Australian Heritage Database

Places for Decision

Class : Natural

Item: 1

Identification

List:	**National Heritage List**
Name of Place:	Warrumbungle National Park
Other Names:	
Place ID:	105853
File No:	1/03/201/0001
Nomination Date:	25/07/2005
Principal Group:	Landform sites and areas

Status

Legal Status:	25/07/2005 - Nominated place
Admin Status:	05/07/2006 - Assessment by AHC completed

Assessment

Recommendation:	Place meets one or more NHL criteria
Assessor's Comments:	
Other Assessments:	:

Location

Nearest Town:	Coonabarabran
Distance from town (km):	11
Direction from town:	W
Area (ha):	23500
Address:	John Renshaws Pkwy, Coonabarabran, NSW 2357
LGA:	Coonabarabran Shire NSW Gilgandra Shire NSW Coonamble Shire NSW

Location/Boundaries:
About 23500ha, John Renshaws Parkway, 11km west of Coonabarabran, comprising the whole of the National Park.

Assessor's Summary of Significance:
The Warrumbungle National Park forms an extensive and spectacular geomorphological site, and the bold volcanic landforms are unrivalled anywhere else

in Australia. The landscape of spires, domes, plugs and dykes is uncommon in Australia, and the sharp rise of the landform from the surrounding plain to heights of more than 700 metres contributes to the aesthetic drama.

The Warrumbungles represent one of the best examples of a number of central shield volcanoes along the east coast of Australia, and have a wide array of outstanding volcanic features, including domes, plugs, dykes, sills, lava-flows, tuff layers, and horizontal and vertical columns. Some of the spectacular and well-known volcanic features of the Warrumbungles include the Breadknife, a narrow 90 metre high dyke that stretches for half a kilometre; Bluff Mountain, a trachyte dome with a near-vertical face 250 metres high, and Belougery Spire, a plug that illustrates horizontal trachyte columns.

The Warrumbungles are in a transition zone between the arid western and wetter coastal zones, and are of significance as a refugium in inland south-east Australia that supports exceptionally high numbers of species when compared to most other inland places in southern Australia.

Draft Values:

Criterion	***Values***	***Rating***
A Events, Processes	The Warrumbungles form an extensive and spectacular geomorphological site (Cochrane and Joyce 1986), and the bold volcanic landforms are unrivalled anywhere else in Australia (Yeates 2001). The volcanic features and landforms illustrate each of the stages in the development of the Warrumbungle volcano, and include an unusual opportunity to examine the inside of a volcano, in addition to parts of the original shield, or external surface, of the volcano, as well as successive layers of lava (Duggan & Knutson 1993, Johnson 2004). The Warrumbungle National Park displays a wide array of outstanding volcanic features, including plugs, domes, dykes, sills, lava-flows, tuff layers, and horizontal and vertical columns (Duggan & Knutson 1993, Ferrett 2005, Geoscience Australia website 2005, Johnson 2004, Percival 1979, Yeates 2001). The Warrumbungle National Park is in a transition zone between the arid western and wetter coastal zones, and is of significance as an important refugium in inland south-east Australia. The Warrumbungles support exceptionally high numbers of species, and the place is one of a small number of places in inland southern Australia that are centres of richness for plant and animal taxa (NSW NPWS 1997, ANHAT 2005).	AT
D Principal characteristics of a class of places	The Warrumbungles are one of the best examples of a number of central shield volcanoes along the east coast of Australia (Yeates 2001, Sutherland 2003 & 2005), and	AT

	constitute the best representation of exposed volcanic features within the main north-south volcanic line in eastern Australia (Sutherland 2005). The site illustrates an outstanding diversity of volcanic features within a relatively small area that have high integrity.	
E Aesthetic characteristics	The Warrumbungles form a distinctive and spectacular volcanic landscape of spires, domes, plugs and dykes that is uncommon in Australia (Context 2006, Crocker & Davies 2005b, Duggan & Knutson 1993), and the sharp rise of the landform from the surrounding plain to heights of more than 700m contributes to the aesthetic drama. The site beautifully exposes the inside of a shield volcano, and the bold volcanic landforms are unrivalled anywhere else in Australia (Yeates 2001). The integrity and scenic vistas of the features within the Warrumbungle National Park are of outstanding value to the community.	AT
I Indigenous tradition	Evidence of Aboriginal occupation in the form of artifact scatters, grinding grooves and a stone quarry occurs in Warrumbungle National Park (Balme 1986, DEC 2005, ERM Mitchell McCotter 1994). Excavations suggest that Indigenous people were using the park from at least 5,000 years ago (Fox 1996).	BT

Historic Themes:

Nominator's Summary of Significance:
Is one of the most distinctive volcanic landscapes in Australia, displaying a spectacular range of geological features in exemplary fashion and telling us much about how the land was shaped and formed.
Is a refuge for plants and animals and a transition zone between the arid western and wetter coastal zone. Its distinctive flora and fauna is especially rich in plants (>550spp), birds (186spp), and reptiles (53spp).
Contains almost one third of Australia's species of parrots and cockatoos.
Has spectacular scenery and other natural features that attract many visitors from NSW, interstate and overseas.

Description:
The Warrumbungles represent one of the larger volcanoes that form a north-south line stretching from northern Queensland to southern Victoria. These volcanoes were formed when a stationary super-heated area of the mantle sporadically broke through the crust as Australia moved north, forming a sequence of volcanic peaks that decrease in age from north to south. Volcanoes in central and north Queensland, such as Cape Hillsborough and the Peak Range are between 32 and 30 million years old, while southern sites, such as Mount Canobolas is 12 million years old, and Mount Macedon, an outlier in southern Victoria, is 6 million years old. The Warrumbungles are dated at between 13 and 17 million years old (Johnson 2004, Sutherland 1995).

The Warrumbungle National Park encompasses the central region of the former

Warrumbungle volcano. Originally, thick trachyte lava welled up from a number of different vents over a wide area, which subsequently became blocked as the trachyte solidified. As the volcano aged, more fluid basalt lava flowed from new vents, alternating with ash and scoria explosions. The later flows filled the spaces between the earlier trachyte domes, and built a large cone rising approximately 1000 metres, with a diameter of nearly 50 kilometres. Ninety per cent of the volcanic cone has since been eroded away, leaving the present-day landforms of plugs, domes, dykes and sills of the earlier eruptions, and erosion has exposed a roughly circular shield volcanic landscape. Examples of trachyte vents that can be seen today include the volcanic neck at Belougery Spire, Crater Bluff, and the lava dome of Bluff Mountain, which collectively form the central region of the volcanic shield (Ferrett 2005).

The volcano went through several developmental stages, which have been interpreted in the layers of rock at the site. Initially, the lavas were very viscous, and high in silica, making them more resistant to subsequent erosion. The trachytes formed either lava domes or plugs, and comprise most of the unique and spectacular features of the eroded volcanic landscape. Four types of trachytes with varying chemical compositions can be distinguished in the area. They can be distinguished by colour differences, which range from green to green-blue, to blue, to white. Later the chemical composition changed, resulting in eruption of hawaiites and trachyandesites, which are today found south-east of the park and surrounding Tonduron Mountain, which is just outside the boundary of the National Park. Other volcanic features of the area include dykes which are vertical sheets of igneous rock exposed by erosion. The spectacular Breadknife, a 90m high natural wall, is a well-known example of this.

The Warrumbungle volcano resulted in large amounts of lava being deposited onto the earlier rock strata. Subsequent erosion has exposed the underlying sedimentary rock known as the Pilliga Sandstone, which is exposed at lower elevations in the central and north eastern areas of the National Park. The Pilliga Sandstone was formed in the Jurassic (around 180 million years ago) when the area was covered by large shallow freshwater lakes. Sand and mud deposited in the lakes were then buried and compressed, subsequently forming the sedimentary sandstones and shales. These were then uplifted to form a system of broad valleys and flat-topped hills similar to some of the present-day country surrounding the Warrumbungles (NSW NPWS 1997).

Fossils have been found in the area. Originally, lakes formed within the Warrumbungle volcano supported a high diversity of diatoms, which were then deposited in the lake floors, and animal and leaf remains have been found to the north-east of the park boundary at Bugaldie (Sutherland 1995).

The moderate height of the Warrumbungles is enough to provide cooler air and lusher vegetation, compared with the surrounding plains (Johnson 2004). The Warrumbungles fall within the Western slopes division , which is drier and warmer than the adjacent Tablelands division, with rainfall of 370 -750 mm per annum falling mainly in summer, moderate winter frosts and little or no snow (Harden 1990).

The vegetation is dominated by eucalypt woodlands, with mallee and shrublands occurring in areas with skeletal soils. The area is relatively species rich, particularly when compared with other inland sites, with up to 620 plant species recorded for the

park (NSW NPWS 2001). This is a reflection of the location of the site, situated as it is on the boundary between the western slopes and the western plains, with representative species from each province (NSW NPWS 2001). The area is also within the broader transition zone between the eastern coastal ecosystems and the semi-arid interior. Species that occur on the New England Tablelands also occur here as outliers on the higher parts of the range with moist aspects (NSW NPWS 2001). Species near the southern edge of their distributional range are also found here, such as *Eucalyptus trachyphloia*, *E. crebra* and *E. melanophloia* (Costermans 1986).

The local topographical relief is considerable. Many of the peaks are in excess of 1,000 metres and provide a large contrast to the surrounding plains and hilly country. The hot dry western slopes of the range support predominantly inland flora while the cooler, moister conditions of the sheltered southern and eastern slopes support forests (AHC 1981).

The area contains almost one third of Australia's species of parrots and cockatoos with 23 species, and a total of 180 bird species. There are also twelve frog species, twenty four mammal species and fifty three species of reptiles (AHC 1981, ANHAT 2005, NSW NPWS 1997).

Fauna species in the area include the brush-tailed wallaby (*Petrogale penicillata*), and five other macopods, the eastern grey (*Macropus giganteus*), the wallaroo (*M. robustus*), the red-necked wallaby (*M. rufogriseus*), and the swamp wallaby (*Wallabia bicolor*). Other fauna include koala (*Phascolarctos cinereus*), greater glider (*Petauroides volans*), the squirrel glider (Petaurus norfolcensis) and several species of bats, including the eastern horseshoe bat (*Rhinolophus megaphyllus*) (NSW NPWS 1997).

In springtime a variety of flowering shrubs and heathland plants provide colour, including swainsona and indigofora peas, boronias, hardenbergia, fringe-myrtles, clematis, everlastings, mint bushes and hop bush species. Tree species in the range include mugga ironbark (*Eucalyptus sideroxylon*), scribbly gum (*E. rossii*), cypress (*Callitris enderlicheri*) and rough barked apple (*Angophora floribunda*) (AHC 1981) .

Over 19 Aboriginal sites have been recorded in Warrumbungle National Park, predominantly artefact scatters consisting of quartz and less commonly silcrete, chert, quartzite and silicified wood (AHIMS, 2005). Other sites within the park include rock shelters with cultural deposit, axe grinding grooves (in two locations) and a stone quarry (ERM Mitchell McCotter, 1994:5.49; Balme, 1986:168-180). A wooden boomerang has been found on the floor of a rocky cavity known as Burbie Gap Cave, while a piece of abraded ochre, together with a cached pebble hammer stone, a grindstone fragment and quartz artefacts have been found in a shelter on Blackman's Mountain (Balme, 1986:169, 172). Grinding slabs have been recorded at two open sites along Wambelong Creek. Archaeological excavations have been conducted at Tara Cave, Chalkers Mountain, where surface artefacts and grinding grooves have been recorded. The deposits included ochre nodules, and suggest occupation from about 4,800 years ago (Fox, 1996:51). Tara Cave area is listed on the Register of the National Estate.

Typically the stone tool assemblages from these sites includes debitage from anvil

split quartz and flaked quartz debitage in areas of high relief, while workshops or flakes from microblade production are present in sites on lower creeklines as well as within the high country (Balme, 1986:186).

The pattern of occupation includes extensive Aboriginal campsites along major creeks such as Wambelong Creek; artefact scatters at confluences on the branches of minor tributaries in the ranges; sites with stone tools associated with soaks and springs on mountain slopes; artefact scatters on ridge crests and mountain tops (including extensive scatters above 620ml asl); and occupation of scarce rock shelters and fissures in valley sides and cliffs. (ERM Mitchell McCotter 1994) While permanent water is available in Wambelong Creek, it has been suggested that use of this area may have been focused on specific food resources for short periods of time (Balme, 1986:180).

The aesthetic qualities of the place arise from the volcanic landform features, the natural vegetation and wildlife all within a small area. Throughout the range are a number of walking tracks that take visitors through the landscape to experience the details and textures of the array of volcanic rock formations, petrified wood, water courses, natural vegetation and also to the scenic view points that provide extensive panoramas (Duggan and Knutson 1993).

A small array of historic features remain in the park from the grazing period and include part of a dingo fence. There are the remains of a sawmill and shafts of unsuccessful gold, silver and diamond mines (NPWS 1997).

Analysis:
Comparative Analysis

Claims
The nominator claims that the Warrumbungles have natural heritage values at the national level under criteria (a), (d) and (e).

These claims are addressed below under the relevant criteria and considered in a national context using ANHAT analysis, expert opinion and available literature.

CRITERION (a) – *The place has outstanding heritage value because of the place's importance in the course, or pattern of Australia's natural or cultural history.*

The nominator claimed that the Warrumbungle National Park is one of the most distinctive volcanic landscapes in Australia, displaying a spectacular range of exemplary geological features and telling us much about how the land was shaped and formed.

An analysis was undertaken of volcanic sites along the length of the east coast of Australia. The east coast of Australia has been volcanically active throughout the Cainozoic and into the Holocene (70 million years ago to approximately 4,700 years ago) and a large number of sites illustrate geological processes that are comparable to the Warrumbungles. Sites of geoheritage significance, based on assessments by the Geological Society of Australia's state branches, were ranked comparatively by

Yeates (2001). There are 103 known potential volcanic sites in Australia of greater than local significance, of which 65 have significance at state level or higher. Most of these sites demonstrate outstanding examples of particular features associated with volcanism such as rare minerals or lava flow features. Six places were ranked extremely highly for the diversity of features associated with volcanism: Undara Crater and Lava Tubes (Qld), Lord Howe Island (NSW); Bombo Quarry (NSW), the Tweed Shield Volcano (NSW – Queensland border), the Mount Napier volcanic complex (Victoria) and the Warrumbungles (NSW).

Undara is one of the best examples of a lava flow in the world and has outstanding examples of lava caves and flow features associated with lava flows. Lord Howe Island illustrates all the emergent features of a large shield volcano, and provides a unique and spectacular exposure of the Lord Howe Rise. Bombo Quarry has a range of flow features including spectacular columnar jointing and a range of rare mineralogical features associated with the split of Australia from the Lord Howe Island Rise. The Tweed Shield Volcano is a highly eroded and deeply dissected caldera displaying a large number features and is an excellent example of such a dissected caldera. The Mount Napier volcanic complex is a spectacular example of geologically recent volcanic processes, and much of the history of the Newer volcanics region of Victoria can be interpreted here.

The Warrumbungles provide a prime illustration of a wide range of volcanic features. The degree of erosion exposes a splendid range of volcanic features, including the interior volcanic plumbing, and provides a well balanced range of surface remnants and sub-volcanic structures (Sutherland 2005). The spectacular volcanic features and landforms illustrate each of the stages in the development of the Warrumbungle volcano, and include an unusual opportunity to examine the inside of a volcano, in addition to parts of the original shield, or external surface, of the volcano, as well as successive layers of lava (Duggan & Knutson 1993, Johnson 2004). Yeates (2001) compared the Warrumbungles with the Tweed volcano, and ranked the Warrumbungles as internationally significant, compared with the Tweed volcano, which he ranked as nationally significant, the reason being that the Tweed volcano is more eroded, and the geological features are not as clearly defined. In their publication on national and international geological sites, Cochrane and Joyce (1986) ranked Lord Howe as being of international significance for the range of features presented, and for scenic values. While the Warrumbungles may not be as spectacular as Lord Howe Island, they nevertheless provide an outstanding example of a wide variety of volcanic features, and the site is an excellent illustration of the process of volcanic formation (Duggan & Knutson 1993, Duggan et al 1993, Percival 1985, Sutherland 2005, Yeates 2001).

In a report on the geological features of national and international significance in Australia (Cochrane and Joyce 1986), the authors found the Warrumbungles to be of national significance representing an eroded shield volcano which forms an extensive and spectacular geomorphological site. Percival (1985) noted that the geological features and volcanic landscape of the Warrumbungles are among the best known and most popular in NSW, and Yeates (2001) states the volcanic landforms are unrivalled anywhere else in Australia, and ranked the site as being internationally significant.

The nominator also claimed the place is a refuge for plants and animals and a

transition zone between the arid western and wetter coastal zones, and that its distinctive flora and fauna is especially rich in plants (over 550spp), birds (186spp), and reptiles (53spp). The nominator also claimed significance for the number of species of parrots and cockatoos.

An analysis using ANHAT of 1:100 000 mapsheets that were in the top 2% for significance (2005), showed that the Tenandra and Coonabarabran mapsheets, which encompass the Warrumbungles, are rich for a number of groups of both plants and animals. Further analysis showed that the Warrumbungles are one of a very small group of inland places that are significant for richness and concentrations of endemic species for a number of taxa, including for some bird groups, including parrots and cockatoos, and honeyeaters. The place is also highly significant for acacias, and a number of other plant families, including epacrids, peas (*Fabaceae*), orchids, myrtales including eucalypts, and Proteaceae, including persoonias and grevilleas. This result is consistent with the area being of outstanding significance as a transition zone and a refuge in inland south-east Australia (NSW NPWS 1997 & 2001). The Warrumbungle National Park, when compared to the majority of other inland places, supports exceptionally high numbers of species, and is one of a small number of inland places that are centres of exceptional richness for a number of plant and animal taxa (NSW NPWS 1997, ANHAT 2005). The only other places with comparable species richness in inland south-east Australia are the Grampians, and Mt Kaputar.

The Warrumbungles meet criterion (a) for both geoheritage and biodiversity values.

CRITERION (b) - *The place has outstanding heritage value because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.*

While the nominator did not make any specific claims under Criterion (b), there is evidence in the literature that the place contains rare minerals. In a report on the geology of the Warrumbungles (Duggan & Knutson 1993), the authors report that recent studies of the trachytes and rhyolites show them to have unusual minerals. Two examples are: wilkinsonite, and aegirine. Wilkinsonite is a newly named mineral that has its type locality at the Warrumbungles, and is only known from one other place in the world to date, in Yemen (The Mineral Database website 2005). Sutherland (et al. 2000) reports: "The site contains an international type mineral locality for wilkinsonite, a late- stage crystallising silicate mineral in the evolved trachytes". The mineral was named after Professor John Wilkinson, from the University of New England, Armidale, NSW, a researcher on volcanic rocks.

The presence of the mineral aegirine is not unusual, however the Warrumbungles contain a very high concentration of zirconium, with twice as much as has been recorded anywhere else in the world.

An internet search showed that there are large numbers of rare minerals, with more being discovered every week throughout the world. The Australian Museum website (2005) outlines numerous sites around Australia that have yielded important or rare mineral specimens. Because Australia is a large country with a long and complex geological history, it has a large number of mineral localities of many different types (Australian Museum 2005). Sites that have produced world class mineral specimens

include the Broken Hill silver-lead-zinc deposit in far western New South Wales, the silver-lead mines of Dundas in western Tasmania, and the uranium mines of the Top End in the Northern Territory. Broken Hill mines are the type locality for 11 minerals, and have also yielded a considerable number of rare minerals.

The Warrumbungles do not meet criterion (b).

CRITERION (c) - *The place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history.*

The nominator did not make any specific claims under criterion (c). There is some evidence in the literature, however, that the place has value as a research site.

As detailed in the analysis under criterion (a), the Warrumbungles provide a prime illustration of a wide range of volcanic features. The degree of erosion exposes a splendid range of volcanic features, including the interior volcanic plumbing (Sutherland 2005). The spectacular volcanic features and landforms illustrate each of the stages in the development of the Warrumbungle volcano, including an unusual opportunity to examine the inside of a volcano. The geological features are clearly defined and the site is an excellent illustration of the process of volcanic formation (Duggan & Knutson 1993, Duggan et al 1993, Percival 1985, Sutherland 2005, Yeates 2001).

While the Warrumbungles provide one of the best examples of volcanic processes, it is one of 30 shield volcanoes that lie along the Great Escarpment that illustrate aspects of volcanic processes (Johnson 2004, Sutherland 1995). There are few volcanic sites in Australia that have directly resulted in altering our understanding of the evolution of the Australian landscape (Sutherland 2005), rather the sum of volcanic sites has led to an understanding of the north-south trend of eastern volcanic activity. Furthermore, it is difficult to provide direct evidence to show that research on the Warrumbungles has resulted in ground-breaking understanding of Australia's volcanic natural history.

The Warrumbungles do not meet criterion (c).

CRITERION (d) - *The place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of: (i) a class of Australia's natural or cultural places; or (ii) a class of Australia's natural or cultural environments.*
The nominator claimed that the Warrumbungle National Park displays a spectacular range of exemplary geological features and tells us much about how the land was shaped and formed.

There are a number of central shield volcanoes along the east coast of Australia. The Warrumbungles are considered to be the best of many outstanding examples of volcanic rocks that are typical of central volcanoes being very well exposed (Sutherland 2003 & 2005, Yeates 2001).

Sutherland (2005) states that the Warrumbungles are the best representation of exposed volcanic features within the main north-south volcanic line in eastern

Australia. Features include the domes, plugs and dykes of the central volcanic vents. There are also trachyte lava flows, basalt lava domes and trachyte pyroclastics. The site also includes surface remnants of the original volcano, an example being the visible layering on Mount Exmouth, representing a section of the original shield (Johnson 2004). Other sites in Australia that also illustrate a range of volcanic features include Undara Crater and Lava Tubes (Qld), Bombo Quarry (NSW), the Tweed Shield Volcano (NSW – Queensland border), and the Mount Napier volcanic complex (Victoria). However, with the exception of the Tweed Shield Volcano, these other sites were formed by different volcanic processes and represent good examples of the features of lava fields rather than central volcanoes. While the Tweed Volcano is an excellent example of a caldera, the features are not as well preserved when compared to those at the Warrumbungles (Yeates 2001).

The Warrumbungles meet criterion (d).

CRITERION (e) - *The place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.*

The nominator claimed that the Warrumbungle National Park is one of the most distinctive volcanic landscapes in Australia, displaying a spectacular range of geological features in exemplary fashion, and that the place has spectacular scenery and other natural features that attract many visitors from NSW, interstate and overseas.

The aesthetic features for the Warrumbungles are described under three aesthetic indicators: powerful landscapes, defining images, and uncommon landscapes, which were indicators developed in studies by Crocker & Davies (2005a) and Context (2004). This assessment also draws on the detailed assessments by Crocker & Davies (2005b, p.90) and the desk top review of four landscapes by Context (2006), and considers how the aesthetic characteristics are valued by a community or a cultural group.

Powerful Landscape

The Warrumbungles form a dramatic landform of volcanic spires and domes, separated by forested ridges and deep gorges, and the landscape is in marked contrast to the surrounding plains and tablelands (Crocker & Davies 2005b, National Trust 1977). Prominent features include Crater Bluff, Belougery Spire, the Breadknife, Tonduron Spire and Bluff Mountain (Crocker 2005b:90; Duggan & Knutson 1993).

Crocker and Davies list the Warrumbungles as one of 68 landscapes in Australia proposed as being potentially significant as an inspirational landscape against the National Heritage criteria. The place was also included in the short-list of 18 non World Heritage places that had the highest ranking for strength of information, and were chosen for further assessment of their inspirational values against the National Heritage Criteria.

When comparing the place to other volcanic sites, the majority of volcanic landscapes in Australia lack the dramatic landscape of the Warrumbungles, and the spectacular and prominent landscape features here are comparable to only two other volcanic places on the mainland - Mount Warning and the Glass House Mountains.

In its detailed assessment of the Warrumbungles, Context (2006) states that the Warrumbungles rate highly as a powerful landscape.

Uncommon Landscape

The high number of volcanic features that characterise the Warrumbungles, including the many plugs, dykes, and flows, give the skyline of the Warrumbungles a distinctive and unusual jagged silhouette. Yeats (2001) notes that the site beautifully exposes the inside of a shield volcano and its spectacular volcanic rocks, which is uncommon in the Australian context. In a report by Percival (1985), the author noted that the geological features and volcanic landscape of the Warrumbungles are among the best known and most popular in NSW, while Yeates describes the Warrumbungles as having 'bold volcanic landforms …unrivalled anywhere else in Australia.' (Yeates 2001: p265), and ranked the site as being internationally significant.

The volcanic features of the Warrumbungles are unusual at the national scale, and are particularly uncommon in terms of the density and dramatic nature of the volcanic features.

In its detailed assessment of the Warrumbungles, Context (2006) states that the Warrumbungles rate highly as an uncommon aesthetic landscape.

Defining Images

The landscape was the subject of photographic studies by the significant Australian photographers Frank Hurley and Max Dupain. However, there is relatively little other information available on artistic and literature references when compared to many other mountainous landscapes across Australia. For example: the Glass House Mountains, the Blue Mountains, the Grampians and the Flinders Ranges, along with many others, all scored more highly for defining images than the Warrumbungles (Crocker & Davies 2005a). The Warrumbungles do not meet criterion (e) for defining images.

Valued by a Community Group

The Warrumbungles are recognised as a popular and well-known site as evidenced by the number of popular and tourism publications, the number of references on the internet, and the number of historic studies, as detailed in Crocker and Davies (2005b). The Warrumbungle National Park features very strongly in tourism publications across Australia, and in historical references and websites on the internet, and is one of the top ranking sites when compared to other non World Heritage mountainous sites in Australia for these indicators (Crocker & Davies 2005a). However, its value to a particular community is more difficult to demonstrate. Nevertheless, evidence of community value has been present since the 1930s when bushwalkers and rock climbers started to visit the place and in 1953 bushwalkers lobbied for protection of the area as a national park (NSW NPWS 1997). The Warrumbungles have also been classified as a Landscape Conservation Area by the National Trust of Australia.

Although evidence that the Warrumbungles are valued by a particular community group is difficult to locate, it can be shown to be a place that is valued by the Australian community as a whole. The place has aesthetic values as a 'powerful and uncommon landscape'.

The place meets criterion (e).

CRITERION (h) – *The place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, or importance in Australia's natural or cultural history*

The Warrumbungles are associated with one prominent Australian, Professor John Wilkinson, from the University of New England, Armidale, NSW, who is a well-known researcher on volcanic rocks. The Warrumbungles are the type locality for a rare mineral, wilkinsonite. There is no evidence that this association is particularly notable at a national scale, or that the contribution of Wilkinson was particularly more outstanding than other volcanologists.

The place does not meet criterion (h).

CRITERION (i) – *The place has outstanding heritage value to the nation because of the place's importance as part of Indigenous traditions*

The nominator makes no specific claims for Indigenous values against the criteria. However, the Warrumbungle National Park contains evidence of Indigenous occupation which is considered here under criterion (i).

Limited archaeological investigation has been undertaken in the area. The available physical evidence consists of a range of open campsites and open artefact scatters across the landscape, with some evidence of quarrying and stone axe working (grinding grooves). This would appear typical of the range of archaeological evidence occurring in the broader region and elsewhere in the state in similar environments, although limited comparative work has been undertaken in the region (e.g. Balme, 1986). The stone artefact assemblages are from the small tool tradition, which Balme (1986:183) notes is uniformly represented across the north-central rivers region. Balme further indicates that a wider range of archaeological evidence, including evidence of plant fibres in cultural deposits and the processing of macrozamia nuts, is found in the foothills of the Warrumbungle Range, outside the boundary of the area. It is also noted that there are other sites in the region with older evidence of Aboriginal occupation, eg: Crazy Man Rock Shelter dated to approximately 17,000 years old, and Tambar Springs where stone artefacts have been found in association with extinct megafauna bones, possibly dating to 25, 000 years ago (Fairley, 1991:78). There is insufficient evidence to suggest that the pattern of Aboriginal occupation in the area is significantly different from that found in the broader region or elsewhere in the state, and therefore that the area may be of outstanding heritage value to the nation.

Virtually no information regarding Indigenous traditions associated with Warrumbungle National Park has been identified through the desktop assessment. Fox (1996:48) notes that a consequence of the arrival of European people in the region from 1830 has been the loss of the creation stories associated with the mountains. A similar view was expressed by P. Purcell, an archaeologist with the Department of Environment and Conservation who works in the area (Purcell, *pers. com*. 2/12/05). He suggested that while the local Indigenous community places

special value on places in the park, in particular Tara Cave, very little information has been documented about Aboriginal traditions associated with Warrumbungles.

The place does not meet criterion (i).

History:
Prior to European arrival in the area it appears that two Indigenous language groups bordered the Warrumbungle Range – the Kamilaroi and the Kawambarai, while the Weilwan (to the northwest) and Wiradjuri people (to the south) may also have accessed the ranges (Tindale, 1970).

There is evidence to suggest that Indigenous people occupied the area now known as Warrumbungle National Park for at least the last 5,000 years (Fairley, 1991:78).

The first European record for the Warrumbungle Mountains was by Surveyor-General Oxley in 1818 on his second inland expedition. '*To the west the land was level, but to the east 'a most stupendous range of mountains, lifting their blue heads above the horizon, bounded the view in that direction, and were distant at least seventy miles, the country appearing a perfect plain between us and them'* (Oxley *in* Fairley 1991, pg 82).

The range was named Arbuthnot's Range, later replaced by Warrumbungle (Fairley 1991). The name 'Warrumbungle' comes from the Kamilaroi language, and is believed to mean 'crooked mountains' (NSW NPWS, 1997).

There are very few early historical accounts of Indigenous people in this area. In 1818 the explorer John Oxley recorded in his journal that bark huts were to be seen 'in every direction' along the Castlereagh River, and noted that freshwater mussel shells were common in the fire-places. On several occasions he noted that the Aboriginal people were 'numerous' and he variously encountered people as he proceeded into the mountains (Fairley, 1991:78 citing Oxley, 27 July 1818, p.253). George Evans, Oxley's deputy, reported seeing a number of Aboriginal fires about the base of the Warrumbungle Range.

Explorers that came after Oxley were Mitchell and Sturt, who in turn were followed by bushrangers and settlers. Large rugged tracts of forested lands such as the Warrumbungle Mountains were left largely alone, with the exception of selective logging by the early settlers, and much of the Warrumbungles continue to retain their original character.

Evidence of past uses is found in the central valley and edges of the park, which were heavily grazed, and which retain historic relics such as exotic species at the old homestead sites. There are also a small number of abandoned shafts of unsuccessful gold, silver and diamond mines, the remains of a sawmill and a woolshed and evidence of early recreational development including early walking tracks and associated works (NSW NPWS 1997).

The photographer Frank Hurley took 66 images of the Warrumbungles during the first half of the 20th Century and a large image of the ranges dating from the 1970s was

taken by Max Dupain and published in the *Max Dupains's Australian Landscapes* 1988.

By the 1930s bushwalkers and rock climbers had discovered the Warrumbungles, and the first proposal for a Warrumbungle National Park was made in 1936. The proposal was deferred during WWII, and it was not until 1952 that approval was given for almost 2,500 hectares to be reserved for public recreation. In 1953 an area of approximately 3,400 hectares was declared as a national park, and another 2,300 hectares was protected on adjoining lands, and subsequently added into the park. Five huts were constructed along the Grand High tops but Balor Hut is the only one remaining. The present park area is 21,534 hectares (NSW NPWS 1997).

Condition:
Approximately 80,000 people visit the park annually, and the majority camp overnight in the park. Camping facilities are concentrated in the central area of the park, with the main camping areas at Blackmans Camp and Elongery Camp. A day-use area is located at Canyon Camp. There is a Visitors' Centre, also located in the central part of the park. An extensive walking trail system links the central part of the park to the spectacular Grand High Tops.

A number of areas in the national park were cleared for grazing in the last century, and most areas are regenerating slowly. Tree planting has been undertaken in cleared areas in the Wambelong Valley.

Recording of the fire history commenced with declaration of the park in 1954. Fire incidence has been low, characterised by small fires caused by lightning, with major fires occurring once every 20 to 30 years. Most of the park has remained unburnt for over 30 to 50 years. Much of the park was burnt in 1937, while large sections were again burnt in 1952 and 1967. A smaller fire burnt out a section in the central part of the park in 1990 (NSW NPWS 2001).

Condition statement as at October 2005.

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