration of the written sources.

The term 'Blacks' can be understood to refer to either of two groups: Aboriginal people known to the station managers, and those unknown to them. References are provided below to demonstrate this distinction. Given that the letters of station

managers are primarily economic accounts, it follows Aboriginal people who worked for the pastoralists were those most commonly referred to. The following quotes from letters provide examples of the settlers' use of the term 'Blacks'.

- Jeffreys stated: '[he would] lamb with the Blacks' and two other white men (Jeffreys, 1 Feb. 1866).
- Oastler stated: '[he would with] the help of the Blacks...lamb down the first lot of ewes' (Oastler, 7 Mar. 1867) and that 'three white men to each flock will with the help of the Blacks be enough to ensure a good lambing' (Oastler, 25 Mar. 1867).
- Oastler stated: 'if it were not for the Blacks we should want every spare hand for the lambing' (Oastler, 19 Jan. 1868).
- Oastler stated: '[the] Black lamb minders have come back [to Strangways Springs] as they promised. And I will do my utmost with their help to get a first rate lambing' (Oastler, 4 Mar. 1868).
- Oastler stated: '[the] stock of flour, tea and sugar will not spin out...on account of the large number of Blacks [he] had to employ and consequently feed during the lambing season. [He] had to do so or lose all the lambs.' (Oastler, 23 June 1868)

All of the references above relate to lambing and shepherding, types of work discussed later. References to Aboriginal workers as wool-washers were also common, as indicated by the following quotes:

- Jeffreys stated: '[he had] five men...at the Strangways...washing wool with the assistance of the Blacks' (Jeffreys, 5 Mar. 1866).
- Jeffreys stated: '[he could] not keep the Blacks at the tubs [for washing wool at Strangways Springs] - they can not stand the cold [and] I was depending on them for my chief stay'. (Jeffreys, 27 Apr. 1866)
- Jeffreys stated '[that] Wild Blacks [came into the wool-washing at Strangways Springs and] there was a fight amongst the Blacks [and] all our useful washing Blacks have gone to see the operation [which] in the meantime...will cause us delay [as] our best Blacks have left us [and] there are some almost useless lubras left'. (Jeffreys, 27 Apr. 1866)

There were other Aboriginal people described who were not necessarily assisting with any pastoral work, who were familiar to the pastoralists, and not considered

threatening. There is evidence in the letters that these people occasionally worked for the pastoralists. The presence of Aboriginal people camped at Strangways Springs was not unusual, as indicated in a letter in which Jeffreys reported to Warren that: 'the missing jam was found buried under the fires in the black camps [at Strangways Springs]' (Jeffreys, 18 Mar. 1866). Aboriginal camps at Strangways would presumably have been made up of labourers (as described in the above excerpts), as well as their kin. Most Aboriginal people remained seminomadic in this period. On one occasion, Jeffreys wrote that: 'all the Blacks have left us [at Strangways Springs] for some time' (Jeffreys, 1 Oct. 1865). In the drought of 1867 Oastler stated: 'all the other stations are deserted and consequently all their Blacks are flocking to the Strangways' (Oastler, 8 Apr. 1867). This describes relationships that existed between specific pastoral stations and local Aboriginal people, which broke down during drought.

On occasions there is a differentiation in the pastoralists' letters between known and unknown Aboriginal people, using very similar descriptive terminology for Aboriginal people, in particular the terms 'Black' and 'Blackfellow'. For example, in one letter Oastler describes the Aboriginal workers at the station as 'the Blackfellows' and states in the same letter that 'there were a few strange Blacks in at the station at the time' (Oastler, 9 July 1867). On another occasion Oastler wrote to Warren that 'we have seen a great number of strange blacks about here [Strangways Springs] at times...in their paint and filth [and] they have not molested us as yet' (Oastler, 17 July 1866). The term 'strange' is used by Oastler to indicate foreign and unknown Aboriginal people. (The evidence for Aboriginal visitors to Strangways Springs station is discussed later.)

There is a semantic flexibility with the use of the term 'Blacks', which describes groups 'outside' the station employees, and also those known to the pastoralists. This is expressed when in 1866 Warren asks Jeffreys 'if the Blacks are troublesome'. Jeffreys replies: 'the Blacks [that] come to me do not come [from] the Douglas [River] and they are easily kept down. The Strangways Springs Blacks are the most harmless of any north of Port Augusta' (Jeffreys, 29 Apr. 1866). In other letters the term 'Blacks' describes Aboriginal people who the pastoralist's perceive as foreign

and threatening. The term 'Blackfellows' is used exclusively by Oastler from his first letter in June 1866, and is similar in meaning to his use of the term 'Blackboy', and to how Jeffreys and Oastler sometimes use the term 'Blacks'. The following excerpts demonstrate the semantic range of the term 'Blackfellow'. All are from Oastler's letters.

- Oastler wrote: '[that he got the Aboriginal Jacky to build] two good Blackfellow's ...Wurleys' (Oastler, 30 June 1866).
- Oastler wrote: '[he would] get the lambing yards ready with the help of the Blackfellows' (Oastler, 23 Feb. 1867).
- Oastler stated: 'the Blackfellows should happen to set fire to [the long grass at William Springs]' (Oastler, 7 Mar. 1867).
- Oastler wrote: '[that the use of explosives at Strangways Springs] seemed to astonish the Blackfellows quite a bit [and in response to a threat from Oastler to use the explosive on the Aboriginal wurleys] they told me...that they were good Blackfellows and they would not give me any occasion to blow them up' (Oastler, 9 July 1867).
- Oastler stated: '[that at William Creek he met] some Blackfellows who told me all the water in the Anna and Warriner Creeks had tumbled down' (Oastler, 19 Jan. 1868).

These excerpts from the letters demonstrate that 'Black' and 'Blackfellow' are interchangeable terms. Additionally, Oastler's use of the term 'Blackfellow' (and in one case 'Blackboy'), demonstrate that these terms were used to refer to Aboriginal workers. The following excerpts also reveal that each white worker often was accompanied by an Aboriginal worker. For example:

- Oastler stated: 'that Davis came up here [Strangways Springs] yesterday [and] took two horses and Jones, the best Blackfellow' (Oastler, 30 June 1866).
- Oastler wrote: '[that] Thomas has only washed ten out of thirty bales on account of the loss of his Blackfellow' (Oastler, 30 June 1866).
- Oastler wrote: '[he] came into the station at once and brought a Blackfellow with' him (Oastler, 30 June 1866).

- Oastler stated: '[he had] no Blackfellows except Walle-Boy and Dugald McSquark [as] all the rest had gone away a few days before [as] they will do at times [although] they stick to this better than at most stations' (Oastler, 19 Jan. 1868).
- Oastler wrote: '[he had sent a message from William Creek to North Creek via] an express Blackfellow' (Oastler, 19 Jan. 1868).
- Oastler wrote: '[that the ration sheep] for natives [are] to be shepherded by Blackfellows' (Oastler, 19 Jan. 1868).
- Oastler stated: '[that] Edgar's Blackboy [was] assisting with the Bullock team and the shepherd Blackboys - Walle-Boy, Dugald and Jacky' (Oastler, 23 Feb. 1867 & 10 Jan. 1867).

The term 'Wild Blacks' is used in several contexts in the pastoralists letters. These suggest that during the 1860s there were Aboriginal people in the region who only rarely met the pastoralists. In one letter 'Wild Black' was used by Jeffreys to describe an Aboriginal man who came into Francis Springs and guided Jeffreys to water (Jeffreys, 27 May 1866). In another instance, as quoted earlier, the term referred to Aboriginal people coming into the Strangways and disrupting the work of wool-washing to conduct a ceremony involving the Aboriginal boy Kalli Kalli (Jeffreys, 6 July 1865). Early in 1866 Jeffreys wrote to Warren that: 'the Emu is dead. I think it was stolen by some wild blacks' (Jeffreys, 1866). The term 'wild' then, in these letters, refers to Aboriginal people that the Europeans viewed as threatening, and also to Aboriginal people essentially not engaged with the pastoral system. This distinction is explored in chapter 8. Other less common terms for Aboriginal people included 'Aborigines' or 'natives'. These were used when the pastoralists wrote to colonial officials, for example, the Protector of Aborigines, or the Crown Solicitor's office.

The analysis of written sources begins to identify the scope of Aboriginal labour, and some of its characteristics. The pastoral labour process was an integral component of Aboriginal-settler interaction from the earliest years of the pastoral venture at Strangways Springs in the 1860s. The theme of labour, developed in the next section, is an important means of understanding Aboriginal involvement in the pastoral system. I argue that an immediate result for the pastoralists of Aboriginal labour is the

reduction of costs. The indigenous work-force is rarely clearly articulated in the letters of the pastoralists, because most Aboriginal people were not paid wages, and thus did not enter pastoral accountancy. Another benefit for the pastoralists is that there exists a colonial relationship which is (eventually) mutually determined and essentially stable.

Aboriginal workers

Studies of Aboriginal workers in the pastoral industry in twentieth century contexts (McGrath 1987, Markus 1990, May 1994, Rowse 1998, Watson 1998) demonstrate that establishing the numbers of Aboriginal workers is difficult, as historic sources rarely provide such exact information. In this section I analyse the historic written accounts from Strangways Springs station to demonstrate that the ratio of Aboriginal to white workers depends on how well the nature of Aboriginal work is understood, and that the number of workers at any given time depends on the seasonal character of pastoral work. The different types of labour work conducted by Aboriginal workers are treated separately.

The total number of workers referred to by name from 1863 to 1868 is 62. I prefer the term 'worker' because 'employee' tends to imply services rendered for cash payment. As described earlier, only nine of these workers were indigenous. It is possible to estimate potential ratios for Aboriginal to white workers through an analysis of the letters (fig. 7-1). Altogether 62 workers are named in these letters, the average number of named white workers at one time was nine, and the number of named Aboriginal workers was two. These numbers weighted in favour of European workers as most of the Aboriginal workers were not named in the letters. So, to this small number of named Aboriginal workers should be added the other Aboriginal workers referred to with generic terms, such as 'Blackboy'. A conservative ratio of 1:1 can be derived from letters which refer to each white worker as 'having' an Aboriginal worker. Furthermore, the letters describe that often the indigenous work-force was at least four times greater than that of the European, specifically when a large work-force was required, such as during lambing and wool-washing (as discussed below). This ratio

of 1:4 is a significant increase from that derived from using only named individuals, as illustrated in figure 7-1.

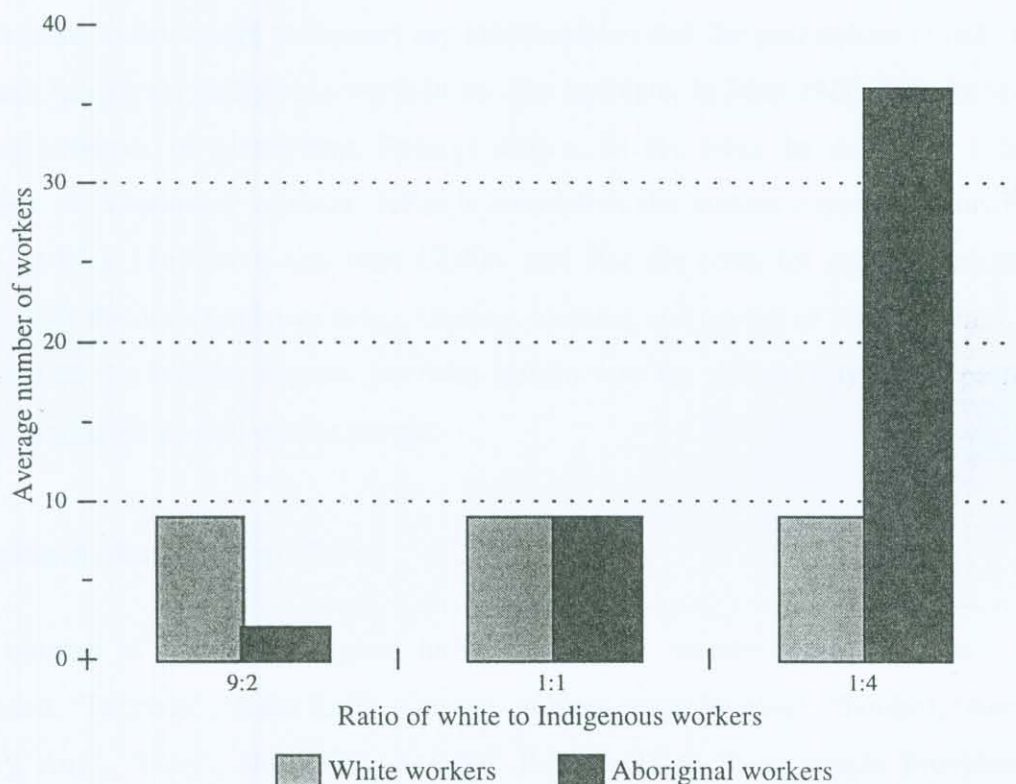


Figure 7-1. Different ratios of Aboriginal to settler pastoral workers (1860s) based on interpretive method. From left; ratio (9:2) based on named individuals; ratio (1:1) based on every white shepherd being accompanied by Aboriginal shepherd; ratio (1:4) extrapolated from descriptions of workers at out-stations.

The pastoralist's letters demonstrate how valuable Aboriginal labour was, especially for keeping wages down. It is difficult to determine exactly how much the pastoralists spent on wages, as the fiscal records have not survived. However, the average wage for a white shepherd during the 1860s was £1 ½ a week, and for a hutkeeper £1 a week (Oastler, 27 May 1866). The higher wage paid to the shepherd was dependant on their skills. Shearers were paid even more again. Only one Aboriginal worker, 'Tilbrook', was paid cash, and at the same rate as the white workers. All other Aboriginal workers were paid in rations. The white workers received rations in

addition to cash.³ Certainly, in the pastoral hinterland there were few places to spend cash, and commodities had a greater value in Aboriginal society, given that they could be exchanged as gifts or payment. The issue of payment for work cannot be separated from a consideration of rationing regimes, as discussed in relation to rationing. There is evidence in the letters to support my interpretation that the pastoralists saved costs through having an indigenous work-force. For example, in May 1866 Jeffreys wrote of the potential of Strangways Springs station. In the letter he describes a large number of Aboriginal workers. Jeffreys stated that the station expenses from May 1866 to May 1867 were less than £2,000, and that the costs for shepherding were small with the main expenses being 'carting, washing and paying of old accounts'. An analysis of the written sources provides insight into the different types of pastoral work conducted by indigenous people.

Individual Aboriginal workers

The number of named Aboriginal individuals in the written sources is small, and included: 'Tilbrook', 'Kalli Kalli', 'Jacky', '(Camp-oven) Winkie', 'Sambo', 'Annie', 'Mary Ann', 'Lucy', and 'Billy Rowdy'. References to these people provides an insight into a range of conventions and practicalities of Aboriginal pastoral work, as understood by the station managers.

There is more information about Tilbrook than any other Aboriginal person at Strangways Springs station. In 1891 Tilbrook is pictured, holding a long woomera and spear (fig. 7-2). Tilbrook had already passed away at this time as suggested in a quote from the accompanying article:

there is a certain romance about [Aboriginal people] as in the case of...Tilbrook, who never left his wurlie after his lubra died, but patiently waited till his turn came to go. (*Pictorial Australian* Feb. 1891, p. 30)

There was no direct reference to Tilbrook's Aboriginality in the letters, for he was never listed with other Aboriginal workers. He first appeared in the lists of waged

³ The 1860s predates advocacy for wages for indigenous people, a movement that only gained momentum from the 1930s onwards (Rowse 1988, p. 57).



Figure 7-2. From left: Billy Rowdy, Kalli Kalli and Tilbrook (*Pictorial Australian* Feb. 1891, p. 21. Photograph by Hon. J. Warren)

workers paid in cash in October 1866. Oastler described Tilbrook's shepherding skills, writing 'we do not meet with a good man up here any day we recognise one' (Oastler, 22 Oct. 1866, 24 Oct. 1866 & 12 Nov. 1867). The differentiation between Tilbrook and other Aboriginal people was again apparent in a letter by Oastler in November 1866, when he wrote that Tilbrook was at Anna Creek with white workers cutting timber to make troughs where 'the Blacks are very numerous' (Oastler, 16 Nov. 1866). Tilbrook remained employed whenever the manager cut back on the number of paid workers, indicating the value of Tilbrook's labour. Tilbrook shepherded without supervision and cared for the valuable and largest flocks of ewes (Oastler, 20 Dec. 1866). For example, in April 1867, the 5094 ewes and weaners on the station were divided into three flocks and shepherded by King, Burnett and Tilbrook; and Tilbrook shepherded 1551 of the ewes at Hayes Water, the most remote of the three flocks (Oastler, 8 Apr. 1867). In October 1867, the 8370 weaners, hoggets and ewes were divided amongst King, Cartier, Burnett and Tilbrook (at Lake Lowden) while other

while other workers were entrusted with menial labour at the station (Oastler, 31 Oct. 1867). The importance of good shepherding is stressed throughout the letters, and Tilbrook was one of the only shepherds entrusted with large flocks who did not suffer notable losses of sheep. For example, in January 1868 rapidly worsening drought conditions required a quick response to minimise losses of sheep. Tilbrook supervised the Aboriginal person 'Walle-Boy' and 'succeeded in getting his flocks into water at Strangways'. When Oastler 'counted Tilbrook's sheep and found them to be complete' (Oastler, 19 Jan. 1868), he recognised this as an achievement in such extreme conditions.

Tilbrook does not appear to be a translator or intermediary with local Aboriginal groups. He was not referred to as an expert tracker. He did not appear to get the same attention from the local Aboriginal people as Kalli Kalli, Jacky and Sambo. Unlike other Aboriginal workers he was not referred to as being absent from the station, although, like all the workers, he was not referred to in every letter. The contexts in which Tilbrook was referred to suggest that he was not a local Aboriginal, and that he came up to Strangways Springs with prior shepherding experience. According to my analysis of these letters, Tilbrook is the only Aboriginal pastoral worker to receive the equal pay with white shepherds. The analysis also demonstrates that not all Aboriginal workers were equally paid. In addition, these letters indicate that pastoral workers who we could assume to be white, may in fact be Aboriginal.

Kalli Kalli⁴ was another Aboriginal man who worked at Strangways Springs Station from 1865 onwards. In 1908, Oastler described Kalli Kalli as 'a grey haired old man on the shady side of forty'. He was pictured in the *Pictorial Australian* article in 1891 (fig. 7-2) which stated: 'Kalli Kalli has a monopoly of the Anna Creek fencing, and he does it well.' (*Pictorial Australian*, Feb. 1891, p. 30)

Kalli Kalli was referred to by name in eight of the letters written during the 1860s. For example, in October 1865, Jeffreys stated that all 'the Blacks have left us for some time with the exception of Winkie and Kalli Kalli' (Jeffreys, 1 Oct. 1865). At that

time Jeffreys had been at Strangways just over two years, and was one year into a severe drought. In July 1865, Jeffreys spoke of 'one of our tame boys' acting as 'interpreter [with] a Wild Black [who] came into the Francis [Spring] and reported a heavy rain having fallen to the west' (Jeffreys, 6 July 1865). Kalli Kalli was one of the three Aboriginal males referred to in letters up to 1865, the others being Sambo and Winkie. Kalli Kalli would have been able to act as an interpreter as he was local, and spoke Arabana language.⁵ Oastler recalled in 1908:

my boy Kalli Kalli, whom I found starving, without parents, at eight years of age, equipped with a small boomerang and yamstick in search for lizards, mice and rats for food with the proviso that should he kill anything extra good it must be taken into the camp for the old men, the inferior articles only being allowed to the youngsters. This being part of their religion it was strictly adhered to, but being in contact with civilisation the aboriginal mind does not carry out this order to the present day. So I gave poor Kalli Kalli a share of my dinner that I happened to have with me, and I adopted him on the spot, and kept him as my henchman for many years...and I am happy to say he has since proved useful in many ways, being even able to take a contract on his own account, and I assure you it was a great pleasure for me to shake hands with my boy, Kalli Kalli, now a grey haired man on the shady side of forty, who had ridden in forty miles to say goodbye to 'Mootabata' when I left the station a short time ago. (Oastler 1908)

Oastler understood Mootabata to mean 'father'. In the above quote Oastler justifies the apparent kidnapping of a child by describing him as 'starving'. This would have occurred between March 1863 and October 1865, when Kalli Kalli would have been eight years old. When Oastler described Kalli Kalli as being 'without parents' he may be blurring Aboriginal descriptions of kinship relationships. In the quote it appears that Kallis Kalli's camp was not far away, and that Oastler's primary concern was not Kalli Kalli's health, but to obtain a 'henchman'. This is one of several references to Aboriginal children as pastoral labourers.

The pastoralists' practice of training young Aboriginal children as pastoral workers is rarely described in the annals of colonial Australia. From Oastler's above description of Kalli Kalli as a 'henchman' indicates a profitable policy for the settlers. Discussing the pastoral industry during the 1930s in the Northern Territory, Rowse (1998) stated

⁴ Kalli Kalli is also referred to as 'Cally Cally' and 'Kally Kally', though the first spelling is maintained here.

⁵ Local people with language skills were able to speak with neighbouring Aboriginal people, who were described in chapter 1.

that the settlers needed some loyal lieutenants being removed from other settlers' protection. Eventually one had to sleep and leave one's stores to work. This relationship of trust and loyalty accord with the evidence from Strangways Springs. The Aboriginal children who began working with the settlers eventually became senior and trusted workers, who provided to the pastoralists their invaluable cultural and linguistic knowledge. As demonstrated here, as stockmen, shepherds and drovers, Aboriginal people quickly gained positions of trust, Kalli Kalli one of the most trusted. In October 1865, Kalli Kalli was working at a camp at 'Myall Creek', three miles west of Strangways Springs with 'Shepherd' (whose wife remained at the station as the cook).⁶ They were shepherding two flocks of sheep and shared a hut. At the same time another Aboriginal male, Winkie, was stationed with Mr Smith at Beautiful Valley, where Mrs Smith cooked and was their hutkeeper (Jeffreys, 1 Oct. 1865). On one afternoon Jeffreys wrote that he was waiting for Kalli Kalli to bring his flock into Strangways Springs to 'drive them through...a dam below the deep spring'.⁷ At that time there were three flocks, six male shepherds including Kalli Kalli and Winkie, plus Mrs Shepherd and Mrs Smith, working at the station. There was no suggestion that Kalli Kalli or Winkie were paid any cash, unlike Tilbrook.

As an adult Kalli Kalli remained a shepherd. In 1908 Oastler recollected an occasion in the 1860s when an Aboriginal shepherd was to be executed by a revenge expedition. (This event is described at greater length below). Oastler described a 'main camp' surrounded by satellite camps using Aboriginal shepherds.

The [main] camp being in charge of only one white man and my black boy Kalli Kalli, now a well grown man with a wife and child - not much to defend the camp in case of a surprise during the night. (Oastler 1908)

Oastler had fired warning shots at the large armed group of Aboriginal people, and employed Kalli Kalli to 'follow on horseback to see them well away, and in about two

⁶ This is the only reference to this creek. Circa five kilometres west of Strangways Springs station are several small creek systems, about half way towards Beautiful Valley.

⁷ This may accord with site S201, which appears to be a water-race for washing sheep. See site description. If so, this is a ancestor to the set of structures recorded there. Jeffreys wrote that 'Jones and Davis spent three days making a dam below the deep spring where we bathed [Jeffreys and Warren] with George. Kalli Kalli's flock will be in directly. I will drive them through it this afternoon. If the sheep puddle it I think it will hold' (Jeffreys, 1 Oct. 1865).

hours time he returned with the information, 'Yes, him pull away more further'. Kalli Kalli conducted types of work other than shepherding. In February 1866, after the extreme losses of 1865, Kalli Kalli and another Aboriginal male, 'Jacky', assisted Jeffreys by mustering the Bullocks. Jeffreys wrote in his letter:

[after] such a long drought the flies came in countless myriads [making] every man here blind, drove the bullocks and horses mad. I have succeeded in mustering the bullocks. I have ridden hundreds of miles and have camped out with Jacky and Kalli Kalli for days and days. (Jeffreys, 2 Feb. 1866)

When Jeffreys wrote of lost horses: 'Jacky found them at the Priscilla [Spring]' (Jeffreys, 2 Feb. 1866). Jeffreys' expectations of Kalli Kalli, even though he was eight years old, is demonstrated by Jeffreys when he wrote to Warren: 'you may be surprised that...two trackers like Kalli and Jacky could not track them' (Jeffreys, 5 Mar. 1866). This indicates that tracking lost animals was an important skill of Aboriginal people, especially as the station was not fenced until the 1880s.

Although becoming Oastler's 'henchman' as a young boy, Kalli Kalli remained culturally engaged with Aboriginal people. For example, he was required to participate in local ceremonial life (like other Aboriginal workers), as indicated when Jeffreys wrote:

Some wild blacks came into [Strangways Springs]. There was a fight amongst the Blacks. They have taken away our boy Kalli to cut him. He screamed to me for assistance. If they intended killing our boy I would have fired into them at once but I considered I had no right to interfere in their religious ceremonies. Jacky, our ram shepherd, Kalli's sister [Ann] and all our useful washing blacks have gone to see the operation. I don't expect them back for a week. (Jeffreys, 27 May 1886)

Kalli Kalli was apparently skilled at working with horses for, in March 1868, when he was about ten years old, Oastler stated 'this country will grow some very fine horses if they are looked after and Kalli Kalli can do that' (Oastler, 18 Mar. 1868). In January 1868 Kalli Kalli accompanied Burnett to collect sheep from Springfield, the Warren family property (north of Adelaide). The two would have journeyed as far as Port Augusta, if not as far as Springfield, 966 kilometres south. Droving journeys of this distance were not uncommon, as John Warren Junior recollected:

black stock men ...would come down from the station with a mob of cattle or sheep - what heroes we thought them. They would make spears and woomeras for throwing them, out of the bamboos that grew in the gully, and when one of them hit a swallow on the wing, our cup of joy was full. (NLA, MS 6120, *The Four Warrens*)

As mentioned earlier, Kalli Kalli worked on the station for over forty years and by 1891 was being paid in rations for work as a fencing contractor. This work allowed him to maintain contact with Aboriginal people who were not employed by the station. The remoteness of the fencing camps would have allowed Aboriginal people to remain separate from the increasing numbers of white settlers in the western Lake Eyre Basin who were contracted to build the railway which cut through Anna Creek station. Kalli Kalli's intermediary role between station managers and non-employed local Aboriginal groups has parallels elsewhere (Rowse 1987).

Another Aboriginal person referred to by name during the 1860s was 'Jacky', also referred to as 'Jack' and 'Jacky Jacky' (Jeffreys, 5 Mar. 1866 & 9 July 1867). There is evidence that, like Kalli Kalli, Jacky was local, acting as the interpreter between the station managers and other Aboriginal people. Jacky was working at Strangways Springs in May 1866 when Aboriginal people came into the station and took Kalli Kalli away for a ceremony. Jacky, like most of the Aboriginal men and women, joined the ceremony. He was first referred to by Jeffreys in December 1865, yet, due to gaps in the sequence of letters, there was no explanation of how or when he started work for the pastoralist. In December 1865, Jeffreys wrote to Warren describing how Jacky had assisted in moving the flocks of sheep thirty miles north of Mount Margaret station during the drought when all the other pastoral properties were deserted. In that letter Jacky was to return to collect the horses and bullocks from Strangways with Davis, a white employee (Jeffreys, 24 Dec. 1865). Given the evidence that Kalli Kalli was a young boy, the same may have been the case with Jacky. They often worked together, as quoted above, mustering bullocks and tracking missing horses (Jeffreys, 2 Feb. 1866 & 5 Mar. 1866). There is however, no evidence for Jacky's age.

Jacky worked for Jeffreys by taking rations to out-stations, and by March 1866 was described as driving a dray with eight bullocks loaded with the washed wool in bales

to Finnis Springs station, accompanied by Davis who took the smaller dray. At that time Finnis Springs was a small neighbouring station (fig. 2-2) that survived in a similar environment and would have engaged most commonly with Arabana and Dieri people. A sketch of that station from the 1870s is a rare image from that period, possibly depicting an Aboriginal male with a horse (fig. 7-3).

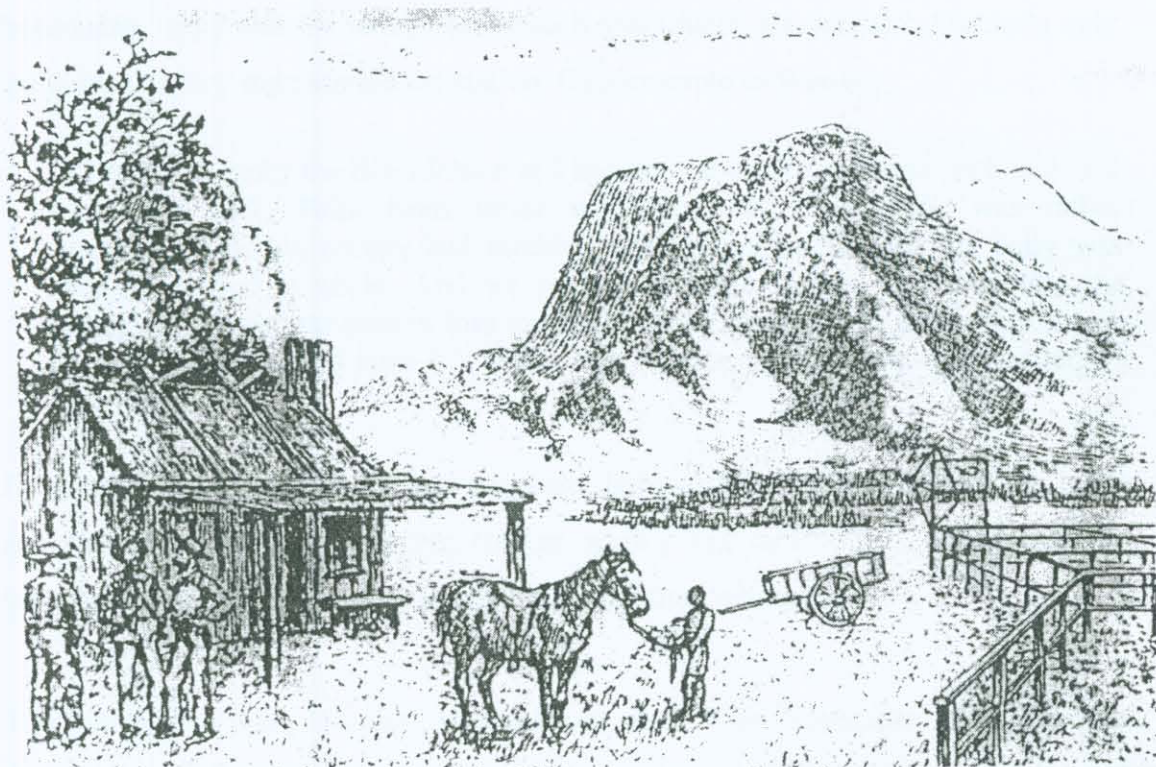


Figure 7-3. Finnis Springs station (1870s), pastoral station neighbouring study area. From (Giles 1889).

Jacky's bush skills were of use when Oastler built a lambing station at Lake Louisa in the winter of 1866. Oastler wrote to Warren that Jacky:

[had got] rations out to Lake Louisa [and]...made three large brush yards. Jones [made] smaller yards besides three dog proof yards out on the run. A wurley for the men and got Jacky to make two good Blackfellows [wurleys], one for myself and one for King, at the yards away from the men's Wurley. (Oastler, 30 June 1866)

The letters suggest that workers were not constantly at the station. In November 1868 Oastler urgently needed to move the sheep, and he bemoaned that most of the Aboriginal workers had gone away. Oastler 'started with Jacky [who had just come in]

to cut brush and top up [repair] the yards at the Yellow Waterhole' for the flock of sheep that would arrive at the waterhole that afternoon. That week Oastler travelled extensively with Jacky as he tried to establish where to move the sheep. The water was drying up all over the property. Oastler and Jacky arrived at William Creek and 'found some Blackfellows who told [Oastler] all water in the Anna and Warriner Creeks had tumbled down so it would be useless heading in that direction'. Presumably Jacky was the interpreter in such encounters. He was also Oastler's only companion as they rode around the station. Oastler wrote to Warren:

So I spoke to Jacky the Blackfellow as I had no-one else to converse with and said 'Cheer up Jack. Faint heart never won fair lady'...Poor Jack was rather downhearted as his pompy had tumbled down (in plain English his belly was empty) he tried to smile. And we jumped onto our horses and rode into the Strangways to get our axes in trim for yard making. And also to renew this...man. Or else as Jack would have it to make one big one pompy jump-up. (Oastler, 19 Jan. 1868)

Jacky never appeared to work as a shepherd, but was a companion, interpreter, horse and bullock musterer, dray driver, tracker, wurley and yard builder, and drover. He was never described as being paid anything other than rations.

The Aboriginal male 'Sambo' was referred to first in November 1864. He was described by Jeffreys as 'driving the spring cart with the old grey horse...which I was taking to the Finness for flour, [when] on Friday the Blacks stole Sambo from us and we did not get the bullocks until the afternoon' (Jeffreys, 30 Nov. 1864). The circumstances of this event are unclear, yet from the evidence relating to other Aboriginal workers, Sambo was presumably, voluntarily or involuntarily, returned to the company of local Aboriginal people. This suggests that the station managers accepted that Aboriginal workers (Sambo, Kalli Kalli, Jacky and others) would not always be available as a work-force due to societal obligations. Sambo may have been one of several local males, as suggested by Jeffreys' references to the 'tameboys' (referred to earlier) (Jeffreys, 6 July 1865). In 1908 Oastler remembered Sambo as a young adult male:

Many years ago, just as a flock of lambing ewes had been placed at Lake Wobmadingalinda with the black shepherds, and one white man in charge...a

black fellow named Sambo, who I told to bring eighteen bullocks and dray [to Strangways Springs]. (Oastler 1908)

The Aboriginal male (Camp-oven) 'Winkie' was probably also one of these 'tameboys' for he is referred to for the first time shortly after that comment, as quoted above in reference to Kalli Kalli. The letters reveal that Winkie was a shepherd in October 1865. He was not referred to in the station letters again until March 1868, when he was shepherding at the Flagstaff (Oastler, 30 May 1868). When, during the interim, managers list their shepherds, they did not refer to Winkie by name. This suggests that either Winkie did not shepherd during this period, or, more likely, that he assisted other shepherds and the practice of the managers in their letters was to list only the managing shepherds, not their assistants. Oastler recalled an occasion when he was waiting at an out-station hut. He described the hut as containing stores, and noted that the flocks were being cared for by Jones (a long-serving shepherd) and 'Camp-oven Winkie, the black shepherd'. (Oastler 1908)

'Billy', another Aboriginal male, was first referred to in November 1866 as taking a dray (and messages) down to Finnis Springs station. Like Kalli Kalli, Jacky and others, he also worked as a tracker, and was described as assisting Oastler search for missing sheep. The other named Aboriginal males were 'Walle-Boy' and 'Dugald McSquark', both of whom I referred to previously. Both were described as working as shepherds in January 1868. There were few additional references to them.

There were four female Aboriginal persons referred to in the 1860s letters: 'Annie', 'Mary Ann', 'Judy' and 'Lucy'. All are referred to during 1866 and 1867 in contexts related to shepherding sheep, or caring for horses and cattle. As Jeffreys describes Annie as Kalli Kalli's 'little sister' we may presume Annie to have been less than ten years old in 1867. From the references to Judy, Lucy and Mary Ann are probably also young girls. I discuss the work of these women, and female shepherds generally, below.

The last Aboriginal 'individual' to be discussed in this section is 'Billy Rowdy', an Aboriginal male who is not referred to in the 1860s letters, having not being born at

that time. Through references to him we see the power of his personality, as remembered by John Warren Junior, who describes a young male apparently successful at adapting to the pastoral order. Billy Rowdy is pictured in the 1891 newspaper article (fig. 7-2). Although the article does not refer directly to Billy Rowdy, it states, presumably quoting John Warren, that 'the Blacks here can be trusted to do any of the usual station work equally as well as the whites' for if 'a black can be treated like a man, he will behave like one, and amply repay his employer for his consideration' (*Pictorial Australian*, Feb. 1891). Billy Rowdy is referred to as being 12 years old in 1879, so was born circa 1867, corresponding with the 1891 photograph in which he appears to be in his mid-twenties. John Warren Junior recalled that Billy Rowdy journeyed for market from Strangways Springs to Adelaide:

Our greatest friend was Billy Rowdy, who amongst his native sandhills rejoiced in the resounding title of Ooioo dâdloo Marunda, who had come down in 1879 and owing to the drought was unable to get back. He was a boy of about twelve years of age and for over four years was in charge of my grandmother at Blair Place, who taught him to read and write; he was employed as a 'knockabout' boy on the place. Sometimes Billy was sent for a holiday to Springfield...Never once when we were playing with these black boys did they say or do a single thing that might be normally hurtful to us; which is more, I think, than one could hope from most white boys. (*Four John Warrens*, pp. 19-20)

Five years later, in September 1884, John Warren Junior travelled to the station, by then called Anna Creek. He was met by his 'old friend Billy Rowdy' at Farina (*Four John Warrens*, p. 45). They travelled overland to Anna Creek with a flock of rams. Apparently, Billy was familiar with global affairs. John recounted that:

The Prince Imperial had not long come to his untimely end in the Zulu War, and Billy, I think, felt rather jubilant about it, so he suggested a sword encounter with me as the Prince and himself as a Zulu chief; my pony was quiet and Billy's rather excited, so the 'Prince Imperial' came off best in the fray. (*Four John Warrens*, p. 48)

John Warren Junior's memoirs do not mention Billy Rowdy again after this date. The references to the individuals discussed here provide an insight into how Aboriginal people related to the pastoralists.

Shepherds, cooks and hutkeepers

During the nineteenth century the largest source of revenue for Strangways Springs/Anna Creek station was sheep. Sheep would eventually be superseded by cattle, which today are associated with pastoralism in arid Australia. Yet sheep farming was a major type of pastoralism in much of Central Australia from the 1860s onwards. Aboriginal involvement in sheep pastoralism continued throughout the twentieth century (Rowse 1998). There are similarities between the Aboriginal involvement in sheep farming at Strangways Springs station as demonstrated in this thesis, and at settlements in Central Australia 60 years later as described by Rowse. Understandably the job of shepherding is central to sheep farming. In relation to indigenous involvement in sheep farming, Rowse states:

Both sheep and goats, in a pastoral economy in which almost no use was made of fences, require constant surveillance to prevent straying and to limit the ravages of dogs; that is grazing sheep and goats required a more continuous use of cheap labour than did cattle grazing. Sheep and goats had to be minded every day and night, usually well away from the homestead...Raising goat and sheep herds therefore called for cooperation between the pastoralist and his or her labourers, spread over a whole year. A family of Indigenous shepherds, once trusted, could be sent out for days or even weeks at a time with rations. (Rowse 1998, p. 61)

This quote emphasises the importance of shepherding. The discussion of individual Aboriginal workers in the previous section revealed that shepherding was work conducted by both European and Aboriginal shepherds such as Tilbrook, Kalli Kalli, Walle-Boy and Dugald McSquark. The white shepherds were accompanied by at least one Aboriginal, yet there were cases where the flocks were the sole responsibility of Aboriginal shepherds. Aboriginal people developed the necessary skills to be trusted as shepherds at Strangways Springs station. This is expressed by Oastler in 1866, in a letter to Warren, stating that he did not need to employ many white men as: 'the Blacks are getting very useful and will be a great help [as shepherds and during lambing]' (Oastler, 5 Feb. 1868). As stated previously, Aboriginal women and girls worked as shepherds. Their presence is worth exploring at length, because it unifies several references in the letters which demonstrate the work of female and male Aboriginal shepherds.

The 1860s letters refer to 'shepherdesses', a term which describes the female Aboriginal workers. In the previous section I mentioned Annie, Mary Ann, Judy and Lucy. These are some of the females, many apparently young girls, who are described as shepherdesses. According to the letters, there were Aboriginal girls shepherding in August 1864 when Warren visited the station. This is the earliest reference to Aboriginal labour on this pastoral property, then 18 months old (Jeffreys, 16 Apr. 1866). In March 1866 Jeffreys described the detrimental effect of the drought on the cattle and horses, who required treating with tar to help heal wounds caused by fly bites.

[Jeffreys] gave them in charge to Annie, Kalli Kalli's little sister, one of the little shepherdesses. She looks after them with great care and musters them every day to a rain water hole three miles from here [Strangways Springs]. (Jeffreys, 5 Mar. 1866)

From this we learn that there was more than one female shepherd, and the female shepherds were apparently based at the head station at Strangways Springs, unlike the male shepherds whose larger flocks of sheep were rarely located at Strangways Springs. The pastoralists attempted to save the feed and water at Strangways Springs for those times when the sheep were brought in for shearing. When referring to Annie, Jeffreys referred to an individual's kinship for the first time. At that time Jeffreys was determined to reduce the station expenses, and was reliant on Aboriginal labour to reduce the number of paid employees. The following month the few remaining white shepherds were severely afflicted by ophthalmia, which temporarily blinded Jeffreys, then King, who were shepherding a flock at the Yellow Waterhole north of Strangways Springs. The role played by the young women in this situation was vital. Jeffreys recollected:

I had a flock camped at the Yellow Waterhole...dogs howling around there night after night...Finding King such a heavy sleeper I walked around the sheep all night, it was a very cold, foggy night. The next day I was blind. The next day I sent Jones to the Strangways for some stores. Shortly after he left King came in blind. Fortunately one little shepherdess was at hand. I gave the flock into her charge. I wanted to get away from the Worley where the flies are in myriads into our dark store at the Strangways but I did not like to leave until Davis returned with the bullocks.... After stopping four days I felt so ill I got a little shepherdess to get two horses although she never rode before. She rode one horse and led the one I rode and brought me safely home. I gave the flocks to her cousin - the little girl

you saw with her on the sand hill at the Warren Springs shepherding lambs. Jones had to attend to poor King who recovered after about five days illness. He has been shepherding the flocks ever since. (Jeffreys, 16 Apr. 1866)

This set of events reveals that the shepherding camp at the Yellow Waterhole consisted of Warren, King, Jones and at least two young Aboriginal girls. Unlike the young Aboriginal boys they did not have experience in riding horses, although were presumably used to tending them. Again there is a reference to genealogical relations in the above quote, plus Warren's recognition of the value of Aboriginal female (and male) shepherds during the first years of the station. Jeffreys stated in his letter to Warren that it was unusual to leave large flocks of sheep in the total care of young Aboriginal girls:

You may imagine that I felt a little anxious giving our flocks in charge to the little shepherdesses for I value those 5640 sheep in lamb at 5000 pounds. I had so little trouble the two days I shepherded them, in fact they shepherded themselves. They never attempted to part and in the evening they came home themselves without my turning or driving them so shall I know the girls could mind them. (Jeffreys, 16 Apr. 1866)

Writing a fortnight later, Jeffreys was presumably still thinking of these events when explaining the ease of shepherding the flocks in the good seasons:

Why they are no trouble to shepherd and there is no risk of losing any. I shepherded them two days at the Trig...they did not feed more than two hours in the morning and two hours in the evening, all the rest of the day they slept. I had no dog, they never attempted to part and never spread over more than twenty acres. A child of seven years old could mind them with safety. What stupid old Matheson told me to put them into flocks the other day, why should I go to the expense of employing two shepherds when here one will do very well? (Jeffreys, 29 Apr. 1866)

From these references we can presume that there were children minding the flocks. When referring to the numbers of shepherds, these letters suggest that there were Aboriginal children accompanying and assisting the shepherds. Annie is named more often than the other female shepherds. When her brother Kalli Kalli was taken away to be 'cut' she left the wool-washing at Strangways Springs to attend the ceremony. Jeffreys left the station soon after these incidents, writing early in June 1866 that:

having suffered so much from sore eyes that I think it is necessary to go to town for a change of air. Oastler will take charge of the lambing. (Jeffreys, 11 June 1866)

The letters suggest that he left for Adelaide some weeks afterwards, although he stopped along the way at Mundowdna station, north of the Flinders Ranges, where he wrote to Oastler. From Oastler's reply we know that Jeffreys had specifically inquired after Annie. Oastler replied: 'Ps: Annie is gone. I have not seen her lately' (Oastler, 30 June 1866).

There are several other references to named Aboriginal females working as shepherds. In April 1867 Oastler described the division of 5266 station sheep into four flocks. Nearly all were shepherded in three flocks by Tilbrook, Burnett and King at lakes to the west of Strangways Springs. A small flock of 172 'rams and rations' was stationed at Strangways Springs and shepherded by 'Judy'. These would have been used to feed the station workers, although Oastler reminded Warren to 'send up some cattle soon...as killing sheep for rations runs away with a good many...and it would be cheaper to use cattle' (Oastler, 8 Apr. 1867). The letters suggest that Aboriginal female shepherds were often based at Strangways Springs station (rather than remote locations) and cared for small flocks of ration sheep, or sick animals. There is only one direct reference to 'Judy'. Six months after this reference, in October 1867, Oastler described that he had completed the shearing and had placed the sheep in nine flocks, shepherded by King and Cartier (presumably with Aboriginal assistance as they each had two separate flocks). Burnett, Tilbrook, Lucy and Mary Ann were the other shepherds. This was the first reference to Lucy and Mary Ann, although Mary Ann could conceivably have been Annie (Oastler, 31 Oct. 1867). Both women were tending small flocks. Of the 8120 sheep, Lucy had 138 'fine wool' sheep, and Mary Ann 200 ration sheep. Again, these people were not listed as being paid, and were presumably being paid in rations from the 'Aborigines' stores'.

Importantly, these excerpts suggest that Aboriginal women were often responsible for the small flocks located near the head station, as well as assisting with larger flocks at out-stations. This is not unlike the work of the two white women, Mrs Smith and Mrs Shepherd, who worked at the station, as often one or both of these women would

remain at the head station as a cook. Other letters reveal that from the late-1860s onwards, certain out-stations were run by male and female Aboriginal workers. On one occasion Oastler describes how the men left the sheep in care of the women when meeting with other visiting Aboriginal people (Oastler 1908). This implied that within a few years of the inception of the sheep station, both indigenous women and men were working as shepherds, with little or no supervision. This accords with the condition described by Rowse above, where 'a family of Indigenous shepherds, once trusted, could be sent out for days or even weeks at a time with rations' (Rowse 1998, p. 61).

The sheep were located in large flocks at 'out-stations'. Here they were divided into two flocks, their separation being important. In drought conditions the practice advocated by Oastler was to keep smaller flocks at different places, rather than risk huge losses in one flock. Jeffreys, on the other hand, delighted in keeping large flocks at one station (Jeffreys, 1866). Oastler's policy resulted from his experience in the region as station manager, and his wariness of bad seasons. As this shepherding dates to an era before fences were built, the flocks required constant protection. During the day the shepherd would allow the sheep to feed. The sheep wore bells in case they became separated (Jeffreys, 16 Apr. 1866). Ideally, a pen was available for the sheep at night. Either way, throughout the night the shepherd would ward off threats, specifically native dogs. Large dogs could kill three sheep in a night (Jeffreys, 16 Apr. 1866). Another concern was theft of stock by Aboriginal people (Jeffreys, 29 Apr. 1866). This meant that the shepherds had to remain near their huts. Presumably the Aboriginal workers were unable to guarantee the safety of the pastoralists' possessions. Hut-keeping and cooking was work conducted at the shepherding out-stations. There is evidence in the letters that this was conducted by both white and Aboriginal workers.

Lambers and wool-washers

The pastoralists' letters reveal that the demand for Aboriginal labour increased during lambing, and describe how this expectation was met, particularly in 1867 and 1868. The lambing occurred annually sometime during March and June. Aboriginal workers

were required to protect the young sheep from predators and bad weather conditions. The Aboriginal 'lammers' were seasonal workers, many of whom returned each year at this time. Oastler stated that ideally each large flock of expectant sheep should be cared for by three white men and an undefined number of Aborigines. Providing for this work-force meant distributing rations (flour, tea, sugar and meat) to the Aboriginal workers.

Oastler described a lambing camp at Lake Louisa in July 1866, as 'very busy...about six hundred sheep here have lambed, and they are still dropping at the rate of over a hundred in twenty four hours' (Oastler, 17 June 1866). He names three white workers and Jacky as being present. In addition, an unstated number of Aboriginal workers were obviously provided with beef. This is demonstrated as, Oastler describes the numbers of cows slaughtered for ration meat, an amount suggesting that the lambing-down station had enough workers to consume almost a complete cow each day (Oastler, 17 June 1866). Aboriginal people other than the workers visited the out-station. Oastler wrote to Warren:

Ps: we have seen a great number of strange blacks about here at times and although anything but pleasant to look upon in their paint and filth they have not molested us as yet. (Oastler, 17 July 1866)

It is uncertain whether the presence of other Aboriginal people 'outside' the pastoral system resulted from an accidental meeting, or from the attraction of a large rationed camp. Whatever the case, the pastoralists also required the labour of Aboriginal people not already working for the station. Oastler describes an occasion when: 'a perfectly wild family of Aborigines having taken up quarters at a lambing-down out-station, I once engaged their services to take the strong mob of lambs and ewes to a yard about three miles away' (Oastler 1908). Another type of work conducted by Aboriginal workers was the wool-washing, which during the 1860s was conducted at the head station at Strangways Springs.

The wool required washing after shearing to remove grease and dirt, a process called 'scouring'. For remote runs such as Strangways Springs Station this was necessary to reduce the expenses of cartage, for dirty wool is very heavy. Early attempts at wool

cleaning were not successful. After inspecting the wool arriving in London from Strangways Springs Station in May 1865, Bakewell stated '75 percent is dirt!' (Bakewell, 26 May 1865). The station managers needed a large and cheap work-force to wash the wool. The letters reveal that Aboriginal people supplied this. The process adopted at Strangways Springs initially was to wash in tubs by hand, then dry the wool in the sun. The addition of a soap, or stale urine, would have helped the scouring process. They probably used the latter as the letters only mention orders for small quantities of soap. A letter written by Jeffreys in 1866 describes the wool-washing, the delay which is referred to occurred when Aboriginal people took Kalli Kalli, Jacky, Annie and the 'washing Blacks' away from the station for a ceremony. Jeffreys wrote:

I have not got along with the washing as well as I have expected. The days are too short, too cold, too windy no sense to try. I can not keep the Blacks at the tubs - they can not stand the cold. I was depending on them as my chief stay. When I commenced I did only bale in one third of a day but by great exertions I have increased up to an average of three bales a day. This was noble work considering it is winter. In one week I should have 48 bales washed, the number I intended putting on in four days. Last night a bitter disappointment occurred when I was getting on so well....In the meantime it will cause delay. I have been working night and day to get the teams started for the last month. The men have had breakfast in the dark...They light their pipes on their way to the tubs and never leave the tubs for a moment all day except at meals. Altho! Our best washing Blacks have left us there are some almost useless lubras left. (Jeffreys, 27 May 1886)

This excerpt demonstrates that wool-washing was vital to the station. It was obviously conducted by all available workers, in the above case by white workers and Aboriginal women. From the mid-1870s onwards the wool-scouring occurred near the shearing shed on Anna Creek (described in chapter 5 as site A9), and, although mechanised techniques were increasingly employed, there would have been a need for a cheap and immediate work-force. The pastoralists' letters suggest that shepherding and lambing was conducted by two different types of Aboriginal worker. Firstly, by young 'indentured' workers such as Jacky, Annie and Kalli Kalli. Secondly by larger groups such as families, in particular husband and wife, and family groups. This second category implies that a large component of the Aboriginal work-force may have been able to work and maintain most aspects of social life. For example, there was no push to take adults from their established social groups. Rather, these descriptions see Aboriginal people working at places they may have travelled and

lived at if the pastoralists were absent. Ceremonial and social obligations were maintained in this work structure. For example, on one occasion Oastler '[went] out to count two flocks of sheep stationed some miles away, I found them quite correct, but no blackfellas about, only their lubras. On making enquires I found that [other Aboriginal persons] had taken away my shepherds, leaving two flocks of sheep all right with their wives to look after them' (Oastler 1908). This perhaps contributes to an understanding of why young children were 'apprenticed' to pastoral work. There may have been less resistance in Aboriginal society to the indenture of young members of the community, than, for example, having all the adult men (or women) work and camp separately to their families. There were however, types of work that departed from this model, namely when Aboriginal worker(s) accompanied white workers to prepare out-stations.

Preparing out-stations and the head station

Preparing the out-stations for the lambing and for the arrival of flocks of sheep was an essential type of station work. The letters reveal that this work was conducted by white workers, who were usually accompanied by at least one Aboriginal male worker, often more. The letters suggest that this work involved clearing artesian springs to remove any blockage to the water flow, cutting hard timbers which grew along the banks of Anna Creek to make water troughs, cutting grass for stock feed, and building yards and residential structures at out-stations.

The physical structures built at out-stations were described by different terms, for example, as 'Blackfellow's Wurleys' (for the use of two white shepherds at a lambing station), 'grass huts' and 'comfortable huts'. The first term suggests that the pastoralists used indigenous technology at pastoral out-stations. Aboriginal wurleys in this region were often wooded bough supported structures, although during winter they were more elaborate. In 1859, Stuart described 'winter wurleys...with mud in the shape of a large beehive, with a small hole at the entrance' (Stuart 1865, 15 June 1865). This provides an understanding of the material technology of the settlers and Aborigines, and how the line between them was blurred.

Similar manual work also occurred at the head station at Strangways Springs, where stone buildings and yard complexes were built. This work was supervised in 1866 by a mason. This work-force complemented the essential work of shepherding and lambing, and were mobilised to any part of the station that required labour.

Aboriginal translators, informants, trackers and message deliverers

The pastoralists required local language skills to enable cross-cultural communication. As described earlier, this was provided by workers such as Jacky and Kalli Kalli. The pastoralists' reliance on interpreters supports my assumption that most white workers were accompanied by at least one Aboriginal. This meant that the pastoralists reduced the possibility of mistaken meaning. However, Rowse reminds us that '[e]ven when frontiers are negotiated, rather than violently contested, borders between cultures, there is every possibility of mutual incomprehension' (Rowse 1998, p. 20). From the pastoralists letters from Strangways Springs, the most common questions the settlers had for indigenous people concerned the location of resources, in particular where there may be water, or when searching for missing animals. The principal Aboriginal workers provided information to the pastoralists regarding other Aboriginal people living on the station. For example, Kalli Kalli was described by Oastler as: 'most useful..., especially as to keeping me well informed as to the movements and depredation that may be committed by the other blacks' (Oastler 1908). Again, this informs us about the compound role Kalli Kalli played, and suggests the blurred boundaries of settler and Aboriginal worlds. Rowse describes relationships similar to Kalli Kalli's, where Aboriginal people essentially lived outside the station system (although still living 'on' the station) as an 'Indigenous strategy [of] keeping in contact with those Indigenous kin who, remaining 'outside', were likely to kill the occasional sheep or bullock, but were desirous of food, clothes, and tobaccos' (1998, p. 65). Kalli Kalli's success in managing a position between these worlds is suggested in an 1890s reference, when he was a fencing contractor to the station.

[Kalli Kalli] goes out with his party of 'nullahs' on a fencing contract; they camp on the scene of their labours, sending in their dray at intervals for rations, which, as a rule, pretty well cover the contract, for the fencing camp is a great rendezvous for certain native drones whose appetite is only equalled by their laziness. (*Pictorial Australian*, Feb. 1891)

This excerpt suggests that Kalli Kalli has used his experience as a worker to provide access to rations for indigenous people not directly associated with the station.

Another type of service requiring Aboriginal skills was tracking. As described earlier, Jacky and Kalli Kalli were respected as efficient trackers. This role included tracking animals which had been taken by Aboriginal groups. Oastler describes his search for missing sheep. He:

took Billy out...and started out to the Black's wurley [at William Springs] where he found the bones of a lamb fresh picked and buried on the land. Near one of the camp fires. This was one more of the missing sheep. I have since got the number of sheep all but four which I would give up as I can find no tracks of them. I found one killed by the native dogs. (Oastler, 8 Nov. 1866)

Message delivery was essential for intra-station communication. Most commonly, it concerned the location of sheep and water. Messages were carried by unnamed Aboriginal individuals, rather than by the skilled white and named Aboriginal workers. For example, Oastler describes sending 'an express Blackfellow' with news about water to other shepherding stations (Oastler, 19 Jan. 1868). Importantly, this also demonstrates that Aboriginal people were continually available to the pastoralists for labour.

Musterers, drovers and cartage

The specific skills required to manage introduced animals, such as horses and bullocks, were quickly demonstrated by Aboriginal workers. Certain workers, such as Kalli Kalli, were described as being adept with horses. Previously I quoted excerpts which demonstrate that Jacky and Sambo worked with the bullock teams, carting wool bales to the Finnis Springs station and Beltana. These men also carted items to the out-stations, as the shepherds relied on having drinking water and rations brought out to them. In addition, they brought troughs and timber in from Anna Creek and William Springs, which required working the drays over sand dunes. This work was important because by training station workers for cartage, the station managers avoided more expensive contractors.

Shearing

Shearing was an essential types of work on the station, yet there is very little evidence for Aboriginal shearers. This could be due to a lack of direct evidence, but more probably results from shearing being a skilled job that required training and was competitively structured as to make it difficult for untrained workers to enter. Shearers often moved from station to station, and were paid higher wages than other station workers. The main venues for shearing were at Strangways Springs station, before moving in the 1870s to shearing sheds on Anna Creek (archaeological material at these sites was discussed earlier).

The discussion of written accounts presented here demonstrates an Aboriginal workforce, particularly skilled in animal husbandry, on Strangways Springs station from the 1860s. In 1896, a report from the Police Inspectors Office (Port Augusta) to the Sub-Protector of Aborigines, describes how the Aboriginal workers, now living at Anna Creek Station, were occupied:

There are about eighty seven Aborigines at Anna Creek all the year. They are very healthy and well behaved. A number of the young men are engaged boundary riding and their Lubras look after the watering of stock and attending the domestic work. The less intelligent ones get their own living by rabbiting. There have been five births and four deaths during the year. (SRSA, GRG 5, Police Inspectors Office, Port Augusta to Sub-Protector of Aborigines Office, 16 Apr. 1896.)

In the last decades of the nineteenth century there were indigenous workers, such as Kalli Kalli, whose place in the pastoral station originated from the 1860s and 1870s. There are descriptions in the written sources which allow an interpretation of different aspects of the lives of these Aboriginal workers and their society, such as where they lived.

Evidence for Aboriginal settlements

The location and character of settlements of people, both Aboriginal and settler, in the south-western Lake Eyre Basin are poorly understood for nineteenth century contexts. However, as demonstrated in previous sections, documentary analysis provides some information about this period. In this section I consider the evidence for Aboriginal

settlements in the written sources, in particular, the letters of the pastoralists from the 1860s. The letters are used to explain settlement patterns as they occurred in relation to pastoral activities, such as shepherding. Such patterns are understood through reference by pastoralists to workers and Aboriginal people. The study period predates any comprehensive and regular recording of Aboriginal population figures. By the turn of the century, the only available figures were the largely inaccurate figures relating to the number of Aboriginal people in receipt of rations at depots.

The pastoralist's letters provide some insight into Aboriginal settlement patterns from 1863 to 1868, by describing Aboriginal workers and meetings with other Aboriginal people. The principle restrictions on this information need to be considered. Firstly, locations referred to in the letters are not particularly specific. The letters are written between people who are familiar with the location of pastoral out-stations. For example, out-stations are referred to by local place names, such as William Springs, Lake Warren and Francis Swamp. Springs tend to be localised geological features, but features such as Francis Swamp tend to be very large areas. When the pastoralists are more exact they use the minimum amount of additional information. For example, it was common to describe a place as 'x miles' from another place, and often with no compass direction provided (as the direction would be self-evident to the recipient). Consequently any evidence considered in this section should be understood to be accurate, but not precise. An important side-effect, as considered in Part 4, is that a corresponding archaeological site has not necessarily been located (nor was the exact matching of places referred to in written accounts with a corresponding site the aim of the field methodology). The second restriction in relation to an understanding of settlements relates to their size. It is very rare for the written accounts to define the number of people in the groups of Aboriginal people. Words such as 'few' or 'many' are used. There are two principle exceptions. Firstly, the approximate number of Aboriginal men in revenge expeditions is described in the letters (as discussed below). Secondly, small family groups are described on several occasions in the letters, most commonly a husband and wife and children. This is one of the main societal configurations described by the settlers. Often such family groups would be met when moving between established larger camps.

It is worth reiterating that it is through pastoral activities that these Aboriginal settlements are interpreted. It is difficult to estimate how many Aboriginal people remained in the region who, at any given point in time, were not known of by the pastoralists (or at least were not commented on). This section then relies specifically on pastoralism, and relates to those Aboriginal people who intentionally met with the pastoralists. There were Aboriginal groups in the region who chose to avoid the pastoralists. And, as explained previously, the pastoralists tend to refer most often to the Aboriginal workers. Therefore, Aboriginal settlements can only be partially interpreted using written accounts of settlers' meetings with Aboriginal people.

Descriptions of encounters with Aboriginal people on the station suggest familiarity between the pastoralists and certain Aboriginal people. This is demonstrated in the following account by Jeffreys in 1866:

The same night the Blacks were camped at our Worley within six feet of the sheep. They had a carrobbery to announce themselves. Jones and King joined in it, I went to bed. In the midst of the din and noise I heard the sheep's rush, I ran out in my shirt, stopped the noise and sent King and Jones to see. They found a dog amongst the sheep, I made the Blacks sleep one side of the sheep and King the other, in the middle of the night I heard a rush but before I could get on my boots for I did not wait for trousers, a dog had half the flock a quarter of a mile off, if it had not been for the bells on the sheep I could not have found them. I brought them back. Jones, King and the Blacks never awoke, knew nothing about it until I told them in the morning, when we found a Ram and two ewes. (Jeffreys, 16 Apr. 1866)

There are descriptions of Aboriginal camps on the property in the letters of the pastoralists, especially as there were some locations, such as the area around Lake William, that were used by Aboriginal people frequently. For example, on one occasion Oastler followed the tracks of lost sheep from William Springs 'and found a lot of Blacks camped there [who] ran away at my approach except an old man and woman'. He camped there, then returned the next day with Billy who found 'the bones of a lamb fresh picked and buried...near one of the camp fires' (Oastler, 8 Nov. 1866).

	1865	1866	1867	1868
January			<u>22</u>	<u>14, 2, 5, 19</u>
February			<u>22, 49</u>	<u>14, 2, 5, 19, 9</u>
March		<u>4, 29, 22</u>	<u>23, 24, 25</u>	<u>2, 15, 16, 9, 15</u>
April		<u>22</u>	<u>23, 24, 25, 1</u>	<u>[2, 15, 16, 9, 15]</u>
May		<u>22, 4</u>	<u>23, 24, 25</u>	<u>12, 2</u>
June	<u>11, 3</u>	<u>22, 26, 4</u>	<u>23, 24, 25, 25</u>	<u>14, 12, 2</u>
July		<u>26</u>	<u>1, 17, 23, 24, 25</u>	
August		<u>26, 28, 4</u>	<u>23, 24, 25</u>	
September		<u>28</u>	<u>[23, 24, 25]</u>	
October	<u>2, 12, 13, 4</u>	<u>27</u>	<u>23, 24, 25</u>	
November	<u>8</u>	<u>17, 19, 27</u>	<u>24, 22, 7, 8, 1, 7</u>	
December	<u>19, 14, 6, 2</u>	<u>22, 1</u>	<u>8, 19</u>	

Key:

<i>italics</i>	Lambing station
<u>underline</u>	Shepherding out-station
bold	Reported Aboriginal camps (consisting not of Aboriginal pastoral workers)
strikethrough	Wool-washing camps
gray	Period of lambing
[brackets]	Inferred location

Places by area (mapped in fig. 7-5)

<i>Area a</i>	1	Strangways Springs	
2	Beautiful Valley	3	3 miles from Strangways
4	Myalls Creek	5	La Pellys Wurley
6	Margaret Springs	7	North Creek
8	Yellow Waterhole	9	Stuarts Creek waterholes
<i>Area b</i>	10	Francis (Swamp and Spring)	
11	Leonard Spring	12	Flagstaff
13	Diana wurley	14	Lloyds Spa
15	Bishop Spring	16	Two Sisters Spring
17	Anna Creek		
<i>Area c</i>	18	Emily Springs	
19	William Springs	20	William Creek
<i>Area d</i>	21	The Trig	
22	Lake Kalara	23	Lake Warren
24	Lake Lowden	25	Hayes Water
26	Lake Louisa	27	Wobmadingalinda
<i>Area e</i>	28	Claypans 30 miles from Strangways	
29	The Douglas	30	Primrose
31	Neales River		

Figure 7-4. Aboriginal camps reported in written accounts (1865-1868)

Other descriptions are of strange Aboriginal groups encountered at out-stations. For example, at a lambing station at Lake Louisa in 1866, Oastler wrote:

Ps: we have seen a great number of strange blacks about here at times and although anything but pleasant to look upon in their paint and filth they have not molested us as yet. (Oastler, 17 July 1866)

The locations of Aboriginal settlements in relation to pastoral activity, as reported in the letters, is represented in figure 7-4. All those places marked as 'lambing stations' represent camps of Aboriginal workers and their families. The period of lambing is marked in grey. The wool-washing camps at the head station are marked. Some Aboriginal camps extraneous to the pastoral camps were described, and these are marked in bold. Similar to the pastoral pattern of land use described in the letters, the Aboriginal settlement was seasonal and transitional. The pastoralists often described

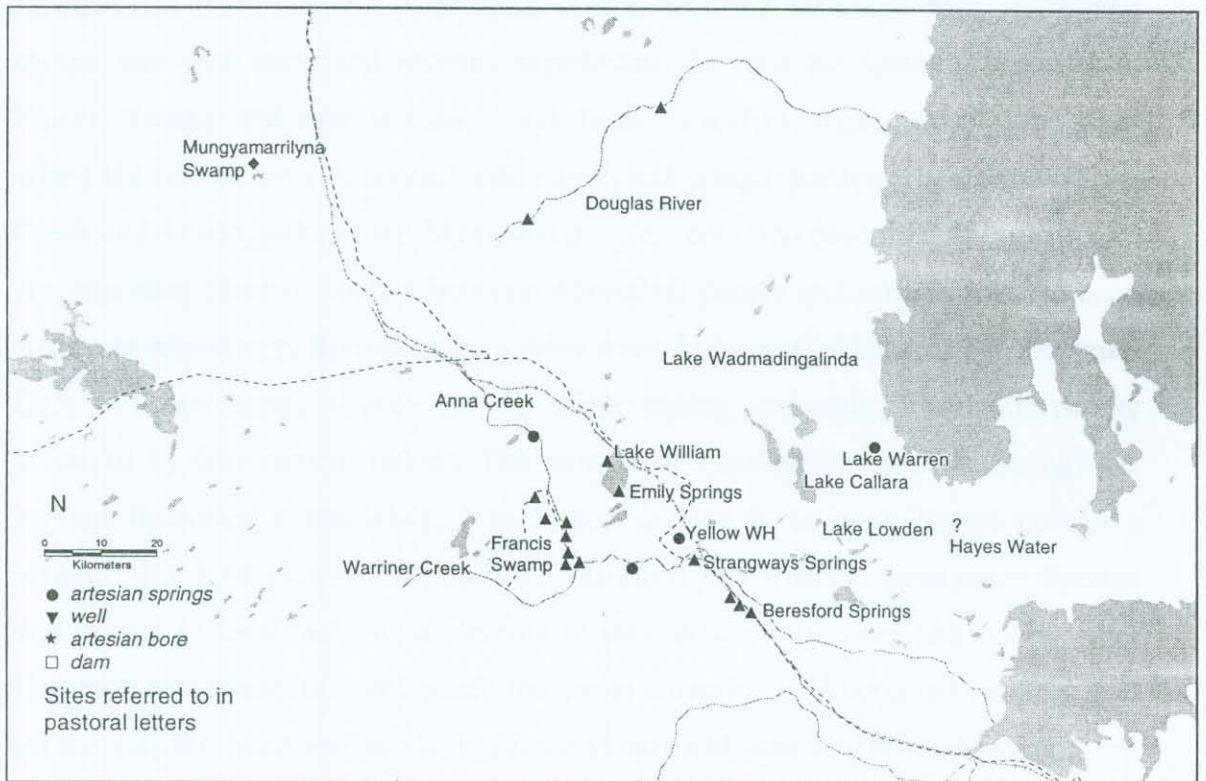


Figure 7-5. Location of some places referred to in the pastoralists' letters

being concerned that there would be adequate resources (water, herbage and Aboriginal workers) for the duration of the lambing. The pastoralists did not

necessarily return to the same out-stations each year, as localities needed time to regrow herbage.

Through the letters it is possible to define certain local areas in which pastoral camps tended to be located together. The areas are defined according to proximity, because places within each region tended to be used concurrently by the pastoralists. There were out-stations in the most immediate vicinity of Strangways Springs (area a), Francis Swamp (area b), Lake William (area c), lakes west of Strangways Springs (area d), and meetings at out-stations when located north towards the Douglas River (area d) (some of these areas are marked on figure 7-5). Other sites were more isolated. In the sporadic accounts from 1865, the lambing occurred close to Strangways and in the Francis Swamp (areas a and b). In 1866 and 1867 lambing stations were established in area d, first at lakes Kalara and Louisa, then at Hayes Water and lakes Warren and Lowden. At these stations there were several reported meetings with Aboriginal camps, and with trade and revenge expeditions. In 1868 the lambing occurred in Francis Swamp and near William Creek (areas b and c). Again, these were areas where the settlers were in contact with Aboriginal groups, particularly along William Creek and Anna Creek, where Aboriginal people were often described as 'numerous'. An important place of contact between Aboriginal people and settlers was the head station at Strangways Springs, where there were Aboriginal shepherds for the small flock of ration sheep, workers for the wool-washing, and older Aboriginal people sustained by Government rations. The number of Aboriginal people at Strangways Springs fluctuated dramatically, from almost no people to large groups including visiting Aboriginal people. Like the areas described as b, c and d, Strangways Springs was central to local indigenous patterns of subsistence, settlement and travel. After European settlement, the station had the social attraction of Aboriginal workers, and presumably the European goods that some people had access to through being given rations and as payment for work.

My analysis shows that to rely on written sources to determine past Aboriginal settlement patterns is problematic. The principle restriction derives from the fact that the written sources result from pastoral activities. This means that some Aboriginal workers are described by the pastoralists, while others are poorly reported. However,

it is possible to show that Aboriginal people lived at the settlers' out-stations, both as workers and visitors, and also lived at the head station at Strangways Springs. There are further links between work and settlement. The periods of increased Aboriginal pastoral work, such as the lambing and wool-washing, saw the establishment of larger Aboriginal settlements, many based on the family unit, rather than particular groups of individuals within the society (such as men or women). By 1875 the ethnographer Gillen wrote that 'all the shepherds employed at this station are Niggers[sic]...and do just as well as the whites' (Spencer & Gillen 1912), suggesting how much Strangways Springs station relied on Aboriginal labour. The following sections discuss other evidence for Aboriginal people's lives and interaction with pastoralists.

Ecological change and use of resources

An important subject in studies of colonialism is the wider implication of exposure to new fauna and flora, including introduced bacteria and virus. This is termed 'ecological imperialism' by Crosby (1986) to describe how the environment is physically transformed as a result of colonialism - truly a 'new world' is created. There is specific evidence in the written sources which refers to ecological changes as they were observed. In particular, the effect of introduced animal species was observed. There are very few accounts of how Aboriginal people reacted to the new species that accompanied European settlers. A rare exception is an account by the explorer John McDouall Stuart, in which he describes meeting Arabana people in Warriner Creek near Strangways Springs in 1858. The account is provided in full:

[I] saw some natives walking along a valley...I hailed them and an old man came up to me. He was rather frightened, and trembled a great deal. He seemed to wonder and be pleased at my smoking a pipe of tobacco. I gave one to him and a piece of tobacco, but he did not know how to manage the cutting, filling, and lighting operations. I did these for him. In the first attempt he put the wrong end in his mouth, which he found rather hot, and quickly took it out. I showed him the right end. He managed a whiff or two, but he did not fancy it. He seemed very much pleased with the pipe, which he kept. I then made him understand that I wanted water. He pointed to the same course that I was steering. In a short time another made his appearance in the distance. By a little persuasion from the old fellow, he was induced to come up, and in a short time became very talkative, and very anxious to show us the water. In a few minutes a third made his appearance, and came up. He was the youngest - a stout, able-bodied fellow, about twenty-four years old. The others were much older, but were very powerful men, and all three

in excellent condition. The women did not come up, but remained in the flat. I expected they were going to take us to some springs, and was disappointed when they showed us some rain water in a deep hole. They were quite surprised to see our horses drink it all. They would go no further with us, nor show us any more, and, in a short time after, left us. (Stuart, in Hardman 1964, pp. 86-7)

The Aboriginal reaction in this excerpt to the amount of water the horses consumed reminds us how different and larger the introduced animals were, compared to desert-adapted species. As described previously, these were animals that certain Aboriginal workers would become quickly proficient at handling. A significant faunal change was the introduction of foreign animals, in particular sheep, cattle and horses. These animals filled the ecological niche occupied by medium to large mammals, in particular macropods. This change meant that Aboriginal people began to hunt these animals, and this was a primary issue of dispute in colonial contexts across Australia. There are some references to the practice of hunting stock in the letters from Strangways Springs. In May 1865 Jeffreys wrote to Warren: 'You will be glad to hear that there has been no sheep hunting for two months', indicating that the initial two years of the pastoral enterprise may have been worse in that regard. There is some evidence that the settlers accepted sheep hunting to an extent. This is suggested in November 1866, when Oastler describes finding a missing sheep in the fires of an Aboriginal camp at William Spring. The lack of concern about this suggests that during the 1860s Aboriginal hunting of sheep did not exceed limits acceptable to the settlers.

Stuart's account, provided above, expresses his disappointment that he was led to a small rock-hole rather than a larger spring. The pastoralists relied on a range of different water sources, including springs, rock-holes, soaks, claypans and creeks. Needless to say, in this arid environment access to water for both indigenous people and pastoralists was critical. The fall-back resource for indigenous occupants had always been the artesian springs in the region (demonstrated by large archaeological deposits). The springs were the justification of the pastoral industry and were the first major victims to the introduced European animals, whose numbers threatened delicate ecosystems. This is demonstrated in the letters of the station managers who attempted to make access to the spring water possible without the stock destroying the springs.

In particular, labour was expended on carving trees into wooden troughs for watering places.⁸

Indigenous people were acutely aware of where and how to obtain water in this region. This was the most valuable knowledge for the pastoralists, as the success of their venture depended on water. There is evidence that some Aboriginal people assisted the pastoralists by providing information. In 1866 Oastler wrote:

The Blacks tell me that a little distance from said waterhole [east of Lake Kalara] there are others quite as large and deep. If the water is quite fresh and yellow and deep as the Blacks say it will last at least twelve months. (Oastler, 16 Nov. 1866)

On another occasion in 1867 Oastler wrote:

[A] Wild Black came to the Francis and reported a heavy rain having fallen to the west. I started immediately with him, Mr Matheson and one of our tame boys as interpreter. We discovered the springs of which we have heard so much. (Oastler, 6 July 1865)

Aboriginal people provided other crucial information regarding the environment. Oastler wrote that he had 'passed his opinion regarding future droughts in the Far North...after due consideration as from what I can learn from the Blacks' (Oastler, 23 Feb. 1867).

There is little information in the letters suggesting whether there were disputes between settlers and Aboriginal people regarding access to water. The drought of January 1866, described previously, may have resulted in clashes over water along the Douglas River. Other references suggest that during severe drought pastoralists and Aboriginal people relied on the same main water resources, such as the permanent spring complexes.

The exchange of information described in the letters may have been a means by which certain Aboriginal groups gained rations. The letters also suggest that the pastoralists were negotiating out of a concern for their own success in the region, which they were

⁸At some point imported American timber was used, as oregon troughs were found at several spring sites in Francis Swamp

not always confident about. Apparently indigenous people assisted in guaranteeing success, particularly during the earlier years of the station by providing an affordable labour force, and knowledge of the environment.

Another change to Aboriginal practices in the environment involved the burning of grasslands. There is evidence throughout Aboriginal Australia of desert fire regimes, which manipulated the grasslands for subsistence by encouraging new growth that attracted animals and new vegetable foods. There is evidence in the letters that Aboriginal fire regimes continued for (at least) several years after the arrival of the pastoralists. This is revealed by the pastoralists concern that the wooden troughs located at artesian springs were protected from fires lit by Aboriginal people (Oastler, 7 Mar. 1867; & 11 Mar. 1867). At that time the grass was very high, the right conditions to burn off. This is a rare insight, for there are few descriptions of concurrent fire regimes and pastoralism in the colonial period. This practice clashed with European use of native grasses. For example, Jeffreys letters describe his attempts to cut and stockpile grasses for animal feed. Throughout the semi-arid region the settlers initially believed that the sheep manure would transform the desert into a rich soil (Jeffreys, 29 Apr. 1855). There are no references to how the different practices were reconciled. All of these changes presumably affected Aboriginal diet and subsistence, especially when rations were used as supplements to bush food.

The ways of (dis)possession: evidence for conflict

A central element of revised interpretations of settler-indigenous interaction has been a review of evidence regarding dispossession of Aboriginal people and colonial conflict. Historians such as Reynolds (1983, 1990, 1994) and Rose (1991) reveal how violence often remained 'hidden'. Consequently, it is important to remind ourselves that the more reprehensible aspects of interaction on the pastoral frontier may be the least likely to be communicated openly in letters. There is, however, some evidence in my study regarding evidence for conflict. Rowse defines the earliest phase of colonisation in Central Australia as where 'the colonial power over life and death is transparent' and characterised by 'securing the invaded property, murderous

during my archaeological survey.

campaigns, lawlessness and few 'welfare' institutions' (Rowse 1998, p. 6). This discussion touches upon elements which are described in the written sources from Strangways Springs station.

The method of colonisation of Aboriginal Australia by European settlers was context specific. Elsewhere in Australia, dispossession of Aboriginal land and lives was brutal, and remains relatively unreported. In the *Destruction of Aboriginal Society*, Rowley stated '[t]he land was settled either at the point of a gun or against the background of Aboriginal knowledge of what a gun could do' (Rowley 1970, p. 214). Rowse states 'the *possibility* of violence (in which colonists' vengeance would ultimately be far greater) underlay all transactions' (Rowse 1998, p. 64). The role of violence was a central component in many colonial encounters in Central Australia (Kimber 1991). This was also the case for the eastern Lake Eyre Basin where many Aboriginal people were murdered 'by bullet and poison' as described by Hercus (1984). Some authors have described the settlement of the western Lake Eyre Basin as different, with no atrocities and relatively peaceful interaction. For example, Shaw (1995, p. 8) cites Hercus, stating: 'Luise Hercus is confident there was little violence in these parts. There was no persecution, there were no massacres. The situation was indeed paternalistic, but benign, quite different from that of the Birdsville Track'. Station manager John Oastler described himself, and others like him, as 'bloodless conquerors of a vast domain'. There is to date very little research into the ways of dispossession in this region. A more extreme position is presented by Horace Simpson, who in his memoirs wrote of the telegraph station at Strangways Springs in the 1880s:

It was reported that the aboriginals murdered a number of the inhabitants here but on making enquiries to my uncle, James Buttfeld, who was stationed here at the police station, in the 1880s said he never heard of the massacre and no mention of it was in the police books about it. (Simpson 1989)

My analysis of historic accounts illustrates a fault with Simpson's reasoning. The surviving police station journals from Strangways Springs cover a short period of time (1885 to 1887). Consequently, any events outside this surviving documentation would not be necessarily referred to. Also, the surviving police journals do not mention any incidents relating to Aboriginal people, even though other accounts describe the

Aboriginal settlement at the station. My interpretation of these journals is that nearly all incidents relating to Aboriginal people were recorded elsewhere, perhaps sent directly to the Protector of Aborigines office. Accordingly the police station records are not accurate in relation to questions regarding Aboriginal life. James Buttfield's observations, however, may refer only to white settlers, because there were retribution killings on the station perpetrated by Aboriginal people during the 1860s, as described by Oastler. The discussion to date demonstrates the connections between pastoralism and Aboriginal people. This is seen to be an essential component of interaction, as Aboriginal pastoral workers were also involved in incidents of suggested or possible violence.

As frontier violence tends to hidden, historic sources acting as self-censors. This was not always the case, and some colonial accounts state the violence perpetuated on the frontier. This process is culturally and contextually located. Rowse details 'the colonists efforts to construct *a useful and satisfactory (to them) account of Indigenous agency*' (1998, p. 5, emphasis mine). This warns us that colonial explanations of events are the opinion of the colonist. There are several references in the letters written by Jeffreys and Oastler during the 1860s, and in the 1908 speech by Oastler, which describe events and attitudes involving violence. These can be analysed to explore the ways that interaction between the pastoralists and Aborigines involved violence, and how negotiation and resistance were reported by the pastoralists. Other references describe peaceful interaction. The letters of the 1860s differentiate between different indigenous groups. There were people living and working with the pastoralists, and there were 'outsiders' (although possibly 'strangers' is a better term, as they are described as 'strange') and viewed as a possible threat. Jeffreys wrote to Warren in 1866:

You asked me if the Blacks are troublesome. I am glad to say the Blacks come to me do not come south of the Douglas and they are easily kept down. The Strangways Springs Blacks are the most harmless of any north of Port Augusta. (Jeffreys, 29 Apr. 1866)

The 1860s saw sporadic acts of violence against property. During the extreme drought of 1866, Aboriginal people took any deserted property. Jeffreys stated: '[that] the Blacks have robbed Matheson's place, smashed every door and window, taken about

one ton of sugar...[and] The Emu is dead. I think it was stolen by some wild blacks' (Jeffreys, early 1866). He then wrote: 'to the Attorney General to ask him if I could deal summarily with the Blacks' (Jeffreys, early 1866). This request was granted, the Attorney General's instructions being:

[Jeffreys] and Ferguson may hear and determine in a summary way charges against aboriginal natives for the Commissioner if offences to which the punishment of death is not attached and sentence to imprisonment for twelve months. (Jeffreys, early 1866)

Jeffreys also received instructions to draw upon the Government for the payment of 'Special Constables'. There are no other references as to whether special constables were appointed. These instructions suggest that the settlers had some support from the colonial administration, to reduce any indigenous resistance. The settlers were interested in their own region, as demonstrated by Jeffreys when he wrote in 1866: '[he was] sorry to tell [Warren] that the Blacks are troublesome on the Douglas [although they] were too far off for him to look after there' (Jeffreys, 5 Mar. 1866). The Douglas River at this time is a frontier between the extent of pastoralism based at Strangways Springs, and other less actively settled areas. In January 1866 Jeffreys moved all the flocks, white and Aboriginal shepherds, and rations into Mount Margaret station (at that time deserted through drought). The sheep were demobbed along the Douglas River, and even further north at springs along the Neales River. This position was threatened by the Aboriginal people in that locality. This is suggested by Jeffreys in a letter two months later:

I am sorry to tell you that the Blacks are troublesome on the Douglas. They are too far off for me to look after there. I must shift [the sheep] immediate to Kalara. (Jeffreys, 5 Mar. 1866)

The lambing out-station consequently based at Lake Kalara was then joined by a large Aboriginal presence. This raised concerns of property, and the need for constant surveillance. Jeffreys wrote in 1866: '[that at Lake Kalara the white shepherds could not leave their hut] for the Blacks would have stolen the rations' (Jeffreys, 29 Apr. 1866). In the same year Oastler stated: '[that at Anna Creek] the Blacks are very numerous and will steal anything if they get a chance' (Oastler, 16 Nov. 1866). The relationship between Aboriginal people and settlers at the out-station can be viewed as

complicated, and based on mutual wariness, and threat. This is also demonstrated by Oastler, writing in 1867 (and also indicating the role of Aboriginal interpreters in these situations):

I told Jack to tell them that if ever they gave me good cause to growl at them I would put powder under their wurleys and blow them up...They told Jack to tell me that they were good quiet Blackfellows and would not give me any occasion to blow them up. Two of them came the next day and volunteered to mix pug and carry stones for me and worked well all day. And started off up the Anna Creek the next day. (Oastler, 9 July 1867)

Certainly Aboriginal resistance was not unknown in the Lake Eyre Basin. Howitt (1996, p. 47) describes clashes between pastoralists and Aboriginal people in the northern Flinders Ranges during the 1870s. He describes the role of the Aboriginal leader of resistance Inabuthina (known as 'Pompey') stating: '[Inabuthina] had to escape and take refuge with the Dieri for burning huts and killing white men - in other words defending his country'. Inabuthina's reaction to the settlers extended to murdering the local Aboriginal male for guiding Howitt.

An examination of references in the written sources concerning Aboriginal 'revenge missions' provides important insight into the layers of interaction in play from the earliest years of the settlement at Strangways Springs. These descriptions also serve to demonstrate that many important aspects of Aboriginal practice continued, and were also being changed resulting from the presence and actions of the pastoralists. Oastler termed revenge missions 'pinyaroo'. They are essentially the same as 'pinya' amongst the Dieri on the eastern side of Lake Eyre, as described by Howitt (1996, p. 178). They are termed 'revenge expeditions/missions' as they visited a people who were suspected of having caused harm to another, normally through some form of magic. Oastler described the pinyaroo:

First as to the formation of the Pinyaroo, or armed parties. On the death, naturally or otherwise, of any aboriginal, consultation was at once held by any of the tribe who happened to be about at the time, and as it is considered quite impossible for a blackfellow to die otherwise than by the violence or witchcraft of some other blackfellow, some individual is at once found guilty, and condemned to death by Pinyaroo at some future and indefinite time, usually at a large gathering of natives, in a good season, when someone or more who were cognisant of such death, and get-up and state the case in forceful language, when a Pinyaroo is at once formed

to execute the sentence, which proceeds to the camp of the condemned man to vindicate their law, when no doubt they feel (no matter how outrageous such feeling appear to us) that they are good and true men, who have but done their duty. (Oastler 1908)

There were several meetings described between revenge parties and the pastoralists. These show that pastoral work did not necessarily mean immunity from traditional life for Aboriginal workers. Further insight into protection from revenge missions is provided by Oastler:

[At] my temporary [out-station] one morning, on going out to count two flocks of sheep stationed some miles away, I found them quite correct, but no blackfellas about, only their lubras. On making enquires I found that a Pinyaroo party had come up during the night and after vindicating the law on two condemned men, not engaged as shepherds, had taken away my shepherds, leaving two flocks of sheep all right with their wives to look after them, and then preceded towards my main camp, to stay about three miles away til nightfall, and then go there to execute my black shepherd who was shepherding the rations sheep. The camp being in charge of only one white man and my black boy Kally Kally, now a well grown man with a wife and child - not much to defend the camp in case of a surprise during the night - I now found myself in rather a tight corner, to say the least of it. If I went to seek assistance at the Police Camp, or Anna Creek Head Station, a tragedy might, and would most likely be enacted before my return, consequently I made up my mind to face the matter myself, considering the responsibility rested on my shoulders, and having my Colt Revolver with me I at once preceded to the Pinyaroo party's camp, where I discovered about thirty Aborigines, with their weapons piled, and themselves camped some little distance away under the shade of some box trees. At once taking up a position between the party and their arms and drawing my revolver I commenced an harangue that I considered would be tantamount to reading the Riot Act to the Aboriginal mind and would be conducive to their dispersal without further loss of life. I then permitted them to take up their arms and depart in peace, and returning to my camp at once, mounted Kally Kally on horseback to see them well away, and in about two hours time he returned with the information, 'yes, him pull away more further'. However we got out firearms ready and kept strict watch during the night, which passed quietly away, and so the affair blew over and I made no more trouble about it, as it was purely a tribal affair, and would only cause a lot of useless expense to the Government if any more action was taken therein. (Oastler 1908)

The ramifications of this interruption to Aboriginal law is unknown. Certainly Oastler took a stand against Aboriginal law, seeing it as being replaced by the European order. For example, he stated:

To break these wild tribes into something like obedience, and to teach them the law of ownership and property, and that their laws must give way to the white

mans' law, were the most difficult task - today nothing is known of the trouble we had of instilling into them that the white mans' was not only superior, but that they must serve him, do his bidding, and observe his laws, and that then they themselves would be better for it. (Oastler 1908)

Further, on law, Oastler stated:

In dealing with wild or semi-wild aborigines I have always held this in mind, never being over-harsh with them, but by being 'suaviter in morto, fortiter in re.'⁹ I hope to be able to show that I may have prevented much bloodshed, and perhaps rendered the State more or less some form of service. I would like to state here that in all the doings of these wild natives they have distinct laws, and they carry them out. That they are revolting and wicked to the last degree, to our mind, goes without saying, although to their way of reasoning the very essence of justice. (Oastler 1908)

These excerpts show Oastler's response to perceived Aboriginal theft or violence throughout his accounts was one of threatened force. Using the frontier vernacular, 'growling' by Oastler involved firing shots in warning. The effectiveness of proposed force suggests that real force was exacted at some point, or else it would not be intimidating.

There is no reason to argue that theft was not repaid with reprisals. I can not present any evidence for Aboriginal deaths, however, there is a strong expression in the pastoralist's letters of the right of European law. By 'European law' I do not mean common law, but the right for settlers to determine offences, types of punishment, and to deliver punishment. The European mind-frame evident in the pastoralists letters quoted here is echoed by the explorer Gregory, writing after visiting the Lake Eyre Basin in 1901. He stated that the pastoralists:

regarded the stock they imported at great trouble and expense, as on a different footing from wild game...and when they could do so with impunity, punished the thieves with 'back-bush law' [The] 'bitter feud'...was by no means universal. Many of the settlers sympathised with the aborigines, and treated them humanely, feeding them when they would have otherwise died of famine, and kindly overlooking the occasional killing of a sheep'. (Gregory 1906, p. 174)

⁹ Translation probably from the Latin phrase 'Sauviter in modo, fortiter in re' (Gentle in manner, resolute in deed).

My interpretation of the pastoralists' written accounts suggests social interaction where the settlers were primarily interested in those Aboriginal people and their residential kin who worked for the settlers. Threats (and presumably occasional incidents) of settler violence were directed towards the perceived threat of Aboriginal people outside the pastoral system. This caution was not without foundation, as the pinyaroo extended their missions into the pastoralists' domain. Stories of Aboriginal violence common throughout colonial Australia acted to perpetuate the settlers' fears.

The features of an early phase of colonialism, as listed by Rowse previously, are supported in my analysis. Firstly, there was a 'securing of the invaded property', which occurred within a very short period of time. From the initial set of pastoral activity areas, access to a more comprehensive configuration of resources was established, which, as demonstrated throughout this discussion, involved the participation of certain Aboriginal people and families. An examination of evidence for conflict reveals that this pastoral world was bounded, both in terms of the landscape (there were areas where the pastoralists could no longer guarantee the safety of an out-station, such as Douglas Creek where early pastoral expansion was frustrated by 'Wild' Blacks') and in terms of indigenous people (there were Aboriginal people who remained 'outside' the pastoral world, yet when they interacted with the pastoral workers were considered threatening). Rowse's second criterion was 'murderous campaigns'. As suggested earlier, it is unlikely that such behaviour would enter into these written accounts. Given this, the only evidence for murderous campaigns, are Aboriginal revenge missions which were focussed on Aboriginal pastoral workers, and which Oastler attempted to prevent. This, and descriptions of 'keeping down' certain groups, would suggest that the station managers would have used violence when necessary. Rowse's third criterion was 'lawlessness'. The recognised existence of two systems of law, settler and indigenous, and the clash between them, was quoted earlier from Oastler's account. European legal concepts of property were central to the colonists, seen in the negative reaction to theft. This is where the two laws become mutually incomprehensible. Indigenous people's notions of their right to hunt animals, including sheep and cattle, and to possess abandoned property, differed immensely from the settlers. Rowse's final criterion was 'few welfare organisations'. This was demonstrated principally by the

evidence for the provision of government rations at Strangways Springs Station, and later at Anna Creek Station.

Traditional practices and ceremonial life

Descriptions of Aboriginal cultural life are rare in the written accounts of the pastoralists. The relatively small amount of evidence for large gatherings of Aboriginal people, trade, long-distance communication and ceremonial life are discussed in this section. These elements are described in the pastoralists' letters as they existed within, and disturbed, the pastoral order. There is evidence that Aboriginal pastoral workers participated in these activities.

In 'traditional' Aboriginal life, large gatherings were organised in times of abundance, such as after heavy rainfalls. This allowed large camps to be sustained for extended periods of time. Hamilton (1972) interpreted the indigenous mobilisation for rations in ecological terms, with the rations representing a 'super waterhole' so that Aboriginal people 'moved towards the whites, not in order to take part in white society, not in order to experience social change, but in order to eat the food' (Hamilton 1972, p. 41). Rowse proposed that a rationed camp could develop its own ceremonial momentum and provide new ceremonial opportunity (Rowse 1998, pp. 97-8). There is evidence in the letters that rationed work camps attracted other Aboriginal groups from outside the pastoral system, and that the opportunity for ceremonial activity was realised. For example, in November 1866 a lambing station at Lake Kalara was visited by a large group of Aboriginal people, and was the scene for a 'corroboree', after which they slept around the sheep with the shepherds. They remained camped there for the period of the lambing camp, causing fears of theft of the shepherds property. On another occasion, described in a previous section, a wool-washing work-force at Strangways Springs was interrupted by a groups of 'wild blacks' who proceeded to conduct a initiation ceremony for the Aboriginal worker, Kalli Kalli. This resulted in most Aboriginal workers leaving the head station for an extended period. These examples lend weight to the interpretation of the contact period as populated by participants with multiple social responsibilities. That is, social obligations existed between Aboriginal persons and Europeans, and between Aboriginal pastoral workers and

others 'outside' the pastoral domain. This complexity has been demonstrated in twentieth century pastoral contexts (May 1994; Rose 1991; Rowse 1998; Watson 1998), but is less well researched for earlier colonial periods.

Howitt (1996, p. 103) stated that even the most rudimentary communication with Aboriginal people would make settlers aware of public classificatory schemes in Aboriginal society: '[t]he pastoral settlers...must from early times have known of the existence of...subclass names' (Howitt 1996, p. 103). There is little evidence for an awareness of social structures in the letters of the pastoralists, until we consider the memoirs, where Oastler demonstrates a greater comprehension of social and cultural life. He explains in 1908 of the Arabana:

I may mention that they are not without some form of religious belief, in as much as they think it is quite possible for a good blackfella's spirit to come back in a white man, but they have only taken up that belief since they have become satisfied of the superiority of the white 'fella', or possibly, when they come to 'know me well and love me' they would not have given me the title of 'Narcoo Noocamarunda', which title I hold to the present time, and which being interpreted means 'the spirit of a black chief come back in a white man', and I'm commonly called Mootabata, 'Father'. (Oastler 1908)

This example of the difference between Oastler's letters and his later memoirs serves to caution us as to how little the pastoralists wrote of Aboriginal people. The letters were particularly weak in describing the material culture of Aboriginal people (an issue pursued in chapter 8). An exception is descriptions of Aboriginal use and trade of ochre. As described earlier, ochre was traded within one of the: 'world's most extensive exchange networks in hunter-gatherer ethnography' (McBryde 1997, p. 588). The most prized ochre was from Pukardu Hill, Flinders Ranges. McBryde describes these lengthy journeys as annual events, following prescribed ritual routes along which ceremonies were held. The Anna Creek area was a source of grinding stones, and important to the network of formal group expeditions to acquire trade goods. There is some evidence from east of Lake Eyre for the continuance of Aboriginal trading expeditions into the post-contact era. In 1874 the Aborigines Office wrote to a mission on Cooper Creek:

Sir, I...inform you that half a tonne of red ochre has been forwarded to your depot at Kopperamanna for distribution among the salt water natives of Lake Hope. The

Government have supplied this ochre with the view to keeping these blacks in their own district and prevent their annual immigrations to the southwards in search of ochre, which has led to frequent robberies of shepherds huts on the line of the route and interference with Aborigines in the settled districts. (SRSA, GRG 52/7/4, p. 411, 106/74)

However, there has been very little evidence from the western Lake Eyre Basin for Aboriginal trading in the post-contact era, other than the recognition that Anna Creek, as a source of grindstones, was an important node in the trade network. There are several events described in the written accounts from Strangways Springs which relate to trading parties. In July 1866, Jeffreys wrote from a lambing station at Lake Louisa: 'Ps: we have seen a great number of strange blacks about here at times and although anything but pleasant to look upon in their paint and filth they have not molested us as yet' (Jeffreys, 7 July 1866). He was probably describing trading parties passing through the region, especially given the ease of travelling such distances in the winter. Oastler described these trading parties:

I can not refrain from referring to what was ... a great source of trouble and annoyance to Magistrates and others connected with stock at that time. The Aborigines had a custom of going periodically, ... usually 50 to 60 strong, to an Aboriginal red ochre mine. This ochre was to the aborigines what gold is to the Whites. And consequently they would travel long distance and go through great hardships to obtain it. To illustrate this, I once weighed at Strangways Springs the loads carried by each member of those parties..., and they weighed from 60 to 80 pounds. The trouble with these parties, being often from long distances inland, wild and well-armed, they were mostly very aggressive in passing, and if not met in a firm manner would be likely to use force in order to obtain their demands. (Oastler 1908)

Oastler describes meeting such groups with warning pistol shots, in a similar way to the revenge missions described in the previous section. The evidence from the written accounts suggests that the locality remained a staging point for expeditions from the north and west, and that trading expeditions did not appear to avoid the pastoralists, often directly confronting them and asking for certain goods. The described meetings at the lakes east of Strangways, such as Lake Kalara and Lake Louisa, and at places such as Lake William, indicate the ongoing role of these places for local and regional meeting points. These meetings would have been accompanied by ceremonies, gift giving and negotiation. It is difficult to establish how the pastoralists affected these meetings.

Other evidence for Aboriginal social behaviour described by the pastoralists were the 'pinyaroo' described in the previous section. These were enacted to punish offences which included 'procuring death by magic,...murder, breach of the tribal moral code, offences against tribal customs, revealing the secrets of the tribal council, or the secrets of the initiation ceremonies to women or the uninitiated' (Howitt 1996, p. 321). Their maintenance was a measure of cultural survival. According to Oastler they stood as the antithesis of European order and attracted great resistance, so that in 1908 Oastler could state: 'Pinyaroo parties are quite done away with, they ought to be made to feel that in killing and slaying each other they are breaking the law that has protected them all their lives' (Oastler 1908). The type of protection described by Oastler would have circumvented the power of the pinyaroo - although how this was articulated in Aboriginal society is difficult to establish. There are several ways in which the pastoral order may have affected Aboriginal social structures. Rowse suggests that by joining in the station life, certain Aboriginal people avoided tribal law (Rowse 1998, p. 61). Certainly this was the case for certain workers, as Oastler describes saving them from the revenge parties if possible. The long-term effectiveness of this policy is difficult to establish however, as the revenge may be enacted at a later date. Another change regarded power relationships. Traditionally the principle negotiations were undertaken by the older men, as described by Stuart (MLSA, PRG 833/1/1, 1859). This process is circumvented through the indoctrination of young indigenous people as pastoral 'apprentices', as described earlier. Here the skills base, and thus access to the goods and protection of the pastoralists, resides with the young workers. This power structure however, should not be necessarily be interpreted this simply. For example, Rowse draws attention to the Myers' (1986) anthropological study of the Pintubi of the Western Desert in the 1950s, and 'emphasise[d] the element of legitimate hierarchy in Western Desert understandings of ...exchanges' (Rowse 1998, p. 43). Myers explanation of the Pintubi concept of 'kanyininpa': 'that authority is also a duty of care', reveals that in certain Aboriginal societies traditional power structures bonded with pastoral work and ration regimes. In this example the senior people retained power, as did the pastoralists. Similarly, as demonstrated previously, at Strangways Springs the young Aboriginal workers and their families remained involved in social life, which reaches beyond the pastoral

order, and presumably accommodated the senior generation. This was facilitated in part through the distribution of rations.

Sexual encounters

An important element of indigenous-settler interactions in Central Australia were sexual encounters, between Aboriginal women and the settlers. It is an issue rarely discussed in the annals of colonial Australia, and the written sources from Strangways Springs are no different. In an exception, Oastler recalled white men pursuing women on the station:

Many years ago, just as a flock of lambing ewes had been placed...with the black shepherds...a black fellow named Sambo...arrived with the information that a white man, a traveller with a horse, had virtually taken possession of the Out Station, refusing to allow Sambo and his lubra to return with his dray and bullocks, (you must understand that the lubra was the attraction to this unprincipled man), when Sambo at once came in to inform me of the state of affairs...[T]here was nothing for it but to buckle on my revolver and to proceed to the sheep station, when I found the recreant traveller had packed up his traps and departed at soon as he had discovered that Sambo had gone to the Head Station for assistance. (Oastler 1908)

As discussed in previous sections, the station manager acted to protect his workers and their interests on this occasion. There are however, no other descriptions of white workers cohabiting with Aboriginal women. The analysis relating Aboriginal workers, demonstrates the presence of Aboriginal females at out-stations and the head station. But any further interpretation is not supported by the written sources. Using the evidence presented here, and given that in other contexts women met the sexual demands of the white settlers (with miscegenation the result throughout Central Australia), we could expect sexual congress to have been an important element of settler-indigenous interaction.

Anthropological studies of Aboriginal life provide supplemental evidence that circumstances were created at Strangways Springs where cross-cultural sexual interaction was probable. In the previous section the Pintubi notion of 'kanyininpa' was used to introduce ideas of nurturance. The evidence presented here would support an interpretation of a social world in which, from the inception of pastoralism in the

1860s, indigenous engagement with the pastoral order acted to accommodate existing social hierarchies and power relationships. If this were so, and it seems likely given the stability of the system and eventual success of the pastoral venture, we could expect that these power structures also included access to women, as demonstrated elsewhere in colonial contexts (Hamilton 1972; Rowse 1998). Hamilton's model of cultural interaction states that Aboriginal people lived close to the Europeans, and that reciprocity was employed (for example sexual favours) to draw white people into their society. With regards to labour, group action drove the agreement to work, in exchange for the white settler 'looking after' the Aboriginal group. In this model the older men have great authority, controlling access to the women, and the labour of men and women. Accordingly, sexual encounters could be viewed as interactions between white men and indigenous women, *and* white men and senior Aboriginal men. The role of Oastler as a protector and, as he described himself, 'Mootabata' (Father), would fit this model, whereby he worked to preserve the colonial order, an order which incorporates indigenous society and meets the demands of the pastoral system. Finally, an unfortunate element of sexual congress was the introduction and rapid spread of syphilis, which, within forty years, was the most prevalent disease in the region.

Disease and health

By the twentieth century official reports described Aboriginal health as becoming increasingly poor. Rowse described the western Lake Eyre Basin as 'the communications corridor to the south [and] was quite likely a conduit for disease, venereal and other' (Rowse 1998, p. 52). Concern was expressed in 1890 by the Aborigines Office:

The Aboriginal population of South Australia at the foundation of the colony in 1836 was estimated to be 12,000. The date of the last official census 1881 a considerable decrease appears to have taken place in their number which is...as Males 3198 Females 2430 Total 5628, exclusive of 709 in the Northern Territory. Of these the healthy adults was 3777, Sick and Infirm 959, Children 892. A large proportion of the 959 sick and infirm appear among the native inhabited country south and east of Lake Eyre along where disease, chiefly syphilis, is very prevalent, even among the young children. (GRG 52/7/6, pp. 762-4, 7 July 1890)

The decrease in population was accounted for by: 'The disparity in the number of the sexes, the small proportion of children to the total population, and the prevalence of disease, to which the [Aboriginal] seem more susceptible since the advent of Europeans, so that the gradual decrease in their numbers can be accountable for.' The difference between western Lake Eyre and other places was accounted for as resulting from reduced access to native foods, hunting grounds and water. The worst settlements were along the route of the railway line, which had been built in the 1880s. Health care was sometimes paid for by the Aborigines Office. One letter from that office describes payment for an Aboriginal man 'Charlie' being cared for in the 'hospital' at Anna Creek, which may have been a room at the head station complex (GRG 52/7/6, p. 497, 78/88, 16 Apr. 1888). A report from the Police Inspectors Office to the Protector of Aborigines, 1896, describes some of the Aboriginal settlements in the Far North (GRG 52/5, 16 Apr. 1896). The main health issues in that letter were and eye diseases and influenza, which was killing people.

It is difficult to establish the mortality rate for these diseases. The issuer of rations at Oodnadatta suggested that the reported number of deaths was inaccurate as 'as the natives are very reticent in giving information or speaking of the dead' (GRG 5, 16 Mar. 1896). By 1902 the main disease was influenza, which would kill many Aboriginal people (GRG 52/7/6, p. 539, 152/88, 14 Aug. 1888). There are very few descriptions by the pastoralists of Aboriginal health from the 1860s until the end of the century. The only reported incidents related to injuries through accidents, rather than disease. Presumably disease had already been introduced remotely prior to the pastoral settlement in the 1860s, transmitted through the extensive trading networks described previously. There are no descriptions of Aboriginal explanations of these diseases, although in some instances the new diseases would have been horrific. Sixty years after European settlement at Strangways Springs, the 1919 influenza epidemic was particularly destructive, as described by Basedow:

The recent influenza epidemic was disasterous, having in many centres...almost completely annihilated the resident groups. We were surprised to note the appalling decrease in the numbers at Anna Creek, once a veritable stronghold of the local tribe. (Basedow 1920)

In several government reports the most healthy Aboriginal people were described as subsisting on station meat and native foods. This shows that if pastoral workers were paid adequate amount of meat and rations for their work, then their health and ability to work on the station, was improved.

Summary

This chapter began with a quote from E.C. Stirling, who in 1896 wrote of his wish to access the memories of 'those early pioneers and settlers who for years lived in close association with the natives at a time when their customs were still uninfluenced by general contact with the Europeans'. The analysis of written accounts fulfils some of Stirling's wish. While not the actual memories of 'those early pioneers and settlers who for years lived in close association with the natives' the interpretation has provided some understanding of structural elements of the earliest period of European settlement in the western Lake Eyre Basin, and Aboriginal-settler interaction and lifeways. Stirling imagined the period from the 1860s to the 1890s as: 'a time when [Aboriginal] customs were still uninfluenced by general contact with the Europeans' (Stirling 1896). This notion was central to much anthropology until recent times - that there could be found an unaffected 'traditional' Aboriginal society in places remote from European centres, such as Strangways Springs station was at that time. This simple linear understanding of cultural change is made problematic by the evidence presented here, which demonstrates the need to understand how the existence of large scale industries, in this case the pastoral industry, related to Aboriginal society. Conversely, the pastoral industry itself can be interpreted as being a creation of Aboriginal and settler participants, from its earliest inception. The evidence presented here indicates that the participants should not be assumed to be members of easily and consistently defined social groups. For example, the discussion of Aboriginal work revealed that Aboriginal workers were people of varying ages, including the very young, and that the worker related to the type of work. Work patterns were defined by the cycles of the pastoral system, and yet Aboriginal workers still had to meet ceremonial and social obligations. On the station the demands of work were met by a system which could accommodate existing social hierarchies and power systems, as well as new power structures, as represented by the pastoral 'apprentices', young men

and women with the greatest access to European goods and knowledge, and reciprocally providing access to Aboriginal knowledge to the settlers. On the other hand, there is evidence that the pastoral order heralded a new set of structures, offering protection for some workers from threats of revenge missions which presumably would have been previously unavoidable. The continuity of such revenge missions, and also long distance formal trading, suggest that the new pastoral system existed in relationship to many other indigenous social and subsistence networks in flux.

As stated earlier, these types of documents are rare by providing insight into the earliest years of the pastoral settlement of the Lake Eyre Basin, a time and place for which very little research of this type has been conducted. It is useful at this point to consider the strengths and weaknesses of these written accounts. The strengths of this data are that they provide sufficient verifiable and accurate accounts to conduct an analysis of pastoral life and Aboriginal participation. The patterns of pastoral activities can be seen to affect changes in Aboriginal life, namely subsistence, and access to people and places. The limitations of this data are that the period which has been emphasised here, namely the 1860s, is quite short. That is there is no consistent means to follow the trajectory of one reporter throughout their whole life on the station. The sources are distinctly Eurocentric. It is the richness of the letters from Strangways Springs that makes this analysis possible. In Part 4, in keeping with the aims of this thesis, I adopt a comparative approach to the evidence for cultural interaction in the study area.

PART IV
DISCUSSION

Chapter 8. Integration and comparison of archaeological material and historic written accounts

Memory, history, and relics offer routes to the past best travelled in combination.

David Lowenthal (*The Past is a Foreign Country*)

Introduction

This chapter discusses Aboriginal-European contact history in the south-western Lake Eyre Basin. Theoretical positions advocating independence of archaeological and documentary evidence (for example, Wylie 1985; Leone & Crosby 1987; Beaudry 1988; Leone 1988; Leone & Potter 1988b; Kirch & Sahlins 1992; Little 1992; Stahl 1993, 1994; Kosso 1995; Small 1995, 1999) seek to develop more critical and enhanced approaches to the interpretation of past human behaviour. Accordingly, in earlier chapters the analysis of archaeological and documentary data has been largely independent. Here I adopt a comparative approach to the treatment of archaeological and historic data to highlight continuities and dissonances between the different evidence.

The field recording method developed in this study described archaeological evidence from a range of archaeological assemblages. Such multiple-site evidence is ideally suited to a landscape based interpretive approach (as discussed, for example, by Head 1993; Ingold 1993; Bender 1994; Clarke 1994; Gosden & Head 1994; Morphy 1994, 1995; Thomas, J. 1994; Head & Fullagar 1997, 1999). Consequently, in this chapter, the notion of landscape is used to structure the comparative analysis between archaeological and historic data. In particular I focus on spatial contexts to highlight how different data sets interrelate.

The evidence presented to date suggests contact in the south-western Lake Eyre Basin was characterised by a complex set of Aboriginal-European relationships. I seek to explore the texture of such interaction, by examining how labour processes were implemented and organised, and how these transformed over time, as demonstrated for example by European perceptions of 'wild' versus 'station' Aborigines. Also

considered is evidence for adaptive elements in Aboriginal life following contact. A focus of this discussion will be to consider how and whether Aboriginal attachment to place changed during contact, in line with recent debate regarding the prehistory of social landscapes (for example, Head & Fullagar 1999).

The last part of the chapter develops a model for agency on the frontier, as demonstrated during the first forty years of the contact period at Strangways Springs. I propose that the dominant structural principles here were colonial regimes of rationing and pastoral labour processes, and Aboriginal people's maintenance and adaptation of traditional life and subsistence.

The notion of landscape offers interpretative potential in accommodating different types of evidence of past human activity (Gosden & Head 1994, Morphy 1994), and patterns of human use over time (Clarke 1994; Mitchell 1994; Head & Fullagar 1999). Gosden and Head capture this versatility when they define landscape as 'a usefully ambiguous concept' (1994, p. 113). In this section I consider landscape in terms of:

- a) the observed record (from mid to late-nineteenth century historic contexts), and
- b) patterns of archaeological remains, accumulated over much longer periods of time.

The following discussion seeks to identify and explain past landscapes, particularly pastoral and Aboriginal landscapes. The underlying structural elements to these landscapes are both environmental and social. Environmental demands dictate that water, food and shelter are essential elements of life in the demanding desert environment. Beyond environmental determinism exist social, cultural and economic decisions which shape human landscape use.

Pastoral landscapes over time

Taken together, the archaeological and historic evidence provides an enhanced interpretation of the working of the nineteenth century pastoral system at Strangways Springs Station. This section uses 1) patterns of pastoral activity, 2) material culture, 3) evidence for expenditure, and 4) types of pastoral work to discuss change in the pastoral domain over time.

The archaeological analysis defined an earlier phase (1862 to post-1882) and a later phase (from 1882 onwards) of pastoralism. Analysis of historic sources has demonstrated that the earlier years of the pastoral station were regulated by the pastoralists' knowledge of local resources (often provided by Aboriginal informants), and structured by the demands of the semi-arid environment. Settlement initially focussed at naturally occurring artesian waters. Field surveys demonstrated that pastoral activity was restricted to springs with associated herbage and/or grasslands. Consequently pastoral use of mound springs was often restricted to areas such as Francis Swamp, Lake William and Strangways Springs (*see* fig. 7-5). Supplemental to these locations were more isolated out-stations (such as the out-station site N3) in dunefields and at lakes closer to Lake Eyre. In good seasons, when ephemeral waters were replenished and able to sustain flocks of sheep, pastoralists accessed the more remote and ephemeral resources of the station. Perhaps not surprisingly, the resultant pastoral settlement pattern correlates with archaeological evidence for pre-contact Aboriginal settlement as discussed below. Following from this observation, while early pastoralist occupation was spatially close to pre-contact and post-contact Aboriginal sites, they rarely overlay Aboriginal occupation sites. This spatial organisation may indicate an avoidance of Aboriginal settlements, by pastoralists who shared the same resources.

The aseasonal pattern structured by irregular rainfalls described here captures the essence of the early phase of the pastoral industry. Station managers defined their initial pastoral management techniques in their letters. In summary, during good seasons they would keep two large flocks (ca. 2500 sheep) at out-stations on rain water (Oastler, 28 July 1868). This required residential out-stations, built with simple labour-intensive technologies. This period is characterised by use of local materials, such as timbers, and locally made structural equipment, such as hand wrought nails. The out-stations required several shifts of shepherds, including Aboriginal workers (as discussed below). During 'indifferent seasons' the flocks were stationed at permanent waters in separate flocks. Keeping smaller numbers of sheep at separate stations

avoided 'boxing', the destruction of herbage and consequent underfeeding.¹⁰ However, the greater number of stations was very labour-intensive.

In addition to out-stations, there were specialist work camps, predominantly for scouring and shearing. Scouring occurred at Strangways Springs head station, as well as at other locations. The shearing is described as occurring at the head station buildings (site S001). The pastoralists' letters suggest shearing was a specialist job conducted by itinerant European shearers, assisted by the station shepherds. The archaeological deposits at the stock yards and the head station resulted in part from this activity. Presumably the European workers were accommodated at the head station, or camped nearby. The less disturbed evidence from site S021 was interpreted as a site of a scour. Neighbouring archaeological deposits sites suggests Aboriginal workers lived next to the scour (for example site S355, fig. 5-34). The close proximity accords with the demands of the work, as the letters describe that the Aboriginal and European workers spent many long days washing wool.

During the initial years of the Strangways Springs Station, the size of stock population was determined by climate, with numbers being reduced by drought and flood. An understanding of local seasons was slow in coming to the pastoralists, although Strangways Springs was never abandoned during drought (unlike every other station in the Far North during the 1860s). The delicate balance between available resources, human population and pastoralism was most apparent during droughts, when the pastoralists were forced to rely solely on artesian springs. Even though the water was constant, the grasslands surrounding the springs was often quickly consumed by the stock. In severe droughts they moved sheep onto neighbouring abandoned stations.

In the last two decades of the nineteenth century the pattern of pastoral activity at Strangways Springs Station changed. New technology, better transportation and increased expenditure made it possible for the pastoralists to better regulate water resources and the spatial organisation of pastoral industry. These changes are reflected in scale of archaeological material. Sites such as the 'Old Anna Creek' Woolsheds and

¹⁰ It was deleterious for different flocks of sheep to become mixed up, termed 'boxing'.

yards (sites A6 and A9) overwhelm in scale smaller sites dating from the inception of the pastoral industry (such as sites N3, I2 and Emily Swamp). In the later phase the pastoralists' bored into the artesian basin making wells and bores in areas remote from natural waters. Built around these new water sources were large fenced paddocks. These protected the stock from predators, with the result that there was less need for residential shepherding. Consequently, the patterning of archaeological material indicates a change in the pastoral network from the locus of the mound spring country into the dunefields and semi-arid pastures (fig. 5-40). By the early-twentieth century a hand-drawn map of Strangways Springs Station shows the central parts of the property divided into large paddocks.¹¹

This observation suggests an increase in expenditure. In the first decades of the station there was little evidence for significant financial outlay, and local materials were used for construction of pastoral work sites. The first artesian bore sunk in 1882 indicates an increase in expenditure, as demonstrated by increased amounts of technical equipment. For example, at the woolsheds on Anna Creek (sites A6, A8, A9) were large boilers, cast-iron ranges, windmills, metal tanks and metal troughs. This equipment would have been more affordable following the construction of the railway from Adelaide in 1886. This shift accords with evidence from later pastoral archives, which suggest increasing expenditure followed the change of ownership to Hogarth and Warren in 1868. In the 1880s they received quotes for windmills, bores and more elaborate shearing equipment. There is no evidence that this increase in financial outlay included increased wages, or the payment of wages to Aboriginal workers.

These changes over time imply change in pastoral work. At Strangways Springs Station the organisation of pastoral practice was originally a mimicry of European animal husbandry practices, as the station owners and shepherds were immigrants from Great Britain, particularly from Scotland. The reliance on shepherds was particularly reminiscent of European pastoral practices. However, predators and harsh climatic conditions for stock meant the number of workers required to care for the sheep was much greater than European conditions, especially during the lambing.

¹¹ Kidman Holdings, North Adelaide, personal collection.

Originally, the station managers had little experience of raising sheep in Australia. As the 1860s letters show, the early phase of pastoralism was dependant on the management skills of the station manager and his senior European and Aboriginal shepherds who were responsible for running out-stations without supervision for extended periods. Following the construction of large protective fenced paddocks, there was a shift away from the network of shepherd's out-stations. This later period is not covered by the pastoralists' surviving letters. However, the archaeological record demonstrates that the shepherding sites were characterised by the older types of 'European' material culture found in the study, rather than late-nineteenth and early-twentieth century types. Additionally, they lacked expensive and heavy technical equipment, which apparently postdates the 1880s. These changes in pastoral work were observed in south-eastern Australia by C.E.W. Bean (1910) who lamented the loss of shepherds from the pastoral landscape:

Even the tradition of them had almost gone from the 'inside' country. And yet most of us who were children in the [Eighteen] eighties have some forgotten childish recollection of a tall gaunt figure in a half frayed overcoat, a shabby felt hat half riding the sunken cheeks, a thin grey beard, and hard lines drawn as with a ruler across his face. One can see the round backs of a hundred sheep on the hill there, the ragged edges of his overcoat showing against the yellow sky, with his stick and his pipe and his dog - the old man himself. With no companions, he lived year in and year out - twenty, thirty, forty miles from the homestead. Once in three weeks or more a cart would turn up with his rations. But seeing men so seldom, he came not to wish to see them - a 'hatter' they called him for his madness. The man was the Shepherd.

C.E.W. Bean (*On the Wool Track*)

Bean's image of a 'solitary shepherd' does not accord with the Strangways Springs evidence. The shepherds at out-stations often numbered three or more, working in shifts to keep flocks separate, and often included a hut-keeper. For both the European and Aboriginal males this was often their wife. Shepherds were as likely to have been young Aboriginal boys or girls. The out-stations were also the site of seasonal work, most importantly lambing, with labour provided by larger groups of Aboriginal families. However, Bean's observation regarding the demise of the shepherd is supported by the archaeological record regarding changes in pastoral work practices over time.

Few of the bores and wells which facilitated the shift from mound spring country into the dunefields had evidence for ancillary settlement. Exceptions reported here were Leonards Bore/Spring (site K1) and Parkers Well (site C1). Importantly, there was no evidence for semi-permanent residential structures for shepherds. As demonstrated by the material remains, the focus of late-nineteenth century station work was the woolsheds on Anna Creek (sites A6 and A9). Here, the scale of 'improvements' was evident, as were small associated residential camps. Parkers Well represents a pastoral working camp, probably for both European and Aboriginal workers. Although shepherds were not as vital in the later phases of nineteenth century pastoralism, there would have been other pastoral work, in particular for boundary riders, animal husbandry, wool scourers, shearers, fencers and dingo killers.

During the period 1860 to 1900 the pastoral landscape underwent environmental change. Habitats were altered by such things as the introduction of new species and the restriction of native animals distribution by fences and poison. Fences attempted to keep sheep, cattle and horses on the inside; while rabbits, dogs and foxes were ideally on the outside. Also significant were the removal of vegetation, and changes to water resources through increased stock numbers. The present condition of artesian mound springs demonstrate such changes as damage from stock, human manipulation of water outflow, reduced artesian water outflow following bores, changes in fauna and flora species, and widespread erosion deriving from de-vegetation. These effects were reported at sites N1 and K1, Emily Springs and Leonard Springs.

Not all aspects of change in the pastoral industry over time were measurable, in particular, evidence for the rate of change from sheep to cattle industries. However, station records indicate increasingly larger herds of cattle from the late-1880s onwards, many being sold to railway construction camps. The archaeological correlates are cattle yards located throughout the station, many built in the twentieth century and located close to the railway for ease of transport.

These results suggest that an understanding of pastoral industries can benefit from a multiple-site regional approach. The notion of landscape provides an interpretive

space to situate links between environment, seasons, movement of people and animals, material remains, and phases of pastoral practice. A recent Commonwealth report (Australia ICOMOS 1995) on pastoral heritage invites research on a wider range of aspects of pastoral technology. To date, studies of pastoral head stations and shearing sheds have overshadowed other elements of the pastoral industry. The results presented in this thesis support the results of the Commonwealth report by revealing that the pastoral industry is best interpreted at a landscape scale. When integrated, individual elements such as out-stations, simple residential structures and yards, isolated bores and windmills, and fences define pastoral landscapes. Importantly, the changes in technology and increased expenditure (termed 'improvements' in pastoral vernacular) are indicative of changes in the pattern of pastoral industries, and of changing relationships with natural resources and labour demands.

'Wild' versus 'station': Aboriginal involvement in the pastoral system

A key outcome of the analysis of historic sources concerned the timing of Aboriginal involvement in the pastoral system where, from the earliest years of the station, Aboriginal labour was a component of the pastoral domain. Analysis of historic sources demonstrated the role of Aboriginal pastoral workers from the inception of the Strangways Springs station. Aboriginal workers who became 'apprentices' and 'henchmen' as young children facilitated cross-cultural communication and labour process negotiations. The key contribution of many Aboriginal men, women, children and families was shepherding, both at remote out-stations as well as near to the head station at Strangways Springs. Analysis revealed that the number of Aboriginal workers was several orders of magnitude higher than a non-critical reading of the historic sources would suggest.

A structuring element of the pastoralists' written accounts during the 1860s and 1870s was the distinction between 'station' Aboriginal people and others, described alternatively as 'wild' and 'strange'. I suggested the term 'station' was used by the pastoralists to describe all the station workers (both permanent and seasonal) and their kin. These people lived and worked 'within' the pastoral domain for at least part of

the year. Aboriginal labour formed the majority of the pastoral work-force. Aboriginal 'outsiders', as defined by the pastoralists, existed largely outside of the pastoral domain. However, the pastoralists described occasions when Aboriginal outsiders visited out-stations and the head station at Strangways Springs. There were three explanations provided for these events in the pastoralists letters. Firstly, to participate in ceremonies with their kin and particularly to conduct initiations. Secondly, as staging points along long distance trade routes, or while conducting revenge expeditions. Thirdly, when Aboriginal 'outsiders' sought commodities from the Europeans during drought. These all have implications regarding an interpretation of the areal meanings of 'station' and 'wild'. Rather than been spatial absolutes corresponding to 'inside/outside' they describe societal manifestations of 'inside/outside' as perceived by the pastoralists. This is similar to terms such as 'coming in', which provide spatial and societal direction to Aboriginal involvement in pastoral domains (Baker 1990a, 1990b).

Despite naming places, the written sources rarely offer precise locational and spatial information. We can infer that Aboriginal people lived at Strangways Springs and at out-stations, but it would be impossible to determine from the written sources alone where they lived in relation to the pastoralists. The archaeological record demonstrates patterning of archaeological remains consistent with Aboriginal settlement following contact. This raises the question: is there an archaeological correlate for the 'wild/station' distinction?

The supplementary evidence from documentary sources makes an important contribution to this problem. For example, the material evidence from out-stations (such as sites N3 and N4) indicates Aboriginal and European site use, raising the question: Were out-stations sites of interaction? The spatial separation between the out-station at site N3 and the Aboriginal camp at nearby site N4 signifies multiple expressions of Aboriginal occupation. These can be summarised as:

- a) There was a relative absence of evidence for pre-contact Aboriginal occupation in the immediate vicinity of the out-station, except very low frequency lithic scatters consistent with short-term campsites, possibly from overnight camping.

- b) The presence of artefacts (stone tools and ochre) at the shepherds hut (feature N3.1) was consistent with Aboriginal occupation. The types of 'European' artefacts inside the hut were found at other Aboriginal occupation sites (such as, pipes, clothing parts, bottles, and shears).
- c) There were post-contact glass working areas and a hearth (site N4) nearby the out-station.

Without supplemental evidence it is impossible to determine whether the surface archaeological remains resulted from concurrent Aboriginal and European site-use. However, the analysis of historic sources indicated that during the earliest years of the pastoral industry, the out-stations:

- a) Were equally working sites for Aboriginal male and female shepherds as for European shepherds and hutkeepers. Normally some mixture of both groups were stationed at stations for periods of two to four months.
- b) Were used for labour-intensive pastoral work, in particular during the lambing when Aboriginal people camped at the out-stations and were fed rations (flour, tea, sugar, tobacco and meat).
- c) Attracted Aboriginal visitors who conducted ceremonies involving Aboriginal pastoral workers. During drought the pastoralists feared theft from these visitors and ensured that the rations were kept in the hut and protected from theft. On occasions Aboriginal visitors to out-stations (particularly trade expeditions) demanded food and were shot at by Europeans. Conversely, on other occasions the European shepherds participated in ceremonial events.

Using the supplemental documentary evidence, we can now propose several interpretations of the archaeological record (other than non-contemporaneous site use by Aboriginal people and European settlers):

- a) The artefacts in the hut may have resulted from shared use of the structure by Aboriginal and Europeans. This accords with the archaeological evidence, which revealed glass tools, flaked grindstone and ochre in the hut, and small knapping floors for stone outside the entrance of the hut. The use of pipes, clothing (buttons and buckles), food flavouring and medicines may have been used by either group.

- b) The adjacent site (N4) provides a variation to the spatial organisation of the complex. If contemporary, this suggests that certain Aboriginal activities occurred close to, but removed from the sight of European shepherds. This accords with European accounts of the noise of Aboriginal social events at out-stations. Site N4 also suggests that the Aboriginal were able to make use of new material (glass objects).
- c) The faunal record in the hut (site N3) revealed that the shepherds butchered and ate both sheep and kangaroo, while the fireplace (site N4) indicated Aboriginal use of sheep. This conforms with and augments the historic record, which does not mention consumption of kangaroo and wallaby.

In this comparison, each set of evidence substantiates and augments the other, providing an enriched interpretation. For example, the evidence of site N4 could be interpreted as a camp of Aboriginal people (perhaps visitors or pastoral workers) meeting out of site of the main camp, and using bottles from the shepherding hut for glass working. The presence of stone and glass working areas outside and inside the hut accords with the presence of Aboriginal workers and their families. The presence of ochre accords with its use and value in Aboriginal society. The pastoralists describe its use in contact period ceremonies and expeditions. The presence of high quality ochre in the hut may have been the property of either the Aboriginal or European shepherds, and would have been a valuable commodity in contact period transactions.¹² Other out-stations, such as at the northern end of Francis Swamp (sites I2, I3, I5 and I4) provide a more substantial post-contact archaeological assemblage. In the light of this discussion, the evidence of large post-contact settlements (such as site I5) located near to yards (site I2) provide an archaeological record with spatial and assemblage-content complexity. Firstly, the spatial record suggests that certain Aboriginal sites were close to out-stations (such as site I5 or N4), and others were more distant (such as site I3). Secondly, some assemblages contained a greater range and amount of 'European' artefacts, such as site I5, which had several living areas containing glass tools, bottles, pipes, clothing parts and metal objects. Given the pastoralists reliance on Francis Swamp for lambing in some seasons (*see* fig. 7-4), site I5 may then be interpreted as the occupancy focus for the Aboriginal work-force.

Similarly, the Strangways Springs evidence can be interpreted along these lines, suggesting that the large rationed work camps will be overlaid, and accompanied by, camps for Aboriginal people 'outside' the pastoral domain. I started this section by introducing the 'station/wild' distinction apparent in my analysis of the pastoralists' letters. A consideration of the integrated evidence reveals that this distinction had permeable boundaries. In terms of archaeological material, the distinctions between 'station/wild' may not necessarily accord with spatial distribution (for example, the occupants at site N4 could have been shepherds, working families or visitors). The quantity of European material in occupation sites may indicate sustained access to European goods consistent with seasonal Aboriginal work camps (in particular site I5). Overall, the distinction is powerful, as it accords with an archaeological record in which some Aboriginal people have access to a range of European goods from the earliest years of contact. The historic sources provide a 'texture' to Aboriginal involvement in the pastoral domain, which is described by the pastoralists as 'wild/station', yet can be seen to be more complicated, with membership changing according to the demands of seasonal labour, and cultural/ceremonial obligations. Consequently, an enhanced interpretation of the archaeological record is possible, where spatial and assemblage-content evidence correlates with the historic evidence. Importantly, the archaeological record suggests that the placement of Aboriginal settlement in relation to European activity varied, and reveals the movement of material culture from workers to other sections of Aboriginal communities.

Aboriginal landscapes and contact

In this section I consider the contact period specifically in terms of Aboriginal life. This requires considering the evidence for continuity and change between the contact era and more ancient Aboriginal occupation. Types of evidence include 1) site location, 2) assemblage content, 3) documentary evidence, 4) rationing regimes, and 5) Aboriginal involvement with pastoral work practices (as discussed in the last two sections). The discussion to date has demonstrated elements of patterning in the pastoral domain over time. I have raised key factors regarding Aboriginal life:

¹² Mike Smith suggested to me that the European shepherds may have used the ochre as a commodity (1998, pers. comm.).

- a) The archaeological record of pre-contact settlement demonstrates late Holocene Aboriginal life was spatially structured by proximity to natural resources, most significantly to artesian waters, and ephemeral waters which provided access to a wider range of peripheral environments. The resultant spatial pattern of settlement reflects an aseasonal cyclical pattern, itself structured by availability of ephemeral waters following rains (*see* Florek 1993). The archaeological evidence supporting this were large Aboriginal occupation sites at mound spring complexes (Strangways Springs, Emily Springs) and isolated springs (Leonard Bore/Spring, Margaret Spring, site I3/I5). Aboriginal occupation at claypans and lakes also resulted in large assemblages (site L2, site N2).
- b) The early dependency of the pastoralists on Aboriginal work in various labour-intensive work practices is documented in their letters. Their letters suggest that the spectrum of Aboriginal work ranged from permanent (shepherds, bullock drivers, translators), to seasonal work (lambing and wool-washing), to isolated tasks (message delivery), providing environmental and climatic information (location of rain and ephemeral waters), and negotiating with other Aboriginal people for seasonal work and for environmental information.
- c) Despite being largely unstratified deposits with reduced potential for isolating fine-grained trends over time, the multiple-site data of Aboriginal sites from this study can be similarly interpreted to other contact studies which examine how indigenous people's daily practices changed following the arrival of Europeans. This question is particularly common to studies of households (Birmingham 1992; Kirch & Sahlins 1992; Bamforth 1993; Lightfoot et al. 1993; Silliman 1998), but applies to multiple site data (Clarke 1994; Lightfoot 1995). In the analysis of archaeological material, I demonstrated that post-contact Aboriginal settlement was defined by distinctly 'Aboriginal' elements in the archaeological record, located in highly structured activity areas interpreted as post-contact contexts. These elements included evidence for glass working, and structured living areas defined by fireplaces and use of 'European' goods. Assemblage richness demonstrated Aboriginal people's use of a wide range of European cultural items from the earliest phases of culture-contact onwards.

Site location and use

There are differences in the content and location of pre and post-contact Aboriginal settlement. Continuities after the contact period of pre-existing practices are demonstrated by the fact that Aboriginal people continued to use some of the same occupation sites. In other instances the absence of any demonstrably post-contact material culture at large Aboriginal occupation sites (for example at Margaret Springs and Mungyamarrilyna Swamp) could be used to argue that Aboriginal people abandoned some places after contact. Equally, the same evidence could be used to demonstrate an unrelated abandonment of places *prior* to European settlement, or may result from the unequal adoption of 'European' goods by Aboriginal people. This highlights a limitation of using archaeological evidence of 'European' material culture to identify post-contact Aboriginal occupation in surface assemblages.

The location of demonstrable post-contact Aboriginal sites suggests a focus of settlement following European settlement towards certain areas, specifically the northern end of Francis Swamp and Strangways Springs. This spatial evidence suggests that there were relationships between European activities and Aboriginal settlement. Aboriginal post-contact settlement resembled late Holocene habitation preferences for water, shade, sandy surfaces and locations at end of dunes, yet with the added variable of proximity to European activity areas. It would appear that all pastoral out-stations from the earlier years of the pastoral station had a nearby Aboriginal settlement. Additionally, evidence from out-stations, in particular sites N3/N4 and I5, suggests Aboriginal proximity to pastoral activity areas, but not necessarily evidence for any residential overlap; that is, concurrent site occupation. This highlights a further limitation of the archaeological record, namely the difficulty in confidently interpreting the fine temporal links between unstratified surface sites. Consequently, the range of possible variation in post-contact Aboriginal settlement was difficult to clearly define from archaeological evidence alone.

This problem was considered above, in the discussion of the out-station complex at sites N3 and N4, where I showed how the supplemental evidence from the historic sources provided a means to argue for contemporary site use by Aboriginal and

European people, and how this may have taken several various forms (depending on whether the Aboriginal people were shepherds, seasonal workers, kin of workers, welcome visitors or unwelcome visitors). These ideas could be further explored by locating other early pastoral sites (such as shepherds' huts) and establishing whether there was associated Aboriginal site use.

Pastoral work and rationing camps

Elsewhere it has been proposed that Aboriginal people's role in pastoral labour processes was regulated by the rationing domain (Rowse 1998). Documents from the Protector of Aborigines Office indicate that Aboriginal people were provided with government rations including food (flour and tea, and occasionally meat), tobacco, clothing, medicines and blankets at Strangways Springs (1860s until 1896) and later at Anna Creek head station (1886 onwards). The Government rations were largely intended for the elderly, sick and infirm. As described earlier, the other key rationers were the pastoralists, who provided food and other rations as payment for work. This explains the focus for post-contact Aboriginal settlement at Strangways Springs station during the period 1862 to 1896¹³, as demonstrated by a suite of extensive occupation deposits along the west and north of the main ridge. Importantly, the historic record provides very few descriptions of Aboriginal post-contact settlement nor the results of distributing rations. For example, there is no indication that Aboriginal people were accessing goods such as clothes, nor descriptions for changes in subsistence as a result of rations distribution. In fact, the police journals for a three year period in the 1880s fail to once mention the permanent Aboriginal settlement at Strangways Springs, shown to exist by the ration order forms kept by the Protector of Aborigines Office (this suggests to me that all issues related to Aboriginal people were reported in separate journals which have not survived).

The archaeological record of post-contact settlement at Strangways Springs reveals a set of large contact camps, smaller camps and special activity areas (such as glass working sites). Like the out-station sites, some of the Strangways Springs occupation

¹³ As stated earlier, the ration depot was closed in 1896 and moved to the Anna Creek head station.

sites were interpreted as being Aboriginal work camps. For example, as discussed earlier, site S355 was interpreted as being related to the wool scour at Strangways Springs (site S201). The archaeological record provided a rich insight into the material culture in living areas at site S355, indicating the presence of clothes, the reuse of broken shear-blades, smoking, some ceramic items, some medicines, the making of glass and stone tools (on the northern side hidden from the scour), and living areas organised around several large fireplaces.

Similarly, other sites at Strangways Springs were interpreted in relation to their proximity to the head station (site S001). Particularly extensive were the assemblages at site S251, immediately west of the head station. This was a likely location for a rationed camp, and possibly residential areas for domestic workers. Like site S355, there was a wide range of material culture, and the widest range of ceramic tableware of any contact period site in this study. Not all contact period sites were equally proximate to the head station, with some located several hundred metres west and north (specifically sites S240 and S512). These last two sites demonstrate higher quantities of complete (or nearly complete) grinding stones than pastoral work camps or site S251. Most post-contact sites indicated decreased use of grinding equipment, indicating changes in food preparation and diet. Thus, the archaeological correlate for the adoption of flour is demonstrated by a decrease (or absence) of grinding stones in living areas. In most assemblages the only grinding stones had been flaked into small pieces, perhaps to make abrasive tools. Other material evidence for dietary change were 'billies' modified from food cans and found near fireplaces, indicating the adoption of tea drinking (requiring hot water). The distribution of identical machine-made stamped buttons suggests that garments were provided specifically for Aboriginal people, as the same buttons were rarely found in European assemblages. Finally, the archaeological record demonstrates the widespread adoption of tobacco smoking through the presence of clay pipes.

It can be seen that the archaeological record provides spatial and material expression of rationing and work regimes, and importantly reveals the extensive physical results of contact period processes which are poorly described in the historic sources. The

final part of this section considers aspects of Aboriginal life such as trading practices and changes in Aboriginal use of places.

Other aspects of contact period Aboriginal life

Evidence for the existence of pre-contact regional trade networks centred on the Lake Eyre Basin has been presented elsewhere (McBryde 1987, 1997). There is little study of how these networks operated following contact; however new ceremonies, such as the Mudlunga ceremonial dance and related songs from northwest Queensland, were presumably introduced to the Lake Eyre Basin along similar routes (Hercus 1980; Mulvaney 1989, p. 3). This thesis suggests the initial continued value of ochre. The archaeological evidence and historic sources provide an enhanced interpretation, being largely in agreement. The primacy of ochre in Aboriginal life, particularly for use in ceremonies, was demonstrated in the years following contact. The most valued and widely traded ochre was mined from the northern Flinders Ranges.¹⁴ The pastoralists at Strangways Springs describe armed missions of up to 70 armed Aboriginal men, each carrying up to 20 pounds of ochre. These trade expeditions apparently originated from further north. The continued use of this high-quality ochre in the study area is demonstrated by the presence of ochre in post-contact assemblages, being found both at out-stations and at Strangways Springs. Analysis indicates a high quality red ochre, not the ochre that the colonial government mined from near Adelaide for distribution in the Lake Eyre Basin in an attempt to prevent trading expeditions (appendix C). The evidence presented here indicates that trade expeditions continued for several years following contact, although whether the practice increased or decreased at contact, and when trade parties ceased, is less clear.

Conversely, other artefacts 'fall out' of Aboriginal people's material assemblages. This condition was described earlier with widespread reduction in the use of food grinding equipment following contact. Importantly, as the most valued source of grindstones was located nearby at Anna Creek, the decrease in grinding equipment

¹⁴ Elkin relates an Arabana account of the origin of red ochre in the Flinders Ranges, at Parachilna (Elkin 1934). This mythological account begins at 'Kalburugwa', a salt lake near William Creek, forty kilometres west of Strangways.

does not appear to have resulted from reduced access to raw materials. Similarly, the evidence from stone tool assemblages can be examined for changes following contact. However, whether changes in range of stone tools following European settlement were significant proved difficult to establish in this study; as variations between post-contact and pre-contact assemblages were not significantly greater than variation between pre-contact lithic assemblages throughout the study area. This condition results from the widespread availability of local raw materials (quartzite and silcrete) which remained readily accessible. However, it appears that fewer exotic artefacts (chert and quartz) were present in post-contact assemblages. If so, then this may indicate that these materials were no longer obtainable or valued. This may correlate to the 'new exotic materials' of glass and metal, which occur in Aboriginal sites as modified artefacts.

The extent of adoption and adaptation to new materials is demonstrated by assemblage contents which demonstrate the appearance of new practices indicated by items of clothing, pipes, cooking vessels and implements. Adaptation to new material is demonstrated by glass working technologies. Local movement of goods in the study area during the contact period is demonstrated by the occurrence of glass tools in working and living areas remote from glass reduction floors.

Thus it appears that contact period changes in the local movement, and long-range trade, of raw materials and other items, can be measured in terms of demand for commodities (which initially remains high for ochre but decreases for grinding stones from Anna Creek quarry) and popularity of exotics (such as new raw materials and commodities). This evidence for differential adoption, adaptations, maintenance and continuities according to different artefacts mirrors the evidence presented here for the contact period being characterised by multiple (rather than monolithic) expressions of agency. Comparative values would be difficult to establish without a firm understanding of economic and social aspects of transactions. It is possible however that the trade items such as ochre were traded between Aboriginal groups for new 'European' objects available to Aboriginal people within the pastoral domain (*see also* Mulvaney 1976, p. 75). It has been demonstrated that European commodities were received by Aboriginal groups before white occupation (*see* Reynolds 1994, p.

48). Given that the study area for a period represented the frontier of European settlement, the continued demand by more northern Aboriginal groups for grindstones from the Anna Creek quarry could be expected, although there is no supporting evidence presented here for that. Similarly, unlike ochre, there is no evidence that pituri trade in the study area continued during the contact era (McBryde 1987), even though pituri was processed on Cooper Creek in later decades (Roth 1904, 1910).

Another measure of change in the contact period is evidence for changes in how places were used by Aboriginal people. For, as Baker reminds us, as much as places were the same, the contact landscape was new to both European and Aboriginal people (1999, p. 21). This is indicated by evidence for changing uses of Aboriginal features in the environment, for example stone alignments. If, as argued earlier, the stone alignments at Strangways Springs were mostly pre-contact features related to non-residential activities (I have suggested they were used during surveillance for animal hunting), then the contact period sees a shift in their use. Certain groups of stone alignments became the focus for glass working, all within 200 metres of refuse dumps of glass bottles, and also in direct sight of the head station. This, and the location of occupation sites along the western and northern parts of the ridge, suggests that in the contact landscape the surveillance of Europeans was conducted separate to residency, that is, Aboriginal living areas were obscured from Europeans. Similarly, in another example, the peripheral camp (site N4) to the out-station in the William Dunfield (site N3) can be interpreted as 'overlooking' the pastoral station. At the same time, the Europeans partially recognised Aboriginal attachment to certain places (such as Strangways Springs), and threatened such important places with destruction to maintain control over Aboriginal residents (Oastler, 9 Aug. 1867).

The evidence presented in this discussion suggests that contact was characterised by various social trajectories, both behavioural and material. This provides the basis for the final section, where this is resolved as a set of criteria to summarise aspects of people's frontier agency in this study.

The texture of agency at Pangki Warruna and Strangways Springs (1862-1896)

A central theme to this discussion could be 'texture'. I have demonstrated that the ways that people interacted in the nineteenth century in the study area was textured, varying according to a range of circumstances such as time, location, season, climate, individual decisions, pastoral practice, work roles in the pastoral domain, and access to rations distributed by the pastoralists' and on behalf of the government. Similarly, the ways that archaeological and historical data interrelated was inherently textured. Separate networks of evidence provided descriptive grids to investigate continuity and change in human behaviour within their temporal and spatial contexts. This analogy to texture finds resonance with studies which perceive colonial period interaction as complex and plural, or, as stated earlier, *characterised by differential forms of cultural interaction*. This study agrees with Kent (1983) whose study of Navajo historic contexts reminds how, using concepts of 'traditional' and 'non-traditional' as baselines, different individuals within cultures change at different rates. These types of results do not easily support any overarching theory of the contact period. In fact, the use of unilinear models of cultural interaction may obscure or distort social strategies. This is not to say that some aspects of the evidence presented here could be explained through theories such as dominance and resistance, acculturation, or accommodation (to name some).

Nevertheless, the results indicate a level of cooperation between Aboriginal and European people resulting from interdependencies which were strongest between the pastoralists and local Aboriginal residential groups.¹⁵ A model of cooperation provides a means to define the elements structuring nineteenth century contact period life in the case study. The term 'cooperation' should not be read as only implying mutually beneficial and positive outcome for different parties, rather the term attempts to capture unconscious and conscious joint actions. The contact period is increasingly being interpreted in regional case studies, which has consequences for master explanatory models, some which overtly politicise the past (such as resistance or

¹⁵ The term 'cooperation' was suggested to me in conversation by Tim Rowse (1988, pers. comm.).

acculturation models). That is not to disagree with positions that state that all archaeological inquiry does not, in part, result from contemporary social contexts (for example, Leone & Potter 1988b, p. 19). Importantly, the term 'cooperation' captures an important element of this study: that, in terms of nineteenth century contexts, Aboriginal people were involved in the pastoral industry from its inception, and provided knowledge and labour which in part guaranteed the longer-term success (in terms of monetary profit for the pastoralists) of the pastoral venture based at Strangways Springs. In the remainder of this section I will consider the elements which, from the results of this study, characterised and structured Aboriginal and European life in the nineteenth century in the study area. These elements were Aboriginal knowledge, natural resources (in particular water), seasons, pastoral domain and work, rationing and law.

Using oral testimonies, Baker shows that in contact contexts before Aboriginal people 'came in', European people 'went out' 'and establish[ed their early settlements at locations that were already the focus of Aboriginal life' (1999, p. 160). Similarly, at Strangways Springs the Europeans arrived to an Aboriginal landscape, immediately acquiring Aboriginal workers (either by negotiation or force) to serve as agents facilitating access to, and communication with, local residential groups. Consequently the pastoralists perceived a spatial and social distinction between Aboriginal pastoral workers and Aboriginal 'outsiders'. However, such binary systems had permeable boundaries, as people moved in and out of the pastoral system. It appears that initial Aboriginal-pastoral negotiations were cooperative, as Aboriginal workers consistently arrived to work at out-stations and the head station. Local Aboriginal people quickly stopped hunting sheep, which helped stabilise frontier relations. The presence of Aboriginal people at early European out-stations and settlements can be viewed in two ways. Firstly, these were places where they already lived and were the best places to guarantee survival in the semi-arid environment. Secondly, the evidence indicates that European places increasingly became the focus for Aboriginal settlement. This accords with pre-contact decisions regarding subsistence, where people lived proximate to resources. The pastoralists provided new foods and goods which Aboriginal people obtained through work (and presumably sexual relations). This resource-based explanation, in which Aboriginal people follow Europeans, was

demonstrated in 1886 and 1896, when Aboriginal people elected to move from Strangways Springs to the head station at Anna Creek to obtain rations (and to be near kin).

Equally, Europeans were through necessity attracted to Aboriginal people. The organisation of pastoral labour processes structured the interaction of Aboriginal people and the pastoralists. The analysis demonstrated that early pastoral work involved constant shepherding punctuated by lambing, shearing and scouring (fig. 7-4). By providing labour Aboriginal life had to fit with the seasonality of the pastoral work process. In part this must have been accommodated within the seasonality of Aboriginal subsistence. How did one accommodate the other? It appears that Aboriginal people met the demands of the pastoral work process, and were always present in sufficient numbers to provide work. In fact, during periods of drought more Aboriginal people sought work than there was work available. In this interpretation, the seasonal opportunities for pastoral work could be viewed as opportunities to obtain food and commodities, comparable to when rain fell and more food was available. Thus, the role of rationing could be viewed as an extension of pre-contact Aboriginal subsistence patterns. Other than work, Aboriginal people also provided local knowledge. Earlier I described the pastoral domain as mimicking Aboriginal subsistence. This resulted from Aboriginal information on the location of waters following rain, which helped the pastoralists survive drought and flood during the earlier years of the station. Perhaps not surprisingly, over time the pastoralists' dependence on Aboriginal knowledge (if not labour) decreased. This becomes particularly noticeable when, from the 1880s onwards, the pastoralists transform the pastoral landscape by organising the industry around newly constructed artesian bores. The construction of large fenced area allow the pastoralists to regulate the distribution of new and native animal species. Aboriginal people participate in this widespread program of environmental manipulation and control by hunting rabbit and dingo for rations. Strang (1999) sees pastoral improvements as 'assertions of power', transforming pastoral landscapes (Layton & Ucko 1999, p. 11). Accordingly, the new hybrid landscape represents a process of transformation. Certainly, in a related manner, the pastoralists perceived of themselves as law-changers, as stated by station manager John Oastler:

To break these wild tribes into something like obedience, and to teach them the law of ownership and property, and that their laws must give way to the white mans' law, were the most difficult task. (Oastler 1908)

As demonstrated by an examination of Oastler as station manager, the relationship between the pastoralists and the Aboriginal participants in the pastoral domain was not unilinear. For example, as a central node in the pastoral system, Oastler attempted to protect Aboriginal workers from outside threats. This also implies a new social landscape, where pastoralists offered protection from tribal lore. In this exchange of power, Oastler apparently became known as 'Narchoo Noocamarunda' and 'Mootabata', which he respectively understood to mean: 'the spirit of a black chief come back in a white man' and 'Father' (Oastler 1908). This indicates how over time, complex colonial relations developed. Similarly, the Aboriginal men 'indentured' as youths to the pastoral domain provided points of access to pastoral work and rations for their kin. Accepting that any inquiry of nineteenth century contexts are largely restricted to archaeological and documentary evidence, these points raised here presumably are the tip of the iceberg in terms of contact period social networks and power relations; which are demonstrated in studies of more recent contexts using contemporary testimony. For example, Myers (1986) describes amongst the Pintubi that authority was structured through 'nurturance', which facilitated bonds between pastoralists and Aboriginal groups. Old men were the chief negotiators for work and sexual favours. Rowley (1971, p. 211) described Aboriginal involvement in pastoral stations as 'forced adjustment' to a 'state of paternal rule' (*see also* Hartwig (1965) or more recently Baker (1999) for a insightful account of Yanyuwa people's history). These results remind that when using documentary accounts it is important to remember the pastoralists will attempt to construct 'a useful and satisfactory account of Indigenous agency' (Rowse 1998, p. 5), which remains a one-sided account of how complicated aspects of cross-cultural interaction (such as changes in 'law' and 'belief') proceeded.

As raised in the above discussion an important transforming step in cross-cultural relations was the introduction of new food sources and commodities through rationing regimes. The results of this research demonstrate that the pastoralists immediately began rationing Aboriginal people in exchange for labour. The Aboriginal reaction

can be viewed as a logical step within pre-contact food procurement patterns, especially considering competition for resources, which rapidly incurred inter-cultural clashes. For example, during the drought of 1867 Aboriginal people outside of the Strangways Springs pastoral domain successfully repelled attempts to demob sheep flocks along the Douglas River. Consecutively, Aboriginal people's demand for rations increased. The additional distribution of rations supplied by the government was intended to accommodate widespread need for food supplies, and represents the next step in the institutionalisation of the rationing process. Consequently, the less mobile members of the Aboriginal community could reside permanently at Strangways Springs. This probably re-enforced the central spatial position of the head station in the colonial landscape, with large campsites established along the western ridge at Strangways Springs.

It appears that rations for pastoral work and government rations shaped a new form of subsistence. However, this did not herald the end of bush foods. For example, during good seasons in the 1890s the Aboriginal population at nearby Peake Station survived off 'bush food' when the government stopped the distribution of rations. Malnutrition was often a consequence of Aboriginal reliance on rations; however, during the 1890s, government reports suggest that this was not a problem at Anna Creek Station (SRSA, GRG 5, Police Inspectors Office to Hamilton, Protector of Aborigines, 16 Mar. 1896). Rowse proposes that rationing is 'learnt' by the pastoralists in early colonial period becoming a 'pervasive institution of Central Australian colonialism' attempting to 'render cross-cultural relationships peaceful and predictable' (Rowse 1998, p. 7). The evidence presented here does suggest that rationing was used by pastoralists in the decades prior to the subsequent European settlement of Central Australia, and, that these practices were used in northern South Australia to successfully define a local residential Aboriginal group who acted as a permanent and seasonal work-force. Importantly, government rations augmented the pastoralists' distribution of rations, and seemingly re-enforced the pastoral domain. Importantly this transfer of goods did not require 'congruity of understanding between donors and receivers' (Rowse 1998, p. 5), which is supported by this evidence. European rationing provided a work-force, yet for Aboriginal people the attraction to rations was a logical extension of existing subsistence strategies.

Elsewhere in Australia, the seasonal nature of pastoralism acted to limit the demands of work and allow time for Aboriginal people to maintain attachments to important places (Head & Fullagar 1997). Similarly, as shown here, the early phase of pastoralism in the south western Lake Eyre Basin was largely seasonal, with the greatest demand for pastoral work being during the lambing and shearing, normally between February through August. This left the hotter and drier period of the year free, times when Aboriginal people (and the pastoralists) presumably relied on the artesian waters. This is some evidence that the rationed work camp attracted larger groups of Aboriginal 'outsiders', and presented opportunities for ceremonial momentum. Other elements of Aboriginal agency are suggested by the archaeological record, which demonstrates the rapid access to European goods, maintenance of trading expeditions, adaptive use of new goods, and selective decisions regarding value of commodities in the contact period.

From this, it is possible to summarise the influence of European and Aboriginal people on each other in this study in the following ways:

- a) Labour. The Europeans were dependent on Aboriginal labour to provide an inexpensive workforce which could accord with seasonal demands.
- b) Knowledge. Aboriginal knowledge in part dictated the spatial parameters of the pastoral domain. Other aspects of Aboriginal practice, such as regular fire management, were not adopted by the Europeans.¹⁶
- c) Social world. By integrating Europeans into new social spheres, such as described above for Oastler, Europeans participated in Aboriginal social life and were incorporated into indigenous explanations of the world. Conversely, Aboriginal people became involved to varying degrees in the pastoralists world, particularly within working and rationing regimes.
- d) Economy. Both Aboriginal and European people defined frontier economy: Aboriginal people defined what was valuable and able to be bartered (for want of a better word) in return for work, knowledge and possibly sexual relations. In this study I have proposed that rationed food, meat, tobacco, implements, new raw

¹⁶ Aboriginal people's fire management in the historic period is considered by Head (1994).

materials, and ochre were all valued by Aboriginal people in the contact period. Conversely, the Europeans and colonial government provided a limited range of new foods and commodities. Additionally, Aboriginal people contributed to the eventual monetary success of pastoral station.

- e) Location. Patterns of settlement were primarily structured by water resources, a resource network which the pastoralists eventually altered. Aboriginal settlements were, in part, structured by the presence of pastoralists. Aboriginal settlement focused at pastoral work sites or rationing sites, or existed 'outside' pastoral systems, resulting in occasional cross-cultural conflict.
- f) Social distinctions. By distinguishing between station and other Aboriginal people, local residential groups were partially accommodated within the pastoral domain, and possibly were able to maintain more regular access to Arabana country. The implications of this system had long-term trajectories, defining access to work, rations and medical care. This in part was a measure of limitations, as the station could only accommodate a certain number of Aboriginal workers, others had to fend for themselves or access the small amount of government rations.
- g) Sexual relations. Although it was never clear from any of the evidence presented here, elsewhere sexual relations played an important role in contact period and colonial interaction. McGrath (1987, p. 3) stresses that power relationships between pastoralists and Aboriginal people were based in part on access to Aboriginal women for sex. She explains that this was made possible in part through violence and through exchange of items such as flour, blankets and clothes. This aspect of colonial relationships is discussed by Reynolds (1972, chap. 5).
- h) Environmental change. The pastoralists practice of introducing sheep and cattle altered delicate artesian ecosystems, and resulted in increased competition for food and water resources. The result of ending Aboriginal fire management regimes on the environment in this region is unclear.
- i) Disease. Epidemics caused widespread loss of life during the early-twentieth century, although earlier epidemics seem likely.
- j) Law. The Europeans introduced a new legal system which privileged the pastoral leasee over Aboriginal people. Aboriginal access to culturally important places

(such as Strangways Springs) was presumably restricted by the demands of subsistence and pastoral resistance to 'outsiders'.

These elements of cross-cultural interaction act as a set of points which could be tested in other contact contexts. In summary, this discussion has attempted to provide an account of the first forty years of culture-contact in the south-western Lake Eyre Basin, by fitting the evidence into longer trajectories of Aboriginal life and by exploring the structural role of the pastoral domain and rationing regimes.

Chapter 9. Conclusions

The past is not dead and gone: it isn't even past. The past is never fully gone. It is absorbed into the present and the future. It stays to shape what we are and what we do.

William Faulkner

Summary

The aim of the analysis of archaeological and documentary evidence in this research can be summarised as asking: What evidence is there for human settlement and colonial period culture-contact in the study region? This question has largely focussed on interpreting evidence related to Aboriginal people of the south-western Lake Eyre Basin, involved in nineteenth century contact with European pastoralists.

The research demonstrated changes in Aboriginal life resulting from European settlement, and revealed the organisation of the pastoral industry originally based at Strangways Springs. Aboriginal people participated in the pastoral industry in different ways. Some males worked year round as shepherds, drovers, caring for horses and bullocks, and setting up the station. Some Aboriginal women were domestic labourers, others were shepherds. A larger number of Aboriginal people did seasonal work, particularly during the labour intensive lambing and wool washing periods (fig. 7-4). This punctuated work pattern meant that work opportunities tended to occur during good seasons following rain. Families would reside at out-stations or the head station for these times. As the station grew, other types of work were conducted by Aboriginal workers, such as building fences, and hunting dogs and rabbits.

The pastoral industry changed over time, essentially characterised by an initial 20 year period of development, characterised in later years (from 1882 onwards) by the increased use of artesian bores and rail transport. This change was demonstrated by material changes in the pastoral network, signified by new technical equipment, and changes in pastoral practice, such as the organisation of the station into large paddocks. Instead of out-stations located at mound springs, which had proved to be very fragile environments easily damaged by pastoral animals, the pastoralists

expanded their network to include dams, artesian wells and bores. The material culture at out-stations located close to springs tends to be the earliest reported in this study. Later sites, such as Parkers Well and the woolsheds on Anna Creek, were characterised by late-nineteenth century artefacts. Sites used following the construction of the railway in 1886 include new goods, such ceramic wares which were not common at earlier sites. The railway presumably accounted for the increase in pastoral equipment, much of which would have been too heavy to easily transport manually. The material record of pastoral sites indicates a correlating cessation in the use of shepherding out-stations in late-nineteenth century contexts. Presumably this trend was repeated throughout the region with the reduced need for shepherds following construction of dog-proof fences.

Following European settlement Aboriginal people originally continued living at the places they had occupied throughout the late Holocene. The demands of the environment dictated that the artesian mound springs of the region, when close to sheltered camping areas on sand surfaces, had long been the focus for Aboriginal settlement. Inevitably, for the same reasons, many of these same places were the focus for pastoral settlement. The new material culture brought into the region by settlers, also defines areas occupied by Aboriginal people following contact. In particular, structured activity areas revealed the use of new goods. For example, stone fireplaces were a focus in living areas for objects entering Aboriginal society. Another example were glass bottles, which were experimented with in ways similar to the 'traditional' Aboriginal use of stone. The thick bases of certain vessels were selected from the European settlement at Strangways Springs, and from pastoral out-stations, and used in secondary reduction areas as cores for flakes. These flakes were found at Aboriginal settlements throughout the study, being most common near to pastoral sites. Similarly, a diverse range of artefacts were used in Aboriginal camps from the earliest period of pastoral presence: including clay pipes, clothing parts (buttons and buckles), cooking pots, utensils, tin cans and glass bottles. These objects indicate Aboriginal adoption and adaptation to new goods. Although difficult to measure without stratified deposits, it appears that within the first 30 years of contact there was a marked decrease in the use of grinding equipment, with the few remaining grinding stones broken into small fragments, possibly for tools. This condition is most evident at occupation sites at

Strangways Springs, which equates to its central role in distributing rations to Aboriginal people as payment for work, and also government rations to a largely permanent community of recipients, most elderly or invalid. The cessation of food grinding equipment suggests the local preference for ration flour. Clay pipes and cooking pots reveals the widespread adoption of rationed tea and tobacco. The clothing parts indicate the distribution of clothes, although their role in Aboriginal society is unclear. Certainly pastoral workers were photographed dressed, and required horse riding accoutrements found at several sites.

These material objects indicate that over time some Aboriginal people increasingly settled near to pastoral sites, which accords with their role as pastoral workers. These camps also attracted Aboriginal people who were not pastoral workers. People sharing ceremonial and social obligations with Aboriginal workers and ration recipients arrived at pastoral work sites. These events were viewed by the pastoralists alternatively as acceptable, annoying, or a threat requiring a response. Late-nineteenth century pastoral sites at artesian bores and wells became new places for Aboriginal work and settlement. This shift in pastoral activity - reflected in changes in Aboriginal life - reveals how settlement in the region became structured by the pastoral domain.

What happened to Aboriginal participants in the pastoral system? This can be answered in part by examining the structural elements of indigenous labour and rationing regimes. The evidence suggests the attractive force of rations, both for workers and members of their community. The success of the pastoral industry at Strangways Springs (which was greater than neighbouring stations) may have resulted from an 'an enclave of stability' which accommodated existing Aboriginal societal obligations. The pastoralists were rewarded with cheap labour force, who could accommodate the punctuated seasonal demands of pastoralism. The pastoralists acted to protect this system, and the Europeans became partially engaged in Aboriginal society. The pastoral domain departed from earlier aspects of Aboriginal society, providing protection from tribal lore, and access to new goods and work. Rationing defined where people lived, at least some of the time.

What happened to those outside the pastoral domain, described as 'wild blacks'? Some lived at places on pastoral stations where there were no stock. Resource bases at the periphery of the station, such as the Douglas River, were contested for. Trade expeditions continued during contact, sometimes meeting resistance from the pastoralists. The inside/outside distinction was blurred, for example during drought, Aboriginals from 'outside' the pastoral domain would arrive expecting rations at Strangways Springs and at other stations in the region. Regional networks moving goods and information also existed in the early contact period, a continuity with late Holocene evidence for long range trade networks. Ochre was traded throughout the Lake Eyre Basin and used by Aboriginal station workers, being found in their shepherding huts and camps. Other trade items common to pre-contact assemblages were no longer common in contact period Aboriginal campsites, for example, as described earlier with grindstones. More exotic raw materials such as chert, seem to become rarer in contact period campsites. Again, these trends are difficult to measure without stratified deposits. Eventually contact period tool kits included a range of new tools in metal and glass, accompanying new food preparation equipment, consumption utensils, objects of adornment, and protective garb.

Outcomes

In addition to the evidence summarised above, there were two outcomes of the thesis:

- a) By exploring continuities and dissonances between the archaeological and documentary evidence, the study contributes to literature concerning the use of supplementary evidence in archaeological analysis.
- b) The study contributes to literature describing culture-contact between indigenous people and Europeans, and the role of Aboriginal people in colonial systems, specifically pastoralism.

Approaches to research: archaeological and documentary evidence

The notion of landscape as networks of human action provides a useful analogy to describe the different evidence used in this thesis. In summary, the historic sources tended to provide temporally exact, yet spatially imprecise, information. Conversely, the archaeological evidence is spatially exact, yet temporally less precise.¹ Each type of evidence provided evidence for networks of past human action. For example, the network created by descriptions in the historic sources indicated the way that pastoralists and Aboriginal people cohabited at out-stations and met throughout the landscape, and the varied ways in which they interrelated, ranging from being co-workers to being competitors for resources. The network of archaeological material demonstrated trajectories for post-contact Aboriginal settlement, establishing that European settlement provided additional variables regarding location of settlements (with the focus of Aboriginal settlement occurring at Strangways Springs and Francis Swamp, then later at Anna Creek Station). The pastoral networks provided a means to understand how pastoralists used the landscape over time. The 'networks' I describe here are analogous to what Leone and Potter (1998b) describe as 'descriptive grids' for independent sources:

¹ Despite this, it was possible to determine phases in pastoral activity and European material culture; to use objects of known manufacture to provide *terminus ante quem* for some occupation assemblages; and to isolate some post-contact Aboriginal assemblages and artefacts.

[W]e are left with two *independent* sources evidence about the past and we are able to work back and forth, from one to the other, using each to extend the meaning of the other. The way to act on this independence between the two kinds of data and set up analytical byplay is to create descriptive grids, often based on insights from the documentary record...One creates the framework, derives from it expectations of the archaeological record, and then uses the deviations from the expectations...as a the basis for a new set of questions about the archaeological record *and* about the documentary record as well. In such analysis, organizational behaviour, which can also be learned from the documentary record, is the concept used to ascribe meaning to the ambiguities discovered through careful description and comparison. (Leone & Potter 1988b, p. 14)

The rationale behind this approach resides in the recognition that both documents and archaeological material are the patterned result of human behaviour (Deetz 1977; South 1977, 1988). The sense of evidential independence maintained in this study facilitates an understanding of the various strengths, weaknesses and characteristics of each set of evidence. These provide a measure of 'ambiguities' (Leone & Potter 1988b) or 'continuities and dissonances' (Stahl 1993, 1994) between data. A sense of 'analytical by-play' was generated between the network of human behaviour provided in historic sources and the inter-site patterning of archaeological material. The research began with unknowns, requiring my survey of the landscape and archives for evidence relevant to general questions about indigenous-settler interaction in Central Australia. The project proceeded in a way similar to that described in the above quote. Fresh insights guided research directions and methods, acting as 'the basis for a new set of questions about the archaeological record *and* about the documentary record' (Leone & Potter 1988b, p. 14). For example, when my analysis of pastoral letters indicated that the primary locations of early pastoral activities were remote out-stations and artesian springs, then this informed the design of consequent regional archaeological survey and excavation. Similarly, the discovery of extensive cultural deposits at Strangways Springs instigated an archival survey which provided a rare documentary record of nineteenth century pastoralism in far northern South Australia. As already described, following from archaeological analysis, two distinct phases of pastoralism were defined. Pastoral settlement shifted 'out' from artesian springs to make use of a wider network of artesian bores. It was not clear how significant this shift was in terms of the pastoral technology. A re-examination of historic sources indicated that many quotes were received for new technical equipment (windmills and bores) being

designed in Melbourne and Adelaide. Corresponding bank statements suggest a corresponding increase in expenditure to enable 'improvements'. Finally, the Strangways Springs Station were remembered as leaders in implementing 'modern' pastoral practices. These are examples of the 'byplay' that informed this research.

Ambiguity between documentary and archaeological records for the Strangways Springs study serves to validate the contribution of archaeological studies of historic contexts; that is, many of the written sources consulted during the survey of archival records failed to refer to Aboriginal people in early colonial contexts in northern South Australia. In this respect the evidence from Strangways Springs represents a relatively rich documentary resource, which is less common for other pastoral industries and sites of early colonial interaction.

The primary limitations of each data set were, in summary:

1. The historic sources are strongly biased towards descriptions of Europeans, resulting in a data set in which few references are made regarding Aboriginal people. Only a handful of Europeans left written records, providing a (intentional or unintentional) history written by the wealthiest, literate male European elite.
2. The documentary dataset is very inconsistent, being largely confined to the earlier years of the pastoral property (1860s and 1870s). Later colonial records become 'locked into' patterns of reporting which rarely presented more than demographic information (for example, the records of the Protector of Aborigines Office).
3. The archaeological analysis relied on 'European' material culture in otherwise 'Aboriginal' assemblages to isolate post-contact occupation. Any post-contact Aboriginal sites with no European material culture 'fell out' of the archaeological interpretation of historic contexts.
4. The range of possible variations in post-contact Aboriginal settlement were difficult to clearly define, as the surface sites lacked fine-grained temporal information provided by stratified deposits or material culture of precisely known dates of manufacture.
5. The exposure of artefacts to natural elements in surface archaeological deposits meant poor retention of plant micro-fossils and other residues.

Significantly, many of these limitations were resolved through the comparative analysis. Specifically, from each of the above points:

1. The archaeological record consistently represented a greater variety of colonial actors than the historic sources: from Aboriginal workers and Aboriginal 'outsiders' to the pastoral domain, to pastoral workers at isolated out-stations. This variety was augmented by the documentary evidence, for example indicating variation in Aboriginal pastoral work. Most importantly it was possible to measure the range of cultural material used during the contact period by Aboriginal people, and to establish cultural practices invisible in the documentary record (for example, wearing items of clothing²).
2. The archaeological record was more consistent over time, and significantly encompasses much longer time periods (including pre-European contexts). From this it was possible to define longer trajectories of human action, namely Aboriginal people's settlement and subsistence in relation to the pastoralists. Also significant were evidence for landscape scale changes in resource use, indicating how pastoral systems came to (in part) structure human settlement.
3. 4 and 5. The analysis of documentary sources provided critically important information regarding Aboriginal involvement in the pastoral system. From sources it was possible to interpret unstratified surface assemblages in various ways: ranging from contemporaneous to exclusive Aboriginal and European use (and several combinations in between). However, there was little evidence in documentary sources for how certain contact period tools (particularly glass tools) were used, although documented rationing regimes made the interpretation of faunal assemblages and other modified objects possible.

A significant difference between the historic and archaeological records was evidence for rates of change. The analysis of historic sources demonstrates differing rates of change in relation to Aboriginal involvement in pastoral activities. For example, certain Aboriginal individuals quickly became permanent pastoral workers. Other groups became seasonal workers. Other groups apparently existed 'outside' of pastoral

² As stated in chapter 5, the use of buttons and clothing fasteners tended to cluster in certain post-contact assemblages. Their role in Aboriginal society may have been not as clothing, but played other functions, for example ornamental objects.

practices. Conversely, the archaeological record provides threshold criteria such as contact/post-contact and early pastoral/late pastoral, rather than demonstrating fine-scaled change over time.

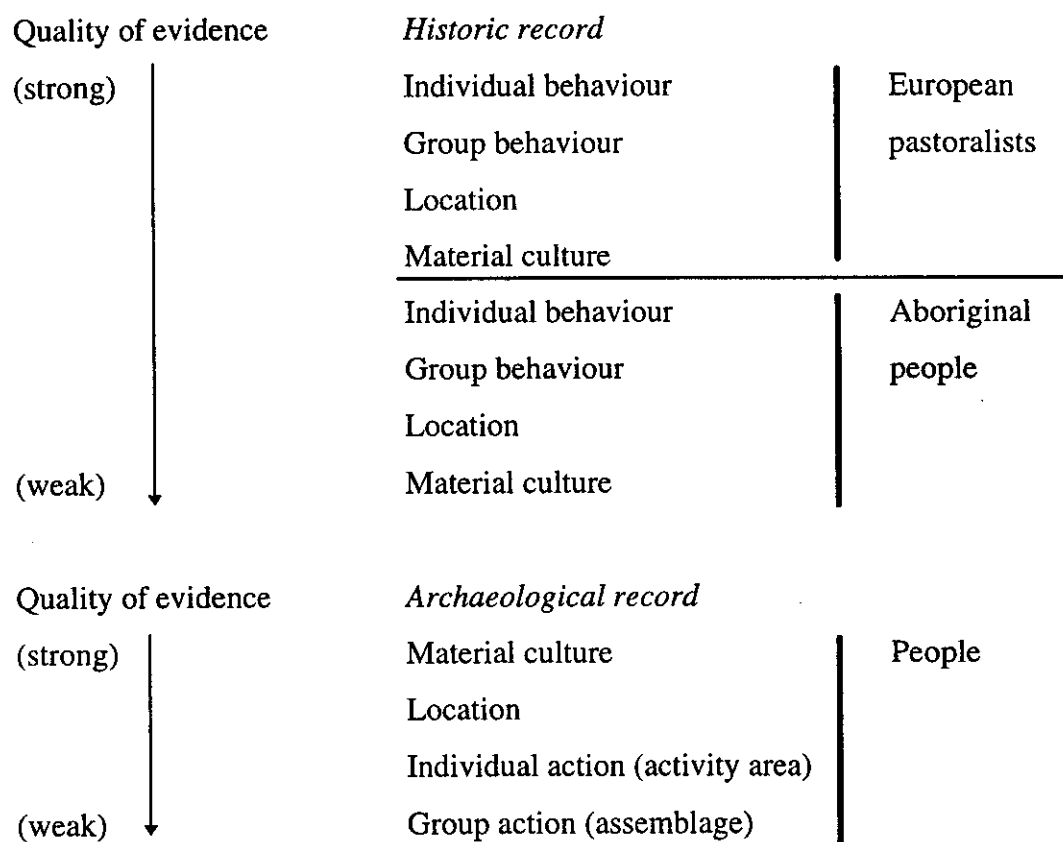


Figure 9-1. Model of the interrelationship of behaviour/action and material culture (modified from Kent 1984, p. 13, fig. 1)

The archaeological and historic evidence also differ in terms of human agency. As the model in figure 9-1 indicates, the evidence in the historical record presented here tends to describe aspects of European life before Aboriginal life. Within those trends, the sources are more likely to describe individuals before groups, then location, while rarely mentioning material culture. Conversely, the archaeological record privileges material culture and location of human activities, with evidence for more recent individual activities often proceeding to group action (although in this study homogenous assemblages were demonstrated as obscuring evidence of individual activities over time through accumulated group action).

As shown above, an important result of this research is that in many respects the historic and archaeological records support each other. However, this does not mean

that archaeology is relegated to the role of 'handmaiden to history', or vice versa. Rather, the process of verification is an important result, allowing for a more reliable interpretation. In historical archaeological studies the different types of evidence often 'when taken in isolation will fail to convince' (Murray 1992, p. 7), yet taken together in comparative frameworks will potentially enhance interpretation. This research supports existing approaches to the use of supplemental evidence in archaeological research (Stahl 1993, 1994) especially studies advocating evidential independence (Leone & Crosby 1987; Leone 1988; Leone & Potter 1988b) and comparative analyses (Gasco 1992, 1993; Stahl 1993, 1994; Lightfoot 1995; Schrire 1995).

Contribution to culture-contact studies

This research contributes to culture-contact studies, including archaeological studies in Australia (*see* Allen 1969; Birmingham 1992; Murray 1993; Clarke 1994; Mitchell 1994; Head & Fullagar 1997, 1999) and overseas (*see* Gasco 1993; Stahl 1993, 1994; Schrire 1995; Lightfoot 1995), and to literature describing pastoral-indigenous interaction in Australia (*see* Rowley 1970, 1971; Reynolds 1972, 1978, 1983; Rowse 1987, 1998; McGrath 1987; Baker 1990a, 1990b, 1999; Rose 1991; May 1994; Watson 1998). The contact-period resulted in continuities and shifts in Aboriginal people's patterns of settlement and subsistence in the study. Most clear changes were Aboriginal residency at ration depots and pastoral work sites, confirming with changing settlement patterns related to work similar to those described in California (Lightfoot 1995). Continuities in residency were maintained, with Aboriginal communities living during non-working periods separate from pastoralists, at areas used previous to European settlement, particularly artesian springs. In the case study the pastoral domain was a strong structuring principle in terms of patterns of Aboriginal settlement. These results imply the importance in understanding the contact period in relation to colonial and economic systems, as has been conducted for example with Macassan-Aboriginal contact studies (Clarke 1994; Mitchell 1994) and in Africa (Stahl 1993, 1994; Schrire 1995). The evidence of many sites throughout the study area provided greater insight into change and continuities in settlement and subsistence than would have been provided by isolated sites. This demonstrates one way that archaeology can measure past human behaviour throughout the landscape,

supporting approaches developed in studies by Clarke (1994), Mitchell (1994), Lightfoot (1995), Head and Fullagar (1997, 1999) and Kirch and Sahlins (1992). This implies that archaeological research of historic period contexts in Australia should attempt to move beyond place-based studies to examine trends in the patterning of cultural material throughout regions.

It has been shown that in northern Australia Aboriginal involvement in pastoral work was punctuated by periods removed from the pastoralists, termed 'going bush' (Rose 1991; Head & Fullagar 1997). This provided opportunities to maintain associations with places, and fulfil social obligations. In northern Australia the off-season for pastoral work is the wet season. In the Lake Eyre Basin involvement in pastoral work was similarly punctuated in the nineteenth century, as Aboriginal people 'returned' to care for sheep flocks during the lambing period, and to wash and pack wool (fig 7-4). The timing of pastoral work depended on rainfall, and there was much less opportunity for work during the driest summer months. These were the months when competition for resources would have been greatest, remembering that there were very limited water resources. This apparently resulted in conflict, at least during the 1860s along the peripheries of the station. The periods of pastoral work overlapped with the periods when traditionally Aboriginal people could visit more remote parts of their country, and maintain larger camps for inter-group gatherings. Unlike the conditions described for northern Australia, where the off-seasons provided an opportunity to visit traditional places, in this study the periods of pastoral work at out-stations provided an opportunity to visit more remote parts of the station. Additionally, rationed camps appeared to gain a ceremonial momentum, often attracting large groups and allowing a chance to fulfil societal and ceremonial obligations. In later years, new forms of work which replaced shepherding - such as fencing, hunting dingo and rabbit - maintained access to country.

The role of European material culture in interpreting the chronology of contact period sites such as these was demonstrated, supporting Allen (1969), Birmingham (1992) and Murray (1993). Yet, these chronologies need to be tested by further research, especially given the scarcity of material culture studies of pastoral work sites. Like Gasco's (1992, 1993) study at Ocelocalco, new materials were used to make objects in

indigenous forms. For example, glass tools were made using technology common to stone tool manufacture, and with similar spatial arrangement of working areas. Certainly, as demonstrated by Schrire (1984, 1995), the material culture of contact provides insight into the technologies and practices of groups of people who are rarely described in documentary sources. Research into material indicators of Aboriginal practice, particularly glass tools (Freeman 1993; Harrison 1996; Cooper & Bowdler 1998), provides new tools for archaeological inquiry of the contact period. With these indicators it is impossible to explore the variation in adaptation to new materials. Similarly, material culture studies need to take into account variations between different evidence (Stahl 1993, 1994; Head & Fullagar 1997). In this study for example, ochre appears to have remained important to Aboriginal people in the study area, even having to be traded several hundred kilometres, whilst other indigenous equipment - such as grinding equipment - was used much less following contact. The implication of changes in assemblage contents provides insight into new technologies and practices. Dietary changes and the popularity of new food, tea and tobacco are demonstrated by the presence of related paraphernalia. Other artefacts were more difficult to interpret - for example did clothing parts indicate Aboriginal people wearing clothes - and if so, under what circumstances? Such questions require future research. It is clear that a diachronic 'contextual' approach to contact studies (Clarke 1994; Lightfoot 1995; Head & Fullagar 1997, 1997) to incorporate both pre-contact and post-contact contexts provides a means to measure change and conservatism in material culture, which as shown in this study, occurs at different rates for different artefact types.

The evidence presented here for Aboriginal involvement with the pastoral domain indicated different types of involvement, ranging from the 'trusted henchmen' to seasonal workers. These results are comparable similar to those reported by Rowse (1987) regarding the role of Aboriginal intermediaries in pastoral domains. The cumulative evidence indicates a complex range of interactions between Aboriginal people - particularly those within the pastoral domain - and the European pastoralists. This supports theoretical approaches which accommodate multiple strategies by participants in culture-contact (Trigger 1982b, 1990; Lightfoot 1995; Rowse 1987, 1998; Schrire 1995). An important result of this research was that elements of

'cooperation' characterised the pastoral domain between 1862-1900. Reciprocity and responsibility, were demonstrated by the pastoralists occasional protection of their workers, and by Aboriginal people meeting work demands and providing information to pastoralists. As summarised by Rowse, this pattern accorded with some Aboriginal traditions and societal organisation, indicating cultural adaptation and continuity. An important element of the organisation of the pastoral domain was rationing, also supporting Rowse (1987, 1988).

This research supports work (Wolf 1982; Trigger 1982b, 1990; Kirch & Sahlins 1992; Rogers & Wilson 1983; Fitzhugh 1985; Rose 1998) indicating that the frontier was linked into wider social and economic networks. The pastoral station was driven by commercial demands, sufficient to maintain the station. Continued demand for wool and meat resulting in increased levels of expenditure at Strangways Springs Station. The provision by Aboriginal people of a cheap, local work force presumably assisted the success of the station (*see also* McGrath 1987, May 1994). Unlike the condition reported by Watson (1998) where Aboriginal workers filled gaps left by European workers leaving pastoral stations (such as during the gold rush or war), this study indicates the involvement on Aboriginal workers from the earliest years of the station, and a deliberate process of using Aboriginal labour to reduce the number of European workers. This accords with observations by Jeans (1988) regarding the provision of cheap labour, and in addition demonstrates that the types of pastoral work conducted by indigenous people changed over time. Future archaeological research could further explore the material and spatial correlates to changes in the pastoral system over time, particularly as this study has only focussed on the first forty years of one station.

Like studies which explore the role of indigenous people's explanations and responsive strategies to culture-contact (Trigger 1981, 1982a, 1982b, 1985; Stahl 1993; Wilson & Rogers 1993; Lightfoot 1995) this research demonstrates that the engagement between Aboriginal people and European settlers was characterised by diversity. People became involved (for a variety of reasons) in the pastoral domain in different ways. Certainly decisions to work (if made available) resulted in increased access to valued new foods and goods, and the chance to maintain - in the form of rationed camps - links with members of Aboriginal society. The evidence suggests that

in the study region many Aboriginal people cooperated with the settlers, establishing a pastoral domain which was in some ways mutually beneficial. Returning to a quote from chapter 1, this research has implications for future culture-contact studies by demonstrating the role of archaeology in providing a critique of 'the still-popular view that pioneering was the exclusive achievement of Europeans and that the Aborigines contributed nothing to the [European] colonisation of the continent' (Reynolds 1990, p. 231). This study has provided a regional example of a specific contact period process, indicating how and why Aboriginal people came to be involved in (or not, as the case may be) the pastoral system. The early pastoral industry based at Strangways Springs, and cross-cultural processes over time were, in part, structured by the pastoral domain, rationing regimes and indigenous labour processes.

The results presented here have a slightly utopian feel compared to the brutality described in literature detailing more recent aspects of indigenous-pastoral contact (Rowley 1970, 1971; Rose 1991; McGrath 1987; May 1994). This results inevitably from the absence of Aboriginal people's narratives in the analysis. It should not be assumed that I argue that the study area differed significantly from other contexts of colonialism, which Rose describes as the 'great Australian holocaust known as colonialism' (1991, p. 2). I have attempted to cover themes such as frontier violence perpetuated by European settlers and Aboriginal people defending their country, although there was very little archaeological or documentary evidence for this important discussion. Similarly, there was little evidence directly informative on the types of sexual relations.

Despite this, there is evidence that the pastoral system in the study area provided an essentially stable domain, with cooperation between some Aboriginal people and the pastoralists. The results were mutual: the pastoralists had access to an inexpensive labour pool, and were keyed into a much wider network of knowledge regarding available resources in the environment. Aboriginal people were provided with a colonial period enclave, in which they had access to rations and opportunities to maintain connections with country and members of Aboriginal society outside of the pastoral domain. During the twentieth century Anna Creek Station remained the regional centre for Aboriginal settlement and later generations of Aboriginal people

remember their pastoral work proudly (Shaw 1995). The archaeological evidence presented in this thesis documents a period during which elements of Aboriginal attachment to land in a colonial context were negotiated and defined. For Arabana people, the cultural and spiritual importance of the study region continues today.

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