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STEPPING STONES TO THE SKY

Archaeological Perspectives on the Cultural Significance of the Weddin Mountains in Recent Prehistory

Tom Knight

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Except where otherwise indicated, the work presented in this thesis is entirely my own.

Tom Knight
School of Archaeology and Anthropology
Australian National University
4 January 2001
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Chapter 1

ARCHAEOLOGICAL LANDSCAPES

May 20 1817. Proceeded forward south-west (of the Lachlan River) eleven miles through a most barren desolate country... It is impossible to imagine a more desolate region; and the uncertainty we are in, whilst traversing it, of finding water, adds doubt to the melancholy feelings which the silence and solitude of such wastes is calculated to inspire. (Oxley 1820:40-41)

July 29 1817: Almost directly under the hill ... we saw a tumulus ... It would seem that some person of consideration among the natives had been buried in it, from the exterior marks of a form which had certainly been observed in the construction of the tomb and surrounding seats. The form of the whole was semi-circular. Three rows of seats occupied one half, the grave and an outer row of seats the other; the seats ... were formed by the soil being trenched up from between them. The centre part of the grave was about five feet high, and about nine long, forming an oblong pointed cone ... to the west and north of the grave were two cypress-trees distant between fifty and sixty feet; the sides towards the tomb were barked, and curious characters deeply cut upon them, (Oxley 1920:138-139, 141)

John Oxley was the first European explorer and surveyor who came through the northern part of the study area in 1817. He was well educated and intelligent; yet he was not culturally equipped to interpret and subsequently deal with this landscape through the eyes of the Wiradjuri hunter-gatherer people of this region, however he did recognise the cultural significance of burial sites placed within it. In the terms of Duncan and Duncan (1988), Oxley was not privy to the text inherent in this Aboriginal landscape, the explanatory narrative that gave it meaning and made it 'home', yet he was able to perceive through his training that these sites had meaning. A later government surveyor/geologist, F.B. Woolrych understood in part the idea of landscape as text to the local people, when as a result of his field and ethnographic observations he wrote:

Widdin' signifies to stop, and it was upon this mountain that the young blackfellow had to remain for a certain time during the ceremony of his initiation into manhood. The mountain is the highest part of the country and a conspicuous landmark for many miles round (Woolrych 1890: 65)
This thesis is an attempt to evaluate landscape as text in the Weddin Mountains and surrounding plains by a detailed archaeological survey, artefact analysis and distribution, and a cultural appreciation of the Wiradjuri mythological and ceremonial worlds. It begins with an understanding of the importance of the cultural landscape in both its natural and humanly modified forms in archaeological interpretations of prehistoric peoples and then focuses on the study area and its Wiradjuri peoples. It concludes with a narrative of the importance of Weddin and journeys to it for the purposes of ritual activity.

**Cultural landscapes**

The rock was now domesticated by a name. (Brian Aldiss *Helliconia Summer*, 1985)

Cultural landscapes exist wherever people have been. (Mulk 1998: 1)

‘Landscape’ has long been recognised as a generic and ambiguous term (eg. Sauer 1963: 322; Gosden and Head 1994). It has found ever increasing application in several disciplines at a number of conceptual levels and considerable debate, if not confusion, exists as to whether a meaning may be effectively derived or implied. Perhaps the most prevalent understanding of landscape stems from the perception of it as a physical geographical entity, a generalised definition for the appearance or surface shape of an area, effectively the intrinsic terrain comprising certain topographic features, characteristic geomorphology, hydrology and vegetation (Ingold 1987: 55, 107, 153; Clark 1990: 173; Renfrew and Bahn 1991: 201). In this respect, a landscape may be viewed as a natural backdrop having potential for, or being devoid of, human use and habitation. A landscape perspective in physical geography, for instance, may be involved with naturally occurring physical elements, such as rocky substrates, outcrops soils and vegetation, and the resultant associated shape, form and structure and drainage in a given area of the earth’s surface. Such an understanding initiates and maintains a focus on elements which are not human in
origin, but which may be either physically utilised by humans or may inherently effect their existence in one way or another - essentially a resource-oriented perspective.

Alternatively, the landscape may be seen as a largely cultural construct, where the signature of human activity upon the natural has become indelibly etched in one form or another over time. Given that the discipline of archaeology is intrinsically concerned with the interpretation of human activity in the past, the manifestation of such cultural landscapes is of paramount concern in this thesis. The notion of ‘cultural landscape’ has become firmly ensconced in the disciplines of archaeology, anthropology and geography (Birks et al 1988; Jackson 1992; Jackson and Penrose 1994; Bender 1993; Hirsch and O’Hanlon 1995; Ashmore and Knapp 1999) and is now becoming a standard form of reference in the field of cultural heritage management where regulatory bodies are increasingly faced with issues of heritage protection on the landscape scale (MacDonald 1996). The term itself was originally defined by the geographer Carl Sauer (1963: 325-326), who conceived the landscape as a bilateral unit composed of the natural, “the physical area... the sum of all natural resources that man has at his disposal”, and the cultural, “the impress of the works of man upon the area”. He saw the cultural landscape as an essentially physical entity, this being the result of a process of alteration or ‘fashioning’ of the natural landscape over time by a ‘culture group’, “culture is the agent, the natural area is the medium, the cultural landscape the result” (Sauer 1963: 343) (Figure 1.1).

Rowntree (1997: 3-4) has noted the importance of Sauer’s observation in that it heralded a break from contemporary views founded in environmental determinism and acknowledged that the physical environment could be transformed by human action into a cultural entity. Subsequent reasoning has suggested that the cultural landscape may be essentially seen as the physical reflection of attempts by cultural communities to reconcile their associations, choices, requirements and ideals for economic, social and political reasons with parts of the
Figure 1.1: Sauer's diagrammatic representation of the cultural landscape (adapted from Sauer 1963: 343)
natural landscape (Wagner and Mikesell 1962: 10; Bonney 1972: 168). From an archaeological viewpoint, a fundamental shortcoming in this lies in the maintenance of the bilateral view of the natural/cultural divide. This is difficult to reconcile with the fact that much, if not all, of the earth’s habitable area has at some stage been occupied and altered (‘fashioned’) to some degree by human beings, for example Europe exposed to intensive wholesale human occupation for such a long time that no natural or non-humanly altered landscape may be said to truly remain (Birks et al 1988). Similarly, recent evaluation of the ‘wilderness’ concept in North America and Australia has revealed the profound influence exerted upon the vegetational and geomorphological regimes by long-term, purposeful Amerindian and Aboriginal burning (Arnold 1996; Head 1994; Kohen 1995; Redman 1999), a revelation that has given lie to the concept of ‘virgin’ country having existed directly prior to the advent of European settlement. Examples, such as these, serve to illustrate the scale of humanly induced physical change, sometimes apparently subtle, that may be wrought on a landscape over time. As a result, archaeologists are compelled to recognise the potential exhibited by practically all aspects of landscape which bear some physical signature of cultural alteration.

However, to describe a landscape as culturally fashioned is to also extend the concept beyond the physical realm; consequently it must become an embodiment of human comprehension and understanding, a cognitive entity. As Schama (1995: 6–7, 10) states, landscapes are every bit as much human mental constructs as they are material realities.

... landscape is the work of the mind. Its scenery is built up as much of memory as from layers of rock ... At the very least, it seems right to acknowledge that it is our shaping perception that makes the difference between raw matter and landscape.

Acceptance of the cultural landscape as a cognitive entity that incorporates the complexities of human experience and perception is being increasingly viewed as an integral component of landscape-oriented archaeological studies (Knapp and Ashmore 1999). While
recognition and interpretation of physical evidence of past human activity appears to be the
convention in archaeology, it is difficult to envisage the implementation of purposeful,
physical alteration of the landscape by prehistoric populations in the absence of initial
appraisal and 'settlement' of the area within their mind and imagination. An important
combination of considerations subsequently arises: that cognitive landscapes come into
being as precursors to the process of physical modification and that elements of perception
continue to operate in conjunction with and parallel to the material dimensions.

Once inhabited, or simply visited, by humans, landscapes undergo a process of
'domestication', whereby they become encapsulated within a realm of cultural
understanding. This process has been described by Downs and Stea (1977) as 'cognitive
mapping', a mechanism utilised in order to come to grips with the world around them
(Downs and Stea 1977: 6). Such a process may be envisaged as roughly comprising a series
of consecutive steps, whereby people appraise a landscape, attribute names to it, develop
explanatory parables for it and ultimately physically fashion or modify it. Tilley (1994)
writes that in this development of understanding or landscape 'construction', a landscape is
initially moved through and 'felt' in terms of tactile sensation (sight, sound, smell, touch)
before being stored in memory and then conveyed between people as information in one
form or another. An origin point for the storage of landscape in memory lies in the process
of naming, an act that transforms the physical and geographical (or 'natural') into
existential space or an entity that is historically and socially experienced (Tilley 1994: 18).
Temporality is then introduced by the creation of narratives, cultural recitals that serve to
connect identified places through space and organise them into a human explanation of the
corporeal world. Tilley (1994: 32) defines these narratives as means to understanding and
describing the world by linking locales, landscapes, actions, events and experiences
together as theses of 'heterogeneous phenomena'. These accounts may provide a
comprehension of landscape through being recounted orally, by the written word, or
through artistic depiction, but which always will be reflections of conceptions or fundamental beliefs relative to the particular culture involved (Fowler 1995: 100). Most important in terms of this investigation, is the embodiment of landscape narrative in legend or mythology, particularly where the bonds established between people and landscape are utilised to ensure correct social behaviour and values. In this respect, landscape stories may be said to convert geographical entities into anchoring points for, or physical reflections of important moral teachings (Tilley 1994: 33).

Physical aspects of the cultural landscape are largely a reflection of these cognitive processes. The culturally altered landscape should also be seen to embody a culture’s values and beliefs, deeply ingrained imperatives that intimately affect the manifestation of material signatures of human occupation. A cultural landscape, then, is not simply the physical signature of a culture’s profane lifeways upon a natural geographical backdrop or setting; it is also a statement, whether constructed consciously or unconsciously, of a culture’s inherent perceptions, values and understandings of life. Importantly, as will be discussed, these values need not manifest themselves in the landscape through monumental or large-scale physical modification; rather, forms of landscape domestication may be achieved in more subtle ways, where significance is attached through attribution of outstanding or sacred association.

Subsequently, it can be stated that the cultural landscape may be defined not only by virtue of its composition of multiple and differing, though not necessarily exclusive, elements, but also through a range of human interpretative perspectives. Landscape must be seen as a highly complex and broad definition that both crosses and connects disciplinary and epistemological boundaries. Similarly, if an understanding of the landscape occupied by humans through time is to be effectively reached, an incorporation and consideration of a range of seemingly differing elements, natural/cultural, physical/cognitive, must be utilised.
Thus the landscape should be regarded as an organising theme or conceptual tool in archaeology rather than an easily identifiable, definitive and singular term (Rowntree 1997: 1). Despite this, until relatively recently, archaeological studies have tended to relegate understandings of the cultural landscape into quite separate interpretative realms.

**Archaeological understandings of landscape**

Four general approaches to the interpretation of landscape have been predominant in recent archaeological studies. They include definition of the landscape as habitat, artefact, sociofact and mentifact.

*Landscape as habitat*

Perhaps the most common approach in archaeology to date has been where prehistoric human populations are seen to have operated primarily in accordance with economic imperatives, such as access to food and raw materials, and/or in response to environmental conditions, such as climate and seasonal variability (eg. Allen 1974; Witter 1990; Bettinger 1977). In this respect, the landscape forms the ecological niches for human activity and is interpreted along adaptationalist lines (Cannon 1999: 31; Lee and Daley 1999: 11). In the realm of hunter-gatherer studies, two primary concerns have been typically addressed: subsistence-settlement and stone procurement strategies, effectively resource use and extraction. A possible reason for this general focus lies in the perception that such material interaction between humans and environment is direct and obvious (Jochim 1998: 2), a level of connection that fits neatly within the empirically focused, hypothetico-deductive frameworks of the ‘new’ archaeology. Landscape is typically viewed as ‘the region’, a broad ecological domain that is perceived to affect intimately the manifestation of local human behaviour and ultimately the evolution of culture itself (cf Binford 1983). Archaeological interpretation of these regions tends to operate under the premise that the minimal physical remains resulting from hunter-gatherer activity are best
suited to the provision of information on the utilitarian aspects of life. Artefactual accumulations distributed over a landscape are subsequently read as broad scale indications of prehistoric human resource procurement strategies formulated in response to resource availability through time (seasonality) and space (uneven distribution through the landscape) (eg. Foley 1981; Gamble 1986). Thus the ‘cultural geography’ of an area may be described in terms of spatially integrated foraging settlement units, such as ‘base camps’ and ‘task-specific field camps’ (Binford 1972, 1980; Heffley 1981; Thomas 1989; Newell and Constandse-Westermann 1996).

Landscape as artefact

The cultural landscape may manifest itself as a phenomenon that has undergone some level of alteration as a result of human occupation, a factor that leads to the archaeological interpretation of landscape as artefact. This approach has characteristically concerned itself with the material aspects of the cultural landscape within which purposeful alteration of the earth’s surface into more or less distinct divisions between cultural and natural are the ideal. Not surprisingly, architecture and agriculture dominate as research themes, as is evidenced by an issue of World Archaeology devoted entirely to ‘landscape archaeology’ (Volume 9, number 3) in which all contributions are dedicated to the interpretation of wholesale signatures in the landscape as a result of post-agricultural human settlement systems including the archaeological interpretation of agricultural field systems (Bradley 1978; Marshall 1978), structures of sociopolitical control over populations and resources in ‘complex’ prehistoric societies (Conrad 1978; Hirth 1978; Hirst 1978), settlement and trade systems in sedentary, agricultural prehistoric groups (Irwin 1978) and post-Iron Age settlement systems and their development (Stjernquist 1978). Unfortunately, such interpretation has been conventionally conducted at the expense of hunter-gatherer themes with the result that archaeological investigation of humanly
modified landscapes seldom acknowledges the potential for similarly significant material signatures to have been created by non-agrarian, highly mobile societies.

**Landscape as sociofact**

At both individual and collective levels, human beings are not confined to single, homogeneous spaces or culturally defined levels of behaviour or interaction. In archaeology, a primary concern is with the manner in which separate human populations define themselves and forge social connections between each other across and within regions. Similarly, this manner of interpretation may also extend to the intra-group scale. A sociofactual interpretation of landscape therefore involves itself with issues of the nature of links between individuals and groups over broad expanses of country. At the intra-group scale, this may include expressions in the landscape of family structures, reproductive/sexual behaviour and child rearing, while at an inter-group level it may incorporate political and educational systems including territoriality, power relations and group status (eg. Haggett 1975; Jackson 1989; Rowntree 1997). An outstanding example of this approach is the recent work on Palaeolithic Europe by Clive Gamble (1999), who regards prehistoric cultural landscapes largely as reflections of regional networks of social interaction between hunter-gatherer populations. Due to the necessity for mobility amongst hunter-gatherer groups, Gamble (1999: 71) suggests that efforts were made to extend co-presence across landscapes through the use of items of material culture. While hunter-gatherers were able to interact at direct levels during meetings and gatherings, Gamble proposes that these social systems were also maintained and are reflected archaeologically by ‘disembodied’ cultural signatures, such as artefacts and rock art, that were implanted in the landscape with the intention of conveying *in absentia* social information throughout regions (Gamble 1999: 71).
Landscape as mentifact

The term ‘mentifact’ is defined by Haggett (1975: 239, 255-256) as representing the ‘abstract and mental’ human component of the landscape. Mentifacts reflect human thought, ideology and imagery, and may include religion, language, magic, folklore and artistic traditions. A cultural construct of significant magnitude is the endowment of spiritual or cosmological significance upon the landscape, a process described by Eliade (1989: 9-10) as the ‘cosmocizing’ of the material world. Through this process, the features of a landscape are effectively brought under human control by assigning them ritual or mythological importance and the landscape is subsequently drawn into the spiritual life of the community (Bradley 1997: 153). Archaeological interpretation therefore can be concerned with the reconstruction of the landscape as a reflection of prehistoric cosmologies, particularly religious beliefs, myths and legend. While these aspects of human existence have been traditionally viewed as intangible and difficult, if not impossible, to discern archaeologically (Fagan 1989: 22; Renouf 1990: 99; Jochim 1998: 2), growing interest in what Tilley (1994) refers to as the ‘phenomenological landscape’ has suggested that certain aspects of the cognitive cultural landscape, including the ritual and sacred, are possible to reconstruct through studying the systematic relationships between sites and their topographic settings (eg. Barrett 1991: 7; Richards 1996; Tilley 1996; Bradley 1997) and the use of detailed ethnographic information (Sundstrom 1996; Bradley 2000).

While each of these interpretive avenues provides important insight into specific features of what constitutes the cultural landscape, to consider any one perceived component as having separately, isolated from any others is to grossly oversimplify the issue. Cultural landscapes are highly complex manifestations that are made up of ‘intractable knots’ or interactive mosaics of each of these understandings or mechanisms (Haggett 1975). Although most archaeologists would not deny the potential existence of complementary cultural themes and functions within the workings of the cultural landscape as they interpret
it, the elaborate interplay, that may have taken place, between these attributes is a factor that is often taken for granted rather than specifically investigated. In this manner, it is common for archaeologists to retain a viewpoint of more or less clear separation between what they see as discrete components of the cultural landscape, what has been termed an *explicit* landscape perspective (van Dommelen 1999: 277).

At one level this approach effectively perpetuates the bilateral view where the natural landscape is seen to exist as a neutral resource quite distinct from the cultural. Not surprisingly, studies focusing on subsistence-level human behaviour and/or the purely material reflections of culture tend to adopt this outlook. The explicit perspective is also evident in studies that attempt to address social/symbolic aspects of the landscape whilst making clear definition between ‘neutral’ and ‘active’ units, such as the sacred and the secular. In this manner, identified places form the focus of investigation often in conceptual isolation from their physical and ideological surrounds. For instance, churches and temples are viewed as distinct from surrounding urban infrastructure, stone arrangements and altars are not linked with adjacent fields and dwellings, ceremonial grounds and rock engraving or pigment art sites are conceptually detached from nearby artefact scatters or middens.

The innate shortcoming of the explicit perspective may be said to lie in its failure to relate specified ‘places’ to the broader setting (van Dommelen 1999). Explicit approaches tend to regard archaeological landscapes in what are effectively conceptual and physical vacuums, essentially removed from the integrity of their overall position within and connection to the surrounding world. In the case of subsistence-settlement oriented hunter-gatherer studies, the result is that prehistoric people are seen to have lived an existence of material and experiential detachment from the physical landscape, a system based upon exploitation and extraction rather than incorporation and connection. Further, socio-religious aspects of
existence, both cognitive and physically manifest, are seen to have taken place in isolation from the profane, or aspects of 'everyday' life and the 'background' landscape.

An alternative approach to the explicit lies in what may be termed an inherent perspective (van Dommelen 1999). Inherent interpretation of the cultural landscape is essentially an acknowledgment of the ubiquitous role that landscape plays in both the 'everyday' and the 'sacred'. It adopts the stance that the two cannot necessarily be clearly demarcated. Indeed, for the sake of interpretative practicality, while the landscape may be conceptually divided into sacred and profane components as shown from the explicit approach, an inherent perspective acknowledges and seeks to identify the broader implications of the sacred within the landscape as a whole. Of particular relevance here is the potential that cosmological and ideological elements possess to become intimately combined with aspects of human existence that are conventionally viewed in archaeology as being empirically quantifiable, such as the economic and subsistence related. In this vein, Renfrew (1994) warns archaeologists against automatically assuming that cosmological beliefs would have operated as separate dimensions or sub-systems of prehistoric societies. Cult activity may have existed as an inextricably 'embedded' component of daily life, where significant locations and ritual aspects of material culture were thoroughly incorporated into secular ranges and uses (Renfrew 1994: 47). In this manner, existential landscapes richly endowed with ancestral and mythological significance may have become 'doubly imaged' in that they were also enscribed with everyday human activities (Tilley 1994: 62).

Landscapes may therefore exist as mosaics of conceptualised places, not all of them necessarily sacred; but places which are intricately linked by cognitive threads and which also pass through and bind the actions of everyday existence, an association defined by Hirsch (1995: 24) as a process of 'mutual implication' rather than the formation of rigid dichotomies. An inherent perspective both recognises the potential for, and seeks to identify
signatures of this interaction within cultural landscapes. This incorporative approach is especially pertinent to the study of hunter-gatherer groups, such as the Australian Aborigines, as no dichotomy between the physical and ideational worlds, and therefore cosmological and everyday issues, may necessarily have been recognised (Jones 1990: 25). Such a theme is of critical importance to this study and is expanded upon below.

**Elements of the sacred**

The sacred may be concisely defined as 'strongly held beliefs or knowledge of a spiritual or religious nature implying reverence and respect' (Creamer 1984: 6.5). In general, it is held that the sacred constitutes otherworldly phenomena that stand out from the commonplace and interrupt routine (Tuan 1978: 84), or, as Eliade (1961: 10) states, exist as effectively the *opposite* of the profane. Concepts of the sacred are conventionally associated with religion and involve the connections that members of a cultural group see to exist between themselves and perceived elements or deities of supernatural origin and power. Basic to such belief is the premise that the world is divided into realms of the known and unknown and that these realms may be bridged through certain understandings and practices (Park 1994: 246). The influence that such belief may wield over the manifestation of cultures through time cannot be underestimated, as responses to the sacred may have acted as major mechanisms in the organization of life, society and human experience (Mahapatra 1992: 11). To this end, it has been suggested that religion and culture can become so closely interwoven that one reflects the other (Park 1994: 94). Conception of the sacred and its manifestation in the landscape has played an integral role in shaping human movement and undertakings, and the manner in which these things were carried out.
**Hierophany and sacred space**

Of central importance to the inherent perspective on interpreting cultural landscapes is the concept of sacred space. In accordance with the mechanisms of human cosmologies, certain expanses of landscape or locales within landscapes may become recognised as worthy of devotion, respect and reverential treatment. As Jackson and Henrie (1983: 94) state, this sanctity does not occur naturally, but is assigned by people through their culture, experience and goals. Thus through human agency an area, place, object or feature becomes a manifestation of the sacred, a process termed by Eliade (1961: 11) as *hierophany:*

> the manifestation of something of a wholly different order, a reality that does not belong to our world, in objects that are an integral part of our natural "profane" world.

These objects may include stones and trees, or topographic features such as mountains, caves and rocky outcrops.

While such sanctification often involves the conceptual saturation of the object with supernatural power or divine being, it may still remain an integral part of its environment or ‘surrounding cosmic milieu’ (Eliade 1961: 12). A hierophany may therefore be charged with sacred significance or power, yet remain unchanged in terms of its shape, colour, texture or position, in other words its place in the ‘natural’ landscape. A feature may, however, become hierophanic largely by virtue of its natural distinctiveness or individuality which sets it off strikingly from its surroundings. Peculiarities, such as outstanding form, colour, size, or texture, are attributes that promote the symbolism of sacred manifestation in natural objects and are often associated with enhanced power or potency (Fickeler 1962: 108-109). Such individuality may also extend to a topographic feature’s position in the landscape with attributes, such as remoteness, inaccessibility, loneliness and isolation, contributing substantially to its exceptional character (Fickeler 1962: 109). Examples of sacred landforms exhibiting such attributes include: the Black Hills, a large isolated mountain range on the northern plains of North America (Matthiessen 1997; Sundstrom
1996); Uluru, a singular abrupt rocky feature of the Central Australian desert with distinct colouration and weathering (Layton 1995); Psychro Cave, Crete, a notable cave formation believed by the ancient Greeks to have been the birthplace of Zeus (Bradley 2000); and Fujiyama, the highest peak in Japan, with its characteristic conical shape and white snow cover (Park 1994). A feature may therefore become culturally charged with sacredness, power, ancestral significance, connectivity, with its natural distinctiveness serving to heighten its sensory impact, making its significance clearly distinguishable within its landscape setting.

Sacred elevation in this manner is of particular relevance to cultural groups who maintain belief in nature or the natural domain as the intrinsic dwelling place and manifestation of their deities. Their landscapes subsequently become complexes of conceptual places that contain and emit power and/or exist as spatial gateways between known and unknown worlds. According to Eliade (1964), three fundamental cosmological worlds may be recognised within the realm of the sacred: the everyday, the upper and the under world. These may come into contact with each other at certain points in the landscape, namely where hierophanies, manifestations of the sacred realms, occur. It is characteristic for the sacred association of spatial gateways to lie in their orientation relative to the everyday realm; caves, fissures and springs, and deep pools connect with the underworld whereas mountains, trees and other upright formations lead to the sky or upper world. While each manifestation of a cosmological gateway may have its own importance in the landscape, locations where all three worlds are seen to connect at a single point attain a heightened, focal significance as a ‘centre’ or *axis mundi* (Eliade 1964). Within this thesis, at the *axis mundi*, the three cosmic worlds become mutually interconnected or put into communication through a break in the homogeneity of space (Eliade 1961: 36-37). The sacred magnitude of these central connective locations to people and their interpretation of the landscape is typically reflected in the importance of certain places in myth and legend, where expression
of what is perceived to lie beyond the known world may be encoded (Cosgrove 1993: 282-286). Myth and legend, in turn, may be drawn upon to act as codified narratives for the enactment of ritual at sacred locations (Smart 1996: 82-83).

**Ritual in the landscape**

Hierophanies provide landscape-based opportunities for people to commune with otherworldly deities and associated power because they may effectively constitute spatial gateways between worlds. Formalised communion of this kind finds its expression in ritual, a sociocultural mechanism that serves to bridge the gap between the three worlds and bring order emanating from the sacred into the realm of the profane. While the specific objectives of ritual may be manifold, two general ritual functions are of particular relevance, namely the renewal or maintenance of sacred power and rites of passage.

In the case of renewal or maintenance of sacred power, ritual may be conducted in order to sustain cosmological balance and harmony in the world. In this respect, ritual may make available power or blessings, may serve to help ward off disasters that could potentially befall individuals or communities, or ensure plentiful supply of vital resources (eg. Mahapatra 1992: 35; Sokolova 1992: 115). Locations held to be associated with particular deities or spiritual energy, such as ‘increase sites’ (Creamer 1984), are also of relevance. Ritual may also be undertaken at sacred locations for the purpose of re-enacting mythological events and, in so doing, release or harness powers seen to reside in intimate association with particular tracts of country. Where landscapes are perceived to be the receptacles and/or result of mythical consanguine activity, ritual activity may serve to reinforce ideas of a prestructured universe and maintain the spatial ordering of important ancestral occurrences. In this manner, group affinity with landscapes, spiritual identity of places and relationships between people and tracts of country or locales is reinforced (Morphy 1995).
Rites of passage effect the formal transition of individuals from one level of social categorisation to another in accordance with perceived stages of life or being. Ritual is often vital to social perception, cohesion, identity and well-being and may include birth, reaching puberty or adulthood, marriage, elevation to significant rank such as leader or adept, and death. Smart (1996: 117) states that each of these social categories may be ‘charged’, that is of sacred or deep social importance, thus making it necessary for special ritual to be undertaken when transition between categories takes place. In the case of societies holding strong belief in the role of ancestors, the state of transition between worlds is of importance, for instance birth (entering the everyday world) and particularly death, the passage from the everyday world to the realm of the ancestors (Smart 1996: 117-118). In the case of death, the role of the landscape in the transition may be pronounced, with highly formalised burials commonly being positioned in close proximity to naturally occurring ‘gates’ or ‘doors’ to the ancestral or spirit world, particularly caves, cliffs and mountains (eg. Brady and Ashmore 1999; Richards 1999). Enacting what is seen as proper alignment between worlds in this case ensures that the spirits of the dead may travel efficiently to their place with the ancestors. Thus ritual burial confirms death in the everyday world and secures acceptance within the next (Eliade 1961: 185). In this respect, it may be said that sacred connection is achieved between worlds by the alignment of temporal and spatial gates (cf Isaac 1967), in which death is the temporal and caves, mountains or cliffs are the spatial.

However, such alignment in time and space is not confined to death. The temporal element represented by other rites of passage is often representative of an opportunity or obligation to undertake communion with the spiritual world on a significant though temporary basis. Typically these rites involve occasions where individuals are compelled to undergo periods of physical and perceptual separation from the ordinary world and receive special tuition or exposure to restricted knowledge. An important is that of initiation which is described by
Eliade (1961: 188) as a time of ‘spiritual maturing’ achieved via revelation and training. Through the initiation ritual, an individual makes a social transition so profound that it is often treated as a form of rebirth into a new sanctified, knowledgeable existence (Eliade 1961: 188-190). Tilley (1999) states that the ceremonial proclamation of this change of status is inextricably linked with magical transformation and concepts of suspension in social time. Three basic phases are recognised here: removal of the initiate from normal existence into a realm of ‘abnormal’ space, time and appearance; a liminal phase of social timelessness where the initiate is physically secluded from the rest of society and typically endures prohibitions and prescriptions on clothing, food and movement; and finally reincorporation into normal society in a new role (Tilley 1999: 154). Importantly, Tilley makes the observation that during the liminal phase the initiate is often regarded as being in a state of holiness, “sacred, contaminated, dangerous, ‘dirty’” (Tilley 1999: 154).

Needless to say, the role of sacred space, the initiation ground or area, is inherent in this process. Initiation rituals commonly involve removal of candidates to sacred locations, places that are highly symbolic of, or associated with, the process of death and rebirth, mythological aspects of creation, the genesis of fundamental law, and the deities or spirit beings seen to be responsible for and intimately connected with these processes. These parts of the landscape play vital roles in the physical isolation of the initiates and their exposure to spiritual power through their hierophanic nature. They become earthly points of abnormal space, where time is effectively suspended for the liminal phase, for example Cuchama (or Tecate) Mountain in southern California, a feature sacred to the Cochimi people as a natural connective point with the upper world and a place of initiation for young men, who were immured on the mountain for up to two years as they were instructed in the lore of their people (Evans-Wentz 1981: 118). Sacred places, such as this, played a dual role in providing a conduit between initiates and the ancestors and acting as constant and
enduring reminders of the cosmological magnitude of the ceremonial event and its relevance to human existence.

Since ritual involves cultural re-enactment and reinforcement, it gives certain modes of activity and associated space or place ongoing and repeated cosmological functions which manifest themselves in corresponding modes of physical human activity in the landscape. Significant places may therefore be attributed specific cultural signatures which relate to their sacredness. Such signatures serve to make sanctified space and places real components of the landscape. As a result, sacred landscapes may be altered or ‘marked’ to some degree by humans (eg. Park 1994: 197-244). Alternatively, they may remain comparatively untouched.

‘The archaeology of natural places’

Tilley (1994, 1996) has emphasised the fact that certain naturally occurring features in the landscape were of cosmological importance to prehistoric people and that they were imbued with significance through names, stories, myths and ritual. In a case study undertaken at Bodmin Moor in Cornwall, he has maintained that while local complexes of granite tors were of significance to prehistoric populations from the Mesolithic onwards, it is only in the Neolithic that this relationship becomes archaeologically discernible as people constructed large-scale monuments in order to harness and draw upon the power seen to reside in the landscape (Tilley 1996: 167). Prior to this time, hunter-gatherer populations are seen to have left behind no deliberate permanent and/or tangible trace of their presence in the landscape aside from a few flint scatters that marked their paths of movement (Tilley 1996: 165). Thus, it is argued, no formalised attempt was made by people to:

objectify and make explicitly visible ... a relationship between social Being and the physical form of the landscape

prior to the establishment of more sedentary societies in the Neolithic (Tilley 1996: 167).
In contrast, Bradley (2000) has suggested that an ‘archaeology of natural places’ may be recognised and implies that this approach may be utilised in the study of prehistoric hunter-gatherer societies as well as those groups that engaged in monumental construction. While recognising that the sacredness of places is often signified through modification, Bradley (2000: 23, 25) makes the important distinction that, despite sometimes ornate monumental embellishment, it is the natural features themselves, gorges, rocks, mountains, caves, waterfalls, rivers etc., that remain a sacred place’s most important characteristic. Further, he recognises that wholly unmodified places have the potential to have been among the most significant to those who visited them and suggests that systematic study of the archaeology both directly in and around such places may shed light upon their roles in prehistoric human cosmologies (Bradley 2000: 28-29, 33-35). Four areas of archaeological enquiry are suggested: votive deposits, rock art, production sites, and monuments.

*Votive deposits* include artefacts and/or other archaeological material, such as bone, that has been deposited in the immediate vicinity of significant places in the landscape, such as caves, rocks, springs. Rather than concentrating solely upon the interpretation of the artefacts themselves, principally as specialised offerings, or relegating material, such as bone, to the category of domestic waste, Bradley (2000: 37-38) suggests their final position in the landscape also calls for elucidation. In this manner, it is the role of the place at which such material has been deposited rather than the circumstances of its deposition that requires interpretative emphasis.

*Rock art* is inherently linked with the landscape, yet its analysis has tended to concentrate upon the form and chronology of the images themselves. Alternatively, identification of the relationships that may exist between rock art locations and the surrounding topography and archaeology, particularly that evident at other significant locations, has considerable potential to shed light on prehistoric human identification with and/or marking of important natural places in the landscape (Bradley 2000: 38-39).
Production sites, principally locales of resource extraction, such as stone quarries, are typically viewed in utilitarian terms as evidence of technological efficiency and exchange. However, as Bradley (2000: 40-41) points out, in many cases more conveniently situated sources of raw material, such as stone, were ignored in the process of obtaining seemingly identical material from comparatively inaccessible, distant or dangerous places. Thus interpretative models that emphasise practicality and efficiency may be oversimplistic, while attempts at identifying the links between artefact significance and the points in the landscape from which they originated may hold more promise in understanding the complexities inherent in these prehistoric systems.

Where they are found to exist, monuments should be viewed as adjuncts to natural places and the broader landscape rather than being viewed as isolated, central places in themselves. While difficulties exist in relation to individual perception in the process of reconstructing possible links between landscape features and monuments, the roles they played in drawing attention to or embellishing conceptually linked but otherwise unmodified places is worthy of consideration (Bradley 2000: 41-43).

An archaeology of natural places, landscape features that themselves display no evidence of human modification, is therefore feasible in cases where archaeological evidence is available for study. As Bradley (2000) indicates, analysis of archaeological sites and material conducted within the landscape context and recognising the relationship between components of both the immediate and broader topography has the potential to shed important light on the way in which significant natural places were perceived in prehistoric times.

The kind of natural places which are regarded as sacred in various parts of the world, including that of the hunter-gatherer are mountains, woodland and groves, springs, pools and lagoons, rock outcrops, and caves and sinkholes
**Sacred mountains**

However, of outstanding universal significance within legends of sacred landscapes are mountains. Regardless of culture group, mountains have attained notable worldwide hierophanic status as homes of deities, ancestral beings and creators, centres of the universe, places of power and life, mythological refuges, and symbols of eternity and other worlds (Fickeler 1962; Tuan 1967; Evans-Wentz 1981; Rose 1990; Park 1994; Smart 1996; Barnes 1999; Brady and Ashmore 1999; Snead and Preucel 1999; Bradley 2000). A prevalent theme inevitably associated with the sacred mountain is that of connection between the everyday world and the upper world, as points of entry to the sky realm or as points of communion with sky gods. In each case, particular natural attributes are identifiable that may be linked with the mountain’s connection with otherworldliness, such as outstanding height, affordance of panoramic views, unusual colour, peculiar shape (pyramidal, dome shaped, mesa-like etc.) and notable ecological attributes which include vegetation and hydrology or its slopes. In many cases, these landscape features were not appreciably marked by the cultures who revered them, rather they were seen to reflect their sacredness in their intrinsic natural manifestation. Such direct conceptual correlates between the everyday world and the sacred in the landscape serve to reinforce the importance of the development of an archaeology of natural places.

**Woodland and groves**

Forests and, in particular, groves, have been venerated as locations of connection between deities and the everyday world (Birge 1982; Park 1994). Sacred groves have been seen as dwelling places of gods, places of fertility and points of union between death and renewal, meriting special treatment or avoidance (Birge 1982: 8-10; Toren 1995: 168-169). Individual trees have also been attributed significance, often being symbolic of fertility, but above all as material connections between the underworld, the everyday world and the upper world (Eliade 1961; Birge 1994). Due to their possession of roots fixed in the earth
and a trunk passing from the ground to the sky, trees effectively become the embodiment of what Eliade (1961: 36-37) terms a 'cosmic pillar' that simultaneously connects and supports all three conceptual worlds.

**Springs, pools and lagoons**

Water features, such as rivers, lakes and springs, have been viewed as sacred by many cultures. Springs are locations where water is seen to be emanating from the underworld, whilst pools and lagoons are often ascribed hierophanies because they are deep and seemingly bottomless and in which live creatures and beings of the underworld.

**Rock outcrops**

Rock outcrops and formations, including isolated rocks, tors, scree slopes, cliffs, bare rock surfaces, headlands and even islands characterised by their abrupt and confronting nature are often claimed to be sacred, particularly if their form is thought to represent humans, animals or birds or that the people believe that certain beings have become petrified (Creamer 1984; Bauer 1998; Bradley 2000).

**Caves and sinkholes**

Caves and sinkholes have been viewed as conduits to powerful forces of the underworld and/or points of origin and departure for ancestral beings and spirits (Stone and Bahn 1993; Brady and Ashmore 1999; Tilley 1999). They have often been associated with dangerous spirits and death, resulting in subsequent avoidance and/or restricted access. Hampton (1999: 49) provides an example from Highland New Guinea where caves were regarded as sacred and dangerous. Entry to these places was only possible for initiated males.
Aboriginal landscapes

The Australian Aboriginal world view is intimately expressed within and through the natural landscape (eg. Baker 1999; Rose 1990, 1996) and has been particularly well researched in the procedures leading to contemporary land claims (eg for the Finke River - Anon. 1989).

The concept of the ‘Dreamtime’ or a mythological creation era is an integral expression of such connection. During the time of creation, a range of primordial spirits, ancestral beings and sky heroes was seen by the Aborigines to have materialised and walked the earth, modifying the generally flat and soft landscape into the variety of topographic and hydrological features seen today (Creamer 1984: 2.2-2.3 ; Cowan 1993: 145). These legendary beings were also believed to have created all of the plant and animal species and were responsible for the origin of customs and social institutions. As Berndt (1970: 5-6) states;

They moved across the land in the Dreaming period, from place to place, or camp to camp, having adventures, performing various rites, and meeting others of their own kind; and they left behind them part of their own sacred essence, which is still present at certain sites. Some were metamorphosed, remaining spiritually indestructible. Some disappeared into the territory of another “tribe”, or into the ground, the sky or the sea; but in doing so, they remained spiritually attached to the land across which they had travelled and the sites they had made or been associated with in some other way. Man, derived from this source of life, was believed to be irrevocably linked with these beings, either directly or indirectly through intermediaries.

Thus the land was the physical personification of the creators and law makers and as a result Aboriginal conception of the landscape extended well beyond sentimental attachment into the realm of intricate and permanent ancestral and spiritual bonds. While these bonds entailed integral connected of people with the land itself, certain places in the landscape were held to be particularly important or sacred. Sacred places or locales were those that were directly related to the concept of the Dreaming and/or owing their derivation to the mythical beings of the creative era (Berndt 1970: 7). These sacred sites typically comprised
remarkable or important physiographic features such as caves, waterholes, strangely weathered rocks, hills and mountains, features that personified the ancestors or their actions and subsequently were receptacles of their aura or spiritual power.

In turn, sacred natural places were seen to be linked by the tracks of mythological ancestral travel between points of the landscape, ‘Dreaming paths’. These paths crossed broad expanses of landscape and linked sacred sites both across space and between Aboriginal groups and were replicated (effectively ‘kept alive’) by hunter-gatherer travel and trade. As a result, these paths have been described as ‘lines of communication’ between Aboriginal groups (Berndt 1970: 6). While this description would emphasise the inter-group social role of the Dreaming paths, it is important to note that it also illustrates conceptual and physical connection between culturally important natural places across the landscape: people knew of sacred features in other areas and these features could be linked through human landscape narrative to be familiar within a cosmological system.

Despite anthropological recognition of this ingrained human spiritual attachment to places within and across country, archaeological studies of Aboriginal landscapes have generally adopted a landscape-as-habitat viewpoint where issues of subsistence and economy have taken precedence over cosmological and ritual concerns. Here the role of the sacred landscape is either overlooked, generally regarded as archaeologically ‘invisible’, or is taken to have operated at a level subservient to and/or masked by the food and resource quest (eg. Pickering 1994). To date, the major avenue of research into prehistoric Aboriginal world view and its connection with the landscape has centred on the study of rock art, particularly analysis of form, style and site-specific interpretation. Rock art - painting and carving - has been viewed as the principal means by which Australian hunter-gatherers marked and subsequently tapped into the power of ancestral beings associated with certain parts of the landscape (eg. Morphy 1987; Tacon 1990; Tacon and Faulstich
1993; Gunn 1997; Tacon 1999). While various landscape features appear to have been investigated in this manner including rock outcrops (eg. Tacon et al 1997), gorges and passes (eg. Forbes 1982), at the landscape scale, culturally significant mountains have attracted considerable levels of attention (eg. Officer 1991; McDonald 1993; David and Wilson 1999).

Of these studies, only recent work by Bruno David (David 1993; Fullagar and David 1997; David and Wilson 1999) has extended the cultural significance of the sacred landscape from the rock art alone into a prehistoric context that encompasses other forms of archaeological evidence. David’s research at Ngarrabullgan (Mount Mulligan), a visually outstanding cliff-lined range in North Queensland has successfully involved not only the area’s rock art, but also open artefact scatter sites and excavated rock shelter deposits into the reconstruction of an Aboriginal sacred landscape feature.

Contemporary and historical records of the local Djungan people indicate that Ngarrabullgan was intimately associated with Dreamtime activity, the top of the range being the home of a particularly dangerous spirit being known as Eekoo, the ‘mountain devil’ and local waterholes housing comparable Mooramully and Barmboo ‘water devils’ (David and Wilson 1999: 167-168). These legends of dangerous spiritual power exhibit archaeological parallels. While dates obtained from Ngarrabullgan Cave on top of the mountain suggest Aboriginal occupation extending back more than 37,000 years (Fullagar and David 1997), the paucity of artefacts and other occupational remains in more recent levels were indicative of near-total Aboriginal abandonment of the cave site around 600 years ago, a trend that is replicated at other shelter locations across the mountain top and at its base (David and Wilson 1999). In this vein, it has been suggested that Ngarrabullgan’s documented Dreaming significance came into being with an Aboriginal ontological shift in
the recent Holocene, an event which simultaneously rendered the sacred feature uninhabitable (David and Wilson 1999: 184-186).

**Other humanly modified landscape elements and sacred places**

While rock art has tended to dominate the interpretation of the prehistoric Australian sacred landscape, other Aboriginal landscape elements of cosmological import, such as ceremonial and burial sites, are known to have existed but their study has barely developed since the mid twentieth century.

Initiation sites, commonly referred to as *Bora* grounds, have been recorded throughout the continent, with several first-hand accounts of the ceremonies themselves being produced in New South Wales during the 1800s (eg. Cameron 1885; Mathews 1895, 1897, 1901; Greenway 1901; Howitt 1904). These sites were of profound significance to Aboriginal groups and involved the connection at certain points of the landscape between people in the everyday world and spiritual power inherent in the land and sky. Physical remains of the ceremonies include rings and mounds of earth or stone and carved trees.

Carved trees themselves were representations of totemic connection between the earth and sky and could be associated with *Bora* grounds or burial sites. These features are known to have existed singly or as multiple entities within a given area and in cultural terms appear to have often functioned in concert with natural parts of the landscape such as hills and mountains. While such archaeological remains are inherently short-term entities, through historical records their morphology may be known and their situation within the landscape accurately reconstructed.

Burial mounds were encountered by the earliest European explorers and were both prominent signifiers of the passage of spirits of the dead between worlds and spatio-
temporal gateways between worlds within the landscape. The mounds were constructed of earth, usually associated with a number of carved trees and in many cases appear to have been conceptually linked with prominent hills or mountains.

Stone arrangements may manifest themselves in a number of forms such as alignments, heaps, cairns, rings or standing stones. In many cases the exact function of such sites is unknown, although in most instances a ritual purpose may either be presumed or is indicated through existing historical records. Accounts that do exist describe these constructs as places of connection with sky beings and possibly revisited sites associated with the process of initiation. In a substantial number of cases, stone arrangements display direct association with prominent elevated positions such as the tops of high hills or mountains.

Natural places known to have been intimately associated with spirits or the dwelling places of certain mythical beings appear in accounts from all parts of the continent. Specific parts of the landscape such as islands, lakes, springs, caves, waterholes, hills, rocky ridges, cliffs, unusual outcrops, mountains and isolated ranges are specifically mentioned in such records (eg. Dawson 1881; Mathews 1904; Parker 1905; Bates 1912).

Therefore cultural landscape may be described as a type of readable manuscript on which the human history of an area is written (Park 1994: 197) for which Duncan and Duncan (1988) have described landscapes as effectively constituting texts which have the capacity to be created, read, interpreted and embellished by their human inhabitants. While it is often taken for granted that such texts or cultural landscapes are purely material in form, it has been shown that they are principally creations of the mind or cognitive constructs. A cultural interpretation of a physical landscape, both natural and man-modified places forms a template from which material reflections are created. This thesis develops this theme by a
description, analysis and interpretation of a prehistoric aboriginal landscape focussed on the Weddin Mountains in central-west New South Wales.
The geographic and archaeological focus of this study is the Weddin Mountains or Weddin Range in Central Western New South Wales. Locally known as 'the Weddins', the relatively compact range is situated in the back country of the Lachlan River floodplain, 53 km south of the river at Forbes and 20 km south west of the township of Grenfell (Figure 2.1). The range marks the local transition between the undulating country to the East and the plains, or Levels, to the West, which together form the New South Wales central western slopes. The study area incorporates a 7854 km² parcel of Lachlan River back country surrounding the Weddin Mountains in order to establish an archaeological cultural landscape defined from east to west by the Crowther Range and Bland Creek, and from north to south from the Lachlan River at Forbes and the hilly country of the upper Burrangong around Young (Figure 2.2). Thus the bounded area effectively occupies the northern half of the 200 km wide belt of slopes and plain which separate the middle reaches of the Lachlan and Murrumbidgee Rivers, the so-called riverine 'hinterland' of Aboriginal occupation (Apps 1990:30).

Mountains and levels: Physiographical attributes

Based on certain combinations of environmental and biological attributes including terrain, climate, geology, soil, vegetation, flora and fauna, Australia may be divided into 80 distinct biogeographical regions or domains which are recognized as containing ecosystems with a high level of similarity (Thackway 1996: 1). At this scale, the study area falls almost wholly within the NSW South Western Slopes Region, described in the broadest sense as an extensive area of foothills and isolated ranges supporting wet/damp sclerophyll and
Figure 2.1: Location of the study area.
Figure 2.2: Study Area - the Weddin Mountains Region.
peppermint forests and box/ironbark woodlands (ANCA 1996). However, in terms of climate, terrain and vegetation, the westernmost zone of the study area may also be said to be characteristic of the adjoining Cobar Peneplain (Morton et al 1997), a semi-arid biogeographic region comprising plains and low hills on Palaeozoic rocks, with coolibah and box woodlands (ANCA 1996). Since the advent of settlement by Europeans, the great majority of the country within these regions has been altered to some degree by activities associated with agriculture, mining, clearing and grazing.

**Topography and geological resources**

The Lachlan hinterland exists as an interface zone between the New South Wales central western slopes and the plains created by the Pleistocene outwash fans of the westward flowing ancestral Lachlan and Murrumbidgee Rivers (Clausen 1990: 3). Topographically, 75% of the landscape is flat (less than 3° slope), 15% undulating and only 10% hilly to steep (Renwick et al. 1968:3). These landscape trends are mirrored in the study area itself with the primary topographic dichotomy being the gradual change from a system of slopes with a maximum elevation of 500 m in the east to the plains in the west with an elevation of between 220 m and 300 m. Interspersed throughout this landscape setting is a small number of well spaced, succinct rocky ranges and hills which provide concise geographic breaks in the otherwise uniformly gentle to flat topographic backdrop. In geological terms, several stages of tectonic activity involving the formation and deformation of Palaeozoic rocks are chiefly responsible for the shape of the Lachlan hinterland country, with the following landscape/geological correlates being pertinent to the study area.

**The gradual ground slope from east to west across the study area.** This factor is due primarily to the large-scale transition from an anticlinorial zone in the east (the Forbes Anticlinorial Zone) to a synclinorial zone in the west (the Bogan Gate Synclinorial Zone)
The study area effectively straddles these two tectonic features, the approximate boundary occurring at Wirrinya.

**Restricted hilly to steep country near Grenfell.** Three ranges adjoin here; the north-south trending Warraderry Range composed of deformed late Ordovician slate, schist and basic volcanics of the Hoskins Formation and the Warrumba and Conimbla Ranges, a rugged combination of uplifted and faulted late Devonian metasedimentary rocks of the Nangar Sub-Group (Bowman 1976; Anon. 1994: 7).

**Gentle slopes in the east.** Gently rolling country to the east, north east and south east of the Weddin Mountains is representative of deformed and heavily weathered, late Ordovician undifferentiated phyllite, schist, micaceous and silty sandstone and siltstone. Stream channels and floodplains composed of yellow soils set on Quaternary colluvium and alluvium are evident along the courses of major drainage lines such as Tyagong Creek (MDBC 1999: P53-53).

**Extensive plain in the west.** The plains country occupying nearly 75% of the study area is known as 'The Levels'. It is composed of Quaternary aeolian and fluviatile undifferentiated sand, silt and gravel which may extend to depths in excess of 100 m (Bowman 1976; Bish and Gates 1991: 10). While these sediments originated from the erosion of local uplifted landforms, they are mainly composed of fine material carried from the eastern tablelands and montane regions of New South Wales by the Lachlan and Murrumbidgee Rivers During the Holocene (Clausen 1990:3). Quaternary deposits are typically overlain by red brown earths and brown, red or grey clays, often characterized by gilgai complexes. Areas with gilgai soils often exhibit melanhole formations with alternate mounds, shelves and depressions (Renwick et al 1968: 14; MDBC 1999: P12-13, P56-57).
Elevated outcrops in the Plain and gentle slopes in the study area's centre and west. A series of concise, often rocky outcrops (hills, knolls and compact ranges) dotting the extensive plain in the study area's west is a combination of remnant volcanic arcs of the Milpose Volcanic Arch (Late Silurian granite, andesite, dacite, rhyolite and tuff) and uplifted oceanic metasedimentary beds of the Nangar Sub-Group (Middle to Late Devonian sandstone, siltstone and shale) (Bowman 1976). These features include rolling to steep low hills with rocky outcrops (Bogolong Hills), narrow rounded crests and ridges with steep sideslopes (Wheoga Range) and narrow crests and steep to very steep hills with cliffs and escarpments (Bribaree Hills and Weddin Mountains) (MDBC 1999: 64-67). The location of some of these topographic features are shown in Figure 2.3.

Climate

The study area is characteristically quite dry with two main climatic zones apparent, which may described as the eastern pattern, characteristic of the slopes and hills directly to the east and south east of Weddin and the western comprising the Plains to the north, west and south west. The slopes and hills in the east attract slightly more precipitation than the plains, averaging approximately 550-600 mm; this zone may experience drought periods of five to seven months, most often through summer and autumn (Renwick et al 1968: 35, 40). To the west, average annual rainfall is around 400 mm with potential drought periods of eight to twelve months (DRD 1949: 9; Renwick et al 1968: 37). While rainfall tends to occur uniformly throughout the year for the study area as a whole, a slight increase in precipitation may be evident during the winter months with isolated, short term storms occurring in summer (Renwick et al 1968: 35, 39; Bish and Gates 1991: 5).

Drought is common in the Lachlan Region. Records held for the study area between 1870 and 1970 indicate that 30% of the years were drought declared or experienced rainfall well below average (between the tenth and thirtieth percentile) (Renwick et al 1968: 40, 133).
These periods may be both sustained and severe, especially on the plains; particularly harsh drought conditions on The Levels during the early nineteenth century resulted in near abandonment of the area by white settlers (Musgrave 1926).

In general terms, the study area uniformly experiences mild winters (average 13° C) and hot to very hot summers (average 28 - 32° C), although mean maximum daily temperatures tend to increase westward (Bish and Gates 1991: 5). A characteristic of the western part of the study area is for very hot temperatures of 38 to 43° C to persist for several days at a time during the summer. Evaporation rates are greatest on the plains where sustained high temperatures combine with the flat topography and wider, shallower surface water storages (Renwick et al 1968: 36-37). Frosts may occur during the winter throughout the study area, with the far south eastern section experiencing the coolest winters brought about by cold air drainage (DRD 1949: 9).

**Vegetation and plant and animal resources**

In general, the study area has been extensively cleared for farming and subsequently grazed and/or intensively cropped. Despite this loss of natural vegetation, remnant communities Continue to give a good indication of the original vegetation cover. Savanna woodland, typical of semi arid western New South Wales, occurs in association across the study area; in general, the plains and gentler slopes support white box (Eucalyptus albens) woodlands on the lighter textured soils and woodland communities dominated by grey box (E. microcarpa) where soils are heavier (Lunt et al 1998: 27). Prior to extensive land clearance for agriculture, this open woodland was interspersed with stands of belah (Casuarina lepidophloia), myall (Acacia pendula), kurrajong (Brachychiton populneum) and what have been described as some of the most extensive forests of cypress (Callitris endlicheri and C. columellaris) in New South Wales (DRD 1949: 10-11). In the heavier soils of the study area's north and far west, tree species, such as grey box (E. microcarpa),
wilga (*Geijera parvifolia*) and western rosewood (*Heterodenum oleaefolium*), also appear, along with native grasslands of windmill grass (*Chloris* spp.), wallaby grass (*Austrodanthonia* spp.), corkscrew grass, spear grass (*Austrostipa* spp.), warrego summer grass, button grass, fairy grass and plains grass (DRD. 1949:10; Renwick et al 1968:15-16; Clausen 1990:4). Major creeklines throughout the study area are lined with red gum (*Eucalyptus camaldulensis*).

While the majority of the area exhibits vegetation that is typical of western New South Wales, abrupt changes in geology, aspect, soil and drainage afforded by the more substantial rocky hills and ranges support 'islands' of specialized plant communities that are representative of those found in the more rugged terrain of the inland slopes of the Great Dividing Range to the east (Clausen 1990). In the local setting, the Weddin Mountains provide the most outstanding with stands of mugga ironbark (*Eucalyptus sideroxylon*), open forest communities of tumbledown gum (*E. dealbata*) and woodlands dominated by Blakely's red gum (*E. blakelyi*) and fuzzy box (*E. conica*); large areas of *Allocasuarina* heath are also evident (Clausen 1990; Renwick et al 1968: 16). Several understorey plant species, including cycads (*Macrozamia secunda*), are present, the mountains being their westernmost extremity (Clausen 1990).

Although the current vegetation of the Weddin Mountains remains largely representative of its pre-contact composition, the loss of much of the original growth from the surrounding country in the last 200 years poses problems for effectively envisioning the vegetational component of the landscape as it was in prehistory. In this respect, the records of the explorer John Oxley (1820) give an indication of the degree to which the study area was vegetated prior to European settlement and in turn provide a partial image of the surficial appearance of the landscape at the time. Oxley crossed The Levels in the winter of 1817 in an unsuccessful attempt to traverse the expanse of country separating the Lachlan from the
Murrumbidgee and in doing so was possibly the first European to see both The Levels and the Weddin Mountains. Records from this expedition indicate that much of the plains country in the north of the study area was 'overrun' by myall (*Acacia pendula*), eventually giving way to stands of cypress on the lighter, sandy soils (Oxley 1820: 39-40). Views from the tops of low ranges revealed that The Levels were very well wooded; while some large tracts of country were described as devoid of taller timber, they retained a considerable cover of *Acacia* growth and very little grass (Oxley 1820: 45). A mosaic patterning of woodland and scrub is therefore suggested for much of the country including broad expanses of open cypress woodland and occasional large 'sterculia' trees (kurrajong), with patches of near impenetrable *Eucalyptus* and *Acacia* growth often associated with vines (1820: 43, 49-50). While Oxley (1820: 44) gives no account of open grasslands, only miles of "miserable" country devoid of any growth at all, it is possible that these plains supported considerable seasonal growth of native grasses. Such plants require summertime conditions in which to germinate and thrive (Cunningham et al 1992: 97-98), and the winter period experienced by the explorers may have subsequently been misleading in this interpretation.

**Water**

*Creeks and streams*

All watercourses in the study area ultimately drain into the Lachlan River and few, if any, are naturally permanent; indeed the flow of the Lachlan River itself receives little contribution from its tributaries downstream of Forbes and is highly dependant upon upstream, upland catchments in the east (Renwick et al 1968: 45). Courses of the major creek lines in the study area are shown in Figure 2.3. The far west of the study area is characterized by the semi-permanent Bland Creek, the most substantial watercourse on The Levels which drains into Lake Cowal and its overflow lagoons (Nerang Cowal and Bogandillon), that provides water to the Lachlan through a series of swamps only during very wet periods (Renwick et al 1968: 42). Several of the Bland's tributaries cross the
Figure 2.3: Location of prominent mountains, hills and major creeks in the Weddin Mountains Region.
plains and slopes of the study area to the east, south and west of the Weddin Mountains. These include Burrangong Creek, Bribbaree Creek, Balalaba Duck Hole Creek, Emu Creek and Tyagong Creek. To the west of the Weddins, Wah Way Creek and Caragabal Creek flow due west into ephemerally swampy country 2 to 3 km from the eastern banks of the Bland. Spring Station Creek, originating at the Weddins' eastern side drains northward into Ooma Creek which eventually terminates in the plains approximately 15 km north of Wirrinya. In all cases, these creeks are naturally ephemeral, holding running water only after periods of rain in their respective catchments, particularly in their better watered upper reaches, and existing as series of waterholes for most of the year. Musgrave (1926: 37) noted that throughout the 1800s the larger waterholes in these creeklines were reasonably reliable sources of water on the plains, except during periods of severe drought. The multitude of lesser creeks and drainage lines found around the flanks of the ranges and in open country channel runoff from typically light local rainfall. As a consequence, these are normally dry and temporarily hold water only after periods of substantial local rain.

**Other surface water**

Other sources of standing surface water in the study area are comparatively ephemeral, for the most part only receiving recharge from local rains as a consequence subject to high rates of evaporation. The plains commonly exhibit low-lying tracts of country that are subject to shallow inundation after rain and/or flooding of adjacent creeks, leading to the formation of swamps and morasses. Areas subject to inundation are particularly common along tributaries of the Bland on the Curraburrama Plain south west of the Weddins and along the middle reaches of Bland Creek. These are broad, shallow depressions often conspicuously vegetated with box woodland and are usually dry during the summer. Rusby Swamp, a comparatively small waterlogged depression on Porters Plain in the study area's far west, is the only permanent swamp on the Levels.
Gilgai formations, or vertosols, may also hold water after rain. These heavy clay soils exhibit shrink-swell properties which result in the formation of hummocky microrelief after wetting and drying cycles (CSIRO 1997; DNRE 1999) and are evident around Caragabal, on the Wah Way Plain and around Marsden (King 1998: 198-200, 208-210, 252-254). In addition to hummocks and depressions, gilgai in the study area may also form deep cracks and melonhole structures (MDBC 1999: P56) which, when combined with the generally impermeable nature of the constituent heavy clays, may form deep, hermetic receptacles for runoff after local precipitation. They were noted as important Aboriginal water sources on The Levels during the 1800s (Wilkinson 1992: 23) and in similar areas to the north of the Lachlan (Cunningham 1973: 365, 368). However, due to their self-mulching nature, vertosols represent an active natural medium and may subsequently alter their shape or ability to hold substantial quantities of water within a reasonably short time span.

While the soils and stream bed deposits of the local mountains and ranges are typically skeletal and composed largely of porous sands and gravels (Clausen 1990), bars and basins composed of impermeable rock occur in intermittent creek lines at the bottoms of narrow, steep gorges and gullies. These sheltered rock holes often form pools containing run-off and remnant water from short term stream flow. During his crossing of the plains in 1817, the explorer John Oxley (1820: 43, 64) found enough water in the gullies of the isolated ranges south of the Lachlan to resupply his team of men and horses as they passed.

The influence of the Lachlan

Although the Lachlan River is the major waterway in the region, the study area does not incorporate any of its main channel or immediate floodplain. Despite this, the landscape of much of its area, particularly the broad alluvial plain, is a geomorphological product of the Lachlan and its surface hydrology is significantly influenced by its proximity to the river. This is particularly relevant in terms of flood events.
The Lachlan rises in the Great Divide just east of Gunning, enters the plains country near Forbes and eventually joins the Murrumbidgee at the Great Carnbung Swamp approximately 50 km north east of Balranald. It receives the majority of its flow from tributaries, such as the Crookwell, Abercrombie and Boorowa Rivers in the hills and ranges of the east (DRD 1949: 7). Although its course is very well defined in the east, downstream of Forbes, the Lachlan meanders through a floodplain over 30 km wide and develops a system of anabranches, multiple channels and swampy areas (Renwick et al 1968: 41).

From this point onward, it is sluggish, receives little contribution from its tributaries and experiences large natural flow losses to evaporation, seepage and groundwater recharge (DRD 1949: 7; Renwick et al 1968: 44; Bish and Gates 1991: 7). As is generally the case for New South Wales' major western plains river systems, its natural flow rate is extremely variable and occasionally it does not flow; discharge is a function of the amount of rainfall occurring in the highlands (Dury 1967: 14; Department of Lands 1987: 106). Depending on input rates, the Lachlan River could therefore exist in its natural state as a continuous body of flowing water or as a chain of often saline waterholes. At present, flow rates are artificially regulated by the construction of several dams and weirs along the course of the river.

When in flood, the Lachlan has the potential to influence the plain’s hydrology far into the hinterland. In 1817, whilst heading south of the present day location of Forbes, John Oxley (1820: 39-40) found the plains some distance from the Lachlan to be swampy and noted extensive lagoons which were being actively recharged by the main river which was running notably high at the time (Oxley 1820: 39-40). High flow rates in the main channel may also lead to reversal of flow direction in tributary creeks, which, in turn, overflow to form extensive morasses and swamps on the plains. In the study area, this factor may be influential as far inland as the Curraburrama Plain where Bland Creek passes through extensive tracts of low-lying country.
In 1852 a substantial example of such a 'backing up' effect occurred through Bogandillon Swamp into Lake Cowal and along the Bland resulting in the inundation of a considerable proportion of The Levels (Musgrave 1926: 41). Aboriginal occupants of the country at the time were seen to respond to this event by retreating to higher ground (Musgrave 1926: 41). When running at flood peak, the Lachlan is capable of breaking its banks and directly inundating surrounding flat country. While this is a comparatively infrequent form of flooding in the study area, such overland flow is known to occur on the Lachlan around Jemalong Gap, to the west of Forbes (Renwick et al 1968: 42).

Episodic overland flow and reverse flow inundation dictated by the Lachlan would have several implications for water availability on the plains. Such events would serve to maintain the continued viability of the great majority of stream-fringing swamps, as well as the flushing and refilling of major waterholes along the course of back country creeks. In addition, inundation of low-lying tracts of country would result in the formation of broad, shallow standing water reserves which, depending on contemporaneous evaporative conditions may last for a number of weeks to several months. Flood events are also an integral natural factor in the maintenance of biotic diversity and productivity on the western plains, with periodic riverine freshes and inundation episodes playing essential roles in the reproductive cycles of major terrestrial and aquatic native plant and animal species (Kefous 1983: 72-75; Cunningham et al 1992; Smith 1993; Shiel 1994; Kooloos 1995).

**Springs**

Springs are a notable water source on both the plains and slopes of the Lachlan Region and were undoubtedly highly significant for the local Aboriginal people. The water is sourced from deeper groundwater and local seepage. The principal sources of groundwater in the Lachlan Region are fractured rocks and alluvia (Renwick et al 1968: 49). Local Devonian rocks (massive sandstones, quartzites and shales) may be weathered to depths of up to 40 m
and often contain considerable quantities of fresh water; similarly, alluvial formations, sands and gravels capped by clays and alluvial soil, have been found to frequently hold moderate to large supplies of potable underground water at depths of approximately 15 m (Bish and Gates 1991: 9-10, 12). Seepage occurs, where local precipitation and run-off soaks into the ground, on the tops of large, elevated outcrops of porous and/or or fractured rock, such as the prominent, resistant ridges and hills in and around Grenfell and geological unconformities, such as around the base of the Weddin mountains and the Wheoga and Bogolong Hills.

Natural upwelling of groundwater water occurs at several points within the study area, one of the most notable being a permanent spring on the plains near Curraburrama (Woolrych 1890: 67; Musgrave 1926: 37). This feature was known to local Aborigines as *Thooroong*-galee and was regarded as the emerging point of a giant mythical snake, known as *Thooron* (Woolrych 1890: 67). Another plains spring with plentiful water in the middle of summer was discovered during fieldwork at the western edge of Bimbi State Forest, near the property *Wynella*, on the upper reach of Caragabal Creek. However, the greatest concentration of springs may be found around the hills and ranges with a substantial number of permanent examples existing within the Weddin Mountains. For example, Blacks Spring, situated in a gully at the mountains' south west, is known to have been revealed to local settlers by Aborigines during a drought in the mid nineteenth century (Holland n.d.: 3). Two other permanent springs were also located on the mountain during fieldwork, one at the head of Guinea Hen Gully at the central section of the range, and another in a rocky creekline on the eastern flank of Weddin Gap. In addition, temporary seepages are evident at a multitude of places within the mountains, which are temporarily activated following events of rainfall along the top of the range.
In the majority of instances, it may be seen that water sources in the study area tend to be dynamic and extremely variable, subject to rapid appearance and depletion and highly dependent on external influences. Processes of such variation are evident in both the short and longer term and involve physical shifts of varying scale. Larger, more permanent swamps may exist as ephemeral bodies which undergo a system of refilling and desiccation at the same location for thousands of years and the more substantial, comparatively reliable waterholes may exist in much the same form within creeklines for centuries. Alternatively, gilgai country may offer many small waterholes which exist only as long as the contemporaneous vertosol profile is maintained, and pools in lesser creeklines may shift location up and downstream as undercut banks collapse and re-form over periods of only a few years or even months. In contrast, springs tend to occur as perpetual features in the landscape, their viability being influenced by the flow of groundwater. This range of hydrological attributes would have been of major significance to the manifestation of Aboriginal landscape occupation within the study area.

An element of difference: the Weddin Mountains

Within the hinterland's flat Quaternary sediments and gently undulating slopes, the Weddin Mountains occur as an outstanding natural landmark visible from a distance of over 50 km on the plains and almost as far from the slopes to the east. From these distances, the range, rising to heights in excess of 400 m above the surrounding country resembles a dark, heavily wooded island in an expansive sea of trees. In comparison with the larger Conimbla Range, 20 km to the east, the Weddin Mountains exhibit a more spectacular and abrupt visual break from their surrounds and occupy a more significant physical location in terms of the transition between surficial landscape and ecology from east to west. They are also substantially larger in area and some hundreds of metres higher than the Wheoga Range, Bribbree Hills and Bogolong Range and subsequently manifest a far more imposing landmark when viewed from a distance.
As is the case with the other local abruptly elevated landforms, the Weddin Range is a remnant of a pre-Pleistocene landscape of extensive mountains which were eventually buried beneath both local sediments and those washed in from the eastern tablelands and montane country of New South Wales in Recent times (Clausen 1990:3). Composed of Late Devonian metasedimentary rocks of the Nangar Sub-Group (siltstone, sandstone, shale and conglomerate), the range is the product of major geological uplift and distortion of the rim of the Hervey Terrestrial Basin. These rocks dip to the north and west and curve in a large anticline, giving the range its characteristic semi-circular shape (Clausen 1990:3; Figure 2.4). Subsequent erosion of the uplifted rock combined with the dip of the strata has resulted in the formation of abrupt, cliffed scarps facing north and west, a series of prominent peaks rising to elevations of over 700 m in the range's north and east and a number of deep, rugged gullies on the western and southern flanks. A geological fault midway along the range is manifested in a low, gently sloping saddle known as Weddin Gap, a feature which effectively separates the range's most substantial peaks - Eualdrie (>720 m) and an adjacent unnamed peak (695 m) in the north; Black Spring Mountain (>720 m) and Weddin Mountain (712 m) in the east. The peaks themselves are readily accessible from the west where ridge spurs and gullies provide networks of natural routeways to the most elevated reaches of the mountains. Access from the east is comparatively challenging and involves negotiation of long escarpments of high cliffs and very steep slopes of broken rock. Once reached, the highest points of the mountains offer wide ranging, largely unbroken vistas of the surrounding country and the length of the Weddin Range itself. From Eualdrie and Black Spring Mountain it is possible to see distant landmarks such as the Narraburra and Booberoi Hills to the west and the rugged range country, such as the Conimbla Range, to the east and northeast.

The mountains are extremely stony, dominated by well drained skeletal lithosols, with sandy soloths underlain by clays on drainage lines and lower slopes (King 1998: 50;
Figure 2.4: Map of the Weddin Mountains showing major topographic features.
MDBC 1999: P64-65). Due to the narrowness of the range and the porosity of the local sandstone, no perennial surface watercourses exist in the area. However, a number of small permanent to near permanent springs occur within the deep gullies, on some lower slopes and at certain points along the top of the range. The nature of the local geology also results in formations which are both unusual in appearance and rare within the regional context. Overhangs and rockshelters are common features where cliffs of silicified sandstone outcrop in the gullies and along the high exposed rock faces of the flanking escarpments. Differential weathering has likewise produced a range of oddly shaped, striking geomorphic features including brightly coloured, isolated natural pillars, deep caves and free-standing cavernously eroded blocks. These features commonly occur in combination and at conspicuous locations; unusually weathered natural pillars may be positioned at elevated spur extremities overlooking surrounding flats at the entrance to major gullies; rockshelters are often adjacent to waterfalls and pools; caverns may be set in otherwise massive sandstone outcrops with spring seepage at the base or in cliff faces. At both an individual and collective level, these geomorphological features stand in stark contrast to the surficial attributes of the generally flat surroundings.

Local vegetation is also distinctive and the thick bush and dense timber cover evident on the Weddins appears to have been a long-term natural characteristic of the mountains (Musgrave 1926:12). The stony soils support an array of tree and understorey species which, in terms of appearance and community structure, contrast sharply with the surrounding plains. These plant communities exist as remnants of the vegetation which had grown on the local ranges in the Pleistocene (Clausen 1990). Tall mugga ironbarks (Eucalyptus sideroxylon) and kurrajongs (Brachychiton populneus) grow on the gravelly flats around the base of the range. On the talus slopes uniformly dense stands of Acacia species including currawang (A. doratoxylon) and mountain hickory (A. penninervis) occur as a visible buffer, separating the wooded slopes and cypress forest from the elevated cliffs.
and peaks. Depending on localized environmental conditions, the top of the range is
vegetated with medium sized Acacia scrub, red stringybark (E. macrorhyncha) and
intergrades of tumbledown gum (E. dealbata), dwyer's red gum (E. dwyeri) and Blakely's
red gum (E. blakelyi). Gently grading upper reaches of gullies contain restricted stands of
mature ironbark, white box (E. albens) and red gum with open, grassy groundcover, while
rock fern (Cheilanthes austrotenuifolia) and vines are quite common in the damper gorges.
Extensive areas of Allocasuarina heath occur on the exposed south west slopes along with
extremely thick expanses of cypress (Callitris spp.) regrowth in areas affected by bush fires
in the 1970s.

Therefore, the Weddins constitute a significant natural anomaly within the study area,
effectively existing as a large composite of contextually different geological, topographic,
hydrological, and vegetational attributes. These traits, both living and non- living, retain
their peculiarity through numerous inherent qualities including their dimensions, shape,
position, height, colour and texture. The range stands out as a striking, permanent landform
set within the comparatively uniform hinterland topography. At this scale, local elevation is
the dominant factor; and it remains dominant and highly visible from 40-60 km away. From
its summits outstanding views of the surrounding country and distant natural landmarks are
available.

The Weddin mountains and surrounding country are a distinctive landscape. The study area
is mostly characterized by extensive, largely dry plains and sloping country supporting
broadly similar vegetational communities. Within this setting the scattered abrupt ridges,
crests and ranges provide noticeable geological breaks in the largely peneplain background.

While significant change has been wrought on both the appearance and structure of the
landscape as a result of nearly two centuries of European vegetation clearance, water
management and agricultural/pastoral practices, many of the essential characteristics of the study area may still be seen as they existed in relatively recent prehistoric times. This level of landscape interpretation is particularly relevant to the study area's peculiar topographic appearance, most elements of which may still be expected to impart the same degree of visual impact today as they did in times of prehistoric Aboriginal occupation.
Chapter 3

THE WIRADJURI ORGANISATION, CEREMONY AND CULTURAL LANDSCAPE

The Aboriginal Culture Area

A culture area may be loosely defined as a geographic region throughout which considerably similar cultural traits are distributed (Mignon 1993: 114). In Australian hunter-gatherer studies, the identification of Aboriginal cultural regions has often been based on linguistic groupings, particularly those identified by Tindale (1974). In this respect, the study area lies within the territory of the Wiradjuri people, an Aboriginal linguistic grouping, whose range appears to have incorporated much of central and southern New South Wales and its more significant river systems including the Murrumbidgee, the Lachlan and the Macquarie (McNicol and Hosking 1994: 79; Richards 1902: 81).

White (1986) and Read (1983) have questioned the validity of accepting the 'language as tribe' model for the Wiradjuri and state that this broad-scale linguistic designation fails to account for political and social variation within it. Rather, White suggests that the Wiradjuri existed as an Aboriginal population who shared the same language, but showed considerable internal variation or cultural 'dimensions' across their geographical range. Notable broad differences within the language group included economic practices between east and west and social/ceremonial organisation between north and south (White 1986: 61-66, 83-84, 96, 98, 106; see below). However, while dispelling the notion of absolute cultural unity, such differences do not appear to have precluded long-range group affiliation and interaction, particularly ceremonial, or knowledge of more distant country (Mathews 1896; Howitt 1904; Klaver 1996: 73-74).
Within the broader language area, local Wiradjuri groups identified themselves with generalized geographic ranges and were named, according to their country, or nguurrambang (Mathews 1897: 118; McNicol and Hosking 1994: 79). While an identification with one's country was important and certain features could be effectively 'owned' by individuals, no strict territorial 'boundedness' appears to have been recognized; and movement between and regular camping within other groups' country was common (Donaldson 1984). Named groups may have constituted 'clans' or 'bands' composed of exogamously related family units, which usually operated at an independent level for the purposes of everyday life: hunting, foraging and sharing the same camp site (MacDonald 1983: 9). Identification of people with their country appears to have been based upon association with particular local environmental characteristics including topography, resources and vegetation; for example, in the Dubbo District, the names of 'red ochre' (Dubba-ga), 'red ironbark' (Murga), 'hill' (Bulga) and 'ironbark' (Munga) groups of the Wiradjuri (Grounds 1983: 8). Along the Lachlan, a local Aboriginal 'tribe' were said to have received their name and found their territory in accordance with the local extent of the boree or Acacia pendula (Cambage 1900: 719). At a more regional level, White (1986: 96-97) suggests that such groups possibly cohered as larger 'ritual communities', which identified with the valleys of major drainage systems such as the Macquarie/Bogan/Castlereagh, the Lachlan and the Murrumbidgee. Historical records also allude to the presence near the study area of the 'Lachlan Blacks', who regularly interacted with one another, shared specific sub-class totems and participated in ceremonial activity (Woolrych 1890; Howitt 1904: 104-108; Musgrave 1926). However, as will be shown below, the precise status of these 'Lachlan' people in relation to the study area is difficult to elucidate.

Available ethnohistories from the nineteenth century suggest that the study area was bounded by a number of Wiradjuri speaking groups including the 'Lachlan Tribe', the
Kolerer-Mittong and the Bundaburra to the north, the 'Boorowa Tribe', 'Cowra Blacks' and 'Bennelong Tribe' to the east, the 'Murrumbidgee Tribe' and Murrung Bulla to the south, and 'The Levels Tribe' to the west (White 1986; Woolrych 1890; Morgan 1934 in Clark 1977: 15). Exactly which of these groups included the study area or parts thereof as their nguurrambang cannot be ascertained with any level of certainty as the area involved is quite extensive and the size and rough geographic range of each of the named Aboriginal groups is not satisfactorily described. From the scant references that do exist, it is roughly suggested that much may have been within the country of The Levels people. According to Crown Surveyor F.B. Woolrych (1890: 63), these Wiradjuri inhabited the inter-riverine plains between the Murrumbidgee and the Lachlan and "entirely separated" themselves from the Boorowa Tribe although they shared the language. A map by Woolrych (1890: 70) shows that The Levels people inhabited the plains surrounding the Bland and Lake Cowal (Figure 3.1). Whether this territory effectively encompassed the remainder of the study area including the Weddins is unknown. However, given the lack of strict territorial boundedness that may have existed within the conception of country held by the Wiradjuri, at the everyday level, the study area may well have been inhabited by a number of Aboriginal groups who, in most cases and at most times, moved over relatively loosely confined geographical ranges.

Importantly, while the Wiradjuri people clearly subscribed to the concept of country, they had no concept of strict territorial boundedness (Donaldson 1984; White 1986: 36), rather a more fluid notion for its use.

**Local Wiradjuri social organisation**

In a generalized sense, the Wiradjuri subscribed to a totemic system involving two primary moieties ('classes'), each of which were composed of two sections ('sub-classes') (Howitt 1904). While the actual naming of these totems differed across the language area, a
Figure 3.1: Crown Surveyor F. B. Woolrych's Map showing Aboriginal groups of the riverine hinterland between the Murrumbidgee and Lachlan (from Woolrych 1890: 70).
complex interrelationship between appropriate sections was maintained between
groups from different Wiradjuri country and even across 'tribal' boundaries. This was made
possible by a system of matrilineal descent, whereby a person inherited their moiety
('meat') from their mother, who had moved to her husband's country at marriage and thus
had created long distance kinship bonds or budjan for her children (Berndt 1947a: 334;
Howitt 1904: 104; Mathews 1906: 942). Regulation of marriage, according to this system,
generally involved recognized intermarriage links between paired sections of the moieties
(Testart 1980). Marriage between the same totems was strictly prohibited and was said to
be punishable by death (Garnsey 1946: 4, 5). This broadly defined, interlocking descent
system has been seen as a characteristic of the Wiradjuri and their close neighbours,
inhabiting the eastern half of the Murray-Darling Basin in New South Wales and southern

However, despite the general application of this four section social system across the
Wiradjuri language area, significant variation in marriage regulation, according to how
groups complemented links between totemic sections, has been identified within what may
be termed different Wiradjuri social regions. In accordance with each matrilineal variation,
White (1986: 87-89) identifies these regions as follows:

- 'Southern Wiradjuri.' Possibly the middle to lower reaches of the Murrumbidgee River.
  Howitt (1904: 211) noted that these Wiradjuri subscribed to a matrilineal system with
  marked differences to that in operation on the Lachlan.

- 'Upper Murrumbidgee.' White bases this on an observation made by Mathews (1897) of a
different system of Wiradjuri social organisation in operation on the river's upper reaches.
  While the extent and boundaries of this system are unknown, White (1986: 88-89) suggests
  that the social organisation of the Murrumbidgee Wiradjuri (both 'Southern' and 'Upper
  Murrumbidgee') may have been "peculiar to Wiradjuri".
- **'Northern Wiradjuri.'** These people appear to have shared features of their system with the southern Wongaibon who lived directly to their north. While described as the Wiradjuri groups of the Lachlan River 'around Booligal' and the Willandra Billabong, there is no information on exactly how far up the Lachlan River this system extended.

- **'Kamilaroi organisation.'** This was derived from the social organisation of the Gamilaraay, a group inhabiting the Namoi and Barwon river systems at least 200 km to the North of the Lachlan. This organisation was characteristic of the Wiradjuri groups of the Upper Lachlan, Bogan and Macquarie rivers. Once again, there is no accurate information given on the parts of the Lachlan that in this respect constituted its 'upper' extent.

While the suggested occurrence of such regional differentiation is compelling, the vagueness of the available ethnographic descriptions does little to elucidate the nature of the Wiradjuri social system which operated within the study area. Was this the country of the Lachlan social system as described by Howitt (1904: 211), and, if so, was this the realm of the 'Upper Lachlan' or 'Northern Wiradjuri' social groupings? Or, did subscription to the Murrumbidgee Wiradjuri system extend this far north, and if so was this influence 'Southern Wiradjuri' or 'Upper Murrumbidgee'?

Geographical positioning roughly points to the former possibility; the area is much closer to the Lachlan River than the Murrumbidgee and, if White's (1986: 96-97) suggestion of 'ritual communities' centred on major drainage systems is appropriate, then it should be regarded as part of the Lachlan. Further, Woolrych's (1890: 63) observation that the Levels people saw themselves as 'entirely separated' from the Boorowa 'tribe' may provide evidence of a cognitive division between the social groupings of the Upper Lachlan and the Northern Wiradjuri, with The Levels Aborigines possibly subscribing to the latter. An additional interesting possibility is that the study area may have existed as a form of 'middle ground' between the different broad Wiradjuri social groups of the Murrumbidgee and
Lachlan Rivers. The Levels country, particularly Bland Creek, has been described as a meeting place of the 'tribes' of the Lachlan and Murrumbidgee (English 1978: 28) and numerous ceremonial and social events involving large scale attendance by these two groups are recorded as having taken place on the plains (Gilmore 1986; Musgrave 1926). This is not to suggest that the area was otherwise treated as an uninhabited 'no man's land' between the two social groups (cf Apps 1990: 30), rather that it could have existed as part of a social interaction zone between the Murrumbidgee and Lachlan as manifested in periodic ritual/social activity.

**Mythology, ritual and the spirit world**

Myth is an arrangement of the past, whether real or imagined, in patterns that resonate with a culture's deepest values and aspirations. Myths create and reinforce archetypes so taken for granted, so seemingly axiomatic, that they go unchallenged. Myths are so fraught with meaning that we live and die by them. They are the maps by which cultures navigate through time. (Ronald Wright *Stolen Continents* 1992)

**Supernatural beings and the Maratal**

Two spiritual dimensions were recognized by the Wiradjuri: a 'Dreamtime' creation era or *Maratal* (Berndt 1947: 332; Gammage 1986: 12) and the contemporary world which people shared with a multitude of mythical beings and spirits. Therefore, it may be assumed that the Wiradjuri subscribed to a similar set of beliefs to those held by their neighbours along the Murray River, where deep religious significance was attributed to the ancestral creation period and everyday life involved co-existence with spirits seen as more or less separate from the Dreaming (Clarke 1999: 149). The perception of both mythological realms was integral to the operation of practically all aspects of Wiradjuri life, rules believed to have originated during the creation period were to be strictly obeyed, periodic ceremonies were needed in order to perpetuate these rules, certain locations associated with certain beings demanded special conduct, and a variety of dangerous or mischievous spirits were avoided.
**Baiame and the 'sky god' legend**

Of foremost religious importance to the Wiradjuri and most of their neighbours was a supreme supernatural being known as *Baiame*. This creator or 'big man' was believed to live in the sky and had spent time on earth during the creation era before returning to *Bullima*, his 'sky camp' (Lang 1899: 493; Parker in Muir 1982).

Dreaming stories relate that Baiame shaped the earth and established the Law for human society and all living things, but then he ascended to the sky from where he takes an active interest in his creatures, especially in their performance of ceremony. Of the latter the most important was the initiation of boys into manhood ... The cultists believed they would rejoin Baiami in the sky at death. (Stockton 1993: 53)

The *Baiame* or 'sky god' belief appears to have been well developed and widely distributed throughout much of what is now New South Wales and parts of southern Queensland and northern Victoria (Creamer 1984: 2.7-2.8; Elkin 1968: 252). Aborigines knew this being by various names: *Ulitarra* on the New South Wales North Coast, *Nurelli* along the Darling and *Gully-goorina* north of Walgett, *Kurlawirra* in far western New South Wales and *Daramulan* on the NSW Far South Coast (Creamer 1984: 2.8; Hercus 1994: 46; Howitt 1904: 495). According to legend, *Baiame* gave people the totemic system, showed them methods of hunting and was responsible for instigating the all important initiation ceremony or *Burbung* among the tribes (Cable and Coe 1899: 164; Lang 1899: 491-492; Mathews 1895: 297-298; McKeown 1938: 4-5; Shropshire 1899: 164). As such, this being has also been referred to in anthropological terms as a mythological 'civilizing hero' (van Gennep 1975: 201). The magnitude of *Baiame*’s integral connection with the totemic system cannot be understated. Within the world as the Wiradjuri saw it, involvement in the totemic system was effectively a prerequisite for existence itself, with everybody and everything having a totem. As stated earlier, this social framework provided the Wiradjuri with a universal explanatory order and determined the nature of critical relationships within
and between groups, marriage regulations and fundamental ties with country. Subsequently, as the perceived genesis of this system, Baiame was viewed as the ultimate law maker and enforcer, intrinsically benevolent but regarded with a combination of dread and awe.

Similar to the well documented Aboriginal Dreamtime beliefs evident in Central Australia, Baiame was believed to have formed parts of the landscape and each of these landscape features was held to retain some of his aura. According to a creation song recorded by Berndt (et al 1993: 221, 594), large-scale products of this process included the Lachlan River, the surrounding plains and a number of tributary creeks. On a smaller scale, certain rocks, caves and trees associated with his passage were seen to bear marks resulting from Baiame's exploits and everyday life (Mathews 1904: 339-342; Mathews 1994). Of particular importance within the Baiame belief were natural, high points in the landscape, usually prominent mountains, as it was universally sustained by all Aboriginal groups that participated in the Burbung that Baiame's final ascension to Bullima occurred as a leap from the tops of certain sacred peaks. To the north of the Hawkesbury River, he was reputed to have finally launched himself into the sky from the top of Mount Yengo after stepping from the tops of other peaks in the area. A series of engraved mundoes, or giant footprints, on local sandstone slabs has been interpreted as archaeological evidence of this myth within the landscape (McDonald 1993). Other similar examples include Oombi (Mt Oxley) and Coronga Peak in western NSW, Mootwingee in the far west, and Mumbulla Mountain on the south coast, (Gordon et al 1993: 45; Hercus 1994: 46). In the same light, Gunnebooke Mountain near Bourke and Tutewolankal, a notable hill near the Lachlan River, have been cited as Baiame's 'sacred place' and 'earthly home' respectively (Berndt 1947: 81; Reay 1944: 322).

Despite its widespread observance throughout much of the continent's south east, the anomalous nature of an Aboriginal mythology centred on a sky hero in the greater
Australian context has resulted in considerable anthropological attention, in particular questioning the antiquity of the *Baiame* belief. Swain (1990) provides a persuasive argument for a post-contact evolution of the *Baiame* phenomenon among the Aborigines of the South East as a direct result of cultural fragmentation and geographical dislocation associated with the 'White' invasion. Three key elements are forwarded in this argument.

i) By the early to mid nineteenth century, the Aboriginal population in New South Wales and Victoria had been so drastically reduced, primarily by newly introduced disease, such as smallpox, and by dispossession from traditional lands, that adherence to traditional religious practice in the pre-contact sense became extremely difficult, if not impossible.

ii) Aboriginal people found themselves unable to rectify the resultant catastrophic imbalance of their religious realm through attempts to incorporate Whites "as cohabiters of land under the charter of the principle of an Aboriginal spatial ontology" or an 'all-embracing Aboriginal Law'. Thus the regenerative equilibrium of what Swain (1990: 212) describes as a 'closed' Aboriginal cosmology was fractured by and had no explanation for the process of invasion.

iii) As a result, Aboriginal people were compelled to incorporate traits of the invaders' material culture and religion, 'White Law', into the traditional sphere in order to maintain a semblance of cosmological and ontological balance. The key element is seen to be the emergence of a singular 'all father' figure with a focus on the sky or 'heavenly' realm. This was not a form of Aboriginal conversion to Christianity, rather it was an attempt to avert cultural catastrophe or *eschaton* through reconciling the act of White invasion with Aboriginal systems of Law and morality.

The composite outcome of these factors is viewed by Swain (1990: 201-203) to have been the transferal from a traditional Aboriginal religious focus on land- and site-based or 'locative' spiritual power to a 'utopian' realm, where human and ancestral spirits ultimately reside in the sky. In this respect, Swain (1990: 203) implies that pre-contact Aboriginal
spirituality in Australia's south east centred on similar 'locative' concepts to those held elsewhere on the continent where emphasis was/is placed on "the association between creative powers and sites, and the affiliation of human spiritual essence with these places" and stressed "ubjectivity and earth-based powers". Alternatively, Baiame is viewed as a comparatively recent religious innovation directly linked with Christian concepts, which diffused rapidly throughout New South Wales and Victoria during the latter half of the nineteenth century.

Compelling as Swain's argument is, a number of issues still requires clarification before it can be altogether accepted. First, it is difficult to reconcile the purported recent and rapid rise of such a religion with the apparently widespread and thoroughly ingrained manifestation evident to ethnographers throughout the 1800s. The Aboriginal concept of this 'sky god' was distributed over several hundred thousand square kilometres and involved the participation of perhaps twenty or more Aboriginal linguistic groups. While Baiame appears to have been the most prevalent title for this being, owing perhaps to its use by some of the most widespread linguistic groups such as the Wiradjuri and Gamilaraay, at least nine names were attributable to the deity in New South Wales alone. From a landscape perspective, a mythological template had been firmly implanted with regard to Baiame's connections with the earth and a number of widely separated prominent mountains and associated natural features, all with parallel characteristics, were seen to be intimately connected with the legend. In these respects, comparisons could easily be drawn between Baiame and other, non-contested 'traditional', powerful mythical beings with widespread geographical distribution and mutually intelligible Aboriginal significance, such as bunyips and the rainbow snake.

Second, archaeological evidence, relating directly to Baiame, while scant, does not necessarily gel with Swain's interpretation. According to Swain, only a single rock art motif
of Baiame displaying horns (after Macintosh 1965) and some examples of Bora ground effigies of cattle, pigs and white men (after Berndt 1974 and Mathews 1894, 1897) are evidence of the sky god (Swain 1990: 223-225, 230). However, these examples appear to be exceptions rather than the rule. Painted and engraved depictions of Baiame are recognized archaeological features of the sandstone country in and around the Sydney Basin, north of the Georges River (McDonald 1994). Similarly, the notable painted depiction of Baiame at Milbrodale in the Hunter Valley (Clouten 1974; Mathews 1893) is devoid of any European traits. In his appraisal of this site in 1891, Mathews noted that the antiquity of the art had been beyond the knowledge of local Aborigines in the 1840s (Mathews 1893: 356). In the case of Bora ground effigies, there is no reason to assume that Aboriginal depictions of introduced animals and 'white men' were not straightforward acknowledgements of the world as it 'now existed' for the Aboriginal people involved. As the Bora was essentially a ritual conduit for impressing the obligations of manhood upon young male initiates, it could be assumed that the magnitude of White occupation and its implications for Aboriginal life may well have featured as an important component of some ceremonies. It should also be noted that many nineteenth century ethnographers including R. H. Mathews described a considerable number of Bora and Burbung grounds displaying native animals and what Swain might class 'traditional' mythological figures in the complete absence of any post-contact elements (eg. Cohen 1897; Hopkins 1901; Mathews 1895,1898, 1901; Petrie 1904).

Finally, even if one accepts Swain's basic proposition, it must be acknowledged that the argument displays a strong tendency to ignore Aboriginal culture's ability to appropriate external elements in order to promote pre-existing beliefs rather than replace them. In other words, the question that should be posed is: if the Baiame belief was indeed a result of factors associated with European invasion, to what degree might it have been used by the
relevant Aboriginal groups to maintain and reflect ingrained and integral traditional mythology?

Plentiful evidence exists of indigenous peoples' manipulation of post-contact media to 'mask' and maintain or emphasize critical traditional information. Dickins (1992) has argued that Central Australian Aborigines effectively utilized combinations of modern pigments and information to uphold and 'shield' certain sacred Dreaming stories of the Warumungu and Warlpiri artistically. In Western Arnhem Land the Kunwinjku people incorporated the story of the spearing of a water buffalo, an introduced animal, into the legend of the extremely powerful Namarrgon (Lightning Spirit) Dreaming site. In this case, the entry of the wounded animal into the Namarrgon site resulted in a severe electrical storm, an incident taken as evidence of the area's powerful taboo and now encoded into local Aboriginal legend and rock art (Carroll 1986: 18). Gamilaraay people of the MacIntyre River area in north western New South Wales similarly relate the story of a greatly feared mythical being Garriya, venting its fury on a trespassing horse team at Booberah Lagoon. Legend in the area currently states that the team was seized and dragged into the lagoon never to be seen again for offending the spirit (Wootten 1996), an Aboriginal use of post-contact information directed at emphasizing the sacred nature of Garriya's dwelling place. In the Americas post-contact Aztec and Inca populations, socially ravaged and decimated by smallpox, were able to maintain the identity and significance of certain mythological figures, such as Tonontzin, Quetzalcoatl and Pachacamac, through disguising them within Catholic iconography, an undertaking seen by Wright (1995) as a highly effective form of cultural resistance against Spanish invasion. In the same vein, Parke (1999) has shown that traditional Fijian mythology has found avenues of expression within the imposed teachings of the Wesleyan missionaries active in the region.
Taking into account these examples, there exists considerable scope for the Baiame legend as recorded after substantial disruption to Aboriginal society to have retained important elements of traditional significance and mythological concepts. It is certainly evident that the 'world above', the sky, was mythologically relevant to the Aborigines of western New South Wales for reasons other than Baiame. Wiradjuri, Yuvalaraay and Gamilaraay legend identified the sky as the home of several powerful beings, including the twin emus, male and female eagles (the stars Venus and Corona), the Moon and the ancestral rainbow serpent (Blows 1981: 83; Mathews 1904: 162). Mathews (1895) also recorded tree carvings and effigies of the definitive sky symbols, the sun and the moon in full or crescent form, at several Bora grounds.

Subsequently, it is suggested that the sky, as well as the earth, may always have been viewed as a powerful mythological domain by groups such as the Wiradjuri and that the Baiame legend, even if influenced by elements associated with European contact, continued to articulate the significance of this spiritual realm. The theme of the mythical sky realm is expanded upon below.

*Other mythical beings*

Descriptions of other mythical figures from the Wiradjuri *Maratal* period are comparatively rare, although existing accounts, from in and around their territory, suggest that a range of ancestral beings were recognized to have existed and left their marks upon the landscape. Booboo, or the 'first man' and another entity Moodgighary were responsible for creating distinctive markings and carvings on flat rocks in the Lachlan region (Cable and Coe 1899: 164). In the far west of Wiradjuri country, creation stories attributed the formation of Willandra Creek and Merowrie Creek to hunting parties of ancestral clever men (*Bookoomuri*) chasing giant kangaroos across the landscape and distinct hills and
ranges dotting the plains in this area were believed to be the campsites of the hunters (Cameron 1885: 368-369).

A common Aboriginal belief across western New South Wales was that of a giant serpent that had existed as a landscape creator being and still resided at certain places in the landscape. This creature was known to the Gamilaraay, Yuwalaraay and far western Wiradjuri as *Kurreah* or *Garriya* (Mathews 1901: 338-339; Parker 1905: 47; Wootten 1996: 23) and to the Wiradjuri of the Macquarie River as *Wawi* (Mathews 1895: 301, 1904: 162). To the Wiradjuri of The Levels country, the mythical serpent's name was *Thooron*, with legend attributing the creation of the permanent spring at Curraburrama to its emergence from underground (Woolrych 1898: 67). Unlike most creator spirits, *Thooron* was seen to be alive and resident in a number of lagoons, waterholes and springs across the plains. Except for a few clever men, the serpent was seen to extremely dangerous to humans and areas associated with it were carefully avoided (Mathews 1904: 162; Radcliffe-Brown 1926). One outstanding example of such a place is Booberah Lagoon in north western New South Wales, which Gamilaraay legend states was created by and is home to the *Garriya* who was seen to have great creative powers and was capable of deadly behaviour, such as rising up and swallowing trespassers or pulling them down into the depths of the lagoon (Wootten 1996: 38). To this day, the lagoon is seen as a sacred and powerful place with tradition forbidding camping around its edges and entry to the water (Wootten 1996: 1).

Contemporary spirits were believed to exist in a range of forms and were frequently associated with certain tracts of country or particular landscape features. In the same fashion that the countryside was inhabited by numerous types of animals, it was also believed to have been full of spirits, including *Yurrii* and *Winambu* ('hairymen'), *gunj* (ghosts), 'redeyes' and bunyips (Povah 1990). Not all of these creatures were regarded as
malevolent and Wiradjuri groups all considered themselves to be positively connected with certain spirit beings relative to their respective group's animal totem.

The Aborigines of the Mirrool Creek area, for instance, believed that they were protected by the spirits of an elderly dingo and spotted owl who would appear and give warning in times of danger (Lethbridge 1946: 279). On the other hand, some spirits were seen to be aggressive or predatory beings and were especially dangerous. Large ghost dogs or *jugi* were regarded as particularly fierce and were typically associated with caves and dense scrub, places subsequently avoided by the Wiradjuri (Mathews 1994: 7-8). In the Dubbo area, a deadly monster or 'devil' known to the local Wiradjuri as *Buo* was believed to inhabit a deep hole in the Macquarie River downstream of the present day location of Dubbo itself (Garnsey 1942: 2). A similar belief appears to have applied to a waterhole on Bland Creek where a devil or *Yeo Yeo* was seen to live (Woolrych 1898: 67). 'Bunyips' were known to the Wiradjuri of the western plains as *tuwi* and these creatures habitually dwelled singly or in colonies in large hollow trees, on the tops of stony hills and in caves (Berndt 1947: 80-81; Donaldson 1994: 27). It was believed that *tuwi* maintained a system of social organisation comparable to humans and were attracted by the smell of burning fat and actively hunted people for food (Berndt 1947: 80). An evil spirit called *Buggeen*, also a term used for some clever men (McNicol and Hosking 1994: 86) was greatly feared by the Wiradjuri. While this spirit was associated with the dark and was subsequently believed to roam freely at night, it was generally regarded as a subterranean dweller (Maguire 1901: 88).

General rules appear to have applied for the identification of areas associated with dangerous spirits or powerful forces. As is evident above, places of particular concern included deep holes in rivers, standing water bodies, such as lagoons and springs, caves and dense scrub. These environment/spirit associations appear to be quite common in southern
and south eastern Australia. In western Victoria, Dawson (1881: 49-58) noted Aboriginal legends relating to springs as homes of multitudes of spirits, caves as pathways for ghosts and the tops of certain mountain ranges, dense thickets and the underground as the haunts of 'bad spirits' or 'devils'. On the lower Murray River, swamps, lagoons, scrub, rocky outcrops, high places, caves and cliffs were associated with a variety of potentially dangerous, if not deadly beings, including *kintji* men and the *mulgyewonk* (bunyip), who could deliver paralysis, sickness or death to human trespassers (Clarke 1999: 153-160).

Examples of these Aboriginal landscape-spirit parallels are given in Table 3.1.

In light of these marked correlations between places in the landscape and mythical beings, it would be difficult to overlook the high potential of the Weddin Mountains as an area of Aboriginal spiritual presence and connection. Multiple and repeated themes indicate that many of the range's natural attributes may be aligned with a range of mythical entities at both generalized and specific levels. These include the area's enclosed gullies, unusually shaped outcrops, sheer cliff lines, caves, springs and thick scrub, natural attributes concentrated into a comparatively restricted tract of country in step with the anomalous geology of the mountains. Foremost in this consideration is the range's outstanding height set in relative isolation and the connection such an attribute has been shown to have held with regard to the sky-hero legend.

**Ceremonies and ritual**

Although everyday Wiradjuri life revolved around a multitude of spiritual beliefs including the profound influence exerted by totemic systems connecting all living people with the time of creation or 'Dreaming' (Grounds 1983: 10), few of their ritual practices and ceremonies have been specifically recorded. Garnsey's (1946) treatise on the Wiradjuri of the Dubbo district includes reference to a limited number of ceremonies relating to the indoctrination of individuals into society from infancy to young adulthood. These included
<table>
<thead>
<tr>
<th>Spirit</th>
<th>Description</th>
<th>Landscape Association</th>
<th>Aboriginal Group/Location</th>
<th>Recorder/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wawi, Thooron, or Garriya</td>
<td>Serpent (‘Rainbow Serpent’)</td>
<td>Springs and lagoons</td>
<td>Winadjuri, Yuwalaray, Gamilaraay</td>
<td>Mathews (1895, 1901, 1904); Parker (1905); Radcliffe-Brown (1926); Woolrych (1898); Wootten (1996).</td>
</tr>
<tr>
<td>Yuuril, Winambu</td>
<td>'Hairymen'</td>
<td>thick bush</td>
<td>Winadjuri</td>
<td>Povah (1990)</td>
</tr>
<tr>
<td>Rugi</td>
<td>Large ghost dog/dingo</td>
<td>caves, thick bush</td>
<td>Winadjuri</td>
<td>Mathews (1994)</td>
</tr>
<tr>
<td>Buo/Teo Yeo</td>
<td>'Devil', water devil</td>
<td>deep pools in creeks and rivers</td>
<td>Winadjuri</td>
<td>Woolrych (1898); Garnsey (1942)</td>
</tr>
<tr>
<td>Tuwi</td>
<td>Bunyips</td>
<td>rocky hilltops, large hollow trees</td>
<td>Winadjuri</td>
<td>Berndt (1947)</td>
</tr>
<tr>
<td>Bugeen/Boola</td>
<td>Evil spirit/ghost</td>
<td>underground, stalks at night</td>
<td>Winadjuri</td>
<td>Garnsey (1942); Maguire (1901)</td>
</tr>
<tr>
<td>Djiir</td>
<td>Invisible malignant spirit</td>
<td>holes in the ground</td>
<td>Winadjuri</td>
<td>Berndt (1947a)</td>
</tr>
<tr>
<td>Murrup</td>
<td>'Bad spirit'</td>
<td>underground</td>
<td>Western Victoria</td>
<td>Dawson (1881)</td>
</tr>
<tr>
<td>Buurt-kuuruuk</td>
<td>'Female devil'</td>
<td>mountains/ranges</td>
<td>Western Victoria</td>
<td>Dawson (1881)</td>
</tr>
<tr>
<td>Spirits</td>
<td>numerous spirit beings</td>
<td>certain springs ('Lurtjpi')</td>
<td>Western Victoria</td>
<td>Dawson (1881)</td>
</tr>
<tr>
<td>Dulagal</td>
<td>'hairyman' spirit</td>
<td>thick bush, Gulaga Mountain</td>
<td>Yuin (NSW south coast)</td>
<td>Rose (1990)</td>
</tr>
<tr>
<td>kintji</td>
<td>'imps'/dwarf beings'</td>
<td>hills, cliffs, caves, rocky outcrops, swamps</td>
<td>Lower Murray River</td>
<td>Clarke (1999)</td>
</tr>
<tr>
<td>'Bad spirits'</td>
<td>'witches/devils'</td>
<td>caves, cliffs associated with hills or mountains</td>
<td>Lower Murray River</td>
<td>Clarke (1999)</td>
</tr>
<tr>
<td>Mugyewonk</td>
<td>Bunyips</td>
<td>waterholes, water at base of cliffs</td>
<td>Lower Murray River</td>
<td>Clarke (1990)</td>
</tr>
<tr>
<td>melbdjumirri</td>
<td>spirit (able to cause sickness/disease)</td>
<td>burial grounds and Dreaming sites</td>
<td>NE Arnhem Land</td>
<td>Reid (1983)</td>
</tr>
<tr>
<td>barniambi</td>
<td>'dreaded spirit'</td>
<td>rocky outcrops, oddly shaped hills</td>
<td>spinifex country, Western Australia</td>
<td>Bates (1912)</td>
</tr>
<tr>
<td>woggal</td>
<td>'avenger spirit'</td>
<td>hills, pools, caves, trees</td>
<td>'Williams area', Western Australia</td>
<td>Bates (1912)</td>
</tr>
<tr>
<td>Mimi</td>
<td>'stick spirits'</td>
<td>caves and rocks in sandstone plateau country</td>
<td>Kunwinjiku (Western Arnhem Land)</td>
<td>Carroll (1986)</td>
</tr>
<tr>
<td>Yaroma</td>
<td>Man-eating terrestrial bunyip</td>
<td>high ranges</td>
<td>NSW south coast</td>
<td>Mathews (1904, 1907)</td>
</tr>
<tr>
<td>daggy</td>
<td>'dead man's spirit'</td>
<td>waterfall</td>
<td>Gidabal - northern NSW</td>
<td>Creamer (1988b)</td>
</tr>
<tr>
<td>Mumuga</td>
<td>monster</td>
<td>caves in mountains</td>
<td>Tharrawal (south of Sydney)</td>
<td>Mathews (1904)</td>
</tr>
<tr>
<td>Gwargaw</td>
<td>'water emu'</td>
<td>waterholes</td>
<td>Yuwalaray - western NSW</td>
<td>Parker (1905)</td>
</tr>
</tbody>
</table>

**Table 3.1:** Examples of Aboriginal spirit beings and their landscape associations.
rites of passage such as the *Copi-Rah* ('white mark') ceremonies and ultimately the *Co-Borah/Burbung* ('red or blood make').

The *Copi-Rah* process was conducted intermittently as an individual grew from childhood to puberty. Three rituals were conducted within the *Copi-Rah: Mah-Rah* ('air make'), where a baby was dedicated to the air and thus became protected from its evil spirits; *Wal-Rah* ('water mark'), where children of around 6-7 years were dedicated to the water to avoid its associated malignant agents; and, at the age of 12, *Wengel-Rah* ('fire mark'), a dedication to the fire spirit involving the application of a hot coal to the candidate's arm in order to create a permanent scar (Garnsey 1946: 4). Following completion of the *Wengel-Rah*, girls received instruction in the tribal spirit (*Gorah*), were given their totem and learned associated societal rules, whilst the boys were prepared for the major *Co-Borah or Burbung* ceremony (Garnsey 1946: 4). While these ceremonies were undoubtedly important components of Wiradjuri social life, no information exists as to whether or not they involved organized gatherings within or between groups, specific points in the landscape, or privileged attendance. However, it could be speculated that, given the seemingly fundamental nature of the *Copi-Rah* process, such activities may have been undertaken quite openly and with a minimum of secrecy.

Other ritual practices appear to have been the sole realm of the 'clever men' and frequently involved 'black magic'. Available accounts indicate that these specific rituals were often conducted only by individuals versed in magic, involved an extreme level of secrecy and entailed use of highly restricted knowledge. They included rain making, ritualized killings, manufacture of charms, and convening with powerful spirits at certain locations in the landscape (Bowler 1902: 203; Cameron 1885: 362; Garnsey 1946: 8; Radcliffe-Brown 1926: 21). Formal visitation of places, associated with certain powerful, often dangerous spirits, was sometimes undertaken by lone clever men as a means of acquiring ceremonial
songs. For example, Mathews (1904: 162) writes that the waterhole home of the *Wawi* spirit could be visited by a 'doctor' or clever man for this purpose, but only after the doctor had painted his body all over with red ochre. Also of significance was the 'making of clever men', a ceremony undertaken in order to induct groups of select apprentices into the world of using magical power. This ritual was conducted over several days at certain secluded and sacred locations where *Baiame* was summoned by singing and powers were then given out to the men by the mythical being (Berndt 1947: 335-337). A licensed surveyor from the 1850s, H. O'Sullivan White (1934: 224), wrote that examples of these sacred ritual locations included the isolated, rocky tops of the Warrumbungle and Nandewar Ranges.

One of a tribe, and generally well up in years, visited alone some inaccessible place in the mountains, there forming a circle of stones of considerable size, the circle being about seven feet in diameter. In this he was to stand and interview the *wandah* or spirit (whether good or evil I never could make out, but held in great dread). The vigil lasted three days and three nights, the interview with the spirit only occurring in the night. The black who underwent this ordeal became the *caragy*, that is, chief director of his tribe. I have met with numbers of these stone circles, always on high points of the ranges and the country very broken...

Both the Nandewars and the Warrumbungles fall within the territory of the Gamilaraay people, close northern neighbours of the Wiradjuri, who shared many similar spiritual beliefs and interacted with them at ceremonies and who spoke a Wiradjuric language (Walsh 1981). Like the Weddins, these mountain ranges exist as abrupt, highly visible, natural landmarks, exhibiting striking geological attributes and are situated on the boundary between slope and plain country.

The most ethnographically celebrated ritual activity of the Wiradjuri was the *Burbung* or initiation ceremony into manhood. In essence, this was common to several neighbouring
Aboriginal groups in New South Wales, Southern Queensland and northern Victoria; the Gamilaraay referring to it as the *Bora* and the Yuin as the *Bunan* (Bowler 1901; Greenway 1901; Howitt 1904; Mathews 1894, 1895, 1917). To the Wiradjuri, the *Burbung* was an event of great magnitude, involving the direct exposure of initiation candidates to sacred knowledge, sacred space, artefacts believed to contain special power, and ultimately, the essence of *Baiame* himself. The end result of this process was complete instruction on the issues of manhood, effectively Wiradjuri citizenship and all the related socio-religious obligations that governed life. Importantly, once fully initiated, a Wiradjuri man was entitled to take a wife of the appropriate moiety.

Although Aboriginal subscription to this institution was widespread and participants were often gathered from hundreds of kilometres around the host area (Mathews 1895, 1896: 327), the *Burbung* appears to have displayed some regional variation with each difference possibly serving as identifiers for each group who inhabited particular 'country'. In this respect, certain versions of it may have been identified as belonging to members of specific regional communities who formed the main groups, such as Lachlan Blacks, though certainly not the only ones, who attended these ritual gatherings (White 1986: 96-97).

While a detailed description of the proceedings of the *Burbung* will not be entered into here, the ceremony in general was described by Howitt (1904:639) as having three main phases:

1) the removal of the boys from their mother's control by the clever men;

2) a prolonged, secret ritual, often entailing the knocking out of the initiate's front tooth;

3) a period of probation endured by the initiate "under severe conditions".
This 'secret ritual' was conducted in an area selected specifically for its secluded nature, often in the midst of thick forest or scrub (Bowler 1901: 13-14). At this location, a ceremonial ground was constructed within which the initiates received their instruction. In terms of the general layout of the initiation ground, there appears to have been a general uniformity across much of New South Wales, the most notable common attribute being a pair of circles or rings interconnected by a pathway.

Most records describe two circles a considerable distance apart and connected by a path. The length of this path and the diameter of the circles would depend on local conditions. Along this path and around at least one of the circles trees were incised and otherwise decorated. The ground on each side of this path was also decorated with objects shaped like images made from clay and grass to represent men, animals and birds. In many cases on each side of the path designs were marked on the ground. (Black 1944: 13-14).

Although they were of the same shape, the two rings of earth or stone were sized differently, one somewhat smaller than the other. According to Mathews (1895, 1898), the name given to the smaller of the two circles was goombo or goonaba, meaning 'Baiame's ground'. Over the prolonged duration of the ceremony, the initiates were moved from the larger ring or Burbung, along the pathway to the goombo where they ultimately received instruction on Baiame and had the significance of the carved and mounded effigies explained to them (Hopkins 1901: 62). This ritual movement has been interpreted by Blows (1981: 84-85) to be symbolic of the initiates' passage from the earth upwards to the home of Baiame, the culmination in the smaller ring being a reflection of the mythical hero's 'sky world' (Elkin 1968: 253). In this respect, the Burbung ground was effectively a map of the passage from earth to the sky, via the medium of jumping or climbing, upon which the ceremony was enacted. It may therefore be said that the representation of the two circles and the pathway was a significant embodiment of the fundamental ceremonial process.
being undertaken, that is, the symbolic transferal of the initiates from the everyday world into the sacred presence of *Baiame*.

Depending upon location, the pathway and circles were constructed from scooped and mounded earth or arrangements of pebble and cobble-sized stones. Pearson (1981: 557) recorded an example of the latter near Brocklehurst, north of Dubbo, where two lines of stones had been arranged to form a curved path 40 m long. Unger (1976: 8) provides an interesting account of the siting of a similar Wiradjuri *Burbung* ground in the Parkes district:

Situated on top of a rocky hill on the writer's property ... is the old Bora ground of the local tribe. The centre piece is a large flat rock some 40 feet in diameter, parts of whose surface gives off a drumming sound when walked on or tapped with a stone. Radiating out from this rock are several rows of stones, some extending for a considerable distance.

In this case, the clever men had taken advantage of a locally elevated position exhibiting unusual natural characteristics, no doubt to help consolidate the sacred nature of the ceremony and subsequently heighten the impact of the proceedings upon the initiates.

During the course of the *Burbung* these ceremonial constructions were believed to be sites of visitation by powerful beings, including *Baiame* himself, and as such were sacred to the Wiradjuri. According to available records, great effort was made to prevent observation of the ground and its proceedings from outside:

... the boohra ground was surrounded by a barricade of branches of trees and bushes, quite impenetrable by the sight between the people and the sacred area which it enclosed. (Greenway 1901: 117)

A screen of smoke was often generated in order to supplement this visual shield (Bowler 1901: 167; Greenway 1901: 117). This barrier served a two-way purpose in that it both maintained the secret nature of the ceremony and protected those not qualified to observe
the proceedings of the *Burbung* from its perceived powers; the penalty for women and the non-initiated who entered the sacred area or viewed anything that went on inside was instant death (Howitt 1904: 592; Mathews 1898: 80).

Following completion of the secret instruction phase at the main ground, candidates were compelled to undergo Howitt's "period of extreme probation under severe conditions" in order to finalize their initiation. This is, of particular relevance, to this study as Woolrych's records (1898: 63) indicate that Weddin Mountain was incorporated into this concluding stage of the *Burbung* as the place "that the young blackfellow had to remain for a certain time during the ceremony of his initiation into manhood." Both Howitt (1904) and Mathews (1895, 1897) describe the trial period as effectively constituting a series of ceremonies in itself, in which the young men were sent to live in an isolated part of the bush for up to a year during which time they individually received periodic visitation by and instruction from nominated tribal 'guardians'. Each of the guardians was selected on the basis of his kin relationship to the relevant initiate in that he was required to be the novice's existing brother in law or, failing this, his future brother in law (Blows 1975: 38).

During the period of isolation strict prohibitions and codes of conduct were placed upon the initiates, including the observance of taboos on many foods, fasting, self denial and regulation of sleeping hours (Greenway 1901: 118; Howitt 1904: 588; Mathews 1897). This was a period when all direct participants were seen to be engaged in sacred connection with *Baiame* and were prone to visitation by powerful spirits. Howitt (1904: 592) noted that the powers associated with the guardians were believed to be strong enough to cause fatal illness to any women who came into contact with them. Through this system, the young men were made familiar with sacred songs and dances associated with the *Burbung* as well as receiving in depth instruction on aspects of tribal law (Mathews 1895: 310, 1897).
From this background, it may be assumed that the Weddin Mountains, or parts thereof, played a significant role in one of the most important of Wiradjuri ceremonies. The range's isolated and rugged nature combined with its characteristically thick vegetation not only provided a suitable location for a period of ritualized separation and probation, but also appears to have played a role in bringing the initiation candidate closer to Baiame and his powers. Key factors undoubtedly central to this interaction would have included conspicuous physical attributes of the mountains including their prominence and height within the plains setting. As no ethnographic information pertaining to the siting of the relevant Burbung ground or grounds is available, it can only be assumed that the phases of initial instruction and movement of the initiates between the two symbolic rings took place relatively nearby. From extant archaeological evidence, a reasonable supposition would be that the ceremonial ground in the Bogolong Hills some 8 km to the north east may well be an example of a Burbung ground which was linked with the recorded role of the Weddins.

The mythological landscape

As already discussed, Swain (1990) suggests that traditional Wiradjuri spirituality centred on locative or earth-based powers. To a certain degree, this appears to have been the case, features of the landscape were indeed perceived to be the product of the actions of ancestral beings during the Maratal and certain places therein were associated with particular levels of significance. Therefore, components of the physical landscape, micro- and macro-scale topography, water features, trees, were incorporated into mythology and endowed with spiritual relevance. Creamer (1988: 94-95) states that these mythical features served to convey essential intellectual and spiritual Aboriginal 'horizons', according to three dominant themes:

1) knowledge of landscape and environment combined with a conservation ethic;
2) cosmology and mythology providing an explanation for natural and supernatural worlds;
3) practical regard for complex socio-religious institutions governing Aboriginal groups.

In the case of theme 1, emphasis is placed upon effective resource understanding, utilization and reaffirmation of traditional ties with country. Totemic increase sites are examples of such locations. Themes 2 and 3 not only serve to provide worldly explanation but place an emphasis on social order. An example of the latter comes from near Lake Cargellico where a notable rock formation was believed to be the petrified remains of a group of women and children who had been turned to stone as punishment for learning secret information relating to the *Burbung* (Mathews 1904: 347). Thus natural terrestrial features were utilized as tangible, *in situ* reminders of important stories and past events relating to the presence and deeds of the ancestors and as powerful statements of the primacy of tribal law. However, in addition to providing earthly reflections of mythological meaning, many such places were also seen to provide conceptual 'inroads' to other realms of spiritual importance, specifically the underworld and the sky.

Little information exists specifically on Wiradjuri conceptions of the underworld. Nonetheless, this realm was very much recognized and generally was feared because some of the most powerful and dangerous mythical beings were believed to dwell or travel underground. Blows (1981: 122) attributes this negative association in large part to the connection between dark confined space and places analogous with death, most notably graves or traps. It is interesting to note that the underworld was closely aligned with other comparable 'hidden' contexts, such as thick bush, large hollow trees and deep waterholes, places where bunyips, *jugi* and other malignant spirits were believed to reside. Landscape connections between the underworld and the world of humans were typically deep holes or openings in rock (caves, crevices) and places where flowing or upwelling subterranean water made its way to the surface, particularly springs.
In contrast to the perception of the underworld, the sky appears to have been associated with more positive factors and points in the landscape where there was seen to exist a connection between this realm and the terrestrial plane were of great importance. Three notable legends serve to articulate the connection between earth and sky within Wiradjuri mythology, the origin of rain, the coming of death into the world, and the story of Eagle and Crow.

*The origin of rain*

In the ancestral times, when all the totemic animals, birds and reptiles were human beings, there was no rain; during the hot summer, drinking water was obtained from Bumeri swamp, where there was a large "basin" lake, near the Marfield Station run in the Ngiamba tribal country. Bumeri was a permanent water supply, and natives collected there and built their camps in the scrub around its shores. While they were camped there, the Eaglehawk quarreled with the Wild Turkey for some reason which has now been forgotten. While Wild Turkey was out in the scrub looking for edible gum from the *ja' ran* tree, Eaglehawk, who was a "clever man," made a number of skin water-bags called *'kalimira*. These he proceeded to fill with water from the Bumeri lake, until no water was left within it and only the white pipe-clay mud remained. He then tied up each water-bag at its neck aperture and went with them over to a very high tree; here, sitting on the ground, he "sang" each *'kalimira*, one by one, up the tree and into the other world beyond the clouds and sky to a place called *'Wantangge' ngura*. (This tree may still be seen near Bumeri; it has been metamorphosed into stone is "a large rounded tall rock which was that tree used by Eaglehawk.") The latter then climbed up this tree and entered himself the place of *'Wantangge' ngura*. Wild Turkey returned to Bumeri from his gum-collecting and was astonished to find no drinking water in the lake. In desperation he crawled around and rolled in the muddy clay-pan in his search for water; "that is why the Wild Turkey is white on the sides of his face, from the mud which he smeared upon himself at this time." He then, together with most of the people camping around the shores of Bumeri, climbed up into the sky to *'Wantangge' ngura*. Now,
instead of all the water being in one place, rain may fall in different parts of the country. It must however be released in a special manner by doctors "who are its keepers". (in Berndt 1947: 359-361)

The coming of death into the world

"The Moon (kapa:ta), a blackfellow, was living around Mount Manara, east of Menindee. One day the Turkey, also a blackfellow, came to visit Moon; they camped together at Manara and began talking. There were a lot of other people camping about. They talked about the old people, and about several sick people who were lying in their camps not far from Manara. The Moon was saying, 'palu'ngi / Dying now / 'matu:pu / all / 'ngi:nkil / those people (or them).. (This was the first time that people had started to die.) Then the Turkey began to talk, and an argument started. The Moon wanted all people, if they had to die, to die for only two or three days; then after they had lain there for that period, they could become alive. But the turkey said, 'No, let them die altogether; then we two can have all the widow women for ourselves.' (The Turkey suggested this because he was unmarried and, desiring the females for himself, was consequently jealous of all the husbands who possessed women. The only way in which he could get these was for their husbands to die completely). Then the moon spoke after deep consideration, "If you should get sick, you can die altogether, but I won't. I shall die for two or three days and then come up alive again."

It is for this reason that the Turkey, when his time came, like all other blackfellows after this, died altogether; but the Moon never really died. That is why the Moon goes away for three or four days, and can't be seen; he is dead; but after that time he gets up from his death-sleep and returns alive. The Turkey continued living on the earth until he died, but the Moon climbed up into the sky from a little hill, which stands straight up and is called Tutewolankal, the earthly home of Baiami; this place was between Lake Cargellico and Welantri (on the Willandra Billabong) near the Lachlan River." (in Berndt 1947: 81-82)
In these myths the inherent theme is of earthly elements and beings ascending to the sky through jumping, climbing or being lifted and subsequently attaining permanence or rebirth. Thus, as Blows (1981: 81) states, the sky was symbolic of cyclic renewal or revival, a place of permanent rain and ancestral humans who had been transformed into new forms after death. Importantly, certain landscape elements become inscribed with connective significance in this regard: the Moon climbed into the sky from a hill that stands straight up; Eaglehawk sang the water into the sky via a tall tree which he and the other beings then climbed up; the tree of the Eaglehawk later became metamorphosed into a large, tall rock. Tall trees, notable rocks and mountains subsequently become integral signs of connection between earth and sky, powerful cosmological symbols of a perceived conduit between permanent death (earth) and death followed by transformation (sky) (Blows 1981: 81-82).

Expression of this earth-sky connection within the country of the Wiradjuri is evident both in ethnographic recordings and in its archaeology. Howitt (1904) wrote of the outstanding importance of this concept to the Wiradjuri and of their practice of carving tall trees in order to reinforce it. In the Bathurst district, Gresser (1963) linked local Aboriginal legend of the sky journey of the spirits of the dead with arrangements of stone cairns constructed on elevated spur tops. This ascent was seen to involve a series of leaps from the piles of stone, the final leap to the sky occurring from the largest cairn (Gresser 1963: 1). At the northern end of Lake Cowal, a series of burial mounds associated with a particularly large carved cypress tree were known to exist at the foot of Manna Mountain up until the early 1920s (English 1978: 28). Given the preceding information, it is believed that this site comprises three closely positioned points of elevation: the burial mound, the tall carved tree and the mountain itself; in this sense, the series of leaps by spirits of the dead to the sky is again promoted by interrelated platforms of increasing height.
Eagle and Crow

The story of Eagle and Crow, a legend that was widespread among the Aborigines of western New South Wales, has important connections with both the moiety system shared by the Wiradjuri and their neighbours and the mythological landscape. These two nurili or ancestral beings were representative of two intermarrying classes: Mukwara (Eagle) and Kilpara (Crow).

(Wa:ku), or Crow, a man of the (Ki:lpara) moiety, formerly lived at one end of the Manara Range, and (Ka:nau) or Eagle, a man of the (Makwora) moiety, lived at the other. They were both (nu:rili) ancestral beings, and in their time Makwora men were short, stout, and dark haired; while Ki:lpara were tall and light haired... The homes of the two men stood up like hills, one at each end of the range, and the camps are identified today with two peaks, believed to have been formed by the turning to stone of the ancestral huts. (Tindale 1939: 245)

Within this legend, these characters were constantly at war with each other but ultimately made peace and agreed upon the system of their two intermarrying classes (Blows 1975: 24). It should be noted that the moiety names given above, Mukwara and Kilpara, were used along the lower Darling by Tindale's (1939) 'Maraura tribe'. However, the use of Eagle-Crow matrilineal moieties and the oppositeness of their social relationship was widespread throughout western New South Wales, including in Wiradjuri country. It may be assumed therefore that the 'Kamilaroi' system of intermarrying moiety names used by the northern Wiradjuri, Dilbi and Kupathin, played equivalent roles.

There exist several important levels in this myth which are relevant here. The most obvious connection with the landscape is the mention of the Manara Range, a topographic feature north-west of Ivanhoe, and its rocky twin peaks as manifestations of the homes of the Eagle and the Crow. Such a myth-landscape connection serves as an effective bonding of legend, law and the physical world. Further significance may be determined from the myth's close connections with the Burbung initiation ceremony and the symbolic elements contained therein. Blows (1975: 40) has suggested that a strong metaphorical link existed between the
characters of the Eagle and Crow myth and the roles played by guardian and initiate in the 
*Burbung*, specifically the correspondence between strong and weak, master and apprentice. 
This connection is heightened and reinforced by the compulsory moiety relationship 
between the novice and his mentor, the guardian must be the initiate's brother-in-law, which 
replicated the mythical connection between *Mukwara* (Eagle) and *Kilpara* (Crow), a 
situation described by Blows (1975: 40-41) as a 'father-son' relationship:

> This latter aspect of the relationship resembles the hunter/thief relationship 
> between the eagle and crow, since it involves both a contrast in behaviour, and a 
> relationship between two persons, insofar as the son obtains (meat) food from his 
> father ... Thus in the initiation ritual the boy is taken away from his mother and 
> placed in the charge of a guardian – who … represents Eagle to the novice's own 
> Crow - from, or through, whom he will receive a wife. An (ideally) reciprocal 
> relationship thereby replaces the rivalrous and asymmetrical father-son pair.

A complex and stratified system of union between intrinsically opposing conceptual and 
physical elements is evident. The ritual itself involves a profound social transition for the 
initiates, that is from boyhood to manhood; the initiate is formally passed along a corridor 
from one ring marked on the ground, representing the earth, to another, representing 
*Baiame's* realm, the sky; the corridor is lined with trees which are often carved to mark the 
occasion, hence reinforcing the act of passage from earth to sky; the initiate is placed in the 
care of a guardian of the intermarrying moiety (the 'Eagle/Crow' dichotomy) who takes 
charge of the boy during his time of communion with the sky god on the mountain, a 
recognized conduit between sky and earth, humankind and *Baiame*. The inherent theme of 
linking earth with sky is continuously expressed through re enactment of legend, ritual 
passage and symbolism, while the process as a whole is reinforced through recognition and 
utilization of certain connective landscape features, specifically tall trees and the mountain.

This concept of the bringing together of opposing sides to form a series of essential 
alliances is manifested in the role of the Weddin Mountains in the *Burbung* ceremony. The 
mountain effectively acted as a cementation of highly important spiritual and social
concepts into the permanence of the terrestrial landscape; it illustrated the significance of connection between otherwise opposed elements under the guidance of an overseeing deity. Just as Manna Mountain appears to have secured the final leap of the spirits of the dead to the sky realm, Weddin Mountain provided the concluding essential connection between the initiate and Baiame. The fact that the Weddin Range constitutes two major peaked extremities separated by a broad gap is an additional factor that would not have escaped the attention of the Wiradjuri clever men. This natural manifestation of the symbolically polarized Eagle and Crow camps on the Manara Range would have provided an ideal method for reinforcing the significance of inter-moiety relationships through the landscape during the initiate's time of seclusion on the mountain.

The Aboriginal choice of the Weddins as a setting is of paramount significance. The mountain acted as an unchallenged backdrop and setting. In this respect the symbolism manifest in the mountain's size, height, and permanence is, I believe, an intrinsic part of the ceremony.

**Toponyms and the meaning of Weddin**

In 1828 as the Surveyor-General of the New South Wales, Major Thomas Mitchell, was issued with instructions to commence a trigonometrical survey of the Colony, he issued a policy that in this endeavour as many aboriginal geographical place names be collected as possible because: "... the natives can furnish you with names for every flat and almost every Hill ..." (Andrews 1992: 72-73). In addition, he issued instructions to his staff to standardize the spelling of aboriginal toponyms (Andrews 1992: 73). This remained policy of the NSW Surveyor-General's department throughout the nineteenth century and would have been applied as the surveyors included the squatted areas Beyond the Limits of Location.
According to Lind (1962: 123), geographical place names may have their origins in 'banal' or more substantial natural and/or cultural contexts. In the case of the former, names may be purely descriptive and provide only a 'one dimensional' mental image of type, shape or form, for example, the use of 'hill', 'dune', 'mountain', 'inlet'. Alternatively, place names stemming from the latter context provide more complex reflections of cultural meaning and significance, providing what Tilley (1994: 18) refers to as a higher 'density' of meaning or meanings for the landscape's human inhabitants. In this respect, the toponym 'Weddin' (from weedin) is more than simply a word used to broadly define a particular topographic feature. It does not mean 'mountain', which in Wiradjuri terminology is dhirrayn or jirrayn (McNicol and Hosking 1994: 88), rather it appears to encompass a range of cultural meanings that are ultimately tied in with the use of the natural landmark itself.

The meaning of Weddin linguistically can be gleaned from a series of potential interpretations of the prefix "wee-" in Wiradjuri and which are listed below:

- **wee-malu** - big or high lookout, or a good view (Thomas (1901: 28);
- **wee'ja** - sit or rest temporarily;
- **wee'ya** - make sit;
- **weed'dtheen** - a gap or opening;
- **wee** prefix repeatedly associated with 'putting down', 'sitting down', 'stop', 'stay', 'lie (down)' Richards (1902: 117);
- **wee** - to sit, to stay, to live (somewhere). The prefix represents state rather than description McNicol and Hosking (1994: 95) (eg. the Wiradjuri word for mountain or hill is dhirrayn or jirrayn - 88).

In Gamilaraay language, a group related to the Wiradjuri speaking a Wiradjuric language, and inhabiting an area 200 km to the North of the Lachlan in the Barwon and Namoi Upper rivers:
weeda - an eminent medicine man among the Gamilaraay and neighbouring tribes (Mathews 1907: 8) – whose name also means bower bird and who was one of the natural phenomena presented to the initiates during the Burbung

Woolrych's (1890: 65) original definition 'to stop' and its manifest connection with the period of probation during the Burbung provides an indication of the mountain's individual status within the Aboriginal landscape template. In line with the role of the Wiradjuri prefix 'wee', to sit, stay or live (McNicol and Hosking 1994: 95), the word subsequently becomes associated with human state, specifically the cessation of movement or action at a variety of levels including putting down, sitting, stopping or lying down (Richards 1902: 117). In terms of the high discipline of the Burbung, such association is most likely linked with wee'ya, to make sit or stay (Richards 1902: 117) rather than to simply cease moving or walking.

This act of doing or being finds its connection with the landscape in an alternative utility for the wee prefix in denoting a substantial high lookout, a good view or an isolated mountain (Thomas 1901: 28; Woolrych 1890: 65), an application which appears to fall within the realm of banality until the mythical importance of certain naturally occurring high points to the Wiradjuri is considered. The Gamilaraay term 'weeda', associated with an important 'medicine' or clever man, and whose manifestation in Burbung is the nest of a bower bird further emphasizes the significance of Weddin mountain and even Weedallion in the Wiradjuri landscape.

'Weddin' is therefore a singular toponym to which a particular and significant Aboriginal cultural landscape meaning was ascribed. It denotes the specific mountain location where one of an especial social order was compelled to remain until their spiritual role was fulfilled, as local knowledge still has it 'the waiting place'. Instilling the mountain with this
meaning, fixed culturally through the act of naming, effectively made the landform an analogue for ritual connection with Baiame, with the result that it became an important and recognized node within the Wiradjuri mythical landscape.

It is thought that the prefix 'wee-' also underlines the importance of surrounding hills, particularly Wheoga and Weedallion, and implicated them as part of the mythology to be read in the landscape.

Other toponyms

Several locations and landscape features in the study area have retained their Wiradjuri names, although the meanings associated with many of the titles have been lost. In most cases, these toponyms appear to fall into the banal or purely descriptive category, perhaps a reflection of the European desire for retaining only certain Aboriginal place names, where appeal may have resided in aesthetics or natural oddities. An example of this is 'Arramagong' (from Narram'agong), or 'wombats running into their holes', the adopted title of an early European, local land holding that originally included the Weddins (Woolrych 1890: 65). Similarly, other place names also have particular attributes: Bimbi (bimbimbi): place of 'many birds', Thuddungra: where 'water running down', Eurabba: A 'boggy creek', Quandialla: an 'echidna', Bogolong (bogo-bogolong): A 'bulldog ant' and Belalaba (boollaboolla): the 'junction of two creeks' (McCarthy 1963; Woolrych 1890). More intriguing in terms of this investigation is a small number of toponyms associated with specific locations, hills, mountains and watercourses situated within clear sight of the Weddin Mountains. These include the following examples.

- The Bribbaree Hills, 9 km south of Weddin Mountain, derive their name from bribera, or 'two boys', a reference to conspicuous twin rocks situated on the top of the hills (Woolrych 1890: 65). Given Wiradjuri legends, pertaining to the embodiment of ancestral
beings or people in prominent outcrops, potential connections between this landscape designation and petrification myths are obvious.

- Pullabooka, a location to the west of the Wheoga Range, is said to be a Wiradjuri for 'head' (McCarthy 1963), possibly a derivation of balang (McNicol and Hosking 1994: 83). Could this place name be a landscape-physiological reference to one of the conspicuous mountains (the Weddins, Wheoga, or Tallabung) which are highly visible on the horizon from this point on the plains?

- Like the Weddins, other prominent local elevated landmarks include the wee-prefix in their titles; these include Mount Wheoga (from we-o-go), 'isolated mountain' or 'mountain standing by itself' (Woolrych 1890: 65) and Weedallion Mountain, for which it could be argued from another Gamilaraay term '-dool' meaning place of therefore Weedalion could mean the place of the clever man. Such nomenclature could then reflect a cognitive link between these three landscape features, that they are connected in some way as a mythological or ritual series: all isolated mountains, almost evenly spaced from north to south and intervisible in this sequence.

- Goonumburrung Creek, a 5 km long tributary which drains eastwards into Ooma Creek approximately 12 km NNW of the Weddins. This plainly refers to the Burrbung ceremony and is possibly connected with the ceremonial ground in the Bogolong Hills, 5 km to the east of the creek.

**Names, intervisibility, connectivity**

**The wee prefix and the west (no wees in the east)**

The place name prefix wee- displays an interesting spatial distribution in and around the study area in that it is not found East of the Weddin Mountain Range or outside of the topographic context of the Plains country. A search of the Geographical Names Register (GNR) of the Geographical Names Board of New South Wales reveals that surviving Aboriginal toponyms commencing with the prefix wee-, wi- and whe- are restricted
primarily to the semi arid plains country within Wiradjuri territory. They include: in the study area, Weelong, Weddin, Wheoga, Wirrinya and Weedallion; and further west, Weelah (near Manna Mountain), Weebar (Wallaroi Creek), Weethalle (west of West Wyalong), Wee Elwah and Weenya (near Carrathool). Of these, seven are directly associated with the Lachlan watershed and all are situated on the plains between the Lachlan and Murrumbidgee Rivers. This suggests that this is probably a remnant reflection of Aboriginal identification with country of the 'western' Wiradjuri.

Landscape and death

Little detailed information is available on Wiradjuri funerary rites. According to Howitt (1904: 465-466), death was known to the Wiradjuri as Bulungal and was recognized as the passing of the spirit, or Jir, which was believed to ascend to the sky via a series of leaps from elevated points in the landscape, such as hills and cairns, or by ‘climbing up’ specially carved trees (Gresser 1963: 1; Grounds 1982: 11). Garnsey (1946: 7) noted that in the Dubbo district, the funeral ceremony was called the Co-rah, or 'ground make' and basically involved burial in the ground. In part of Wiradjuri territory at least, most members of the community appear to have been interred in this manner, the burial itself being undertaken by the head men, or Eulas (Garnsey 1946: 7). Howitt (1904: 465-466) described the Wiradjuri burial process as follows:

After death, the body is rolled tightly in a skin rug, and then placed in a grave about four feet deep. All the personal property, except perhaps some choice articles, are then laid on the corpse, and the grave is filled with sticks and bark, covered over with earth and with large logs placed on it. The surrounding trees are marked, the grave is left, no one going near it and no one speaking of it.

However, in certain important respects this account appears not to refer to standard burial practice, rather the interment of an important leader or clever man. According to Garnsey (1946: 7), burial of ordinary people did not include the marking of trees or inclusion of grave goods.
The burial was done after sundown and before dark, the body being placed in a squatting position, with elbows placed on the knees and the head between the hands and at the foot of a coolabah tree and facing the east. In the case of a big man a strip of bark about 5 foot long & 2 foot wide was stripped from the tree’s eastern side and placed in a slanting position over the corpse (it is said that the tribal markings of the man was painted on the bark in Dubbo-red pigment) and in the case of a Eulomogo (clever man) his trappings of office buried with him. The blaze on the tree was also carved in tribal markings, to show the man’s status in the case of the Eulomogo, and carved trees also marked the grave of a Eula, but the ordinary man or co-ba had no tree marked that I know of ...

Elaborate burials accompanied by greatest ritual activity were generally restricted to men of high social standing, such as celebrated warriors, leaders and clever men, whereas the uninitiated were hastily buried without ceremony (Black 1941: 18). Important burials were typically marked by 1 to 4 carved trees, which often marked the cardinal points in relation to the grave (Black 1941: 23). Carved designs were dominated by scroll and straight line styles and occasionally animal figures, these being totemic representations intimately associated with Baiame and the sky world (McCarthy 1940: 165). Examples of such carved tree designs from burials within and around the study area are shown in Plates 3.1 and 3.2.

In addition to the carved trees, an earthen mound, or tumulus, was also often constructed over the burial itself, this sometimes being supplemented with paths and seats that were utilized in the funeral ceremony (Black 1941: 23). The earliest account of such a Wiradjuri burial comes from Oxley’s (1820: 138-139, 141) journal of exploration along the Lachlan River in 1817:

> Almost directly under the hill near our halting place, we saw a tumulus, which was apparently of recent construction (within a year at most). It would seem that some person of consideration among the natives had been buried in it, from the exterior marks of a form which had certainly been observed in the construction of the tomb and surrounding seats. The form of the whole was semi-circular. Three rows of seats occupied one half, the grave and an outer row of seats the other; the seats formed segments of circles of fifty, forty five, and forty feet each, and were formed by the soil being trenched up from between them. The centre part of the grave was about five feet high, and about nine long, forming an oblong pointed cone ... to the west and north of the grave were two cypress-trees distant between fifty and sixty feet; the sides towards the tomb were barked, and curious characters deeply cut upon them, in a manner which, considering the tools they
possess, must have been a work of great labour and time. (Oxley 1920: 138-139, 141)

This was between the south bank of the Lachlan River and Gobothery Hill, north of Lake Cargellico. A drawing of the burial site, drafted by G. H. Evans, a member of Oxley’s team, is shown in Figure 3.2.

In order to examine the interior of the mound, Oxley ordered it opened and recorded its internal features. After removal of the soil at one end of the tumulus, he found the body of ‘tall powerful man’ estimated to have been between 35 and 40 years of age at the time of death (Oxley 1820: 141). The body had been placed in an oval grave, approximately 120 cm deep and 120 cm long, with a width of between 45 and 60 cm and had been covered first with multiple layers of dry grass and leaves overlain by 3 to 4 layers of wood and finally several feet of soil (Oxley 1820: 139-140). The body itself had been very carefully wrapped in a number of possum skins and a single large net; it was set in a flexed position with the arms between the thighs and the head oriented to the east (Oxley 1820: 140-141).

Four significant attributes are evident in this recording. First, the critical co-occurrence of the carved trees and the burial mound; second, the alignment of the body toward the east; third, the situation of the burial near water, in this case the Lachlan River; and fourth, the placement of the burial at the immediate base of a hill. It is suggested that these attributes combine as integral components of the Wiradjuri sacred landscape and reflect crucial elements of their cosmology. Highly apparent is the concept of earthly connection with other worlds, of the spirit or Jir leaping from a series of man made and natural landscape features, the mound, trees and hill, toward the sky world. That this spatio-temporal connection between worlds involves assurance of cyclic and proper balance between cosmological realms is reinforced through the alignment of the body with the east, the
Plate 3.1: Carved tree from Aboriginal burial mound site at Bumbaldry, now housed in Grenfell Museum.
Plate 3.2: Aboriginal carved tree from burial site at Marsden on Bland Creek (from NSW NPWS record 43-4-005).
Figure 3.2: G. H. Evans' depiction of the Wiradjuri burial mound and carved trees encountered by Oxley in 1817 on the southern bank of the Lachlan River (from Oxley 1820: 138-139).
direction of sunrise and birth, and situation of the burial near permanent, periodically
flowing water.

Ethnohistorical accounts indicate that comparable Wiradjuri mound burials associated with
carved trees were known to have existed from Mitta Mitta Station near Cootamundra in the
south northwards to Warren and Dubbo in Gamilaraay country and from Mount Wayo near
Goulburn in the east as far west as Lake Cargellico (Etheridge 1918; Black 1941). In the
study area, they were found in the nineteenth century, particularly along the Bland. These
include sites at Manna Mountain, Marsden, along the western shore of Lake Cowal and on
Bogies Island in the lake itself, and at Moonbucca and Geraldra, at Thuddungra to the south
of Weddin and at Bumbaldry in the east. Both at Geraldra and the western shore of the
Cowal, multiple burial mounds and considerable numbers of associated carved trees were
known to have existed (English 1978: 28; Black 1941: 24), indicating that these places had,
in fact, been Wiradjuri cemeteries of important men.

Importantly, in terms of their external morphology, these burials accord in detail with the
tumulus recorded by Oxley (1820) in that they had mounds and carved trees and situated
close to water (creeks or lakes). Another important parallel is the positioning of these
cultural landscape features in relation to hills or mountains (Table 3.2).

While it is evident that direct proximity of the burials to a prominent hill or mountain does
not appear to be a determining factor, It may be that the mountain may be highly visible on
the horizon. In this respect, distance may not have been the issue so much as the perception
of presence, that is, if the mountain could be plainly seen, it may also have been considered
spiritually accessible as a stepping stone to the sky world. Such a concept may have been of
particular importance on The Levels where mountains and hills were widely separated by
expanses of plain. However it is equally plausible that burial mounds were located close to
lesser hills, low elevated eminences, from which the jump up to the sky could have been taken by stepping across to the prominent mountain.

Wiradjuri burials were therefore principal signifiers in a landscape of death. However, these humanly made places of the cultural landscape were more than simple statements of mortality and memorials to those who had been celebrated or respected during life (cf Bell and Wakelin-King 1984). They were also integral components of Wiradjuri cosmology that were symbolic of sacred connection between the everyday world and other spiritual realms and reminders of the role of the ancestors within that connection.

<table>
<thead>
<tr>
<th>Burial location</th>
<th>Nearest or prominent hill/mountain</th>
<th>Distance (km)</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manna Mountain</td>
<td>Manna Mountain</td>
<td>&lt; 1</td>
<td>Dominant to North</td>
</tr>
<tr>
<td>West Cowal</td>
<td>Billys Lookout</td>
<td>10</td>
<td>On horizon to West</td>
</tr>
<tr>
<td>East Marsden</td>
<td>Tallabung Mountain; Weddin</td>
<td>26</td>
<td>horizon to NE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>horizon to E</td>
</tr>
<tr>
<td>Moonbucca</td>
<td>Weedallion Mountain</td>
<td>13</td>
<td>horizon to SE</td>
</tr>
<tr>
<td>Geraldra</td>
<td>Geraldra Hill</td>
<td>5</td>
<td>to East</td>
</tr>
<tr>
<td>Thuddungra</td>
<td>Bribbaree Hills; Weddin</td>
<td>11</td>
<td>To NW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>To NNW</td>
</tr>
<tr>
<td>Bumbaldry</td>
<td>Unnamed hill</td>
<td>0.1</td>
<td>Dominant to West</td>
</tr>
</tbody>
</table>

Table 3.2: Wiradjuri burials in and around study area and their spatial and visual relationship with nearest hills and mountains on the plain.

Discussion

The mythological landscape, which was very real indeed to all people, was not solely bound up within concerns for locative or earth-based significance. Definitions of the Wiradjuri mythological landscape should therefore be expanded to also accommodate the underworld and the sky, or must, at least, recognize that certain surficial points and
features, such as caves, springs, mountains and tall trees, played integral roles as conceptual nodes of contact between these recognized realms.

Given the above information, two major roles are suggested for the Weddin Mountains within the mythological landscape, both at a 'profane' or everyday level and within the realm of the sacred:

- as a possible abode for a multitude of contemporaneous spirit beings, many of them considered to be potentially harmful;
- as a contact point between conceptual realms existing outside the surface world. This includes the underworld via the range's springs and caves, and the sky world from the top of the mountains' highest peaks.

The links between the Wiradjuri spiritual realm and the physical landscape are the recognition that mythical landscapes represent the three realms: the earth, the sky and the underworld, and are manifest in a tangible sense as the physical landscape.

Sky - chiefly regarded as 'good' in terms of Baiame, although all sorts of other things were going on (the stars represented unborn children, the constellations ancestral spirits, moon, etc.). The concept of passage from earth to the sky was extremely important to the Wiradjuri because this was the course taken by Baiame on his final journey to Bullima and the subsequent path of spirits of the dead. Various cultures have identified the sky as the realm of supreme gods and, as a result, have regarded this plane as a source of imposition of order upon the earth. The Wiradjuri, through belief in a sky god as their supreme deity, may be included in this group. Parker (1905: 25) wrote that the Yuwalarraay subsequently believed certain clever men were only able to commune with Baiame's 'messenger spirits' after climbing a high peak for four days. Spirits of the dead were also believed to follow this passage of ascension to Bullima via natural high points or their equivalents. Mathews
(1904: 348) recorded a Gamilaraay legend that these spirits followed the course of the Barwon River upstream to the mountains at its source; and Gresser (1963: 1) noted a Wiradjuri belief from Central Western NSW where the dead person's spirit joined Baiame through undertaking a series of leaps from stone cairns. Prominent elevated points therefore retained special spiritual significance for the Wiradjuri.

**Earth** ('terrestrial plane') is generally associated with the 'everyday', mixed with auras. This realm provided the most immediate and tangible proof of ancestral activity during the Maratal; landscape topography and other attributes, such as vegetation, were seen to be the work of the creator beings.

**Underworld or hidden contexts** were regarded as generally bad. It included connection points, such as caves and springs to the everyday world. It combines significantly with water as a medium for dangerous creatures hidden in deep holes and lagoons. Thick bush is also negative as a hidden context and/or a likely environment for providing bad beings with cover. Access to such zones may have been prohibited or privileged, as in 'clever men' communing with particular spirits for one reason or another.

Most, if not all aspects of Wiradjuri mythology were inextricably linked with the prominent and important landscape features.
Chapter 4

PREHISTORIC ABORIGINAL SUBSISTENCE-SETTLEMENT IN THE LACHLAN RIVERINE HINTERLAND LANDSCAPE OF WEDDIN MOUNTAIN

It has already been emphasized that the study area comprises an ecological transition zone from better watered slopes in the East to the drier country of the Cobar Peneplain in the West. This broad tract of country contains a considerable intermingling of environmental attributes which provide a range of potential resources and landscape features for Aboriginal hunter-gatherer utilization. The manner in which people put to use this composite environment, their exploitation of particular resources, their choice of camping sites, and their movement through the country, is of particular importance to this study. Such issues provide the everyday human setting for the establishment of a cognitive and purposefully organized cultural landscape.

Foods available

A wide range of plant and animal resources was available to the prehistoric Aboriginal occupants of the study area. Some examples of documented Aboriginal plant and animal foods known to occur in the Weddin region and their availability are given in Tables 4.1 and 4.2. Two major resource zones may be identified: aquatic-riparian and the hinterland.

Aquatic/riparian resources include plant and animal species found in and around major creek lines and swamps. Major food plants in these zones include the shoots, seeds and starchy roots of reeds, such as *Typha* and wetland rushes.
<table>
<thead>
<tr>
<th>Food Source</th>
<th>Availability</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Millet (Pancium decompositum), lovegrass (Eragrostis spp.)</td>
<td>Mid summer. Require heavy rains to initiate growth.</td>
<td>Seed producing grasses. Seed recorded as being stored after harvesting.</td>
</tr>
<tr>
<td>'Annual Barley Grass' (Hordeum spp.)</td>
<td>Dries out and seeds briefly in early summer.</td>
<td>Seed producing grass. Seed recorded as being stored after harvesting.</td>
</tr>
<tr>
<td>Swamp Wallaby Grass (Amphibromus neesii)</td>
<td>Summer and autumn after wet period.</td>
<td>Seed producing grass.</td>
</tr>
<tr>
<td>Woolybutt Grass (Eragrostis eriopoda)</td>
<td>Spring; maybe autumn after wet period.</td>
<td>Seed producing grass.</td>
</tr>
<tr>
<td>Kangaroo Grass (Themeda australis)</td>
<td>Summer-early autumn; later if conditions are wet.</td>
<td>Seed producing grass.</td>
</tr>
<tr>
<td>Mulga (Acacia aneura)</td>
<td>Summer</td>
<td>Seeds</td>
</tr>
<tr>
<td>Prickly Wattle</td>
<td>Summer</td>
<td>Seeds</td>
</tr>
<tr>
<td>Old Man Saltbush (Atriplex nummularia)</td>
<td>Spring-Autumn</td>
<td>Seeds</td>
</tr>
<tr>
<td>Early Nancy (Anguillaria dioica)</td>
<td>Autumn-Winter</td>
<td>Tuber</td>
</tr>
<tr>
<td>Native Leek (Bulbinopsis bulbosa)</td>
<td>Autumn-Winter</td>
<td>Tuber</td>
</tr>
<tr>
<td>Small Vanilla Lily (Arthrophoium minus)</td>
<td>Autumn-Winter</td>
<td>Tuber</td>
</tr>
<tr>
<td>Pale Vanilla Lily (Arthrophoium milleflorum)</td>
<td>Autumn-Winter</td>
<td>Tuberous roots</td>
</tr>
<tr>
<td>Pepper Cress (Lepidium hyssopifolium)</td>
<td>Drought food</td>
<td>Leaves and stems</td>
</tr>
<tr>
<td>Daisy Yam, Murnong (Microseris scapigera)</td>
<td>Summer</td>
<td>Roots</td>
</tr>
<tr>
<td>Native Carrot (Geranium solanderi)</td>
<td>Summer-Autumn</td>
<td>Roots</td>
</tr>
<tr>
<td>Australian Bindweed (Convolvulus erubescens)</td>
<td>Winter (staple food)</td>
<td>Roots</td>
</tr>
<tr>
<td>Pale Filax Lily (Dianella laevis)</td>
<td>Summer / Autumn-Winter respectively</td>
<td>Berries and roots</td>
</tr>
<tr>
<td>Twining Fringe Lily (Thysanotus patersonii)</td>
<td>Autumn-Winter</td>
<td>Roots and base of stem</td>
</tr>
<tr>
<td>Warrigal Greens (Tetragonia tetragoniodes)</td>
<td>Spring-Summer. Best in hot weather.</td>
<td>Leaves</td>
</tr>
<tr>
<td>Nut Grass (Cyperus spp.)</td>
<td>Autumn-Winter</td>
<td>Bulbs</td>
</tr>
</tbody>
</table>

Table 4.1: Availability of some plains Aboriginal plant foods according to season.
<table>
<thead>
<tr>
<th>Food Source</th>
<th>Availability</th>
<th>Special Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>All year</td>
<td>Feed more actively in warm weather; multiple large species spawn or run when temperature and water levels rise.</td>
</tr>
<tr>
<td>Yabbies, shrimps, crabs</td>
<td>Late spring, summer</td>
<td>Hibernate during cold months, become active with warm conditions providing water levels are sufficient.</td>
</tr>
<tr>
<td>Mussels</td>
<td>All year</td>
<td>Encase themselves in mud during drought; most easily found when water levels are adequate for softening of mud beds.</td>
</tr>
<tr>
<td>Waterbirds</td>
<td>Dependent upon water level</td>
<td>Most prolific during floods which activate breeding and nesting.</td>
</tr>
<tr>
<td>Terrestrial birds</td>
<td>All year</td>
<td>Eggs available according to species; emus eggs in the winter.</td>
</tr>
<tr>
<td>Kangaroos</td>
<td>All year</td>
<td>Found where short green grass occurs: gilgaied plains and around river beds/billabongs in drier periods, grassy plains after rains.</td>
</tr>
<tr>
<td>Possums, echidna, bilby, pademelon, etc.</td>
<td>All year</td>
<td>All less mobile than kangaroos, easily procured. Possums fattest during summer.</td>
</tr>
<tr>
<td>Reptiles</td>
<td>Warmer months</td>
<td>Best located when active; hibernate in cooler seasons.</td>
</tr>
</tbody>
</table>

**Table 4.2:** Availability of some plains Aboriginal faunal foods according to season.
Native woodland and grassland mosaics of the riverine hinterland have also been identified as potentially rich hunter-gatherer zones (Knight 1994). Wilson (1923: 374) noted that numerous large Aboriginal shell middens once existed around the shores of Lake Cowal and that native game, including kangaroos, wallaroos, scrub wallaby, pademelons and bilbies were plentiful on The Levels before the 1900s. In terms of food resources, according to Apps (1990: 29), there were no apparent obstacles to permanent hunter-gatherer occupation of the study area.

Existing Models

While a limited quantity of archaeological research has been undertaken in the vicinity of The Levels and adjoining slopes country, detailed analysis of the region's prehistoric Aboriginal occupation is lacking. Existing studies either relating or pertinent to the region have tended to emphasize hunter-gatherer adaptive mechanisms along the lines of broadly defined economic regimes which relate directly to perceived environmental determinants, particularly the availability of food resources. The inherent shortcoming of such work is manifested in the tendency for aspects of Aboriginal landscape or regional occupation investigation to be approached through a subsistence dominated view rather than one of subsistence-settlement (cf Pickering 1994). It follows that in the most general sense, as an environmental transition zone between Eastern slopes and Western plains, the study area effectively straddles what Witter (1980a) has identified as two models of hunter-gatherer adaptation termed the 'Riverine Oriented' and 'Plateau Oriented'. These models are based on archaeologically defined 'cultural patterning' observed during the course of linear survey conducted between Maimuru and Wagga to the south of the study area. The economic basis for each of these suggested adaptations was viewed as pertinent to post 6000 BP and may be summarised as follows.

Riverine: A subsistence regime on the semi-arid Plains country centred on the utilization of aquatic plants, such as *Typha* and *Triglochila*, and animals, such as fish and
crustacea being particularly important. Large-scale preparation of aquatic tubers for consumption through roasting is evidenced archaeologically by hearth sites, characterized by concentrations of baked clay pellets situated extensively on the broad alluvial plains. With the exception of flood periods, this economy was geographically restricted to the Plains woodlands close to major rivers, such as the Murrumbidgee and Lachlan, although some use of 'semi-arid and dry temperate uplands' probably occurred in the 'seasonal cycle'. Such non-riverine occupation is seen to be evidenced by small, short term and function specific camp sites (Witter 1980a: 10-12).

Plateau: The slope and hill environment, which characterizes the landscape between Junee and Young, is recognized by Witter as 'heterogeneous and distinctive', and a particular vegetable staple, the acacia bean, a tree legume, is suggested for the region. Aboriginal occupation involved camping on a range of topographic units, such as ridges, slopes and flats, but always in close proximity to water sources, such as creeks and drainage lines. Archaeological indicators of this adaptation are seen to comprise oval shaped hand stones, used to process the acacia bean staple, and intensive use of quartz artefacts, a material which is locally abundant. The plateau quartz industry was expected to be of a higher level of sophistication than that evident in the riverine zone (Witter 1980a: 11).

Witter's model was subsequently applied by White (1986) in his general study of the Wiradjuri, and which incorporated the current study area. While applying the basic concept of the 'riverine' and 'plateau' subsistence proposition, White emphasizes the regional division by stressing the comparative importance of less seasonally influenced terrestrial animal hunting in the East (1986: 56, 64). In the case of the Western Slopes region, where "Riverine Plains interfinger with the higher land", it was suggested that the Aboriginal economy probably consisted of an annual regime dependant on the use of both 'riverine' and 'plateau' environments (White 1986: 53).
Although a rather coarse-grained background is provided by this 'East-West' adaptive proposition, it does little to clarify issues of hunter-gatherer settlement patterns in the study area. The question must be posed therefore, was there, as suggested, a discernible dichotomy between Aboriginal subsistence-settlement regimes in the East and West? What factors were driving these economies and what adaptive mechanisms underlay their operation? These drawbacks are particularly relevant to the Plains country between the Weddin Mountains and the Bland as no suggestion of Aboriginal use is effectively forwarded for this essentially non-riverine environment.

The Levels

While it would be convenient to fall back on the simplicity of views forwarded by explorers (Oxley 1820; Sturt 1833; Mitchell 1838) and earlier archaeological research (Paton and Hughes 1984; Martin 1985; Balme 1986; McDonald 1986; Paton 1992) that riverine plain hinterlands in western New South Wales were typically waterless, ecologically and topographically unvaried 'no man's lands' in prehistory, such a scenario is not supported by the archaeological evidence. To the contrary, the upshot of recent archaeological investigation focused specifically on the semi-arid, generally flat country occurring some distance from adjacent riverine corridors in the north, central and south west of New South Wales has been a general consensus that local Aboriginal people were not only conducting regular forays into back country zones, but could well have maintained near-permanent habitation regimes in some areas. This includes work conducted on the Murrumbidgee plains (Klaver 1987, 1998; Littleton et al 1996), the Namoi-Barwon black soil (Knight 1994), Willandra National Park (Faulkner 1999), the Temora district (Apps 1990) and Lake Cowal (Cane 1995).

The results of limited archaeological survey on the Plains fringing the study area and within The Levels country itself certainly suggest that prehistoric Aboriginal people were utilizing
this floodplain environment. A gas pipeline survey, paralleling the Newell Highway on the western edge of the study area, resulted in the identification of several artefact scatters and Aboriginal scarred trees on the plain between the Bland and Jemalong Gap (Navin and Officer 1997: 29-31). In another EIS project, Kelton (1995: 4) also identified a number of artefact scatters located some distance from the Lachlan River at Forbes and suggested that this is evidence of Wiradjuri occupation "over a variety of landform units away from the river". In addition to these results, quantities of artefacts have been privately collected by land owners over the years from a number of sites occurring on their properties. An analysis of grindstones sourced in this manner from The Levels combined with observation of artefact scatters in local plains gilgai zones led Wilkinson (1992: 23) to the conclusion that Aboriginal people utilized all available environments in the Lachlan district and well have maintained a 'plains-oriented economy'.

However, despite the establishment of an Aboriginal back country presence through these findings, defining the actual nature of a suggested 'Plains-oriented' hunter-gatherer occupation remains problematic and as yet unresolved. For The Levels, Wilkinson's conclusions were largely based on the prevalence of Aboriginal grindstones within local assemblages, a subsistence indicator suggested by Tindale (1974) of the grass seed dependent 'Panara' Aboriginal economy. Taken at this level, any Aboriginal Plains subsistence regime could be neatly slotted into a purportedly specialized economy focused primarily on seed grinding technology simply by the combined presence of seed bearing grass species in the local environment and grindstones within the archaeological assemblage. To her credit, Wilkinson avoided this somewhat blinkered approach by acknowledging the broader lithic assemblage within the wider plains and slopes environment. The subsequent issue is therefore one of identifying the nature of Aboriginal subsistence-settlement along the lines of more complex environmental and logistical parameters than simply identifying potentially predominant food staples.
Subsistence-settlement models for the Riverine Plains have been traditionally generalized. Initial theoretical constructs focused on broadly comparable environments were strongly influenced by the perceived importance of periodic riverine productivity within otherwise highly marginal settings and subsequently promoted 'aggregation and dispersal' models, centred on aquatic resource zones. Allen's (1974) conception of the 'Bagundji' subsistence system for the Darling Basin provided the original impetus for this line of reasoning. Based on ethnohistorical and environmental data, this model describes an Aboriginal subsistence regime not only strongly linked to, but ultimately dependent upon fluctuations in the flow of the Darling River, as determined by rainfall in the river's primary catchment in the Eastern Highlands. Critical here is the occurrence of riverine 'freshes', or peaks in discharge, during the warmer months of spring and summer, the result being a period of very high biotic productivity when riverine foods such as fish, crustaceans, waterfowl, shellfish and aquatic plants are most abundant. In Allen's model, these times were marked by Aboriginal aggregation along the riverine corridor when the aquatic foods and important summer grasses formed the subsistence base. While the surrounding Plains country was acknowledged to offer a range of readily available terrestrial food resources, this realm was seen as only accessible after irregular local rains resulted in the formation of usable pools of surface water; as evaporation is lowest during the cooler months, any long ranging hunter-gatherer forays into the back country were viewed as winter occurrences (Allen 1974: 311).

An essentially seasonally driven subsistence regime is envisaged composed of aggregation of people along the riverine corridor during the warm summer months and, when local rainfall permitted, and winter dispersal of people into the back country up to 80 km from the river (Allen 1974: 312). However, despite this apparent round of landscape use, the Bagundji economy was seen to be the embodiment of an fundamentally riverine oriented system fully dependent on the productivity of the Darling.
The influence of this proposition is apparent in Kefous' (1983) 'Riverain' model for the environmentally alike Murray River near Lake Victoria in far western New South Wales. In her study, the variable productivity of the riverine environment is once again viewed as the limiting factor determining Aboriginal subsistence strategies, with the river forming the "principal source of (Aboriginal) sustenance" (Kefous 1983: 167). As in the case of the Darling, the Murray's productivity is seen to have been highest when flood pulses inundated the river tract. During these occasions, hunter-gatherer occupation was perceived to have centred on the exploitation of fish, turtles, waterbirds and starchy aquatic tubers (1983: 72-74). The hinterland's primary role in this Aboriginal subsistence scheme was perceived as a sometime exploitation zone for small groups of people, when limited surface water was available, and as a relatively important resource fall back zone, whenever flooding, and therefore riverine resources, failed (Kefous 1983: 167-168).

From this point of view, use of the riverine hinterland country falls neatly within the realm of the dispersal mode of landscape occupation, either in a punctuated periodic form or as a fall back option. The consequence of this perspective is that the hinterland environment is not viewed as an Aboriginal habitation zone in its own right; rather, it is incidental to a riverine heartland which is effectively seen as the focus of local hunter-gatherer subsistence-settlement. A possible explanation for this conceptual bias may lie in the near-arid nature of the plains in Far Western New South Wales, where little, if any, usable surface water, in the form of springs, rock holes or soaks, occurs and average local rainfall may only amount to half that experienced in hinterlands further East. This difference is clearly reflected in regional vegetation speciation and structure; while the Plains of the Central West are typified by savanna woodland and grassland mosaics the drier hinterland country of the far west supports sparse open Acacia savanna and shrub steppe species. Within this comparatively desiccated setting the attractions of the riparian zone have appeared obvious and archaeological interpretation reflects this assumption. Also
problematic is the highly generalized nature of the perceived dispersal mode of Aboriginal landscape occupation where little, if any attention is given to possible internal mechanisms of Aboriginal settlement and resource exploitation patterns within the hinterland. Neglected in this respect are important potential aspects of subsistence-settlement within expansive environment settings; factors, such as variable utilization of back country topography, movement between water sources and local resource zones, are not considered. Subsequently, while giving a partial picture of possible Aboriginal Plains usage, the conventional aggregation/dispersal model as applied to the Far West of New South Wales may not effectively provide a basic working definition for a 'plains-oriented' Aboriginal subsistence-settlement regime.

More recently, a number of Plains studies conducted in less extreme climatic zones have retained the riverine-oriented basis, albeit with emphasis placed on hunter-gatherer opportunism in step with the inherent unpredictability of the riverine and back country environments, particularly with regard to human responses to major flooding events and sporadic local rainfall occurrences.

In an archaeological study of the central Murrumbidgee riverine plain to the south west of The Levels, Klaver (1998) has suggested that Aboriginal hunter-gatherers practiced a cyclic strategy of movement between the Riverine corridor and the Plains of the hinterland. Despite Aboriginal establishment of a semi-sedentary occupation along the riverine corridor and within close proximity to swampy zones, where repeated use was made of earth oven mounds to prepare *Typha* roots, people are also seen to have made substantial use of the back plains. She forwarded two models of occupation: a 'Spring/Summer' settlement phase centred on the resources of the riverine zone and an 'Autumn/Winter' phase, where groups moved out onto the plains after local rains (Klaver 1998: 286-287). In the former phase, it is suggested that people made use of 'mass capture' food procurement
techniques, such as specialized fish net technology, combined with collection and preparation of vegetable staples including starchy *Typha* roots and grass seed (Klaver 1998: 286). During the cooler months and after maximum local rains, a comparatively mobile settlement pattern is suggested in which people moved out onto the plains in small core groups to take advantage of plant and animal species responding to hinterland precipitation (Klaver 1998: 287). Such Plains occupation would have involved hunter-gatherer use of water sources, such as ephemeral water courses and back country swamps. The influence of flood events is also seen to have played a major role in the Aboriginal use of the riverine hinterland, with exploitation of this zone occasionally extending over long duration as a result of both hinterland swamp recharge and long term inundation of the lower lying parts of the flood plain (Klaver 1998: 288).

In north western New South Wales, Knight (1994) has stressed the possible importance of the Namoi riverine hinterland as both an important source of foods and as a zone of Aboriginal occupation which may have paralleled the apparent importance of the riverine zone. This study had been based on ethnohistorical research, consideration of local environmental attributes and archaeological survey around Pian Creek, a mostly dry anabranch of the Namoi that may have exhibited near permanent to permanent waterholes at certain points along its length. The survey resulted in the discovery and analysis of 67 back country Aboriginal sites, including artefact scatters, isolated finds, Aboriginal scarred trees and hearth sites situated over 50 km from the riverine corridor (Knight 1994: 89-90). Based on this information, two models for Aboriginal occupation in the black soil back country were forwarded:

(i) Seasonal/intermittent occupation, characterized by Aboriginal use in the wake of rain/flood replenished back country water reserves, such as waterholes and creek lines followed by retreat to riverine corridors in hotter months when water reserves became depleted.
(ii) Permanent/frequent occupation, possibly by household to band sized Aboriginal
groups (between 10 and 40 people) in territories containing near permanent to permanent
water sources. This occupation regime was seen to involve small-scale aggregation and
dispersal strategies around waterholes situated well back from the riverine corridor.

Both of Knight's models were seen to hinge heavily upon the element of hunter-gatherer
opportunism in step with environmental unpredictability. The primary reasoning behind his
proposition was that riverine corridors, such as the Namoi, need not have been preferred
Aboriginal environments but zones occupied largely through necessity during dry periods;
given suitable quantities of surface water, the local Gamilaraay people may have both
seized the opportunity to access the hinterland and to spend as much time as possible
occupying the woodland savanna environment of the plains while water supplies lasted

While both Klaver and Knight acknowledge an Aboriginal motivation to utilize
purposefully the non-riverine environment through flexible choice as well as necessity, they
fall short of identifying the nature of possible underlying structures driving the hunter-
gatherer land use strategy. In this respect, Faulkner's (1999) study of Aboriginal settlement
patterns in Willandra National Park alongside the Willandra Billabong in the lower
Lachlan, provides an important additional perspective on possible purposeful hunter-
gatherer responses to the back country environment. Faulkner correctly identifies the
environmentally deterministic nature of existing models and suggests instead that the
hunter-gatherer subsistence-settlement regime in the country around Willandra Billabong
Creek may have functioned through the development of complex 'buffering strategies'
aimed at risk minimization within an unpredictable marginal environment. As is the case
for riverine hinterland environments in general, in the back Plains setting at Willandra
water availability was probably the ultimate determinant on prehistoric human habitation and settlement patterns.

As the availability and nature of this vital resource could be substantially influenced by even slight environmental variation, Faulkner (1999: 122-123) suggests that the local hunter-gatherer survival regime revolved around highly pliant strategies which had the capacity for rapid spatial redistribution of the human population in relation to locally available resources. Such a system was made possible by maintaining a fluid, relatively low Aboriginal population which was highly flexible in terms of its ability to mobilize and alter its exploitation patterns. Faulkner found that the stresses placed on the Aboriginal population by water and resource uncertainty were evidenced archaeologically by the nature of the stone tool assemblage. Artefacts were generally well curated and were not only manufactured from a range of imported 'preferred' material, such as chert, quartzite and silcrete, but also more improvised 'replacement' stone, including quartz, volcanic and sedimentary varieties, with few retouched and backed implements, such as microliths and tulas being apparent (Faulkner 1999: 125-127). These attributes were interpreted as being evidence of a form of technological subservience to the broader demands placed on subsistence-settlement strategies by the uncertainties of the local environment; effective risk minimization demanded that stone procurement, artefact production and use correspond with the nature of implemented settlement patterns, the upshot being use of mobile tool kits and curation of and improvisation with available raw material within a stone-poor environment (Faulkner 1999: 123-127).

Ultimately, Aboriginal residential mobility and resource use was seen to be governed by responses to the distribution of water in the landscape;

... people were distributing themselves throughout the landscape to take advantage of this resource (water) when it occurred, and in doing so gain access to the plains resources. This pattern of settlement may also correlate with the
Faulkner (1999: 127, 130) posits that the risk minimization strategies evident in Willandra National Park were the product of a long history of Aboriginal occupation within the plains setting and that the resulting high levels of human familiarity with the country played an important role in reducing the potentially negative effects of environmental uncertainty.

Subsequently, it is evident that the most recent studies provide important insights into Aboriginal Plains occupation which serve to expand significantly upon simple aggregation and dispersal patterns. Foremost here are the following observations;

- the Plains are not viewed as ecologically 'featureless' and landscape units away from rivers are cited as playing roles in Aboriginal settlement patterns;

- the hinterland resource base may have been far from depauperate in comparison with the rivers;

- the availability of many important Plains resources and therefore Aboriginal movement on the Plains was probably influenced as much by largely unpredictable periodic natural events as it was by seasonality;

- in important ways, Aboriginal inhabitants of the Riverine Plains environment were capable of managing their subsistence-settlement regime or regimes to some degree rather than being wholly subservient to environmental dictation.

These observations may be compiled to provide an amended, relatively broad model for hunter-gatherer settlement within 'typical' semi-arid back country environments (Figure 4.1).

The utilization of such an amended model of plains occupation provides a positive avenue of investigation for this study. Of particular importance are the identified issues of flexible
ABORIGINAL POPULATION

PLAINS ENVIRONMENT
Extensive; generally flat with some mid-small scale topographic variation
Semi-arid savanna woodland/grassland mosaics
Unreliable rainfall (average 300-500mm annually)
Periodic flooding of adjacent river channels and major creek lines
Resource availability generally periodic rather than seasonal; terrestrial fauna uniformly available

FLEXIBLE SUBSISTENCE-SETTLEMENT STRATEGIES
Broad based economy, possible concentration on periodically plentiful resources
Potentially wide ranging movement patterns
Suite of 'fall back' options/buffering strategies
Dependent upon availability of water

DRY PERIODS
Range restricted to vicinity of permanent water
Dependence focused on permanent water
Possible fall back to rivers
Resource base restricted to what is available within restricted range, possibly aquatic and ecotone foods

WETTER PERIODS/WATER AVAILABLE
Wide ranging settlement
Full potential use of available ecosystems and associated resources
Variable scale movement in response to periodic flooding; may include influx of normally riverine populations

Figure 4.1: Amended model of Aboriginal occupation of semi-arid riverine hinterland environments.
hunter-gatherer subsistence strategy management and ready response to unpredictable environmental factors (i.e. Faulkner's 'buffering strategies'). Such attributes should be viewed as subsistence prerequisites within semi-arid riverine hinterland environments where resource productivity, local rainfall and flooding may be periodic and sporadic rather than purely seasonal (Balme 1995: 17). Due to this central tenet, the model provides versatility in its application, an important trait as riverine hinterland environments may be expected to display regional variation in terms of topography, hydrology and localized vegetation patterns, each of which having the potential to influence local hunter-gatherer settlement patterns to some degree.

This factor is particularly relevant to the Western part of the Weddin study area as the model allows for the possibility of forms of substantial, if not permanent, Aboriginal habitation in back country environments provided sufficient and accessible fresh water was available. As described in Chapter 2, despite being a generally dry landscape subject to high levels of surface evaporation, the local combination of geology and sub-surface hydrology has endowed The Levels with a quantity of natural springs, several of which have been described in historical accounts as being both viable during the driest times and known to local Aboriginal people (Woolrych 1890; Musgrave 1979; Holland n.d.). Viability, in this respect, refers to the fact that fresh water would always have been present at these locations in quantities adequate to sustain human survival at subsistence level, most probably as steady seepage which could be concentrated in native wells, such as those recorded by Oxley (1820: 54, 69) between the Lachlan and the Murrumbidgee. Though typically modest in size, these spring locations may have represented vital environmental 'keys' to accessing the plains; Apps (1990: 30-31), for instance, noted that permanent Aboriginal occupation in the hinterland of the Temora district was made possible by the presence of these small, but reliable, natural water sources. During better (though not necessarily 'best') times, these water sources were supplemented by quantities of semi-
permanent surface water stores noted as having existed on The Levels including deeper waterholes in creek lines and sheltered rock holes in the isolated hills (Oxley 1820: 51, 64, 75; Musgrave 1979: 37).

Given that water was available in these types of location and that the food resources of the local environment were varied and adequate enough to sustain hunter-gatherer subsistence, it can be assumed that there existed in prehistoric times the potential for considerable periodic, if not permanent, Aboriginal occupation of The Levels. Whether permanent or periodic in nature, application of the amended riverine hinterland model indicates that the subsistence-settlement regime probably comprised a highly flexible system ultimately dependent upon the presence of reliable springs at certain points throughout the landscape. Aboriginal movement through the landscape may be expected to have occurred in response to the nature of water sources relied on at the time. A postulated regime for settlement patterns along this line of reasoning may be summarised as follows:

- in dry times, people would have restricted their movements to the vicinity of and directly between the springs and any other reliable water sources. Such locations would be highly important nodes within the landscape and may have included deep waterholes in the more substantial creeks, the permanent Plains spring at Curraburrara and the seepages in the gullies and along the base of rocky hills and ranges, such as Wheoga and Weddin. Transit of the landscape between these locations would have been based heavily upon detailed knowledge of the country and carried out in anticipation of water availability at potential destinations. It cannot be discounted that periods of extreme water scarcity may have precipitated movement to relatively distant areas, such as Lake Cowal or the Lachlan River.

- during periods of peak water availability, settlement patterns would have been less restricted permitting wide ranging movement and broad scale use of most available ecological niches and corresponding resources. Depending on the degree of floral and
faunal productivity occurring in step with these periods, full exploitation of a range of aquatic and terrestrial resources may have occurred as swamp and creek complexes, such as the Burrangong and Caragabal, were incorporated into the hinterland economy.

As suggested in the general model, an overabundance of water on the Plains would have been another influential factor in human movement, though due to the distance of central parts of The Levels from the main river channels this was perhaps not quite as critical a concern as would have been the case directly along the riverine corridors. In this respect much of the lighter soil Plains landscapes to the north, south west and immediately west of Weddin may have represented favourable zones for human occupation during flood events, due to their relative local elevation and possession of micro relief. Inundation of lower lying areas, due to steady backing up of creek lines by the Lachlan River or heavy local rains may not have required regular large scale movement to drier country. Such flooding is typically gradual and involves the formation of broad, shallow morasses and swamps in low lying areas bordering the more substantial drainage lines, particularly the Bland and Burrangong Creek. However, comparatively infrequent and unpredictable broad scale flooding may have necessitated more resolute retreat to higher ground. As a safeguard against rapid flooding events, an element of 'fluvial sensitivity' (cf Apps 1990: 132), such as camping away from flood prone areas may have been incorporated into the general subsistence-settlement regime. The potential benefits of occupying elevated, well drained locations, such as the Weddin Mountains and the Wheogas, which offered substantial natural shelter during protracted wet periods and refuge from any major flooding on the plains, are obvious.
The Slopes

The study area encompasses a component of the gentle slopes and hills country to the East of the Weddin Mountains. This zone is environmentally distinguishable from the West by topography, climate and vegetation.

Witter (1980b) surmised that the Mid to Late Holocene Aboriginal occupation between Dalton and Canberra consisted of foci around both tributary and major stream valleys within which conjectural seasonal movement was suggested. This movement comprised occupation of the tributary valleys and lower slopes during the winter months, in order to be above cold air trapped in valley bottoms and below cooler elevations, where water was plentiful and "a high diversity of environments" could have been exploited; during the summer, people moved into larger valley bottoms and also forayed into the higher elevations, both zones being sources of water and food resources (Witter 1980b: 12). In more recent times (late Holocene), migration into the highlands during summer to exploit bogong moths was suggested (Witter 1980b: 13). Witter sees elements of Flood's (1973) models of site distribution as applicable to the region, i.e. large lowland camps and medium-sized lowland camps, large lowland camps were more extensive site types found exclusively in river valleys or gently sloping land whilst medium lowland camps were more limited in size and found mainly on escarpments and saddles (Witter 1980b: 3).

Pearson's (1981) study of the Aborigines of the upper Macquarie River provides one of the most comprehensive pieces of research on hunter-gatherer subsistence-settlement in a region environmentally comparable and adjacent to the study area. It utilized ethnographic and archaeological information relating primarily to Aboriginal occupation in the recent Holocene up to and shortly after the advent of European settlement. While acknowledging that a generalized 'normal' prehistoric Aboriginal movement cycle was difficult to ascertain from ethnographic accounts, Pearson utilizes the records of early European observers in
order to construct a general idea of Aboriginal group size and camping behaviour. These records suggested that the region was inhabited by a small number of 'clan' groups of Aborigines, each sized at 80 to 150 people; in turn, each clan was divided into small 'daily life' units of up to 20 people (Pearson 1981: 75-76). Characteristically, the 'daily life' units were observed to engage in two broad habitation movements;

- short moves between camp sites of only a few hundred metres at the most and was the product of avoidance of refuse build up, superstition concerning the original site location and/or a desire for a 'change of scene'. Such activity characteristically resulted in elongated site formation, such as continuous artefact scatters along river banks;

- long distance moves by moving to a camp site several kilometres away.

Large scale gatherings of people (multiple units or clans) were also noted as having occurred when a particular food resource was plentiful, during ceremonial or other social events, and out of curiosity in response to particularly unusual occurrences (Pearson 1981: 75-76). Such occurrences, while being comparatively anomalous, may have had important effects on broad scale Aboriginal settlement patterns; indeed, it is, ethnohistorically recorded factors, such as social and religious obligations and warfare, that Pearson (1981: 349) cites as being the major influences on hunter-gatherer movement.

Information gained from the ethnohistorical records was supplemented with archaeological data. Field survey conducted across a range of environmental and topographic units within various sub-regions of the upper Macquarie resulted in the recording of 148 prehistoric sites, including 57 artefact scatters, 21 rockshelters, 17 grinding grooves sites, 10 stone quarries/sources, 15 stone arrangements, 6 'earth structures', 19 carved trees and 3 canoe trees. Primary archaeological and landscape trends noted included the following:

- site distance from nearest water source ranged from 10 to 500 m. The average distance was 98.4 m.

- site size (in terms of area) increased with proximity to water.
sites showed a strong tendency to be situated on level, well drained locations in hilly/undulating topography (74%) with far fewer being located on river flats (16.7%) and river/creek banks (9.5%).

Pearson's interpretation was that while access to water appeared to be a very strong influence on site location, people were also choosing their campsites with reference to other factors, such as shelter, drainage, temperature and view. Larger site situation closer to water and on what Pearson (1981: 94) viewed as less favourable topographic locations, such as alluvial flats, was attributed to multiple group gatherings according with the influence of 'economic rent', a system in which larger groups tended to camp where sufficient water could be found nearby, thereby diminishing the potential costs of water transportation. However Pearson does not admit the possibility of reasonably mobile small unit campsites which, consistently revisited, may have left behind extensive scatters, a practice suggested in the ethnographic records he cited.

With regard to the influence of food resources on Aboriginal settlement patterns, Pearson (1981: 349-350) states that there is no archaeological or ethnohistorical evidence for Aboriginal reliance on any particular food or seasonally occurring food in the upper Macquarie. Instead, there is the suggestion of a wide based economy generally involving uniform or preferential collection strategies principally within woodland, grassland and riverine environments. While Pearson (1981:350) believes that some foods may have been seasonally available he posits that such a non-specialized local hunter-gatherer economy would probably not have been affected by periodic scarcity of certain foods and that Aboriginal movement and behaviour would therefore have been similarly unaffected.

A consequence of this is the suggestion of a broad based, non-specialized model of Aboriginal subsistence-settlement involving little or insubstantial seasonality as a
significant factor. In terms of movement, rather than an occupation regime governed by food collection, the primary influences on both regional and localized settlement patterns included water availability, topographic elements and social/religious factors. In this respect, Pearson (1981: 70) makes a notable observation relating to differences in patterns of Aboriginal habitation between East and West; that the more uniform distribution of water sources in the sloping landscapes of the upper Macquarie region, permanent local Aboriginal occupation could have been undertaken throughout the year without being heavily reliant on the major streams, except in the driest periods.

Similarly, Witter and Hughes (1983) found that sites in the low hills within the Lachlan catchment were generally situated on the valley flanks. This was interpreted to be a reflection of landscape concerns, such as access to water and to zones of greater environmental diversity. A regional model was subsequently forwarded that suggested Aboriginal economic orientation towards major streams and valleys with occasional forays into 'dry inlands'. Within this model, more systematic exploration into the dry, plain country could have occurred after heavy rains replenished local water supplies and during drought there would have been retreat to major river systems, such as the Lachlan.

Barber (1990: 24-29) noted that the Aborigines living in the Cowra district had at their disposal a wide array of naturally occurring plant and animal foods, few of which were seasonally determined in their availability. It also appears that, with the exception of fish, these resources were uniformly distributed across the full range of landscape units evident in the district (1990: 28).

The limiting factor therefore was not seasonality per se but the prolonged semi-arid cycle of wet and/or inundated phases which can occur at any time of the year and dry periods or droughts which may last for a period of a few months to about 10 years.
Water availability in the study area

It is assumed that access to food resources would not have been a limiting factor on local Aboriginal occupation. The combination of forest, woodland, grassland, plain, mountain and riparian zones within the savanna setting provided a broad and plentiful range of readily procurable vegetable and animal foods (Tables 4.1 and 4.2). Rather, it was water availability which was the primary physical constraint upon human habitation in this area.

Times of peak water availability are seen to have been extended rainy spells, possibly combined with substantial flooding or extensive inundation of lower lying areas. It may be assumed that during these periods major creeks would have contained continuous flowing water, lesser drainage lines exhibited plentiful pools and expansive morasses and/or swamps were evident on the Plains. Extended wet spells, such as these, served to recharge important surface water sources, such as waterholes, rockholes, gilgai complexes and swamps. As a result, easy access to potable water would have been possible throughout all parts of the study area.

During 'average' to 'good' times, the entire Lachlan Riverine Hinterland Landscape including the Plains, Slopes and Weddin Mountain is theoretically habitable, with access to water in one form or another being possible from a distance of no more than 10 km in most cases. In terms of reliability and/or quantity, notable natural water sources may be scaled from 'best' to 'minor'.

Areas of best water availability would have been the more substantial creek lines, where periodically flowing water and regular chains of semi-permanent to permanent waterholes of reasonable size were to be found, including the Bland, Burrangong Creek, Bribbaree Creek, Caragabal Creek and Ooma Creek, which, under these conditions, existed as long,
linear corridors of water availability that bisected the landscape. As such, these surface features may well have provided the basic network for human access to the majority of the local landscape.

The permanent springs, while not necessarily locations of copiously flowing or upwelling water, could nonetheless be classed as significant localized hydrological entities given their reliability, fixed position in the landscape and intermediate positioning between major drainage lines. As water sources, these therefore became nodes of relative certainty within a largely unpredictable setting. Permanent springs are most frequent in the Weddin Mountains and at the base of hills and ranges to the north east, including Mortray Hill and the Bogolong Range. Intermittent springs and seepages occur in basically the same basic settings as the permanent examples. During times of flow, these sources would have augmented the accessibility of the ranges and outcrops in the centre and north east of the Weddin study area.

Depending upon localized soil conditions, gilgai zones exhibit variable potential in terms of their capacity to hold surface water. In some cases, gilgais can contain quite substantial waterholes (over 20 m wide and up to 1 m deep) that hold water for months after rain. Alternatively, these areas may only exhibit a series of discrete water filled potholes and shallow depressions that dry up quite quickly, especially during times of peak evaporation. It can only be assumed that on average, gilgai areas would have afforded reasonable quantities of drinkable water for at least a few weeks after rain or flooding. During these times, they would have been undoubtedly important in the North and West of the study area, where the other sources, sizeable watercourses and springs, are widely separated by dry plains.
Rock holes and seepages are features primarily of the rocky hills and ranges, particularly those uplifts exhibiting the requisite geology, size and morphology that provides aquifers, catchments and, above all, shelter from evaporative elements, such as direct sun and wind. In this respect, while several of the hills and ranges may serve to concentrate water at certain points after rain, only the long, deep gullies of the Weddin Mountains have the potential to shelter such vulnerable water sources for more than a few days. In most cases, such sources of water would be relatively limited during normal times, with their main Aboriginal utility occurring shortly after local precipitation. The more persistent pools in the gullies of Weddin can be expected to have promoted more extended hunter-gatherer occupation in and around this part of the study area, particularly in conjunction with the mountains' permanent springs.

As the periods between rainfall recharge lengthened and losses through evaporation more marked, it may be assumed the minor water sources would have become progressively diminished and that the Aboriginal dependency upon the larger, more permanent drainage lines and more reliable springs with corresponding restrictions in human foraging range, increased. During these times, the driest parts of the study area are expected to have been the Wah Way Plain directly to the West of Weddin and the country around Wirrinya and the Wheoga Range to the North West. Local water sources for these areas are hydrologically variable gilgai zones, with the nearest substantial riparian corridors and permanent springs often being over 15 km distant from the driest locations. Of course, depending on the quantity of water available at points separated by dry country, it may have been quite plausible to cross this area and indeed forage from it.

There can be little doubt that the worst periods of water availability, i.e. droughts of extended duration, from several months to several years, made hunter-gatherer life difficult. Temporary abandonment of tracts of country, particularly the more remote parts of The
Levels, would have occurred and people may have found it necessary to centre their occupation on a reliable source or sources of water, with surrounding foraging ranges of perhaps 10-15 km. Depending upon local prehistoric Aboriginal demographic characteristics, such as size, during the Late Holocene, it is probable that during droughts hunter-gatherer land use took on two distinct, though possibly simultaneous patterns in:

1) the Bland, which would have been an elongated chain of waterholes as far as Lake Cowal and the Lachlan;

2) the Slopes and ranges in the East, ecologically diverse country characterized by a number of permanent springs.
Chapter 5

FIELD METHODS

Broad scale archaeological survey of the study area was undertaken over a period of several months throughout 1996 and 1997. While the study area is quite extensive (7854 sq km), it was only sampled. It was not intended to supply a comprehensive 'regional' archaeological perspective, but to provide a generalised, sub-regional view. Congruent with this concept of scale and in keeping with the contextual aims of the general investigation, an attempt was made to encompass both the Weddin Mountains and as much of the surrounding country within the study area as was practically possible.

Sampling strategy

A pragmatic approach was adopted for the sampling of the study area landscape in that the most readily accessible areas exhibiting satisfactory levels of archaeological exposure and/or applicable physiographic characteristics were targeted for inspection. These factors are worth clarifying here.

Accessibility of the landscape is a major consideration in this study and involves issues relating to both land tenure and physical constraints on undertaking survey. In the case of the former, it is estimated that over 85% of the study area is privately owned land, principally used for grazing and/or cultivation. While permission to enter and conduct survey on properties may be sought, due to time constraints and the scale of the study area, it was decided to initiate the survey within areas of public land and reserve the option of seeking entry to private land as an alternative strategy as needed. Physical constraints on survey, specifically the nature of terrain and vegetation, were less of a problem as most of the study area is flat and readily accessible by vehicle and/or foot. Major issues, in this
respect, were experienced in the Weddin Mountains as the range itself is poorly roaded, quite rugged and supports dense vegetation.

Archaeological exposure is a major concern, particularly in the search for artefact scatter sites which may be quite subtle in their appearance due to partial obscurement by soil, vegetation and humic material. Even more extrusive site types, such as stone mounds and alignments, may be difficult to define due to the thick growth of grasses present on the plains at certain times of the year. It was therefore necessary to undertake the survey in areas exhibiting substantial extents of surface exposure, typically in the form of skeletal soils, eroded surfaces and shallowly graded dirt trails, as well as timing the field work in accordance with periods of least vegetative cover.

Physiographic characteristics of the landscape were important concerns in terms of obtaining a rough sample from as many representative local environments as possible and the nature of site types expected to be encountered. Three broad physiographic settings were identified as requiring sampling within the study area: the Plains country of The Levels, the rolling to hilly country of the east and the rugged outlying ranges, such as Weddin. Each of these, in turn, was recognised as comprising a range of different environmental zones, according to local soil, hydrology, vegetation and topography. These natural attributes have potential to have influenced modes of hunter-gatherer behaviour and, in turn, the manifestation of the local archaeology. This influence may be apparent in terms of resource availability (eg. reliable water sources or zones seen to be rich in other resources such as food), suitability for habitation (eg. well drained, level and not flood prone) and conformity with what were seen as important cosmological/ritual places (eg. large rocky slabs, mountains, upright rocks, water features). It was therefore seen as important to obtain as balanced a sample as possible from the range of environmental and physiographic zones apparent within the study area.
As part of the procedure utilised to deal with obtaining a satisfactory spatial sample, a number of reconnaissance trips was undertaken across the study area prior to survey itself to gauge the extent, suitability and selection of potential sample zones in the landscape. This included preliminary inspection of the area’s State Forests and Weddin Mountains National Park itself. By and large, it was discovered that a broad range of readily accessible potential survey zones was evident and these subsequently provided the geographic basis of the sampling strategy.

The two basic study area divisions surveyed were the Plains and Slopes country and the Weddin Mountains.

**Plains and Slopes**

In order to provide a broad spatial control over archaeological survey and analysis of a large area, the country surrounding the Weddin Mountains was divided into four quadrants, NW, SW, NE and SE (Figure 5.1). These may be summarised as follows:

NW comprises the country north west of Weddin, including the Wah Way Plain, the gilgai country around Caragabal, the rolling to hilly country south of the Wheoga Range, and the Garema Plain in the north.

SW includes the southern half of The Levels, country dominated by the Currawurrama and Eurabba Plains and their creek systems including lower Burrangong, Bribbaree and the middle reaches of the Bland, and Weedallion Mountain.

NE is characterised by the plains adjacent to Ooma Creek, the Bogolong Hills and the rolling terrain around Grenfell.

SE includes the rolling to hilly terrain to the north and northeast of Young, the plains along the middle reaches of Burrangong Creek and Tyagong Creek, and the Bribbaree Hills.
Figure 5.1: Study area divided into Plains and Slopes quadrants and precincts.
While quadrant division is essentially arbitrary, it does reflect a level of climatic and physiographic reality in that the NW and SW quadrants incorporate the Plains country of The Levels within the Western climatic zone, and the NE and SE quadrants encompass the generally rolling terrain within the Eastern zone.

In turn, each quadrant was divided into precincts which provide a basic reflection of the broad environmental units making up each quadrant. These are summarised in Table 5.1.

Survey was conducted opportunistically within each precinct, the nature of specific investigation of an area being governed, in turn, by the manner of archaeological exposure and landscape access afforded. On the Plains and Slopes of the study area, ready access to surveyable country occurs along stock routes, within State Forests and at Crown Reserves. As shown in studies of the Murrumbidgee riverine plain by Klaver (1987; 1998), these areas of public land can provide highly suitable settings for archaeological survey. Three primary forms of sampling were utilised in accordance with the type of access gained, block survey, linear survey and spot survey.

**Block survey**

This included comprehensive investigation of identified or targeted blocks of country where a combination of uninhibited access and satisfactory archaeological surface exposure and/or visibility presented itself. Best examples of zones utilised in this fashion include the various State Forests situated on the Plains and Slopes surrounding the Weddin Mountains, which effectively present 'parcels' of country between 2 and 14 sq km in extent occurring in a number of environmental zones. Overall, a combination of very good archaeological visibility, accessibility and environmental diversity is afforded through these locations due to three primary factors:

1) the consistently high degree of exposure, 'archaeological windows', provided by the graded forest management tracks which service the areas;
2) the more or less regular bisection of the blocks of country concerned by the grid-like networks of the trails;

3) the situation of the blocks across a range of physiographic locations of the landscape.

Block survey areas are summarised in Table 5.2.

<table>
<thead>
<tr>
<th>Survey quadrant/precinct</th>
<th>Environmental/physiographic characteristics</th>
</tr>
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<tbody>
<tr>
<td><strong>NW quadrant</strong></td>
<td></td>
</tr>
<tr>
<td>- Marsden</td>
<td>plains and gilgai country with major creek corridor</td>
</tr>
<tr>
<td>- Jingerangle Plain</td>
<td>back plain country, no major creeks</td>
</tr>
<tr>
<td>- Wah Way Plain</td>
<td>black soil plain, single ephemeral creek corridor</td>
</tr>
<tr>
<td>- Pullabooka slopes</td>
<td>rolling country with minor drainage lines</td>
</tr>
<tr>
<td>- Garema Plain</td>
<td>open plains, includes two ephemeral creek corridors</td>
</tr>
<tr>
<td>- Wheoga Range</td>
<td>plains and gentle slopes, minor drainage and some springs</td>
</tr>
<tr>
<td><strong>SW quadrant</strong></td>
<td></td>
</tr>
<tr>
<td>- Bland Creek</td>
<td>plains and inundation zones flanking major creek corridor</td>
</tr>
<tr>
<td>- Eurabba Plain</td>
<td>plains and inundation zones flanking creek corridor</td>
</tr>
<tr>
<td>- Weedallion slopes</td>
<td>rolling, stony country with minor drainage lines</td>
</tr>
<tr>
<td><strong>NE quadrant</strong></td>
<td></td>
</tr>
<tr>
<td>- Mulyandry Plain</td>
<td>heavy soil plains, single ephemeral creek</td>
</tr>
<tr>
<td>- mid-Ooma Creek</td>
<td>plains and gently rolling country along creek corridor, some springs</td>
</tr>
<tr>
<td>- Warraderry slopes</td>
<td>rolling to hilly terrain, minor drainage lines and springs</td>
</tr>
<tr>
<td><strong>SE quadrant</strong></td>
<td></td>
</tr>
<tr>
<td>- Monteagle slopes</td>
<td>rolling to hilly country, plentiful drainage lines and major creek</td>
</tr>
<tr>
<td>- Burrangong Creek</td>
<td>light soil plains and slopes along major creek corridor</td>
</tr>
<tr>
<td>- Emu Creek</td>
<td>flat to rolling country, plentiful drainage lines, some springs</td>
</tr>
</tbody>
</table>

*Table 5.1:* Plains and Slopes survey precincts with environmental/physiographic characteristics.
<table>
<thead>
<tr>
<th>Block Name</th>
<th>Area (km²)</th>
<th>Quadrant</th>
<th>Environmental Zonation/Description</th>
<th>Watercourses</th>
<th>Area surveyed (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eurabba State Forest</td>
<td>6</td>
<td>SW</td>
<td>Back plain</td>
<td>none</td>
<td>10</td>
</tr>
<tr>
<td>Curragurrama State Forest</td>
<td>5</td>
<td>SW</td>
<td>Plain bordering onto swampy inundation zone (Curragurrama Plain). Rocky outcrop with sudden local relief of 57 m in centre.</td>
<td>none</td>
<td>11</td>
</tr>
<tr>
<td>Jingerangle State Forest</td>
<td>3</td>
<td>NW</td>
<td>Mainly back plain with restricted rocky outcrop with local relief of 30 m in centre. Possible coolibah swamp (usually dry) in western extremity.</td>
<td>none</td>
<td>5</td>
</tr>
<tr>
<td>Caragabal State Forest</td>
<td>3.8</td>
<td>NW</td>
<td>Back Plain</td>
<td>single ephemeral</td>
<td>5</td>
</tr>
<tr>
<td>Pullabooka State Forest</td>
<td>13.75</td>
<td>NW</td>
<td>Plain bordering onto undulation zone.</td>
<td>single ephemeral at northern end.</td>
<td>8.5</td>
</tr>
<tr>
<td>Mulyandry State Forest</td>
<td>6.5</td>
<td>NE</td>
<td>Gently sloping zone with rocky outcrop epicentre with local relief of 50 m set in back plain</td>
<td>none</td>
<td>8</td>
</tr>
<tr>
<td>Priddle State Forest</td>
<td>2</td>
<td>NE</td>
<td>Plain</td>
<td>small number of ephemeral</td>
<td>3.5</td>
</tr>
<tr>
<td>Maudry State Forest</td>
<td>2</td>
<td>NE</td>
<td>Gently sloping on edge of granite outcrop with local relief of 50 m, gently undulating country.</td>
<td>Single ephemeral watercourse, possible small springs.</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 5.2: Summary of block surveys, Plains and Slopes.
**Linear survey**

Linear survey was conducted primarily in transects along the stock routes which traverse the local plains and slopes. Stock routes in the study area tend to be extensive (frequently over 50 km in length and 10-200 m wide) and afford surveyable linear areas either side of roading from ten to hundreds of metres in width. Typically, a linear transect was conducted on foot for as long as exposure was evident, in some cases for up to several kilometres. While this form of opportunistic survey has its limitations in small scale study areas with limited archaeological exposure, the value of such a strategy in a regional survey with generally high levels of potential archaeological 'windows', such as is the case in this particular study, cannot be discounted. With the degree of extent offered in the combination of the study area's size and the considerable lengths of local stock routes, it was possible to successfully sample exposures across practically all environmental zones apparent. Linear survey samples are shown in Table 5.3.

**Spot survey**

Spot surveys involved a combination of landscape point targeting and opportunistic survey of areas wherever access and visibility was available. In the case of the former, locations were specifically identified on topographic map sheets for localised, intensive survey. These included Crown Reserves and other areas of public land occurring at points in the landscape deemed to have high archaeological potential and/or physiographical characteristics warranting investigation. Alternatively, opportunistic spot survey was undertaken in step with chance encounters made during vehicular travel along roads or stock routes with any significant exposures encountered being investigated. Study area spot samples are given in Table 5.4.
<table>
<thead>
<tr>
<th>Transect Name</th>
<th>Quadrant</th>
<th>Description</th>
<th>Area surveyed (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Route Road</td>
<td>NE</td>
<td>Gently sloping and flat country directly east of Weddin. Incorporates a cross section of gradients and zones adjacent to and away from creeklines.</td>
<td>15</td>
</tr>
<tr>
<td>Monteagle Stock Route</td>
<td>SE</td>
<td>Gently undulating country incorporating a progression of gradual ascent from a riparian corridor (Burrangong Creek) to the top of a low range.</td>
<td>7</td>
</tr>
<tr>
<td>Grenfell</td>
<td>NE</td>
<td>Short stock route corridor and four wheel drive track on the northern edge of Grenfell township.</td>
<td>3</td>
</tr>
<tr>
<td>Tyagong Creek</td>
<td>SE</td>
<td>Stock route corridor incorporating back plain and a section of riparian corridor.</td>
<td>3</td>
</tr>
<tr>
<td>Holy Camp Road</td>
<td>NE</td>
<td>Broad road verge. Incorporates gently undulating to flat country east of Weddin.</td>
<td>12</td>
</tr>
<tr>
<td>Old Caragabal Road</td>
<td>NW</td>
<td>Stock route corridor comprising flat back plain country. Incorporates sandy plain, extent of black soil gilgai and riparian corridor at Caragabal Creek.</td>
<td>17</td>
</tr>
<tr>
<td>Lynches Road</td>
<td>NW</td>
<td>Broad road verge. Incorporates plain and gently undulating country.</td>
<td>4</td>
</tr>
<tr>
<td>Eves Lane</td>
<td>NW</td>
<td>Broad road verge. Incorporates plain and gently undulating country.</td>
<td>2</td>
</tr>
<tr>
<td>Mid Western Highway</td>
<td>NW</td>
<td>Broad road verge. Gently undulating country.</td>
<td>2</td>
</tr>
<tr>
<td>Alexanders Lane</td>
<td>NE</td>
<td>Stock route corridor (near Mulyandry SF on Red Creek). Plain country incorporating back plain and creek line zones.</td>
<td>4</td>
</tr>
<tr>
<td>Garema</td>
<td>NW</td>
<td>Stock route corridor. Incorporates back plain and two riparian zones (Ooma and Pinnacle Creeks).</td>
<td>6</td>
</tr>
<tr>
<td>Wheoga</td>
<td>NW</td>
<td>Stock route corridor. Incorporates plain, basal slopes of Wheoga Range and a creekline.</td>
<td>5</td>
</tr>
<tr>
<td>Yarralea</td>
<td>NW</td>
<td>Stock route corridor. Incorporates slightly undulating back country and creek corridor flats on edge of gilgai zone.</td>
<td>3</td>
</tr>
<tr>
<td>Bribbarree Hills</td>
<td>SE</td>
<td>Stock route corridor. Incorporates a cross section of back plain in the vicinity of the Bribbarree Hills.</td>
<td>4</td>
</tr>
<tr>
<td>Weedallion</td>
<td>SW</td>
<td>Stock route corridor. Incorporates gently undulating back country with some pronounced drainage lines emanating from Weedallion Mountain.</td>
<td>6</td>
</tr>
<tr>
<td>Bimbi State Forest</td>
<td>NW</td>
<td>Forestry track just west of Weddin. Incorporates a section of back plain on edge of gilgai, a permanent spring and a length of ephemeral creekline.</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 5.3: Summary of linear transects routes, Plains and Slopes.
<table>
<thead>
<tr>
<th>Name</th>
<th>Quadrant</th>
<th>Description</th>
<th>Area (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marsden</td>
<td>NW</td>
<td>Travelling stock reserve straddling east and west banks of Bland Creek</td>
<td>3000</td>
</tr>
<tr>
<td>Williams Crossing</td>
<td>SW</td>
<td>Travelling stock reserve straddling Bland Creek</td>
<td>1000</td>
</tr>
<tr>
<td>Burrangong Creek</td>
<td>SW</td>
<td>Travelling stock reserve straddling Burrangong Creek</td>
<td>1500</td>
</tr>
<tr>
<td>Emu Creek</td>
<td>SE</td>
<td>Travelling stock reserve straddling Emu Creek</td>
<td>600</td>
</tr>
<tr>
<td>Thurundle Bridge</td>
<td>NE</td>
<td>Travelling stock reserve straddling Ooma Creek</td>
<td>1200</td>
</tr>
<tr>
<td>Bimbi</td>
<td>SW</td>
<td>Travelling stock reserve straddling Burrangong Creek</td>
<td>400</td>
</tr>
<tr>
<td>Thuddungra</td>
<td>SE</td>
<td>Extensive roadside exposure on plain overlooking Bribbaree Creek</td>
<td>300</td>
</tr>
<tr>
<td>Driftway</td>
<td>NE</td>
<td>Extensive roadside exposure on bank of Ooma Creek</td>
<td>200</td>
</tr>
<tr>
<td>Brundah Creek</td>
<td>SE</td>
<td>Extensive roadside exposure, riparian zone on Gerrybang Road - good exposure.</td>
<td>500</td>
</tr>
<tr>
<td>Ooma Creek</td>
<td>NE</td>
<td>Extensive roadside exposure on creek crossing</td>
<td>1000</td>
</tr>
<tr>
<td>Bribbaree Creek</td>
<td>SW</td>
<td>Crossing on main road to Bribbaree</td>
<td>1200</td>
</tr>
<tr>
<td>Grimms Lane</td>
<td>SW</td>
<td>Exposure zone near Bimbi/Burrangong Creek</td>
<td>500</td>
</tr>
<tr>
<td>German Hill</td>
<td>NW</td>
<td>Large exposure area on hill in middle of back plain</td>
<td>2000</td>
</tr>
<tr>
<td>Ironbarks</td>
<td>NW</td>
<td>Extensive exposure in gently undulating country overlooking creekline, edge of gilgai zone</td>
<td>2500</td>
</tr>
<tr>
<td>Wirrinya</td>
<td>NW</td>
<td>Skeletal soil exposure in slightly undulating back country</td>
<td>600</td>
</tr>
<tr>
<td>Currawong</td>
<td>SW</td>
<td>Back country plain ploughed paddock on private property near the Weddin</td>
<td>10 000</td>
</tr>
</tbody>
</table>

Table 5.4: Summary of spot survey locations, Plains and Slopes.
The positions of these survey routes and locations relative to the Weddin Mountains are shown in Figure 5.2.

**The Weddin Mountains**

Systematic survey was undertaken within all readily accessible parts of the Weddin Mountains, including the flanks of the range and components of the mountain interior.

In addition to opportunistic field survey within the National Park and surrounding State Forests, two adjacent properties, *Currawong* and *Kumbundra*, were visited and collections known to have come only from these properties were inspected.

Unlike The Levels and country to the east of the range, survey of the Weddins was not restricted by access. As it falls within National Parks estate, a Class 'A' research permit was granted by Parks for this project, the entire mountains zone was open to full accession by survey teams. However, the issue of archaeological visibility constituted a major *caveat* throughout much of this field work component. The nature of available exposure providing effective archaeological visibility varied in step with the two principal units into which the mountains were demarcated for the purpose of survey.

**Mountain flanks**

As a landscape and survey designation, the 'mountain flanks' were deemed to be the topographic units occurring within one kilometre downslope of, or outwards from the major break of gradient signifying the uplift and outcropping of the mountain range 'proper'. The interface distinction was not difficult to define in the field, given the tendency for the range's geology to form abrupt, steep to very steep slopes (including screes), often in association with sandstone escarpments. In the majority of cases, the flanks of the mountains comprise complexes of broad flats, sections of plain and adjacent low gradient
Figure 5.2: Location of linear, block and spot surveys, Weddin Mountains Region.
talus slopes situated at the edges of major slope features and at the mouths of the more substantial gullies.

In terms of surface visibility, mountain flank locations vary from very well vegetated with grass, *Acacia* scrub and woodland, to extensive areas of bare, gravelly soil, often substantially effected by sheet and gully erosion. While bare and eroded surfaces are a natural attribute of the range's highly permeable thin soils (King 1998: 50), these characteristics were found to be exacerbated in grazed and/or cultivated areas outside the Park boundaries, where surface visibility was frequently excellent across extensive areas. In the comparatively better vegetated areas within the Park and adjacent state forest, high levels of visibility were provided by systems of management trails, extensive and well worn animal tracks, and Park visitor infrastructure (camp grounds, carparks, walking trails).

Mountain flank survey routes are shown in Figure 5.3 and details are given in Table 5.5. In most cases, effective survey coverage was found to be acceptably high with good coverage of most accessible flank areas being achieved. The only exception to this outcome is the central-eastern mountain flank between Holy Camp and Weddin Gap, an extent of approximately 5 km. Survey of this area was not possible as it is very rugged with no trails of any kind.

_Mountain interior_

In general, the 'mountain interior' incorporates all mountain areas above the 380 m contour including the slope features (usually quite steep) and the associated cliffs and escarpments which define the boundaries of the range in terms of gradient and visual impact, and the spurlines, ridgelines, peaks, flats, saddles, drainage lines and gullies occurring as elevated topographic features and/or internal components of the Weddin Mountains uplift.
Figure 5.3: Archaeological survey routes undertaken in the Weddin Mountains.
<table>
<thead>
<tr>
<th>Mountain survey trajectory</th>
<th>Survey unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seatons Farm</td>
<td>FNW</td>
<td>Block survey of flats and creek banks beneath north west gullies</td>
</tr>
<tr>
<td>Northern Base</td>
<td>FNW</td>
<td>Contour-linear survey of flanks below northern cliffs</td>
</tr>
<tr>
<td>Bimbi State Forest</td>
<td>FNW</td>
<td>Linear survey of fire trail flanking edge of national park</td>
</tr>
<tr>
<td>Central Base</td>
<td>FCW</td>
<td>Contour-linear survey of flanks below central slopes</td>
</tr>
<tr>
<td>Northern Currawong</td>
<td>FCW</td>
<td>Block survey of flats and creek bank at entrance to Wentworth Gully</td>
</tr>
<tr>
<td>South Fire Trail</td>
<td>FSW</td>
<td>Linear survey of footslopes, creek banks and flats below range and at gully mouths</td>
</tr>
<tr>
<td>Weddin State Forest</td>
<td>FSW</td>
<td>Linear survey of flats and creek banks flanking range</td>
</tr>
<tr>
<td>North East Fire Trail</td>
<td>FNE</td>
<td>Linear survey of flats, slopes and creek banks below cliffs</td>
</tr>
<tr>
<td>Holy Camp</td>
<td>FNE</td>
<td>Block survey of foot slopes and flats beneath cliffs</td>
</tr>
<tr>
<td>Weddin Gap Road East</td>
<td>FSE</td>
<td>Contour-linear survey of slopes, flats and creek banks on mountain flanks</td>
</tr>
<tr>
<td>Small Basin Gully</td>
<td>MTN</td>
<td>Contour survey of gully bottom, sides, margins and creek terraces</td>
</tr>
<tr>
<td>Basin Gully</td>
<td>MTN</td>
<td>Contour survey of gully bottom, sides, margins and creek terraces</td>
</tr>
<tr>
<td>Black Gin Gully</td>
<td>MTN</td>
<td>Contour survey of gully bottom, sides, margins, creek terraces and mountain top</td>
</tr>
<tr>
<td>Northern Cliffs</td>
<td>MTN</td>
<td>Survey of cliffs, mountain top and creek bank</td>
</tr>
<tr>
<td>Eualdrie</td>
<td>MTN</td>
<td>Survey of mountain top and highest northern summits</td>
</tr>
<tr>
<td>Ben Halls Cave</td>
<td>MTN</td>
<td>Survey of cliffs, slopes, spur tops and creek banks on mountain top</td>
</tr>
<tr>
<td>Shingle Gully</td>
<td>MTC</td>
<td>Contour-linear survey of gully, cliffs, spurs, slopes and summits on mountain top</td>
</tr>
<tr>
<td>Wentworth Gully</td>
<td>MTC</td>
<td>Contour survey of gully bottom, sides, margins and creek terraces</td>
</tr>
<tr>
<td>Guinea Hen Gully</td>
<td>MTC</td>
<td>Contour survey of gully bottom, sides, margins and creek terraces</td>
</tr>
<tr>
<td>Weddin Gap</td>
<td>MTS</td>
<td>Linear survey of slopes, spurs, saddle and flats on mountain top</td>
</tr>
<tr>
<td>Black Spring Mountain</td>
<td>MTS</td>
<td>Linear survey of slopes, spur and highest southern summit</td>
</tr>
<tr>
<td>Bows Gully</td>
<td>MTS</td>
<td>Contour survey of gully bottom, sides, margins and creek terraces</td>
</tr>
<tr>
<td>Black Spring Gully</td>
<td>MTS</td>
<td>Contour survey of gully bottom, sides, margins and creek terraces</td>
</tr>
<tr>
<td>Weddin Mountain</td>
<td>MTS</td>
<td>Gully survey, contour survey of mountain top slopes, spurs, flats and summit of Weddin Mountain</td>
</tr>
<tr>
<td>Donkey Gully</td>
<td>MTS</td>
<td>Contour survey of gully bottom, sides, margins and creek terraces</td>
</tr>
</tbody>
</table>

Table 5.5: General description of Mountain survey trajectories.
Four wheel drive roading, a major 'window' of surface visibility utilised on the mountain flanks, is restricted to a fire trail that bisects the range at Weddin Gap and a connecting trail leading from the top of Weddin Gap to Black Spring Mountain in the range's south. A well worn walking trail connecting Holy Camp with Eualdrie Peak also provides some access in the far north. While affording uniformly excellent archaeological exposure, the road and trail network penetrates into only limited sections of the mountain interior. Natural surface exposure typically afforded by animal tracks and the highly erodable thin soils were therefore targeted as the major alternatives for surface survey coverage and a variety of unroaded bush routes was subsequently traversed on foot (Figure 5.3). These routes included coverage on ridges and spurlines, plateau locations, mountain peaks, flats and most of the range's major gullies. However, although the largely skeletal, easily erodable soils of the interior's more Table 5.5 exposed and elevated points were found to occasionally provide acceptable levels of archaeological visibility, this factor was negated to a substantial degree by the combination of thick scrubby vegetation and surface obscurement by dry leaf litter. In turn, the visibility on most elevated flats and alluvial terraces also proved to be very low due to the comparatively thicker soils and grassy cover evident at these locations. In order to address the problem of surface visibility within the mountains, a limited test pitting program was undertaken in the range's interior.

Extrusive survey mediums, specifically cliffs, escarpments, rocky creek beds and substantial outcrops, presented problems only in the nature of their immediate accessibility. In this respect, locations, such as the tall vertical escarpments on the lower reaches of Basin and Black Gin Gullies and the cliff lines at the range's far northern extremity were found to be quite difficult to inspect due to their elevation, the precipitous local terrain and very thick brushy growth. Some areas, such as the expansive multiple escarpments and screes directly below Black Spring Mountain and Weddin Mountain, are extraordinarily rugged and were impossible to survey adequately within the available time frame. Despite this, in
the majority of cases, close examination of promising rock formations and outcrops was achieved and it was possible to incorporate an extensive search component for potential rockshelter sites and grinding grooves into the survey. Examination of the interior for these site types included most of the largest gullies and major escarpments along the range's northern and western sides.

**Mountain survey and analysis units**

For the purpose of maintaining a control on the spatial distribution of any archaeological material discovered throughout the mountains, the Weddin Range was divided into 9 survey and analysis units according to areas of the flanks and mountain interior (Figure 5.4). A general description of unit boundaries is given in Table 5.6.

<table>
<thead>
<tr>
<th>Mountain unit</th>
<th>Delineation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNW</td>
<td>Mountain flank zones north of Shingle Gully and extending to the northern point of the range.</td>
</tr>
<tr>
<td>FCW</td>
<td>Mountain flank zones between Shingle Gully and Weddin Gap.</td>
</tr>
<tr>
<td>FSW</td>
<td>Mountain flank zones between Weddin Gap and the eastern most point of the range.</td>
</tr>
<tr>
<td>FNE</td>
<td>Mountain flank zones between approximate alignment with Wentworth Gully and the northernmost point of the range.</td>
</tr>
<tr>
<td>FCE</td>
<td>Mountain flank zones between approximate alignment with Wentworth Gully and Weddin Gap.</td>
</tr>
<tr>
<td>FSE</td>
<td>Mountain flank zones south of Weddin Gap and extending as far as the eastern most point of the range.</td>
</tr>
<tr>
<td>MTN</td>
<td>The elevated country north of and including Black Gin Gully. Includes Small Basin gully, Basin Gully, Black Gin Gully and Eualdrie Mountain.</td>
</tr>
<tr>
<td>MTS</td>
<td>The elevated country to the south and south east of Weddin Gap. Includes Green Gully, Black Spring Gully, Bow's Gully, Mill Gully, Donkey Gully, Spring Gully, Black Spring Mountain and Weddin Mountain.</td>
</tr>
</tbody>
</table>

Table 5.6: Mountain survey and analysis units and their geographic boundaries.
Figure 5.4: Division of the Weddin Mountains into Flank and Interior survey units.
While the exact division of these units is based on arbitrary boundaries, the methodology gives scope for the provision of data which may be analysed for any archaeological variation which may be present around or along the range.

**Archaeological test pitting**

The survey of the interior of the Weddin Mountains produced only a small number of sites and it was decided to improve knowledge of the mountain’s archaeology by conducting a series of test pit excavations.

In most cases, archaeological test pitting is undertaken as a method of investigating a known site's possible sub-surface extent and/or as a method of salvaging artefacts in the face of possible destruction or high disturbance (for example, Clark 1977; Officer 1998; Shawcross and Hope 1997; Witter 1981). In recent years, this methodology has been extended to encompass the testing of deposits for the presence or absence of artefacts in locations deemed to have high archaeological potential but exhibiting no surface artefacts. Such locations have been dubbed PADs (potential archaeological deposits) and typically include well drained, near level locations close to water sources and with an acceptable depth of undisturbed deposit; they include creek banks, flats and basal slopes in more open country and saddles, broad ridge tops and shoulders in mountainous terrain. They may also include the earthy floors of promising rock shelters or caves. While the obvious high archaeological potential of rock shelter or cave PADs speaks for itself, such locations tend to be obvious and proven landscape foci for spatially concentrated hunter-gatherer activity (eg. Vinnicombe 1980), the merit of testing deposits at high potential open air locations for the presence of sub-surface archaeology has also been demonstrated. This has included the digging of series of both shovel probes and 1 m squares in mountainous terrain (eg. Kamminga et al 1989), slopes country (eg. Bonhomme 1986) and plains (eg. Officer et al 1998). Precedents, such as these, suggest the validity of utilising test pitting as an avenue of
archaeological investigation in the Weddin Mountains where comparative open air PAD locations would be expected to be well defined and spatially concise within the mainly rugged surrounds.

It was intended that the test pitting exercise in Weddin's interior would serve as an investigation of the following factors;
- to test for both the presence or absence of stone artefacts in the mountains' interior through overcoming problems associated with the generally very low archaeological visibility evident along the top of the range.
- to provide an effective archaeological sampling of mountain interior landscape toposquence features, additional to those already sampled through surface survey where acceptable visibility was previously encountered. In this respect, certain parts of the landscape with typically low surface visibility, for instance creek banks and grassy flats, could be ultimately compared for their archaeological content with features exhibiting comparatively better visibility (for instance skeletal peaks and ridge tops) in a less biased fashion.
- to provide, if successful, a numerically expanded body of information on the relatively small pre-existing database of the mountain top stone artefact assemblage.

Geographic scale of the sub-surface sampling

At an ideal level, the exercise was intended to provide an evenly dispersed spread of sample points across the entire top of the range. The basic archaeological nature of both the sample locations, that is, the material targeted for location and recovery, was intended to parallel as closely as possible that already recorded at open sites in and around the range, that is primarily stone artefacts deposited in an open air environment.
Accessing units and selection of sample points

In theory, the top of the range is accessible via a system of spurs, ridgelines and long gullies. Based on this premise, it was initially intended to utilise all such available entry points to the range as appropriate. However, previous attempts at mountain top survey had revealed that, due to exceedingly thick coverage of the ridges and spurs by *Acacia*, *Allocasuarina*, and *Callitris* regrowth, the only truly practical method of penetrating through to the most elevated parts of the Weddins was by following the western gullies to their highest reaches. In this manner, certain pre-determined broad target zones were reached and where practical, suitable locations within these were selected as sample points.

The target zones had been identified at various locations throughout the range where hunter-gatherer activity conducive to site formation was deemed most likely to have occurred. Following the findings of various archaeological surveys in heavily vegetated, mountainous terrain elsewhere in south east New South Wales (eg. Byrne 1981; Grinberg and Knight 1995; Knight 1996), such zones are most likely to include flat or gently sloping surfaces on confined elevated points (peaks, shoulders, knolls), topographic 'routeways' (sizeable gullies, ridge tops, spurs, saddles) and reasonably close to potential water sources (creek banks).

On the basis of these prerequisites, 14 target zones were accessed for potential test pitting (Table 5.7). The location of these is shown in Figure 5.5. As is evident in Table 5.7, some were not test pitted, due either to the discovery of open artefact scatters in the areas during the exercise, or the universal unsuitability of the zone because of its heavy vegetative cover and/or lack of deposit.

In total, fifteen test pits were dug at 11 sample points within various target zones in the Weddins' interior. All were excavated with shovel and/or hand trowel and the deposit
Figure 5.5: Test pit target zones, Weddin Mountain Interior.
<table>
<thead>
<tr>
<th>Mountain target zone</th>
<th>Description</th>
<th>Test pits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Plateau location, upper reaches of Small Basin Gully Creek</td>
<td>single 1 m square on stream terrace</td>
</tr>
<tr>
<td>2</td>
<td>Middle reaches of Basin Gully</td>
<td>single test trench in rock shelter</td>
</tr>
<tr>
<td>3</td>
<td>Plateau location, upper reaches of Small Basin Gully Creek</td>
<td>open artefact scatter found at location</td>
</tr>
<tr>
<td>4</td>
<td>Broad peak on ridgeline separating Basin and Black Gin Gullies</td>
<td>single test trench at foot of scarp on shoulder feature</td>
</tr>
<tr>
<td>5</td>
<td>Summit of Eualdrie</td>
<td>single 1 m square test pit</td>
</tr>
<tr>
<td>6</td>
<td>Broad saddle/gap, upper reaches of Black Gin Gully Creek</td>
<td>single 1 m square test pit</td>
</tr>
<tr>
<td>7</td>
<td>Upper reaches of Wentworth Gully</td>
<td>single test trench at foot of scarp on shoulder feature</td>
</tr>
<tr>
<td>8</td>
<td>Upper middle reaches of Guinea Hen Gully</td>
<td>open artefact scatter recorded on creek terrace</td>
</tr>
<tr>
<td>9</td>
<td>Broad saddle, upper reaches of Guinea Hen Gully Creek</td>
<td>single 1 m square test pit on stream bank</td>
</tr>
<tr>
<td>10</td>
<td>Saddle on ridgeline separating Bows Gully and Mill Gully</td>
<td>not test pitted due to universal coverage by thick vegetation</td>
</tr>
<tr>
<td>11</td>
<td>Flat, head of Bows Gully</td>
<td>four 1 m square test pits on flat and creek terrace</td>
</tr>
<tr>
<td>12</td>
<td>Broad saddle between unnamed peak and Weddin Mountain at head of Mill Gully</td>
<td>not test pitted due to thick vegetative cover</td>
</tr>
<tr>
<td>13</td>
<td>Summit of Weddin Mountain</td>
<td>not test pitted due to lack of deposit</td>
</tr>
<tr>
<td>14</td>
<td>Upper reaches of Donkey Gully</td>
<td>series of shovel probes on creek terrace and spur top</td>
</tr>
</tbody>
</table>

**Table 5.7:** Location and general description of Mountain Interior locations targeted for test pitting.
passed through 9 mm and 5 mm sieves. It was discovered that only certain small scale features within specific broader landforms offered suitable conditions for sampling. Stream terraces within major gullies or on plateaus and near flat surfaces within the drainage amphitheatres found at the heads of certain gullies (usually located within broad saddles) were the most suitable while restricted shoulders or flats on peaks were only adequate sample points. Ridgelines and spurs were found to offer very little, if any, combinations of deposit and openness. These restrictions fit well within the scope of the exercise aims as the locations found to offer best sample potential were also those most in need of archaeological resolution. The pits are described in Appendix I.

Site and artefact recording

The potential shortcomings of arbitrarily defining ‘sites’ and attributing specific modes of hunter-gatherer behaviour to these entities have long been recognised in archaeological studies (eg. Cherry and Shennan 1978: 17; Binford 1980; Ebert 1992: 17). An area of concern is the manner in which potentially false, singular function is often assigned to diverse accumulations of material which may, in reality, be the result of various activities, or alternatively be only partially representative of true archaeological extent and content.

An alternative approach has been to remove the interpretative focus from the concept of the site to the artefact. Utilising an ‘off-site’ archaeological approach, Foley (1981) has measured differential hunter-gatherer use of environments by analysing the density of artefacts, rather than quantities of sites, for each environment. Comparable approaches have been used with some success in Australian studies where hunter-gatherer use of a range of environments at a landscape scale has been of concern (eg. Packard 1991; Hunt 1993; Grinberg and Knight 1996; Knight and Evans 1998).
However, such an approach requires either universally very high conditions of archaeological visibility across all areas to be surveyed, or implementation of a complex environmental and archaeological visibility ‘component’ recording system in order to identify and subsequently gain control over sample biases introduced by various limitations upon effective survey coverage (eg. Packard 1991). In light of this, it has been recognised that the site concept need not be altogether abandoned, provided clear definition of what is taken to constitute a site is given in light of specific research aims (cf Klaver 1998: 130-132; Faulkner 1999: 36).

Just as concentrations of artefacts set within lower densities of ‘background’ cultural material may conventionally be utilised in making inferences of prehistoric human behaviour (Plog et al 1978; Butzer 1982: 259; Smith 1995: 6), so may the incidence of artefacts in accordance with ‘windows’ of archaeological exposure within backgrounds of comparatively low visibility. On a landscape scale such as that represented by the study area, such occurrences, as revealed through sampling, can be taken as minimal indices of the local archaeology and subsequently basic reflections of hunter-gatherer presence and activity. Artefact finds, occurring either singly or as definable concentrations, are therefore viewed as potential components of a greater picture of Aboriginal landscape occupation (cf Klaver 1998: 135).

The site concept is therefore adopted in this study as a descriptive reference to a clearly discernible accumulation of stone artefacts or single artefact and/or other material, such as fired clay hearth material, Aboriginal scarred trees and stone arrangements, within a surficial background that otherwise may or may not provide comparable levels of archaeological visibility. In the case of multiple artefact clusters being found across a single exposure, a site is defined as 2 or more artefacts occurring within 50 m of each other, following the NSW NPWS procedures, whereas an artefact found 50 m or more from
another is termed an isolated find. The possibility that these sites may themselves constitute components of a larger, complex accumulation of artefacts spread over a broad area, is acknowledged.

Unless clearly linked with ethnologically defined roles, as may be stated for ceremonial grounds, function is not assigned to what are essentially fragmentary remains, such as eroded or disturbed artefact scatters. Rather, factors such as site description, location, distribution and content are taken to be useful in identifying patterns of hunter-gatherer settlement (cf Faulkner 1999). The major point recognised is that sites, such as artefact scatters, are, at the broadest level, residues of human behaviour and representative of some level of human activity, not necessarily being of a single purpose or mode. These forms of evidence may, in turn, be related to both the immediate and broader landscape settings in which they were found.

In addition to recording and analysis of their internal attributes, extracting meaning from sites requires a consideration of the characteristics of the landscape within which the archaeology is found. The central theme in this study is that the site is entirely dependant upon the landscape rather than incidental to it. As a result, site recording included characteristics of the physical landscape, what associations between sites and landform could be attributed and also what could be seen from sites and from where could the site be seen. Subsequently, data collection involved a multi-tiered approach, whereby emphasis was placed upon both local archaeological and basic environmental attributes. Examples of site recording forms used in the survey are shown in Appendix II.

**Recording Stone Artefacts**

The primary objective of acquiring data on lithic material was to investigate attributes that readily discernible in the field. For the sake of maintaining this level of
simplicity, recorded artefact variables included the following (see also Artefact Recording Form, Appendix II);

**Raw material type and colour:** from preliminary survey work in the area, it was expected that a range of stone types would be present, including chert, quartz, volcanic, silcrete and quartzite. Allowance was made for recording any other stone types encountered. Colour was regarded as extremely important as it constitutes both a means of identifying variation within a stone type and holds considerable potential to have been culturally significant.

**Artefact type:** these included flaked stone artefacts, manuports, formal tools, ceremonial stones and production tools.

Flaked stone artefacts were flakes, flaked pieces, blades, chips, flaked pebbles and cores. Flakes were defined by the presence of a platform and a bulb of percussion, whereas flaked pieces included those artefacts not possessing platforms or bulbs of percussion but which were obvious products of flaking activity. Chips were defined as small angular pieces devoid of other diagnostic features. Blades were identified as elongate flakes (typically twice as long as wide) with a dorsal ridge, this factor being indicative of deliberate core preparation. Cores were defined by the presence of a striking platform and one or more negative scars. The number of platforms and negative scars were recorded and allowance was made for noting whether these artefacts had been utilised in the production of blades, or were themselves the product of bipolar flaking. Bipolar cores were identified by the presence of opposing, crushed platforms. Flaked pebbles included examples that appeared to have been split or reduced by human agency.
Manuports were regarded as non-modified, exotic pieces of stone, typically river pebbles, the presence of which at a certain location could only be attributed to transport by hunter-gatherers.

Formal tools included a range of implements that are seen to have been manufactured for specific, generally utilitarian purposes. These include hatchets, scrapers, burren adzes, eloueras, grindstones, tulas and amorphous adzes.

Ceremonial stones include objects such as *tjurunga*, engraved stones, phallic stones and cylcons. These items were manufactured for specific ritual roles including repositories for spiritual power, educational use, transmission of sacred information between groups, invitation or instruction to attend initiation ceremonies, increase rites and grave markers. *Tjurunga*, or sacred totemic stones, are trimmed and ground flat stones that are smeared with pigment and may also display intricate engraved designs. These artefacts are most commonly associated with central Australian Aboriginal groups, although they have been reported for other parts of the continent (McCarthy 1976: 69-70). Engraved stones exhibit engraved motifs and incised lines. They are typically river pebbles, although hatchets may also be marked in this manner (McCarthy 1976: 66). Phallic stones were utilised in initiation and reproductive ceremonies and vary in length from 50 mm to 900 mm (McCourt 1975: 148-149; McCarthy 1976: 71). They are cylindrical or bi-convex in shape and most commonly resemble a circumcised penis (McCarthy 1976: 71). Cylcons, or cylindro-conical stones, are cylindrical in shape, tapering to a pointed or rounded distal end. They may be made from a variety of stone types and were manufactured through a process of flaking, pecking, grinding and polishing (Hamm 1987: 18). Some examples exhibit engraved surfaces, with forms such as lines, animal tracks, circles and rings (Black 1942: 15; McCarthy 1976: 66). The meaning and function of cylcons is essentially unknown, although McCarthy (1976: 67-68) suggests that they may have paralleled the significance
of the tjurunga of central Australia. Historical accounts also state the use of certain ‘magic’ stones in ritual practices such as rain making and funerary ceremonies (eg. Bowler 1902; Garnsey 1946). However, beyond simple description as ritual objects, these artefacts are not described in any detail. As such, these stones may have been readily identifiable artefacts such as engraved stones or cylcons, or unaltered amorphous objects, such as river pebbles, which could easily be interpreted in the field as simple manuports.

Production tools include hammerstones and anvils. Generally used in percussion or bipolar flaking, these implements exhibit damage to their surfaces and margins, typically pitting and occasional flaking, as a result of repeated impact with stone surfaces. Anvils, often slabs of tabular stone or river pebbles, may display particularly concentrated pitting in the centres of their surfaces and scarring on their margins as a result of wedging.

Retouch and/or use wear: any evidence of invasive flaking suggestive of artefact edge use or curation of sharp edges on flakes or implements was noted. Depending upon extent, these attributes were recorded as either ‘present’ or ‘extensive’.

Cortex: presence of reef or water worn cortex was noted for all artefacts, expressed as a percentage of artefact surface.

Number of platforms/negative scars: the number of platforms and negative scars was recorded for all cores. Number of negative scars were also recorded for flakes.

Artefact dimensions: length, width and thickness was recorded in millimetres. Dimensions were recorded for all artefacts except chips.
Chapter 6

ARCHAEOLOGICAL SURVEY RESULTS AND ANALYSIS

A total of 221 Aboriginal sites was recorded for the study area as a whole which includes all sites located during surface survey, the test pitting exercise and visitation of known sites on the properties Currawong and Kumbundra (Appendix III). Of these, 88 were located in the Weddin Mountains and the remainder in the surrounding Plains and Slopes.

<table>
<thead>
<tr>
<th>Survey quadrant</th>
<th>Isolated artefacts</th>
<th>Artefact scatters</th>
<th>Shelters with artefacts</th>
<th>Stone arrangements</th>
<th>Scarred trees</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW</td>
<td>20</td>
<td>38</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>65</td>
</tr>
<tr>
<td>SW</td>
<td>9</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>NE</td>
<td>4</td>
<td>21</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>SE</td>
<td>0</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Weddin Mtns</td>
<td>17</td>
<td>67</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>88</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>157</td>
<td>3</td>
<td>1</td>
<td>10</td>
<td>221</td>
</tr>
</tbody>
</table>

**Table 6.1:** Numbers of sites recorded within the study area according to each Plains and Slopes survey quadrant and the Weddin Mountains.

Over 72% of the recorded sites are open artefact scatters, whilst a further 23% are isolated finds. The remaining 5% of sites are made up of scarred trees with only 10 examples found, mainly on plains to the west of Weddin, 3 rock shelters found on the mountain itself and a single stone arrangement site on the property Kumbundra.
In this chapter, the sites discovered during the survey are described and analysed in terms of their type, size and their landform spatial associations.

**The Weddin Mountains**

Eighty two archaeological sites were discovered in and around the Weddin Mountains as a result of surface survey. These sites include 64 artefact scatters, 16 isolated artefact finds and 2 rock shelters with surface artefacts. In addition, an Aboriginal ceremonial ground and a collection of locally collected stone artefacts were also recorded on the property *Kumbundra* on the range's central western flank. The details of this site and the associated collection are discussed later in this section.

Recorded sites were found in both mountain flank and interior contexts, although these occurrences were far from uniform in terms of distribution (Table 6.2).

<table>
<thead>
<tr>
<th>Mountain zone</th>
<th>Isolated artefacts</th>
<th>Artefact scatters</th>
<th>Stone arrangements</th>
<th>Shelters with artefacts</th>
<th>Total sites for each zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNW</td>
<td>3</td>
<td>18</td>
<td>-</td>
<td>-</td>
<td>21</td>
</tr>
<tr>
<td>FCW</td>
<td>4</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>FSW</td>
<td>1</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>12</td>
</tr>
<tr>
<td>FNE</td>
<td>2</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>13</td>
</tr>
<tr>
<td>FSE</td>
<td>1</td>
<td>9</td>
<td>-</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>MTN</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>MTC</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>MTS</td>
<td>4</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Totals</td>
<td>17</td>
<td>67</td>
<td>1</td>
<td>3</td>
<td>88</td>
</tr>
</tbody>
</table>

Table 6.2: Archaeological site types recorded in and around the Weddin Mountains by surface survey and excavation.

Most sites (77%) were found on the flanks of the mountains, with the greatest number being found in the FNW unit (24%). The mountain interior accounts for only 23% of sites.
While sites are apparent in all mountain interior units, the highest incidence is in the MTS unit, with 50% of interior sites, all but 1 occurring in the saddle at Weddin Gap. The remaining site recorded in the MTS unit was an isolated artefact on Black Spring Mountain (WW21). Apart from this site, no archaeological finds were made in the mountain interior south of Weddin Gap.

In certain cases, the variation in site frequency may be largely attributable to the non-uniform conditions of exposure and visibility discussed in the preceding section. This explanation may be particularly appropriate in the case of mountain top units where, in many instances, very little surface exposure was encountered, for example, the northern and central mountain interior units and areas of the far southern mountain interior such as the top and sides of Weddin Mountain itself. Archaeological finds were in the main restricted to two general forms of exposure in the mountain interior: certain types of skeletal surfaces and the surface of the graded fire trail at Weddin Gap and on the side of Black Spring Mountain.

Skeletal surfaces were found to comprise a considerable proportion of the mountain interior with the prime determinant on visibility being thin layers of leaf litter and some scrubby growth. In the main, these surfaces provided good archaeological visibility but only yielded archaeological finds in the case of drainage line terraces and other relatively level locations at the heads of major gullies. Conversely, all other topographic features effectively surveyed via comparable surfaces, low gradient slopes, spur tops and peaks, failed to produce any archaeological material.

Topographic locations exhibiting comparatively thick soils and/or thick humic upper layers, included saddles, stream terraces and flats or elevated meadows. Upon inspection in the field, most, if not all, of these areas were deemed to possess high archaeological potential
due to their gentle gradient, open nature and well drained soils. However, as mentioned, these locations only exhibited artefacts where exposure had been afforded through the grading of the Weddin Gap Fire Trail to depths of between approximately 10 and 30 cm. In all other instances, the extremely low surface visibility afforded due to grassy cover and/or the thickness of the soil itself appeared to provide a plausible potential explanation for the lack of archaeological finds at these points. This issue was further investigated through the implementation of the test pitting program across the top of the range.

In the case of the mountain flanks, the apparent bias in site occurrence, particularly the concentration of sites at the north-western mountain boundary, is less readily explained through issues of archaeological exposure and visibility as survey opportunity was universally quite high across all flank units. While the majority of sites were found along graded property, forestry and fire management trails, the considerable exposure provided by lower slope skeletal surfaces, such as talus formations and areas subject to extensive sheet wash, also yielded archaeological material. Various combinations of these exposure types were evident throughout the mountain flanks, although best conditions for archaeological survey were experienced within the eastern units, where graded trail exposures are supplemented by very extensive skeletal surfaces. With this factor in mind, it is highly possible that the increased number of artefact scatter sites noted on the flats and lower slopes around the mouths of Basin and Black Gin Gullies at the north-west unit is reflective of prehistoric hunter-gatherer activity rather than conditions of archaeological visibility.

Despite the tendency for the local geology to form overhangs and occasional cavernously weathered features suitable for Aboriginal use, only two rock shelters in the mountains were found to exhibit surface artefacts. This includes a small shelter in Basin Gully (BG1) at the range’s northern end and a shelter at the range’s south east near Weddin Gap (Gap 1). In
the case of site BG1, a single artefact was found to be exposed in floor deposit eroded by an internal dripline. The shelter at site Gap 1 is situated adjacent to a small, permanent spring and contains deposit which has been partially disturbed by recent human and animal activity. Two stone artefacts were evident on the surface at this site. Shelters with high archaeological potential, though devoid of surface artefacts, were noted at various other locations, including outstanding examples in Basin Gully and Guinea Hen Gully. Subsequent excavation of a test trench (WTPN 2) at the former, an outstanding cavernously weathered shelter overlooking a steep drainage line, revealed that archaeological material was present in the shelter deposit.

No evidence of the Aboriginal rock art reputed to exist in the mountains was discovered during the course of survey. As already mentioned, pigment art has been reported to occur in two local cave sites, one in Basin Gully at the north west and one at a concealed, and otherwise, unknown location on the range’s south east. Considerable effort was made to relocate the Basin Gully site through systematic contour survey of all areas of cliff line and escarpment without success. As a result of time constraints and the difficult nature of the country in the south east, no systematic search for the latter site was possible. This does not preclude the possibility that these sites exist or have existed at some time in the recent past.

The gully topography in Basin Gully is steep and heavily vegetated and it is possible that the low entrance to the cave containing art was missed. There is also considerable potential for this gallery to have been destroyed as a result of feral goat activity in the area. However, several well concealed caves in this area matching the description of the art site were located and investigated, but in all cases it was found that all panels with the highest potential for art had been heavily rubbed and discoloured by generations of goats taking shelter within them. The art site reported at the southeastern end of the range may continue
A total of 11 locations were sampled by test pit excavation in order to determine whether a sub-surface archaeology existed and in some cases to discover whether artefacts were present in areas where ground visibility was poor. The location of the 11 sample points are given in Table 6.3. All were located on the forest floor except one location in a rock shelter (WTPN2) (Plates 6.1 and 6.2).

<table>
<thead>
<tr>
<th>Test pit no/s</th>
<th>Mountain unit</th>
<th>Mountain location</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTPN 5</td>
<td>MTN</td>
<td>Plateau location, upper reaches of Small Basin Gully Creek</td>
</tr>
<tr>
<td>WTPN 2</td>
<td>MTN</td>
<td>Middle reaches of Basin Gully</td>
</tr>
<tr>
<td>WTPN 1</td>
<td>MTN</td>
<td>Broad peak on ridgeline separating Basin and Black Gin Gullies</td>
</tr>
<tr>
<td>WTPN 4</td>
<td>MTN</td>
<td>Summit of Eualdrie</td>
</tr>
<tr>
<td>WTPN 3</td>
<td>MTN</td>
<td>Broad saddle/gap, upper reaches of Black Gin Gully Creek</td>
</tr>
<tr>
<td>WTPC 1</td>
<td>MTC</td>
<td>Upper reaches of Wentworth Gully</td>
</tr>
<tr>
<td>WTPC 2</td>
<td>MTC</td>
<td>Upper reaches of Wentworth Gully</td>
</tr>
<tr>
<td>WTPC 3</td>
<td>MTC</td>
<td>Broad saddle, upper reaches of Guinea Hen Gully Creek</td>
</tr>
<tr>
<td>WTPS 1(a-d)</td>
<td>MTS</td>
<td>Flat, head of Bows Gully</td>
</tr>
<tr>
<td>WTPS 2</td>
<td>MTS</td>
<td>Upper reaches of Donkey Gully</td>
</tr>
</tbody>
</table>

**Table 6.3:** Locations of mountain test pit sample points.

The results were variable in that only 4 pits revealed any archaeological deposit in the form of stone artefacts (Table 6.4, Appendix I). In the majority of cases, certain places thought extremely favourable, including summits of large mountains, creek terraces, flats and spur tops, proved negative.
Plate 6.1: Basin Gully Rockshelter site, viewed from drainage line.

Plate 6.2: Basin Gully Rockshelter site.
Sub-surface artefacts were found only in pits excavated in the North and Central units of the mountains and include 3 open locations and one rock shelter. These finds were made at 2 creek terraces (WTPC 1 and WTPC 3), a mountain top flat (WTPN 3) and a rock shelter in Basin Gully (WTPN 2).

Archaeological material was found at depths of between 10 and 35 cm below the surface and consisted chiefly of stone artefacts, although Aboriginal hearth material (charcoal) was evident at the rock shelter site. Artefacts at the open locations were all found at depths of 20 to 35 cm and were associated with geomorphic interfaces between compacted and/or leached sediments and overlying lighter textured soils with a higher humic content. The artefacts at the open sites included flakes, flaked pieces, chips, a core and 2 backed blades, manufactured from chert, volcanic and quartz.

<table>
<thead>
<tr>
<th>Test pit</th>
<th>Trench/pit size (cm)</th>
<th>Mountain unit</th>
<th>Location</th>
<th>No of. artefacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTPN1</td>
<td>200 x 20 x 20</td>
<td>MTN</td>
<td>flat at base of scarp</td>
<td>0</td>
</tr>
<tr>
<td>WTPN2</td>
<td>170 x 30 x 20</td>
<td>MTN</td>
<td>rock shelter in gully</td>
<td>19</td>
</tr>
<tr>
<td>WTPN3</td>
<td>100 x 100 x 35</td>
<td>MTN</td>
<td>flat, head of gully</td>
<td>20</td>
</tr>
<tr>
<td>WTPN4</td>
<td>100 x 100 x 35</td>
<td>MTN</td>
<td>mountain peak</td>
<td>0</td>
</tr>
<tr>
<td>WTPN5</td>
<td>100 x 100 x 70</td>
<td>MTN</td>
<td>creek terrace</td>
<td>0</td>
</tr>
<tr>
<td>WTPC1</td>
<td>100 x 100 x 35</td>
<td>MTC</td>
<td>creek terrace</td>
<td>1</td>
</tr>
<tr>
<td>WTPC2</td>
<td>seven 30 x 30 x 40 shovel probes</td>
<td>MTC</td>
<td>creek terrace</td>
<td>0</td>
</tr>
<tr>
<td>WTPC3</td>
<td>150 x 100 x 30</td>
<td>MTC</td>
<td>creek terrace</td>
<td>7</td>
</tr>
<tr>
<td>WTPS1 (a)</td>
<td>100 x 100 x 40</td>
<td>MTS</td>
<td>flat, head of gully</td>
<td>0</td>
</tr>
<tr>
<td>WTPS1 (b)</td>
<td>100 x 100 x 35</td>
<td>MTS</td>
<td>creek terrace</td>
<td>0</td>
</tr>
<tr>
<td>WTPS1 (c)</td>
<td>100 x 100 x 35</td>
<td>MTS</td>
<td>flat, head of gully</td>
<td>0</td>
</tr>
<tr>
<td>WTPS1 (d)</td>
<td>100 x 100 x 25</td>
<td>MTS</td>
<td>flat, head of gully</td>
<td>0</td>
</tr>
<tr>
<td>WTPS2 (a-c)</td>
<td>three 30 x 30 x 30 shovel probes</td>
<td>MTS</td>
<td>creek terrace/spur top</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 6.4: Test pitting results, according to mountain interior units.
Forty percent of the stone artefacts were found at the northern rock shelter site WTPN 2 in Basin Gully. This site was excavated in 5 cm spits to a depth of 20 cm. The artefacts were discovered at depths between 10 and 20 cm in association with compacted, charcoal rich deposit. Stratigraphy at the site revealed that the stone artefacts were associated with two distinct lenses of charcoal, one at the rear of the shelter at a depth of 10 cm and a larger, rock-lined accumulation at the dripline at a depth of 20 cm (Figure 6.1). The artefacts at this site included flakes, flaked pieces, chips and 2 cores, these being of chert, quartz and volcanic stone.

The four test pits contained in total only 47 artefacts of which one, WTPC 1, had only one, a quartz backed blade. Seven stone artefacts were found at WTPC 3. The two main sites, WTPN 2 and WTPN 3, had approximately equal numbers of artefacts found between 10 and 35 cm.

Twenty artefacts were recovered from the open location at WTPN 3, a mountain top flat approximately 2400 m² in area. The pit was situated approximately 40 m from the upper reaches of Black Gin Gully Creek. All of the artefacts at this location were found in a clean yellow sand at between 25 and 35 cm. No charcoal was evident in the deposit. The fact that this cultural material was found in such concentration in a single test square within a comparatively much broader setting suggests that considerably more artefacts may be present at this location in the MTN unit.

The stratigraphy at the other major site, rock shelter WTPN 2, reveals that the 19 stone artefacts found here were associated with two hearth events, a small, compact fireplace at a depth of 10 cm at the rear of the shelter, and a larger, stone-rimmed fire at a depth of 20 cm near the dripline. Two radiocarbon dates were obtained from this excavation trench. They may be used to date the two hearths and the deposition of artefacts. The raw, uncalibrated
Figure 6.1: Cross section, test trench at WTPN 2 rockshelter site.
The test pit results indicate that stone artefacts are present in both open sites and in one rock shelter in the mountain interior. To some degree they emphasise that the general paucity of surface material evident during preceding field survey of the interior was largely a reflection of low surface visibility in certain locations, particularly where thicker soils were apparent. Given the minimalist sampling approach for this exercise, that is excavation of small squares within comparatively broad settings, the subsequent number of positive results would indicate that in some parts of the northern and central mountain interior (units MTN and MTC) the extent of the sub-surface archaeology may be quite considerable.

However, the overall lack of archaeological material evident for all test pits to the south of Black Spring Mountain is significant. Locations having great occupation potential within the rugged terrain are comparatively rare at this end of the range and test pitting in the MTS unit concentrated on what was seen as the ‘best available’ locations. Two possible explanations are proffered: 1) that the negative result is a partially accurate reflection and
the artefact count and density in the south is actually substantially lower than that in the centre and north; or, 2) the surface survey and test pitting results are largely accurate and therefore the absence of artefacts from the southern end of the range is real.

In light of the preceding ethnological findings, the potential implications of these possibilities are compelling and will be the subject of a later discussion.

**Site size and artefact densities**

Mountain artefact scatters range in size from 2 to 200 artefacts, the largest site, recorded in Weddin is WW 8, situated on the slightly higher flat between the alluvial fans of Basin Gully and Black Gin Gully at the range’s north western end (FNW). In relative terms, this site is unusually large for the mountain zones, with maximum artefact counts in other mountain zones falling well below this number (Table 6.5).

<table>
<thead>
<tr>
<th>Mountain survey unit</th>
<th>No. of sites</th>
<th>Range of no. of artefacts per site</th>
<th>Mean artefacts per site</th>
<th>Mean site area (m²)</th>
<th>Artefact density per site (per m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNW</td>
<td>18</td>
<td>2-200</td>
<td>21</td>
<td>205</td>
<td>0.1</td>
</tr>
<tr>
<td>FCW</td>
<td>6</td>
<td>2-40</td>
<td>15</td>
<td>105</td>
<td>0.1</td>
</tr>
<tr>
<td>FSW</td>
<td>11</td>
<td>2-19</td>
<td>6</td>
<td>91</td>
<td>0.07</td>
</tr>
<tr>
<td>FNE</td>
<td>11</td>
<td>2-14</td>
<td>6</td>
<td>23</td>
<td>0.3</td>
</tr>
<tr>
<td>FSE</td>
<td>9</td>
<td>2-32</td>
<td>8</td>
<td>69</td>
<td>0.12</td>
</tr>
<tr>
<td>MTN</td>
<td>3</td>
<td>2-20</td>
<td>13</td>
<td>25</td>
<td>0.52</td>
</tr>
<tr>
<td>MTC</td>
<td>2</td>
<td>7-31</td>
<td>19</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>MTS</td>
<td>6</td>
<td>2-10</td>
<td>5</td>
<td>67</td>
<td>0.07</td>
</tr>
<tr>
<td>Weddin</td>
<td>66</td>
<td>2-200</td>
<td>11</td>
<td>124</td>
<td>0.09</td>
</tr>
</tbody>
</table>

*Table 6.5: Average number of artefacts, maximum number of artefacts and average site areas for Weddin Mountains artefact scatter sites.*
However, the anomalously large number of artefacts at site WW 8 skews the figures for the FNW unit and by eliminating this from the size analysis the typical site sizes for this unit can be identified (Table 6.6).

<table>
<thead>
<tr>
<th>Mountain survey unit</th>
<th>No. of sites</th>
<th>Average no. artefacts</th>
<th>Av. site area (m²)</th>
<th>Av. artefact density (per m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNW</td>
<td>17</td>
<td>11</td>
<td>235</td>
<td>0.05</td>
</tr>
<tr>
<td>FCW</td>
<td>6</td>
<td>10</td>
<td>185</td>
<td>0.05</td>
</tr>
<tr>
<td>FSW</td>
<td>11</td>
<td>6</td>
<td>91</td>
<td>0.07</td>
</tr>
<tr>
<td>FNE</td>
<td>11</td>
<td>6</td>
<td>23</td>
<td>0.3</td>
</tr>
<tr>
<td>FSE</td>
<td>9</td>
<td>8</td>
<td>69</td>
<td>0.12</td>
</tr>
<tr>
<td>MTN</td>
<td>3</td>
<td>13</td>
<td>25</td>
<td>0.52</td>
</tr>
<tr>
<td>MTC</td>
<td>2</td>
<td>19</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>MTS</td>
<td>6</td>
<td>5</td>
<td>67</td>
<td>0.07</td>
</tr>
<tr>
<td>Weddin</td>
<td>65</td>
<td>12</td>
<td>93</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Table 6.6: Weddin Mountains artefact scatter site size attributes for sites with artefact counts below that at site WW8.

From this information it can be seen that mean artefact counts range between 5 and 19 artefacts and display an artefactual density of 1 artefact per 1 to 21 square metres. In other words, artefact scatter sites in and around the Weddin Mountains display a tendency to be very well dispersed and contain relatively few artefacts. Within the realm of these characteristic mountain site types a trend is evident for artefact scatters to contain higher artefactual content in the central and northern mountain units along the western flanks, and in the centre and north of the mountain interior. Sites are more compact and dense on the eastern flanks and the north and centre of the interior. Artefact scatters sites are smaller and well dispersed in the southern mountain interior and on the south west flanks.

Three site size categories can be stated for Weddin: small (between 2 and the average mountain figure of 12 artefacts), medium (between 12 and 27 artefacts) and large (> 27
artefacts). Medium site size is based on the mean number of artefacts at sites with greater than 12 artefacts, but less than 200 (the lower count for WW8). Large scatters are those with a count higher than medium sites. The frequency and distribution of these site types are given in Table 6.7.

<table>
<thead>
<tr>
<th>Unit</th>
<th>No. small sites</th>
<th>No. medium sites</th>
<th>No. large sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNW</td>
<td>15</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>FCW</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>FSW</td>
<td>9</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>FNE</td>
<td>9</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>FSE</td>
<td>8</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>MTN</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>MTC</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>MTS</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Weddin</strong></td>
<td><strong>53</strong></td>
<td><strong>7</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

Table 6.7: Frequency and distribution of small, medium and large artefact scatter sites for Weddin.

Medium and large sites amount to only 20% of mountain artefact scatters. These above average-sized sites are found on mountain top and flank units, with the exception of MTS, where only small sites are found. Large artefact scatters are uncommon, with 83% of these sites occurring on the mountain flanks and only one in the mountain interior, in the MTC unit. The greatest number of large sites occur at the north west flank, on the flats near the entrances to Basin and Black Gin Gullies.

In summary, the mountain flank units/zones exhibit the highest incidence of large mountain sites, particularly on the range’s north west, around the entrances to the major gullies of the northern end of the range. Artefact scatters situated along the remaining flank units are much smaller in terms of artefact content with variable densities, those of the eastern side generally are areally smaller and more dense, while the south west flank exhibits well
dispersed sites with slightly lower artefact counts than other flank units. Mountain interior sites are comparatively less common, with a number of strong dichotomies between north and south. While it is suggested that medium to large sites are markedly uncommon in the interior, the MTN and MTC units are comparable to flank sites in terms of their average size. Sites in the MTS unit are notably smaller, with no medium or large scatters at all. Viewed with regard to the complete lack of sites in the far south of the range, specifically in the area between Black Spring Mountain and Weddin Mountain, this trend is suggestive of a ‘tapering off’ in site and artefact occurrence to the south of Weddin Gap.

**Site Location Trends**

Four primary environmental attributes were taken into account with regard to the determination of factors involved in Aboriginal site location in the mountains: landform, slope, vegetation and distance to and nature of nearest potential water source.

**Site-landform associations**

Fifteen generalised landform elements were recognised for the mountains. These included the following: Elevated features - ridgeline, spur, peak, plateau; Slope features - lower, middle and upper slope; Level features - saddle, shoulder, crest, flat (including both inter-montane flats and those on the footslopes), stream bank (terraces); Cliff features - cliff, cliff top, cliff base.

Archaeological material was discovered in direct association with only seven mountain landform elements: stream banks, flats, middle slopes, lower slopes, plateau locations, peaks and spurs (Figure 6.2).

Topographic features without sites had very low surface visibility, such as crests, shoulders and saddles, or were found to be genuinely devoid of archaeological material, despite
Figure 6.2: Mountain sites occurrence in relation to landform element.
adequate survey coverage and generally acceptable levels of surface visibility. While cliff features have shelters and caves, some with a potential archaeological deposit (for example, in Black Gin Gully), those along the major scarps did not exhibit surface artefacts and, as already mentioned, no rock art was discernible. Those shelters and caves found to contain traces of Aboriginal occupation were associated with discontinuous, relatively low rocky outcrops on slopes or slope/flat interfaces rather than major escarpments.

Most mountain flank unit sites are to be found in those areas most suitable for campsites, such as the flats around the base of the range and on stream bank features, comparatively restricted flats and terraces directly fringing sizeable drainage lines. A few were also evident on the lower slopes and the toes of spurs where these features abutted flats and/or stream banks. The remainder of landform units evident at the base of the range, such as steep and generally rugged, talus slopes and cliffs, offer little attraction for human habitation, apart from rock shelters.

Sites of the mountain interior display a much broader range of landform associations occupied than their flank counterparts, with archaeological finds in six landform categories. The most archaeologically rich landform features within the range are stream banks/terraces with 35% of recorded sites which are the most ubiquitous relatively level, locations and are characteristically found along the upper reaches of the large gullies and at the confluences of drainage lines. In comparison, well defined open flats, which are comparable locations in terms of suitability for human occupation are not common in the mountains and account for only 10% of the sites. Such features are occasionally found at the heads of all drainage lines.

A quarter of the mountain interior sites occur on the sloping plateau in the vicinity of Weddin Gap in the range’s south. This area comprises perhaps the most open, level broad-
scale topographic feature on the top of the range and acts as a natural boundary between the range’s northern and southern peak and gully complexes. Most of the remaining interior sites, middle slopes and spurs, are similarly placed. All of these landform features and sites are associated with possible movement up into Weddin Gap from the west or the climb from the Gap to the base of Black Spring Mountain.

Although the summits of Weddin Mountain, Eualdrie and other lesser peaks along the range were closely inspected, no artefacts were discovered. Even a test pit excavation in the skeletal soils on top of Eualdrie failed to yield any cultural material. Only one site was found on a mountain peak in the Weddins, an isolated artefact, a volcanic flake, located on the north-west slope of Black Spring Mountain 100 m from the summit.

*Slope*

The relationships between site and local slope in the mountains suggests that in general hunter-gatherers were conducting activities associated with stone artefact deposition only in areas of low to gentle gradients. On the mountain flanks, 91 - 100% of sites were found to occur on the footslopes in association with settings exhibiting very low to gentle slope (0 - 5 degrees), with the small number of remaining sites occurring on moderate gradients (>5 - 10 degrees).

In the mountain interior this trend is basically upheld with 71 - 100% of sites being found on gentle gradients, although a notably increased association between sites and moderate to inclined surfaces (>5 - 20 degrees) is evident for the MTN and MTS units. These trends are reflective of the overall nature of the terrain within which the sites were found. On the mountain flanks the transition from mountain slopes to the footslopes is abrupt, with the great majority of sites being situated on the level to near level flats and stream banks around the base of the range. As indicated in the landform consideration, the only breaks
from this association is in the case of moderate gradient lower slope and spur features which interfinger with the flatter areas and have attracted some degree of Aboriginal occupation. In contrast, the mountain interior exhibits a greater range of micro- and macro-topographic situations, although sloping and more rugged terrain tends to dominate. In this respect, the siting of most Aboriginal activity areas took advantage of circumscribed, lower gradient situations, such as drainage line terraces, small flats and open plateau points. However, an important factor is that site situation was not restricted solely to these 'obvious' or 'most convenient' locations as up to 29% of sites in a given unit were found to occur in conventionally less favourable, steeper settings. These trends are reflected in the MTN and MTS units and include points on middle slopes, spurs and the aforementioned find on the top of Black Spring Mountain.

**Vegetation**

Basic associations observed between mountain site location and dominant local vegetation regimes are given in Figure 6.3. While it may be stated that archaeological finds in general were made in similar vegetation regimes throughout the mountains as a whole, a number of strongly differing trends between interior and flanks are evident in terms of site frequency and vegetation.

Flank unit sites show a definite tendency to be found in greater numbers in areas supporting cypress forest and cypress/box woodland, with 71% of flank sites occurring in these environmental zones. Also of importance, ironbark and box woodland communities have 26% of sites. Remaining sites (3%) were found in association with low mountain forest, dominated by *Eucalyptus blakelyii* and various acacia species.

In contrast, the greatest number of mountain interior sites were found in association with pure stands of ironbark (40% of sites) and in locations dominated by acacia (30%).
Figure 6.3: Mountain sites occurrence in relation to vegetation regime.
Vegetation regimes of apparent significance on the flanks, most notably cypress and cypress/box communities, accounted for only 15% of interior sites.

While the natural vegetation of the Weddins has been preserved to a large degree by virtue of the range having never been extensively cleared for agriculture, it is possible that significant vegetational change may have occurred in the mountains as a result of relatively recent fires. This factor may have implications for the archaeological associations described above. Vegetational regimes at many parts of the mountain interior with archaeological finds seem to be a product of regrowth after a large bushfire in the 1970s. Extremely dense stands of acacia and other brush species, for instance, were often noted in locations where burnt remains of mature eucalyptus and cypress trees were also evident. In this respect, the structure and species currently growing at such locations may well be unrepresentative of the vegetation in the area prior to burning. Subsequently, stands of box and cypress may well have been more archaeologically important in the interior than is currently reflected.

The apparently significant association between interior sites and pure stands of ironbark remains an interesting trend as all trees where sites were found were noted for their outstanding size and maturity. These stands of timber occur in comparatively sheltered parts of the range with generally level, stony soils and a clear understorey. It is seen as an interesting possibility that these environmental attributes may well have acted as positive attractions for Aboriginal occupation within the otherwise rugged, densely vegetated mountain surrounds.

*Distance to nearest water source*

Three primary types of water source are evident in the Weddins: drainage lines, creeks or gullies, springs and water holding depressions or rock holes. Of these, that most commonly associated with archaeological sites is the drainage line and creek, this type
being the closest water bearing feature to 92% of sites. Of the remainder, 5% were found near springs and 3% in closest proximity to depressions/rockholes.

Mountain sites were found between 5 and 500 m from potential water sources, with the mean distance for all site types being 104 m. Mean distances of different mountain site types and artefact scatter size categories from nearest potential water sources are given in Table 6.8.

<table>
<thead>
<tr>
<th>Site type</th>
<th>No. of sites</th>
<th>Mean distance to water (m)</th>
<th>% near permanent source</th>
<th>% near semi-perm. source</th>
<th>% near seasonal source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock shelter with artefacts</td>
<td>3</td>
<td>17</td>
<td>33</td>
<td>-</td>
<td>66</td>
</tr>
<tr>
<td>Isolated find</td>
<td>17</td>
<td>119</td>
<td>-</td>
<td>12</td>
<td>88</td>
</tr>
<tr>
<td>Small scatter</td>
<td>53</td>
<td>121</td>
<td>2</td>
<td>2</td>
<td>96</td>
</tr>
<tr>
<td>Medium scatter</td>
<td>7</td>
<td>44</td>
<td>-</td>
<td>15</td>
<td>85</td>
</tr>
<tr>
<td>Large scatter</td>
<td>6</td>
<td>41</td>
<td>-</td>
<td>17</td>
<td>83</td>
</tr>
</tbody>
</table>

Table 6.8: Average distance from nearest water source and percentile occurrence according to water source status for mountain site types and artefact scatter size categories.

It is evident here that small artefact scatters and isolated finds display a similar average distance from nearest water sources of about 120 m, a distance marginally greater than the mean for all sites of 104 m. In contrast, artefact scatter categories with higher numbers of artefacts (that is, the medium and large scatters) occur in much closer proximity to potential sources of water, that is roughly 40 m distance. In this respect, it is apparent that distance to potential water source played some role in the manifestation of artefact scatter size, the larger and/or most frequently used sites having the closest spatial association with water.

Another consideration in terms of relationships between sites and water is the status of the water sources, that is, whether they are permanent, semi-permanent or short-term resource
providers. The only examples of near permanent water sources in the mountains are a limited number of spring locations, four of which were incorporated into survey (2 in Guinea Hen Gully and the examples at Gap 1 and in Black Spring Gully). Semi-permanent water sources include a few creeks, which are spring fed, and depending upon local rainfall may be dry during hotter times. Short-term water sources are typically creeks that flow and/or hold water after local rains and depressions or rock holes that hold water from localised run-off. The frequency occurrence of mountain site types in relation to the reliability of their nearest water source is given in Table 6.8.

It can be seen here that very few (7) mountain sites were in close proximity to the more reliable water sources. These include Gap 1 rock shelter and WTPC3, both in the vicinity of permanent springs and sites WSF1, WW35, WW36, WW37 and BG2, all near spring-fed creeks. In contrast, short-term water sources, primarily intermittent creek and drainage lines, appear as the nearest potential water sources for the majority of sites, including most of the larger examples. Also surprising is the artefact count average for sites nearest the more reliable water sources. With an average of 13 artefacts, these sites do not exhibit a much greater content than sites near short-term sources which have an average of 9 artefacts. This indicates that the reliability of water sources did not effect the number of artefacts at sites in the same manner as simple proximity to a potential water source.

It should be noted that the mountains' permanent springs may be significantly under represented in terms of their possible archaeological association. These are typically situated in areas with thicker soils and grassy growth and subsequently provide limited opportunity for detection of surface archaeological material. The archaeological potential of zones around springs is perhaps hinted at by the positive findings of limited test pitting conducted near a spring complex at the head of Guinea Hen Gully (WTPC3), where subsurface artefacts to a density of 7 per m² were recorded.
The Kumbundra Site

A particularly notable mountain site was recorded on Kumbundra, a property situated on the central western flank of the Weddins on the footslopes of the range, just south of Guinea Hen Gully (Figure 6.4). The site comprises a complex of 24 collapsed and somewhat dispersed stone mounds or low cairns on a broad, gently sloping lower slope/creek terrace interface feature at the base of Flat Top Hill. A stone artefact scatter occurring in association with the mound complex and a collection of artefacts gathered from the property and housed at Kumbundra station were also recorded (see below and Chapter 7).

Stone artefacts are evident in the vicinity and include flakes, cores, flaked pebbles and a large grindstone fragment. These artefacts occur within the mound complex itself (as mentioned, sometimes contributing to the make-up of the accumulations themselves) and along the bank of the creek parallel to and between the two groups of mounds. Lumps and pellets of baked clay, possibly hearth material, occur in association with two of the mounds, one each at the northern and southern extremities of the site.

In total, 98 stone artefacts were recorded in association with the mound site, occurring in a density of around 0.16 artefacts per m$^2$, effectively constituting a ‘large’ mountain artefact scatter (in fact, the second largest scatter recorded for the mountains). At a basic level locational attributes of this scatter accord with general trends set by other comparable mountain sites; it occurs on near level ground originally in association with open cypress forest and falling within close proximity to a water source. Significantly, it occurs in the same part of the range as the other large mountain sites, the western flank component north of the MTS unit. Also in a manner similar to these sites, it is situated close to the mouths of two gullies, Dingo and Guinea Hen, the former being a natural access route to Weddin Gap and the latter being one of the most substantial gullies of the Weddin Mountains.
Figure 6.4: Location of Kumbundra, Western Flank of the Weddin Mountains.
However, the most notable attribute of the site lies not in its similarities with the other mountain sites, but its differences. The presence of the stone mound complex itself represents a considerable break from the manifestation of the other sites recorded in the mountains. Rather than being suggestive of generalised Aboriginal camping activity, it implies the prehistoric use of the location as a ceremonial ground. In addition, there are locational attributes that set the site apart from others on the western flank. The natural setting of the stone mounds represents the only point on the western flanks at which an open view of both a prominent local mountain peak, in this case Black Spring Mountain, and a number of other isolated mountains on the open plains, Bribbaree, Weedallion and the Boginderra Range, is available.

**Weddin Mountains sites summary**

The most frequently encountered evidence of hunter-gatherer activity in the Weddin Mountains is the small, low density artefact scatter, containing about 12 artefacts. In general, these occur in most surveyed parts of the range, including the flanks of the mountains and in both surface and sub-surface open air contexts in the more rugged interior. In contrast, medium and large artefact scatters are far less common, collectively amounting to just under 15% of all recorded sites. They are much more common on the mountain flanks than in the mountain interior and are most evident on the central and northern units on the western side. The large artefact scatters in the mountains contain in excess of 27 artefacts and one has 200 stone artefacts. They are comparatively rare. Only 6 such sites were recorded, most of these were located on the western flank northwards of Weddin Gap and typically in the vicinities of the mouths of the range's most substantial gullies, that is Basin, Black Gin, Wentworth and Guinea Hen.

Rock shelters in the mountains attracted some degree of hunter-gatherer occupation, although the nature of such visitation and the degree of use is difficult to assess in the
absence of more detailed excavation results. Limited test pitting suggests that some Aboriginal flaking of stone and use of hearths occurred in some of the rock shelters within the last 400 years, the known instances of this occupation being in the range's north west (WTPN2 in Basin Gully) and south east (Gap 1).

Certain local environmental and topographic factors seem to have played a role in the position and manifestation of the mountain artefact scatter sites. At the most basic level, artefact scatters are most common on low gradient surfaces, such as flats and creek terraces, an attribute of particular relevance to the mountain interior, where topographic units of this type represent comparatively circumscribed locations within the surrounding rugged terrain. Physical indications of Aboriginal occupation are not found on spurs and ridges, features conventionally regarded as routeways through dissected country. Rather, sites show a near overwhelming tendency to be situated on terraces within the upper reaches of gullies. The only exceptions to these trends occur in the Weddin Gap/Black Spring Mountain vicinity, where some archaeological association with slopes and a mountain peak is found.

Proximity to water in one form or another appears to have appreciably influenced the manifestation of artefact scatter sites with the larger examples, displaying a strong tendency to occur well within 50 m of potential water sources. Interestingly, this trend seems to be upheld, regardless of the reliability of the water source with usually dry, drainage lines, having as substantial an effect as semi-permanent and permanent water features. Prime examples here include the large scatter sites that occur in close proximity to the ephemeral creeks emanating from the gullies on the western flanks.

Given these generalised morphologies and trends, two particularly notable features or attributes are apparent for the archaeology of the mountains at this level.
The first is the *Kumbundra* site, where the remains of a complex of stone mounds and/or cairns, associated with the second largest artefact scatter in the mountains, are found. While the majority of the mountain sites fall within a basically 'common' site category typically associated with everyday Aboriginal activities, the mound complex is suggestive of ceremonial or sacred context.

The second attribute is the paucity of archaeological material in the far southern mountain interior, namely the top of the range between Black Spring Mountain and Weddin Mountain, including the latter peak itself.

**Surrounding Plains and Slopes**

One hundred and thirty one sites were recorded on the Plain and Slope country surrounding the Weddin Mountains. These sites include 33 isolated artefacts, 90 artefact scatters and 8 Aboriginal scarred trees. The distribution of these according the general regional quadrants surveyed is indicated in Table 6.9.

<table>
<thead>
<tr>
<th>Survey quadrant</th>
<th>Isolated artefacts</th>
<th>Artefact scatters</th>
<th>Scarred trees</th>
<th>Total sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW</td>
<td>20</td>
<td>38</td>
<td>7</td>
<td>65</td>
</tr>
<tr>
<td>SW</td>
<td>9</td>
<td>18</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>NE</td>
<td>4</td>
<td>21</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>SE</td>
<td>0</td>
<td>13</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>33</strong></td>
<td><strong>90</strong></td>
<td><strong>10</strong></td>
<td><strong>133</strong></td>
</tr>
</tbody>
</table>

Table 6.9: Sites by type recorded in the surrounding Plains and Slopes.

A total of 159 hectares was surveyed in the Plains and Slopes. Approximate survey coverage according to quadrant is given in Table 6.10.
Most of the sites (50%) were recorded in the NW quadrant. Although this survey zone received the greatest amount of survey coverage, at 1 site per hectare, site frequency is roughly comparable to that of the other quadrants (SW: 1/ha; NE: 0.5/ha; SE: 0.93/ha).

Artefact scatter sites and isolated artefacts were discovered in a range of survey contexts including graded dirt roads and road verges in State Forests, open paddocks, stock routes and major routeways, and on eroded surfaces provided by overgrazed areas, expanses of skeletal soils and points where gully erosion had taken place.

Aboriginal scarred trees were recorded almost exclusively on the plains in the NW quadrant, with two found in the NE and a single example noted in the SW quadrant. The scars were evident on the trunks of both dead and still living red gum (Eucalyptus camaldulensis) and box (E. albens) trees (Plates 6.3 and 6.4). Scarred trees are chiefly seen as evidence of Aboriginal removal of bark for the manufacture of a range of items including canoes, water containers, shields, pegging boards for animal skins, shelters and coffins (Knight 1994: 108; Klaver 1998: 224-226). They may reflect Aboriginal activity both in the vicinity of both longer term habitation areas and one-off events in locations distant from habitation camp sites (Klaver 1998: 224). Mathews (1897b: 127) noted that bark stripped from trees was also utilised in Burbung ceremonies, the strips being called munga or dhoorung. However, it is expected that scars resulting from this use would be

<table>
<thead>
<tr>
<th>Quadrant</th>
<th>Linear coverage (ha)</th>
<th>Block coverage (ha)</th>
<th>Spot coverage (ha)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW</td>
<td>47</td>
<td>19</td>
<td>0.81</td>
<td>66.81</td>
</tr>
<tr>
<td>SW</td>
<td>6</td>
<td>21</td>
<td>1.4</td>
<td>28.4</td>
</tr>
<tr>
<td>NE</td>
<td>34</td>
<td>16</td>
<td>0.24</td>
<td>50.24</td>
</tr>
<tr>
<td>SE</td>
<td>14</td>
<td>0</td>
<td>0.14</td>
<td>14.14</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>56</td>
<td>2.58</td>
<td>159.59</td>
</tr>
</tbody>
</table>

Table 6.10: Survey coverage for each quadrant, Slopes and Plains.
Plate 6.3: Aboriginal scarred tree (site Jing 10), Jingerangle State Forest.
Plate 6.4: Aboriginal scarred tree, Bimbi State Forest.
extremely difficult to distinguish from those caused by bark removal for domestic purposes. Of the 10 Aboriginal scarred trees recorded in the study area, 8 were located on the plains directly between the Weddin Mountains and Bland Creek, and only 2 east of the mountain, near Ooma Creek. All were found in remnant woodland stands in State Forests and along stock routes. As a result their dispersed distribution provides limited useful archaeological information save some evidence of Aboriginal activity, principally in the western quadrants of the study area.

Site size and artefact densities

Artefact scatters of the Plains and Slopes of the study area range in size from between 2 and 149 artefacts. Average number of artefacts per site is 15 and the average site area 150 m². A break down of average site size attributes according to survey quadrant and precinct is given in Table 6.11.

It is evident that a pronounced dichotomy exists between East and West in terms of artefact scatter site size attributes. Artefact scatter sites in the both NE and SE quadrants display considerably higher average artefact counts per site, 55% to 164% respectively than those in the West and also exhibit artefact densities per site as high or considerably higher than is the case in the west. The lowest artefact densities, or highest levels of artefact dispersal, are evident in the NW quadrant, where, on average, scatters display one artefact for every 16 m² of site area.

Artefact scatters for the Plains and Slopes have been divided into small, medium and large size categories. The majority of Plains and Slopes sites (79%) contain between 2 and 15 artefacts which is significantly less than the largest scatters which may contain over 100 artefacts. The mean site figure of 15 is therefore used as the maximum threshold for small scatter definition. In a similar fashion, medium sites are defined as containing 16 to 48
<table>
<thead>
<tr>
<th>Survey quadrant - precinct</th>
<th>No. of artefact scatters</th>
<th>Range no. artefacts per site</th>
<th>Mean no. artefacts per site</th>
<th>Mean site area (m$^2$)</th>
<th>Mean artefact density (per m$^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NW quadrant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Marsden</td>
<td>3</td>
<td>2-45</td>
<td>11</td>
<td>175</td>
<td>0.06</td>
</tr>
<tr>
<td>- Jingerangle Plain</td>
<td>13</td>
<td>2-15</td>
<td>6</td>
<td>137</td>
<td>0.04</td>
</tr>
<tr>
<td>- Wah Way Plain</td>
<td>10</td>
<td>2-19</td>
<td>8</td>
<td>172</td>
<td>0.05</td>
</tr>
<tr>
<td>- Pullabooka slopes</td>
<td>7</td>
<td>2-69</td>
<td>15</td>
<td>170</td>
<td>0.09</td>
</tr>
<tr>
<td>- Garema Plain</td>
<td>3</td>
<td>4-38</td>
<td>18</td>
<td>70</td>
<td>0.26</td>
</tr>
<tr>
<td>- Wheoga Range</td>
<td>2</td>
<td>3-17</td>
<td>10</td>
<td>163</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>SW quadrant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bland Creek</td>
<td>9</td>
<td>2-118</td>
<td>16</td>
<td>103</td>
<td>0.15</td>
</tr>
<tr>
<td>- Eurabba Plain</td>
<td>6</td>
<td>2-13</td>
<td>6</td>
<td>130</td>
<td>0.05</td>
</tr>
<tr>
<td>- Weedallion slopes</td>
<td>3</td>
<td>2-8</td>
<td>5</td>
<td>31</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>NE quadrant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Mulyandry Plain</td>
<td>11</td>
<td>2-32</td>
<td>9</td>
<td>124</td>
<td>0.07</td>
</tr>
<tr>
<td>- mid-Ooma Creek</td>
<td>4</td>
<td>6-149</td>
<td>48</td>
<td>62</td>
<td>0.77</td>
</tr>
<tr>
<td>- Warraderry slopes</td>
<td>6</td>
<td>3-16</td>
<td>9</td>
<td>64</td>
<td>0.14</td>
</tr>
<tr>
<td><strong>SE quadrant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Monteagle slopes</td>
<td>4</td>
<td>3-26</td>
<td>15</td>
<td>36</td>
<td>0.42</td>
</tr>
<tr>
<td>- Burrangong Creek</td>
<td>4</td>
<td>5-73</td>
<td>24</td>
<td>413</td>
<td>0.06</td>
</tr>
<tr>
<td>- Emu Creek</td>
<td>5</td>
<td>4-94</td>
<td>45</td>
<td>395</td>
<td>0.11</td>
</tr>
</tbody>
</table>

**Table 6.11:** Average artefact scatter site size attributes according to survey quadrants and precincts of the study area Slopes and Plains.
artefacts, as the mean for sites with greater than 15 artefacts is 48. Large sites are defined as having greater than 48 artefacts. Distribution of these site categories is shown in Table 6.12.

<table>
<thead>
<tr>
<th>Zone</th>
<th>No. small sites</th>
<th>No. medium sites</th>
<th>No. large sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW</td>
<td>32</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>SW</td>
<td>17</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>NE</td>
<td>15</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>SE</td>
<td>7</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Plains &amp; Slopes</td>
<td>71</td>
<td>13</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 6.12: Distribution of site size categories for the Plains and Slopes

Half of the large scatters occur in the SE quadrant, 2 in the Emu Creek precinct and 1 in Burrangong Creek precinct. There is also one each in the other quadrants, Pullabooka Slopes (NW), Bland Creek (SW) and Mid Ooma Creek (NE). The largest scatter containing 149 artefacts is site TMC2, located at Three Mile Camp, approximately 6 km north east of the Weddin Mountains. This site is also the only recorded scatter in the study area that exhibits an artefact density in excess of one artefact per square metre at 1.5. This is also the only large site in the Plains and Slopes to occur outside of a creek corridor. However, the nature of the artefactual evidence at the site, an assemblage of closely spaced blade flakes of identical material, indicates a flaking floor, the short-term on-site reduction of a single core. Subsequently, it is proposed that this site is representative of a single flaking event rather than repeated hunter-gatherer use.

Based on similarly defined site size categories, it is apparent that Plains and Slopes artefact scatters are, on average, marginally larger than their counterparts in the Weddin Mountains. Despite this, the largest artefact scatter in the study area, WW8, is to be found on the north
west flank of the mountains. Further, the suite of large sites found in relatively close proximity to one another at this part of the range are comparable in size, if not larger than the largest of the Plains and Slopes sites.

Site location trends

Site-landform associations

Site frequency according to landform component is shown in Figure 6.5. The most prominent associations evident are the high levels of site occurrence on the Open Plains for the NW, SW and NE quadrants and the marked association with stream banks in the SE quadrant. In the case of the former, it could be argued that since this is the most extensive landform then the result is expected. Nonetheless, this trend is seen as significant for the basic reason that it strongly implies a considerable hunter-gatherer presence in environmental zones characteristic of the semi-arid Lachlan ‘back country’.

Stream banks are the most significant archaeological locations in the SE given the fact that a cross section of landform units characteristic of the mainly sloping terrain was also surveyed in this quadrant. Such a trend may reflect the combined importance to hunter-gatherers of nearby water supply, riparian resources and fairly level gradients in their selection of camping places in the more sloping terrain of the study area. Comparable landform components in the more peneplain quadrants of the study area, NW and SW, show markedly fewer site numbers. In terms of local terrain, this may reflect a much reduced imperative to seek gently sloping surfaces for camping because level ground is widely available. However, the potential importance of these location in terms of their role as water sources cannot be understated and this may well be reflected in the fact that nearly 70% of the larger sites in the NW, SW and NE quadrants are associated with stream banks (and see ‘Water sources’ below).
Figure 6.5: Site location in relation to landform element, Plains and Slopes.
Elevated landform positions, hillocks, rises, lower slopes and crests, collectively account for 17% of Plain and Slope sites. These features occur as either transition points between Sloping country and Plains, or as relatively isolated elevated points such as undulations or distinct rocky hills within the Plain country. As such these points generally offer good views of surrounding terrain and may have provided areas of comparative safety during major flood episodes. Despite this, no overt evidence of increased hunter-gatherer presence or occupation seemed apparent for these features, with associated artefact scatters generally displaying lower than average artefact numbers and high levels of dispersal.

**Soil**

Due to the size of the Plain and Slope component of the study area and its range of hydrological and geomorphological attributes, the possible relationships between sites and various local soil types are considered here. Five highly generalised soil types were identified for the survey area: primarily sandy soils, coarse gravelly deposits including talus, loamy soils, heavy clay soils, and gilgai. Frequency based associations between recorded sites and soil types according to survey quadrant are given in Table 6.13.

Lighter textured loamy deposits show the highest levels of archaeological association for all quadrants because they are relatively free draining and therefore dry more quickly and because they support a more attractive, open understorey vegetation. In the case of the eastern survey components, this association may be largely attributable to the local predominance of this soil type. In the west where heavier clayey soils become much more common, the sandy soils as well as loams significantly support the majority of sites. While zones of heavy soils were not avoided by the Aboriginal hunter-gatherers, the lighter textured, more freely draining deposits were the preferred camping locations.
Areas of clayey soils, such as the central parts of the Wah Way Plain and around Garema, show markedly lower levels of archaeological association. In turn, sites in these areas tend to be located along the more reliable drainage lines, such as Ooma Creek and the Bland, rather than in open flat clayey country. It should be acknowledged that taphonomic processes, associated with the dynamic nature of clayey soils (shrink-swell, deep cracking and self-mulching), may have influenced the observation of artefacts. This factor may play a role in the apparent paucity of readily discernible surface artefacts in the study area’s lower lying plains with heavier soils.

<table>
<thead>
<tr>
<th>Survey quadrant</th>
<th>No. of sites</th>
<th>% sandy</th>
<th>% gravely</th>
<th>% loams</th>
<th>% clays</th>
<th>% gilgai</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW</td>
<td>64*</td>
<td>25</td>
<td>0</td>
<td>66</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>SW</td>
<td>27*</td>
<td>37</td>
<td>11</td>
<td>52</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NE</td>
<td>25</td>
<td>4</td>
<td>0</td>
<td>88</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>SE</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Table 6.13:** Percentage of sites located on local soil types in the Plain and Slope country. *observations not available for one NW sites and one SW site.

This is emphasised by absence of sites from gilgai zones (deep cracking vertosols). However it is possibly also a reflection of considerable survey bias because very little access was possible. These zones are most pronounced in the North West, particularly on the plains between Caragabal and Bland Creek that form substantial parts of the Marsden and Jingerangle Plain survey precincts. Archaeological finds made in these areas tended to be associated with the slightly elevated, better drained sandy soils of bordering gentle slopes or rises. While sites are known to occur in the gilgais of The Levels (Wilkinson 1992) and the potential importance of such areas as Aboriginal water sources is suggested (Cunningham 1973), an Aboriginal preference for camping on adjacent less boggy substrates, particularly during wetter periods is an important possibility that may be reflected here.
Vegetation

The vegetation regimes characteristic of the Plain and Slope country have undergone large-scale change as a result of land clearance for agricultural and pastoral purposes. This modification is particularly evident in the West where most of the Plains have been intensively farmed for many years. Despite this, an attempt was made during survey to identify spatial relationships between site occurrence and any remnant vegetation regimes. Such observation was restricted to major woodland and forest trees, as these provided the only reliable instances of mature, or old growth, vegetation. These relationships are shown in Figure 6.6.

Greatest levels of spatial association are evident for forest and woodland structures dominated by cypress (*Callitris* spp.), box (mainly *Eucalyptus albens*) and mixed stands dominated by them. This may be largely a reflection of the natural dominance of these vegetation types across most of the study area. The prominence of cypress may also be substantially attributed to the artificially promoted dominance of species of this tree in the State Forests that provided a considerable proportion of Plains survey zones.

Spatial relationships of sites with river red gum (*Eucalyptus camaldulensis*) is also indicative of occupation in and around riparian zones. This association between sites and river red gum forest/woodland in the SE quadrant parallels the strong relationship noted for stream bank communities in the sloping terrain east of Weddin.

The greatest range of archaeological and vegetation community association occurs in the NE quadrant where a range of species specific woodland and forest types is evident. While box and the mixed cypress/box communities dominate here, other woodland types that may once have featured more strongly in the study area, such as those principally composed of
Figure 6.6: Site location in relation to vegetation regime, Plains and Slopes.
belah (*Casuarina* sp.) and ironbark (*Eucalyptus sideroxylon*) show some archaeological association.

**Distance to nearest water source**

Identified water sources in the plain and slope quadrants include creeks and waterholes, springs, swamps and water holding depressions, and the inundation zones. Of these source types, the great majority of sites (74%) were found in closest proximity to creeks or drainage lines, this basic trend being repeated for all quadrants and accounting for all sites recorded in the SE. The next most common water source associated with sites are depressions or inundation zones accounting for 22% of sites, almost all of these being archaeological occurrences of the NW and SW. The small number of remaining sites were recorded in closest proximity to swamp zones in the SW quadrant, and two instances of springs (one each in the NW and SW).

Minimum site distance from water source is 10 m and the furthest any recorded site was found from a discernible potential source was 2000 m. Mean site to water source distance for Plain and Slope areas as a whole is four hundred and nine metres. The mean distance that a site is from water source, according to artefact scatter size class and survey quadrant, is given in Table 6.14.

It is apparent that there is a strong relationship between the number of artefacts recorded at a site and the proximity to water. All large sites are found within 100 m of a water source whilst small sites (2-15 artefacts) are found approximately 300 m and isolated artefacts at distance in excess of 530 m from water in all quadrants, except the SE, where no such sites were found.
Table 6.14: Average distance from nearest water source and percentile occurrence according to water source status for Plain and Slope artefact scatter size categories.

This relationship is similarly expressed when the mean number of artefacts are noted for each 100 m interval from observed water sources (Figure 6.7). It is evident that not only do artefact quantities per site decrease with distance from water, but the mean artefact densities also do as well, showing a marked decrease beyond 250 m.
Figure 6.7: Mean size of Plains and Slopes sites in relation to distance from nearest potential water source.
In terms of the reliability of water sources, 15% of sites were found in closest proximity to permanent water, 21% nearest semi-permanent sources and 64% nearest short-term supplies. Large and medium sized sites display tendencies to be associated with the more reliable water sources (Table 6.14). Although sites in the vicinity of permanent water sources display a greater mean number of artefacts, it is evident that artefact densities remain similar for all three forms of water source status types (Table 6.15).

These trends differ notably from those in the Weddin Mountains where both permanent and semi-permanent water sources were found to display no connection with larger sites.

**Surrounding Plains and Slopes sites summary**

Comparable site densities of around 1 site per 1 to 2 hectares are apparent for all quadrants of the Plains and Slopes that surround the Weddin Mountains. Like the mountains, the most common site type for the Plains and Slopes is the artefact scatter, typically containing around 2 to 15 artefacts. While sites to the west of the mountains display a tendency to be smaller and more dispersed than those to the east, large scatters of between 48 and 149 artefacts are present in all quadrants, principally in close proximity to the major creek corridors such as the Bland, Burrangong and Ooma.

<table>
<thead>
<tr>
<th>Water source status</th>
<th>No. of sites</th>
<th>Mean no. artefacts per site</th>
<th>Mean artefact density (per m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td>19</td>
<td>29</td>
<td>0.12</td>
</tr>
<tr>
<td>Semi-permanent</td>
<td>27</td>
<td>9</td>
<td>0.10</td>
</tr>
<tr>
<td>Short-term</td>
<td>84</td>
<td>12</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Table 6.15: Mean on-site artefact numbers and densities in relation to status of nearest water source in Plain and Slope country.
In the east, all site types are most commonly situated along stream corridors, while on The Levels, sites are often found out on the open plains and to a lesser degree, on succinct gravelly rises. Soils appear to have played a role in determining where Aboriginal hunter-gatherers camped in this country, with light textured loamy or sandy deposits being preferred to the heavier clayey soils. These trends reflect what appears to have been a wide-ranging hunter-gatherer subsistence-settlement regime, which involved occupation in most zones of the study area. The presence of Aboriginal scarred trees in some of the most ‘isolated’ parts of The Levels is taken as additional evidence of this.

However, proximity to sources of water played an important role in this settlement pattern. Situation of the largest artefact scatters almost exclusively to well within 100 m of the nearest water source, often of a semi-permanent to permanent nature, indicates the significance of this resource to the landscape’s prehistoric occupants. In this respect it is suggested that the archaeology does not so much reflect single, large-scale camping events around water sources; rather, it is indicative of the long-term attractiveness, or high levels of redundancy (cf Binford 1980), exhibited by these places and subsequently repeated visitation by people over time.

It should be noted that revisitation of places within the study area was not solely restricted to waterholes and creeks. The substantial quantity of sites found in and around the Weddin Mountains indicates the importance of this general location to the Wiradjuri people within the hinterland setting. Further, the nature of the morphology and situation of these sites in the landscape is suggestive of a role or roles that extended beyond the imperatives of subsistence alone. The stone arrangement site at Kumbundra is evidence of this. Investigation of the contents of the study area’s sites, the stone artefacts, and their possible links with the world of the sacred as well as the profane, is the topic of the next chapter.
Chapter 7

ANALYSIS OF THE ARTEFACT ASSEMBLAGES

A total of 2294 artefacts was recorded as a result of field survey and test pitting in the study area. Of these, 923 pieces were recorded in the Weddin Mountains and 1371 artefacts in the surrounding Plain and Slope country. An additional 55 artefacts, from the Kumbundra collection, were also recorded.

The artefacts may be divided into 7 broad categories: debitage (flakes, flaked pieces and chips), cores, blades (elongate flakes exhibiting a dorsal ridge), Production Tools (hammerstones and anvils), Formal Tools (including backed blades, scraper tools, thumbnail scrapers, adzes, tulas, eloueras and ground hatchets) and grindstones. An additional artefact category, ceremonial stones, is evident for the Weddin Mountains, comprising cylcons, engraved stones and a Bogan pick (McCarthy 1939) and was used as a result of the analysis of the Kumbundra collection. These artefacts represent an important component of the mountain assemblage and are an integral archaeological reflection of the sacred nature of Weddin.

Weddin Mountains

For the purposes of this analysis the Weddin Mountains artefacts were separated into two geographical zones: the Mountain Flanks and the Mountain interior, the Kumbundra site and collection from the same property were treated separately, although it is located on the western flank of the mountain.
A. Mountain Flanks

1) Artefact morphologies and frequencies

A total of 701 artefacts were analysed from 68 sites located in the Mountain Flanks. The most substantial component of the Mountain Flanks assemblage is debitage at 81% (47% flakes, 19% chips, 15% flaked pieces). Blades comprised only 7%; Cores 6.5%; Formal Tools 3.8% (2% backed blades, 1% scrapers, 0.3% burren adzes, 0.3% adzes - all slugs, 0.1% hatchets and 0.1% eloueras); and Production Tools (anvils) 0.3%. The least frequent general implement type, grindstones, accounts for only 0.8% of the assemblage. Two of these artefacts were found, in the FNW and FSW units. Both grindstones exhibited grinding surfaces suggestive of tool reduction (i.e. hatchet grinding) rather than seed processing in that they were either small, concave depressions (suited to surface polishing) (Plate 7.1) or elongated, narrow grooves (suited to edge grinding) (Plate 7.2). Therefore the assemblage for the Mountain Flanks comprised mainly 'waste' and very little in the way of 'tools' or 'implements'.

In terms of a broad comparison of assemblages between the Eastern and Western Flanks, debitage accounts for around 80% of the assemblage for both sides of the range (Figure 7.1). However, the Formal Tool ratios are also different; in the East the non-Formal to Formal ratio is 18:1, while in the West it is 28:1. Formal Tool variety is much higher in the West with 6 types as opposed to only 2 in the East. Cores are more frequent in the East, but once again there is more variety in core types in the West. Blades are far more frequent in the West. Grindstones were only found in the West. However, it must remembered that these trends are based upon very small numbers of implements as the great majority of the assemblage is debitage.
Plate 7.1: Portable hatchet grinding stone found at southern end of Weddin Range.

Plate 7.2: Portable hatchet grinding stone found at north west end of Weddin Range.
Figure 7.1: Artefact categories frequency, East and West Flanks, Weddin Mountains.
A geographically more detailed assemblage comparison was also carried out between the different flank sections of the range, FNW, FCW, FSW, FNE and FSE (Figures 7.2 and 7.3). Again debitage dominates at between 75 and 88% of all assemblages. In the East, both NE and SE assemblages are identical in that they are made up of the same general artefact categories (debitage, cores, blades and Formal Tools); the only difference between these is that Formal Tools are more frequent in the South. On the Western side, there is complexity in assemblages, as measured by a greater variety of implements in the NW, where all groups are represented. The Formal Tool frequency is practically uniform throughout; although blades are much more frequent in the CW and therefore more than any other zone on the mountain flanks; cores are the least frequent in the SW.

2) Basic raw material frequencies

Three flakeable stone types dominate this assemblage: chert, quartz and fine grained volcanic. Other raw material types present include silcrete, quartzite and indurated mudstone, but these combined account for only 4% of all artefacts evident. There is a pronounced dichotomy in raw material occurrence between Eastern and Western Flanks (Figure 7.4). In the East, quartz (53%) and chert (32%) predominate, with very low quantities of volcanic (8%) and silcrete (7%) making up the remainder. In the West, volcanics dominate (37%) but quartz (33%) and chert (27%) also occur with high frequency. There is a pronounced reversal in importance of volcanics and quartz from East to West. Very small numbers of artefacts made from silcrete (1%), quartzite (2%) and indurated mudstone (1%) are also evident in the West. Thus, in the West, there is not only a greater variety of raw materials evident, but the frequency of major types is quite different from that in the East.
**Figure 7.2:** Artefact categories frequency, Eastern Flank units, Weddin Mountains.
Figure 7.3: Artefact categories frequency, Western Flank units, Weddin Mountains.
Figure 7.4: Artefact raw material frequencies, East and West Flanks, Weddin Mountains.
While the most common artefact raw materials found on the Flanks as a whole are quartz (36%) and volcanic (31%), the 'characteristic' stone is chert, which is found with much the same frequency in both the East and West (32% and 27% respectively). This stone is typically dark purple in colour and is commonly found on sites all around the mountains' flanks and accounts for over 70% of artefactual chert recorded. Seven other cherts occur, including red, green, brown, orange, black, white and pink varieties. Similarly, while a total of 7 fine-grained volcanic types was recorded on mountain flank sites, the volcanic component is overwhelmingly composed of a light grey material which accounts for 83% of the volcanics, and is the most frequently encountered stone on sites in the West but quite rare in the East.

Discrepancies in raw material occurrence are also apparent at the Flank unit scale (Figure 7.5). Chert and quartz are the main stone types for both the FNE and FSE, with quartz dominating in both cases. The major differences between these are the much greater importance of quartz in the FSE assemblage (66% compared to 37%) and the addition of silcrete along with an increased frequency of non-quartz stone in the FNE. In the West, the trend for chert, volcanic and quartz to dominate is upheld despite some variations in frequency. On this side of the range chert maintains a consistent frequency of around 25-30% in all units; volcanic is the most important for the FNW and FCW, but it falls to its lowest levels in the FSW; in step with the drop in volcanic frequency, quartz attains its highest west levels in the FSW (54%). The greatest variety of raw materials for the mountain flanks is found in the FNW, with 6 basic stone types and 17 different varieties of them.

An interesting point is that sandstone is only used for artefact production in the West where it is the sole stone type from which grindstones were manufactured.
Figure 7.5: Artefact raw material frequencies, Mountain Flank units, Weddin Mountains.
3) Raw material frequency, according to artefact category

In this section, the identification of the association between raw material and artefact category is examined, that is, in order to determine whether there is any preferred choice of raw material in the manufacture of specific artefact types.

In both the East and the West the highest level of artefact manifestation for all stone types is as debitage, which ranges from 77-90% in the East and 50-100% in the West. Another similarity occurs in the case of cores, where only volcanic, chert and quartz examples were found. Interestingly, the non-quartz cores were not restricted to the major chert and volcanic varieties because at least 50% of the chert and 33% of the volcanic examples were made of the less popular varieties. No cores of 'very rare' stone, such as silcrete, quartzite or indurated mudstone, were found around the mountain flanks.

In the East, the very low number of blades suggests that they were manufactured solely from stone types 'rare' to the flank, namely volcanic and silcrete, whereas other Formal Tools were manufactured from the 'common' materials, chert and quartz. In the West, 'rare' stone, silcrete and quartzite, appear to have been specifically used in the production of both blades and Formal Tools. The commonly used materials, chert and volcanics, also seem to have been similarly utilised here, while quartz shows the lowest levels of specific application of all stone used in these categories. Blade cores were only found in the West, these were found to be 50% on purple chert, 33% grey volcanic and 17% quartz.

Closer scrutiny of the types of stone allocated to Formal Tool production also reveals other interesting trends. In the East, for the most common Formal Tool found, the backed blade, over 66% of the chert ones were manufactured from 'rarer' (ie. non-purple) varieties. In the West, although a range of volcanics is present, only the grey variety was utilised in Formal
Tool (ie. backed blade and scraper) production, accounting for 43% of the stone used. While purple chert was utilised in the manufacture of adzes, burrens, scrapers and backed blades, it appears that 'rarer' cherts (orange and pale coloured varieties) were more commonly used for making backed blades. The only elouera recorded was made from brown quartzite, a 'very rare' stone type in local terms.

4) Curation of stone (level of reduction according to raw material)

Artefacts considered in this section are cores and flakes as these provide the best indications of basic artefact dimensions in particular length and this information is used directly infer to stone reduction.

Pronounced uniformity is evident on both sides of the range, in terms of both flake and core length, regardless of raw material type. Average flake length for all stone types is relatively uniform, falling between 15 mm and 22 mm, the only exception is the anomalously high average length for the 'rarer' volcanics in the East at 42.25 mm, although this is almost certainly due to the very small sample size, only 4 pieces. Average flake length is almost exactly the same for each of the raw materials, as is core length, for both the East and West flanks. It is worth noting that this indicates that both cores and flakes of all stone utilised are characteristically quite small throughout the mountain flanks.

Consideration of length aside, some variation is apparent in terms of the intensity of core reduction, according to raw material between East and West. In the West, the average number of negative scars is much higher on purple chert and grey volcanic cores than those of quartz. On the other hand, in the East, where 50% of cores are on quartz and 50% on mixed chert, this is reversed, with quartz cores displaying highest average negative scar
numbers. Core rotation (as shown by average number of platforms) is highest in the West for grey volcanic cores and highest in the East for quartz.

5) Technological attributes

From this analysis, the Aboriginal stone industry around the mountain flanks involved the production of small flakes utilising small cores. The great majority of these artefacts were produced by percussion flaking.

A trend for a slight dimensional difference is apparent between flakes of the West and East, whereby the Eastern flakes generally exhibit a narrower difference in average length/average width ratio than the Western. In this respect, flakes from the East are 'blockier' than those in the West. A similar comparison for cores shows a tendency for extreme core 'blockiness' in all raw materials on both sides of the range.

Blade technology is apparent on both sides of the range, albeit a much more obvious feature of the West than the East. This is shown in the much higher blade to non-blade artefact ratio in the West (1:13) than that evident in the East (1:49) and in the presence of blade cores in the West and their complete absence in the East. The paucity of blades in the East is so pronounced that a statistical appraisal of blade attributes on this side of the range is not possible. Blade technology in the West appears to have involved the use of small cores, where the average length of blade cores is 27.8mm, in concert with the production of correspondingly small blades, averaging of between 14 mm and 24 mm depending on the raw material used.

Bipolar technology is evident in very small quantities of flakes and cores. Only three bipolar flakes and a bipolar core were recorded in the West and only two bipolar flakes
were found in the East. All were manufactured from quartz, possibly from river pebbles, as the only cortex evident appears smooth and water rounded. Each of the flakes exhibited singular rather than bipolar bulbs, with the primary form of evidence for their manufacture being their 'fabricator' shape combined with alternately crushed and splintered ends. This evidence may conform with Witter's (1980a: 10) suggestion that lamellate bipolar industries in this part of NSW were more a development associated with the Eastern slopes than the adjoining Western plains.

Mountain Flanks Summary:

The Mountain Flanks exhibit an assemblage composed mainly of debitage. Formal Tools are more frequent in the East but there is a greater variety of tool types in the West. In a similar fashion, cores are more frequent in the East but there is a greater variety of types in the West. The greatest range of implements is evident in the FNW unit.

While three stone types (chert, volcanic and quartz) dominate the Western flanks, only two (chert and quartz) do so in the East. A number of particular stone types may be said to typify the flanks on either side of the range; grey volcanic 'typifies' the West and quartz 'typifies' the East. In turn, the Mountain Flanks as a whole are characterised by the universal prominence of dark purple chert. Of all the Flank units, the biggest range of raw materials occurs in the FNW.

The 'typical' raw material trends appear to be borne out to a large degree by the Formal Tool stone allocation trends; quartz was an important Formal Tool raw material on the Eastern flank; grey volcanic in the West; purple chert was utilised in similar amounts on both flanks. However, the 'rare' stone types, non-purple cherts, silcrete and quartzite, seem to have had some importance in the production of backed blades and blades on both sides.
of the range. Less than half of the stone types found during field work in the flanks, evident as either tools or debitage (ie. in a reduced state), occur as cores, suggesting that they had arrived in their places of deposition already manufactured, or, more likely, the cores from which they had been manufactured on-site had been subsequently carried away.

All stone types appear to have been used to produce universally small flakes of almost uniform length on both sides of the range. While average core length is also notably uniform for all raw materials on both sides of the range, cores of grey volcanic and purple chert display more intensive use, having more platforms and many more negative scars, in the West, with quartz being the stone utilised in this fashion in the East.

Percussion flaking is the predominant flaking technique evident on both sides of the range, with blocky cores of all raw material types predominant on both sides. However, Eastern flakes are on average notably blockier than those in the West. Microblade technology is much more a Western feature of the flanks than an Eastern trend and it is also suggested that flakes are, on average, marginally more blade-like in the West than in the East. Quartz lamellate bipolar technology, possibly restricted to use of river pebbles, is present in very small frequencies on both sides of the range.

**B. Kumbundra Mound complex artefacts**

Ninety eight stone artefacts were recorded as an open scatter in and around the stone mound complex. These artefacts are analysed separately in order to provide a comparison with comparable material found other, perhaps more profane, contexts elsewhere in the mountains.
The artefacts at the site are predominantly debitage, ie. 77 pieces (79% of the assemblage). There are 8 blades, 5 cores, including two large examples incorporated into the centre of mounds at the southern and northern ends of the site and 2 flaked pebbles. A small number of Formal Tools is evident, including a single backed blade, 1 thumbnail scraper and 3 scraper tools. A near complete bottom grindstone fragment manufactured from a tabular slab of well bonded, possibly semi-metamorphosed, sandstone which had purposefully trimmed margins was found eroding out of the creek bank in the southern part of the site. The amorphous grinding surface of this artefact was probably used for grinding grass seed. A single anvil, produced from a flat volcanic river pebble, is located in the northern section where it was incorporated into one of the stone accumulations lining the creek. Relative artefact category frequencies are shown in Figure 7.6.

Flaked artefacts had been manufactured from 12 different varieties of stone, including: a pale grey silcrete; pale grey quartzites; brown, red, black and purple cherts; black, brown and grey volcanics; and white quartz. In keeping with the basic raw material trends of Weddin, the dominant stone types are purple chert, white quartz and grey volcanic (Figure 7.7).

The most substantial degree of raw material allocation to implement manufacture was that of purple chert to blades, with 21% of this stone type being used for this purpose. Quartz displays the broadest use, although no specific allocation, with its utilisation in the production of blades and scrapers as well as debitage and a single core. Of the rarer stone types, silcrete was used for production of the only backed blade found at the site.

Mean flake lengths and widths, according to raw material are notably small, 20 mm, regardless of stone type. Flake length to width ratios indicate that most flakes on the site are
Figure 7.6: Artefact categories frequency, *Kumbundra* site.
Figure 7.7: Artefact raw materials frequency, *Kumbundra* site.
relatively square, with the exception of a single silcrete flake which displays blade-like dimensions.

Cores are composed chiefly of rarer stone types including 2 pale quartzite and 2 brown volcanic as well as one made on quartz. The non-quartz cores are of reasonable size and slightly wider than long displaying an average length of 83 mm and width of 93 mm. These artefacts exhibit 1 or 2 platforms and 4-8 negative scars. In comparison, the single quartz core is quite small, only 20 mm by 20 mm, with a single platform and 6 negative scars, indicating a considerably more advanced stage of reduction.

As such, the assemblage at the *Kumbundra* site is in most respects typical of sites on the Western side of Weddin. It exhibits a substantial range of raw materials, of which grey volcanic, purple chert and quartz are dominant and a variety of flaked implement types is present albeit in small numbers. Ample evidence of local blade production is also in keeping with the Western trend. Slightly unusual is the quantity of cores (equivalent to 25% of the total found elsewhere on the Western side) and the presence of ‘rare’ implements such as the anvil and grindstone.

**The Kumbundra collection**

This collection comprises 55 stone artefacts found on *Kumbundra* station by the Grimm family since they cleared it for grazing in 1912, in particular in the 1950s and 1960s. Therefore all these artefacts were known to have been found on this property of 568 hectares and encompassing the footslopes and level country of the mountain flanks between Guinea Hen Gully and Weddin Gap on the western side of the range.
The artefacts include a range of types either found to be rare during survey, or indeed not found at all elsewhere in the survey. These include 9 hammerstones, 11 anvils/mortars, a portable axe grinding stone, 9 horsehoof cores, 11 ground edge hatchets, 5 flaked hatchet blanks, 6 cylindro-conical stones, a waisted pick and 2 engraved stones.

The hammerstones are essentially unmodified volcanic river pebbles of various sizes between 80 and 130 mm length (Plate 7.3). All examples exhibit heavy use-related pitting around most, if not all, of the length of their respective margins, with occasional examples showing evidence of having also been used as anvil stones. In these latter cases, the confined, deep surface pitting is indicative of bipolar flaking activity using small to medium sized pebbles.

Anvil stones include modified rounded and flat volcanic river pebbles in a range of sizes between 100 and 180 mm length (Plate 7.4). In the majority of cases, heavy pitting is evident on both surfaces and evidence of wedging, ie. pitting on opposing margins, is also common. Nearly all anvils bear heavy, concentrated pitting in the centre of the pebble surface, evidence of sharp impacts between hard objects that is most probably the result of use in the bipolar flaking technique. A single larger artefact shows a broad, concave pitted surface that is suggestive of use as a mortar, possibly for the processing of hard-shelled seeds such as those of *Acacia* species (Plate 7.4, top right).

A single small, bottom grindstone fragment exhibits a single elongate, narrow groove on one surface (Plate 7.5). The morphology of such use wear is comparable with grooves found on portable axe grinding stones located elsewhere around the Range during survey (Plates 7.1 and 7.2) and descriptions of Aboriginal ‘flat stones’ used for axe grinding noted
Plate 7.3: Examples of hammerstones, *Kumbundra* collection.

Plate 7.4: Examples of anvil stones, *Kumbundra* collection.
in historical documents as being sourced from the Weddin Mountains during the 1800s (Wells 1993: 39).

The 9 cores in the collection may be best described as horsehoofs (cf McCarthy 1976; Lampert 1981) in that they are large and blocky with broad, flat platforms and domeshaped bases (Plate 7.6). They had been manufactured from a well fused, grainy volcanic stone, grey to brownish grey in colour, with all examples exhibiting extensive patination (discolouration) on all surfaces. Average length and width for the cores is 75 and 85 mm respectively. Similarly, negative flake scars were typically large and square, between 40 and 80 mm in both length and width. Extensive step fracturing was evident around platforms of all examples. These artefacts represent the only examples of horsehoof cores, or indeed any other type of large core in the entire study area.

Stone hatchets, hatchet fragments and hatchet blanks are evident in a range of basic forms (Plates 7.7 and 7.8). These implements had been manufactured from various types of volcanics, ranging from fine- to coarser grained varieties, the latter being particularly dense and heavy. Most of the finer grained examples had been originally obtained in elongate, flat river pebble form and had been prefabricated through rough flaking. Little to no additional surface finishing appears to have been subsequently undertaken. These implements range in size between 75-90 mm length, 38-65 mm width and 15-50 mm thickness. In most of these instances, grinding itself had been restricted to the working edge, with only one example showing grinding or polishing extending any distance over the surface (Plate 7.8, far left). In such respects, these hatchets accord in terms of basic morphology with the one located during surface survey of the range and the two examples held in the small collection at the adjacent Currawong station. In addition, some of the Kumbundra examples exhibit multitask utilisation through the presence of deep anvil pitting on their surfaces. Due to this
Plate 7.5: Bottom grindstone fragment, Kumbundra collection.

Plate 7.6: Horsehoof cores, Kumbundra collection.
Plate 7.7: Hatchets and hatchet fragments, *Kumbundra* collection.

Plate 7.8: Ground edged hatchets, *Kumbundra* collection.
combination of attributes, the basic impression conveyed by these artefacts is that of practically produced portable, utilitarian implements.

Two ground edge hatchets in this collection were found to display quite dissimilar characteristics. They had been manufactured from an extremely dense, comparatively coarse grained volcanic stone but are cylindro-conical in shape rather than flat and 'square' (Plate 7.8, two examples at right). Both implements display carefully ground edges with no sign of any use-related damage and their surfaces have been universally finely hammer dressed to produce a smooth, rounded form.

The 2 engraved stones are composed of heavy grey volcanic material, possibly originally river pebbles. Both are approximately 180 mm long, 90 mm wide and 55-60 mm thick with lenticular transverse sections. The surfaces of the stones have been finely hammer dressed and the distal margins trimmed to blunt ends, although the end of one of the stones has been removed through breakage at some time in the past. In this respect the possibility is not ruled out that the latter artefact is a hatchet with a badly damaged distal end. Both of the stones display deeply incised lines on their surfaces. One exhibits engraving on one surface in the form of a series of intersecting lines (Plate 7.9). The other has single straight lines incised at angles across both surfaces that extend to the margin (Plates 7.10 and 7.11).

A single elongated, tapering implement, 180 mm in length and flat oval in section, was identified as a Bogan Pick (cf McCarthy 1939, 1976) (Plate 7.12, example at right). This artefact had been manufactured from grey volcanic stone and its entire surface hammer dressed. It is waisted toward the proximal end and exhibits what appears to be some minor use damage on the tapered distal end. The function of Bogan Picks is unknown, although McCarthy (1939) has likened them to cylindro-conical stones.
Plate 7.9: Engraved stone, Kumbundra collection.
Plate 7.10: Incised lines on stone surface, *Kumbundra* collection.

Plate 7.11: Incised lines extending over stone margin.
Six cylindro-conical stones, or cylcons, had also been collected on the property (Plates 7.12 and 7.13). Cylcons are described by McCarthy (1976: 66-68) as being basically cylindrical in shape, tapering to a pointed or rounded distal end and ranging in length from 150 to 760 mm and in width from 40 mm to 100 mm. They are typically made out of sandstone, quartzite, basalt, slate and phyllite and their surfaces may be roughly flaked, pecked or ground (McCarthy 1976: 66). In some cases, cylcons may exhibit very finely ground surfaces and/or a range of incised designs such as bird tracks, circles, crosses, stellate forms, single or combined straight lines and herringbone patterns (Etheridge 1918; Black 1942: 15). Four principal cylcon forms are forwarded by Black (1942: 27): cylindrical (cylindrical for the greater part of their length), conical (cone-shaped), cornute (horn-shaped) and phacoid (bean-shaped). Cylcons from Kumbundra are mostly cylindrical forms, although individual phacoid and conical examples are also present. They are circular to oval in cross section and range in length from 150 to 240 mm. All had been manufactured from grey volcanic stone and most are roughly flaked. However, one example is finely hammer dressed and exhibits a single incised line on its surface (Plate 7.12, example at left). It is cylindrical and truncated in form, indicating that it had been broken at some stage and then rounded off for re-use (cf McCarthy 1976: 66).

This collection also contains some pieces of granite from the same contexts as the artefacts (Plate 7.14). These range in length from 45 to 90 mm and are generally slab-like, although one piece is semi-rounded. They do not exhibit any evidence of flaking or ground surfaces, rather they appear to be naturally exfoliated pieces. However, granite is not a component of the geology of Weddin, rather it is found to the south east at a distance of about 60 km, in the sloping topography around Young and about 20 km to the north east in the Bogolong Hills. Therefore, these granite pieces represent Aboriginal manuports brought specifically to Weddin for some reason. In this vein a possible ritual significance for the manuports is
Plate 7.12: Incised cylcon (l) and Bogan pick (r), Kumbundra collection.

Plate 7.13: Examples of cylcons, Kumbundra collection.
not ruled out. In excavations of sandstone rock shelters in the Sydney Basin, McDonald (1993) discovered blocks of basalt sourced from Mount Yengo, a landscape feature locally associated with the Baiame myth. Due to the Aboriginal significance of the mountain, she attributed the presence of the manuports to the social importance of Yengo, thereby giving the basalt fragments a ritual definition (McDonald 1993: 87-88). It is therefore seen as an intriguing possibility that the granite manuports at Kumbundra are reflections of ritual connection between the western side of Weddin and other significant places such as the ceremonial ground in the granitic Bogolong Hills (see Chapter 8).

**Kumbundra Summary:**

The artefact assemblage from the site recorded at Kumbundra is generally typical of the Western flanks of Weddin and in terms of its variety of raw materials displays similarities with the FNW unit. Despite this, a collection of artefacts sourced from the property was found to contain implements that are classed as rare or highly unusual, including a large number of Production Tools (hammerstones and anvils), unusually large cores, a variety of ground edged hatchets and an array of ceremonial artefacts including engraved stones, a Bogan pick and cylecons. A number of notable manuports, namely natural pieces of granite sourced from hilly country to the east, was also collected on the property. These artefacts represent anomalous archaeological occurrences that may be contextually traced to a particular section of the Weddin Mountains, namely the flanks in the vicinity of Guinea Hen and Dingo Gullies north of Weddin Gap on the Western side of the range.
C. Mountain Interior

1) Artefact morphologies and frequencies

For the mountain Interior as a whole, debitage also predominates at 86% of the assemblage (Figure 7.8). The remaining morphologies are: cores (4%), grindstones (4%), blades (3%) and Formal Tools (2%). With only 3 examples, the Interior Formal Tool count is very small and is composed of two backed blades and a burren adze. Hammerstones and anvils also are absent from sites on the top of the mountain.

While debitage, cores and blades are present throughout the top of the range in low numbers, Formal Tools are found only in the Centre and North and grindstones are strictly a feature of the North only, at site SBG1 situated at the head of Small Basin Gully. The grindstones include four fragments of separate bottom stones and a whole lower bottom stone. Grinding surfaces on these stones are broad and typically extend across the entire surface of the artefact, a morphology suggestive of application to seed grinding. Single examples of backed blades were found in the North and Centre.

2) Basic raw material frequencies

Quartz is the major stone type (41%), followed by chert (32%), volcanics (24%) and a very small quantity of indurated mudstone (2%) (Figure 7.9). Seven varieties of chert and two varieties of volcanic are evident, all of these equating with stone types found around the base of the range. Purple chert account for 56% of the chert present and grey volcanic comprises 96% of all volcanics.

Some variation is apparent from North to South. In the North, quartz is most important, comprising 45% of the assemblage and volcanic (37%), chert (18%) make up the remainder; in the South, quartz is also predominant (55%), chert (19%), and volcanics
Figure 7.8: Artefact categories frequency, Mountain Interior units, Weddin Mountains.
Figure 7.9: Artefact raw material frequency, Mountain Interior units, Weddin Mountains.
(19%), and indurated mudstone (7%); in the Centre, significantly chert is the most important raw material, comprising about 64% of the assemblage, with quartz ranked second with only 26% and volcanics (10%).

Internal variation in non-quartz stone types is also notable. In the North and South zones, a limited array of cherts is evident (only 3 in the North and 2 in the South). Singular occurrences of an unusual pale brown volcanic stone are also evident in the North and South at sites BG2 and WW21 respectively. Indurated mudstone is restricted to the South. In the Centre, only grey volcanic is utilised and at least 5 varieties of chert, most of which were not found anywhere else along the top. However, in all three zones purple chert, grey volcanic and quartz are the 'characteristic' stone types.

3) Raw material frequency according to artefact category

All stone types evident along the top of the mountains occur overwhelmingly as debitage. All other stone artefact categories occur in such low numbers as to be considered statistically invalid, when separated into constituent raw materials. However, it is interesting to note that quartz, despite being the most numerous artefactual stone type, was not utilised in the production of Formal Tools at any location along the top of the range. Only 5 cores were found in the mountain top surveys, of which 3 were quartz, and one each of purple chert and indurated mudstone.

4) Curation of stone (level of reduction according to raw material)

For the mountain top as a whole, the average flake length on all raw materials is between 15 and 20 mm. The main stone types, purple chert, other chert, grey volcanic and quartz, all display basic uniformity in flake length across the top of the range, with the
exception of purple chert and grey volcanic flakes in the MTS quadrant where they tend to be longer (by 4 to 10 mm respectively) than at other points.

Average core length for the mountain top is quite small (24 mm), similar to that for the mountain flanks. The average number of negative scars is relatively uniform for all raw material types at about 6, with the exception of a single, heavily curated indurated mudstone example found in the South, which exhibited over 40 negative scars.

5) **Technological attributes**

All flakes have been produced through percussion flaking. The only evidence of bipolar technology is a single quartz core in the mountains' north (MTN). In most cases, flakes tend towards being 'square', with the exception of a blade-like tendency for the small sample of grey volcanic flakes in the South. Another interesting exception is the tendency for non-purple chert flakes to be wider than they are long. Cores are small and 'blocky', with singular examples of bipolar and microblade versions in the North and Centre respectively. No hammerstones or anvils were found on the top of the range.

Blade technology does occur in the form of the single blade core and a small number (5) of blades from all 3 mountain quadrants. These are manufactured from purple chert, pale chert and quartz.

**Mountain Interior Summary:**
The mountain interior assemblage could best be described as ‘depauperate’ in that it exhibits a high frequency of debitage and very little in the way of Formal and Production Tools. Formal Tools are rare all around, and are restricted to the MTN and MTC units.
Grindstones are a feature of the North of the Interior only and are in turn found at one site. Cores are also very rare in the Mountain Interior as a whole.

Quartz, purple chert and grey volcanic are 'characteristic' of the Mountain Interior when it is considered as a single entity. However, there are notable internal characteristics particular to each mountain zone; grey volcanic and quartz typify the North; an impressive array of chert varieties the Centre; and quartz and some indurated mudstone the South. Despite this internal variation, the Interior is more like the Western flank than the Eastern in its possession of grey volcanic as a universally important stone type.

All raw materials occur mainly as debitage, with the stone knapping activity being focused upon percussion flaking of small, carefully curated 'blocky' cores. A small amount of blade production was undertaken, mainly with purple chert.

**Surrounding Plain and slope country**

1) *Artefact morphologies and frequencies*

All basic artefact categories are present in the surrounding country, with relative frequencies being roughly comparable to the Weddin Mountains (Figure 7.10). At this generalised level, the only readily discernible difference between the mountains and the surrounding country is the considerably higher frequency of grindstones and grindstone fragments for Weddin at 5% but only comprising 0.1% of the assemblage in the plains/slopes quadrants. Only 2 grindstones were found outside of the mountains, in the NW quadrant.

In terms of individual quadrants, it can be seen that debitage is universally predominant at over 80% of all artefactual material and all other categories below 10% relative frequency
Figure 7.10: Artefact categories frequency, Plains and Slopes quadrants.
in nearly all cases, except for the high incidence of blades on the Plains/Slopes in the NE quadrant, where they comprise 11% of this quadrant’s total assemblage. It is interesting to note that over half of the blades (54%) occur in a single site, TMC2.

Formal Tools of the Plains and Slopes are mainly backed blades (46%) and scrapers (32%), with very small numbers of eloueras (4%), thumbnail scrapers (4%), tulas (7%) and amorphous adze slugs (6%). A single ground edged hatchet was found in the NE quadrant near Jump Up Rock. Of these implements, the thumbnail scrapers and tulas comprise types not found at Weddin. While the more numerous examples of Formal Tools were found in all quadrants, some distributional trends may be hinted at by the occurrence of the rarer types;

- eloueras were found only in the South of the study area, in both the SW and SE quadrants.
- thumbnail scrapers were only found in the NW quadrant.
- tulas were found only in the North in both the NW and NE quadrants.
- adzes were only found in the East in both the NE and SE quadrants.

Despite such occurrences, the degree to which these finds may reflect actual archaeological trends in the study area is severely limited by the very low numbers of artefacts involved.

Cores account for around 4% of the Plain/Slope assemblage, in comparison with 18% for that of Weddin and they are found in limited numbers on sites in all 4 quadrants. This artefact category is slightly more frequent in the SE than elsewhere. Associated Production Tools, such as hammerstones, were rarely encountered on Plain/Slope sites with only 4 being recorded, 2 in the NW and 1 each for the SW and SE quadrants. Anvil stones are similarly uncommon, a total of only 9 were found on the Plains and Slopes component,
over half of which were from the Currawong site, in the NW about 4 km west of Kumbundra.

2) Basic raw material frequencies

Artefacts of the Plains and Slopes were manufactured from a total of 31 different stone types, including varieties of silcrete, quartzite, chert, volcanics, indurated mudstone and quartz. The predominant generalised stone types for the region as a whole are quartz (38%), volcanics (29%) and chert (28%), although there is notable variation in frequencies between quadrants (Figure 7.11).

The major stone types are clearly identifiable for each quadrant. In the NW, grey volcanic is dominant (41%), followed by quartz (29%) and purple chert (13%); whilst in the SW, it is quartz (51%) and grey volcanic (37%). For sites in the SE, quartz is clearly most frequent (54%) followed by purple chert (24%) and considerably lesser amounts of grey volcanic (10%), while in the NE raw material frequency is quite even at quartz (25%), red chert (30%) and purple chert (27%),

Therefore there are broad-scale trends for grey volcanic and quartz to dominate in the Western quadrants, while in the East quartz, purple chert and red chert are most apparent. At a similar landscape scale, red/purple chert and grey volcanic dominate the Plain and Slope country to the North of Weddin, while quartz appears to have been more heavily utilised in the South. It is worth noting here that the red variety of chert is only markedly significant in the NE. When stone varieties for the Plain and Slope quadrants are considered as a whole the most common are identical to those of the Weddin Mountains as a whole, namely white quartz, grey volcanic and purple chert.

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Figure 7.11: Artefact raw material frequency, Plains and Slopes quadrants.
The greatest variety of raw material is exhibited in the NW with 21 different kinds of stone, including of the rare stone types of the study area, such as silcrete, quartzite and non-grey volcanics. Other quadrants display lesser levels of archaeological stone diversity and are similar to each other.

3) Raw material frequency according to artefact category

The preference for certain raw materials to be used for certain artefacts reveals some strong correlations between rarer stone types and certain artefact categories, particularly, quartzite used in the manufacture of blades in the SW, silcrete and quartzite used for Formal Tools in the NW and silcrete used for blades in the NE. However, as in the mountains analysis, the reliability of these reflections is reduced by the very small sample sizes involved in these instances.

Alternatively, it is with the most statistically valid stone types (that is, larger samples) that the most reliable indications of any such associations can be made. These include only a few basic correlations, for example quartz was rarely allocated to blade and Formal Tool manufacture. Despite the widespread prominence of quartz as an archaeological stone type, it does not appear to have been given any particular Tool application. Notably the other major stone types, chert and/or volcanic were selected for the manufacture of blades and Formal Tools. In apparent accordance with their prominence, the most commonly utilised varieties are purple chert and grey volcanic. Whilst by no means exhibiting a majority proportional use for specialised implement manufacture, these kinds of stone do appear to have been preferred to quartz as the base material from which finer and/or more purpose specific implements were made.
In accordance with this trend is the composition of the small quantity (6) of blade cores found in the Plain and Slope area of which 5 were composed of chert and volcanic. This pattern is maintained within each quadrant.

Cores of all types are consistently composed of major stone types, chert, volcanic and quartz, in accordance with their prominence for each quadrant. It is worth noting that the sample of purple chert cores in the NW is composed of only a single artefact located in Bimbi State Forest approximately 4 km west of Weddin. Cores of rarer raw materials, such as indurated mudstone, silcrete, quartzite and uncommon varieties of chert and volcanics, were only found in one or two occurrences within various quadrants. An interesting factor is that these cores are found on larger sites and within 50 m of water.

4) Curation of stone (level of reduction according to raw material)

Flakes composed both of the major stone types, purple chert, red chert, grey volcanic and quartz and less common varieties are universally small, (generally between 15 and 20 mm length).

Average core lengths are correspondingly quite small (generally 20 - 30mm), although all cores in the SE display slightly greater length, and the quartz cores the NE are on average at least twice the length of their counterparts in all other quadrants. Average numbers of platforms and negative scars for cores are shown in Table 7.1.

The degree of core rotation is on average around one to two events, with highest rotation evident for cores of grey volcanic and purple chert in the SE with 2-3 platforms on average. These figures coincide with the highest numbers of average negative scars on cores, showing perhaps the highest levels of core curation on the Plains and Slopes. Despite this,
levels of core reduction in step with average core length strongly indicate that most cores of the major stone types were being quite heavily reduced in the Plain/Slope country as a whole. Cores of rarer stone types are also small (average length of 31mm) and show evidence of being heavily reduced (average negative scar count of 11).

<table>
<thead>
<tr>
<th>Raw material</th>
<th>NW</th>
<th>SW</th>
<th>NE</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>purple chert</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td>grey volcanic</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>quartz</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Table 7.1: Mean number of platforms and mean number of negative scars on cores of major stone types according to survey quadrant.

5) Technological attributes

Flake length:width comparisons indicate that flakes of the major stone types in all quadrants show a strong tendency towards being square in shape, ie. their lengths and widths are quite similar. In a few cases, flakes show a tendency to be wider than long, particularly on non-purple chert in the NW and on non-grey volcanic in the SE. This would indicate that such flakes were struck from short, broad cores, themselves possibly transported from quarry sites as large flakes, the ventral surfaces of which were utilised as platforms. On average, no flake populations display blade-like form.

Cores for major stone types are universally small and are either short and broad or blocky entities. As described above, these tend to be heavily curated and correspond in length with the average dimensions of flakes of the same stone varieties. This would indicate that the
majority of cores probably arrived at and were flaked in the study area landscape as modestly sized artefacts. The great majority of quadrant cores had been percussion flaked.

Blade technology is evident on sites across the Plains and Slopes region as a whole. Modest frequencies of blades and blade cores in all quadrants indicate that production was focused upon micro-blades, with average lengths being quite small, 18-20 mm and blade cores 18-44 mm.

Evidence of bipolar technology is limited to small frequencies of flakes in the Eastern quadrants. All of these artefacts had been produced from quartz.

**Plains and Slopes Summary:**
The basic flaked stone assemblage of the Plains and Slopes is roughly comparable to that at Weddin in that it is dominated by debitage and other artefact categories such as Formal Tools are rare. However, two Formal Tool types not found at Weddin, thumbnail scrapers and tulas, appear to be peculiar to the NW and NE quadrants.

Cores are far less frequent on the Plains and Slopes than at Weddin, these being found close to water. They are typically short, square shaped artefacts that have been heavily reduced to a length of 20-30mm. Mean flake lengths parallel these dimensions, indicating that these small cores were being knapped on-site and were already being curated by the time they had entered the study area.

Raw materials exhibit some variability between quadrants, although the basic trends evident at Weddin are also reflected: grey volcanic in the west, quartz in the east and purple chert in the parts of the quadrants directly surrounding the Weddin Mountains. A large
range of rarer stone types is evident, particularly in the NW. This roughly parallels the marked diversity in stone evident for the FNW unit at Weddin. It is possible that some of these rarer stone types, such as silcrete and quartzite, were being allocated most frequently to the production of blades and Formal Tools.
Chapter 8

THE WEDDIN MOUNTAINS AND THEIR HINTERLAND AS SACRED LANDSCAPE

The Wiradjuri regional landscape and its features was inextricably linked with legend and mythology, that explained it as a product of the creative period or Maratal and the actions and deeds of ancestral spirit beings. The landscape was thus proof of the Maratal and the creators, it housed powers associated with these beings and was studded with points of potential connection with other worlds - hierophanies or sacred places. Establishing other-worldly connection at these places could result in the release and harnessing of spiritual power and/or communion with powerful spirits seen to dwell above or below the earth. It could also ensure maintenance of cosmological order in step with concepts of natural or ‘proper’ progression, such as the event of death, the transition of the spirit from earth to sky and therefore confirms the maintenance of the Wiradjuri way of life.

These hierophanous locations were the earthly points of the spirit world emergent (cf Ouzman 1998), the most prominent of which in the study area appears to have been within the Weddin Mountains where according to Woolrych’s (1890: 65) ethnographic account the young male initiates of the Burbung made their contact with Baiame.

Widdin' signifies to stop, and it was upon this mountain that the young blackfellow had to remain for a certain time during the ceremony of his initiation into manhood. The mountain is the highest part of the country and a conspicuous landmark for many miles round.

Thus Weddin was seen by the Wiradjuri as a contact point between earth and sky, a place of physical transition where not only people climbed up toward the sky world, but the sky being came down to the earth.
Natural components of the Wiradjuri sacred landscape, each fitting within a broader template of significance but no doubt possessing in many, if not most cases, a particular story of mythological relevance, are apparent in the study area. It may be assumed that several types of places exhibited naturally ephemeral presence and are not only indiscernible today, but underwent processes of natural and cultural reconstruction over comparatively short time frames. Sacred groves, notable thickets or stands of trees, are a prime example of this category. Other natural features, such as mountains, springs, pools and rocks, are, in human terms, 'eternal' and may be expected to have conveyed significant cultural messages through substantial periods of time. In these cases, it is not so much the feature itself that is ephemeral, rather the story that is subject to change over time.

From the basic template of the sacred Wiradjuri landscape constructed in Chapter 3, it is now possible to identify and describe natural and humanly modified places of potential cosmological significance within the Weddin study area. The potential significance of these places may be reiterated or strengthened when factors, such as the local archaeology and toponyms, are also taken into consideration.

**Place and Mountains associated with ‘jumping up’ and connection with the sky world**

A suite of hills, mountains and ranges was associated with Baiame’s final ascension to Bullima throughout much of New South Wales. Limited ethnographies indicate that in the more mountainous topographies of the East, these generally comprised outstanding peaks visible above the surrounding terrain for some distance around. In the West of the state, this legend is connected with a repeated landscape theme of notable, relatively compact and often isolated mountains set within largely peneplain environments. In the study area, there are replications of this in a concise series of well spaced, abrupt hills and remnant ranges which dot a landscape otherwise dominated by flat Quaternary alluvium.
As a result of their geology, the hills and mountains exist in severe topographic contrast to the plains, making them contextually impressive and in the case of Weddin, visually spectacular. Not only do these topographic entities accord with the ethnographic descriptions of Wiradjuri ‘jumping up’ places, but also with Woolrych’s (1890) brief account of the Weddin which provides confirmation of the attribution of sacredness to at least one of these mountains.

Basic physical and visual attributes of the prominent hills and mountains of the study area are given in Table 8.1. From this summary of basic information certain repeated themes are evident including abrupt local elevation, isolation within the plains setting and possession of between one and four prominent peaks. Multiple peaks seem to exhibit the tendency to be separated into concise features at either end of a range.

The shape of the mountains seen from a distance or from close proximity is often regarded as a critical factor. Within the study area forms, such as pyramidal or dome, as at Tallabung and Yambira, are found less frequently than the twin peaked format of Wheoga, Bribbaree and Weedallion which are characterised by twin peaks. Weddin is a singular, large elongated shape as seen from the east or west with a unique shape. It is made up of two sets of twin peaks, one at the northern end of the mountain, comprising Eualdrie and an unnamed summit, separated by the Weddin Gap from a second at the southern end comprising Black Spring Mountain and Weddin Mountain itself.

It could be argued from examples elsewhere in NSW that twin peaks may symbolise the physical manifestation of the initiation ground, the transformation of youth to man and the transition point between the world of men and the world of Baiame, writ large, dominating the landscape. The example of the twin-peaked Manara Range in the far west of the state...
Weddin 430 elongated, with twin peaks at both the northern and southern ends isolated on plain

Wheoga 330 twin peaked razor-backed; from certain angles a pyramid and a pinnacle can be seen isolated on plain

Bribbaree >130 compact and abrupt twin peaks at either end isolated on plain

Weedallion 160 compact and abrupt, twin peaks isolated on plain

Bogolong Hills 200 elongated massif, single major peak with two compact and abrupt outlying hills at northern end edge of hilly country adjacent to plains

Tallabung* 280 compact and abrupt, dome-like with four peaks isolated on plain

Boginderra-Narraburra* >230 series of hills/ranges, multiple peaks plain setting

Yambira* 510 distinct sugarloaf (dome) set above surrounding ranges prominent peak within major range to east

Manna* 200 compact and abrupt single peak isolated on plain at end of lake

Table 8.1: Physical and visual attributes of hills and mountains in the study area.
* denotes highly visible features immediately fringing arbitrary study area boundary.

and its mythological links with the opposing, though interdependent, moieties of Eagle and Crow is a case in point.

Comparable attributes, such these, provide conceptual connection across space; the mountains may be seen as repeated high points set in a sequence across the Plains, or even as a chain of stepping stones. This is emphasised by the fact that the ‘next’, or final point in the chain of connection, not to mention other stepping up points in the distance, is visible from the top of each peak. For instance, a roughly defined set of jumps across the plain
from north to south might comprise: Tallabung - Wheoga - Bogolong - Weddin - Bribbaree - Weedallion - Boginderra; each consecutive point highly visible from the last and vice versa.

A significant attribute of mountains and hills are summits and escarpments that exhibit bare rocky surfaces, such as slabs, platforms, granite domes and cliffs, particularly those offering extensive views of the surrounding countryside. Importantly, places, such as these not only afford vistas of the countryside below, but also uninterrupted exposure to the sky. Such locations are linked with ceremony, as witnessed by various stone arrangements both in the study area in the Bogolong Hills and in surrounding areas (Unger 1976; Stead 1987). Owing to their largely bare, rocky nature and commanding positions overlooking the plains and other features of the study area, the Bribbaree Hills and Weedallion Mountain to the south of Weddin have considerable potential in this respect.

**Places associated with the underworld**

Natural points of entry with the underground, such as caves and deep water features, were generally associated with dangerously powerful, often wrathful spirits, most notably the rainbow serpent or *Thooron* as it was known on The Levels. This mythological landscape association was particularly marked where subterranean water seeped out or flowed to the surface at permanent spring locations and at deep waterholes in rivers or lagoons. Springs, in one form or another, are characteristic hydrological features of the study area, particularly on the footslopes of the main ranges; several of these are permanent. At least one, the spring at Curraburrama, was seen by the Wiradjuri as a point of *Thooron*’s emergence from the underworld (Woolrych 1890: 67). It can therefore be assumed that other comparable places, such as Sauls Springs at Wheoga Hill, other permanent springs at Bogolong and Mortray, locations on the eastern and western flanks of Weddin and on the top of the range itself, may have been attributed similar significance.
Caves, cracks and fissures are characteristic attributes of the escarpments of Weddin and its larger rocky outcrops. As already indicated, they occur externally around the mountain on its outward facing escarpments and also in interior gullies as well as in certain free standing and highly weathered outcrops. Prominent examples here include deep cracks in the cliffs bounding the range’s northern end, many of these being outflow points for seeping groundwater, and the brightly coloured, differentially weathered columns overlooking the mouth of Basin Gully (Plates 8.1 and 8.2). The most important physical attributes of such openings are their apparent depth and internal darkness, properties that suggest connection with the underworld or association with dangerous mythological creatures such as *jugi* or ghost dogs. As has also been discussed earlier, the Wiradjuri recognised a distinct relationship between confined, dark places, and entrapment and mortality; reiterating this belief was the recognition that the most feared of evil or potentially rancorous spirits - *Bugeen, Yeo Yeo, Thooron, tuwi* - were believed to dwell in subterranean contexts. Certain deep, dark caves or fissures therefore have potential to have been regarded as places of death, extreme danger or doorways to malignant realms.

*Other potential ‘breaks’ or points of connection*

The study area exhibits numerous natural ‘breaks’ or marked changes in landscape texture and physical form that correspond with the Wiradjuri hierophanous template. The impact of these breaks is strongly enhanced and reinforced by the comparatively homogenous topography of extensive plains and rolling slopes. Such features may be individually important, or one of the components of a composite suite of landforms.

In the Plains country, it is possible that rocky reefs and outcrops, such as the minor uplifts at Curraburrama, Mulyandry and Jingerangle State Forests, anomalous gravelly ridges and gilgai zones, such as those near the Bland and on the Wah Way Plain, may have been

Plate 8.2: Weathered columns, Basin Gully, Weddin Mountains.
attributed particular cultural significance. Although low in height, certain reef outcrops offer extensive views of the surrounding country and distant more substantial mountains (Plate 8.3). On the well wooded Levels topography, places, such as these, would have afforded rare opportunities to gain a visual perspective of its position and spatial relationship with other landscape features. Questions may subsequently be raised as to whether these specific points were regarded as important for these reasons; for example, did they constitute ‘jumping up’ places or platforms of connection, stepping stones, with the readily discernible mountains in the distance?

Occasional gravelly ridges and gilgais comprise other low key, yet potentially, important natural landscape breaks on the plain. The Wiradjuri association between certain dangerous Tuwi spirits and the former landform has already been mentioned. In the case of gilgai, particularly melon hole formations, a notable downward-oriented or earthly confined association is obvious in the presence of these abrupt and deep holes which occasionally contain ponds of water. While it is not implied here that all such occurrences were of outstanding Aboriginal significance, it is recognised nonetheless that they exhibit physical attributes that parallel cultural conceptions of connection with the underworld, specifically negative space or readily discernible dark voids within the ground.

More substantial contextual landscape breaks become apparent in the vicinity of the outlying hills and mountains where four major features of potential hierophany may be defined: rocky outcrops, isolated rocks, cliffs, gullies and caves.

Notable rocky outcrops in the study area are often positioned in prominent locations, such as on the tops of tall hills and mountains or as conspicuous breaks at the termination points of ridges and escarpments. It is known that such features were recognised by the Wiradjuri as mythological reminders of Maratal events from accounts, such as those of Mathews'
(1904: 347) at Lake Cargellico and Woolrych (1890: 65), of the ‘two boys’ rocks on top of the Bribberri Hills just to the south of Weddin. Comparable, visually striking outcrops occur in concert with places, such as the Wheoga Range (Plate 8.4), Jump Up Rock (Plates 8.5 and 8.6) and the Weddin Mountains. Within accompanying rocky backgrounds, the singularity and visual impact of these features is often heightened by unusual or bright colouring, locally repeated characteristic shape and unusual weathering patterns. The erosion on the exposed surfaces of the mountain is quite dramatic producing tall pillars, suspended boulders and strangely cavernous fissures on vertical surfaces.

In a similar manner, isolated rocks may also be seen as significant and a number of notable examples are found in the study area. In general, whilst these may have been regarded as important to the aboriginal perception of the sacred landscape, only certain characteristics, such as massiveness, uprightness and tor-like weathering, will be dealt with here. Furthermore the associations between rocks and fissures or caves as entry points into the underworld, and the presence of holes which retain water or relatively level eroded surfaces of bedrock may have served to enhance the meaning of a place. Notable rocks include a pair of large, cavernously weathered, large pillars at the northern end of Weddin which have fallen as scree from the escarpments high above, an unusually weathered, free standing pillar-like stone at the base of the range below Eualdrie on the eastern footslopes of Weddin (Plate 8.7) and granite tors and upright stones at Jump Up Rock and the Bogolong Hills. As is the case in the Jump Up Rock these formation are not necessarily of great size, but retain significance in terms of their physical properties of roundness, uprightness and position, within the local context. Given the nature of the local granitic and sedimentary geology, it can be assumed that other similar rocks occur at locations in and around the hills and mountains of the region.
Plate 8.3: View of Weddin from Curraburrama, approximately 50 km west of the range.

Plate 8.4: Rock outcrops, northern end of Wheoga Range.
Plate 8.5: View south over Jump Up Rock. Note upright stone, middle picture.

Plate 8.6: View north east over Jump Up Rock. Note tor on slab, middle picture.
Plate 8.7: Weathered sandstone pillar below Eualdrie, north east flank of Weddin Mountains.
It is also worth noting that by their very nature cliffs act as ‘protective’ barriers around features, especially in the case of Weddin, which is mesa-like in form. While the precipitous nature of cliffs provides a natural physical barrier against ready penetration of the range, the variety of hierophanous connections attributed to these features serves to strengthen their power as deterrents to entry and as a result, heighten the impression of interior sacredness. In this manner, access to the mountain interior is physically and conceptually channelled towards other mountain formations, particularly gullies.

Deep rocky gullies are features essentially restricted to the mountains and must be viewed as important breaks for a number of reasons. First, they are natural entrances to the mountains, penetrative routeways through and into the interior of a greater, culturally significant landscape feature. Second, they are effectively areas of negative space, highly visible gaps within the body of the range. Third, gullies are not only potential access routes through the terrain, but also physically enveloping features which are themselves possessed of internalised landscape breaks including caves, springs, cliffs and occasional waterfalls. In other words, substantial rocky gullies, such as Black Gin, Basin and Guinea Hen, encapsulate voids full of potential natural points of connection with the spirit world. Further, in their role as natural access routes, they inevitably lead upwards toward the top of the range itself. To follow any one of the gullies into the range as far as its headwaters places the visitor at the base of the highest and significant peaks, therefore implying that they were the obvious routes of a conceptual journey from the earth toward the sky.

It is of importance to note here that a substantial feature of the landscape, such as the Weddin Mountains, is a sum of a number of potentially culturally significant natural parts and that the Aboriginal cosmological perspectives pertinent to the range may have found their specific application in concert with the position of the observer in relation to the
mountains themselves (Figure 8.1). From a distance, the mountains’ appearance on the horizon may be suggestive of a singular feature, solid in outline and colour. However, as one moves closer, the range’s cliffed escarpments, gully lines and individual peaks become apparent as separable features in their own right, each possibly with their own significance. Closer still and viewed from the flats below, the range looms over the observer, the nearest part of the mountains and any of its components - for instance, from the west a large gully mouth with a cliffed entrance and/or caves - effectively filling the field of vision. Upon entering a gully, or negotiating a cliffline, the observer becomes enclosed by the mass of the range itself and once again a whole new perspective of the mountains may be said to be in operation as the visitor moves through an environment characterised by gullies, cliffs, rock formations, shelters, springs and waterfalls to eventually emerge onto the flat places, slopes and peaks of the mountain. This process is explored in greater detail below.

**Humanly marked places**

A number of places in and around the study area appear to have been embellished with physical cultural signatures or their roles as natural features were reproduced artificially in order to replicate their connectivity. Examples of the former in and around the study area include: axe grinding grooves, a stone arrangement, a series of aligned stone mounds/heaps, probable rock art sites.

**Axe grinding grooves**

Grinding grooves are quite rare within the study area with confirmed sites in fringing areas at Manna Mountain and Billy’s Lookout and other similar occurrences rumoured to exist in the Narraburra Hills (Apps 1990). However, some portable stones used for axe grinding have been found at several locations in and around the Weddin Mountains. The Manna Mountain site lies to the north of Nerang Cowal. Over 60 grooves are evident
Figure 8.1: Map of the Weddin Mountains showing locations of potentially hierophanous natural features and known Aboriginal ceremonial sites.
on an outcrop of silicified conglomerate near the base of the mountain, not far from the
reported location of the burial mound and scarred tree (English 1978). At Billy’s Lookout,
10 km west of Lake Cowal, approximately 36 grooves are evident on an outcrop of tuff
which also exhibits a permanently watered rock hole nearly 2 m deep. The hole itself shows
signs of having been artificially expanded by flaking of the surrounding rock and a mound
of stones occurs nearby. Humanly made features, such as these, were incorporated by the
Wiradjuri into the mythology of Baiame’s exploits and were viewed as products of the sky
hero’s activities during his time on earth (Cable and Coe 1899).

Stone arrangements

There is an Aboriginal stone arrangement located in the Bogolong Hills, known as
Driftway. It was described by Stead (1987), as an Aboriginal ceremonial ground, based on
the NSW NPWS 1980 site record (site number 43-6-007) as a series of curvilinear stone
alignments radiating outwards from a large central rock on a bare granite outcrop. However
closer examination revealed this not to be the case; there are 3 lines of small granite
boulders, forming 2 corridors, each about 2 m wide, running approximately from north to
south for about 38 m (Figure 8.2). There are also tors, and larger natural, outcrops of
granite, some exhibiting small shelters, and small cairn-like, heaped accumulations of stone
as well as at least 7 rock wells. It is located on the summit and ridge of a bare granitic
outcrop on the western edge of the Bogolong Hills on the northern flank of an ephemeral
creek. It faces west overlooking the Ooma Creek valley, with the northern end of the
Weddin Mountains to the south west and the Wheoga Range to the west north west.

On the approach from the west, just below the summit ridge on a steep granite slab, are a
series of human enhanced circular holes, generally 60 cm in diameter and up to 1 m deep
which would have retained water and been protected with a slab (Plate 8.8). On the
Figure 8.2: Site plan, 'Driftway' Aboriginal stone arrangement, Bogolong Hills.
ridgeline itself at the northern end, there is a large blocky outcrop standing about 2-3 m high with several wide and vertical fissures (Plate 8.9). Immediately on its eastern side of this feature, there is a small sub-circular flat area about 10-15 m in diameter. From the northern edge of this flat, rising up the smooth, bare rock surface are 3 lines of single stones, spaced between 5 and 100 cm apart, which seem to begin from a single central stone and form 2 corridors, each about 2 m wide, which trend for about 37.7 m where they appear to join at the top of a 1.5 m rise at a single stone (Plates 8.10 and 8.11). Beyond this point continuing south, there is a short series of small stones on the rock surface about 15 m distant and then at a distance of a further 30 m there is a small, placed upright rock about 40 cm long, 20 cm wide and 50 cm tall with a line of smaller, flatter rocks to the south, the surface at this point is level with earth patches and bare rock. A broad grassy and rocky flat lies to the south of this point and a small stone circle about 1 m in diameter is to be found on this surface about 60 m away (Plate 8.12). From a group of tors and cairn at the far northern end of the outcrop, about 100 m from the large rock near the stone arrangement, the site overlooks the Jump-Up rock complex and the Weddin Mountains (Plates 8.13 to 8.15).

An interpretation of this site is that it is a Burbung location. The northern flat could have been the location of the first circle, Burbung, and from which a participant would not have been able to see to the west, north or east. The corridors of stones to the south leads the viewer in that direction but one’s view from the flat is restricted by the slight, 1.5 m rise in the outcrop at the end of the corridor (ie. about 35 m away), so that one cannot see beyond that point. It invites movement up the corridor and upslope and passes several clusters of stones, perhaps heaps, towards the end of the corridor section. A line of stones then leads the participant to the upper flatter area from which there are views to Eualdrie (221°) and the northern scarp of Weddin (232°), Wheoga (299°) and as far as Tallabung, located from this position between the two parts of the Wheoga range (Plates 8.16 and 8.17). In this area,
Plate 8.8: Artificially enlarged rock hole or ‘native well’, Driftway site, Bogolong Hills.
Plate 8.9: Fissure in granite outcrop at northern end of Driftway stone alignment.
Plate 8.10: View of main stone alignment, Driftway site, looking south.
Plate 8.11: View of main stone alignment, looking north.
Plate 8.12: Small stone ring, approximately 65 m to south of stone alignment.
Plate 8.13: Granite tor, approximately 100 m north of main alignment, Driftway site. Jump Up Rock is highly visible in middle distance (wooded rise in paddock to right of ranging pole).
Plate 8.14: Cairn at the base of a granite tor, approximately 100 m north west of the main stone alignment, Driftway site. The northern end of the Weddin Mountains is highly visible at this location.
Plate 8.15: Detail of cairn at base of granite tor.
Plate 8.16: View of Eualdrie Peak at northern end of the Weddin Mountains from the most elevated point of the main stone alignment, Driftway site.
Plate 8.17: View over the plains to the north west from most elevated point of main stone alignment, Driftway site. Visible on horizon are the northern and southern ends of the Wheoga Range, with Tallabung Mountain in far distance, middle horizon.
there is space for a smaller second circle, or goonaba, on the flat but this could even be the very small stone ring already described. Movement from north to south would invite revelation. The two locations suggested for circles are not intervisible, a trait noted at several other stone arrangement Burbung sites in the general area, such as Governor Hill at Goulburn and in the Tumut area (Boot 2000 pers comm).

A ground edged hatchet, made on a dense, heavy dark grey-wacke, was found at the foot of this outcrop (Needham pers. comm. 2000).

A second site, a granite outcrop called Jump Up Rock, situated 6 km to the north of the Bogolong site, may also be considered a humanly altered stone arrangement and perhaps ritually linked with the Bogolong site itself, indeed it can be viewed from the tors and cairns at the northern end of the Bogolong site. The site seems to be focussed upon two upright stones, probably unmodified tors, about 30 m apart on the summit of the granite dome (Plates 8.5 and 8.6). Both are associated with bare granite surfaces. These may be simply unmodified tors but there is some indication that loose rocks have been cleared away from them and lower down the slope there are two terraces which appear to have been cleared of loose stone. The site has views of the Bogolong Hills and the Weddin Mountains to the south, the Wheoga Range to the west and two prominent local hills, Bald Hill and Birangan, to the north and east. A ground edged, stone hatchet made of grey-wacke was found on a creek bank, 200 m from the base of this site. This find confirms a spatial association between ground-edged hatchets and/or ceremonial stones and stone arrangement sites.

Stone mound site at Kumbundra

A series of aligned stone mounds or heaps were found at Kumbundra on the western flank of the Weddin Mountains below Weddin Gap and immediately to the south of Guinea
Hen Gully. It comprises a complex of 24 collapsed, and somewhat dispersed, stone mounds or low cairns on a broad, gently sloping alluvial fan and creek terrace at the base of Weddin Mountain and its outlier, Flat Top Hill (Figure 8.3).

The general setting of this mound complex comprises a very gently sloping paddock slightly elevated above and just to the west of the course of a north-south trending creek that drains Dingo Gully in the centre of the Weddins. However, creek flow is largely sourced from a semi-permanent spring on the slope just below the mouth of the gully. The location is naturally hemmed in to the north, west and east by Flat Top Hill and the main Weddin Mountains (Plate 8.18), with open views across the plains to the south and south east. To the south east, Black Spring Mountain forms an imposing landmark (Plate 8.19), while to the south on the plains the Bribbaree Hills, Weedallion Mountain and Boginderra Hills are all visible (Plates 8.20 and 8.21). While stony screes surround the area and cobble beds are evident along the course of the creek itself, the lower slopes and terrace formations upon which the site is located appear to be composed of silty soils and are naturally devoid of rocky outcrops. The site itself contains a number of small depressions, 3 to 5 m across and 1 – 2 m deep which are springs on the gently sloping talus.

The stone mound site contains 24 localised accumulations of large pebble and cobble sized stones, the accumulations varying in area from approximately 1 m$^2$ to 165 m$^2$ (Plate 8.22) They are separated from one another by distances of between 10 to 30 m. The stones are typically sub-angular to semi-rounded quartzite and sandstone cobbles locally sourced from the metasedimentary formations of the mountains, although, in some cases, large cores and flaked pebbles of volcanic stone, exotic to the range, had been incorporated into the aggregations. They are assembled in a matrix of earth and gravel and at present are no more than two courses high. Each accumulation exhibits at least one central concentration of
Figure 8.3: Plan of the Kumbundra Aboriginal stone arrangement site, Western Flank of the Weddin Mountains.
closely packed stones, surrounded by loose scatters of similar stones, suggesting that these are remnant mounds or cairns (Plate 8.23). In some locations these packings form discernible shapes, circles and sinuous elongated lines.

The epicentres bear a strong resemblance to an historically documented ceremonial mound structure in Victoria, which was excavated by Frankel (1982) at Sunbury and to other stone arrangements, such as Black Mountain in New England (McBryde 1974). In some cases, up to three or four such epicentres were discernible per individual accumulation, with a total of 43 individual bases being evident on the site at the time of recording.

The site is divided into two groups of mounds: a southern and a northern, separated by about 220 m. The distribution of the southern group is restricted to within 160 m of the creek line, although twentieth century cultivation of the paddock upslope of the mounds may have obliterated further evidence for the site. This disturbance constitutes the only cultivation the general location has experienced since it was cleared for grazing in 1912. The area of the mounds has never been cultivated (Graham Grimm 2000 pers comm). The southern group of mounds appear to be arranged in a rectangular area covering approximately 130 x 160 m.

Although the majority of the accumulations resemble collapsed cairns, purposeful alignments of stone are evident within the southern section of the site, such as short curved lines and rings of approximately 1 m in diameter, some with concise stone epicentres. Collectively this mound group forms a series of 5 E-W (approximately 80° magnetic) rows about 20 m apart and each containing 3-5 epicentres and at least 2 N-S alignments at right angles to these (Figure 8.4).
Plate 8.18: View north west over Kumbundra mound site, Flat Top Hill in background.

Plate 8.19: View south east from Kumbundra mound site, Black Spring Mountain in distance.

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Plate 8.20: View to south east of Bribbree Hills from Kumbundra mound site.

Plate 8.21: View to south west of Weedallion Mountain from Kumbundra mound site.
Plate 8.23: Example of mound epicentre, *Kumbundra*.
Figure 8.4: Plan of E-W and N-S mound alignments, Kumbundra site.
Stone aggregations in the northern part of the site are generally much smaller and less dispersed than the southern examples, although they seem to be low stone piles rather than taller mounds or cairns. Several of them have been exposed by soil erosion and occur with flaked artefacts within the top 20 cm of the local silty alluvial deposit. They are aligned along the creek-line and may be indicative of a sinuous line trending NNW.

The mound site also has within it at least 3 instances of baked cay balls, possibly Aboriginal hearth material (cf Klaver 1987). Two of these occurrences are evident eroding from the creek bank in the northern section, one associated with very old charcoal. The single baked clay pellet accumulation evident in the southern section is incorporated into the scattered remains of a stone mound.

**Rock art sites**

Several probable rock art sites have been reported to exist at cave locations in the northern and southern parts of the Weddin Mountains. Both are alleged to be pigment art sites, one in Basin Gully in a rock shelter or cave. Many possible locations were examined and the conclusion reached that if rock art was present, it had been rubbed off by goats, and the other somewhere in the rugged cliffed and scree country on the eastern face of the range below Black Spring Mountain. This area proved difficult to access and no systematic search could be undertaken.

**Burial mounds and carved trees**

Eight Wiradjuri mound burial sites marked by carved trees are known to have existed within the study area. These include individual mounds with 1 to 3 trees at Manna Mountain at the northern end of Nerang Cowal, East Marsden and Moonbucca on the Bland, Bogies Island in Lake Cowal, Thuddungra just south of Weddin and Bumbaldry, east of Grenfell. Two locations, Geraldra on the Bland and the western shore of Lake
Cowal, were known to have exhibited multiple mound burials and considerable numbers of carved trees. Further, there is the possibility that additional burials once existed on the flats to the east of Weddin (Graham Grimm 2000 pers. comm.).

All of the burial mounds were close to permanent water (such as creeks or lakes) and were situated either at the base of a hill, or at points on the plains from which prominent hills or mountains were highly visible.

Eternal and obvious as many of the natural sacred features were, their power was potent but essentially latent provided individuals complied with Wiradjuri social conventions. The specific relevance and utilisation of certain landscape features as transition points between worlds required processes of ‘proper’ access and reigniting of power and as such always involved ritual that implicated levels of social privilege. For instance, the rainbow serpent and its waterhole or spring home was lethal to all but the clever man who had engaged in all of the appropriate protocols for visitation. Likewise, although his aura was inherent within certain sacred places, Baiame needed to be summoned or ‘sung’ into existence by qualified individuals before either initiates or clever man candidates could engage in compulsory communion with him. Thus necessary alignment had to be made between temporal and spatial ‘gateways’ to the spirit world, ritualised events, such as rites of passage, including Burbung, and the burial of clever men as the temporal, and hierophanous locations where these events took place (Weddin Mountain, Manna Mountain) the spatial.

**Toponyms**

A number of present-day toponyms within the study area are suggestive of the Wiradjuri cultural landscape and may also provide indications of sacred association and ritual significance. For example, the meaning contained within the name ‘Weddin’ or weedin, as a high waiting place, a location to be left to contemplate in the presence of
Baiame, has already been discussed with reference to the time in the wilderness aspect of initiation. This concept is also suggested in the place names of other prominent mountain ranges in The Levels, such as Wheoga and Weedallion. However, to the north east of the Weddins in the vicinity of the Bogolong Hills a small collective of place names, archaeological remains and cultural/topographic templates hints at a landscape of interconnected sacredness. These toponyms exist today as a consequence of the records of the area’s first surveyors, who were obliged during their mapping of New South Wales to record Aboriginal place names where possible and therefore retain a version of it for posterity.

There are three toponymic components of this landscape of potential ceremonial importance: Jump Up Rock, Goonumburrung Creek and Munjal Hill in the north east of the study area in and around the Bogolong Hills (Figure 8.5).

**Jump Up Rock**

Despite the fact that it is clearly marked on topographic maps, no explanatory records appear to exist for the toponym Jump Up Rock. While it could be assumed that this place name suggests an outstanding local formation that subsequently draws attention due to its impressive local height and/or shape, such as the case of ‘jump ups’ or mesas in the Tibooburra area, it is in reality nothing more than an isolated, low hill studded with weathered granite boulders (Plates 8.5 and 8.6). Local landholders of Birangan and Arabanoo properties regard it a misnomer because of its seemingly unimpressive nature. However, it must be regarded highly significant as the origin of the toponym lies in the cultural associations of the feature rather than a simple description of its appearance. Given the Wiradjuri cosmological need for places of ascension to the sky, particularly in connection with the Burbung ceremony, it may be suggested that Jump Up Rock may be of Aboriginal origin reflecting a possible sacred connection with the nearby Bogolong
Figure 8.5: Location of toponymic components, Bogolong Hills complex.
ceremonial ground and possibly with other topographic features of the study area. While field inspection of the rock revealed no readily discernible stone arrangements, such as cairns or alignments, the top of the uplift offers open views of the Bogolong Hills complex, the Weddin Mountains and the Wheoga Range, attributes that may have been of Aboriginal ritual importance.

Use of the toponym 'Jump Up Rock' for the creek south of the rock is also seen as potentially important. This creek has no immediate physical connection with Jump Up Rock itself, its source is in the Bogolong Hills and it flows initially along its footslopes. Perhaps it was named after the low hill to the north or another local feature also associated with ritual ascension to the sky. Perhaps too there has been a toponymic drift across country. Nevertheless, its use as a creek name may be European, but it still may be a reflection of local Aboriginal landscape perception remaining inherent. A further possible explanation is that it may reflect the ceremonial status of the adjacent Bogolong Hills, a spatially and perhaps ritually connected with the rock, signifying it as part of the concept of 'jumping up'.

**Goonumburrung Creek**

Goonumburrung Creek is a name of Wiradjuri origin and is made up of two components, *Burbung* and *goonum*. The former refers to the *Burbung* ceremony of male initiation, whilst the latter implies *guunang* or yellow ochre (McNicol and Hosking 1994:88), both of ceremonial importance. An additional possibility is that *goonum* is a reference to the *goonaba*, the smaller of the two connected rings of the Burbung ground (Mathews 1907). The fact that this toponym has been applied to a landscape feature in this particular area is of major significance to this study. Although the precise relationship between the creek name and the ceremony remains unknown, the toponym provides
additional evidence of a local landscape within which the recognition and enactment of the sacred was integrally linked. From a landscape perspective, this creek location has open views to the Bogolong Hills in the east and the Weddin Mountains to the south. Goonumburrung Creek itself is also connected with these locations by virtue of the local hydrology; a short stream, it drains directly into Ooma Creek, a watercourse that has its headwaters at the Weddin Mountains and which also receives nearby drainage from the Bogolong Hills complex via Jump Up Rock Creek.

*Munjal Hill*

Munjal Hill is included in this consideration due to the combination of a possible linguistic interpretation of its title and its occurrence close to the above mentioned natural and cultural landscape features. The relevance of the name ‘Munjal’ lies in it being a sound shift variation of the term *bujarn*, the Wiradjuri system of social inheritance of or access to country through the mother’s line (see Chapter 3). As this system of inheritance is totemically based, it has strong ritual overtones and was possibly an important educational component of the *Burbung*. In his study of the southern Wiradjuri, Kabaila (1998: 86) notes the sacred importance of a landscape feature known as Mudjarn Mountain, a prominent feature in the Tumut Valley near Brungle, used as a trigonometrical point in the late 1820s and recorded as ‘Mojongbury’. According to Aboriginal informants from that area, the mountain was associated with traditional initiation ceremonies and therefore was strictly avoided by all except clever men (Kabaila 1998: 86). Given the strong ritual overtones of *bujarn* in Wiradjuri law and its possible connections with initiation, it is seen here as more than coincidental that a mountain intimately connected with the *Burbung* should be given the same title. Rather, it is suggested that through its integral role in the reinforcement of the totemic system, this particular landscape feature became in effect an embodiment of the institution of *bujarn* and subsequently inherited its name. If this is so, it is an intriguing possibility that Munjal Hill may have played a similar Aboriginal ritual role in the study.
area to that of Bujarn Mountain at Brungle, or was at least connected in some manner with the local landscape of the *Burbung*.

It is also interesting to note that Birrangan hill from the Wiradjuri word ‘birra’ meaning a distant place or in the distance, perhaps the most distant place in the north east seen in this direction from either Weddin.

**Bogolong Hills as an initiation zone**

From the field evidence of stone arrangements at Bogolong and Jump Up Rock and the place name evidence, it is suggested that the Bogolong Hills complex was a possible Wiradjuri ceremonial landscape.

The stone arrangement at Bogolong is set on a hill with views of the Weddin Mountains to the south west and the Wheoga Range to the west and to Birangan Hill and Bald Hill, immediately to its north. Both of the latter are prominent extensions of the same intrusive granitic range and which encircle the catchment of Jump Up Rock Creek, a watercourse that drains westwards into Ooma Creek. Two kilometres to the west of Birangan Hill, there is the low, dome-shaped, weathered low granitic outlier or knob called Jump Up Rock, a geological formation that effectively acts as a signifier of the aforementioned series of hills that appear as an elevated backdrop to the knob when viewed from the west, which in part is also a stone arrangement. It too has prominent views to Weddin and Bogolong in the south and Wheoga in the west.

Each of the identified toponyms is probably indicative of a topographic component or place that played a role in the manifestation of ceremonial activity, possibly the *Burbung*, either in concert or at separate times. Considering the importance of conceptual elevation of ritual participants to the sky world in Wiradjuri ceremony, one possible scenario forwarded is that
the complex of hills was viewed as a chain of 'stepping up' points with each feature playing a role in the stage-by-stage movement of the ceremony across the landscape (cf Howitt 1904). It is also suggested that by virtue of their prominence and natural connection with the Bogolong Hills and Jump Up Rock, Birangan Hill and Bald Hill were included in the ritual progression. Goonumburrbung Creek, a tributary to Ooma Creek, also significant in initiation, that drains from low hills 6 km directly west of the Bogolong.

Located in the adjoining valley to the east of the Bogolong Hills is Munjal Hill, a concise, dome-shaped, foothill of the Conimbla Range that lies some 8 km further to the east of the Bogolong Hills complex. It should not be discounted as an additional part of this complex, this potential factor adding an element of landscape-scale interconnectivity between significant natural features.

**Intervisibility**

On the New South Wales south coast, intervisibility played a key role in the mythological and ritual connection held to exist between widely separated mountains, such as Pigeon House, Gulaga (Mount Dromedary) and Mumbulla Mountain (Egloff 1979; Rose 1990). Application of this rationale to the study area, results in the suggestion of possible broad-scale conceptual links between what are effectively chains of isolated mountains and hills across the plains and the rolling country in the east. As already mentioned, the Weddin Mountains are plainly visible from the Bogolong Hills complex and this area may in turn be clearly defined from the top of Eualdrie at the northern end of the Weddins. Such intervisibility is a highly important attribute which, to knowledgeable participants in the prehistoric ritualised landscape, may have potentially linked the two ceremonial locations. There can be little doubt that members of the Wiradjuri community were aware of the identity, cosmological status and ceremonial importance of the mountains they could see on the horizon.
Reconstruction of the sacred landscape though a journey to the Burbung

Aboriginal passage across the study area would have been a continuous journey through a world full of corporeal reminders of the ancestors (great and clever men) and the presence and powers of mythical beings, in many respects a broader landscape interpretation of what had been explained as part of Burbung. A landscape which characterised the mythological past was inherent in all aspects of Wiradjuri existence, from both the everyday lifeways of food and tool procurement to the highly formalised rituals of initiation and death. Analysis of the regional archaeology suggests that prehistoric hunter-gatherers had incorporated all parts of the study area into their modes of occupation and movement, although the exact nature of this broad-scale habitation is difficult to define through the scant physical of the sites. It can only be assumed that during the course of this human movement across the plains and slopes people were acutely aware of certain components of the landscape, not only in their immediate presence, but also visible at varying degrees of distance on the horizon.

The reconstruction of this landscape perspective represents a considerable challenge to the archaeologist, especially considering the highly incomplete nature of our current knowledge of Aboriginal habitation of the region in question. Despite this, an interpretative avenue exists for one especial mode of Wiradjuri movement across the landscape of the study area: travel to a Burbung ceremony.

From available historic documentation and archaeological interpretation, certain places in the study area represented spatial points of other-worldly connection within the Aboriginal sacred landscape and that important temporal opportunities periodically presented themselves for the establishment of parallel cosmological connection at these places. In this respect, knowledge that the Burbung was enacted within the study area provides the
opportunity to identify specific landscape locales that people specifically travelled to at certain times from other parts of the region and beyond.

Ethnographic records suggest that the siting of the *Burbung* ground itself was often an event that did not require return to any specific point or pre-existing ceremonial ground. In other words, the cleared level areas of the initial phase of instruction were important, but repeatable, constructs established in areas seen as suitable for *Burbung*. Therefore, there could be several such grounds in a small area with only few sites ever being used more than once that one event and were not necessarily reused in subsequent initiations. In contrast, it was the situation of the ceremonial ground in relation to the presence of a regionally recognised set of specific cultural landscape components that provides an indication of a more stable, fixed sacred geography. Thus ceremonial *areas*, rather than specific *sites*, were revisited for a given ritual purpose over time. This concept is particularly relevant when it is considered that the main meeting and camping places of the multiple groups participating in the ceremonial event were invariably situated some distance from the ground itself.

Within the study area, at least two such ceremonial areas can be identified, the Weddin Mountains and the Bogolong Hills, both natural places that still exhibit physical evidence of *Burbung* ceremonies in the past. It is the prehistoric event of Aboriginal travel specifically to such sacred places that provide the rationale for this consideration.

In this instance, the destination point for the ritual participants is seen to be the Weddin Mountains, a recognised place where the *Burbung* had been enacted over what is assumed to have been a considerable span of time. While the principal ceremonial grounds themselves may have been sited at any number of points on the flats around the base of the range over the years, a repeated theme of the ceremony *per se* is held to be the isolation of
initiates on the top of the range during their communion with Baiame. In this manner, the mountains themselves become the spatially fixed landscape hierophany of the ceremony.

In theory, travel to the Weddin Mountains across the surrounding study area could have been undertaken by a multitude of potential routes, especially during good seasons when abundant water was available on the plains. However, it is suggested that identified linear routes of travel were utilised for this purpose, specifically along the courses of the area’s major creeks. Creeks provide well defined natural routeways through the landscape and were possibly of marked importance for travelling through the heavily wooded plains country, particularly during drier times. These waterways also provided natural connection between back country catchments such as Weddin, with the major river valleys that White (1986: 96-97 ) suggests may have formed the ceremonial ‘heartlands’ of many Wiradjuri ritual communities. Therefore it is presumed that creek line journeys were perhaps the norm for Burbung and at least 8 such routes can be proposed (Table 8.2, Figure 8.6) of which 3 will be discussed in detail.

<table>
<thead>
<tr>
<th>Direction of origin</th>
<th>Burbung route to Weddin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. North</td>
<td>Via Central Lachlan along Ooma Creek</td>
</tr>
<tr>
<td>2. North West</td>
<td>Via Lower Lachlan, Lake Cowal along Caragabal Creek</td>
</tr>
<tr>
<td>3. West</td>
<td>From Lake Cargellico/mallee via Caragabal Creek</td>
</tr>
<tr>
<td>4. South-west</td>
<td>Via Temora along Bland/Burrangong Creek</td>
</tr>
<tr>
<td>5. South</td>
<td>From Murrumbidgee, via Stockinbingal, upper Bland</td>
</tr>
<tr>
<td>6. South east</td>
<td>From Young via Burrangong Creek</td>
</tr>
<tr>
<td>7. East</td>
<td>From Cowra via Bumbaldry along Tyagong Creek</td>
</tr>
<tr>
<td>8. North East</td>
<td>From Gooloogong via Warraderry and Emu Creeks</td>
</tr>
</tbody>
</table>

Table 8.2: Suggested creek line routes travelled by participating groups to Burbung at the Weddin Mountains.
Figure 8.6: Creekline routes of Aboriginal travel to Burbung at Weddin Mountains.
In this area many of the creeks lead towards the Weddin Mountains and indeed have their source springs on or immediately below the mountain itself.

Travel along any of these natural routes may well have involved another level of ritual in itself because features encountered include such as lagoons and rock pools, groves of trees, burial mounds and views to particular high points to the left or right, always with the knowledge that Weddin lies straight ahead. As such, they are physical threads of connection between places across space, in effect, possessing to some degree the essence of the destination.

For the sake of this hypothetical reconstruction the ultimate destination is taken to be the ceremonial ground at *Kumbundra*. Only three primary routes to this part of the Weddins will be described in detail: from the north west along Caragabal Creek; from the south west along Burrangong Creek; and from the north along Ooma Creek.

**Route 1. Ooma Creek form mid Lachlan**

On the basis of the stone arrangement and toponymic studies, the Bogolong Hills complex can be viewed as a possible Wiradjuri ceremonial landscape, particularly devoted to initiation ceremonies.

Each of the identified toponyms is probably indicative of a topographic component or place that played a role in the manifestation of ceremonial activity, possibly the *Burbung*, either in concert or at separate times. Considering the importance of conceptual elevation of ritual participants to the sky world in Wiradjuri ceremony, one possible scenario forwarded is that the complex of hills was viewed as a chain of ‘stepping up’ points with each feature playing a role in the stage-by-stage movement of the ceremony across the landscape (cf Howitt 1904). It is also suggested that by virtue of their prominence and natural connection with
the Bogolong Hills and Jump Up Rock, Birangan Hill and Bald Hill were included in the ritual progression. Due to its relative closeness, Munjal Hill should not be discounted as an additional part of this complex, this potential factor adding an element of landscape-scale interconnectivity between significant natural features.

If such an interpretation is plausible, how then may the identification of a series of natural features incorporated into Wiradjuri ritual in this part of the study area relate to the similarly significant Weddin Mountains some distance to the south west? Both areas were of ritual significance and may well have been linked through the Burbung. One possible avenue of recognising conceptual affiliation between these features is through considering attributes such as intervisibility and physical connection of natural features by subsidiary landscape components such as drainage lines.

Physical connection between these points may in turn have been established and maintained through the recognition that natural linear features of the landscape, such as the major creek lines which emanated from distant landforms and which passed close by and/or were hydrologically linked with other significant places. In this regard, the course of Ooma Creek, a drainage line that commences at the Weddin Mountains and is connected with Jump Up Rock Creek and the Bogolong Hills, is of outstanding importance. In its natural state, this watercourse drained Weddin and Bogolong but it also served as a natural routeway between them. It is proposed that rituals conducted at or near the Bogolong Hills were extended to include the Weddin Mountains visible on the horizon 12 km to the south west, both visually as the ceremony unfolds and actually as the initiates made their journey to it for isolation. Therefore the ceremonial journey from one of these places to the other took place along the banks of Ooma Creek.
This watercourse is an ideal access route directly to the Weddin Mountains from the Lachlan River country immediately to the north. Such a route may have been travelled not only by the people of the upper-middle Lachlan River, but also by participants from further north, including the Macquarie or Bogan Rivers. From the Lachlan at the present day location of Forbes, it is a 15 km journey across the Grawlin Plain to the lower reaches of Ooma Creek at Garema. From this point it is approximately 72 km along the creek to the Weddin Mountains.

From the centre of the Grawlin Plain, the most outstanding visible landmark lying in the basic direction of travel would be the Wheoga Range directly to the south. From this point the razor-backed range is viewed directly in alignment with its north-south axis and appears as a striking pinnacle in the distance. To the west, Tallabung Mountain and its composite peaks, Mootch, Carrawandool and Narrowroong, would also form a striking isolated feature on the horizon.

Passage further south would result not only in the appearance on the horizon of the Bogolong Hills complex to the south east, but also in the distinct alteration in the appearance of the Wheogas as the perspective shifted to a view from the north east. From this angle the range appears more as an elongated, flat-topped feature. It may also be expected that certain high points of the Weddin Mountains, particularly Eualdrie Peak, would be evident between the Wheogas and the adjacent low hills. In this manner, the range would be apparent as a comparatively small, but high, single mountain top in the far distance.

Close to halfway through the journey the travellers would find themselves at the entrance of a valley between 5 and 7 km wide, which is bounded by a group of low hills, such as
Mortray, Lucy and Snake Hills in the west and the Bogolong Hills complex in the east. The vista over the low hills to the west would be dominated by the Wheogas, while in the east the precise shapes of Bald Hill dome, flat topped Birangan Hill and Jump-Up Rock and would provide conceptualised, landscape-scale, ‘stepping stones’ to the ceremonially significant granite outcrop with its Burbung site in the Bogolong Hills. In the distance and framed within the shape of the valley itself, the Weddin Mountains would appear as a dark, elongated range with the high twin peaks of its northern end.

Passage through the full extent of the valley would be overshadowed by the length of the Bogolong Hills in the east with the Weddins increasing in scale to the south including the appearance of the red cliffs at the northern end. Near the end of the valley, travellers would be confronted with the permanent Bogolong Springs, suggested to been associated with the underworld and/or emergent spirits. By the time of emergence from the valley 7 km north west of the current location of Grenfell, the Weddins would represent the most prominent natural entity visible, its red cliffed escarpments under Eualdrie Peak plainly visible (Plate 8.24) and the distant twin peaks of Black Spring Mountain and Weddin Mountain now prominent at the southern end.

The sight of the southern twin peaks would gradually become the dominant view as Ooma Creek was followed to its source, a number of permanent springs at the base of the range on the eastern side of Weddin Gap. Once again, the cosmological role of these hydrological features in light of their position at the headwaters of the creek, as spatial points of entry to the underworld and as occurrences situated directly under the cliffed escarpments of the peaks of initiation, may be assumed to have been notable.
Plate 8.24: View of Eualdrie Peak at northern end of the Weddin Range from 9 km east. Note cliffed escarpment.
Given the replication at this point of the range of the natural attributes evident at Kumbundra (situation mid-way along the length of the range beneath the culturally significant peaks, possession of permanent springs), it is possible that a comparable ceremonial ground also existed here. Further field-based research incorporating this section of the mountains may well reveal a similar accumulation of stone mounds.

From this point, the most direct line of access to Kumbundra was over the top of the range at Weddin Gap. Alternatively, travellers could have followed the base of the range to the nearby Emu Creek and followed this stream to its junction with Burrangong Creek onwards to the possible camp ground near Bimbi. While the latter option amounted to a final distance of almost 30 km as opposed to only 13 km over the gap, as in the case of entering Black Gin Gully in the mountains’ north west, it is unknown whether passage through the mountains, especially in such close proximity to the high communion point of the Burbung, was actually culturally permissible.

**Route 2. Caragabal Creek from the middle Lachlan valley**

This route may have provided a corridor of travel for groups of people coming from the country west of the Bland, such as from around Lake Cargellico and also those from around the junction of the Lachlan with the outflow of Lake Cowal at Bogandillon Swamp. As the major waterway in the far west, the south to north flowing Bland Creek itself may be assumed to have played a major part in the movement of people to its confluence with Caragabal Creek. In turn, Caragabal Creek acts as a natural corridor from the Bland near Marsden eastwards to Junction Hole and then onwards via Little Caragabal Creek to the mouths of Basin and Black Gin Gullies at the north west part of the Weddins, a total study area distance of approximately 57 km.
In the case of groups that had come from the Lachlan at Bogandillon Swamp, the initial phase of the journey would have taken them past Manna Mountain with its grinding grooves and the associated burial site at the northern end of Nerang Cowal. Depending upon the route taken around the lake, the burial sites located on its western shores (English 1978: 28) and the solitary hill called Billy’s Lookout with its grinding grooves would also have been passed. Further travel southwards along the eastern shore and the course of the Bland would have afforded a constant view of Tallabung Mountain, with its distinctive dome shape with sharp, multiple peaks isolated on the open plain to the east.

As the journey turned eastwards from the Bland at the present day location of Marsden, the Weddin Mountains would have been plainly visible as the point of destination on the horizon, wherever naturally grassy plains allowed open views across The Levels (Plate 8.25). From this point, Weddin appears as a solid, dark coloured, completely isolated, and multiple-peaked massif. From Marsden to Junction Hole, itself a deep waterhole, extensive gilgai country would have been encountered, with intermittent views of Tallabung to the north east as a concise, twin- or triple-peaked entity (Plate 8.26) and Weddin 22 km to the east.

As progress was made across the Wah Way Plain, certain new views would have become apparent; to the north, Tallabung probably becomes largely obscured by the gentle slopes of Wheoga Hill, while to the north-north east Wheoga Mountain would in turn have become readily visible as an abrupt, twin peaked hill, The Pinnacle standing as a tall, vertical stack/column to the right of Mount Wheoga; to the south west, the Boginderra Range and Narraburra Hills, a known Burbung location in its own right, would also have become visible as isolated, multiple peaked hills approximately 20 km distant. From this point, the red-orange cliffed escarpments and differential colouring of the various vegetational
Plate 8.25: View of Weddin over plains from Marsden, approximately 50 km north west of the range.

Plate 8.26: View of Tallabung Mountain from plains approximately 15 km south.
regimes of the Weddin Mountains are discernible as evolving visual attributes of that major landmark.

If the current remnant natural vegetation regimes give a basic indication of the tree cover of the eastern Wah Way Plain in recent prehistory, it could be imagined that, for the final 15 km of travel, most views across the plain would have been interrupted by cypress forest and myall woodland. Occasional breaks in the canopy may be expected to have revealed a skyline dominated by the combination of dark mountain clad in vegetation and bright red-orange sandstone cliffs of Weddin. Emerging from the forest at the flats lying before the entrances to Small Basin, Basin and Black Gin Gullies, the travellers would have found themselves faced with abrupt, densely wooded and stony slopes, with elevated brightly coloured cliffs forming the skyline. Caves, outcrops and other weathered features would have been apparent, with the large, cliffted entrance to Black Gin Gully forming an enclosing presence over the flats along the creek (Plate 8.27). It can be imagined that the magnitude of the occasion of arrival was heavily reinforced by the presence of these physical breaks from the comparatively uniform plains country.

From the flats at the range’s north western flank, the ceremonial ground at Kumbundra could be easily reached through an 8 km walk around the base of the range. As a readily discernible outlier of the mountains north of Weddin Gap, Flat Top Hill would have provided a prominent landmark indicating the approach to both Guinea Hen Gully and the nearby Burbung ground.

**Route 4 and 5. along the upper Bland and Burrangong Creek**

For Wiradjuri groups of the slopes country around Temora and those possibly visiting from the valley of the Murrumbidgee, travel to the Weddin Mountains may well have involved following the Bland from its upper reaches to its junction on The Levels with
the westward flowing Burrangong Creek at Curraburrama. From here Burrangong Creek may be followed eastwards across the plains to just east of the current location of Bimbi, where minor drainage lines may subsequently be followed upstream to the western side of the Weddin Mountains at Kumbundra. This route involves an approach across the study area of approximately 88 km.

Commencement of this journey within the study area would place the travellers between the Narraburra Hills/Boginderra Range and Weedallion Mountain, the former occurring 17 km to the west and the latter 10 km away to the east. Archaeological and ethnohistorical information indicates that by this stage several burial sites marked by carved trees along the Bland at Geraldra and Moonbucca and the ceremonial location in the Narraburra Hills would thus far have been acknowledged by the travellers as sacred components of the unfolding landscape.

Once again, movement basically northward along the Bland would be expected to have involved repeated encounters with numerous burial mound sites, each tumulus being surrounded by 2-4 carved trees that served as reminders of spiritual ascension to the sky and, in turn, drew the observers’ attention to distant hills such as Weedallion which, at this point, would be evident through gaps in the trees as a lone twin-peaked mountain to the south east.

Arrival at the junction of Burrangong Creek and the Bland at Curraburrama may well have been a particularly notable event as a number of important landmarks effectively ‘come into being’ at this point; the Boginderra Range and Weedallion would still be highly apparent to the south; to the east, the significant Weddin Mountains would now be visible as a distinctive double-ended range; and nearly 70 km away to the north Tallabung
Mountain would have become evident as a pair of low, isolated domes. Further heightening this perception of a landscape filled with visual reminders of the Maratal was the local presence of Thoorongalee, the hierophanous spring marking the point of emergence for the rainbow snake at Curraburrama. This was probably a place to be respected, and perhaps even avoided, with its rainbow serpent mythology.

Progress up Burrangong Creek from Curraburrama encountered extensive tracts of low-lying, readily inundated ground and to Eurabba almost certainly involved passing through swampy areas of considerable size. As was probably the case in the journey across the Wah Way Plain, long-range visibility across the flat country may be expected to have been considerably reduced by closed woodland. However, where open stretches of grassland and breaks in the trees occurred, people may have been able to catch glimpses of the double-headed Wheoga Range to the north (Plate 8.28) and Weddin, the view by this stage becoming increasingly dominated by the southern peaks and Weddin Gap, and possibly initial views of the twin-peaked Bribbaree Hills, 'the two boys', to the east-south-east.

At the current location of Bimbi, it is possible that a major congregation of Aboriginal people may have assembled either along the well watered stream or at the lagoon known to have existed near this point (Graham Grimm 2000 pers comm). Situated in full view of Black Spring Mountain and Weddin Mountain, such a location would have provided an ideal camping ground for the main group, while the clever men, initiation candidates and their carers continued onwards to the ceremonial ground at Kumbundra.

Arrival in the vicinity of the stone mounds at Kumbundra gives a sense of enclosure by the Weddin Mountains (Flat Top Hill, Black Spring Mountain) while simultaneously offering open views of several landscape features encountered during passage across the plains,
Plate 8.27: Clifed slopes surrounding entrance to Black Gin Gully, north west end of Weddin Range.

Plate 8.28: Wheoga Range viewed from Burrangong Creek, approximately 35 km to south.
such as the Bribbaree Hills, Weedallion Mountain and the Boginderra/Narraburra Hills. It may be expected that each of the landscape components evident at this point had its own cosmological significance, although it may also be assumed that when placed into this composite scene, they also became integral to a larger picture of sacred interconnection, possibly a chain of ‘jumping up’ points connecting at least two known Burbung areas (in this scene, the Narraburra Hills and Weddin).

**Repeated landscape themes and messages**

From the above descriptions and Table 8.1, a number of repeated themes is apparent, specifically with relation to the shapes of distant mountains on the horizon and other features observed. Depending on the position from which most of the mountains and hills in and immediately around the study area are viewed, they manifest themselves in a number of comparable basic forms, regardless of the specific details of their individual shape such as single domes, twin- or triple-peaked configurations and flat tops mesa-like massifs. Such repeated patterns of form can be viewed as potentially important aspects of the manifestation of the sacred landscape throughout the study area and almost certainly beyond. Repeated form may have played an integral role in the cultural association with places in the landscape and mythological narratives that conveyed the stories seen to be inherent in the country.

A point worth stressing is that for some people attending the Burbung, this may have been their first ever visit to the Weddin Mountains. As such, the journey would have involved a critical process of cognitive landscape association for these people; they would have been reinventing the landscape, reproducing the ancestral past (cf Morphy 1995), in accordance with their pre-existing mental template of the sacred. While those familiar with the local
country would have explained the story of the land as they travelled, there can be little doubt that the newcomers were already seeing the basics of the landscape in familiar terms.

For instance, a Wiradjuri of the country around Willandra Creek in the lower Lachlan would have Weddin as a local manifestation of *Tutewolankal*, while for a Yuwalaraay of the upper Darling, it would be *Gunnebooke*. In their respective journeys across hundreds of kilometres of central New South Wales, they had encountered or even followed a chain of similar features across the plains, each being an embodiment of the other and an assurance of the cosmological meaning inherent in the landscape. These components of the landscape were not singular occurrences, rather they were culturally and ritually connected across space. In accordance with the non-linear chronological order inherent in the *Maratal* (where all things ‘are’ at once), Weddin was both the ceremonial landscape focus and part of a chain of connection. Mathews (1907: 11) provides an example of the formalised manner in which descriptions of the sacred landscape were exchanged between groups at an initiation ceremony that took place in 1895.

On getting near the general camp, all the men paint and ornament their bodies, in accordance with the custom of their country, and the novices are painted red from head to foot. When within sight of the camp they give a shout, and march on to the *boora* ring, which they enter and call out the names of remarkable hills, waterholes, and camping places in their country. They also announce in the same way the totems of the principal men of their tribe. The local mob, and all the men who had arrived in previous contingents, are sitting round the ring, having assembled there when they heard the strangers approaching. They also now enter the circle and jump about, and, in turn, call out the names of important localities in their several districts, as well as the totems to which they belong.

**Journeys to the top of Weddin**

The top of Weddin comprises a pair of major peaks at the southern end (Black Spring Mountain and Weddin Mountain) and a pair at the northern end (Eualdrie and the unnamed peak to its north). The intervening topography consists of a number of lower
peaks and ridgelines, separated by a series of generally south west-north east trending gullies, the headwaters of which occur as gently sloping to flat saddles and plateau locations. A major topographic attribute of the range is Weddin Gap, a broad saddle that effectively separates the northern end of the range from the southern and acts as an elevated pass from one side of the mountains to the other.

Entrance to the interior of the mountains is most readily afforded by the westward draining gullies, natural corridors that penetrate the steep slopes and cliffed escarpments of the mountain perimeter and lead upwards to the 'spine' of the range. These features vary in length, ruggedness and gradient, with the largest examples penetrating deepest into the mountains and offering the greatest array of potential 'stopover' points, such as broad terraces, rock shelters and water sources. Examples of the larger gullies include Basin and Black Gin in the north, Wentworth and Guinea Hen in the centre, and Black Spring, Bows and Donkey in the south.

Weddin Gap is also a potential natural entrance to the mountains from both the eastern and western sides and, due to its central position, may have been utilised by Aborigines as a mountain top starting point for access to either the north or the south of the range.

Whether access to the notable mountain features, particularly the major gullies, was culturally restricted on the basis of their potentially hierophanous status, is a factor worthy of consideration. Entry to the mountain tops via Black Gin Gully, for instance, involves physical enclosure of the individual within the body of the mountains, a journey through confined space that is often spent in the absence of direct sunlight. In the world of the Wiradjuri, this may have been considered a path fraught with danger as it involved unavoidable passage within close proximity to cliffs with their cavernously weathered
shelters and periodically flowing waterfalls plunging into rock pools, places typically associated with underworld spirits and malevolent power. Possibly most significant of all was the fact that this gully ultimately leads to the top of the mountains at a flat area at the base of Eualdrie peak, the highest point at the northern end of the range. Arrival at this high point results in open views to the north and east of country otherwise not visually encountered on the journey across The Levels, including the ceremonially significant Bogolong Hills complex to the north east.

Two other potential access routes to the mountain interior are considered here: Guinea Hen Gully from Kumbundra and Weddin Gap from the eastern flank.

*From Kumbundra to Guinea Hen Gully and on to the tops*

Entrance to the mountain top at the central section of the range is possible via Wentworth Gully, Dingo Gully and Guinea Hen Gully. Guinea Hen Gully is the most substantial of the natural routes and provides ready access from the ceremonial location at Kumbundra. Travel by this route commences with partial enclosure to the north, west and east by the outlying Flat Top Hill and the central slopes of Weddin, the permanent spring below the mouth of Dingo Gully acting as both central marker to this setting and connective point with the underworld. In order to access the mouth of Guinea Hen, visitors would then have negotiated the saddle that connects Flat Top Hill with the main range, a densely wooded and stony area that divides the entrance to the major gully from the footslopes of Kumbundra.

Compared to the abrupt cliffed ‘jaws’ of Black Gin Gully, entrance to the confines of Guinea Hen is a gradual process, involving transition from slopes rather than cliffs along broad, flat creek terraces. Stepped cliffed escarpments, while present, are generally set back from the course of the creek which in turn exists as lengths of cobble beds interspersed with
rock bars. Not far into the gully, Aboriginal travellers would note a spring situated just upstream of a sandstone slab in the creek bed, while approximately 1 km further along a notable rock shelter with a low, dark interior is evident on the northern side of the creek. Other notable natural attributes of this gully are the occasional large and very old Kurrajong (*Brachychiton spp*) trees that grow on the creek terraces and intermittent, relatively low clifflines that directly abut the creek banks which exhibit notable tabular erosion. Such features may have been respectively taken to represent living pillars connecting earth with sky and spiritually charged formations possibly connected with *Maratal* events. At the point of exit from the gully to the top of the mountain, a substantial co-occurrence of hierophanous entities is present. This place comprises a natural amphitheatre of small drainage channels that converge at a gently sloping, open location that is vegetated with tall, old growth red gums (*Eucalyptus camaldulensis*), a species of tree otherwise not encountered on the top of the range. This location is flanked to the north and south by local peaks and the centre of the amphitheatre is dotted with a number of small springs that issue seeping or trickling water. As such, the location is a collective of important representations of landscape-based spiritual transition; the journey up the gully, the tall unusual trees and the local peaks are all embodiments of ascension to the sky world, while the springs and the downward slope of the gully already travelled indicate return to the earth, connection with the subterranean realm and possibly dwelling places of dangerous spirits.

*Ascent of Weddin Gap from the east*

While being representative of a natural pass between the peaked extremities of the mountains, the comparatively gentle topography of Weddin Gap is restricted to the 800 m wide saddle feature on the top of the range. Direct access to this point from both east and west flanks still involves stiff climbing up rocky, though not cliffed, slopes. In this regard, it is possible that the gap was accessed indirectly from the west via one of the adjacent
gullies, such as Dingo Gully at Kumbundra. Conversely, access from the east would have required negotiation of slopes at the headwaters of Ooma Creek.

Travellers from the eastern side of the mountains would have followed the course of one of Ooma Creek’s uppermost tributaries to the base of the range, this route taking them to a point overlooked to the north and south by high cliffs and steep screes. At the point before ascension up one of the spurlines, the rock shelter site directly adjacent to a permanent spring at the base of the range (Gap 1) may have been visited for ritual purposes prior to the climb into the mountains themselves. In this respect, it is also possible that visitation was made to the rock art site reported to exist in the vicinity.

The climb up the eastern spurline to the gap would have been much easier than a comparable journey from the west as vegetation on the eastern slopes is more open, consisting of white box woodland rather than thick heath scrub. As a result, views over the flats below the range and the rolling country along Emu Creek near the current location of Grenfell would have unfolded as the travellers gained height. Once atop the range at Weddin Gap, the scenery would comprise a level surface hemmed in by mixed vegetation: open box woodland and thicker cypress and currawongs (*Acacia spp.*). Access to all points of the mountain tops and the western flanks is theoretically possible from this point provided members of the visiting party possessed knowledge of the mountains, a detailed landscape narrative, gained during previous journeys through the range.

*Travel across the mountain*

Once reached by any of the above routes, travel across the mountain top involved negotiation of a series of thickly vegetated slopes, gully heads, plateau locations and broken rocky peaks. Avoidance of the steep gully slopes and their associated dangerous spirits was
probably best achieved by skirting the eastern bases of the crest of the range and following the narrow corridor of plateau locations overlooking the eastern flanks. However, this, in itself, was a dangerous proposition as it involved coming into close contact with the edges of the high, cliffed escarpments bounding the eastern side of the range. Given the extreme natural dangers of such places, loose edges and rocks, abrupt ledges and their obscurement by thick scrubby vegetation, the route could well have been perceived as being host to a multitude of potentially hostile spiritual 'tricksters' or 'mountain devils', in effect guardians of the sacred interior.

However, the dominating spiritual theme of the mountain top must have resided in its placement of the visitor within the sky realm. Whether encountered during transit from one point of the interior to another or as destination points in themselves, the most outstanding attribute of the peaks along the top of the mountains is the combination of direct, open exposure to the sky and views of the surrounding slopes and plains. In this respect, the sense of elevation and connection with Baiame is magnified at the highest points, Eualdrie and its twin at the northern end and Black Spring Mountain and Weddin Mountain at the southern, especially following the respective journeys to these peaks through physical enclosure by gully walls and thick vegetation, avoiding dark and hostile places.
Indian people talk about the mountain that Excellent, Idaho, is built in the shadow of - the mountain the morning sun rises behind - how it is the reason why we're acting the way we are. Indian stories say the mountain has powered us here - snagged us. We may think we're here for this reason or for that reason. We may think that what we're doing is what we're doing, but really what we're doing is being snagged by the spirit of the mountain.

(Tom Spanbauer *The Man Who Fell In Love With The Moon*, 1991)

Archaeological interpretations of Aboriginal hunter-gatherer landscapes have trodden a rather orthodox path over the last fifty years or so. The advent of the focus upon 'man-land' relationships followed by the emergence of the 'new' archaeology set in train a convention for viewing the Aboriginal landscape as a potentially hostile, natural realm or setting for human activity, in effect, survival. Such interpretation has characteristically sought explanations for human subsistence-settlement systems through analyses of least-cost resource extraction and human responses to environmental constraints through technological means.

The ultimate problem with this somewhat blinkered approach lies in the fact that it has taken for granted the ethnohistorical and anthropological recognition that Australian hunter-gatherer cultural systems incorporated the landscape into realms of understanding extending well beyond economic and subsistence related concerns. The ethnographically documented, Dreaming tracks and places of central Australia and their integral connection with the desert landscape is a case in point. In archaeological studies, such human attributes have been conveniently overlooked or ignored, either seen as not relevant or too difficult to define. Yet these aspects of Aboriginal existence possess their own archaeology that is
intimately connected with the landscape and through it the structures that underlie everyday existence and activities.

Landscapes may be said to exist by virtue of their interpretation by humans. Even the most basic of resources are cultural appraisals (Sauer 1952: 2-3). It follows that cultural landscapes arise directly from the manner in which people interpret their surroundings and subsequently attribute certain explanations and values to the places that, as an interconnected whole, form their world. Landscape may be said to have its own language in that it exists as a series of named locales connected by explanatory narratives, stories or myth (Tilley 1994). In turn, myth may exist as a powerful means of reinforcing cosmological belief through the landscape and in this manner certain areas or specific natural features, hierophanies, become endowed with sacredness or spiritual power (Eliade 1961).

Hierophanous landscape features are perceived to be points of connection with other worlds, such as the sky or underworld and/or earthly embodiments of supernatural beings. They may include springs, caves, notable rock formations, trees and most notably, mountains. In Aboriginal Australia, hierophanies and the narratives that bound them together across space were treated with reverence and respect. Sacred information was closely guarded and a host of ‘dangerous places’ was either avoided at all costs or demanded special codes of behaviour. Ritual conducted at these places brought into alignment spatial and temporal gateways to other worlds and served to reanimate places with ancestral power and/or provide the opportunity for communion with great beings. Numerous malignant spirits were also recognised, all having their place in the landscape, such as in holes in the ground, caves, springs, cliffs and thickets, were, in turn, feared and avoided. This is not to imply that Aboriginal people lived their lives in constant
superstitious dread or were obsessed with arcane secrets (Creamer 1984: 6.6), rather it is an acknowledgment of the importance of cosmology as an influential factor in everyday life (Strehlow 1971: 594) and its expression through the landscape.

Bradley (2000) has argued that it is possible to analyse such prehistoric landscape perception through an ‘archaeology of natural places’. He suggests that votive deposits, rock art, production sites and monuments all provide potential information on natural features of cultural importance (Bradley 2000: 36-43). As a result, it is possible to incorporate non-humanly marked natural places into systematic archaeological analysis through interpretation of the deposits and sites found in close proximity to and in the topography surrounding them. In this manner, an attempt has been made to recreate a prehistoric Aboriginal landscape in central western New South Wales, using as its focus the culturally significant Weddin Mountains.

Archaeological analysis of stone artefact scatters in the study area suggests an inherent landscape (cf van Dommelen 1999), where hunter-gatherers made use of the great majority of environmental zones available to them, including areas around significant natural features. Artefact assemblages indicate that people were utilising a considerable variety of raw materials to produce flakes and a range of stone implements, such as backed blades, adzes, scrapers and eloueras. The stone types utilised in this fashion include varieties of chert, volcanics, silcrete, quartzite, quartz and indurated mudstone. Distribution of raw material types throughout the study area was not uniform and considerable variation was noted between different parts of the Plains and Slopes and sections of Weddin itself.

An important and inherent question with regard to this thesis is the possible role of the flaked tool assemblage in creating a meaningful and/or ‘unconscious bi-product of simple
actions' signature for significant places in the landscape. Basically there are two general and important results from this study: the variation apparent in raw material types across the study area and the morphology of particular implement types, namely grindstones, ceremonial stones and hatchets and their respective position within the landscape.

Given the geographical extent of the study area, it is not surprising that broad variations in raw material occurrence are evident between widely separated zones. The artefact scatters at Curraburrama State Forest on the western bank of the Bland, for instance, are nearly 70 km from those on Red Creek in the far north east of the study area. A number of quite different raw material sources may be expected to exist relatively near each of those general areas respectively and people, making use of their nearest available stone, would be expected to leave corresponding residues of culturally modified stone nearby. Thus it may be posited that the red chert that is common to the NE quadrant probably reflects use of a stone type available in outcrops to the north west of the Conimbla Range (Bowman 1976) and the grey volcanic of the West was obtained from a quarry somewhere on The Levels or in the hills west of the Bland. While the exact natural sources of the stone types evident on sites in the study area are essentially unknown, it may be assumed that, to a degree, their general vicinity may be reflected in this manner. However, this argument can only be pushed so far because unlike stone outcrops, Aboriginal hunter-gatherers were not stagnant within landscapes. In accordance with economic and socio-religious imperatives, they engaged in purposeful and wide-ranging movement within and well beyond their nguurrambah or homelands. The important point is that, whether searching for water, exploiting a periodically available food, or attending a ceremonial event, these people were carrying their stone with them.
Kuhn (1995) refers to the process of people supplying themselves with flakeable stone and personally transporting it as the ‘provisioning of individuals’. This ensures a ready, though finite, supply of stone in areas devoid of this resource. Such a strategy is proposed for the study area, where the archaeological evidence indicates careful flaking of curated cores by hunter-gatherers within all local physiographic zones. It is suggested that individual provisioning was particularly important in areas such as The Levels, where no stone, either flakeable or suited to expedient use, is naturally available over broad expanses of country. This careful use of personally transported stone is reflected by the low numbers of artefacts at sites, the low mean size of flakes and cores and the range of exotic stone types apparent, such as silcrete, indurated mudstone and the ‘rarer’ cherts and volcanics.

The provenance of the stone types characteristic of the study area, fine grained grey volcanic in the West, purple chert around the Weddin Mountains and white quartz is, for the larger part, problematic. While quartz may have been sourced from any of the local stone outcrops as either geological veins or pebbles in conglomerates, the precise location of the volcanic and chert quarries is unknown. Rare instances of cortex on artefacts suggest both of these raw materials were sourced from reef contexts rather than as nodules or pebbles. Adopting the perspective of ‘artefactual stone concentration in landscape as equal to the proximity to natural source’, it may be assumed that the grey volcanic was sourced from a location or locations between the Bland and Weddin (ie. an outcrop on The Levels) and the purple volcanic from somewhere near or within the Weddin Mountains. However, the nature of the local geology does not support this. Further, Aboriginal use of these stone types also appears to have involved a level of curation as advanced as that employed with the ‘rare’ stone types. With these factors in mind, it is suggested that these raw materials were quarried from outcrops fringing the study area, possibly at sources around Temora in
the south west where various natural sources of volcanics and cherts are known to exist (Apps 1990: 3).

It is therefore suggested that, as a personally provisioned resource, the variety of artefactual stone types in the study area is evidence of hunter-gatherer movement both within and from beyond the Weddin region. In other words, the flaked stone artefacts may be taken to indicate visitation of places in the landscape by both local Aborigines and external groups who brought stone from their respective countries in with them. It follows that the variety of stone types evident at Weddin, particularly on the Western side of the range, is the result of Aboriginal groups repeatedly ‘calling upon’ the mountains in prehistory.

Whether or not the different stone types evident within the flaked stone assemblage may be taken as a mere bi-products of such visitation or purposeful markers of Aboriginal presence is an intriguing issue. Ethnographic documentation shows that Aboriginal people were often recognised by the natural attributes of their home country, including their stone resources (Garnsey 1946). Hunter-gatherers were also perfectly aware of the nature of artefact scatters as cultural features (Hayden 1979), thereby recognising them as features that had formed as a result of past human activity. In this manner, flaked stone artefacts may be seen to have played an active role in cultural systems rather than a passive, purely economic/technological one (Gero 1989: 92). Whether this extended to include the purposeful marking of places in the landscape is a question that clearly requires further research.

The distribution of other artefact types, ceremonial stones, such as engraved stones and clycons, and stone hatchets, provide a clear indication of the cultural significance of
Weddin and related places. For example, ceremonial stones are only found at *Kumbundra* on the western talus flanks of the mountain itself.

Stone hatchets must be regarded as ceremonial stones as well. Garnsey (1946: 8) writes that these artefacts were known to the Wiradjuri as *mo-go* or *mo-gel*, 'spirit stones', often the property of greatly feared clever men. Like the engraved stones and cyleons, these were also only found in very special places of the study area. Firstly, the largest concentration of hatchets is known from in a very restricted zone in the vicinity of the *Kumbundra* property and its stone arrangement site. These include: one from survey in Weddin State Forest, about 1 km from the stone arrangement, two found in Wentworth Gully and now held in a private collection at *Currawong* station, and 11 in the Grimm collection from *Kumbundra* property. Other stone hatchets are known from the vicinity of Jump-Up Rock and the Bogolong stone arrangement.

The spatial relationship between these artefact types and stone arrangements and/or important natural sites highlighted as culturally significant within Wiradjuri cosmology in this thesis is strengthened. Confirmation of this conclusion can be seen in another private collection, which was examined too late for inclusion in this thesis, held at Carthona, 2 km to the east of the mountain, contained 3 hatchets and a cyleon from that property.

While a brief ethnohistorical reference by Woolrych (1890) indicates that Weddin was utilised by the Wiradjuri people as a place of seclusion during the *Burbung* ceremony of initiation into manhood, archaeological reconstruction of the Wiradjuri sacred landscape template has provided a method of elucidating both this specific theme and the context of the mountains in a broad-scale landscape of cosmological significance. Five main avenues of investigation were utilised:
1) consideration of Wiradjuri mythology and ritual;
2) investigation of the details of the Burbung or Bora ceremony;
3) interpretation of meanings inherent in local toponyms;
4) archaeological survey and analysis of Weddin and the surrounding country;
5) archaeological appreciation of probable routeways to Weddin.

Important landscape-mythological correlates were identified for the Wiradjuri. First and foremost, Wiradjuri cosmologies were focused upon the sky hero or creator, known as Baiame, who, during the Maratal or Dreamtime, created much of the landscape and taught people the all important social institutions of the totemic system and the Burbung, or ceremony of male initiation. He ascended to the sky world, or Bullima, by leaping from the top of a mountain. The sky, therefore, was seen by the Wiradjuri to be the abode of the most powerful and important of spirits and certain mountains were recognised as points of potential connection with this spirit world. At the tops of high mountains, Wiradjuri clever men were able to commune with the sky being, novices could be taught magic powers and initiates were sent to learn secret information on the responsibilities of manhood. Mountains were, therefore, one of the most important of Wiradjuri hierophanies.

Other hierophanies included deep waterholes, caves, cliffs, springs, prominent rock outcrops and free standing stones, features that were seen to harbour spiritual power, represent important Maratal events, embody mythical creatures and that were gateways to other worlds. Places such as these were either feared and avoided as malignant realms and/or treated as places where those versed in magic could supplement their powers and learn new ceremonies.
Ceremonies and ritual involved the establishment of temporary connection between the everyday world and spirit worlds. This could involve direct ceremonial use of landscape hierophanies, such as the use of stone arrangements on top of mountains, or indirect use often entailing recreation of natural forms, such as construction of mounds and carving of trees at burial sites. Of these events, the most significant was the Burbung, a ceremonial occasion which entailed the introduction of boys to the institution of manhood through exposure to the power of Baiame.

The Weddin Mountains and other natural components of the study area's topography are identified as a Burbung landscape. Set in a region dominated by plains and low, rolling country, the Weddin Mountains, Wheoga Range, Bogolong Hills, Bribbaree Hills and Weedallion Mountain were conceptually linked stepping stones to the sky within a cosmological system focused upon communion with Baiame. These natural features were connected at several levels through the institution of the Burbung; as ceremonial places in their own right, but each being related to the other through intervisibility and repeated themes of topographic isolation, shape and elevation; as staging points within a single, prolonged ceremony, where ritual movement, such as that between the Bogolong Hills/Jump Up Rock complex and Weddin, was facilitated by major creek lines; and as nodes or named places linked across space by an Aboriginal landscape narrative.

The inherent symbolism of these natural features within the Wiradjuri sacred landscape was manifest as groups of people travelled through the country, often over substantial distances, to participate in the Burbung. Examples have been proposed for a number of such journeys through the study area, routes that brought people from all over Wiradjuri territory and beyond, to a common ceremonial destination where Baiame would make their young boys men - the Weddin Mountains. As people travelled along their respective paths, the
landscape of the Maratal both evolved and repeated before them as components of the cultural landscape, both natural and humanly made, came into view, receded and were replaced with new examples. These included waterholes, rock formations, springs, burial mounds with carved trees and most importantly, mountains. Irrespective of the homelands from which these people came, their perception of these features and therefore their experience as they travelled through the landscape would have been similar because the story of life could be read in the form, shape, depth and colour of features both immediately surrounding them and on the horizon. Twin-peaked mountains reaffirmed the legend of Eagle and Crow, pinnacle shapes the ascension of the Moon, burial mounds and their carved trees spiritual transition to other worlds and the place of the ancestors in the landscape. In this respect the journey represented a macro-scale version of the initiation ceremony itself: two rings (a starting point and sacred destination) connected by a pathway surrounded by sacred effigies (the route of travel with its landscape features) and the arrival at the small ring, goonaba, or 'Baiame's ground' (Weddin). Regardless of the pathway travelled, the final approach to the mountain would have provided a powerful reminder of its role in the ceremony. With its abrupt slopes and cliffed escarpments set high above the surrounding plain, the Weddin Mountains were the natural embodiment of connection between earth and the sky.


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Appendix I

Test Pit Summaries
DESCRIPTIONS OF TEST PIT EXCAVATIONS

North unit

WTPN1 (target zone 4) AMG refs 58990. 624760

A test trench 2 m x 20 cm x 20 cm depth was dug perpendicular to the base of a minor sandstone/conglomerate scarp on the shoulder of an unnamed peak on the western top of the range. The location was selected due to its level, open ground, sheltered situation and possession of some deposit adjacent to a notable rock outcrop. While some shelter was afforded by the outcrop, the shallowness of the overhang dictated that any potential human activity in the location would generally be expected to occur on the flat earthy surface in front of the rock formation. The trench was not extended beyond 20 cm depth due to time constraints.

<table>
<thead>
<tr>
<th>PIT NUMBER</th>
<th>SPIT</th>
<th>DEPTH</th>
<th>DESCRIPTION</th>
<th>ARTEFACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTPN1</td>
<td>1</td>
<td>0-20 cm</td>
<td>Damp unstratified dark brown/black soil with frequent angular to sub angular quartz fragments sourced from the local conglomerate.</td>
<td>None</td>
</tr>
</tbody>
</table>

High moisture content in the deposit indicated that the adjacent sandstone/conglomerate outcrop could be acting as either an aquifer or channelling influence on residual water present in the general area’s soil after relatively recent rains. Larger fragments of sandstone were evident in concentration at the end of the pit closest to the scarp, these almost certainly being the result of the natural decomposition of the overhanging outcrop. No artefacts were recovered from the pit.

WTPN2 (target zone 2) AMG refs 59010. 624840

A test trench 1.7m x 30 cm x 20 cm depth was dug from the back wall to entrance dripline at a rock shelter with PAD on a steep creek bank on the middle reaches of Basin Gully. The location was selected as it was the only local landscape feature option offering shelter, level ground and high potential deposit (approximately 20 m² > 35 cm depth). The rock shelter has a maximum length of 9.6 m, depth of 6.2 m and height of 1.7 m at the dripline. The test trench impacted on only a fraction of the deposit's extent with the largest floor space left undisturbed for any potential future archaeological excavation. This was deemed important as the location constitutes one of the most outstanding rock shelters in the Weddins. The trench was dug by hand trowel only and deposit was removed in 5 cm spits.
some litter and animal (wallaby?) droppings overlying compacted deposit of light textured, grey-brown soil (Munsell 10YR 4/2). Sub-surface charcoal commences at the dripline, extending 60cm into the rock shelter.

Sub-surface charcoal commences at the dripline, extending 60cm into the rock shelter. Charcoal now present throughout spit with concentrations forming a concise band toward rear and a thick layer at dripline. Some lumps of charcoal around 2-3cm² evident here. 11 stone artefacts recovered from rear of trench mixed with charcoal at base of spit.

Soil becoming slightly lighter in colour. Charcoal now only present in concentration mixed with cobble sized rock fragments 30cm inside of the dripline. 5 stone artefacts recovered from rearward end of trench.

Charcoal now evident in dense concentration both mixed with and under closely packed rock fragments inside of dripline. Some lumps of charcoal around 2-3cm² evident here. 3 stone artefacts recovered.

Although probing revealed that the deposit extended for at least another 20 cm, test pitting was ceased after completion of spit 4 due to time constraints and the successful retrieval of a satisfactory sample of stone artefacts at the location.

Upon completion of the trench, the profile exhibited a relatively uniform (not obviously stratified) deposit, although archaeological layering was suggested by the precise lensing of charcoal in what appeared to be two hearths: one toward the rear of the shelter in Spit 2 and one at the entrance in Spit 4. As the approximate rate of soil deposition in the shelter is unknown, it was not possible to state with any certainty from the profiles alone whether or not the hearths were of Aboriginal origin. The initial impression gained was that, due to the Weddin Mountains' history of reasonably intensive European occupation and use and the relatively shallow depth of discovery, the hearths may have non prehistoric antiquity, particularly the occurrence in Spit 2. In this respect the presence of stone artefacts in stratigraphic association with the charcoal accumulations may be the result of mixing of the pre-existing deposits by more recent non Aboriginal human activity in the shelter. Charcoal was subsequently recovered from each hearth for radiocarbon dating. Radiocarbon dates for
the rearward and entrance hearths were returned as $150 \pm 50$ BP (ANU-10809) and $240 \pm 50$ BP (ANU-10808) respectively.

The charcoal bands represent:

1) initial charcoal spread widely across top spits probably the result of post depositional disturbance of underlying charcoal rich deposit, possibly at the time of formation of the rearward hearth.

2) distinct lenses = hearths of history or recent prehistory, the rearward being the younger of the two and possibly non-Aboriginal; the dripline example older and lower in the profile, associated with leached deposit, probably Aboriginal. The older age of the entrance hearth accords with its base, i.e. dense charcoal set in hearth stones, being set in a stratigraphically lower position than the rearward hearth.

Of the 19 artefacts recovered from the test pit, the greatest quantity and density occurred at the base of Spit 2, in close proximity to the hearth at the rear of the shelter. Here, 11 artefacts were recovered in an area of approximately 1.8 m$^2$, giving a maximum artefact density for the excavated part of the shelter of 6/m$^2$. Except for a single small quartz core, the artefacts were all debitage and composed mainly of quartz. The non-quartz assemblage comprised 4 flakes, 3 grey volcanic and 1 orange chert. Artefact numbers decreased in step with the subsequent spits. 5 quartz artefacts (3 flakes and 2 chips) were found in spit 3 and 3 artefacts (a purple chert flake, a quartz flaked piece and a quartz bipolar core) came from the final spit. No retouch or use wear was evident on any of the artefacts.

The potential archaeological productivity of rock shelter sites may usually be assumed to be high, especially in cases where the landform feature is comparatively rare. Although the Weddin Mountains are composed largely from sandstone, which readily forms rock shelters, shelters of satisfactory size, gradient and situation for substantial human use are not very frequently encountered. Subsequently, the recovery of artefacts from WTPN2 is not particularly surprising. The relatively low number of artefacts found at the site; rock shelters tend to confine human activity (subsequently concentrating archaeological evidence) and a higher number of artefacts would usually be expected from a shelter of this quality

**WTPN3 (target zone 6) AMG refs 59159. 624690**

A 1 m$^2$ test pit of 35 cm depth dug on a near level surface approximately 40 m from the drainage line forming the upper reaches of Black Gin Gully Creek. The target zone is a very gently sloping margin of the saddle separating Eualdrie Peak from an unnamed peak to the south. The area was selected for sampling due to its possession of deep soil in a rare
instance of approximately 2400 m² of reasonably open, mature *E. sideroxylon* and *E. blakelyi* woodland within an otherwise extensive, near impenetrable scrub of *Callitiris* and *Allocasuarina* regrowth. Spits were undertaken in accordance with geomorphological attributes.

<table>
<thead>
<tr>
<th>PIT NUMBER</th>
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</tr>
</thead>
<tbody>
<tr>
<td>WTPN 3</td>
<td>1</td>
<td>0-20 cm</td>
<td>Dried leaf litter overlying a thin humic layer and a light textured brown (Munsell 10YR 3/4) soil. Some charcoal evident in the uppermost level.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>20-25 cm</td>
<td>Commencement of a yellowish (Munsell 10YR 4/4) very fine sandy soil containing fine quartz gravel. No charcoal.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>25-35 cm</td>
<td>Continuation of the yellow sandy soil with the addition of stone artefacts.</td>
<td>20 stone artefacts were collected from this level</td>
</tr>
</tbody>
</table>

Stone artefacts were apparent mixed with light sandy soil at a depth of between 25 and 30 cm. Digging was ceased at 35 cm as an adequate artefactual sample had been obtained. Probing revealed that deposit continued for at least another 15 cm.

Artefacts predominantly comprised debitage, mostly flakes and chips of quartz and grey volcanic material, with a single flake of brown chert. A very small asymmetric backed blade manufactured from grey volcanic was the most notable artefact recovered.

The fact that a single square metre test pit produced artefacts at an arbitrarily selected point within an area of around 2400 m² would seem to indicate that the immediate location has some potential for possessing an extensive sub-surface veneer of artefacts. Furthermore, the density of artefacts in this case was very high at 20/m². This may show that the current manifestation of the location as 'habitation friendly' may well be a reflection of the area's attributes at some point in prehistory and that the place held an attraction for Aboriginal occupation.

**WTPN4 (target zone 5) AMG refs 59140. 624840**

A 1 m² test pit to a depth of 35 cm at the summit of Eualdrie Peak. This location is possibly the highest point of the Weddin Mountains and constitutes a prominent rise on a major scarpline at the range's north eastern end. The peak offers far ranging and spectacular views both of the country to the north and east of the mountains and over a substantial length
of the Weddins to the south. While Eualdrie's summit is reasonably broad, it is rocky and offers few flat, open locations suitable for camping. The point selected for test pitting constitutes an area of approximately 6 m² just to the south west of the trig point. This location is the only flat and open area on the peak coupled with a well drained earthy base and appeared to be the most ideal location for any prehistoric Aboriginal habitation. Spits were undertaken in accordance with geomorphological attributes.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>WTPN 4</td>
<td>1</td>
<td>0-10 cm</td>
<td>Leaf litter over a dark brown (Munsell 10YR 4/4), light textured humic soil. Charcoal and charcoal staining evident.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10-25 cm</td>
<td>A reddish orange (Munsell 7.5YR 3/4) light textured soil with some small fragments of charcoal throughout.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>25-35 cm</td>
<td>Gravelly soil mixed with plentiful broken rock. Some charcoal present with local bedrock appearing at lowest points.</td>
<td>None</td>
</tr>
</tbody>
</table>

The test pit was dug to the maximum depth achievable at the location. Charcoal noted in the lowest levels was both minute in size and too soft to allow for effective collection. No artefacts were encountered in the pit. Survey of the foot track traversing the summit of Eualdrie also revealed no artefacts, despite a generally good window of opportunity.

**WTPN5 (target zone 1) AMG refs 58931.624959**

A 1 m² test pit to a depth of 70 cm conducted on a small creek bank terrace on the upper reaches of Small Basin Gully. While this zone generally represents the 'levelling out' of the gully at the northern mountain plateau, creekline terraces are the only local features with suitable deposit for sub-surface sampling within the more or less gentle to moderate sloping background topography. Although a surface scatter of stone artefacts had been found approximately 700 m upstream of the terrace during previous survey, an inspection of the skeletal surfaces of the adjacent gentle slopes had revealed no surface artefact occurrences in the immediate vicinity of the sampled point.

The terrace sampled exhibits a combination of attributes which give it high archaeological potential including level, well drained earthy ground adjacent to an intermittent water source and shelter afforded by a small rocky outcrop at the base of the adjoining slope. The deposit
at the location showed substantial depth, both when initially probed and when test pitting was under way. Spits were undertaken in accordance with geomorphological attributes.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>WTPN 5</td>
<td>1</td>
<td>0-40 cm</td>
<td>Grassy surface overlying relatively loose, dark brown (Munsell 10YR 2/2) humic soil with charcoal rich layer evident near the surface. Some quartz fragments commencing at 35 cm.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>40-70 cm</td>
<td>Hard packed soil, slightly coarser and less humic than above level. Brown colour (7.5YR 3/4) with quartz fragments and small pebbles sourced from local conglomerate. Very small fragments of charcoal evident in lower levels.</td>
<td>None</td>
</tr>
</tbody>
</table>

While probing at the base of the pit indicated that deposit continues for at least another 30 cm, digging was ceased due to time constraints. No artefacts were located in the test pit.

Centre unit
WTPC1 (target zone 7) AMG refs 59175. 624561

A 1 m² test pit to a depth of 35 cm on a stream terrace overlooking the upper reaches of Wentworth Gully Creek. In a zone characterised by skeletal soils supporting dense cypress and heath, the terrace offers approximately 200 m² of flat earthy ground, currently sheltered by a stand of mature currawongs (Acacia spp) within a few metres of two waterholes in the creek bed upstream. Spits were undertaken in accordance with geomorphological attributes.

<table>
<thead>
<tr>
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<th>DEPTH</th>
<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>WTPC 1</td>
<td>1</td>
<td>0-20 cm</td>
<td>Dark brown (Munsell 10YR 3/1) light textured humic soil with charcoal in the upper level. Some quartz fragments evident throughout.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>20-35 cm</td>
<td>Dark, reddish brown (Munsell 5YR 3/3) light textured soil and broken bedrock with quartz fragments.</td>
<td>A single artefact was found at the geomorphic interface at 20 cm</td>
</tr>
</tbody>
</table>

A distinct geomorphological interface where both soil colour and texture changed was evident at a depth of 20 cm. The only artefact recovered from the test pit, a small asymmetric backed
blade manufactured from high quality quartz, was found at this mark. While no edge wear or retouch was evident on this artefact, the microlith's distal end had been cleanly snapped off.

**WTPC2 (target zone 7) AMG refs 59141. 624551**

A linear series of 7 shovel holes, each 30 cm² x 40 cm deep, at 1.5 m intervals across a stream terrace in the upper reaches of Wentworth Gully Creek. The terrace offers approximately 600 m² of level, sheltered ground next to a potential water source and exhibited deep deposit when probed. In all respects, the feature represented an excellent camping location. The opposite stream bank also possesses a reasonably broad terrace, elevated several metres higher than and geomorphologically distinct from the sampled terrace in that it exhibits a skeletal gravelly soil. Inspection of this surface did not reveal any surface artefacts.

The deposit recovered was a universally dark brown, slightly sandy soil with occasional quartz fragments naturally sourced from local bedrock. Despite the area's apparent high archaeological potential and the extent of the linear sample (from break of slope to creekline), no artefacts were recovered from the test holes.

**WTPC3 (target zone 9) AMG refs 59255. 624440**

A 1.5 m x 1 m test pit to a depth of 30 cm on a flat area on a broad saddle, upper reaches of Guinea Hen Gully Creek. At this point the creekline branches within a gently sloping drainage amphitheatre characterised by open, grassy ground and large mature red gums. The amphitheatre is sheltered, possesses at least two permanent springs and is perhaps the best potential open air camping location encountered in the Weddin Mountains' interior during the course of this study.

Test pitting was undertaken on a level earthy surface approximately 40 m downstream from the lowest occurring spring. Spits were undertaken in accordance with geomorphological attributes.

Stone artefacts were encountered at a depth of 20 cm and appeared to be uniformly associated with the geomorphological interface between a light leached soil and fine gravelly sand at this level. Artefacts included 4 flakes of chert, volcanic and quartz, a chert flaked piece and a blade and small core both of quartz.
South unit

**WTPS1(a) (target zone 11) AMG refs 59616. 623830**

A 1 m² test pit to a depth of 40 cm on near level ground above the head of a tributary to Bows Gully Creek. The target zone represented an area very similar to the successfully sampled target zone 6 in the North, a rare expanse, approximately 2500 m², of relatively open earthy ground surrounded by dense scrub at the head waters of a drainage line. The location sampled is vegetated with mature, well spaced malleeing eucalypts and low grass. Spits were undertaken in accordance with geomorphological attributes.

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>WTPS 1(a)</td>
<td>1</td>
<td>0-5 cm</td>
<td>Thin leaf litter overlying a humic sandy soil, grey brown in colour (Munsell 10YR 4/1).</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5-20 cm</td>
<td>A leached version of the overlying soil, light grey (Munsell 10YR 5/2) with some naturally occurring quartz fragments.</td>
<td>7 stone artefacts were recovered at 20 cm</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>20-30 cm</td>
<td>Light gravelly sand (Munsell 10YR 6/1) with naturally occurring quartz pebbles and fragments. Some orange clayey motting apparent in the soil.</td>
<td>None</td>
</tr>
</tbody>
</table>

Excavation was carried out to a depth beyond the exhaustion of soil and well into underlying clay. The deposit in this test pit was universally devoid of charcoal and gravels. No artefacts were evident at any of the dug levels.

**WTPS1(b) (target zone 11) AMG refs 59606. 623830**

A 1 m² test pit to a depth of 35 cm located on an elevated terrace above a minor drainage line at the head of a tributary of Bows Gully Creek, 100 m downstream from WTPS1(a). The location offered a rare instance of level ground, sheltered by an old kurrajong tree near a potential water source and exhibited deposit of greater than 20 cm when
probed. Spits were undertaken in accordance with geomorphological attributes. Digging was undertaken to the maximum depth possible at the location. No artefacts were located in the test pit.

<table>
<thead>
<tr>
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<th>DESCRIPTION</th>
<th>ARTEFACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTPS1(b)</td>
<td>1</td>
<td>0-20 cm</td>
<td>DAMP, dark brown (Munsell 10YR 2/2) humic earth with occasional small piece of local sandstone 'rubble'.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>20-30 cm</td>
<td>Reddish brown (Munsell 2.5YR 3/4) sandy soil with some small pebbles sourced from local rock.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>30-35 cm</td>
<td>Angular cobbles overlying what appeared to be local sandstone/conglomerate bedrock.</td>
<td>None</td>
</tr>
</tbody>
</table>

WTPS1(c) (target zone 11) AMG refs 59604. 623830

A 1 m² test pit to a depth of 35 cm, located approximately 40 m north of and slightly elevated above WTPS1 (a). This pit and WTPS1(d) were dug in early October in order to test the negative findings of the previous sampling in the target zone. Spits were undertaken in accordance with geomorphological attributes. The deposit was universally devoid of charcoal and gravel. No artefacts were located in the pit.

<table>
<thead>
<tr>
<th>PIT NUMBER</th>
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<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>WTPS1(c)</td>
<td>1</td>
<td>0-12 cm</td>
<td>Dark brown (Munsell 7.5YR 3/2) humic soil layer.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12-20 cm</td>
<td>Very dark greyish brown soil (Munsell 10YR 3/2) with sandy texture and some orange clayey mottling.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>20-25 cm</td>
<td>Deposit becomes heavily mottled with orange/brown, slightly sandy clay.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>25-35 cm</td>
<td>Orange/brown (Munsell 7.5YR 5/6) clay trending to lighter colouration with depth.</td>
<td>None</td>
</tr>
</tbody>
</table>

WTPS1(d) (target zone 11) AMG refs 59603. 623830

A 1 m² test pit to a depth of 25 cm. The pit was dug approximately 40 m west of WTPS1(c). Spits were undertaken in accordance with geomorphological attributes. No charcoal or gravels were evident in any of the layers and no artefacts were located in the pit.
Three shovel holes were dug, two on a drainage line terrace and one on a low spur overlooking the terrace, on the upper reaches of Donkey Gully Creek near the range's far south-east end. These small land units represented the only areas suitable for sub-surface archaeological sampling in the vicinity of Weddin Mountain itself.

**Terrace sample (WTPS2(a/b))**: a restricted incidence, approximately 10 m$^2$ in area, of level ground at the interface zone between a slope and the incised drainage line was sampled via two 30 x 30 cm shovel holes approximately 3 m apart. Both shovel pits were extended to bedrock which occurred at a depth of 30 cm. No artefacts were evident in the deposit.

<table>
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<th>DEPTH</th>
<th>DESCRIPTION</th>
<th>ARTEFACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTPS2(a/b)</td>
<td>1</td>
<td>0-30 cm</td>
<td>Uniform very dark brown soil with quartz gravels</td>
<td>None</td>
</tr>
</tbody>
</table>

**Spur top sample (WTPS2(c))**: a level patch of ground on a low, rocky spur comprising the gully's south boundary was sampled via a shovel hole approximately 40 x 40 cm to a depth at bedrock of 25 cm. The location represented a rare local incidence of open level ground and possessed a thin soil cover. Local bedrock was encountered at the base of the pit. No artefacts were evident in the deposit.

<table>
<thead>
<tr>
<th>PIT NUMBER</th>
<th>SPIT</th>
<th>DEPTH</th>
<th>DESCRIPTION</th>
<th>ARTEFACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTPS2(c)</td>
<td>1</td>
<td>0-25 cm</td>
<td>Light textured reddish soil with angular quartz gravels</td>
<td>None</td>
</tr>
</tbody>
</table>
Appendix II

Site and Artefact Recording Forms
SITE CARD : WEDDIN SURVEY

Site name : ________________________________

Mapsheet: __________________________ Grid references: __________________________

Site type:

<table>
<thead>
<tr>
<th>No.</th>
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<tbody>
<tr>
<td>01</td>
<td>isolated artefact</td>
</tr>
<tr>
<td>02</td>
<td>artefact scatter</td>
</tr>
<tr>
<td>03</td>
<td>rock shelter/cave</td>
</tr>
<tr>
<td>04</td>
<td>quarry</td>
</tr>
<tr>
<td>05</td>
<td>rock art site</td>
</tr>
<tr>
<td>06</td>
<td>burial</td>
</tr>
<tr>
<td>07</td>
<td>carved tree/s</td>
</tr>
<tr>
<td>08</td>
<td>scarred tree/s</td>
</tr>
<tr>
<td>09</td>
<td>stone arrangement</td>
</tr>
</tbody>
</table>

10 other:

Landform element:

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<td>ridgeline</td>
</tr>
<tr>
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<td>upper slope</td>
</tr>
<tr>
<td>03</td>
<td>mid slope</td>
</tr>
<tr>
<td>04</td>
<td>foot slope</td>
</tr>
<tr>
<td>05</td>
<td>spur</td>
</tr>
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<td>spur side</td>
</tr>
<tr>
<td>07</td>
<td>saddle</td>
</tr>
<tr>
<td>08</td>
<td>shoulder</td>
</tr>
<tr>
<td>09</td>
<td>crest</td>
</tr>
<tr>
<td>10</td>
<td>flat</td>
</tr>
<tr>
<td>11</td>
<td>stream bank</td>
</tr>
<tr>
<td>12</td>
<td>swamp bank</td>
</tr>
<tr>
<td>13</td>
<td>cliff</td>
</tr>
<tr>
<td>14</td>
<td>cliff top</td>
</tr>
<tr>
<td>15</td>
<td>cliff base</td>
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<tr>
<td>16</td>
<td>plateau</td>
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<tr>
<td>17</td>
<td>peak</td>
</tr>
<tr>
<td>18</td>
<td>undulation: rise</td>
</tr>
<tr>
<td>19</td>
<td>hillock</td>
</tr>
<tr>
<td>20</td>
<td>rocky outcrop</td>
</tr>
<tr>
<td>21</td>
<td>open plain</td>
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Elaboration on above (if necessary):

Slope:

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<tbody>
<tr>
<td>01 0-2</td>
<td>level</td>
</tr>
<tr>
<td>02 &gt;2-5</td>
<td>gentle</td>
</tr>
<tr>
<td>03 &gt;5-10</td>
<td>moderate</td>
</tr>
<tr>
<td>04 &gt;10-20</td>
<td>inclined</td>
</tr>
<tr>
<td>05 20-30</td>
<td>steep</td>
</tr>
<tr>
<td>06 &gt;30-45</td>
<td>v. steep</td>
</tr>
<tr>
<td>07 &gt;45</td>
<td>prec.</td>
</tr>
<tr>
<td>08 &gt;70</td>
<td>cliff</td>
</tr>
</tbody>
</table>

Aspect: _______ Altitude: _______ Estimated surface visibility (%): _______

Site dimensions (m): length_________ width_________

Soil:

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</tr>
<tr>
<td>02 tallus</td>
<td></td>
</tr>
<tr>
<td>03 light loam</td>
<td>light loam</td>
</tr>
<tr>
<td>04 heavy clay</td>
<td>heavy clay</td>
</tr>
<tr>
<td>05 gilgaied</td>
<td>gilgaied</td>
</tr>
<tr>
<td>06 other</td>
<td>other</td>
</tr>
<tr>
<td>07 cave deposit</td>
<td>cave deposit</td>
</tr>
</tbody>
</table>

Vegetation info:

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<td>01 white cypress forest</td>
<td>ironbark</td>
</tr>
<tr>
<td>02 cypress/box</td>
<td>acacia</td>
</tr>
<tr>
<td>03 box dominated</td>
<td>kurrajong</td>
</tr>
<tr>
<td>04 ironbark</td>
<td>red gum</td>
</tr>
<tr>
<td>05 acacia</td>
<td>belah</td>
</tr>
<tr>
<td>06 kurrajong</td>
<td>shrubs</td>
</tr>
<tr>
<td>07 red gum</td>
<td>grassland</td>
</tr>
<tr>
<td>08 belah</td>
<td>11 plateau regrowth</td>
</tr>
<tr>
<td>09 shrubs</td>
<td>12 plateau forest</td>
</tr>
<tr>
<td>10 grassland</td>
<td>13 ironbark/box</td>
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</tbody>
</table>

Elaboration on above (eg. structure: complex, woodland etc.):

Estimated distance to nearest potential water source: _________________

source type:

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<th>Description</th>
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</thead>
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<td>swamp/lagoon</td>
</tr>
<tr>
<td>02 spring</td>
<td>rain catching depression</td>
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Status: 01 permanent 02 semi-permanent 03 seasonal/short term
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<th>Colour (see code below)</th>
<th>Raw material</th>
<th>Artifact description</th>
<th>Core</th>
<th>Core type</th>
<th>Number of platforms</th>
<th>Number of retouch zones</th>
<th>Remaining cortex (%)</th>
<th>Retouch present</th>
<th>Use wear present</th>
<th>Step fracturing present</th>
<th>Core length (mm)</th>
<th>Core width (mm)</th>
<th>Core thickness (mm)</th>
<th>Remarks</th>
<th>Thickness</th>
<th>Width</th>
<th>Length</th>
<th>Remaining cortex (%)</th>
<th>Use wear present</th>
<th>Retouch present</th>
<th>Step fracturing present</th>
<th>Length (cm)</th>
<th>Width (cm)</th>
<th>Thickness (cm)</th>
</tr>
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</tbody>
</table>
Appendix III

List of Aboriginal Sites Recorded During Survey
<table>
<thead>
<tr>
<th>Site Name</th>
<th>Map Sheet</th>
<th>AMG E</th>
<th>AMG N</th>
<th>Type</th>
<th>Unit/Quadrant</th>
<th>Landform</th>
<th>Slope</th>
<th>Area</th>
<th>Veg.</th>
<th>H2O dist.</th>
<th>No. artefacts</th>
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Appendix IV

Radiocarbon Age Determination
Summaries
Report on Radiocarbon Age Determination for ANU-10809

Submitter: Tom Knight
Submitter's Code: WTPN2/2
Site & Location: Weddin Mtns, Central West NSW, Australia
Sample Material: Charcoal
Physical Pretreatment: Possible contaminants were removed.
Chemical Pretreatment: Sample was washed in hot 10% HCl, rinsed and dried.

\[ \delta^{14}C = -16.8 \pm 4.6 \text{ \%o} \]
\[ \delta^{13}C = -24.0 \pm 2.0 \text{ \%o estimated} \]
\[ D^{14}C = -18.7 \pm 6.1 \text{ \%o} \]

AGE = 98.1 ± 0.7 %M

Comments:
150 ± 50 BP

In your publications you must always quote Laboratory Code, Sample Number and Conventional Age BP ± error or % Modern ± error if given.

Ages are reported as Conventional Years BP or % Modern (Stuiver and Polach, 1977, Radiocarbon 19, 353-363).

Recommended oceanic reservoir correction for Australia is -450 ± 35 (Gillespie and Polach, 1979, in Berger and Suess (eds), Radiocarbon Dating, UCLA Press, 404-421). If a correction is applicable you must quote Laboratory Code, Sample Number and both the Conventional Age BP and the Reservoir Corrected Age BP*.
Report on Radiocarbon Age Determination for ANU-10808

Submitter: Tom Knight
Submitter’s Code: WTPN2/4
Site & Location: Weddin Mtns, Central West NSW, Australia
Sample Material: Charcoal
Physical Pretreatment: Possible contaminants were removed.
Chemical Pretreatment: Sample was washed in hot 10% HCl, rinsed and dried.

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<th>Parameter</th>
<th>Value</th>
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<td>$\delta^{14}$C</td>
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<td>$\delta^{13}$C</td>
<td>-24.0 ± 2.0 %o estimated</td>
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<td>D$^{14}$C</td>
<td>-29.3 ± 6.1 %o</td>
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<td>AGE</td>
<td>240 ± 50 BP</td>
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Comments

In your publications you must always quote Laboratory Code, Sample Number and Conventional Age BP ± error or % Modern ± error if given.

Ages are reported as Conventional Years BP or % Modern (Stuiver and Polach, 1977, Radiocarbon 19, 353-363).

Recommended oceanic reservoir correction for Australia is -450 ± 35 (Gillespie and Polach, 1979, in Berger and Suess (eds), Radiocarbon Dating, UCLA Press, 404-421). If a correction is applicable you must quote Laboratory Code, Sample Number and both the Conventional Age BP and the Reservoir Corrected Age BP*.

Fax: 61 2 6249 0315 Prof John Chappell: 61 2 6279 8113 (ph) Abaz Alimanovic: 61 2 249 0117 (ph) Steve Robertson: 61 2 6249 0121 (ph), Steve.Robertson@anu.edu.au (email)
Calibration file(s): INTCAL93.14C
Listing file: tom.txt

10808
SC10808B-1
WTPN2/4

Radiocarbon Age BP 239 ± 50

Calibrated age(s) cal AD 1660
cal BP 290

Calibrated age(s) obtained from intercepts (Method A):

do one Sigma** cal AD 1644 - 1675 (306 - 275)
cal AD 1776 - 1799 (174 - 151)
cal AD 1943 - 1954 (7 - 0*)
do two Sigma** cal AD 1521 - 1568 (429 - 382)
cal AD 1627 - 1689 (323 - 261)
cal AD 1732 - 1813 (218 - 137)
cal AD 1925 - 1954 (25 - 0*)

Summary of above:

minimum of cal age ranges (cal ages) maximum of cal age ranges:

1 sigma cal AD 1644 (1660) 1954
cal BP 306 (290) 0*

2 sigma cal AD 1521 (1660) 1954
cal BP 429 (290) 0*

cal AD/BC & cal BP age ranges (cal ages as above)
from probability distribution (Method B):

% area enclosed cal AD (cal BP) age ranges relative contribution
to probabilities
68.3 (1 sigma) cal AD 1637 - 1682 (313 - 268) .42
1748 - 1805 (202 - 145) .42
1935 - 1955* (15 - 0*) .16
95.4 (2 sigma) cal AD 1511 - 1599 (439 - 351) .13
1617 - 1703 (333 - 247) .35
1717 - 1819 (233 - 131) .37
1851 - 1863 (99 - 87) .01
1917 - 1955* (33 - 0*) .14
Radiocarbon Age BP 152 ± 50
Calibrated age(s) cal AD 1685, 1740, 1809
1930, 1954
cal BP 265, 210, 141
20, 0*
Reference(s)
(Suider and Pearson, 1993)
cal AD/BC (cal BP) age ranges obtained from intercepts (Method A):
one Sigma**
cal AD 1671 - 1782 (279 - 168)
cal AD 1795 - 1826 (155 - 125)
cal AD 1826 - 1888 (124 - 62)
cal AD 1908 - 1947 (42 - 3)
cal AD 1953 - 1954 (0* - 0*)
two Sigma**
cal AD 1656 - 1955* (294 - 0*)
Summary of above:
minimum of cal age ranges (cal ages) maximum of cal age ranges:
1 sigma
cal AD 1671 (1685, 1740, 1809, 1930, 1954) 1954
cal BP 279 (265, 210, 141, 20, 0*) 0*
2 sigma
cal AD 1656 (1685, 1740, 1809, 1930, 1954) 1955*
cal BP 294 (265, 210, 141, 20, 0*) 0*
cal AD/BC & cal BP age ranges (cal ages as above)
from probability distribution (Method B):
% area cal AD (cal BP) age ranges relative contribution
68.3 (1 sigma) cal AD 1675 - 1706 (275 - 244) .17
1714 - 1776 (236 - 174) .36
1799 - 1820 (151 - 130) .13
1838 - 1872 (112 - 78) .18
1915 - 1943 (35 - 7) .16
95.4 (2 sigma) cal AD 1668 - 1787 (282 - 163) .46
1792 - 1895 (158 - 55) .36
1903 - 1950 (47 - 0) .17
1952 - 1955* (0* - 0*) .01
References for datasets used:
Comments:
†This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.**2 + curve std. dev.**2)
2 sigma = 2 x square root of (sample std. dev.**2 + curve std. dev.**2)
[ ] = calibrated with linear extension to calibration curve
0* represents a 'negative' age BP
1955* denotes influence of bomb C-14
For cal yrs between 5500-5190 BC an offset of 25 years is possible.
NOTE: Cal ages and ranges are rounded to the nearest year which
may be too precise in many instances. Users are advised to
round results to the nearest 10 yr for samples with standard
deviation in the radiocarbon age greater than 50 yr.