Conservation Management Plan

Volume 1 of 2 - Report

Prepared for Jenolan Caves Reserve Trust and the NSW Department of Environment and Climate Change

August 2009
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Executive Summary

Jenolan Karst Conservation Reserve

The Jenolan Karst Conservation Reserve (the Reserve) is located in the local government area of Oberon in the Blue Mountains in NSW. It comprises a total land area of 2,422 hectares which includes a complex system of limestone caves, natural landscape and various elements of built heritage.

The Reserve is listed on the NSW State Heritage Register, and it is one of eight reserves that comprise the Greater Blue Mountains heritage listing on the National Heritage List and World Heritage List. It is one of Australia’s foremost and oldest visitor destinations with over 220,000 visitors annually.

The Reserve is divided into two zones: the Visitor Use and Services Zone contains seven precincts in which development has occurred; and the Conservation Management Zone covers the natural sections of the Reserve.

Significance

The Reserve is of state significance for its historical, aesthetic, research and rarity values. The highly significant features are the limestone caves and karst landscape. The Reserve’s aesthetic qualities are its cave formations, the natural landscape and the hamlet setting associated with the caves.

The Reserve’s historical values include the various early infrastructure, later infrastructure developments and implementation of innovative design to minimise damage to the karst system. The first use of electric cave lighting in Australia and the first development of hydro-electric power in Australia both occurred at the Reserve. More recent developments include the use of ultra violet filters for reservoirs, replacing older cave infrastructure with new stainless steel railings and LED lights, and innovative cleaning techniques within the caves.

The Reserve is highly significant as the first public reserve set aside in NSW for the protection of a natural resource (the caves). Using absolute techniques of measurement, Jenolan Caves has recently been found to be the oldest cave system in the world, and is the most visited cave system in Australia.

Caves House is also highly significant as it is the first attempt by a government authority to promote and regulate tourist development at an area of acclaimed heritage value in Australia. Caves House was designed by prominent NSW Government Architect Walter Liberty Vernon, with all alterations and additions from the 1880s to 1970s being executed by successive NSW Government Architects.

The Reserve is part of the National and World Heritage Listing for the Greater Blue Mountains. It is significant for its outstanding examples of on-going ecological and biological processes that are important in the evolution of Australia’s highly diverse ecosystems and communities of plants and animals, particularly eucalypt-dominated ecosystems. The Reserve is host to a number of rare and uncommon flora and fauna species, especially within the caves.

Conservation

The aim of this report, jointly commissioned by the Department of Environment and Climate Change NSW (DECC) and the Jenolan Caves Reserve Trust (the Trust), is to develop new visionary policies, strategies and actions to ensure the retention of the significance of the place, while allowing for adaptive reuse, possible future development and ongoing management and maintenance of the Reserve.

Various features within the Reserve have been assessed in regards to their significance, and identified for conservation and retention, potential demolition, further research, and various conservation and maintenance works.
Using this Conservation Management Plan

This Conservation Management Plan (CMP) has two volumes: Volume 1 is the report; and Volume 2 is the heritage inventory forms. This CMP is one of the management documents for the site, and its relationship to other documents is demonstrated in the flowchart below.
Undertaking Works at the Site

If proposing works within the Visitor Use and Services Zone (VUSZ) of the Reserve

This approvals process assumes that the VUSZ will, in the future, be managed by DECC. Reference should first be made to the relevant inventory form for the Precinct and item/feature in Volume 2. The inventory forms note the significance, condition, archaeological potential and recommendations for the maintenance and management of the Precinct or item/feature. Depending on the nature of the proposed works, reference should then be made to Section 9.3 and 9.4 to confirm the required approvals process. The nature of the works will determine what approvals you may need to obtain. Any submission for proposed works should consider relevant conservation policies and implementation strategies and actions in this Report (Sections 10 and 11).

Should another agency eventually manage the VUSZ then this approvals process may need to be altered.

If proposing works within the Conservation Management Zone (CMZ) of the Reserve

The CMZ is managed by DECC. Reference should first be made to 2009 Draft Plan of Management, relevant specialist reports and studies and Section 9.3 and 9.4 of this Report to confirm the required approvals process. There are overarching and specific (archaeological sites) conservation policies and implementation strategies and actions within this Report apply to the CMZ as well as VUSZ (Sections 10 and 11).
1 Introduction

This section describes the site, its location, its ownership, the scope, aims, layout and limitations of the entire Report, authorship, further research and its future monitoring and review.

1.1 The Jenolan Karst Conservation Reserve

The Jenolan Karst Conservation Reserve (the Reserve) comprises an area of 2,422 hectares and contains a large, complex cave system with around 45 km of known passageways divided into 350 caves.

The Reserve is part of the Greater Blue Mountains UNESCO World Heritage Area, and is included as part of the Greater Blue Mountains listing on the National Heritage List. The Reserve is also listed in the NSW State Heritage Register. With more than 220,000 visitors annually, it is one of Australia’s foremost and oldest visitor destinations, and the oldest under public management, with its natural, cultural, historic, scientific and recreational values of local, regional and State significance.

The Reserve has been divided into two zones. The Visitor Use and Services Zone (VUSZ) contain seven precincts in which development has occurred, and the Conservation Management Zone (CMZ) covers the natural sections of the Reserve.

1.2 Scope of the Report

The brief for this project was to prepare a CMP for the Reserve, and includes description, analysis, comparative analysis, and assessments of significance that cover the entire Reserve. All buildings, structures, archaeological features and sites, recorded Aboriginal sites and planted/designed landscape elements within the seven VUSZ precincts have been surveyed in detail and recorded in the inventory sheets (Volume 2). In addition, there are several items in the CMZ, outside the boundaries of the VUSZ precincts, which have been included in the inventory. The inventory also covers infrastructure insofar as it has cultural heritage value.

The policies developed in the CMP focus on the management of the precincts and the items within the precincts of the VUSZ, as well as those additional items identified outside the VUSZ.

1.3 Aims of the Report

This CMP has been commissioned by the Department of Environment and Climate Change NSW (DECC) and the Jenolan Caves Reserve Trust (the Trust). It makes reference to, updates and builds on The Conservation Plan (Built Environment) for the Caves House Precinct, Jenolan Caves Reserve prepared by Robert Moore and Associates in 1988 (1988 CMP).

The 1988 CMP comprises three volumes:

- Volume 1 – Caves House Precinct (now known as the Grand Arch Precinct) – contains an analysis of the documentary and physical evidence, assessments of significance, conservation policies and implementation;
- Volume 2 – Caves House Precinct – contains the historical and architectural development, chronologies, historic photographs and fabric survey; and
- Volume 3 – Supplementary Volume – covers the other five “auxiliary” precincts in the Reserve (as defined in 1988), documentary and physical evidence, assessments of significance, conservation policies and implementation.

1 Department of Environment and Climate Change 2008A:1
INTRODUCTION

The aim of this CMP is to develop new visionary policies, strategies and actions to ensure the retention of the significance of the place, while allowing for adaptive reuse, possible future development and ongoing management and maintenance of the Reserve. Its objectives are to:

- Identify, direct and achieve long-term conservation and management outcomes for the VUSZ;
- Assist the Trust and DECC to meet corporate objectives and statutory requirements;
- Ensure the balanced and compatible management of cultural and natural heritage values within the Reserve;
- Place the cultural significance of the VUSZ within the context of the Reserve as a whole, and as part of a suite of similar places managed by the Trust and DECC; and
- Develop visionary management policies within the context of legislative requirements, Trust and DECC management frameworks and stakeholder issues.

This CMP will be a public document and should be read in conjunction with the Draft Plan of Management for the Jenolan Karst Conservation Reserve, 2009.

1.4 Structure of the Report

This Conservation Management Plan has two volumes.

- **Volume 1** - The report and its supporting documentation. General information regarding the Reserve, its characteristics and its history, its social and cultural heritage significance, and its Aboriginal heritage significance is contained in the main body of the report, as are the high level policies and guidelines. Precinct summaries based on this information are provided at the end of each section.

- **Volume 2** - The heritage inventory forms. The inventory forms contain descriptions, historical detail, photographs, plans, policies and guidelines which are specific to each VUSZ precinct and each item within the precincts, as well as several items within the CMZ.

1.5 Site Ownership

The Reserve is owned by the NSW Government, with the Jenolan Caves Reserve Trust currently managing the VUSZ, and DECC (through the Parks and Wildlife Group) managing the CMZ.

1.6 Site Location

The Reserve is located approximately 130 km west of Sydney, within the Oberon Local Government Area (Figure 1).

1.7 Site Visits

The VUSZ precincts and some areas of the CMZ were inspected on 20, 21 and 22 January 2009 by team members from both Urbis and Archaeological and Heritage Management Solutions (AHMS). Further inspections of the VUSZ precincts by Hughes Trueman took place on 24 February 2009.

1.8 Methodology

This Conservation Management Plan has been prepared in accordance with the NSW Heritage Manual (1996 and updated publications), the Australia ICOMOS Burra Charter (1999), and The Conservation Plan by James Semple Kerr (2000).

2 Department of Environment and Climate Change 2009
1.9 Terminology
For the purpose of this CMP, definitions and terminology are provided in Appendix C of Volume 1 of this report.

1.10 Constraints and Limitations
Team members were assisted on their site visits by Trust and DECC staff and this guidance was greatly appreciated. However, some sites were inaccessible because of the seasonal danger of snakes, because they were inhabited, and/or because they were not readily visible (for example, underground structures). Previously recorded Aboriginal artefact scatters were difficult to locate due to grass cover and erosion. The timing of the site visit in summer has prevented the identification of winter or spring flowering plantings of cultural significance.

No Aboriginal community consultation was undertaken during the preparation of this CMP. Consequently, no ethno-historical information has been included in this document. The preparation of an Aboriginal Heritage Management and Conservation Strategy is recommended as an initial step in the ongoing process of heritage management of the Reserve (see Policy 7 Section 10 of this Report).

While detailed surveys of all interiors were not possible within the scope of the project, the spaces of primary significance have been surveyed and their significance is clearly understood.

A detailed inventory of all of the elements of the cave infrastructure was outside the scope of the brief, however a thorough tour of the caves was provided enabling the Project Team to gain an appreciation of their historic infrastructure.

1.11 Author Identification
The CMP was prepared by:

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- Lisa Newell, Associate Director, Archaeological and Heritage Management Solutions;
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- Laura Matarese, GIS Officer, Archaeological and Heritage Management Solutions; and
- Simon Wiltshier, Director (Structural Engineer), Hughes Trueman.

Unless otherwise stated, all drawings, illustrations and photographs are the work of Urbis.
1.12 Acknowledgements

The authors would like to thank the following people and organisations for their assistance with the compilation of this plan:

- The Project Management Team:
  - Stephen Meehan, Project Manager, Karst and Geodiversity Unit, Department of Environment and Climate Change;
  - Alan Griffin, former Chair and Project Director, Jenolan Caves Reserve Trust
  - Peter Austen, Director, Jenolan Caves Reserve Trust
  - Caroline Lawrance, Culture and Heritage Division, Department of Environment and Climate Change;
  - Olwen Beazley, Culture and Heritage Division, Department of Environment and Climate Change;
- Grant Commins, former Manager Cave Operations;
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- Paul Flood, Business Enterprise Manager, Mole Creek Karst National Park, Tasmania;
- Mick Cockburn, Ranger in Charge, Chillagoe/Mungana Caves National Park, Queensland;
- Vicky Thomas, Librarian, Heritage Council of Western Australia; and
- Paul Williams, Manager Technical Services and Capital Works, Jenolan Caves Reserve Trust.

1.13 Other Reports

In the preparation of this CMP reference was especially made to the following heritage reports:

- Conservation Plan (Built Environment) for the Jenolan Caves Reserve, Robert Moore and Associates, 1988;
- Jenolan Caves Reserve Heritage Asset Management Strategy, Godden Mackay Logan, 2007;
- Draft Plan of Management for the Jenolan Karst Conservation Reserve, DECC, 2009;
- Jenolan Caves Reserve Total Asset Management Strategy, Value Network, 2008; and

A full list of references is contained in the Section 13 of this Report.

1.14 Further Research, Monitoring and Review

Various areas of further research are noted in Section 10.14 of this report.

The recommended time-frame for the monitoring and review of this CMP is five years.
2 Site Description

This section provides a description of the overall site, its curtilage, and each of the seven precincts.

2.1 Site Location

The Reserve is situated on the western spur of the Blue Mountains, about 180 kilometres west of Sydney and 80km west of Katoomba (Figure 1). The Reserve is located in mountainous country, forming a dissected eastern margin of the highland plateau east of the town of Oberon. It is part of McKeown’s Valley which is a significant fluvial karst valley.

Figure 1 – Site Location
2.2 Site Curtilage

The Jenolan Karst Conservation Reserve is listed on the State Heritage Register of NSW (Figure 2).³

Figure 2 – State Heritage Register Curtilage Map of the Reserve

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³ Heritage Branch 2009A
2.3 Reserve Zones and Precincts

There are seven precincts which form the Visitor Use and Services Zone (Figure 3). The balance of the Reserve (shown in green) is the Conservation Management Zone.

\[\text{Map provided by DECC.}\]
Figure 3 – Reserve Zones and Precincts
2.4 Definition of the Precincts within the VUSZ

The 1988 CMP defined six precincts. This 2009 CMP uses the seven precincts defined by the 2009 Draft Plan of Management for the Jenolan Karst Conservation Reserve, and shown in Figure 3. The following table provides a comparison between the two:

Table 1 – Renaming of Precincts

<table>
<thead>
<tr>
<th>1988 CMP Precincts</th>
<th>Equivalent Precincts in this CMP (2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caves House</td>
<td>1. Grand Arch</td>
</tr>
<tr>
<td>Five Mile Hill</td>
<td>2. Jenolan Cottages</td>
</tr>
<tr>
<td>Mt Victoria</td>
<td>3. Five Mile Road Housing</td>
</tr>
<tr>
<td>Red Turn</td>
<td>4. Burma Road Housing</td>
</tr>
<tr>
<td>Two Mile Hill</td>
<td>5. Two Mile Road Housing</td>
</tr>
<tr>
<td>River</td>
<td>6. Campground &amp; Utilities</td>
</tr>
<tr>
<td></td>
<td>7. Bellbird Cottage</td>
</tr>
</tbody>
</table>

2.5 Definition of Items within the Precincts

The items within each precinct have been numbered in four categories - buildings, archaeological sites, Aboriginal sites and cultural landscape features. The numbering of the buildings has been established by the Trust and DECC under the 2009 Draft Plan of Management and has been followed in this CMP. The aboriginal sites are defined as A01 - A20, the sites of European Archaeology as E01 - 07, and the sites of cultural landscape significance as L01 – L08.

For a full listing of items, refer to Section 8 - Gradings of Significance.

In addition to the above items, which have all been described and assessed in the inventory forms, there are a number of sites which do not have inventory forms completed because either they have not been located during the site visits, or they are under existing buildings. These include:

- Site of the Gaol – listed in the 1988 CMP, in the Five Mile Road Precinct possibly in the vicinity of the former Police Station;
- Site of McKeown’s Hut – under Caves House, Grand Arch Precinct;
- Site of Wilson’s accommodation and dance platforms – under the road, Grand Arch Precinct;
- Site of 1887 accommodation – under Caves House, Grand Arch Precinct;
- Site of 2 stables on Camp Creek – probably under Motel, Grand Arch Precinct; and
- Rubbish dumps – these are mentioned in the 2009 Draft Plan of Management but are noted to have been backfilled and also disturbed by bottle collectors.

2.6 Geography and Topography

The Greater Blue Mountains dissected sandstone plateaus are an intriguing example of the earth’s evolution - its geological beginnings through convergent (active) margin tectonics; its uplift through the subsequent divergent (passive) margin tectonics; its dissection through the cutting of the gorges and its extraordinarily-diverse features of note from pagoda-like formations to limestone caves.5

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5 National Parks and Wildlife Service 1998:16
The Reserve is located in the eastern portion of the Lachlan Fold Belt in the Captains Flat-Goulburn Synclinal Zone. Its geology comprises a series of conformable Upper Silurian andesitic to rhyolitic pyroclastocs, cherts, shales and limestone units. A number of structural interpretations have been proposed for the area, with a strike faulted anticline structure being commonly accepted. Regional bedding dips steeply to the west with the Upper Silurian Jenolan Caves Limestone, conformably overlain to the west by a calcium enriched basalt, or spilite. Upwards of 300 caves occur within the Reserve (see below) with the majority oriented north south. The exceptions are the Temple of Baal and Orient Caves which are oriented east west.  

Selective chemical dissolution of the Jenolan Caves Limestone by acidic natural waters has resulted in the formation of karst landscape. Surface features include bare rock surfaces, widened joints, solution grooves, dry creek beds and enclosed depressions. The underground environment is characterised by cave systems that act as conduits for the transmission of water.  

A cave is usually considered to be any naturally formed underground cavity large enough for a person to enter, with larger chambers referred to as caverns. Most caves are formed by the gradual chemical erosion of limestone rocks by moving water. Limestone is both permeable and soluble, and dissolves in rain-water, forming carbonic acid. The continual flow of water through the limestone, and the gradual dissolving of the stone by the acid, causes the enlargement of cracks. They eventually become caves over thousands of years. In most limestone areas there are almost no rivers on the surface. Instead, these rivers are found underground flowing through the caves.  

The Reserve contains an extensive network of limestone caves, and is an excellent example of karst topography. Jenolan is situated in a deep gorge cut by the Jenolan River into the Blue Mountains plateau. The caves have formed where the river and its tributaries have cut through the 150m-thick limestone, which dips steeply to the west. On the road from Mt Victoria near the caves, a more-than-600m thick light-grey slate sequence is well exposed.  

The most prominent surface karst feature is the wall of limestone 90m high and [in excess of] 150m wide at the confluence of the Jenolan River, Surveyors Creek and Camp Creek. There are three karst bridges - the Grand Arch, through which the road runs, which is being cut by Camp Creek, the Devil’s Coach house which is the floodwater channel of McKeowns Creek and Carlotta Arch, a stone bridge containing stalactites which are part of a collapsed cave system. There are over 300 cave entrances.  

Many of the caves contain river sediments and surface in-fills as a consequence of past environmental events. These sediments contain valuable information on past climate and vegetation change, and provide a visual representation of pre-existing landforms. The remains of extinct fauna and flora can also be found throughout the caves although minimal research has been conducted in this area.  

2.7 The Natural Environment  

The information in this section is sourced from the 1998 World Heritage Nomination for the Greater Blue Mountains Area, unless otherwise attributed.  

The Greater Blue Mountains are generally well named. They are great because of their vast panoramic scale, encompassing over a million hectares of dissected uplands and imbued with the aesthetic qualities of wilderness, age and natural integrity. They are also blue. This is not only the effect of distance but also of the characteristic and evocative atmospheric blue haze from the fine drops of oil, which are dispersed by their eucalypt-dominated vegetation and perfuming the air. The Greater Blue Mountains are, however, not mountains but rather deeply incised sandstone plateaus, with spectacular cliffs, valleys and gorges.

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6 DECC 2009, section 4.3.1  
7 DECC 2009, section 4.3.1  
8 Schon 1985:160  
9 DECC 2009, section 4.3.1  
10 Schon 1985:161  
11 DECC 2009, section 4.3.1
The distinctive landscape of the Greater Blue Mountains comprises various areas which are diverse in character, ranging from the grandeur of cliffs to the subtle undulations of the plateau horizons and forested valley floors, from sentinel rock formations and cascading waterfalls to the fine-grained mosaic patterns of different plant communities. Gorges, bottleneck valleys, slot canyons, limestone caves and "pagodas" are striking natural phenomena.

The section of the Greater Blue Mountains in which the Jenolan Karst Conservation Area lies is characterised by deep gorges, broken quartzite ridges, upland peaks and sandstone plateaus with remnant basalt mounts. Limestone from coral laid down in the Silurian period has created a series of outstanding limestone caves, of which Jenolan Caves is the best known. The complexity, size and beauty of these caves were recognised early and protected by reservation, in 1866.

In the nineteenth century, underground caves were considered the most sublime of places because only there could Nature's darkness be experienced utterly and completely. The caves at Jenolan provided such an experience as visitors considered the natural forces required to produce the unlimited variety of limestone formations, from the most delicate and intricate to the most overbearing and majestic.

The Greater Blue Mountains and surrounding plateaus provide habitat for a wide variety of mammals, birds, amphibians and reptiles. The faunal diversity strongly reflects the floristic and structural diversity of the sclerophyll vegetation. Approximately 400 vertebrate species have been recorded, including one reptile endemic to the area. There is a diverse and rich invertebrate fauna, much of which is undescribed.

Of the species of vertebrates recorded for the Greater Blue Mountains, approximately 10% are listed as rare or threatened. These species of conservation significance are predominantly birds and mammals. There are 12 rare, vulnerable or threatened mammals within the area. These include the Spotted-tailed Quoll (Dasyurus maculatus), Koala (Phascolarctos cinereus), Yellow-bellied Glider (Petaurus australis), Squirrel Glider (Petaurus norfolcensis), Long-nosed Potoroo (Potorous tridactylus) and the Brush-tailed Rock Wallaby (Petrogale penicillata). Seven of the endangered mammals are bats. There are 15 species of birds found in the area listed as rare or threatened.

Over 70 plant communities have been recorded for the area, ranging from rainforest, tall open-forest and swamps in wetter sites through a multitude of open forest and woodland variants to scrub and heath in drier, exposed conditions. The most diverse vegetation types are the open-forest and woodland units, almost all dominated by eucalypts. Eucalypts are a major contributor to the uniqueness of the area, with almost all the species being Australian endemics. As a result of the diversity of geology and topography, the Greater Blue Mountains provide an exceptional range of habitats that is reflected in the diversity of eucalypt species and the communities they dominate. The area offers the best single global example of their characteristics, still existing in an extensive, natural landscape.

The Reserve forms a subset of the Greater Blue Mountains Area. A detailed inventory of flora and fauna, and discussions on specific topics where further research is needed has been compiled in *Flora and Fauna of the Jenolan Karst Conservation Reserve* by Ian Eddison (2008), and the following discussion is taken from that report. It describes the abundant resources of the site, and also highlights the cave species in the Karst System.

Of particular interest is the description of the archaeological resource of bones of extinct species that have been found within the Caves. There was a rediscovery of a Diprotodon on 12 May 2007. A one line mention of “Diprotodon being found by Jeremiah Wilson” is in a brief, one page annual report by Oliver Trickett to the Department of Mines in 1899. It is likely that Vic Eberton had also stumbled across the Diprotodon during his time at Jenolan in the 1940s, as graffiti above the Diprotodon is arguably his initials. A Sooty Owl (Tyto tenebricosa) pellet dig in the Nettle Cave, by Deborah Morris in 1991, revealed many species of mammal, many of these are extant or locally extinct including the Mountain Pygmy Possum.12

Over thousands of years, some changes to flora and fauna densities may have occurred due to the fire regimes of the traditional land owners. However, the most dramatic changes would be due to changes in climate. Climatic conditions during the late Pleistocene were colder and drier than at present and conditions became warmer and wetter in the Holocene. Since European settlement in the Reserve,

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12 Eddison 2008:52
some areas have changed due to fire management practices, and the building of infrastructure in the form of tracks, then roads for horses, bullock teams, hikers, cyclists and motor vehicles and all the amenities required to accommodate the needs of visitors has meant a significant change to habitat. The introduction of trout into the Jenolan River in 1899 impacted upon the native fish and animals, although there are now anecdotal reports of native fish in the river. Trout are no longer released into the river. Platypus and native ducks remain in the Lake and in the downstream sections of the river.

The earliest photographs of the Reserve show a fairly dense floristic habitat within the valley. Most photographs however, show very open woodland surrounding the Caves House area. The early reliance on fires for heating and cooking caused the depletion of the nearby timber, and opening up of the hillsides had occurred. Since the collection of firewood has ceased, some of the vegetation is once again quite dense. It has however become dense with both native and introduced plants. Typically, introduced plants and animals have become problematic for the management of the Jenolan Caves Karst Conservation Reserve.

2.8 Built Heritage

The following is a general overview of the built heritage within the VUSZ. Inventory forms in Volume 2 provide more detailed documentation of the internal and external fabric of all built features, including a condition assessment.

Built structures of cultural heritage significance comprise retaining walls, roads and paths, weirs and bridges, stairways, walkways and ladders within the caves, extant infrastructure both inside and outside of the caves, and buildings.

There is no overall consistency in the character of the built form, however the relatively small scale of the buildings and the relatively small amount of excavation, has allowed the topography to remain highly visible. While Caves House is the dominant structure and the most significant building on the site, there are numerous smaller services buildings built in a more utilitarian style, along with a number of small cottages in clusters forming the housing precincts. In addition there are some larger accommodation buildings built in a variety of styles from "Sydney School" through imitation English Vernacular, and some of the more recent buildings or refurbishments have a more "Alpine" feel. The newest structure on the site is a contemporary steel and concrete shelter.

The site is extremely steep as a result of local geology and does not contain many naturally benched areas. Consequently considerable cutting has been carried out on site to construct roads and buildings. There are numerous embankment types on site, including cuts into sound bed rock, cuts into weathered and fractured near surface rock, cuts into extremely weathered rock and soil, dry stone walls, mortar bedded rubble walls, mortar bedded dressed and coursed stone walls, interlocking precast concrete walls, reinforced concrete walls and gabion walls (stone in wire baskets). Ongoing localised slips have been noted. Retaining walls generally appeared in reasonably good state of repair.

It is understood that the Jenolan Caves Rd and Oberon Rd are Roads and Traffic Authority (RTA) roads and come under the jurisdiction of that Authority as they move through the site as far as the Kanangra Boyd turn off (beyond this is the responsibility of Oberon Council). The Jenolan Caves Rd loop road and all other roads in the Reserve are in Trust ownership. The roads are historic and incorporate historic cutting and filling, retaining walls and security fencing. There is widespread use of large timber baulks, which are understood to be recycled rail and tram track sleepers, as part of a guard rail system.

2.9 Aboriginal Archaeology

The Reserve contains 21 recorded Aboriginal archaeological sites that form part of the evidence of Aboriginal occupation and use of the area. The most common site type is stone artefact scatters and/or isolated finds with other site types in the area including art, grinding grooves and a burial. The known

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13 Eddison 2008:54
14 Moore 1988C
15 Eddison 2008:55
sites have been recorded and registered\textsuperscript{16} in the Aboriginal Heritage Inventory Management System (AHIMS) with DECC.

Recorded stone artefact scatters and/or isolated finds (A03-A11, A14-A19 and A21) occur on several landforms including crests, hill spurs, alluvial flats and creek terraces. These sites tend to be located in areas of current use and occupation such as fire trails and tourist walking tracks. The majority of the artefact scatters have been recorded adjacent to the Jenolan River and its tributaries in McKeown’s Valley north of the Caves House and the Grand Arch. These sites are located on or in the vicinity of the McKeown’s Valley tourist walking track.

The majority of the artefacts recorded are flakes, which have been identified as broken and reduced, complete and/or retouched. Additionally two potential cores have been identified by previous surveys and one potential axe or possible a stone hammer was identified during the 2009 site inspection. The predominant raw material used for stone artefacts recorded to date is quartz, with other raw materials being chert, silcrete and fine grained siliceous material that is possibly volcanic in origin. The materials may have been sourced from river pebbles or imported from other areas as the local geology of the Reserve is dominated by limestone.

Several of the sites have been impacted by activities in the Jenolan Karst Reserve. A key example is A08, which retains clear evidence of grading and/or other soil truncation through mechanical means. While these areas are still delineated as Aboriginal sites until they are appropriately managed under the \textit{National Parks and Wildlife Act, 1974}, their significant rankings are appropriately reduced to address such former impact.

There are two art sites recorded in the Reserve which are both located in McKeown’s Valley on limestone overhangs adjacent to the Jenolan River (A12 and A20). One of the art sites was previously recorded and registered with DECC (A12) and the second was identified in the 2009 site inspection as a rock overhang with European graffiti (subject to separate listing E08) over one of two Aboriginal paintings (A20). In both cases the Aboriginal art uses pigment rather than engraving to form the Aboriginal motifs. The pigment used is likely to have been made from wet red ochre. Although the art has considerably faded, each site features one classic male “C” shape anthropomorphic figure. Site A20 also has a red linear feature that may have been a serpent. A black figure to the left hand side of the anthropomorphic figure at A20 is considered to be associated with the European vandalism of the site rather than a contemporary of the Aboriginal art. The Aboriginal motifs visible at these art sites are examples of the “Simple Figurative” style which dates to the Holocene period (the last 10,000 years).\textsuperscript{17} The small assemblage (one or two figures) may indicate a single episode or casual occupation at each site.\textsuperscript{18}

The previously recorded site A09 has two potential grinding grooves adjacent to the Jenolan River on a loose limestone boulder on the side of a river bed and an artefact scatter. This site was not re-located during the 2009 site inspection due to poor visibility resulting from re-vegetation of the area.

One burial is located within the Reserve, although the site has been recorded and registered twice in the DECC AHIMS system. It was not viewed during the 2009 site inspection due to the site’s potential cultural sensitivity and the absence of the relevant Aboriginal community. The site is located in one of the caves in the Reserve. The skeleton has been cemented to the floor of the cave by natural mineralization processes. Descriptions of the deposition and articulation of the body suggest that it may have washed in rather than constituting a formal burial, however further analysis and consultation with the Aboriginal community would be required to make any conclusions about the nature of this site.

Aboriginal archaeological sites tend to be associated with natural features, particularly those in the vicinity of natural resources that provide for water, food and shelter. A review of the trends in site distribution of the recorded sites within the Reserve indicates there is a strong association of sites in close proximity to water. Ten sites have been recorded along a 2 km stretch of the Jenolan River in McKeown’s Valley. An extrapolation of this site density across the length of watercourses in the Reserve indicates there is the potential for over 80 sites to occur in this type of environment.

\textsuperscript{16} Three are in the process of being registered and have not been given a formal AHIMS identification number by DECC.

\textsuperscript{17} Maynard 1976:200-201

\textsuperscript{18} McDonald 2008:66
There is also potential for further archaeological sites to be found on alluvial flats, creek terraces and lower slopes adjacent to water courses or in other natural features including hill crests, ridge tops and saddles. Other potential sites may include rock shelters, art (pigment or engraving), fish traps, hearths, middens, water holes and modified (scarred or carved) trees in areas of vegetation that include trees greater than 80 years old.

The trend for Aboriginal archaeological sites to occur in the vicinity of natural resources is based on a scientific model where environmental variables and landforms are known to be important for prehistoric populations. However, the occurrence of cultural and ritualistic sites does not necessarily follow the principles outlined above, since their location is related more to cultural importance than practical uses. Ritualistic site types may include, but are not limited to, bora rings, initiation sites, birthing sites, other ceremonial and dreaming sites and stone arrangements.

It is likely that the recorded sites in the Reserve predominately date from the mid to late Holocene period, however there is potential for evidence of older occupation to occur in the area (see also Section 5 - Comparative Analysis). Recently Megafauna was discovered in a surface deposit that had collapsed in the Chifley Cave. Megafauna species tended to become extinct some time during the late Pleistocene (approx. 60,000 years B.P). Although no Aboriginal artefactual material was observed in the deposit there is the potential to find evidence of Pleistocene occupation and use of the Reserve.

2.10 European Archaeology

The European archaeological resource contained within the Reserve comprises a number of sites which form a physical remnant of the development and service of the Caves as a flourishing tourist attraction. These sites include the archaeological remains of three guest houses dating from the 1880s, Wallace’s Guest House, Kiaora Guest House and Rose Cottage. All three are remarkably different from the other in terms of their locations, aspects, associative and historical values and in their archaeological potential. However, all are remnants of key elements in the history and development of the tourism industry associated with the Caves.

Wallace’s Guest House (E01) originally comprised a three-storey building perched on the top of a spur overlooking the Jenolan Valley within the Bellbird Cottage Precinct. The archaeological remnants of this building consist of approximately 3 base courses of stone work across the south-western corner of the ridge on which they are situated, and sections of terracing around the sides of the cliffs, originally built for gardens and as areas for guests to admire the views.

Rose Cottage (E03) was also located in an aesthetically pleasing position, within the northern entrance to McKeown’s Valley rather than perched above the Jenolan River, like Wallace’s Guest house. The remains of Rose Cottage comprise the foundations of a two room dwelling with a verandah along the southern façade, and the ruins of the chimney and fireplace to a height of approximately 3m. The potential archaeological resource associated with the site of Rose Cottage is considered to be high as material within the ruined walls of the cottage appears to remain intact and is likely to contain artefacts associated with the occupation of this building.

The remains of Kiaora Guest House (E02) are located to the south east of the Jenolan Cottages, adjacent to the western side of Jenolan Caves Road. Archaeologically, the site has been heavily impacted, and is considered to be of little research value. However, the site itself and the associated remaining garden plantings are considered to be of significance as the remnants of the role of this guest house in the development of Jenolan Caves tourist industry.

Similarly, Pomona Grove Farm (E04) was, during its operation, was an integral part of the development of tourism at Jenolan Caves. Its surviving archaeological resource has potential to embody, interpret and demonstrate that value as well as provide information about the operation, layout and functions of the farm. The site of Pomona Grove Farm consists of the potential archaeological deposit associated with the piggery, farm house and farm tool shed. The site is located on the northern bank of the Jenolan River, in the Campground and Utilities Precinct.

The industrial and archaeological remnants of the 1897 / 1906 sewage system (E07), the site of the 1896 Vertical Steam Dynamo (E05) and the remains of the Leffel Wheel and its associated infrastructure (E06), located within and adjacent to the Grand Arch Precinct, are all contributory
elements to the significance of Jenolan Caves as a tourist destination and are reminders of the Caves’ need to be self-sufficient from an early date.

The long history of Aboriginal and European exploration and use of the area surrounding Jenolan Caves is illustrated in a rock shelter on the western face of McKeown’s Valley (E08). The rock shelter features an Aboriginal “C” figure and serpent with later European graffiti written across the figure. The author of the graffiti, E. Burnett, may also have been responsible for a second figure located on the left hand side of the Aboriginal figure. The graffiti is a rare example of vandalism of Aboriginal art within the Jenolan Caves area, but is considered representative of European attitudes to exploration and Aboriginal art at the turn of the 20th century.

In addition to the items listed above, a number of other potential archaeological deposits or resources may survive within the study area. These items include the potential remains of early known structures such as McKeown’s hut and the first Caves House built in 1887 which are located under the existing Caves House, the site of two stables on Camp Creek, which are now probably under the motel accommodation or service roads, and the dance platforms erected within the Grand Arch which have since been subsumed by the road pavement. While these items cannot be inspected, or their survival or integrity quantified, their presence should be noted and taken into consideration should future works provide an opportunity to assess them in further detail. Additionally, the site of the former gaol associated with the Police Station was not relocated during the 2009 field survey.

2.11 The Cultural Landscape

The cultural landscape setting has been progressively modified over time, commencing in the late 1800s and early 1900s, as original plantings have been lost due to bushfire, drought, lack of maintenance and the general unsuitability of mostly exotic species to the conditions of the area.

The cultural landscape resource contained within the Reserve comprises a limited number of sites: The most significant contribution to the cultural landscape of the main tourist precinct occurred in the early 1900s when Charles Maiden of Sydney’s Botanic Gardens laid out the gardens of the Grand Arch Precinct where the remaining cultural landscape setting comprises primarily of stone walling, and individual specimen trees and limited areas of perennial plantings. The precinct is set within a generally intact natural landscape setting and over time many of the originally introduced exotic plant species that have survived the relatively harsh conditions have become invasive weeds throughout the bushland fringing the precinct. This conflict occurring between the interaction of exotic and indigenous species is a key issue to be considered in the future management of the site.

The prominent Blue Lake cultural landscape comprises the man-made lake, De Burgh’s Bridge and modified vegetation combine to create a significant cultural landscape. The cultural and scientific significance of this landscape has been recognised in the Blue Lake Management Strategy developed for the site.

The remnants of Pomona Grove Farm (E04) and the old campground are within the Campground and Utilities Precinct where the cultural landscape setting comprises the clearing for the farm and some evidence of earth shaping remains on the western slopes of this precinct. The landscape by the river has been heavily modelled by fill after its early use as a piggery.

In addition, there are remnant domestic gardens and garden walls associated with buildings such as the cottages BC1 and BC3 in the Bellbird Cottages precinct.

2.12 Cave Infrastructure and Historic Inscriptions

With the European discovery of the Jenolan Caves and its increasing popularity as a tourist destination, the infrastructure within the caves has developed to accommodate public access. Many of these developments have been innovative in minimising impacts on the environment and are being copied elsewhere in the world.

Initial cave exploration and tourism was undertaken using candlelight, with lamps for the guides. A metal candle holder was devised, reputedly by Jeremiah Wilson, “with a hollow tube by which it could be held, and through which the candle was pushed by a spiral springing the centre of a reflector cum
guard to catch the drips”. Replicas of these candleholders remain are shown to visitors, while an original is stored in the Imperial Cave. Even in the 1880s “reports began commenting on the environmental impact of visitors on the caves, with drippings of candle wax and dark powder deposits from the residue of magnesium lamps having a visible effect”.

In 1887 the Imperial Cave was probably the first cave in the world to be lit with an electric light, powered by a Vertical Steam Dynamo (E05). The effectiveness of electric lighting had been demonstrated seven years earlier with experimental lighting of part of the Chifley Cave with lead-zinc batteries. In 1889 the system using the Vertical Steam Dynamo for powering of the Caves was replaced by one of the earliest hydro-electric systems in Australia, using a Leffel Wheel (E06) and Crompton Dynamo. By 1894 light fittings had been installed in most of the caves open to the public. Remnant wiring, insulators, lights, coloured lights (c. 1970s) and switchboards remain in the caves (Figure 4).

Figure 4 – Old Infrastructure within the caves

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19 Dunkley J, Jenolan Caves Guides, Guests and Grottoes p 13
20 Cove 2009 pers. comm.
21 Dunkley J, Jenolan Caves Guides, Guests and Grottoes p 16
22 Dunkley 2007:17
A new automated electronic system was recently installed within the caves providing exceptional technology (Figure 5). The system was installed in the Imperial Cave in 1998, Lucas Cave in 2004, Temple of Baal and Nettle Caves in 2006 and Orient Cave in 2008, and it provides unique cave tours with sound and light show.\textsuperscript{23} The new lighting and presentation features comprise electronically controlled sequences of illumination and sound, which subtly reveal the grandeur of the cave as areas are lit, then softened, as the focus moves around the cave.

Figure 5 – Automated electronic system

Technological advancements in cave lighting at Jenolan include the light-emitting diode (LED) lights, which have been installed since 2006 in the Orient and Temple of Baal Caves (Figure 6). The technology of the LED lights mean that when the Temple of Baal was relit and reopened the entire cave with all the lights on uses less wattage than two domestic toasters. The Orient Cave was relit in 2008 and the 207 luminaries use 1629 watts for the entire cave, which is an improvement in the site's sustainability.

\textsuperscript{23} Cove 2009 pers. comm.
Figure 6 – New LED lights with caves

The first attempts to provide a controlled path through the caves for conservation, and presumably for safety purposes, were in the 1890s with paths defined by wire cable and chicken wire used to protect accessible formations. Much of this survived until the 1980s. Stainless steel handrails have been installed in the Lucas, Imperial, Chifley, Orient, Nettle and Temple of Baal Caves (Figure 7) replacing much of the iron railings and chicken wire. Stainless steel was chosen over recycled plastic for its structural integrity and it will not easily corrode or release any chemical by-products into the cave environment.

Figure 7 – New infrastructure within the caves

24 Dunkley 2007:16
Further developments in the 1880s involved widening passages, with paths and steps cut into the rock, and the installation of ladders (some wood but mostly iron) (Figure 8). By the turn of the 20th Century concrete was more prevalent for provision of access stairs and ramps. The most dramatic intervention occurred in 1954 with the excavation for the Binoomea Cut.

Figure 8 – Part of the caves walking network cut into original rock formations

As the caves were explored, many explorers and visitors left their mark in the form of graffiti, or inscriptions, some going back to the 1850s. There have been some (limited) signature inventories made for specific cave sections by guides or speleological societies, which have looked mainly at caves not generally toured, or which are only toured as adventure activities (for example, the “Plughole Tour” in the Elder Cave). These inventories were not available during the preparation of this report. Figure 9 shows a plan of the caves and notates their associated remnant infrastructure and cuttings.

Figure 9 – Cave Maps and Infrastructure
2.13 Site Description - Summary of the Precincts within the VUSZ

2.13.1 Grand Arch Precinct

In the 1988 CMP, Robert Moore divided the Caves House Precinct into four components based on the uses of the site. This included the Caves House Complex, The Camp Creek Service Area, the Grand Arch and Entry Precinct, and the surrounding mountains and caves. However, in this CMP these definitions are no longer useful in the context of the re-defined precincts.

The main entry point to the Grand Arch Precinct is past the original Coach House (Building 37), over the limestone De Burgh's Bridge (Building 39), through the spectacular natural rock formation of the Grand Arch. The precinct sits in a river valley, although the majority of the rivers have now been channelled into concrete culverts. It is dominated by the Caves House (Building 1) complex of buildings, with their imposing Edwardian romantic vernacular style. The ground floor of these buildings is constructed of limestone sourced from the site while the upper floors exhibit imitation half timbering and roughcast. The terracotta roofscape is a dominant element on the site.

The early Engineers House (Building 17) and The Nest (Building 16) are picturesque timber buildings set in the hills, and dominant in the early photos of the precinct. Further development winds up the hills following a ribbon style, with the distinctive rough stone retaining walls of the roads forming a dramatic topography, and often forming the backdrop to buildings. Several early timber or concrete service buildings remain in the vicinity of Caves House. On the hills behind the Caves House complex are a number of late 20th century accommodation buildings.

Up until the mid 20th century, the buildings within the precinct closely reflected the style of Caves House. Post WWII there was a departure from this, with a number of buildings in the 1970s constructed in the "Sydney School" style using rough timbers and mono-pitched roofs. However by the 1980s some buildings were again providing a modern interpretation of the English vernacular style of Caves House.
Around the Grand Arch itself, which defines the access points to the caves, there are buildings in a conglomerate of styles and no architectural cohesion, from a variety of periods, including the most modern building on the site, the new steel and concrete picnic shelter. As the focus for public visitation on the site, this part of the precinct has a high number of visitors, and offers the essential visitor services such as food and beverages, WCs, tickets for caves tours, interpretation, carparking, and walking tracks, in addition to the hotel function.

The precinct is dominated by both vehicular and pedestrian activity. Jenolan Caves Road winds through the precinct and is steep in some sections, often with no clearly defined pedestrian routes. There are three carparks within the precinct and a number of walking tracks radiating out from the precinct.

There are remnant original gardens and terraces, and tennis courts, within the Grand Arch Precinct. The landscape has been progressively modified over time since the early 1900s when the formal gardens were established. Subsequent ongoing development of visitor infrastructure, and a lack of resources applied to the maintenance of the landscaping, has led to the progressive decline of the gardens.

In addition, a number of exotic plants have migrated out of the Precinct and into the catchment such as the Sycamores, believed to have been planted in the 1860s-80s but now considered a weed. The remaining elements of greatest landscape significance are the specimens of exotic trees scattered throughout the precinct and the remaining hard landscape elements such as stone walling, including the remnants of the terrace gardens opposite Caves House.

The landscaped setting of Caves House and the Grand Arch Precinct is of cultural significance due to the juxtaposition of the historical resort architecture and its attendant exotic planting, with the rugged topography and native vegetation of the broader setting.

Figures 10 and 11 provide a map\(^\text{26}\) and some photographs of the Grand Arch Precinct.

\(^{26}\) Map provided by DECC
Figure 10 – Site Plan – Grand Arch Precinct
2.13.2 Jenolan Cottages Precinct

The Jenolan Cottages Precinct is the most remote precinct, on the northern border of the Reserve abutting the Jenolan State Forest. Although the two storey guest house, Kiaora (now demolished), was built about 1 km from here in the 1890s, it was never historically established as an area for guest accommodation.

The precinct comprises a group of identical 1985 buildings (Jenolan Caves Cottages, Buildings J5 to J12) arranged in a horseshoe shape around a flat grassed oval (Binda Field) which was the site of an old market garden. There is also a pair of water storage tanks (Buildings J13 and J14), a brick fire shed (Building J2), a large colourbond shed used to store archival material (Building J3), a caretakers cottage (Building J1), and a toilet/shower block (Building J4). A pumping shed (Building J15) is located some distance away to the north west of the precinct.

The site has in the past been used for car parking during peak holiday seasons. The caretaker's cottage and garage are bland brick buildings of no architectural merit. The cottages are nondescript buildings with vertical timber cladding, on brick piers and dwarf walls timber, with slightly raked cliplock roofing. Each has a balcony facing the central grassed area, which also contains a new playground.

No landscape elements of significance exist within this precinct.

Figures 12 and 13 provide a map\(^{27}\) and some photographs of the Jenolan Cottages Precinct.

\(^{27}\) Map provided by DECC
**SITE DESCRIPTION**

Figure 12 – Site Plan – Jenolan Cottages Precinct

Figure 13 – Photographs – Jenolan Cottages Precinct

Site of the former market garden

Jenolan Caves Cottages
2.13.3 Five Mile Road Housing Precinct

The Five Mile Road Housing Precinct is located in a cleared area above and below the Jenolan Caves Road, approximately 1.5km from the caves. The area is steep and incorporates several cottages, terraced into the slope, and accessed via a winding dirt road.

The Precinct was established in 1897 as a Police Prefecture and was sited above the road specifically to facilitate the supervision of entry into the Reserve, unlike the other precincts in the Reserve which were typically located below the road. The first official camp ground was also established near the police station in the 1890s. The former camp store (Building F7) is located at the southern end of the precinct.

Pedestrian access is provided by concrete stairs between the old camping ground, on the high side of the precinct and the road to the c1916 police station (now the Administration Office, Building F6). The precinct also features paved and driveway areas associated with the dwellings and some retaining walls (stone and concrete), as well as fire equipment and service elements. There is some soft landscaping, again in conjunction with the dwellings, and the precinct also includes the former 1890s Old Camp Ground walking track.

The precinct also incorporates a number of shed buildings and garages (most of which were constructed in the 1950s or later) and four c1950s reservoirs (Buildings F8 to F11). The area on the lower side of the road (the former horse paddock associated with the police station) contains the Road Keepers Cottage (now a Staff Cottage, Building F1).

By the 1950s all the cottages in the Five Mile Rd precinct were used as staff accommodation. This remains the case, with the exception of Building F4 which is used as a karst research facility and Building F3 which is used by the Jenolan C Historical and Preservation Society (JCHAPS) to store historical archives.

Apart from remnant walling and a limited number of exotic plants at Building F1 which reflect the past use of this area, no landscape elements of significance exist within this precinct.

Figures 14 and 15 provide a map and some photographs of the Five Mile Road Housing Precinct.

Figure 14 – Site Plan – Five Mile Road Housing Precinct

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28 Map provided by DECC
2.13.4 Burma Road Housing Precinct

There was an upsurge in visitor numbers after WWII, with a corresponding increase in the staff numbers. The Burma Road Housing Precinct was developed in the late 1940s and early 1950s as an accommodation centre for staff and their families.

The precinct is located approximately 1km from Caves House, on the slopes of the McKeown Valley. Some of the buildings within the precinct have been sited directly over the main cave system and directly above Karst formations. The precinct is located within a partial clearing and accessed via dirt road off the Oberon Road.

The precinct consists of seven cottages (Buildings B1 to B7) and outbuildings, as well as four reservoirs (Buildings B9 to B12) and services including a fire shed, tractor shed and hopper. The cottages are typically timber, similarly constructed out of fibrous cement sheets, with stud framing, corrugated sheet roofing and set within terraced gardens overlooking the Valley. A number of the buildings have been variously modified, with works including additions and some re-cladding and ad hoc placement of outbuildings.

An enclosure previously housed endangered species of Brush Tailed Rock Wallabies, with fencing to keep the foxes and feral cats out. The wallabies are no longer held in captivity (the gate remains open). There is a cottage (Building B7) in the vicinity of this enclosure and a wallaby shed just outside the precinct boundary.

There are walking trails which formerly connected the Wallaby Enclosure with Caves House and Carlotta’s Arch, and the walking tracks incorporate some entrance holes into the Caves. No landscape elements of significance exist within this precinct.

Figures 16 and 17 provide a map and some photographs of the Burma Road Housing Precinct.

\[\text{Figure 15 – Photographs – Five Mile Road Housing Precinct}\]

Former Police Station, F6

Reservoirs

\[\text{Map provided by DECC}\]
Figure 16 – Site Plan – Burma Road Housing Precinct

Figure 17 – Photographs – Burma Road Housing Precinct

Cave entrance

Staff cottage B5
2.13.5 Two Mile Road Housing Precinct

The Two Mile Road Housing Precinct is located within a partially cleared area of bush land on the edge of the northern slopes of the Upper Surveyors Creek Valley, on the south west side of the Reserve. Access to the precinct is via a private gravel road off Two Mile Road. The precinct was developed to provide additional staff accommodation.

The precinct includes four c1980 bungalows in a modern colonial style, with associated services including septic and water tanks. The bungalows (Buildings T1 to T4) are largely identical, with only slight variations in their design. The buildings are constructed in brick veneer and timber cladding and feature wrap-around concrete verandahs and hipped half gabled corrugated sheet roofing with chimney.

There is some soft landscaping within the predominant bush setting and gravel path and drives are provided off the private road. No landscape elements of significance exist within this precinct.

Figures 18 and 19 provide a map and some photographs of the Two Mile Road Housing Precinct.

Figure 18 – Site Plan – Two Mile Road Housing Precinct

Source of base map: DECC

Figure 19 – Photographs – Two Mile Road Housing Precinct

Road leading to each of the bungalows

One of the four bungalows

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Map provided by DECC
2.13.6 Campground and Utilities Precinct

The Campground and Utilities Precinct covers an area on both sides of the river downstream from the Grand Arch and Bellbird Cottage Precincts. It also extends up the steep dirt Hydro Road to the Five Mile Road Housing Precinct. The campground itself has been closed since 2005, however the area remains accessible to visitors via a walking trail from the Grand Arch Precinct.

This precinct contains a number of redundant and operating services such as the Hydroelectric Station (Building U3), the Sewerage Treatment Plant (Building U1), and the Weir and the Trout Ladder (U5). The remains of the Pomona Farm include the former piggery, the slaughterhouse (Building U7), and remnant terracing for the orchards and market gardens.

The campground area was established during the 1970s and is grassed, with easy access to the river. On the slopes behind the campground on the northern side of the river there are remnant orchard trees, and the ruins of what appears to be the Pomona Grove Farm House, which is believed to have stood from the 1890s to at least 1919. On the southern side of the river are the remnant ruins of a limestone bridge, and further picturesque former camping areas.

Within this precinct the clearing for the farm and some evidence of earth shaping remains on the western slopes. The flat grassed area of the piggery remains. It is the historical nature of the past activities in this area and their influence on the landscape that is of primary significance.

Figures 20 and 21 provide a map and some photographs of the Campground and Utilities Precinct.

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31 Map provided by DECC
Figure 20 – Site Plan - Campground and Utilities Precinct
2.13.7 Bellbird Cottage Precinct

The Bellbird Cottage Precinct covers an elevated bluff in the Jenolan River Valley, just off Jenolan Caves Road to the east of the Grand Arch Precinct. It is also linked, via the unsealed Hydro Rd, to the Campground and Utilities Precinct. Today the precinct comprises two cottages, each with a carport and outbuilding. Bellbird Cottage (Building BC1) is available for holiday rentals, while the other (Building BC3) is a staff cottage.

On the most prominent spur, at the southern tip of the precinct, is a level site with some remnant retaining walls and spectacular views, which was the site of the c1888 Wallace's Guest House (now demolished). The flat area that indicates the former site of this building on the edge of the valley affords magnificent views.

Of the two remaining cottages the c1920 Building BC3 is the most intact. It is a picturesque weatherboard building with a gabled roof and weatherboard accretions, and a weatherboard outhouse. It has intact internal and external joinery.

Bellbird Cottage (Building BC4) is technically the older of the two cottages. Built c1916 it was rebuilt in the 1980s with vertical timber cladding, and has lost its overall form and architectural character. Internally some decorative detailing remains although the picture rails and the ceiling cornices appear more reminiscent of 1930s detailing.

Apart from remnant walling and a limited number of exotic plants around the cottages which reflect the past use of this area, no landscape elements of significance exist within this precinct.

Figures 22 and 23 provide a map and some photographs of the Bellbird Cottage Precinct.

32 Map provided by DECC
Figure 22 – Site Plan – Bellbird Cottage Precinct

Figure 23 – Photographs – Bellbird Cottage Precinct

Site of Wallace's Guest House

Cottage B3 with Garage B4
3 History

This section provides a history of the site noting several phases of development and key historical themes. A comprehensive historical analysis of the Reserve was prepared as part of the 1988 CMP. This forms Attachment A to this report. The following summaries are based on this analysis unless otherwise attributed. Extracts are also taken from the Historic Engineering Marker Nomination33 to describe the history of the road and rail access, lighting and power, water supply and sewerage.

3.1 Aboriginal History

Some 60,000 years BP, Australia was part of a larger continent known as Sahul where, due to low sea levels, some dry land connections between Australia and New Guinea were exposed.34 People colonised what we now know as Australia some time between 40,000 to 60,000 years ago by crossing the area from New Guinea and the Indonesian archipelago. They entered northern Australia via Arnhem Land and/or the Kimberly region and/or Cape York. A recent study35 found that an initial arrival date of 45,000 BP was well supported where as older sites, dating to around 60,000 BP, were not, mainly due to taphonomic reasons.

There are several ideas about how people moved around Australia and when parts of the country were populated. One theory36 is that people migrated in all directions after entering Australia, where the inland regions were populated more quickly than the coastal regions. This model calculates that it would have taken 1,350 to 2,200 years to populate or ‘fill up’ Australia. Another theory37 is that people moved around the coast, and then migrated inland. Regional studies in dryland areas focusing on the last 20,000 years have shown a pattern of population growth, expansion and decline that may correlate with changes in climate.38 The populations in dryland areas greatly increased in the last 1,500 years as shown by the larger number of archaeological sites, a differentiation of rock art, greater artefact discard within sequences of sites and a greater use of marginal areas.

The earliest known evidence of human occupation in NSW is located in Lake Mungo, approximately 640 km west of Jenolan. The lake was fed by the Lachlan River from catchments near the Canberra highlands. Dating of archaeological sites indicates humans were present at Lake Mungo by 50,000–46,000 BP at the same time as, or very soon after, the initial occupation of Australia.39 The lake has evidence of human activity dating to 20,000 BP, indicating the area has been occupied, continuously or intermittently, for at least 26,000 years.40 Evidence of past human occupation includes artefacts and interments, where even the earliest examples (dating to 40,000 BP) show evidence of culturally advanced mortuary practices. The sites at Lake Mungo provide a picture of how people adapted to climate change from the lakes full to drier conditions, increased dust deposition and the correlation (if any) of the arrival of people and the extinction of megafauna.41

Aboriginal occupation in the Sydney Basin dates back into the Pleistocene period (i.e. before 10,000 years ago). The oldest reliable date in the region comes from George & Charles St, Parramatta (c.25,000–30,000 BP)42 with the oldest coastal site in the Sydney region is Prince of Wales Hospital (8,400 BP) and Curracurrag Rock shelter in the Royal National Park (7,450 BP).43 The early occupation sites dating to the late Pleistocene/early Holocene in the Sydney region tend to be found in deep stratified

33 Institution of Engineers Heritage Committee 1996
34 O’Connell et al, 2004:835
35 ibid
36 Birdsell in Flood, 1983:78-79
37 Bowdler in Flood, 1982:78
38 Smith et al, 2008:389
39 Bowdler et al, 2003:837
40 ibid
41 Miller et al 1999; Roberts et al, 2001
42 Attenbrow, 2002:18-19; Cranebrook Terrace [41 1700±3000±2000 ANU-4016]; Shaw’s Creek [14700±250 Beta-12423] and JMcCHM 2005; [30,735±407 Wk-17435].
43 Prince of Wales Hospital [8400±800 lacks a lab no. from source] and Curracurrag 1 [7 450±180 Gak-482].
rock shelter deposits and within alluvial deposits, particularly on the margins of large rivers such as the Hawkesbury-Nepean and Parramatta Rivers.

The archaeology of the Sydney Basin has been well documented through a large number of academic studies, regional management studies and impact assessment investigations over the past 30 years. More than 4,500 sites have been recorded and registered with the DECC Aboriginal Heritage Information Management System (AHIMS) for the Sydney Basin, reflecting both the wealth of archaeology in the region and the number of archaeological investigations undertaken.

The dominant archaeological site types in the Sydney Basin are rock shelters with midden deposit, rock shelters with art, rock art engravings and open artefact scatters. Other common site types include rock shelters with artefacts, grinding grooves and open middens.

The Blue Mountains region has been occupied for at least the last 15,000 years. The oldest datable occupation site in the region is Shaw's Creek K2, a rock shelter site which dates to 14,700 BP. Other rock shelter sites around this age in the Blue Mountains date to approximately 12,000 years BP such as Walls Cave. Occupation in the mountains appears to have been focussed around the river systems which were a source of food, water and stones for tool making. Other evidence of occupation includes low density artefact scatters, where the stone tool assemblages show the types of technological changes that occur in south eastern Australia, such as the emergence of the small tool tradition. Early occupation in the mountains appears to have been sporadic and to have increased over the last 5,000 years (although this may be a function of the number of known early sites for the region).

Little is known about the Aboriginal history of the Jenolan area, and at this stage, an understanding of the history of the area has been sought using studies from the Blue Mountains and Sydney region, in which the Reserve is located.

The known Aboriginal archaeological sites in the Reserve also appear to focus along watercourses and comprise of low density artefact scatters and sites in rock overhangs. Although no detailed analysis of archaeological sites in the Reserve has been undertaken, the types of stone tools and particularly the art indicate the area has been occupied during the Holocene period (last 10,000 years). Based on the archaeological evidence in the Blue Mountains region outlined above, there is the potential for the Reserve to retain archaeological of human occupation dating to the terminal Pleistocene period (20,000 – 10,000 BP).

3.2 Phases of European Development

The 1988 CMP structured the post-contact development of the Reserve into six phases:

1. Discovery and Early Visitors, c1838 - 1867
2. Jeremiah Wilson and early Accommodation, c1867 – 1895
4. Expansion and Early Popularization 1907 – 1929
5. Depression, War and Post-war Recovery, c1930 – 1960

The following sections include two additional phases to cover the decades since 1987:


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44 Attenbrow, 2002:49.
45 ibid
46 Bowdler 1981; Johnson 1979
47 Stockton 1993:25
48 Attenbrow 1981
49 Maynard 1976:200-201
3.2.1 Discovery and Early Visitors, c1838 – 1866

The most common legend surrounding the European discovery of the caves involves bushrangers and convicts, but has not been substantiated. Supposedly in 1841 a local pastoralist, James Whalan, captured a runaway convict and bushranger James McKeown who had hidden in the caves and the valley for around three years. Noting the cave’s archways, he later returned and explored the Grand Arch, Devil’s Coachhouse and Nettle Cave.

By 1842 James’ brothers Charles and Edwin Whalan had also explored the caves and started conducting groups to visit the area, which they did for many years. Initially known as McKeowns Caves, the name Fish River Caves was soon adopted. Twenty years later the visionary MLA John Lucas campaigned for increased protection for the caves. The Fish River Caves Reserve was gazetted in 1866, the first reserve in NSW made for the protection of a natural feature, and predating the world’s first National Park by six years.

3.2.2 Jeremiah Wilson and Early Accommodation, 1867 – 1895

After the parish of Binda was created, the caves were renamed Binda Caves. To further protect them, Lucas supported the appointment of Jeremiah Wilson as Keeper of the Binda Caves on 12 January 1867. Wilson, who lived on his farm 30km away, had been exploring the caves for some years and provided camping facilities for visitors. The destruction of cave formations was made an offence in 1872.

Neither the roads nor the railway were built specifically to service the caves, they were part of a colonial works program to improve land transport west of the Great Dividing Range, and provided the basic tourist routes to the edge of the Reserve. The specific road works for Jenolan caves were the descents, west, then east to the Caves precinct. The first of these was the two mile hill descents, which was completed in 1879 by the Public Works Department Road Superintendent Henry Cambridge. The following year Jeremiah Wilson built some rough timber buildings and became the resident caretaker. The Binda Caves were renamed Jenolan Caves in 1884. By the mid-1880s the demand for accommodation had increased and the tourist development in the Blue Mountains to the east also increased rapidly. The Government was subsequently lobbied to complete the connection to the caves from that side. The road ran down the descent known as the Five Mile Hill and was completed in 1887 to within half a kilometre of the Caves on the eastern side of the Jenolan River, from which point visitors walked to the Caves.

The buildings in the Reserve were expanded several times, and steps, gates, railings, ladders and wire mesh cages were built in the caves to improve visitor safety and to protect the formations. A conservationist, Wilson designed candle holders to minimise wax droppings. A steam-driven dynamo was installed in the Grand Arch in 1887 to provide electricity to light the Imperial Cave, the first time in the world that caves had been electrically lit. The dynamo was replaced in 1889 by a water-driven Leffel Wheel near a waterfall on the Jenolan River – the first hydro-electric scheme in Australia, which provided lighting for the caves and the accommodation buildings.

As the caves became accessible to increasing numbers of visitors, and demand grew for experiences other than visiting caves, other areas within the Reserve were developed for accommodation, service infrastructure and guest attractions. The rugged terrain of the Reserve appealed to the Victorian sense of the picturesque and guide’s cottages and Guest Houses were sited on romantic vantage points, often remote from the central buildings. The lack of suitable sites for cultivation, and difficulties with access, water supply and sewerage also influenced the location of buildings.

Most of the buildings were destroyed by fire in 1895. The fire proved to be the ruin of Jeremiah Wilson and an opportunity for the Government …..to revoke Wilson’s lease, resume the remaining buildings and to erect a government accommodation house on the site left vacant by the fire.

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50 Alfred Whalan, writing in the Lithgow Mercury, 31 March 1899
51 Dunkley 2007:10
52 Dunkley 2007:10
3.2.3 Government Intervention: A Retreat for the Wealthy 1896 – 1906

The government’s focus when rebuilding the central accommodation was to provide a resort for wealthy travellers and those wanting a retreat from Sydney. In 1896 the short section of road from the Five Mile Road to the Caves was completed, incorporating the limestone arch bridge designed by the famous PWD Engineer, E M De Burgh, effectively linking the eastern road, through the Grand Arch, to the western-side road.

A new Caves House, designed by the Government Architect Walter Liberty Vernon, was completed in 1897 with access via the new road. Designed in the Arts and Craft style, Caves House reflected the romantic and picturesque associations of the caves — it was described by Vernon as “a large comfortable hotel of the type best known in the tourist districts of England, Scotland and Ireland”.

Under the direction of Joseph Maiden, the Director of the Royal Botanical Gardens, the slopes around Caves House were terraced and remodelled, providing a park-like setting.

The Lithgow Mercury of 9 June 1899 described the area thus:

A few days ago a representative of this journal took a trip to the Caves, and was quite surprised to see the changes and improvements that had been made during the past twelve months under the superintendence of Mr Trickett, the inspector. From a scene of rugged grandeur the place, after passing through the Grand Arch has been converted into quite a sylvan beauty spot.

Since the completion of the Caves House everything that human hands could do has been done to make the surroundings as charming as possible. Around and in front of the house, gardens have been laid out and planted with shrubs and flowers in a manner which reflects the greatest credit on the taste of Mr J H Maiden and Mr W Blakeley. Anyone who had visited the Caves three years ago could not realise without seeing them the changes which have been made.

The surroundings now are simply lovely and make one wish to spend an unlimited time there. Through the efforts of Messrs Trickett and Fred Wilson, the Caves themselves have undergone vast improvement and the most timid and nervous person in the world need not now be the least afraid of threading the underground mazes and mysterious passages. Everything tending to increase the comfort and easy transit of visitors from cave to cave has been carried out.

Inclines have been levelled, depressions filled up, proper concrete steps built in what were once dangerous places, thus ensuring perfect safety. Added to this, all the passages have been completely enclosed with strong wire netting overhead and down the two sides so that no one can now touch the stalagmites and stalactites. Even a little child may go through the Caves now without danger.

Our representative had the pleasure of inspecting one of the new caves - the Gem of Jenolan - not yet open to the public. The passage to it is however being made ready as fast as possible. Its beauty is indescribable. Then there is the matter of accommodation. At the Caves House visitors may obtain all the comforts of a leading metropolitan hotel, minus the liquors. Mr Shipway, the manager, is one of the most genial of good fellows and nothing but praise has been bestowed on him by those who have experienced his hospitality.

3.2.4 Expansion and Early Popularization 1907 – 1929

The introduction of the motor car (the first car through the Grand Arch was in 1903, although horse-drawn coaches were also used until 1917), and promotion by the tourism authorities, increased the popularity of a visit to the caves. Caves House was expanded and numerous service buildings were constructed to cope with the increased visitor numbers, including day trippers. A tradition began of families and friends staying for a week or more each year, to enjoy the health benefits of the mountain air. Package tours began, bicycle touring and bushwalking became popular. Tennis Courts, a cricket court ...
pitch and other recreational facilities were constructed and Caves House featured dances and resident entertainers. Many visitors purchased souvenirs, including group photographs which were taken by a full-time photographer based in a kiosk.

Harry Smith had linked the Great Western Railway and the Jenolan caves through his leasehold of railway refreshment rooms, and the Caves Hotel. In the later 1920s the Railway Department was also vigorously pursuing revenue from tourism and had inaugurated the Caves Express to Mount Victoria, which included a morning scenic run to Mount Victoria, followed by a motor-coach ride to the Caves, with a return trip to Sydney in the evening. Figure 24 shows a general plan of the site in 1921.

3.2.5 Depression, War and Post-war Recovery, c1930 – 1968

Visitation decreased during the depression and the war years. Post war renovations to Caves House saw gradual increases in visitor numbers, although the picturesque styles of the original buildings and gardens were abandoned in favour of “modern” sensibilities. Changes in holiday patterns and the greater mobility of visitors gradually altered the character of Jenolan. By the 1960s, “good staff were difficult to obtain, turnover was rapid and bureaucracy stifled the few people with feelings for the caves, their history and their intangible value to the nation’s heritage”.

3.2.6 Nostalgia and Environmental Concern c1968-1988

Further renovations and building programs coincided with a period of strong growth in visitor numbers during this period. At the same time, a growing awareness of environmental issues saw visitors taking a greater interest in the natural and scientific values of the Reserve. There was very little scientific work undertaken at Jenolan from the 1930s to the 1980s. This policy began to change in the early 1980s and there has been a steady rise in access by the scientific community and areas of scientific research since then. An Environmental Protection Committee was formed to try and balance the competing demands between the natural values and tourist activities. The Jenolan Caves Historical and Preservation Society were formed in 1972 and many new caves have been explored or “rediscovered”.

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55 Historic Engineers nomination by the Institute of Engineers Heritage Committee 1996
56 Moore, Vol. 3, 1988C:11
57 Dunkley 2007:69
Figure 24 – General plan of Jenolan Caves site, 1921
3.2.7 Planning for Change 1989 - 2003

Until 1989 the Reserve was managed by the NSW Tourism Commission. The Jenolan Caves Reserves Trust (the Trust) was established by the Greiner Government and Minister Tim Moore, as Minister for the Environment, in July 1989 for the care control and management of Jenolan, Wombeyan and Abercrombie caves. It is an independent statutory body authorised under the National Parks and Wildlife Act. The Trust was established as a financially self-sustaining body relying on income from visitor charges and lease revenue from Caves House, with some Capital Grants. These actions were part of the NSW Government's wider reform package often known as New Public Management Principles.

As part of this transfer of control, a comprehensive Conservation Management Plan for the built heritage of the VUSZ was prepared (the 1988 CMP). In 1990 changes were made to the Trust to broaden the membership base and the additional stakeholders included representatives of the National Trust, National Parks, local council and tourism representatives.

A lease was signed by the Greiner Government in 1990 offering Caves House to a private company on a 99-year lease. During the tenure of the leaseholder as operators of Caves House substantial changes were made to the second floor of the 1907-09 Vernon wing. During a subsequent lease in 1995-96 further changes were made on the ground floor of this wing to accommodate a Bistro.

In 1997 Borenore Caves were also transferred to the Trust, placing additional strain on existing resources.

In November 2000 the Reserve was included in the Greater Blue Mountains Area which was inscribed on the World Heritage List in recognition of its natural heritage values.

Due to concerns with the business model in 2003 the Minister for the Environment initiated a special review of the Trust by the Council on the Cost and Quality of Government. The review recommended a plan of action to revitalise the State’s cave networks and proposed the incorporation of the significant areas of Abercrombie, Wombeyan, Borenore and Jenolan Caves into the Department of Environment and Conservation to join the other 33 significant karst areas, to ensure that the management of all significant caves was located within the one organisation.

External factors also affected visitation to Jenolan in the late 1990’s and early 2000’s. These included the introduction of cheap air fares - domestically and internationally, the rapidly changing nature of regional Tourism, Sydney Olympic’s, reduced levels of international travel following the terrorist attack in New York in September 2001 and concerns about Severe Acute Respiratory Syndrome (SARS), the revolution in home entertainment, improved roads (which made one day visits a lot more feasible), the increasing liability that comes with heritage assets, major bushfires in the Blue Mountains in 2001-02, and the emergence of the Y Generation with an entirely different needs in respect of tourism/recreation.

During this period the knowledge and skills of the Trust staff in karst management grew exponentially – they are now regarded by many as world leaders in karst interpretation, with cave development in all reserves becoming leading edge, for example entry to the caves through the Grand Arch at Jenolan was completely remodelled, a program to upgrade lighting technology at Jenolan was commenced, the self guided tour was developed at Wombeyan and a leading edge Sewerage Treatment Plant was built at Wombeyan.

3.2.8 Conservation of Natural and Cultural Heritage 2004 - 2009

The Trust Board was replaced with an Administrator on the expiry of its term in January 2004.

The National Parks and Wildlife Amendment (Jenolan Caves Reserves) Act of 2005 transfers the four karst reserves to DECC. The transfer of the Jenolan Karst Conservation Reserve will occur in two stages with the first stage, implemented in July 2006, being the transfer of the Conservation Management Zone to DECC. A Karst Conservation Unit and a Karst Management Advisory Committee have been created, comprising experts in cave science and management. The second stage, the transfer of the VUSZ, will occur after the conservation and management plans are endorsed, and the lease issues are finalised. After the transfers are complete, the Trust will be abolished.
Conservation and management issues continue to be a focus, with the commissioning of a plan of management and a program of refurbishments and upgrades. The Greater Blue Mountains (of which the Reserve is part) was added to the National Heritage List in 2007.

Development within the Reserve is increasingly subject to stringent environmental considerations, such as containment of water from the washing of vehicles, stream-watch water monitoring and the ultraviolet treatment of water and waste water instead of using chlorine. There has been an $18 million program of works on Jenolan Caves Road at Five Mile Hill and a $2.9 million capital works program to upgrade caves and aboveground infrastructure.\textsuperscript{58} Since July 2006 $3 million has also been spent on Caves House. The aim is to reinvigorate and renew the VUSZ, so that the Reserve may once again become a great tourist attraction, with a sustainable future.

3.3 Historical Development of the Precincts within the VUSZ

3.3.1 Grand Arch Precinct

Accommodation and Access

During the 1860s the accommodation provided for visitors was very basic. It consisted of small, rough, open bush huts (no physical evidence of these remains) and tents within the Grand Arch and Devils Coach House. In 1869, two years after Jeremiah Wilson was appointed the Keeper of the Caves, a timber dancing platform was erected in the Grand Arch. Oberon Road was surveyed in 1878 and this new access prompted further development within the VUSZ. Two acres (0.8 hectares) in the vicinity of the Grand Arch were leased to Wilson in 1879. He erected several accommodation buildings, on the site of what is now Caves House (Building 1). During the 1880s these buildings and the caves were gradually improved by Wilson and supervisors from the Mines Department.

In 1895 a fire destroyed most of the accommodation buildings on Wilson’s lease. The Minister for Mines then revoked Jeremiah Wilson’s lease and took possession of what remained of his buildings.

The Jenolan Caves Road was extended through the Grand Arch in 1896, linking with the Oberon Road.\textsuperscript{59} A limestone arch bridge (now known as De Burgh’s Bridge, Building 39) carried the road over the creek and inside the Arch. That same year the foundations were laid for the first wing of Caves House (Building 1), designed by the Chief Government Architect Walter Liberty Vernon. On completion of the first stage of buildings and infrastructure in 1898, the lease of the complex was granted to the entrepreneur Harry Smith.

A camping ground was established in 1900 behind Caves House, but after the first cars arrived at Jenolan in 1903, the site soon became a car park. Between 1907 and 1909 Caves House was extended, and a third wing was built between 1915 and 1917. A fourth wing was completed in 1923.

During the 1950s, after the austerity of the depression and war years, promotion of the Reserve increased. Caves House was renovated and upgraded, and became a “Mountain Chalet”. By the 1970s, the precinct was again being developed and modernised to attract visitors.

Other Buildings

The 1898 Caves House redevelopment also included the creation of complementary buildings, staff quarters and visitor amenities. A post and telegraph office was opened in the precinct (and the original 1889 Post Office was demolished). The second post office and waiting room was demolished and reconstructed in a new location in 1974. An Engineer’s Residence (Building 17) was built in a prominent site above Caves House.

\textsuperscript{58} Jenolan Caves Reserve Trust 2009, Information provided by the Trust, March 2009
\textsuperscript{59} Road names have changed several times over the years. Two Mile Hill and Five Mile Hill are local names only. Mt Victoria Road is now the Jenolan Caves Road. Oberon Road was previously Edith Road and Jenolan Caves Road. The current names will be used in this history.
Guide’s cottages were built in strategic positions in the Reserve in 1898 and plans were drawn up for additional cottages in 1916. Three of these (now demolished) were located behind Caves House (the others were in the Campground and Utilities Precinct, and the Five Mile Road Housing Precinct).

The curving stone wall leading into the precinct was reportedly structured to guide horse-drawn coaches down to a Coach house. Until the road was extended into the Grand Arch in 1896, visitors walked from the Coach house and through the arch to the settlement. This old Coach house was converted to an electrical plant house and garage in 1925 (The Old Diesel House, now an electrical workshop, Building 37).

A c1920 refreshment kiosk was demolished in 1957, and a replacement kiosk built on the site. This has been reconfigured in 1996 as the Ticket Office (Building 28). Several other buildings have been reconfigured for other uses, including the Old Refrigeration House (now a Substation, Building 3).

A 1961 Resource Centre and Toilet block (Item 31 in the 1988 CMP) was demolished in 1989.

A shelter shed (Item 30 in the 1988 CMP) was demolished in 1999, and replaced with a larger shelter (Building 30).

A tin store shed (construction date unknown) was located in Car Park No 3 in 1988 (Item 13 in the 1988 CMP). It has since been demolished (possibly moved elsewhere).

**Sewerage**

In the early days sewage was discharged directly into the river and creeks. The first complete sewerage system (E07) was constructed in the Grand Arch Precinct in 1897, including a vitrified clay pipeline which discharged the sewage into the creek below the hotel. The sewer line was laid next to the existing hydro pipe and discharged further downstream from the Leffel turbine (without treatment). At a now unidentified location, the wrought iron sewer pipe crossed the river as a trussed pipe structure.

In 1906 a concrete septic tank (approved by PWD engineer E M De Burgh) was built a little further downstream on the right bank of the river. The effluent discharged directly into the river. The tank (15.5ft x 8ft x 7ft is believed to be in situ, buried under river gravel and silt, though the location is unknown. The 1897 sewer line was extended in 1909, 1.5km down stream to a site below the power station. This system is discussed in more detail in Section 3.4.6.

**Electricity Generation**

Initially, the caves were viewed using candles, then magnesium flares. In 1880, E. C Cracknell demonstrated the effectiveness of electric lights for illuminating the Caves, by using lead-zinc batteries in the Margherita Cave. A six-horse-power vertical steam-driven dynamo (E05) was installed in the Grand Arch in 1887, and an electrical distribution system wired through the Nettle, Imperial and Arch caves, then later in the Shambles and Wilkinson branches. This is believed to be a world-first use of electricity for cave illumination.

The Jenolan River flows underground through the McKeown Valley in a limestone belt in which the main caves system is found. Downstream the river resurfaces in a narrow valley where a hydro-electric system, using a water-driven Leffel wheel (E06), was set up in 1889 on the bank of the Jenolan River about half a kilometre downstream of the yet to be built limestone bridge.

Just below the crossing was built a small concrete pipehead weir which diverted water into wrought iron pipes (reused from Hudsons temporary water supply to Sydney 1886-88) to the turbine driving a Crompton dynamo. This is reputed to be the first use of hydro-electric power generation in Australia. It replaced the dynamo in the Grand Arch, and the power was used both to light the caves and for buildings within the Grand Arch Precinct. The hydraulic ram and the turbine within the Coach house (electrical workshop Building 37) were restored during the late 1980s and portions of the weir, some sections of the wrought iron pipeline and the Leffel turbine remain.

An extensive network of electrical wiring, lights and switchboards were installed in the Caves.

In 1908 a curved concrete dam was completed downstream of the weir to create what is now known as Blue Lake and the hydro take-off was moved to the downstream face of the new dam. The Blue Lake dam appears to have been the last in a series of cylindrical dams built in the Mountains area (the most spectacular of which was built at Medlow Bath) though this is not verified. The Blue Lake supplied water
to the Leffel turbine, which was driving the 1889 Crompton Dynamo and 1893 Western Electric Dynamo, both of which were supplying electric lighting to the Caves. This system continued until 1916 when the new hydro power station was built about 900m below the limestone bridge.

Two Pelton Wheel turbines, supplied by James Gordon and Co., London and two British Westinghouse hydro generators were installed, with marble switch boards and knife switches. This equipment is still in place; the turbines are used as back-ups and the switch boards have been replaced.

In 1953 turbines and generators were superseded by a Gilkes and Gordon turbine (turbo impulse wheel) and a Lancashire dynamo with 57kW output. Finally a back up diesel generator was installed in 1982 in the converted coach house (building 37). Today, hydro power supplies about 60% of requirements including the Caves and the buildings on the Lake side of the Grand Arch, with a total load of 200kW. The system has a stand-by generator to protect against power failure.

**Water Supply**

Originally the water supply appears to have been a combination of run off from upstream to the residential area and from a hydraulic ram, downstream near the Leffel turbine, which delivered water to the small concrete reservoir (1888) in the Surveyors Creek, above the accommodation buildings on the site of the children’s playground. Approximately ten years after the first reservoir a second reservoir was built upstream behind a weir across the creek. In 1902 the PWD Annual Report noted that a new concrete dam had been built on the Mountain torrent, 20 chains above the old dam.

The capacity of the new reservoir was 250,000 gallons, and the supply was carried to the hotel and offices through a 3 inch pipe. Subsequent PWD drawings refer to this as the “Upper Dam”, with the 1897 works simply referred to as the “Reservoir and Dam”. In 1908 a third reservoir was built near the Leffel wheel below the Grand Arch, and the Blue Lake was created (38). The Blue Lake is referred to in PWD drawings as the “Storage Reservoir and Lower Dam” In 1921 another feeder reservoir was constructed upstream at Surveyors Creek and a pump house (Building 35) was installed on the limestone bridge near the Grand Arch.

In 1914 it was decided to take advantage of the well known underground river, under the cave system. The river at modest depth passes below the stone bridge at its crossing of the surface flowing Jenolan River. The water was then pumped through a galvanised pipe to the Upper Dam from whence it gravitated to the residential area. Details are not known, other than it was a centrifugal pump.

At stages the water supply was upgraded over the years as demand grew, involving increases in pipe sizes, construction of reservoirs and reticulation extensions. A reservoir was filled in to form Car Park No 1 c1950, but the weir is reported in the 1988 report as remaining. In 1968 extensions were constructed to serve the Burma Road and Five Mile Road cottages, for which a 2000 GPH mono pump was installed in addition to the existing centrifugal pump in the pump house, both drawing from the underground river.

In the late 1980s the upper dam was decommissioned for health reasons. The last major work was in 1982 when two additional positive displacement pumps were installed in the pump house at the stone bridge, and the centrifugal pump was taken out of service.

In 2006/07 there was a major upgrade of the water supply system including the provision of three new pumps and a new sand filter.

**Landscaping**

The landscaping of the area around the Grand Arch, using the exotic species which were popular at the time, commenced during the 1880s. In order for visitors to appreciate the rugged mountain scenery a system of tracks and hiking trails linked picturesque lookout spots and cave entrances.

In 1897 the Director of the Botanical Gardens, Charles Maiden, was commissioned to remodel the landscaping.
Figure 25 – Early photographs of the Grand Arch Precinct

Wilsons’ accommodation at the Reserve, c1888; [Source: ML 1-06202]

The dancing platform in the Grand Arch, c1870s; [Source: Dunkley 2007:41]

Stone arch bridge over creek, viewed from Lucas Cave c1910; [Source: ML 1-29962]

Caves House 1910-19; [Source: ML 1-35110]
Grand Arch Precinct at the turn of the 20th century; [Source: Dunkley 2007:44]

Figure 26 – 1922 Site Plan of the Grand Arch Precinct

Extract from Oliver Trickett’s last map of Jenolan Caves; [Source: Dunkley 2007:37]
Figure 27 – Caves House, 1927

Figure 28 – Views of surrounding buildings, 1978

[Source: ML 1-02542]

[Source: ML 3-45755]

[Source: ML 3-45759]

[Source: ML 3-45855]
3.3.2 Jenolan Cottages Precinct

The Jenolan Caves Road was constructed in the late 1880s to provide an alternative route to the original track from Oberon, and it now provides the principal access into the Reserve. The two-storey Kiaora Guest House was built on this road approximately 1 km from the Jenolan Caves Precinct in the 1890s, however the precinct was never historically established as a primary area for guest accommodation. The Guest House was used as a staging post for the early visitors arriving by coach and was subsequently destroyed by fire c1939 (E02).

The precinct currently has a group of eight identical buildings (the Jenolan Cottages Buildings J5 to J12) dating from 1985, arranged in a horseshoe shape around a flat grassed oval (Binda Field) which was the site of an old market garden farm used to supplement produce from the Pomona Grove Farm. The other facilities built at the same time include a toilet and shower block, water storage tank, barbeques and a small shed. A Caretaker’s Cottage (Building J1) and a Fire Station (Building J2) were built near the turnoff from Jenolan Caves Road.

Since 1988 a small metal shed (Building J3) has been built near the Fire Station to house archival material. An additional water tank has been placed next to the original tank (J13 and J14).

The site has in the past been used for car parking during peak holiday seasons.

3.3.3 Five Mile Road Housing Precinct

The 1988 CMP notes that the File Mile Road Precinct was established in 1897 as a Police Prefecture, the vantage point occupied by the precinct making it an ideal location for this purpose. The CMP further notes that a police station was built above Jenolan Caves Road in 1898. However the plans of the existing Building F6 suggest a much later construction of 1916. It may be that there was an earlier police cottage which was subsequently demolished. A horse paddock for police horses was also established below the police station, on the low side of the road and the 2009 Plan of Management further notes that there was formerly a gaol at the rear of the police station. The police use continued until 1939 when the police station operations were relocated to Oberon and the cottage became a staff residence.

In the early years, the precinct contained two guides’ cottages set on promontories or terraced slopes, with magnificent views of the valley. Walking tracks connected these cottages to the Grand Arch and Carlotta’s Arch and formed part of an extensive system of walkways for the enjoyment of visitors.

A camping ground was opened in the 1890s near the police station site. A walking track led from here, past an early guides’ cottage (now demolished) to the six-foot-track. The track crossed the McKeown Valley trail, which led to the old tennis courts, rifle range and various cave entrances. From the police station it was easy to supervise the entry of visitors into the valley and to oversee the camping ground and horse paddocks.

Plans were drawn up in 1916 for some additional guides’ cottages. Although it is not clear how many were built, the style of the Administration Building (Building F7) suggests it was one of them. It was later converted for use as a camping store where visitors could buy provisions and has now reverted to a cottage providing staff accommodation. Later, the road-side keeper’s cottage was built on the site of the horse paddocks (probably mid 1920s). This building (Building F1) was dismantled and moved from its previous position in the Jenolan Cottages Precinct.

In 1947 plans were drawn up for three additional staff cottages. Two of these (Buildings F3 and F4) with detached garages, were built on the site of the old camping ground.

By the 1950s all of the cottages in this precinct were being used for staff accommodation. They are still primarily used for this purpose, although some support services are also accommodated, such as research and archives uses.

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60 Mitchell Library, Jenolan Cave Photographs, PXA 1030, Box 3
61 Department of Environment and Climate Change 2009:139
3.3.4 Burma Road Housing Precinct

During the late 1940s and 1950s this precinct was developed as an accommodation area for staff and their families. The oldest cottage in the precinct (Building B6) is one of three staff cottages (the other two were built in the Five Mile Road Housing Precinct) built in 1947. The precinct was further developed in the 1950s as visitor numbers to Jenolan Caves increased. Ten staff cottages and outbuildings, as well as a fire shed, were built along the access road. A small tractor shed and hopper bin were constructed close to the fire shed. It is unclear whether the fire shed predated the fire which burned down the refreshment kiosk near Caves House in 1957 however it has now been replaced by a modern shed to house the fire fighting equipment. The Cavers Cottage (Building B8) is reputed to have been the fireman’s cottage. Four water reservoirs (B9 to B12) were also constructed – one to supply water to the cottages and three to support the increased fire fighting capacity.

Modifications, alterations, additions and re-cladding have all changed the original forms of the cottages, which were built of stud framing clad with fibrous cement, and roofed in galvanised corrugated iron.

At the northern end of the precinct is an area which was used for tennis courts and a rifle range. One of the 1950s cottages was built on this site. Later, the area was fenced to keep endangered species of Brush Tail Rock Wallabies safe from foxes and feral cats. The cottage became known as the Wallaby Enclosure Cabin. The cottage has now been demolished and the gate to the wallaby enclosure remains open. All that remains is a small wallaby shed.

3.3.5 Two Mile Road Housing Precinct

This area was established in 1980 for staff accommodation. The four brick veneer cabins (Buildings T1 to T4) do not relate to the character of earlier precincts within the Reserve.

3.3.6 Campground and Utilities Precinct

This precinct was developed by 1896. It provided an area for farm produce, water supply, hydro-electricity generation, sewage disposal and recreation in the form of trout fishing and swimming.

The Pomona Grove Farm was established in this precinct the 1890s on the relatively flat area by the river. It supplied produce for Caves House and included a farmhouse (now demolished), a piggery (covered by fill) and a slaughterhouse (Building U7) downstream. Access to the farm (and at least one tool shed -also demolished) and the piggery was via an unsealed road from the old police cottage on Jenolan Caves Road, or by a track along the river from the Grand Arch Precinct. Visitors were encouraged to use the river track down to the farm, where they could obtain refreshments. The site of the former Pomona Grove Farm was later used as a camping ground with a shower and toilet block constructed nearby. Camping here ceased in 2005.

A second hydro-electric station (Building U3) was constructed downstream in 1915, with the pumps eventually installed in 1917. The pumping house is Building U7, close to the power station. Water is piped down to the power station via a raised pipe (Building U6). An 1897 guides’ cottage (Building U4) was then used to accommodate the engineer in charge of the power station.

In the early days sewage was discharged directly into the river and creeks. The first of such systems was constructed in the Grand Arch Precinct in 1897, and included a vitrified clay pipeline discharging below the Blue Lake to service the new Caves House. By 1909 the need for a treatment facility of greater capacity was recognised, and a new site was selected much further downstream on the left bank, below the 1906 “hatchery dam” Two 48ft long concrete boxes were built parallel to the lines of the steep hill. The upper box was a three cell septic tank which discharged into the lower box, the biological filter bed full of broken rock. (These structures are still in place).

The third treatment works were located adjacent to the 1909 works and were completed in 1954. They comprised integrally constructed sedimentation and digestion tanks with the effluent discharging down to an 18ft diameter trickling filter, and through a chlorination tank onto a detention pond, and finally to the Jenolan River, with the sludge drawn off onto drying beds.
The fourth and current treatment works, (Building U1) and control room (Building U2), a 500 person capacity Pasveer Channel, is located on the flat ground below the earlier two works. This was completed in 1975 and produces a high quality secondary treated effluent. The works comprise a roughly elliptical shaped channel around which the sewage is driven by a pontoon mounted aerator. Sludge is dried and disposed of as landfill, while the effluent is periodically decanted. Originally the effluent was chlorinated before being discharged into the river, however there was concern that the chlorine may harm caves downstream and an ultraviolet light sterilisation system was substituted. The sewer line follows the walking trails on the banks of the river. In 2001 there was a major upgrade of equipment in the STP including new aerators.

With the establishment of Pomona Grove Farm a swimming pool was created in the river. A walking track was cut for access to the pool from Caves House and steps were built (some cut into the rock and some concrete) to assist the visitors into the pool. These steps have eroded or washed away in parts. The year after the sewerage system was installed, trout fingerlings were introduced at the swimming pool. Several years later a trout hatchery dam was formed by constructing a weir (Building U5) across the river, with concrete fish “steps” down to the river. Trout fishing was expected to provide an additional sport for visitors to the caves.

There are the remains of a stone bridge in the Campground on the opposite side of the River to the hydro station, however no images or dates have been determined.

Modifications to the cottages and the shower block during the 1980s have utilised the rustic “bush romantic” style used extensively within the VUSZ during that period. The late 1980s also saw the introduction of fitness equipment and outdoor furniture along the walking tracks from the Blue Lake.

Figure 29 – Early photographs of the Campground and Utilities Precinct

3.3.7 Bellbird Cottage Precinct

Jenolan Caves Road (initially known as Mt Victoria Road) was constructed c1888 to replace a little-used rough buggy track, which terminated several kilometres from the caves. Commencing at Hartley, the new road stopped just short of the Grand Arch, at a coach house. The road was edged with a post and rail fence, with projecting struts and beams.

This new road prompted further development of the Reserve as the demand for accommodation increased. The first building in the Bellbird Precinct was Wallace’s Guest House (E01), built along the new road in 1888, to supplement the accommodation at Caves House. Jutting out over the precipice, with terracing and landscaping, the house commanded magnificent views over the valley. Access was by means of a road cut from Jenolan Caves Road, edged with a post and rail fence and marked by rubblestone gateposts. The building was used extensively during the reconstruction of Caves House in 1896-98 and by 1921 it provided staff accommodation. It has now been demolished.
Bellbird Cottage (Building BC1) was constructed c1916, and was extensively rebuilt during the 1980s. It was named after the bellbirds whose song is a key feature of the precinct. The other cottage (Building BC3) dates from 1920. Both architecturally, and in their location in key locations for capturing views, the two cottages follow the picturesque philosophy employed by Vernon in the design of Caves House.

3.4 Historical Themes

The use of historical themes allows consideration of the significant elements of the Jenolan Karst Conservation Reserve in a broader context, and by the use of thematic groupings comparisons can be made with sites of similar thematic importance. In this CMP the NSW thematic frameworks have been used, and are detailed for each element in the Inventory Sheets in Volume 2 of the report. The main themes revolve around the importance of the natural environment, the imposition of the cultural landscape that evolved through European occupation, the importance of technology and the establishment of utilities in developing the remote village, the impact of Government administration on the site, the growth of the pursuit of leisure, and the scientific resources of the archaeological sites. Other more intangible themes are the Aboriginal significance of the site, and the exploration of the Caves, and the stories of the families who explored, protected and developed the Caves and infrastructure.
4 Intangible Evidence

Intangible evidence refers to knowledge, experiences, practices, expressions and representations in relation to a significant place. Understanding intangible evidence requires an appraisal of experiential and lived knowledge, as expressed by the persons who live in, work in, work with or visit the Reserve. The identification of social, cultural, environmental and economic values attached to the site, its precincts and various features contained within these also form an important component of this interaction. It is important that these interactions between person and place, and the identification of areas, precincts and features which are an important locus for social, cultural and economic activity, including places which require conservation or preservation, are documented.

In this CMP the appraisal of intangible evidence takes the form of in-depth interviews, wherein the interviewer and interviewee have engaged in semi-structured conversation about the site (the Reserve), with the interviewer documenting the interactions between person and place that are reported or inferred in this dialogue.

In providing an overview of intangible evidence associated with the Reserve, this section of the report incorporates:

- **A background review of documents** associated with the site including the 1988 CMP, the Burra Charter and Guidelines, the Oberon Council Social and Community Plan 2006 Towards 2020: NSW Tourism Masterplan and the Department of Environment and Conservation (DECC) Visitation Strategy.

- **Social and cultural context analysis** incorporating a demographic overview of the locality and region, to include population characteristics; and,

- **Key stakeholder interviews** that identify and explore social, cultural and community values ascribed to the study area, current uses, and issues and opportunities for the study area.

4.1 Background Review of Documents

To understand the social aspects of the Reserve today and its association to the community, it is important to recognise how the conservation process has changed, how the Jenolan Caves are being protected, and what forms of demographic change and community interests operate in the study area. These insights are identified through the Burra Charter, the Jenolan Caves Reserve Draft Plan of Management 2009, the Oberon Council Social and Community Plan 2006, NSW Tourism Masterplan and the DECC Visitation Strategy.

The Burra Charter makes two references to relationships of tangible and intangible heritage. Under Article 12, the Burra Charter notes that those who have a connection with a place or item of heritage value can be best appreciated by participating in the conservation, interpretation and management of these areas. This leads to considerations of methods, such as stakeholder interviewing and consultative workshops, as key techniques in the conservation management process. Similarly Article 26.3 encourages groups and individuals who have a connection with the conservation area/item to be involved in the conservation and management, as well as gain a complete understanding of the cultural significance of the site.

The 2009 Plan of Management replaces the 1988 Plan of Management. It will be implemented over the following five years and focuses on ecologically sustainable development. This is achieved through analysing the impact of activities, focusing on sustainable use and conservation to protect site values.

The Oberon Council Social and Community Plan aims to identify the needs of the community of Oberon and recommend ways of addressing these issues over the next five years. In 2006 Oberon Council identified a number of target population groups, which informed the delivery of some eleven focus groups within the community. These groups included children, young people, men, women, older people, people with disabilities, Aboriginal and Torres Strait Islander people, people from culturally and linguistically diverse backgrounds, people from the new area incorporated into the Oberon Council area in 2004, business people, and Councillors.
Identified needs in the Oberon Shire that are relevant to Jenolan include:

- Communication and knowledge of existing services
- Public Transport
- Disabled parking
- Recognition of the Aboriginal Community in Oberon
- Education of the community regarding Aboriginal culture
- Access to interpreting services
- Need to balance environment requirements and economic developments
- Economic development in business and industry needs Council's help and support

The needs of the Oberon community vary across population groups – a full summary is provided as Appendix D. It is important to recognise these issues to determine whether the Reserve can provide assistance in catering for these needs or if greater community participation can be encouraged.

_towards 2020: nsw tourism masterplan_

This masterplan has been prepared by Tourism NSW and aims to “raise tourism’s contribution to the sustainable development of NSW”62. The guiding principles behind this plan are sustainability, effective partnerships and a quality visitor experience. Projected visitor numbers and expected flow patterns throughout NSW pose two key challenges. These include stimulating visitor demand to better align with business and service capacity and managing visitor growth in high demand areas, taking community needs and values into account. Major trends for tourism in NSW with the most implication for government include aviation, safety and security, tourism investment potential, rising insurance costs, ageing population, changing tourism consumer and ‘getting back to nature’, information technology, managing high growth areas. In relation to the Blue Mountains, it was mentioned in the masterplan that Countrylink provides a valuable transport to regional NSW and has launched several new travel packages to destinations including the Blue Mountains. This will enable tourism to flourish in the area.

Department of Environment and Conservation Living Parks: A Sustainable Visitation Strategy

Prepared in 2006, this plan pertains to NSW parks which are managed by the National Parks and Wildlife Group of the NSW Department of Environment and Climate Change. This state plan’s underlying principle is sustainable visitation with aims to protect and conserve park values, enhance visitor experiences, provide ecologically sustainable and culturally appropriate visitor use, excellence in visitor management, enhanced community health and wellbeing and economic benefits for communities. Part of the DECC’s role is to protect and conserve areas of subterranean land, including karst (limestone) landforms and natural phenomena (such as limestone caves). Such parks provide opportunities for sustainable visitor use, education and enjoyment. The plan acknowledges the significance of the Jenolan Karst Conservation Reserve, Australia’s most impressive limestone caves63. It is included in the Greater Blue Mountains World Heritage Area. Jenolan receives over 250,000 visitors a year, making it the most popular tourist destination in country NSW.

4.2 Social and Cultural Context

The Greater Blue Mountains area is situated within the Blue Mountains, Oberon and Lithgow local government areas. The Reserve is located within the Oberon Local Government Area (LGA) which covers an area of 3,660 square kilometres and had a total population of 5,030 persons at the time of the 2006 Census of Population and Housing. The LGA is composed of a number of small population centres, the most populous of which was Oberon (township), with 2,473 persons, followed by O’Connell (355 persons), Black Springs (171 persons) and Burrarga (117 persons).

63 DECC, 2006,
Much of the regional landscape is preserved in the form of national parks with significant state forest reserves in the area. The most significant parks, by land area, include the Kanangra Boyd National Park, Blue Mountains National Park and the Abercrombie River National Park. A number of state forests, including the Vulcan, Gurnang, Mount David, Dogs Rock, Blenheim, Essington, and Lowes Mount state forests also comprise an important land use in the region.

The Blue Mountains City has an area of 1432 square kilometres and a steady population of approximately 76,000 persons. The major population centres of the LGA are located at Katoomba and Springwood, with townships also at Blackheath, Glenbrook, Lawson, Wimnalee and Woodford. In the LGA, 74% of it is situated in the World Heritage National Park and a further 14% of the City is contained in public reserves.

Although the Reserve is located within the Oberon LGA, the site has strong ties with the Lithgow local government area, situated on the western edge of the Blue Mountains. Lithgow LGA covers an area of 4551 square kilometres and has a stable population of 19,755 persons. The main urban centre in the LGA is Lithgow, with townships at Portland and Wallerawang and numerous villages, hamlets and rural localities of varying proximity to Lithgow. Although Lithgow has historically been seen as a mining and industrial area, it has also diversified with a strong heritage, tourism and residential presence in the LGA.

Two thirds of the Lithgow LGA is given over to the World Heritage Area and other National Parks. As stated above, forestry is a significant land use in the region. The timber industry comprises a significant proportion of Lithgow's economy and provides a source of timber as well as a range of recreational vehicle activities.

4.2.1 Analysis of Social and Cultural Context

The social and cultural context of the Reserve is informed not only by the experience and viewpoints of stakeholders interviewed in the body of this report, but by the social trends and experiences lived by individuals and communities resident within the region surrounding the Reserve.

Analysis of socio-demographic data by Urbis identified the following issues and trends in the region:

- In the Blue Mountains region, there appears to be a long-term association in the area, with many long-term residents. In the Oberon region, the population profile suggests that the area has retained a high proportion of residents who have a long-term association with the area, as evidenced by the larger than average cohort of residents aged 55-59 and 60-64 in the 2006 census, who are also strongly represented in the 2001 (aged 50-54 and 55-59, respectively) and 1996 (aged 45-49 and 50-54) censuses of the area. In the Blue Mountains LGA, 56.4% of its residents did not move at all between 2001 and 2006 and 15.3% moved within the LGA between 2001 and 2006, suggesting that there is a large proportion of residents who have a long-term association with the area. In the Lithgow region, there is a slightly older than average population which is ageing at a relatively fast rate compared with NSW.

- In the Blue Mountains region, the data suggests that there is an absence of young adults. While there is a relative absence of young people aged 20 – 29 years old in the Oberon region when compared to the national average, this trend mirrors that experienced across the greater Central West region of NSW. The lower than average proportion of young adults in both the Oberon LGA and broader Central West region is more likely to be attributed to nuances in population composition than to a lower employment or educational opportunities generally available in regional areas over metropolitan areas. In the Blue Mountains LGA, the number of people aged 18 to 24 and 25 to 34 is lower than compared with the Sydney statistical division. There were proportionately fewer young people aged 20–24, 25-29, 30-34 and 35-39 living in the Lithgow LGA compared with

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65 Lithgow City Council, 2009, available at www.lithgow.com/council/gen_profile.html
NSW\textsuperscript{68}. These trends are indicative of the low percentage of young adults in the broader Central West region.

- The Blue Mountains’ population has a small proportion of people from culturally and linguistic backgrounds. Levels of cultural and linguistic diversity in the Oberon region are relatively low; less than 130 persons (or 2.6\% of the population) speak a language other than English at home. Similarly, a relatively low proportion of persons resident in the area were born overseas (approximately 8.9\%), more than half of which were born in English speaking countries such as the United Kingdom or Ireland. Levels of cultural and linguistic diversity in the Blue Mountains region are also relatively low, with 4.8\% of the population speaking a non-English language at home. Further, 16.5\% of the population was born overseas, most of which were from English speaking countries. In the Lithgow LGA, there was significant cultural diversity with people from a wide variety of cultural and linguistic backgrounds. However the numbers of people from these backgrounds was relatively small\textsuperscript{69}.

A full analysis of regional demographic and social trends is contained in Appendix E of this report.

### 4.3 Stakeholder Consultation

Urbis undertook individual interviews with 10 stakeholders over the period 25 February 2009 to 8 March 2009. Interviews were conducted by telephone to facilitate a greater degree of flexibility for stakeholders to participate. DECC provided Urbis with a list of sixteen individual stakeholders of which ten were contacted. Additionally, information about a number of bus and coach tour operators was also provided although the scope of this report allowed additional stakeholders to be interviewed only if a candidate in the initial selection was unavailable.

A stakeholder interview guide was developed by Urbis in consultation with DECC. Nine interview questions were used as the basis for all of the stakeholder interviews undertaken, with provision for general discussion at the conclusion of these questions between the interviewer and interviewee. Opportunities for general discussion were seen as an important means of allowing for further elaboration on the issues raised by interviewees across the different question fields, and provided a space for the interviewer to summarise interviewee responses. As a guide, approximately one hour was scheduled for each stakeholder interview.

The interview questions were developed as a means of identifying general, site/precinct/feature specific and subject specific knowledge (such as the interviewees’ experience of social, cultural or economic change at the Reserve). A copy of the stakeholder interview guide is provided in Appendix F of this report.

Urbis recorded the results of each interview as individual transcripts, which were then analysed for key themes and issues against the key question areas tabled in the interview guide. In many instances, information raised in the interviews was specific to the experience of an individual stakeholder rather than being shared by others and these issues also required consideration in the analysis.

#### 4.3.1 Interview Questions and Responses

**Question 1: What are some of the features that you feel signify Jenolan as a significant place?**

Respondents were asked some of the features that they felt signified Jenolan as a significant place. Answers included the caves themselves for their complexity, variety, adventure, decoration and age. The struggle to open up the caves and provide safe access for large volume of visitors was also highlighted, and aspects relating to these struggles, particularly by way of cave discovery, were identified as ‘quirky’ or unusual aspects of the caves. In this regard, Jenolan has attracted new technology in exploration, and a geologist/caver has been experimenting with using video photography and large screen, opening up new possibilities for showing visitors striking features of restricted caves.

\textsuperscript{68} Lithgow City Council, 2008

\textsuperscript{69} Lithgow City Council, 2008
Another significant feature mentioned across stakeholder interviews related to Jenolan’s geological history. The Jenolan Caves are still being explored and in some parts are still undiscovered. Paleokarst is quite probably the oldest cave system in the world; deposits are ancient and geologically extraordinary. Jenolan also has a long cultural history, which was identified by one respondent as being unequalled elsewhere in the world with the exception of examples in the former Yugoslavia, which were the first cave systems to attract scholarly attention.

Although the Reserve is a world significant centre, it doesn’t have the overdevelopment normally associated with major tourist centres. As one interviewee explained “it is somewhat of a surprise when you get there and drive through the arch – the old world charm of the buildings, the fact that it hasn’t been jazzed up”. Jenolan’s strong European and Aboriginal heritage is a focal point as well as its natural and scenic attractions: eucalypts, cave biota, tiny crustaceans and walking trails around Blue Lake and the valley as well as its built attractions - Caves House, limestone bridge and the Grand Arch entrance. Jenolan’s isolation and striking views were strongly emphasised as features which add to the significance of the Reserve as a place.

Question 2: What do you feel are the most important physical features of the site (buildings, structures, areas, places)?

Respondents were asked what they felt were the most important physical features of the site and gave a variety of answers in terms of buildings and structures including Caves House, the Grand Arch and Five Mile Hill Road. The area has a strong presence of hydro power industry, with the Leffel Wheel, a hydro electric generation facility and the hydro power station, being mentioned as key physical features. The Leffel Wheel is one of only two left in the world and an example of early use of such technology. Other significant built features cited included Carlotta Arch, the Guides’ office for its historical interest, the Engineers’ House, the old police station and De Burgh’s Bridge.

The area has a strong presence of natural vegetation and landscaping and these were also discussed by several interviewees in their response to this question. Maiden Gardens in Cave House has been degraded and one respondent felt that it should be restored to reflect the past history of the caves. The walking trails appear to be presently underused and neglected. There are interesting walks near the hydro power station and around the Coach house. The caves and the lighting inside the caves, a world first, were noted as exceptional features. The Six Foot Track is noteworthy as it was the first tourist track built in NSW funded by Parliament. It is a significant feature in the historical context of the caves and was built from Katoomba to the caves so people could visit the caves on horseback. Other notable features of the site discussed during the interviews included the Diprotodon fossil, Blue Lake, and the caves in the cliffs at McKeown's Valley.

Question 3: Are there buildings or facilities at Jenolan that have not been conserved or protected? Are there any features of the site that you feel are undervalued?

Respondents were asked which buildings or facilities had not been conserved or protected at Jenolan and many answers were given. Caves House needs to be preserved in the style of its period. The garden adjacent to Caves House is neglected now and has been devastated by ivy. The Five Mile Hill Precinct (old police station/”White House” (administration), store) plus two modern buildings: one which is used as a research facility/laboratory; and the building that houses the historical society archives should be re-routed and reconstructed. The area is very unstable and whilst the RTA has strengthened the road, a landslide could still happen, with the rockfall landing on the road. The walk near Carlotta Arch beside Lucas Rocks is closed and the walk coming down behind Caves House has track markers that have subsided.

Other sites which have been neglected include the school house, electrical plant, Kiaora (formerly a guest house), Six Foot Track, the Post Office Museum, the Blue Lake precinct, Wallaby Hall [nb recently upgraded], McKeown's Valley and electricians’ storage facility. Buildings which could be opened to the public include the chief caretaker’s house, cave guides building and ticket office. There are two or three old cottages on the left hand side of the road, at the steep descent, coming from the Sydney side that are in poor condition and need a lot of work.
The Wallaby Enclosure (fenced off to house wallabies and koalas) has been vandalised and needs tidying up. People get lost along the trail. The Grand Arch is an extraordinary geological feature but should not be managed with a main road running through the middle of it.

**Question 4: Have there been any favourable or unfavourable changes or decisions at Jenolan in the past?**

In Question 4, respondents were asked whether there had been any favourable or unfavourable changes or decisions at Jenolan in the past. Many of the interviewees recalled unfavourable changes and decisions including the construction of the poorly designed and inefficient bistro, which is out of context with the heritage of Caves House.

Funds being spent in other areas or lack of funds to particular areas were noted. For example, there is a problem with invasive weeds in the area, particularly in the valley. Funds are required and a lot of time and energy has already been spent trying to control this. Public support in the form of funding from State or Federal Government was also identified by one respondent as being of increasing importance, noting the current declining market for tourism.

Management of Jenolan was a controversial issue. One respondent discussed how it was confusing figuring out what government departments "runs what, it has been too much, with every change. It needs some stability. There is a need to say this is how it will be managed for this number of years." Further, management under NPWS was cited as being an issue. One respondent felt that NPWS doesn’t enjoy a high reputation. There is concern that they will not adequately engage the public and share power. Another respondent mentioned that some people would fear the transferring management of Jenolan to DECC.

Another perceived unfavourable decision was the closure of the camp ground at the end of the Blue Lake Walk. This has resulted in a lack of affordable accommodation in the area, particularly for backpackers. Other unfavourable decisions mentioned included the involvement of the private sector in cave tours [nb this was proposed but never went ahead], traffic issues on Five Mile Road and the construction of concrete encapsulated lamps in the Grand Arch area. This area needs tidying up and guides require a sheltered space.

Respondents gave mixed answers to self-guided tours at Nettle Cave. Whilst there was concern with the infrastructure and design, it has diversified the cave tour experience and people are able to listen to the tapes as they go.

Favourable decisions at Jenolan included the redevelopment of the show caves: stainless steel and LED lighting has provided better interpretation and protection of the caves and is more environmentally friendly. Another positive change noted was the removal of feral fauna and flora, such as foxes.

**Question 5: What sort of social function or role does Jenolan provide to the public?**

Jenolan provides a positive social function for locals and visitors alike. The site gives residents the opportunity to do something different, particularly for special occasions. Further, Jenolan provides a variety of activities, including special cave tours, carols by candlelight in the Grand Arch and concerts to encourage social interaction. Anti-social behaviour at the site has occurred, often when the there are big tour parties. When the place is crowded, it can be quite difficult to engage in social interactions.

The site is a centre for education and provides people from all nationalities with the opportunity to visit the show caves and enjoy the European heritage of the precinct. It is an outdoor opportunity for an educational experience and is more about experiencing the Australian environment outside the city. Jenolan is a popular destination for school groups. It inspires young people and gets them enthused about geology, science, and outdoor recreation. During the school holidays there is a stream watch program for school children and there are other holiday programs for children. Further, in June/July, Santa comes to the caves. There was a need identified for an Environmental Centre (or similar) on the site by some respondents, providing a forum for tour and school-group briefings.
Question 6: What are specific places within the Jenolan reserve that you feel are important to visitors and the community?

- The caves - ten show caves and one self guided, as well as over 300 others that can be used with permission for qualified people. Jenolan Caves were the first caves (internationally) to be lit electrically. There is a donkey engine just out of the Grand Arch (but it is not signposted, just there). The original system used a Leffel Wheel. The wheel is still there, but there is no preservation or interpretation. Ten years ago one of the electrical companies was interested in preserving it, but this didn’t eventuate.
- The walk down the river or the walk through the playing fields (via Carlotta Arch).
- Six Foot Track – ends opposite Caves House. At the Carlotta Arch, walkers from Katoomba first make contact with the caves, it is a focal point for walkers on the track, both arriving and leaving.
- Caves House - has inadequate access for non-overnight visitors. The above ground interpretation could be improved. It needs to be more innovative, more modern with a better use of technology.
- Grand Arch – it is quite a sight coming down the hill going through the Grand Arch. The roads in and out (both directions) are spectacular. The limestone bridge. Think of those who built them.
- Devil’s Coach house
- Wild caves
- Vantage points with views and vistas
- Ticket office
- Hydro plant
- McKeown's Valley
- Blue Lake precinct and the walk along the river - interpretation is good, but needs updating
- Scenic value of the area
- The Reserve has become important to the community due to its conservation value. It provides the opportunity for escape or to join an adventure tour.

Question 7: In what ways is Jenolan culturally significant in relation to European histories in Australia or local history within the region?

The entrepreneurial effort is culturally significant. The first guide was Jeremiah Wilson, who was keeper from 1866 to 1890s, who first took visitors down by horse and cart. Before that locals and farmers used to take people in. It used to be self sufficient; it had its own farms within the Reserve. The fact that Jenolan was discovered early in the piece added to the attraction of settlement. It made itself attractive to overseas visitors. A lot of European photographers visited and other visitors came from all over the world, bringing different cultures to the region. They included WWI soldiers; Governors; King George V1, Queen Elizabeth and Lord Carrington.

Until post WWI, Jenolan was Australia’s leading tourist destination. It had a long tradition of being the place to go to for honeymoons and celebratory trips. The caves were the first tourist icon in NSW and are a tourism Mecca. There are apocryphal stories of bushrangers hiding in the caves. Technically it meets all national or state criteria for heritage listing. The site was set aside for the preservation of caves before a national park was created anywhere in the world. It is the first conservation reserve in the world, dating to 1866. It preceded Yellowstone by 6 years and was 12 or 13 years ahead of the Royal National Park.

The area also has a strong engineering heritage, with the first hydro electric scheme providing cave lighting as well as de Burgh’s Bridge (De Burgh was important in early engineering). The Six Foot Track was the first tourist track funded by Parliament. Caves House (the original section) was built in 1889; other sections were added from 1915 to 1924. Caves House provides evidence of past protocols, dining practices. There is a public perception of exceptional quality.

There is a theory that people visit as children, then return as teenagers and then come as adults. Jenolan has long standing links with the community.
Question 8: Do you feel current facilities for visitors at Jenolan are appropriate?

Respondents were asked whether they felt the current facilities for visitors to Jenolan were appropriate. The answers were varied in nature, but several interviewees discussed the lack of visitor or interpretation centre, which would provide clearer details about the site and act as a social, focal point in which groups could meet.

An issue which was raised in terms of facilities was accommodation. Caves House is an expensive choice for accommodation and was noted for its poor amenities. Further, Caves House lacks an adequate visitor's centre and exhibition/learning space. One respondent suggested converting the old laundry behind Caves house into an interpretation centre/conference centre. There appears to be a lack of affordable accommodation on site as the old camping ground has closed. Backpackers can no longer camp at the Caves, and will organise a bus at the other end to take them out.

Another concern at Jenolan discussed by respondents was the parking facilities and traffic management. A visitor management system is required to better allow the movement of people through the valley and the reserve. At present, there is a conflict between traffic and pedestrians and people wanting a quiet contemplative experience and the hustle and bustle of crowds. There needs to be more parking, and vehicles removed from Grand Arch. It is spoilt by cars and sometimes buses are parked there. Parking in peak visitor times is a problem. There has previously been discussions about constructing a lift from a parking area on top of the hill, but it would be complicated for people with disabilities. Parking could be provided off site and transport located at Five Mile Hill [nb this is sometimes provided during peak periods]. An overflow car park for peak times is required and could be located on the Lithgow side of the Grand Arch or the old camping group. A bus could service the main caves area.

Some respondents discussed the issue of the toilets in the Grand Arch. One interviewee suggested they were needed, particularly after a long visit to the caves. On the other hand, there is an argument that there shouldn’t be a pollution source in such an iconic place.

Question 9: What sort of economic contribution does Jenolan provide to the region and its communities?

The Reserve provides employment in the area. It employs locals as guides, in reception and Caves House staff. There is also the flow on effect. Food is purchased locally. People who are visiting may stop in Oberon for fuel and visit other things. Jenolan is part of the Greater Blue Mountains Tourist region, part of local, regional and state tourism. Shops throughout the mountains benefit. People go to town, spend in craft shops, and buy clothes and food. People often go to the museum from the caves. Mechanics are called out to breakdowns. People may leave Sydney on a Sunday morning, stop for tea or coffee on the way and then stop for a meal somewhere in the mountains on the way home.

Most visitors from overseas are day trippers. Overnight visitors are more likely to be from Australia. The Trust provides weekend entertainment e.g. musical weekends, historical weekends and carols by candlelight. This is helping attract people to the area and locals can go as well.

Question 10: General Suggestions

General suggestions from the respondents were mixed, given the nature of the topic. One respondent mentioned that cavers feel their work is unrecognized and would like to form part of an advisory group to have input over issues with Jenolan. Traffic is an ongoing issue and the road going in has a different risk profile to most. It is necessary to look more carefully at traffic management for future years. When the recent work was undertaken, the road operated as a one way road, bringing traffic in one direction and out via Two Mile Hill. This could be looked at as a way of managing traffic in the future. Another interviewee discussed the removal of cars in the Grand Arch. One respondent debated the nomination of the caves separately on the World Heritage List. The importance of the staff should be emphasised, the top guides, staff at ticket office and Caves House are an integral part of visitor satisfaction and for protecting assets.
The Government has made a strong commitment to Jenolan and has demonstrated this over the last 5 years, with $3 million for infrastructure and $3 million for Caves House. Redevelopment of the sites at hill flats, the laundry, the Burma Road complex (buildings on the road, on the karst) should be considered. Further, there needs to be more integrated marketing with other cave destinations, for example information about Jenolan at Yarrangobilly and vice versa; cross marketing. Perhaps a new activity to encourage people to the area such as abseiling or bungy jumping could be looked at. A lot of work needs to be done on Indigenous associative values and further focus on Aboriginal heritage in the Reserve. There should be a requirement in CMP for an Aboriginal Cultural Heritage Plan, including values, sites and with consultation.

**Adaptive Reuse**

There are a number of sites at the Reserve which have the potential to be redeveloped for adaptive reuse. A good example of this which has already taken place is the conversion of the old post office into a museum. The old school is presently used for internal meetings and as a base for adventure tours. The school could be partially converted into a bistro, where staff and visitors could meet, providing a better understanding of the visitors. Alternatively, informal refreshments could be provided under the Grand Arch, resulting in a more natural flow for social interaction. The old electricians building, which has heritage value, could become a small interpretative centre or information centre. The (previous) living quarters for staff, located in a 1970s pine-clad structure are poorly maintained and have limited heritage value. It could possibly be demolished as there is no need for the building and does not add to the aesthetic of the site.

**Signage**

In general, signage at Jenolan is adequate, but could be improved. Most of the sites depend on guides relating information. The signage at the Grand Arch is too busy and has too many messages. It is not the best quality for an iconic feature. There could be bilingual brochures which could be taken and then returned to make areas more accessible to overseas visitors. Currently international visitors are consigned to highly regulated tours. There should be more about the history of Caves House and more information about the discovery of the caves e.g. “this part of the cave was discovered by…” Signage needs to be located where the people are.

There is not an adequate visitors’ centre. Whilst there is a small interpretative section in the ticket office, it needs to be bigger. The centre would provide a space where a group could be briefed on how the caves were formed (perhaps in Wallaby House which is not currently used, with signage for people to get there). There should be international signage on toilets and international signage wherever possible. Signage on walking tracks needs replacing, most is old and in poor condition. Directional signage is generally satisfactory, but maps need upgrading. A nice entry sign to Jenolan is required [nb there is an entry sign]. The Trust used to have one, but the NPWS sign isn’t adequate.
5 Comparative Analysis

The comparative analysis of the Reserve in this section refers to local, state, national and international comparisons for natural heritage, Aboriginal heritage, European heritage and the cultural landscape.

5.1 Natural Heritage

5.1.1 Natural Landscape

The Jenolan Karst Conservation Reserve is part of the Greater Blue Mountains World Heritage Area, which was inscribed on the World Heritage list in December 2000. The contiguous national parks and state recreation areas in the Greater Blue Mountains, of which Jenolan Karst Conservation Reserve is part of, covers some 1,200,000 hectares. The parks are half pristine wilderness areas and close to Greater Sydney……

A similar example is Yosemite National Park in USA which is close to San Francisco and also listed on the World Heritage List for its natural environment.

The following conservation reserves make up the Greater Blue Mountains World Heritage Area:

- Blue Mountains National Park;
- Wollemi National Park;
- Kanangra-Boyd National Park;
- Yengo National Park;
- Gardens of Stone National Park;
- Nattai National Park;
- Thirlmere Lakes National Park; and
- Jenolan Karst Conservation Reserve.

The Greater Blue Mountains World Heritage Area was listed primarily for the evolution and diversity of its eucalyptus related vegetation, as the area contains the globally most diverse expression of eucalypt dominated ecosystems. It is a million hectares of contiguous protected reserves over ancient dissected sandstone plateaus, interrupted by basalt outcrops and limestone karsts, of great geo-diversity.

The Reserve is highly significant as the first public reserve set aside in NSW for the protection of a natural resource - in this case, the caves, and predates the creation of the Royal National Park in 1879.

5.1.2 Geology

The Reserve is significant for its caves and karst landscape. Karst landscapes are named after the great limestone Karst Plateau in Slovenia, and are formed from rock that dissolves in water, such as limestone, dolomite or chalk. There are four Karst conservation reserves in NSW: Abercrombie, Borenore, Wombeyan and Jenolan. Jenolan is one of the most visited geological sites in NSW.

The Reserve’s three karst bridges: the Grand Archway, Devil’s Coach house (at present stream level), and Carlotta Arch (at a higher level), are internationally renowned. The extent of cave development in a relatively thin body (outcrop width of 300mm) of steeply dipping limestone is remarkable.

The Reserve is renowned for its range and profusion of calcite speleothems, including examples of less common forms such as helictites, ribbon helictites, shields, monocrystalline stalagmites and sub aerialstromatolitites. Aragonite speleothems, often with spectacular morphology, are also found in restricted localities. Gypsumite speleothems are significant and include forms not reported elsewhere. The Reserve

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70 National Parks and Wildlife Service 1998:56
71 National Parks and Wildlife Service 1998:12
72 DECC 2009: 41
also contains a variety of phosphatic, ferrous and manganiferous minerals. These are predominantly of biogenic origin. There is a substantial range of clastic cave sediments, including sand, gravels, laminated clays, red cave earths and a variety of facies deposits, occurring in a variety of relationships at all levels within the cave system. 73

The karst contains over 300 tagged cave entrances. ... The caves contain rich troglobitic fauna, outstanding aesthetic qualities, and a diverse range of speleothems (i.e. cave formations) and minerals. Many of the caves contain river sediments and surface in-fills as a consequence of past environmental events. These sediments contain valuable information on past climate and vegetation change, and provide a visual representation of pre-existing landforms. The remains of extinct fauna and flora can also be found throughout the caves although minimal research has been conducted in this area. 74

5.1.3 Flora and Fauna

The Jenolan Caves Reserve is of state significance for the number of rare and uncommon flora and fauna species which have been recorded. The caves are noted for containing the greatest diversity of cave invertebrates in NSW.

The remains of extinct fauna and flora can also be found throughout the caves although minimal research has been conducted in this area 75.

5.2 Aboriginal Heritage

The known Aboriginal archaeological sites of the Reserve, identified earlier in this document (Section 2.9 - Description of Aboriginal Archaeology) are predominately small overhangs with art and artefacts, grinding grooves, disturbed artefact scatters and a burial. The potential archaeological resource and sites are likely to include further rock shelters, overhangs, art (pigment or engraved) and artefacts scatters within the Reserve.

Extensive studies by Eugene Stockton in the eastern lower and central Blue Mountains indicate a predominance of rock shelters, art sites, open site (artefact scatters) and grinding grooves located adjacent the major creek and drainage lines, as is the case in the Reserve. 76 Stockton suggests that the hunter-gatherer movement occurred seasonally between the lower and upper valleys and the broader plateau (Cumberland Plain). Given the location of the Reserve (on the western side of the Great Dividing Range rather than the eastern side), the ephemeral or seasonal use of the Reserve in favour of a longer term occupation of the Western Slopes/Plains can also be considered likely. Josephine Flood in her definitive study of the Snowy Mountains also suggest an seasonal use of the mountain environment through the exploitation of the ‘Bogong Moths’ and the increasing population pressures on coastal environments from rising sea level (and subsequent loss of territory). 77

Based on excavations of several rockshelters in the Blue Mountains, occupation of the region began at or following the Last Glacial Maximum between 22,000 and 12,000 years ago, demonstrated by Kings Table (basal age of 22,240 ± 1.000 14C years BP), Shaws Creek KII (basal age of 12,980 ± 480 14C years BP), Springwood Creek (basal age of 8,730 ± 330 14C years BP), Lyrebird Dell (basal age of 12,550 ± 145 14C years BP), and Walls Cave (basal age of 12,000 ± 350 14C years BP). 78 All of these sites are occupied sporadically until the last 1,000 years. Similarly, Eagle Reach is only thought to be of mid to late Holocene (5,000 years BP to present) based on art style 79. Flood’s analysis of several rockshelters (including Cloggs Cave and Sassafras I and II) and an open site (Nardoo) which also

73 DECC 2009: 41
74 DECC 2009:41
75 DECC 2009:41
76 Stockton 1993
77 Flood 1980
78 Stockton and Holland 1974; Kohen et al. 1984
79 Tacon et al. 2008
indicates initially occupation from 17,000 years ongoing (and expanding) until the recent past.\textsuperscript{80} This accumulated evidence suggests that the sites present within the Reserve can be considered to be less than 20,000 years, and most likely under 5,000 years in age based on their disturbance and art styles.

After beginning in earnest the 1980’s (although suggested as early as the 19th Century)\textsuperscript{81}, the debate over Aboriginal hunting of Megafauna versus natural extinction is still ongoing\textsuperscript{82}, and hence where sites containing Megafauna occur, they are of immense importance to archaeological and environmental research. Currently no archaeological sites containing Megafauna remain are known in the Reserve, however the potential (especially given the size and extent of the Chifley Cave as an example) for such limestone caves to retain both archaeological deposits and Megafauna must be considered high, and if discovered would be of very high archaeological significance.

In summary, the known archaeological sites located within the Reserve are considered to be typical examples of the local and more regional picture of Aboriginal occupation of the Blue Mountains and wider Great Dividing Range. The archaeological resource of the Jenolan Caves currently exhibits only small and ephemeral sites that are more likely to relate to the recent past (i.e. the last 5,000 years), rather than the sites of greater antiquity, which are generally of significant size and scale (e.g. Cloggs Cave, which was over 15 m wide, 20 m deep and 7 m high).

While the known archaeological sites are of relatively limited archaeological importance when placed in a local and regional context, the potential for significant sites within the Jenolan Karst Conversation Reserve is high. It is considered likely that prior to European use, the Caves of the Karst system may have retained extensive and/or old deposits of a similar nature to those found in Puritjarra in Central Australia, Cloggs Cave in the Snowy Mountains (which itself is within limestone) and Koonalda Cave in the Nullabor Plains. While comparisons cannot be made on potential sites within the Reserve, the potential for other sinkholes and/or limestone caves within the Reserve is considered high, and hence the potential for early Holocene or Pleistocene (>10,000 years) deposits, as found in Cloggs Cave, Allens Cave and Koonalda Cave, is also considered to be high. Subsequent comparative analysis of the Reserve following future discoveries may find closer comparisons with these older Pleistocene sites, in contrast to the more recent ephemeral sites discussed here.

Within a continent settled over millennia by indigenous peoples, this protected area is rich in evidence of the cultural continuity of its Aboriginal occupants and their artistic and spiritual expression. The landscape is scattered with dreaming sites and rock art.\textsuperscript{83}

5.3 European Heritage

5.3.1 Tourism - Caves

The Karst region of Slovenia was being explored in the 17\textsuperscript{th} Century, including marking out passages and noting certain formations. The Caves of Aggtelek Karst and Slovak Karst are listed on the World Heritage List.\textsuperscript{84} The Škocjan Caves are limestone caves within the karst region, which is one of the most famous in the world for the study of karstic phenomena.

Touring caves was a well established fashion in England in the 18\textsuperscript{th} Century, such as Poole’s Hole and Peak Cavern in England’s Midlands.\textsuperscript{85} Early visitors to caves were not very concerned with the technical aspects of the limestone formations, rather then their romantic notion. The English were somewhat late in taking up caves as a scientific study in comparison to other European countries. In the United State of America the Mammoth Cave in Kentucky was a significant tourist destination, but more so for the mummified native American found in the cave in 1816 and it was not until the 1850s that the limestone features in the cave was the main draw-card.

\textsuperscript{80} Flood 1980
\textsuperscript{81} Grayson 1983
\textsuperscript{82} Wroe and Field 2006
\textsuperscript{83} National Parks and Wildlife Service 1998:11
\textsuperscript{84} UNESCO 2009A
\textsuperscript{85} Horne 2005:232-236
The modern geological explanation for the existence of limestone formations was proposed in 1812 by French naturalist Georges Cuvier, who stated that lime deposits were a consequence of carbonic acid in solution which dissolved limestone rock, and upon evaporation left glittering crystals. The theory was first published in English in 1820.

New South Wales developed a reputation as the place to see limestone caves from the 1830s including:
- Jenolan Caves (near Oberon); discovered in 1838;
- Wellington Caves (near Dubbo);
- Abercrombie Caves (near Bathurst);
- Yarrangobilly Caves (Kosciuszko National Park);
- Wombeyan Caves (near Goulburn); and
- Borenore Caves (near Orange) within Borenore Karst Conservation Reserve; previously managed by the Jenolan Caves Reserve Trust, along with the Jenolan, Abercrombie and Wombeyan Caves; discovered in 1830 by first European visitor.

The placing of Jenolan Caves under public management in 1866 is an example of the pioneering conservation associated actions in the Blue Mountains area. Later Jenolan Caves was the first viewing cave to be lit by electricity. By way of comparison the inscribed United States natural property Mammoth Cave was not protected until 1926.87

Jenolan Caves has nearly 40km of surveyed passages, which are all interconnected and mostly accessible to tourists, making them one of Australia’s longest caves. The world longest cave system is the Mammoth Cave in Kentucky, USA, with more than 580 km of caves surveyed.88 The complex system at Jenolan Caves is one of the largest underground cave systems in the world, and it was only recently it was proclaimed the oldest open cave system in the world.

Scientific analysis of the caves was active throughout the 19th Century and early 20th Century, however from the 1930s to 1980s there was very little scientific work undertaken. Since the 1980s there has been a steady rise in access by the scientific community and areas of scientific research. Jenolan Caves has recently been claimed to be the oldest cave system in the world that has been dated by absolute techniques89 and is Australia’s most visited caves.90

Significant limestone cave sites in Australia include:91
- Naracoorte Caves, SA; discovered in 1845; listed on World Heritage List along with Riversleigh in Queensland for fossils sites; also listed on State Heritage List for SA;
- Ngilgis Cave (formerly known as Yallingup Cave), WA; discovered in 1898; listed on State Heritage List for WA;
- Cutta Cutta Caves (near Katherine) within Cutta Cutta Caves Nature Park, WA; discovered in 1900; not heritage listed;
- Marakoopa Caves Tasmania (Karst) within Mole Creek Karst National Park; discovered in 1829; not heritage listed;
- Chillagoe-Mungana Caves within Chillagoe-Mungana Caves National Park, Queensland; discovered in c. 1888; not heritage listed; and
- Buchan Caves, Victoria; first cave discovered in 1907; the Buchan Caves Reserve is listed on the Victorian Heritage Register.

86 Department of Environment and Climate Change 2009B and 2009C
87 National Parks and Wildlife Service 1998:54
88 National Parks Service 2009
89 Osborne et. al. 2006:377
90 Osborne et al 2006; EPA 2009
91 Bodycoat 1996:3; UNESCO 2009B; EPA 2009; Tasmanian Land Conservancy 2008
There are some limestone cave sites that are listed on the World Heritage List solely for this reason, namely Mammoth Cave National Park, United States of America (discovered in 1859) and Cango Cave, Oudtshoorn, South Africa (discovered in 1780). Many other cave sites are listed on the World Heritage List for other values, such as cave sanctuaries and wall paintings (e.g. Mogao Caves, China; and Cave of Altamira, Spain) or cave monuments and sculpture associated with religious activities (e.g. Ajanta, Elephanta and Ellora Caves, India).

5.3.2 Tourism - Accommodation

At the turn of the 20th Century mass tourism arrived at the caves, partly thanks to the motor vehicle. There was still scientific analysis of the caves, but the focus was on tourism. The increasing number of visitors and demand for new experiences other than visiting the caves gave way to the development of new visitor accommodation, as well as service infrastructure and staff accommodation.

Jenolan Caves House may well be amongst the first examples of attempts by a government authority to promote and regulate tourist development at an area of acclaimed heritage value. It is certainly the first such attempt in Australia.

The development of Caves House within colonial society in Australia in the Victorian period is unusual, as first class hotels throughout the British Empire were normally the province of private enterprise. The idea of government funded accommodation was not new in Australia, as Governor Macquarie of NSW introduced a policy specifying the construction of inns when granting parcels of land in the early years of the colony. Many inns were encouraged along the pike roads constructed for coach travel, with surviving examples today including the Settlers’ Arms, St Albans, 1848 and the Court House Hotel, Windsor, 1841, but these were not government ventures.

Some cave sites in the world do not allow onsite accommodation, such as Oudtshoorn (South Africa). Other cave sites within Australia have onsite accommodation, although not as iconic as Caves House includes Caves House, Yarrangobilly Caves, Kosciuszko National Park, NSW and Caves House, Yallingup Caves, WA (originally built 1905 and rebuilt in 1938) listed on the State Heritage Register of WA (Figure 30). Wombeyan Caves House in NSW was burnt down in 1935 and has not been replaced (Figure 31), however there are camping facilities and on-site cabins associated with the caves.

Figure 30 – Caves House, Yallingup, WA


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92  Cango Caves 2009; National Parks Service 2009
93  Dunkley 2007:47
94  Moore 1988A:40-41
5.3.3 Cultural Landscape

The development of terraced gardens associated with the development of tourist accommodation and facilities within natural landscape settings, often located in close proximity to and to take advantage of the attraction of geographical / geological features was common at the turn of the century.

While many tourist accommodation developments occurred in conjunction with townships, as is the case throughout the Blue Mountains area, for example Hydro Majestic (1904), few examples exist in isolation.

Whilst it was the natural features of the landscape that were the primary attraction, there was a need to set the buildings in a managed landscape that would be familiar to the visitors and not perceived as being as hostile as the Australian bush.

Developments in Australia comparable to the Jenolan Caves – Caves House Precinct in their era of development and setting are rare. One development that is of a similar era, scale and natural setting is Mt Buffalo Chalet in Victoria, which is rated of State Significance.

In the case of most of the examples cited, it is the landscape setting of the built form and accompanying exotic vegetation, in conjunction with the dramatic natural landscape that combine to create a landscape of high scenic quality.

The karst system has necessitated other more recent developments and innovative designs, specifically in relation to the treatment of water and sewage, where the use of ultra violet filters was employed to minimise damage to the Karst in association with the use of chlorine filters. Jenolan was the first in the State to utilise this technology for sewage and the use of this technology in the treatment of water is also quite early95.

5.3.4 Caves Infrastructure

Jenolan Caves are leading the way for other cave sites in the world with their innovative design and solutions to show the caves to tourists, whilst conserving the important geological features over the long-term. Several papers have been written and published in the Australian Journal of Earth Sciences, Broadkarst News and other journals noted in the Bibliography. Other cave managers and other prominent figures have visited Jenolan Caves to look at the technological advances within the caves, as well as the advances in the Reserve’s interpretation and geo-tourism.96

95 Bennett 2009 pers. comm.
96 Cove 2009 pers. comm.
6 Assessment of Significance

The statement of significant from the World, National and State heritage listings is included below, and new statements of significance have been developed for the seven precincts within the Reserve, and for the cultural landscape.

6.1 Assessment Criteria

6.1.1 World Heritage Assessment Criteria

To be included on the UNESCO World Heritage List, sites must be of outstanding universal value and meet at least one out of ten of the following selection criteria:

1. To represent a masterpiece of human creative genius;
2. To exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;
3. To bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
4. To be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;
5. To be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
6. To be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);
7. To contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;
8. To be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;
9. To be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;
10. To contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

6.1.2 National Heritage Assessment Criteria

To reach the threshold for the National Heritage List in Australia, a place must have 'outstanding' heritage value to the nation, as assessed by the Australian Heritage Council. This means that it must be important to the Australian community as a whole. There are nine National Heritage criteria against which the heritage values of a place are assessed.

a. The place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history;
b. The place has outstanding heritage value to the nation because of the place’s possession of
uncommon, rare or endangered aspects of Australia's natural or cultural history

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

d. The place has outstanding heritage value to the nation because of the place’s importance in
demonstrating the principal characteristics of:

e. a class of Australia's natural or cultural places; or

f. a class of Australia's natural or cultural environments;

g. 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

h. The place has outstanding heritage value to the nation because of the place’s importance in
demonstrating a high degree of creative or technical achievement at a particular period

i. The place has outstanding heritage value to the nation because of the place’s strong or special
association with a particular community or cultural group for social, cultural or spiritual reasons

j. 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, of importance in Australia's natural or cultural
history

k. The place has outstanding heritage value to the nation because of the place’s importance as part of
Indigenous tradition.

6.1.3 State Heritage Assessment Criteria

The Heritage Council of NSW have developed the following set of seven criteria for assessing heritage
significance, which can be used to make decisions about the heritage value of a place or item:

A. Historical Significance; an item is important in the course or pattern of the local area’s cultural or
natural history.

B. Associative Significance; an item has strong or special associations with the life or works of a
person, or group of persons, of importance in the local area’s cultural or natural history.

C. Aesthetic Significance; an item is important in demonstrating aesthetic characteristics and/or a
high degree of creative or technical achievement in the local area.

D. Social Significance; an item has strong or special association with a particular community or
cultural group in the local area for social, cultural or spiritual reasons.

E. Research Potential; an item has potential to yield information that will contribute to an
understanding of the local area’s cultural or natural history.

F. Rarity; an item possesses uncommon, rare or endangered aspects of the local area’s cultural or
natural history.

G. Representative; an item is important in demonstrating the principal characteristics of a class of
NSW’s (or the local areas); cultural or natural places; or cultural or natural environments.

There are two levels of heritage significance used in NSW: state and local. The precinct assessments in
this CMP have been prepared in accordance with the ‘Assessing Heritage Significance’ (2001)
guidelines from the NSW Heritage Manual. The inventory forms (Volume 2 of this report) include the
assessments of each of the elements within the precincts.
There are also significance assessment guidelines in relation to Aboriginal sites. Aboriginal significance is assessed in relation to archaeological or cultural significance. Aboriginal people are more likely to value sites for cultural rather than scientific reasons. Archaeologists normally assess the significance of Aboriginal sites in NSW when it is threatened or potentially threatened by development or when a plan of management for a site or area is being developed. Significance assessment criteria for Aboriginal sites include research potential, educational potential, representativeness, rarity and aesthetic values.

6.2 Statement of Significance – World Heritage Listing

6.2.1 Greater Blue Mountains

The Greater Blue Mountains (of which the Reserve is part) was inscribed on the World Heritage List in 2000, after being assessed as having outstanding value under criteria 9 and 10. The place has:

Outstanding examples representing on-going ecological and biological processes significant in the evolution of Australia’s highly diverse ecosystems and communities of plants and animals, particularly eucalypt-dominated ecosystems

And includes:

Significant habitats for in situ conservation of biological diversity, including the eucalypts and eucalypt-dominated communities, taxa with Gondwanan affinities, and taxa of conservation significance.

The full text of the values indentified by the World Heritage Listing is in Appendix B.

6.3 Statement of Significance – National Heritage Listing

In May 2007 the Greater Blue Mountains were one of 15 World Heritage places included in the National Heritage List. The listing assessment used in the National Heritage List is the same as that on the World Heritage listing assessment and Statement of Significance. Although the values relate to the whole of the Greater Blue Mountains, they include reference to the following:

The Greater Blue Mountains is considered one of the most important areas of natural and cultural history in Australia (Criterion 1). The area includes one of the largest and most beautiful interconnected caves systems in Australia and is an outstanding site of geological and speleological interest, and is the iconic Australian example of a cave system with associated visitor facilities (Criterion 4). The karst landscape and the known caves exhibit outstanding aesthetic characteristics valued by both the Aboriginal and European communities (Criterion 5).

The Caves Reserve was created in 1866, six years before the declaration of the world’s first National Park. The first use of electric cave lighting in Australia was employed here in 1887, and the first use of hydro-electric power in Australia occurred at the site in 1889. The Reserve demonstrates a high degree of creative or technical achievement at a particular period (Criterion 6).

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97 Department of Environment and Climate Change 1997:88-99
6.4 Statement of Significance – State Heritage Listing

6.4.1 Jenolan Karst Conservation Reserve

The State Heritage Register listing (in June 2004) contains the following Statement of Significance for the whole Reserve, which includes cultural heritage places outside the Visitor Use and Services Zone:

Jenolan Caves Reserve is of state significance for its historical, aesthetic, research and rarity values. The caves and karst landscapes developed as important scientific and tourist destinations throughout the late 19th and 20th centuries, and the Reserve is highly significant as the first public reserve set aside in NSW for the protection of a natural resource - in this case, the Jenolan Caves.

The Reserve is highly regarded for the aesthetic qualities of the caves and cave formations, reflected in cave names such as Aladdin and Gem Cave; for the ability of the caves to demonstrate technological developments such as the first use of electric cave lighting in the 1880s, and the first development of hydro-electric power in Australia. The setting of the caves hamlet in the Jenolan Valley, with the tiny hamlet and picturesque Caves House almost dwarfed by steeply rising cliffs on all sides, the entrance into the hamlet through the fortress-like Grand Arch, and the distinctive Blue Lake formed by the weir for the hydro-electric scheme, all combine to form a landscape of great beauty and distinctiveness.

The Reserve has the ability to yield information on the geological history of NSW and of the Australian continent, and for the archaeological potential of the hamlet area to provide evidence of the early period in the development of tourism in NSW.

The number of rare and uncommon flora and fauna species to which it is home, especially within the caves; and the evidence it can demonstrate of the development of tourism, especially mountain and caving tourism, in NSW, add to the significance of the Jenolan Caves Reserve (HO).

The geomorphic history of the Jenolan Caves system is extremely complex, the cave system contains an exceptionally diverse variety of karst and cave types illustrating the full range of processes and products from incipient, scarcely perceptible depressions through to multistage cave developments and decayed remnant features. The McKeown Valley, north of Blue Lake contains the finest such assemblage in Australia. The Jenolan River valley is one of the most outstanding fluviokarst valleys in the world. The range and diversity of the karst and decoration, including a remarkable diversity of mineral species, is varied, profuse and equal to the finest in the world. The Jenolan Caves and surrounding areas contains a very diverse assemblage of morphologies and mineral species. There is evidence in these features of the influences of palaeo-landscapes.

The contribution to the formation of the landscape of structural influences, lithological influences, and drainage patterns is the source of considerable scientific and educational interest at Jenolan. The geomorphology of Jenolan includes a variety of non karstic phenomena that are important because of their relationship with the karst. Because these features lie adjacent to, and in some cases over, the karst they give considerable insight into the formation of the karst. A large number of invertebrate fossils have been discovered in the limestone of the Jenolan Caves. These include corals, stromatoporoids, algae, brachiopods, gastropods and straight nautiloids. Subfossil remains of many vertebrates are also found in the caves.

The caves provide shelter and habitat for a number of rare species including the sooty owl (TYTO TENEBRICOSA TENEBRICOSA) (rare in Australia) which roosts in the cave known as the Devil's Coach House and the Jenolan Caves Reserve supports a population of the brush tailed rock wallaby (PETROGALE PENICILLATA). This species is listed as vulnerable on Schedule 12 of the NSW National Parks and Wildlife Act. Also found in the caves is the opilionid arachnid (HOLONUNCIA CAVERNICOLA) which is known only from the Jenolan Caves system. The Caves Reserve contains three rare or endangered plant species. These are PSEUDANTHUS DIVARICATISSIMUS (3RC), GONOCARPUS LONGIFOLIUS (3RC), and GERANIUM GRANITICOLA (3RC). In the latter half of the 19th century the caves were recognised as perhaps the premier natural attraction in Australia. Although they no longer
occupy this role, Jenolan remains one of the most important natural heritage areas in Australia. The caves are a very high profile natural feature in NSW. The Jenolan Caves area is widely used as a research and teaching site for studying the geomorphology and processes involved in karst formation (RNE, 1978).

Jenolan is one of the most important areas of natural and cultural heritage in Australia. The area includes one of the largest and most beautiful interconnected cave systems in Australia and is an outstanding site of geological and speleological interest. The Jenolan River, Blue Lake and a system of intimate valleys and watercourses provide a magnificent setting for a distinctive range of native vegetation and fauna. The Caves Reserve was created in 1866, six years before the declaration of the world's first National Park. Since its reported discovery by James Whalan between 1838 and 1841 the area has attracted more than three million visitors. Caves House, and its associated outbuildings, adds to the area's cultural significance. The area also contains a number of important industrial relics, including Australia's first hydro-electric power station and the remnants of the first electric lighting of caves which was installed in the Chifley Cave in 1887 (National Trust of Australia, 1985).

The condition and integrity of the Reserve remains largely as in 2004 therefore this Statement of Significance remains relevant.

6.4.2 National and State Historical Themes

The primary National themes relating to the significance of the Reserve include:

- Theme 1 - Tracing of the Natural Evolution of Australia;
- Theme 2 - Peopling Australia;
- Theme 3 - Developing local regional and National Economies;
- Theme 4 - Building Settlements, Towns and Cities;
- Theme 7 - Governing; and
- Theme 8 - Developing Australia's Cultural life.

The main NSW themes relevant to the Reserve revolve around the importance of the natural environment, the imposition of the cultural landscape that evolved through European occupation, the importance of technology and the establishment of utilities in developing the remote village, the impact of Government administration on the site, the growth of the pursuit of leisure, and the scientific resources of the archaeological sites. Other more intangible themes are the Aboriginal significance of the site, and the exploration of the caves, and the families who explored, protected and developed the caves and infrastructure.

6.5 Statements of Significance for the Precincts within the VUSZ

The 1988 CMP concluded that the Grand Arch Precinct, Campground and Utilities Precinct and Bellbird Cottage Precinct were of major cultural significance, with the Five Mile Road Housing Precinct having substantial significance and the Burma Road Precinct having some significance. The Jenolan Cottages Precinct and the Two Mile Road Housing Precinct were considered to have no cultural significance warranting recognition. While this CMP further refines the Statements of Significance for each of the precincts having regard to the current assessment guidelines, the levels of significance do not alter substantially.

6.5.1 Grand Arch Precinct

The Grand Arch Precinct has historical significance as the primary focus of the Visitor experience of the caves since the camping establishment set up by Jeremiah Wilson in 1879. The precinct has local significance as the focus for cave exploration, science and management which have led to increased appreciation and protection of the Reserve’s caves. The Grand Arch Precinct contains the most
significant building in the Reserve, Caves House, which developed primarily between 1896-1923 under the direction of prominent Government architect Walter Liberty Vernon. Caves House (1) is considered to have aesthetic significance at a State level for its internal and external attributes, and particularly for its skilful siting in the valley. The precinct has some level of rarity as a remote Government run guest house in a spectacular park setting, and is generally representative of the development of the site as the appreciation of the Caves has drawn visitors to the site.

Other buildings, structures and historic plantings in the precinct considered to be of state significance are the Seismograph equipment (13), the Old Post Office (18), the Blue Lake and Weir (38, L08), De Burgh's Bridge (39), the site of the Vertical Steam Dynamo (E05), the Leffel Wheel (E06), remnants of the first Sewerage System (E07), and the Terrace Gardens (L04). There are a number of support buildings dating from the late 19\textsuperscript{th} century and the 20\textsuperscript{th} century which are of local significance including the Boiler house (2), the Old Refrigeration House (3), the Gatehouse (6), the Diesel generator House (7), the Workshop (14), The Nest (16), Engineers Cottage (17), former School (25), the Guides Office (Building 28), Substations 1 and 2 (33 and 34), Old Diesel House (37) two Holm Oaks (L01 and L02), Group of Chinese Weeping Cyprus (L03), the Western Red Cedar (L05), and The Big Tree (L06).

6.5.2 Jenolan Cottages Precinct

The Jenolan Cottages Precinct has local historical significance as a former market garden, developed to supplement produce from the Pomona Grove Farm.

6.5.3 Five Mile Road Housing Precinct

The precinct has local significance as part of the first phase of government development and expansion (1896-1906). This period reflects the beginning of mass tourism at Jenolan and the development of the site as a retreat for the wealthy elite. The Five Mile Precinct and Camp Ground and Utilities Precincts are strongly associated with the main Grand Arch precinct and developed as ancillary extensions to the facilities offered in the Caves House precinct. The precinct was established in 1897 as a Police Prefecture and was planned and sited above the road specifically to facilitate supervision of entry into the Reserve. The site of the first official camp ground (1890s) and horse paddocks are also within the precinct.

Although the buildings date to different periods, there is a picturesque rustic aesthetic common to the cottages that gives the precinct an overall cohesion. Cottage F6 is arguably one of the more decorative and prominent cottages in the Reserve and has aesthetic significance. Along with the cottage at F7 the cottage is also significant as a representative example of two of the earliest cottages on the Reserve, both dating to 1916 and both of which are highly intact. Few cottages survive in the Reserve from this period and the buildings are considered rare.

The former NSW Public Works Department (now Department of Commerce) has a long association with the precinct, having designed many of it's buildings and structures.

6.5.4 Burma Road Housing Precinct

The Burma Rd precinct reflects the subsequent and ancillary development of the Reserve in the late 1940s, through to the early 1960s (when Jenolan was recovering from the Depression and Second World War), and this is reflected in a more characteristic austerity of design and materials for built forms. Tourism was also improving in the post war period and necessitated the development of additional staff accommodation, and the reestablishment of the school in the mid 1950s.

It is likely that the buildings in the precinct were built from spec plans by the Government Architects office or the Public Works Department. The precinct has local significance as being representative of post war precinct planning and the cottages are of interest as representative examples of post war cottages on the Reserve (the earliest of which dates to 1947), though many have been modified, which has diminished their significance.

The precinct relates to the Grand Arch precinct via the network of walking trails which connect the precinct with Carlotta’s Arch, the Grand Arch and Caves House. The proximity of the Precinct to the Reserve’s cave system is an on-going environmental concern.
6.5.5 Two Mile Road Housing Precinct

The precinct was founded to provide additional staff accommodation and reflects the building programs which coincided with a period of strong growth in visitor numbers in the 1970s and 80s. This is not however viewed as a significant historical phase or development and the precinct is not considered to be historically significant as the precinct is too recent.

The precinct is associated with the staff and community of Jenolan, however most precincts share this associated and it is not sufficient to meet the criterion.

The precinct reflects the typical modern colonial bush aesthetic of the later accommodation buildings and precincts. The building group is highly intact but does not demonstrate architectural merit or innovation in its design.

6.5.6 Campground and Utilities Precinct

The Campground & Utilities Precinct is of historical significance at a State level as the Precinct housing the infrastructure that enabled Caves House to function and be self-sufficient in such a remote location. It also has historical significance at a State level as the site of the first hydroelectric plant in Australian, in addition to one of the earliest Sewerage Works. The Trout Farm is also believed to be one of the earliest in the country. The Precinct is also of historical significance as it contains the remnants of the former Pomona Grove Farm, which provided meat, fruit and vegetables to the guests of Caves House from the late 1890s – to at least 1919.

The precinct has aesthetic significance at a local level for its picturesque Weir and Trout Ladder, the idyllic setting of the former campgrounds on both the north and south sides of the River, and the physical connection via the steep winding dirt Hydro Road to Jenolan Caves Rd which ensures a dramatic entry and exit from the Precinct.

The site of the former piggery has moderate research potential, and as part of the Pomona Grove Farm which has high historical significance. The potential ruins of the former Pomora Grove Farm House has moderate archaeological research potential. The site of the Hydro electricity station, still in operation, has High Research potential and is of exceptional significance. The site of the Sewerage Treatment plant has little research potential, and is not considered rare.

The Campground and Utilities Precinct has rarity value as one of the earliest precincts, developed from the 1890s, to support the operations in the Grand Arch Precinct.

6.5.7 Bellbird Cottage Precinct

The Bellbird Precinct has local historical significance for its ability to reflect an important stage in the development of the Reserve. The completion of Jenolan Caves Road in 1888 made it possible to develop accommodation to the east of the Grand Arch. Wallace’s Guest House (c1888) was the first such development. The archaeological remains of Wallace’s Guest House indicate not only the need for more accommodation as a result of the increased visitor numbers, but the prevailing custom of siting such buildings in isolated locations with spectacular views, in order to fully appreciate the natural beauty of the area. Similarly, the siting of the two later cottages within the Bellbird Precinct is historically significant as a reflection of the ongoing importance of this romantic philosophy.

The c1888 rubblestone gateposts marking the entrance to Wallace’s Guest House from Jenolan Caves Road form part of the historical significance of the archaeological site and have aesthetic significance resulting from the sympathetic use of natural materials within the landscape.

Bellbird Cottage (c1916) retains some aesthetic significance despite its 1980s alterations. Some internal decorative detailing remains and the existing timber cladding, while not original, is sympathetic to the natural setting.

The c1920 cottage has aesthetic significance as a picturesque weatherboard building with intact internal and external joinery.
6.5.8 The Cultural Landscape

The visual environment has a number of areas of high significance. These occur in locations where heritage built-form elements contrast with the natural setting and where topographic form, geological elements and water interact to create landscapes of high scenic quality. The visual settings of significance are considered to be:

- The contrast between the heritage architecture of Caves House, its accompanying exotic planting and the rugged topography and indigenous vegetation of the natural landscape setting.
- The Blue Lake, Carlotta’s Arch and Grand Arch setting at the approach to the visitor precinct, particularly when viewed from Jenolan Caves Road near the old Diesel House.
- Carlotta’s Arch and the landscape setting viewed from the north.

6.6 Archaeological Potential

Archaeological Potential is defined as:99

The degree of physical evidence present on an archaeological site, usually assessed on the basis of physical evaluation and historical research. Common units for describing archaeological potential are:

- known archaeological features/sites (high archaeological potential);
- potential archaeological features/sites (medium archaeological potential);
- no archaeological features/sites (low archaeological potential).

The assessment of the archaeological potential for each precinct has been included on the inventory forms (Volume 2 of this report).

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99 Department of Urban Affairs and Planning 1996
7 Condition and Integrity of the Precincts within the VUSZ

This section provides an overview of the condition and integrity for individual buildings or other built elements within the seven precincts. Reference should also be made to the individual inventory forms in Volume 2 of this Report.

7.1 Grand Arch Precinct

The Grand Arch precinct is entered from the east via Jenolan Caves Rd over the historic de Burgh’s Bridge and through the Grand Arch, or via Oberon Rd from the north. The Precinct sits in a river valley, although of the four converging streams two are channelled into concrete culverts, converging just downstream of Caves House. All four streams enter into Blue Lake.

The Precinct is dominated by the Grand Arch karst formation, the topography of the River valley, and by the Caves House complex of buildings with their imposing Old English Domestic Revival vernacular style and use of local limestone. Early service buildings of timber and concrete remain in the vicinity of Caves House, along with later 1970s timber buildings in a bush vernacular style. The integrity of the precinct is high, with intact buildings dating form all major phases of development remaining. Much of the work in this precinct has been undertaken by the Government Architect's office, and this remains the situation today.

As the focus of the visitor experience, this precinct is well maintained. Some of the paving is new (around the Ticket Office and new Shelter) while some is older and in fair condition, with evidence of movement. The roads and retaining walls are generally in good condition. The front-of-house areas of Caves House are generally well maintained (along with buildings such as the Engineers House, Cottage 11, the Gatehouse and the Mountain Lodge) while the back of house areas of Caves House such as offices are less well maintained. Staff accommodation such as Hill Flats and the Nest are in poor condition. Both the natural and cultural plantings are in a degraded state at the edges of the precinct.

7.2 Jenolan Cottages Precinct

The Jenolan Cottages Precinct is accessed via a dirt road off Jenolan Caves Rd, on the northern border of the Reserve. The clearing was originally established as a market garden, supplementing produce from the Pomona Grove farm for the visitors and staff of Jenolan. In the mid 1980s it was established as an additional guest accommodation area, comprising a caretakers dwelling, two large garages, a concrete water tank, a WC/Shower block and 8 holiday cabins. The precinct has no aesthetic significance. The buildings and road are in good condition.

The archaeological site of the former Kiaora Guest House lies a kilometre away from this precinct. Formerly a two-storey guest house, the building was demolished in the 1970s, and the insubstantial remains are in poor condition.

7.3 Five Mile Road Housing Precinct

The Five Mile Road Precinct is located in a cleared area above and below the Jenolan Caves Rd approximately 1.5km from the caves. The precinct is steep and incorporates terraced levels accessed via a winding dirt road with pedestrian access provided by concrete stairs between the old camping ground, on the high side of the precinct and the roadway to the Old Police station. The landscape and views dictate the siting and form of the cottages to a significant degree.

The precinct incorporates five cottages (with associated services and built elements such as garages), utilities including the four reservoirs and fire equipment, and landscaping elements including some fencing, paving, and retaining walls and introduced plantings. The walking track on the southern side of the precinct joins the 6 foot track which connects Mount Victoria and Caves House.
The precinct was the original site of the original campground and horse paddock. Historical analysis undertaken for the Moore CMP (1988) indicates that there may have been additional cottages built in the precinct in 1916, however the number and location of the cottages is unknown and inspection revealed no extant footings or other evidence of built forms.

Although the Five Mile Road Precinct was chosen as the site of the Police Prefecture in 1897, the earliest of the extant built forms in fact dates to 1916 (as discussed in Section 3.4.3, the date of the former police cottage does not appear to be 1897). Later buildings date from the post-war 1950s with all cottages modified in some capacity (the F3 and F4 cottages have been re-clad, the F6 cottage façade has been altered by a partial verandah infill and the cottage has also been re-roofed, F7 has undergone restoration and maintenance work including repainted re-roofing and reconstruction of the verandah). The F1 cottage was originally located in the Jenolan Cottages precinct and was relocated and reconstructed in its current location. There have also been ancillary building additions including WCs to some cottages. The precinct thus reflects various historic layers of the Reserve and is considered to be moderately intact.

The condition of the precinct built forms is generally good. General maintenance is required as per the individual inventories but typically includes treatment of weathered timber, re-roofing, investigation of roof cladding and associated capping, flashing and guttering, repair or replacement of downpipes and repainting. Some restoration works have also been recommended.

7.4 Burma Road Housing Precinct

The Burma Road housing precinct was established in the late 1940s, in response to the growing visitor numbers and staffing requirements. The precinct incorporates seven cottages (with associated services and built elements such as garages), utilities including the fire station and services, four reservoirs, the tractor shed and hopper bin as well as landscaping elements including some fencing, paving and introduced plantings. The precinct is linked to the main Grand Arch precinct via the network of walking tracks and there is some associated way-finding signage. The precinct also formerly incorporated the Wallaby enclosure and there was a 1950s cottage in this vicinity which has since been demolished.

Built forms largely date from the 1940s-1960s and virtually all have been modified in some capacity with typical alterations comprising of new external wall cladding, new roofing and associated capping, flashing and guttering and cosmetic remediation works such as repainting and repairs to window frames. There has also been some addition of ancillary buildings including sheds and WCs and internal upgrades are also likely though not substantial. It is noted however that the overall form of the cottages is intact, and there is potential for restoration of original facades and cladding. The precinct is therefore regarded as moderately intact.

The precinct topography slopes down to the north, with some terracing and as with the Five Mile precinct, the landscape and views dictate the siting and form of the cottages to a significant degree. Condition of the buildings is generally good, although some cracking was noted in the B3 cottage and there is some potential for subsidence to this cottage and others located on the northern slope (i.e. cottages B1-4) which should be identified and rectified where possible. General maintenance is required as per the individual inventories.

7.5 Two Mile Road Housing Precinct

The Two Mile Road precinct is a comparatively new precinct, established in the 1980s to provide additional staff accommodation. The buildings are highly intact with only cosmetic refurbishments such as repainting. The buildings generally are structurally sound and in good condition, with only minor maintenance required (refer specific inventories). It is noted that where cottages are occupied, the condition of the cottages are better maintained.

The precinct is set within a flat partial clearing of bushland on the edge of the Northern slopes of the Upper Surveyors Creek Valley, on the south west side of the Reserve. There are a number of trees and shrubs (some introduced) in proximity to the cottages and some clearing of landscape elements has been recommended to minimised bushfire hazards. The precinct is accessed via private gravel road off Oberon Road and includes infrastructure such as septic and water tanks which are generally in good condition.
7.6 Campground and Utilities Precinct

The Campground and Utilities Precinct covers an area river both sides of the Jenolan River downstream of the Grand Arch Precinct. The Campground has been closed for camping since 2005, however the area is accessible on foot from the Grand Arch precinct. The precinct contains a number of redundant and operating services, one of the oldest cottages remaining on the site (U 4 – the Hydro Cottage), and the remnants of the (now demolished) former Pomona farm and piggery. The area is accessed by a steep dirt Rd (the Hydro Rd) via the Five Mile Rd housing precinct.

7.7 Bellbird Cottage Precinct

The Bellbird Cottages precinct covers an elevated bluff in the Jenolan Valley. The precinct comprises two cottages, each with a carport and outbuildings, accessed via a dirt road. The cottages dated from c1920 (BC3) and c1916 (BC1 – rebuilt after a fire c 1930). BC3 is the most intact, although it has suffered from subsidence problems and is currently vacant. BC1 has lost its external form and character, although the c 1930s interior remains intact, and this building is available for holiday lettings.

The precinct also contains the site of Wallace's Guest House (demolished post 1921). The only tangible reminder on the site is a dry stone retaining wall on a protruding spur, providing a level surface.
8 Gradings of Significance

Different elements of a place may contribute in different ways to its heritage value. There are five gradings of significance, which were developed by the NSW Heritage Council. The justification for this criterion has been expanded in Table 2 to appropriately assess individual elements associated with the Reserve. The significance of precincts and elements within the precincts are graded in Section 8.2 with reference to the relevant significance assessment guidelines.  

8.1 Gradings of Significance - Definitions

Table 2 – Definitions - gradings of heritage significance

<table>
<thead>
<tr>
<th>Grading</th>
<th>Grading No.</th>
<th>Justification</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceptional</td>
<td>5</td>
<td>Rare or outstanding and directly contribute to the place’s overall heritage significance; they retain a high degree of integrity and intactness in fabric and use, and should be retained and conserved in-situ; any change should be minimal and must retain significant values and fabric.</td>
<td>Fulfils criteria for local or state heritage listing</td>
</tr>
<tr>
<td>High</td>
<td>4</td>
<td>Demonstrate a key aspect of the place’s overall heritage significance; they have a high degree of original fabric or they retain their original use; they should be retained and conserved; retention should be considered in-situ; and minor change is allowed so long as significant values and fabric are retained and conserved.</td>
<td>Fulfils criteria for local or state heritage listing</td>
</tr>
<tr>
<td>Moderate</td>
<td>3</td>
<td>Contribute to the place’s overall heritage significance; they may have been altered or modified but still have the ability to demonstrate a function or use particular to the site; and change is allowed so long as it does not adversely affect the overall significance of the place or fabric of exceptional or high significance.</td>
<td>May fulfils criteria for local or state heritage listing</td>
</tr>
<tr>
<td>Little</td>
<td>2</td>
<td>Difficult to interpret; they may have been substantially altered or modified which detracts from significance or demonstrate utilitarian use that has no particular significance for the site; and change is allowed so long as it does not adversely affect the overall significance of the place or fabric of exceptional or high significance.</td>
<td>Does not fulfil criteria for local or state heritage listing</td>
</tr>
<tr>
<td>Intrusive</td>
<td>1</td>
<td>Damaging to the place’s overall heritage significance; and they can be considered for removal or alteration. For archaeological sites this category is usually referred to as ‘nil’.</td>
<td>Does not fulfil criteria for local or state heritage listing</td>
</tr>
</tbody>
</table>

8.2 Gradings of Precincts within the VUSZ

Within the Reserve there are precincts that are considered to be of state significance for their extant building, archaeology and landscape attributes, most notably the Grand Arch Precinct and the Campground and Utilities Precinct. Within these precincts are elements of the accommodation buildings and infrastructure built to address the burgeoning tourism interest in the caves dating from the first period of Government Administration in the 1890s.

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100 'Assessing Heritage Significance' publication in Heritage Office 2005; ‘Archaeological Significance Assessment’ publication in Department of Environment and Climate Change 1997:88-99
There are also precincts of local significance that contain early buildings, such as the Bellbird Cottages Precinct and the Five Mile Precinct. The other precincts are considered to be of lesser significance.

Table 3 summarises the assessed level of overall significance for each of the precincts with regard to grading and level (Local or State).

Table 3 – Levels of Significance – Precincts

<table>
<thead>
<tr>
<th>Precinct</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Grand Arch</td>
<td>5</td>
<td>State</td>
</tr>
<tr>
<td>2. Jenolan Cottages</td>
<td>3</td>
<td>Local (historic)</td>
</tr>
<tr>
<td>3. Five Mile Road Housing</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>4. Burma Road Housing</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>5. Two Mile Road Housing</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>6. Campground and Utilities</td>
<td>5</td>
<td>State</td>
</tr>
<tr>
<td>7. Bellbird Cottage</td>
<td>4</td>
<td>Local</td>
</tr>
</tbody>
</table>

The VUSZ includes structures, spaces and elements of varying significance within the overall heritage significance of the Reserve, which have been graded according to their relative significance within a thematic framework. These gradings are detailed in the inventory forms (Volume 2 of this Report) and summarised in Tables 4 to 13 below. The gradings of significance are then shown on the precinct plans at the end of this Section (Figures 33-40).

Table 4 – Grading of items within the Grand Arch Precinct

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Caves House</td>
<td>5</td>
<td>State</td>
</tr>
<tr>
<td>2 Old Laundry/ now Boilerhouse</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>3 Old Refrigeration House, now substation</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>4 Laundry</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>5 St Trinnians</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>6 The Gatehouse</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>7 Diesel Generator House</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>8 Mountain Lodge</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>9 Wallaby Hall</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>10 Shelter &amp; BBQ</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>11 The Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>12 Public Toilets</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>13 Seismograph Station</td>
<td>4</td>
<td>State</td>
</tr>
<tr>
<td>14 Workshop</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>15 Workshop</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Item</td>
<td>Grading of Significance</td>
<td>Level of Significance</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>16 The Nest</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>17 The Engineer’s House</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>18 Old Post Office</td>
<td>4</td>
<td>State</td>
</tr>
<tr>
<td>19 The Hill Flats</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>20 Gardener’s Store</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>21 Public Toilets</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>22 Shelter</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>23 Barbeque</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>24 Public Toilets</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>25 School</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>26 School Shed</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>27 Male Toilet</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>28 Ticket &amp; Guides Office</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>29 Female Toilets</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>30 Shelter</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>31 Female Toilets</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>32 Male Toilets</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>33 Substation No 1</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>34 Substation No 2</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>35 Pump house</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>36 Kiosk Substation</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>37 The Old Diesel House</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>38 Blue Lake Weir (See L08 below)</td>
<td>5</td>
<td>State</td>
</tr>
<tr>
<td>39 De Burgh’s Bridge</td>
<td>5</td>
<td>State</td>
</tr>
<tr>
<td>40 Reservoir</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>41 Reservoir</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>A1/A2 Cave within the Reserve</td>
<td>See table 15</td>
<td></td>
</tr>
<tr>
<td>A04 Lucas Rocks</td>
<td>See table 15</td>
<td></td>
</tr>
<tr>
<td>E05 site of Vertical Steam Dynamo</td>
<td>4 (See Table 16)</td>
<td>State</td>
</tr>
<tr>
<td>E06 Leffel Wheel</td>
<td>5 (See Table 16)</td>
<td>State</td>
</tr>
<tr>
<td>E07 First Sewerage System</td>
<td>4 (See Table 16)</td>
<td>State</td>
</tr>
<tr>
<td>L01 Quercus ilex – Holm Oak</td>
<td>4</td>
<td>Local</td>
</tr>
</tbody>
</table>
### GRADINGS OF SIGNIFICANCE

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>L02 Quercus ilex – Holm Oak</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>L03 Group of Cupressus funebris – Chinese Weeping Cyprus</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>L04 Terrace Gardens</td>
<td>4</td>
<td>State</td>
</tr>
<tr>
<td>L05 Thuja Plicata – Western Red Cedar</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>L06 Sequiodendron gigantium – Big Tree</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>L07 The Terraced Gardens</td>
<td>4</td>
<td>State</td>
</tr>
<tr>
<td>L08 Blue Lake</td>
<td>5</td>
<td>State</td>
</tr>
</tbody>
</table>

Table 5 – Grading of items within the Jenolan Cottages Precinct

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1 Caretakers Residence</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J2 Fire Shed</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J3 Archives Shed</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J4 Public Toilets &amp; Laundry</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J5 Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J6 Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J7 Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J8 Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J9 Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J10 Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J11 Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J12 Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J13 Reservoir</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J14 Reservoir</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J15 Pump Shed</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>A07 Top Farm</td>
<td>See Table 16</td>
<td></td>
</tr>
<tr>
<td>A8 Top Farm 3</td>
<td>See Table 16</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 – Grading of items within the Five Mile Road Housing Precinct

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 Staff Cottage</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>F2 Single Garage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>F3 Historic Archives Building</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>
## GRADINGS OF SIGNIFICANCE

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>F4 Karst Research Facility</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>F5 Single Garage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>F6 Staff Cottage</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>F7 Historic Cottage</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>F8 Reservoir</td>
<td>2</td>
<td>Local</td>
</tr>
<tr>
<td>F9 Reservoir</td>
<td>2</td>
<td>Local</td>
</tr>
<tr>
<td>F10 Reservoir</td>
<td>2</td>
<td>Local</td>
</tr>
</tbody>
</table>

Table 7 – Grading of items within the Burma Road Precinct

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1 Staff Cottage</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>B2 Staff Cottage</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>B3 Staff Cottage</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>B4 Staff Cottage</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>B5 Fire Shed</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>B6 Staff Cottage</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>B7 Staff Cottage</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>B8 Cavers Cottage</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>B9 Reservoir</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>B10 Reservoir</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>B11 Reservoir</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>B12 Reservoir</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 8 – Grading of items within the Two Mile Road Housing Precinct

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 Staff Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>T2 Staff Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>T3 Staff Cottage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>T4 Staff Cottage</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 9 – Grading of items within the Campground and Utilities Precinct

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1 Sewage Treatment Plant</td>
<td>2 (STP) 3 (remains of '57 STP)</td>
<td>- Local</td>
</tr>
<tr>
<td>U2 STP Control Room</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>U3 Hydroelectric Station</td>
<td>4</td>
<td>State</td>
</tr>
<tr>
<td>U4 Hydro Cottage</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>U5 Weir</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>U6 Toilet/shower</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>U7 Slaughter House</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>U8 Pumping House</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>U9 Raised Water Pipeline on Concrete Piers</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>E04 Site of Pomona Grove Farm</td>
<td>4 (See Table 16)</td>
<td>State</td>
</tr>
</tbody>
</table>

Table 10 – Grading of items within the Bellbird Cottage Precinct

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC1 Bellbird Cottage</td>
<td>3</td>
<td>Local</td>
</tr>
<tr>
<td>BC2 Single Garage</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>BC3 Staff Cottage</td>
<td>4</td>
<td>Local</td>
</tr>
<tr>
<td>BC4 Carport</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>E01 Site of Wallace's Guest House</td>
<td>5 (See Table 16)</td>
<td>State</td>
</tr>
</tbody>
</table>

Table 11 – Grading of other items within the Reserve

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>E02 Site of Kiaora Guest House</td>
<td>3 (See Table 16)</td>
<td>Local</td>
</tr>
<tr>
<td>E03 Site of Rose Cottage</td>
<td>4 (See Table 16)</td>
<td>State</td>
</tr>
<tr>
<td>E08 European Graffiti</td>
<td>5 (See Table 16)</td>
<td>State</td>
</tr>
<tr>
<td>A03 Paradox Cave</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A05 Gravel Dump</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A06 Gravel Dump 2</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A09 McKeown's Valley</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A10 McKeown's Creek 1</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A11 McKeown's Valley 2</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A12 McKeown's Creek 4 (Billy Goat Shelter)</td>
<td>See Table 15</td>
<td></td>
</tr>
</tbody>
</table>
### Item

<table>
<thead>
<tr>
<th>Item</th>
<th>Grading of Significance</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A13 McKeown's Creek 5</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A14 McKeown's Creek 6 (Mammoth Flat)</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A15 McKeown's Creek 7</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A16 McKeown's Creek 8</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A17 McKeown's Creek 9</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A18 McKeown's Creek 10</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A19 McKeown's Valley Shelter 1 (with Artefact)</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A20 McKeown's Valley Shelter 2 (with Art)</td>
<td>See Table 15</td>
<td></td>
</tr>
<tr>
<td>A21 Quarry Fire Trail Scatter</td>
<td>See Table 15</td>
<td></td>
</tr>
</tbody>
</table>

### Table 12 – Grading of Items of Aboriginal Heritage

<table>
<thead>
<tr>
<th>Item</th>
<th>AHIMS I.D. (where applicable)</th>
<th>Archaeological (Scientific)</th>
<th>Social (Cultural)</th>
<th>Research</th>
<th>Rarity</th>
<th>Representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01 Skeleton Cave</td>
<td>45-4-0017</td>
<td>High-Exc</td>
<td>Unknown- Aboriginal Community Consultation required; Burials are generally considered of exceptional social significance &amp; value</td>
<td>High</td>
<td>Exc</td>
<td>High</td>
</tr>
<tr>
<td>A02: Cerebus Cave</td>
<td>45-4-0164</td>
<td>High-Exc</td>
<td>Unknown- Aboriginal Community Consultation required; Burials are generally considered of exceptional social significance &amp; value</td>
<td>High</td>
<td>Exc</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Little- Nil</td>
<td>Little</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Little- Nil</td>
<td>Little</td>
<td>Low</td>
</tr>
<tr>
<td>A04 Lucas Rocks</td>
<td>45-4-0163</td>
<td>Little</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Little- Nil</td>
<td>Little</td>
<td>Low</td>
</tr>
<tr>
<td>A05 Gravel Dump</td>
<td>45-4-0140</td>
<td>Nil</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Nil</td>
<td>Little</td>
<td>Low</td>
</tr>
<tr>
<td>A06 Gravel Dump 2</td>
<td>45-4-0049</td>
<td>Nil</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Nil</td>
<td>Little</td>
<td>Low</td>
</tr>
<tr>
<td>A07 Top Farm</td>
<td>45-4-0139</td>
<td>Nil</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Nil</td>
<td>Little</td>
<td>Low</td>
</tr>
<tr>
<td>Item</td>
<td>AHIMS I.D. (where applicable)</td>
<td>Archaeological (Scientific)</td>
<td>Social (Cultural)</td>
<td>Research</td>
<td>Rarity</td>
<td>Representative</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------</td>
<td>----------------------------</td>
<td>-------------------------------------------------------</td>
<td>---------------------------</td>
<td>----------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>A08 Top Farm 3</td>
<td>45-4-0048</td>
<td>Nil</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Little</td>
<td>Little</td>
<td>Little</td>
</tr>
<tr>
<td>A09 McKeown’s Valley</td>
<td>45-4-0131</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Moderate-Little</td>
<td>Moderate-Little</td>
</tr>
<tr>
<td>A10 McKeown’s Creek 1</td>
<td>45-4-0198</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Little</td>
<td>Little</td>
</tr>
<tr>
<td>A11 McKeown’s Creek 2</td>
<td>45-4-0161</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Little</td>
<td>Little</td>
</tr>
<tr>
<td>A12 McKeown’s Creek 4, Billy Goat Shelter</td>
<td>45-4-0160</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>A13 McKeown’s Creek 5</td>
<td>45-4-0159</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Unknown-Further Work Required</td>
<td>Unknown-Further Work Required</td>
</tr>
<tr>
<td>A14 McKeown’s Creek 6, Mammoth Flat</td>
<td>45-4-0158</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Unknown-Further Work Required</td>
<td>Unknown-Further Work Required</td>
</tr>
<tr>
<td>A15 McKeown’s Creek 7</td>
<td>45-4-0157</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Unknown-Further Work Required</td>
<td>Unknown-Further Work Required</td>
</tr>
<tr>
<td>A16 McKeown’s Creek 8</td>
<td>45-4-0156</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Unknown-Further Work Required</td>
<td>Unknown-Further Work Required</td>
</tr>
<tr>
<td>A17 McKeown’s Creek 9</td>
<td>45-4-0155</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Unknown-Further Work Required</td>
<td>Unknown-Further Work Required</td>
</tr>
<tr>
<td>A18 McKeown’s Creek 10</td>
<td>45-4-0165</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Unknown-Further Work Required</td>
<td>Unknown-Further Work Required</td>
</tr>
<tr>
<td>A19 McKeown’s Valley Shelter with Artefacts</td>
<td>n/a</td>
<td>Moderate</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
### GRADINGS OF SIGNIFICANCE

<table>
<thead>
<tr>
<th>Item</th>
<th>AHIMS I.D. (where applicable)</th>
<th>Archaeological (Scientific)</th>
<th>Social (Cultural)</th>
<th>Research</th>
<th>Rarity</th>
<th>Representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>A20</td>
<td>McKeown's Valley Shelter with Art</td>
<td>n/a</td>
<td>Moderate-High</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>High</td>
<td>Moderate-High</td>
</tr>
<tr>
<td>A21</td>
<td>Jenolan Artefact Scatter</td>
<td>n/a</td>
<td>Little</td>
<td>Unknown- Aboriginal Community Consultation Required</td>
<td>Little</td>
<td>Nil</td>
</tr>
</tbody>
</table>

### Table 13 – Grading of items of European Archaeology

<table>
<thead>
<tr>
<th>Item</th>
<th>Historical</th>
<th>Associative</th>
<th>Aesthetic</th>
<th>Social</th>
<th>Research</th>
<th>Rarity</th>
<th>Representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>E01</td>
<td>Wallace’s Guest House</td>
<td>High – 4</td>
<td>Mod – 3</td>
<td>Exc – 5</td>
<td>Little – 1</td>
<td>Mod – 3</td>
<td>High – 4</td>
</tr>
<tr>
<td>E02</td>
<td>Kiaora Guest House</td>
<td>Mod – 3</td>
<td>Further Research Required</td>
<td>Little – 2</td>
<td>Little – 2</td>
<td>Little – 2</td>
<td>Mod – 3</td>
</tr>
<tr>
<td>E03</td>
<td>Rose Cottage</td>
<td>Mod – 3</td>
<td>Further Research Required</td>
<td>High – 3</td>
<td>Little – 2</td>
<td>High – 4</td>
<td>High – 4</td>
</tr>
<tr>
<td>E04</td>
<td>Pomona Grove Farm</td>
<td>High – 4</td>
<td>Nil – 1</td>
<td>Nil – 1</td>
<td>Nil – 1</td>
<td>Mod – 3</td>
<td>Mod – 2</td>
</tr>
<tr>
<td>E05</td>
<td>Vertical Steam Dynamo</td>
<td>High – 4</td>
<td>Nil – 1</td>
<td>Little – 2</td>
<td>Little – 2</td>
<td>Nil – 1</td>
<td>High – 4</td>
</tr>
<tr>
<td>E06</td>
<td>Leffel Wheel</td>
<td>High – 4</td>
<td>High – 1</td>
<td>Mod – 3</td>
<td>Little – 2</td>
<td>Little – 2</td>
<td>Exc – 5</td>
</tr>
<tr>
<td>E07</td>
<td>Sewage Works</td>
<td>High – 4</td>
<td>Little – 2</td>
<td>Mod – 3</td>
<td>Little – 2</td>
<td>Little – 2</td>
<td>Little – 2</td>
</tr>
<tr>
<td>E08</td>
<td>Art Site</td>
<td>Exc – 5</td>
<td>Nil – 1</td>
<td>Exc – 5</td>
<td>High – 4</td>
<td>Nil – 1</td>
<td>Exc – 5</td>
</tr>
</tbody>
</table>
Figure 32 – Gradings of Significance – Grand Arch Precinct

GRADINGS OF SIGNIFICANCE

- 5: Exceptional
- 4: High
- 3: Moderate
- 2: Little
- 1: Intrusive

Key:
- Cave House
- Laundry
- Old refrigeration house, new substation
- New Substation
- Caves
- Fiscal
- West
- Restaurant
- Old Caves
- Substation No. 1
- Substation No. 2
- Mountain Lodge
- Wallaby rut
- Barker & BSC
- Old Caves House
- Dr. Bartilovic’s Home
- Landis
- Grasmere
- Warooka
- Public toilets
- Public toilet
- Crewe’s Cottage
- South
- School
- School shed

Scale: 1:500

 Prepared: AGC CP (AGCS) 30-40

This map is only for the purpose of identifying the location of rock art and associated rock art features. The Department of Environment and Climate Change (DECC) does not recommend its use for any other purpose or for any other reason.
Figure 33 – Gradings of Significance – Grand Arch Precinct – Landscape Elements
Figure 34 – Gradings of Significance – Jenolan Cottages Precinct
Figure 35 – Gradings of Significance – Five Mile Road Housing Precinct
Figure 36 – Gradings of Significance – Burma Road Housing Precinct
Figure 37 – Gradings of Significance – Two Mile Road Housing Precinct
Figure 38 – Gradings of Significance – Campground and Utilities Precinct
Figure 39 – Gradings of Significance – Bellbird Cottages Housing Precinct

Figure 10: Bellbird Cottages Precinct
9 Issues, Opportunities and Constraints

This section discusses the issues, opportunities and constraints arising from the heritage significance of the Reserve, the various heritage listings, statutory obligations, approvals processes, the NSW Government’s Total Asset Management Strategy, and Trust and DECC policies and management. The following two sections draw out these issues, opportunities and constraints into conservation policies and implementation strategies for the ongoing management and use of the Reserve.

9.1 Implications of Site’s Significance and Use

9.1.1 Retention of Significance

The public use of the site must be managed in a way to minimise the impact on significant features, including the geology, hydrology, karst and natural landscape. This is a significant challenge and should continuously be managed in line with new advances, technologies and developments. As well as specific significance criterions, the Reserve has a scenic beauty that is to be preserved.

The Reserve has been relatively self sufficient since its early development, with water, power, education and postal service facilities on site. These facilities form part of the site’s significance, some of which have local or state significance. Examples in the Grand Arch Precinct include the Old Laundry (building 2), Diesel Generator House (Building 7), Old Post Office (Building 18), School (Building 25), Substations 1 and 2 (Buildings 33 and 34), Old Diesel House (Building 37), and the sewerage system (E07).

An issue affecting the retention of significance of the Reserve is the human impact on the fragile karst system. This is being managed within the caves themselves by development of innovative techniques to clean the caves without adversely affecting the karst system, through the implementation of cave access and development policies, through targeted and on-going research by appropriately qualified and skilled experts, and through the monitoring and evaluation of environmental conditions by Trust and DECC staff.

Overdevelopment of the site would adversely affect the significance of the Reserve. Development should be sensitively located within existing Precincts and if proposed in new areas, an extensive assessment should be undertaken to minimise impacts on the natural and built environment. The Reserve should retain the existing character which is intimate, and is not typical of a major tourist facility.

Any alterations and additions to existing buildings or new development within the Reserve should be sympathetic to the existing character of the place. New works are not recommended to exactly match existing, as this would be contradictory to the principles of the Burra Charter.

To retain significant built elements of the site, as identified in Section 8.2, they should have an ongoing compatible use and have ongoing maintenance to ensure significant fabric and values are retained.

9.1.2 Opportunities for Future Use

The Reserve provides opportunities for various recreational uses, whilst respecting critical ecosystems, soils, geomorphology and geology. The recent upgrades of Caves House and the adaptive reuse of many existing buildings within the Grand Arch Precinct (e.g. Wallaby Hall as a conference venue), has ensured the longevity of these buildings and opportunities to bring different clientele to the Reserve.

This report has identified opportunities to upgrade or demolish certain built elements on the Reserve without impacting on the heritage significance of the site. This will ensure that the site will continue to be economically viable and diverse in the services and facilities it provides. Examples of diverse uses
ISSUES, OPPORTUNITIES AND CONSTRAINTS

at the site include concerts in the caves and niche tourism products, such as getaway package deals offered to NRMA members.  

There are various stories that can be told about the significance of the site. Much of the existing interpretation on the site relates to the Reserve’s native flora and the caves. Some built elements on the Reserve are already interpreted, such as signage around the River Walk, but there are opportunities to interpret the built environment as well as the natural environment. There may be an opportunity for a visitor/interpretation centre at the site.

9.1.3 Constraints on Future Use

One of the main constraints for future use of the Reserve is the area’s topography and significant karst features. This provides constraints on access and car parking, on where to build and the composition and design of these built elements. Some of the Burma Road houses are recommended to be relocated or demolished if they adversely affect karst.

If new development is proposed within the Reserve, some areas may require vegetation clearing and reshaping of the landform, which should be carefully assessed as to the impact on the environment and significance of the entire Reserve. There are also physical constraints within the Grand Arch Precinct, meaning that new development will either have to replace existing building and structures or be sensitively located with existing built elements.

The built and natural elements of the Reserve require a high level of maintenance and works will have to be prioritised in budgets. Examples include physical maintenance works to buildings to ensure they are secure and waterproofed. Other examples include maintaining the walking tracks, retaining walls and removal of invasive flora species.

Camping at the Reserve may be considered in association with managing the site’s European and Aboriginal archaeology although should not be planned for certain areas of the Reserve until further archaeological investigations are undertaken as recommended in this Report. Other accommodation options within the Reserve could also be further considered, such as backpacker accommodation.

The complex heritage listings and approval process may be a constraint to future use of the site. Site specific exemptions may be appropriate for the Reserve, so that cyclical maintenance and minor works can be undertaken without approval or notification.

9.2 Heritage Listings

Table 14 lists statutory and non-statutory heritage listings that apply to the Reserve.

Table 14 – Heritage Listings for Jenolan Karst Conservation Reserve

<table>
<thead>
<tr>
<th>Heritage Listing</th>
<th>Listing Name</th>
<th>Listing No.</th>
<th>Date Listed or Inscribed</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statutory Listings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNESCO World Heritage List</td>
<td>Greater Blue Mountains World Heritage Area</td>
<td>917</td>
<td>2000</td>
<td>JKCR is part of this listing, of which the primary focus is natural heritage values</td>
</tr>
<tr>
<td>National Heritage List</td>
<td>Greater Blue Mountains</td>
<td>2007</td>
<td></td>
<td>JKCR is part of this listing, of which the primary focus is natural heritage values</td>
</tr>
<tr>
<td>State Heritage Register (NSW)</td>
<td>Jenolan Caves Reserve</td>
<td>01698</td>
<td>2004</td>
<td>JKCR is listed for its historical, aesthetic, research and rarity values</td>
</tr>
<tr>
<td>Oberon Local</td>
<td>Jenolan Caves (Part 1 – Archaeological Sites of)</td>
<td>-</td>
<td>1988</td>
<td>JKCR has five listings that separately apply to the</td>
</tr>
</tbody>
</table>

101 NRMA 2009
Environmental Plan 1988

Schedule 2 – Heritage Items
- Jenolan Caves House, Lot 39 DP 728898 (Part 2 – European Heritage Items of Schedule 2 – Heritage Items)
- Rowe’s Homestead, Lot 49 DP 728898 (Part 2 – European Heritage Items of Schedule 2 – Heritage Items)
- Limestone Bridge (near Grand Arch), Lot 49 DP 728898 [De Burgh’s Bridge] (Part 2 – European Heritage Items of Schedule 2 – Heritage Items)
- Jenolan Caves Reserve Conservation Area (Part 3 – Heritage Conservation Areas)

Non-statutory Listings

| National Trust of Australia | Jenolan Caves Conservation Area | 3164 | JKCR is listed for its geological formations, flora, fauna, Caves House and other buildings and landscape features |
| Register of the National Estate | Jenolan Caves and Reserve | 890 | 1978 | JKCR is registered primarily for its geomorphology, as well as diverse landscape and fossil elements |

The Reserve is listed on the National Heritage List (NHL) as part of the Greater Blue Mountains listing. However, it’s listing under the State Heritage Register is the more relevant listing while the site is managed by NSW authorities/departments.

9.3 Statutory Obligations

Various statutory obligations apply to the Reserve (Table 15), which have been summarised from the Jenolan Karst Conservation Reserve Draft Plan of Management and Jenolan Caves Reserve Trust – Heritage Asset Management Strategy.

Table 15 – Statutory Obligations

<table>
<thead>
<tr>
<th>Statutory Controls **</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Controls</strong></td>
<td></td>
</tr>
<tr>
<td>National Parks and Wildlife Act 1974 (NSW)</td>
<td>Jenolan Karst Conservation Reserve was established under this Act</td>
</tr>
<tr>
<td></td>
<td>Jenolan Caves Reserve Trust was established in 1989 under this Act</td>
</tr>
<tr>
<td>National Parks and Wildlife Amendment (Abercrombie, Jenolan and Wombeyan Karst Conservation) Act 1997 No. 2</td>
<td>Provided for the staged transfer of care, control and management of the</td>
</tr>
</tbody>
</table>

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102 Department of Environment and Climate Change 2009
103 Godden Mackay Logan 2007
### Amendment (Jenolan Caves Reserves) Act 2005
- Reserve to DECC from the Trust
- Provided for future abolition of the Trust and establishment of a Karst Management Advisory Committee

### Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
- Activities that are likely to have an impact on matters of national environmental significance, Commonwealth lands or actions undertaken by the Commonwealth may require approval from the Commonwealth Minister or may be exempt through bilateral agreements entered into by the Commonwealth and State

### Environmental Planning and Assessment Act 1979 (NSW)
- The act sets the framework for planning requirements on DECC estate in NSW

#### Planning Controls
- **Oberon Local Environmental Plan 1988**
  - Activities listed in the planning provisions may require approval or notification
- **Oberon Development Control Plan 2001**
  - Activities listed in the planning provisions may require approval or notification

#### Heritage Controls
- **Heritage Act 1977 (NSW)**
  - Activities listed in Section 57(1) of the Act require approval of the Heritage Council through a Section 60 application for heritage items listed on the State Heritage Register of NSW
  - Some activities are exempt from approval (Section 57(2) of the Act) but may require notification or endorsement (refer to Standard Exemptions or any Site Specific Exemptions) for heritage items listed on the State Heritage Register of NSW
  - Compliance with Section 118 of the Act – Minimum Standards for Maintenance and Repair
  - DECC have some delegations under the Heritage Act, however they still require Section 57 approvals through the Heritage Council of NSW as the Reserve is listed on the State Heritage Register
  - Compliance with Section 170 of the Act – Heritage and Conservation Register for items of environmental heritage owned or occupied by DECC (further detailed in State Agency Heritage Guide)
  - Heritage items within Reserve include archaeological sites, historic landscapes, Aboriginal sites, and various built elements, such as buildings, roads, bridges and cave infrastructure

#### Public Health and Safety
- **Building Code of Australia**
  - Any works to make the place comply with Building Code of Australia requirements should be governed by the heritage significance of the place
- **Occupational Heath and Safety Act 1983 (NSW)**
  - Any works to make the place comply with health and safety provisions should be governed by the heritage significance of the place
- **Contaminated Lands Management Act 1997**

The above public health and safety statutory requirements are the most relevant to heritage conservation, but there are many other acts that are relevant to management of the site. These were also not noted in the ‘relevant’ Trust and DECC planning documents in Appendix B of the 2009 Plan of Management.

[** Note: All of the above statutory controls are as amended from time to time.]**
9.4 Approvals Process

The World Heritage Listing invokes the EPBC Act 1999. This stands as a separate approval process to that under the Environmental Planning and Assessment Act 1979 (NSW). Works proposals are assessed against a set of criteria to determine whether they are “controlled”, in which case it is necessary for the proposal to be referred to the Commonwealth for approval. A bi-lateral agreement exists between NSW and the Commonwealth Governments to regulate that one set of documents suffices for both State and Commonwealth approvals. Another bi-lateral agreement is being prepared (sometime away) to regulate that it will not be necessary for State agencies to refer to the Commonwealth.

Under the State heritage listing, Jenolan is bound by the Heritage Act 1977 (NSW). DECC has delegations under limited circumstances, to approve minor works under the Heritage Act (however CMPs are referred to the Heritage Council of NSW). The Heritage Act also has the provision for agreeing exemptions for works which are allowed to be undertaken without approval under the Heritage Act, however under DECCs procedures there is a formal internal process for ensuring such exemptions are legitimate.

The requirements of Part 5 of the EP&A Act (NSW) provides for the overall regulatory framework for approvals. The requirement for an REF is based on whether the activity is defined as “works” in which case an REF is required. In most cases an REF is signed off by a Regional Manager. However, under the new category of ‘exempt’ development, no planning approval may be necessary for some activities. For on-park works, this includes walking tracks, picnic areas, roads and maintenance.

DECC sites are not subject to the requirement to submit approval applications to Local Government. However, DECC has a basic statutory obligation to ensure works are certified under the BCA. A new set of procedures is being prepared by DECC for guidance in retaining works certificates and occupation significance.

Figure 40 illustrates the DECC Approvals process (excluding the process required if necessary under the EPBC Act). It was developed as a training document and provided for inclusion in this report.

9.5 Non-statutory Obligations

There are no obligations regarding the non-statutory heritage listings for the Reserve.

The Australia ICOMOS Burra Charter is an internationally recognised document that provides guidance for the conservation and management of places of cultural significance. Conservation policies have been prepared in this report in accordance with the principles of the Burra Charter.

9.6 Total Asset Management Strategy

The NSW Government has defined the processes which State Government agencies should use to plan activities and services, to allocate resources and to report on performance. Total Asset Management, a NSW Government policy introduced to achieve better planning and management of the State’s assets, is part of a strategic management framework in which government's social, ecological and financial service outcomes are achieved by the most efficient means and within the resource limits of the community.

The Jenolan Caves Reserve Trust has prepared a Total Asset Management Strategy from 2007/2008 to 2011/2012 financial years.

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104 Flowchart for activities within DECC Estate developed by Ray Fowke of DECC
105 NSW Government Asset Management Committee 2009
106 Jenolan Caves Reserve Trust 2008
9.7 Heritage Asset Management Strategy

A Heritage Asset Management Strategy (HAMS) has been prepared for the Jenolan Karst Conservation Reserve by Godden Mackay Logan in accordance with the requirements in the *Heritage Act 1977* (NSW). Under Section 170 of the Heritage Act, government instrumentalities are required to establish a register entitled ‘Heritage and Conservation Register’ that details items of environmental heritage that they own or occupy that are listed on state or local statutory instruments.


Policy 100 in Section 10 recommends the development of site specific exemptions under the Heritage Act to allow for ongoing maintenance and minor works to be carried out on the site without individual approvals.

9.8 Trust and DECC Policy and Management

DECC have prepared a Draft Plan of Management in 2009, which outlines strategies and actions to ensure the recognised values of the Reserve are protected and conserved. The 2009 Draft PoM details statutory requirements and outlines management frameworks for the Reserve’s geology, cultural heritage, Indigenous heritage, flora and fauna, fire management, visitors, infrastructure, hydrology, and the visual, social and economic environment. The PoM for the Reserve should be read along side this conservation report, specifically the Conservation Policies and Implementation Strategies and Actions.

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107  Godden Mackay Logan 2007
108  Department of Environment and Climate Change 2009
10 Conservation Policies

The conservation policies in this section address the issues, opportunities and constraints from Section 9 of this report, and they provide a vision for the Reserve’s ongoing use and sustainability.

Reference should initially be made to the inventory forms for the appropriate Precinct or element (in Volume 2 of this Report), and preceding discussions that provide a background to each conservation policy. The inventory forms directly refer to the level and grading of significance, whether the item should be retained and conserved, and other recommendations for the ongoing management and maintenance of the item, the precinct and the overall Reserve.

10.1 Vision for Reserve

The vision and mission statement of the Jenolan Caves Reserve Trust is as follows.

**Trust Vision:** Excellence in karst conservation and tourism

**Trust Mission Statement:** To manage the natural and cultural heritage and the visitor facilities of Jenolan Caves Karst Conservation Reserve in an environmentally, socially and commercially sustainable manner.

As the Reserve is now jointly managed by the Trust and DECC, the following vision statement has been developed:

The Jenolan Karst Conservation Reserve should continue to be one of New South Wales premier visitor destinations, through the conservation of the diverse natural and cultural heritage, and maintenance of the Reserve’s world heritage values. All activities undertaken on the Reserve will be sustainable to ensure a healthy karst and Reserve environment as a priority, and best practice heritage management. The Reserve will continue to be a leader in regards to cave tours, infrastructure and management, and a leader in interpretation.

The visual amenity of the natural and built features on the Reserve should be conserved and enhanced, including protection of historic view corridors and vistas. Visitor experience at the Reserve will be informed by historical research including Aboriginal history and consultation with relevant communities and individuals. The social and environmental monitoring processes will be incorporated into the Reserve management frameworks, and the Reserve will be managed using the Strategies and Key Management actions in Part C of the 2009 Plan of Management.

10.2 Managing Heritage Significance

The Reserve consists of various built components that contribute in different ways to the overall significance of the place. The degree of change considered appropriate is dependent on its assessed level and grading of significance. The gradings of significance are based on those in the Assessing Heritage Significance guidelines by the Heritage Office (2001:11) and are noted in Table 2. Elements with a higher grade of significance will have greater constraints on change.

The constraints, issues and opportunities arising from significance gradings form further conservation policies in this section with the aim of ensuring the overall integrity and significance of the place is retained and conserved.

Policy 1. Elements of exceptional significance must be actively conserved.

Policy 2. Elements of exceptional and high significance should not be obstructed by new works, structures or services, and they should be clearly visible and interpreted as part of the new development.
10.3 Conserving the Natural Environment

The important features of the natural environment within the Reserve are the karst system and the diverse ecosystems and communities of plants and animals. The cave system must be protected, along with the distribution, abundance and health of all floral and faunal species and natural systems. The diverse natural environment needs to be conserved with reference to ongoing environmental, social and financial management of the Reserve.

Policy 3. Expert scientific and technical advice must be used to achieve best practice karst management at the Reserve.

Policy 4. Recreational use of the Reserve must be managed in a manner that does not detrimentally impact on the natural environment.

Policy 5. Facilities, infrastructure and the development of other future works in the Reserve must not pollute or cause adverse impact on the flow or quality of surface and subterranean water, and associated subterranean flora and fauna. All activities should be undertaken in a manner which minimises their impact on geology, geomorphology, soils and natural drainage systems.

Policy 6. A program of progressive removal of built elements that have an adverse impact on the karst system must be implemented providing the impact of removal of the element is not greater than the impact of retaining the status quo.

10.4 Managing Aboriginal Heritage

There is an existing known Aboriginal heritage resource, however significant portions of the Reserve have yet to be investigated. This investigation must be undertaken through Aboriginal consultation and ongoing identification and management of these resources.

Policy 7. A detailed Aboriginal heritage management and conservation strategy should be prepared as soon as possible, to include Aboriginal community consultation and identify Aboriginal heritage values and management options for the Reserve, and to assess areas of the Reserve yet to be formally investigated.

Policy 8. Should new development or activities be proposed on or adjacent to known Aboriginal archaeological or culturally sensitive sites, a detailed assessment should be undertaken prior to their instigation.

10.5 Managing the Built Environment

The built environment is inclusive of all buildings, weirs, reservoirs, remnant historic and cave infrastructure, which have been identified in Section 8 Gradings of Significance. It is exclusive of roads, some stone retaining walls to roads and De Burgh’s Bridge (all of which are subject to control of the Roads and Transport Authority).

Policy 9. The Reserve will be managed to ensure the continuance of the natural karst processes. No new structures will be built on karst without appropriate environmental assessments.

Policy 10. When the following buildings have reached the end of their useful lifespan they may be considered for demolition: items 4, 9, 10, 11, 12, 15, 19, 20, 21, 24, 27, 29, 36 in the Grand Arch precinct, U2 and U6 in the Campground and Utilities precinct, cottages T1-4 in the Two Mile precinct, utilities such as the fire shed, tractor shed and hopper bin in the Burma Road precinct (B5) and garages in the Five Mile precinct (F2 and F5), and buildings in the Jenolan Cottages (J 1 – 12).

Policy 11. Any buildings or other elements to be removed (as noted in Policy 10) should be recorded with digital photography, their location marked on the existing archival plans and the plans kept on-site with a copy of this CMP.
Policy 12. Building services, particularly visible elements such as conduits and piping, must be managed to ensure they do not detract from the visual integrity of the setting.

10.5.1 Alterations and Additions to Buildings
Policy 13. Alterations and additions, including the provision of new services, to buildings of exceptional or high significance must not detract from the place’s overall heritage significance and be identifiable as new works. New works to buildings of moderate significance should consider impacts on the heritage significance and character of the item before changes are made.

Policy 14. New evidence discovered when undertaking new works to the place must be recorded and details (e.g. photographs, notes) must be kept with a copy of this report on-site.

10.5.2 New Buildings
Policy 15. Any new buildings proposed on the Reserve must not intrude on the integrity of existing buildings, and should respect the orientation and character of existing buildings within the subject Precinct.

10.5.3 Cuts, Embankments, Retaining Walls, Weirs and Paths
Policy 16. All original or early historic cuts, embankments, retaining walls, weirs, paths and stairs should be retained and conserved.

Policy 17. Repairs to localised damage should be undertaken immediately with original materials. Where deterioration affects a more extensive area, then geotechnical advice should be sought. Gabion or modern wall solutions may be used for remedial works however they should be faced with stone walling that is sympathetic to walling in the immediate vicinity.

Policy 18. The Blue Lake (L08) weir and the Hydro weir (U5) should be conserved and retained to a high standard given their high level of significance.

Policy 19. A representative sample of timber baulks and the guardrail system on roads should be considered for retention (and possibly treated with a preservative such as Preschem Polesaver Rods) in liaison with the Roads and Transport Authority in any future road upgrading.

10.5.4 Stormwater
Policy 20. All culverts and associated overland flow paths must not be altered or constrained without appropriate assessment of the hydraulic issues and the impacts of any alteration or constraint on the Reserve’s karst.

10.5.5 Cave Infrastructure
Policy 21. A sample of cave infrastructure from all periods must be retained, providing the DECC Karst and Geodiversity Unit are satisfied that the infrastructure is not causing damage to the karst. Retained historic infrastructure is not required to be visible to the public.

10.5.6 Geotechnical Requirements
Policy 22. Geotechnical advice must be sought in regard to any landslip evident on the site which may affect the stability of the built or cultural landscape or the archaeological resource.

10.5.7 Fire Management
Policy 23. Development of precincts and/or proposed conservation works to buildings must consider the fire risk present in the VUSZ in the choice of design and materials, particularly in the more isolated precincts.
10.6 Maintenance

All built elements within the Reserve require ongoing maintenance as per the recommendations of the individual inventory reports (summarised in the recommendations of the Implementation Section 11.6) and/or as per the Total Asset Maintenance Plan.

Policy 24. The following buildings must be properly maintained having regard to their high level of significance - the Old Diesel House (37), the Boilerhouse (2), the Seismograph Station (13) in the Grand Arch Precinct, and Cottage (BC3) in the Bellbird Precinct.

Policy 25. A regular program of repainting must be implemented to ensure sound paint finishes are maintained to all galvanised surfaces, as the run off from the galvanised metals has a detrimental impact on the karst.

Policy 26. Replacement of finishes/materials in built structures must be undertaken with finishes/materials of a comparable quality.

Policy 27. Original cladding on weatherboard buildings must be retained where possible as there are relatively few of these buildings in the Reserve. It is important to retain as much original fabric as possible when repairing these structures.

10.7 Conserving the Cultural Landscape

The following policies are aimed at managing the cultural landscape within the Visitor Use and Services Zone of the Reserve.

10.7.1 Broader Park Setting

Policy 28. Developments within the Reserve must be managed to minimise disturbance to the tree canopy, and the integrity of the views in and around the Reserve.

10.7.2 Grounds and Setting

Policy 29. Significant views and vistas within the Reserve should be retained. These include views to Caves House, the Engineer’s House, the Grand Arch and Blue Lake and Carlotta’s Arch from primary vantage points. These views should be identified and protected as part of the development of a Landscape Management Plan.

Policy 30. The components that combine to define the cultural landscape of the setting including geological and landscape features, heritage structures and exotic and indigenous vegetation, must be preserved, maintained and interpreted. Invasive vegetation and weed species that have established in the visitor precincts should be removed.

Policy 31. Built infrastructure must not reduce the viability of significant trees. Management and monitoring of the tree health should be undertaken on an ongoing basis.

Policy 32. Fire management plans should be implemented to ensure protection of the cultural and natural landscape setting. All fire management plans must include the requirement for fuel reduction burns in high risk zones in the bushland area adjoining the Grand Arch Precinct.

10.8 Managing the Archaeological Resource

The following policies are aimed at managing the European and Aboriginal archaeological resource within the entire Reserve. Detailed management of the archaeological resource should be as per the recommendations of the individual inventory reports, which are also summarised in the recommendations of the Implementation Section 11.2.

Policies relating to management of the Aboriginal archaeological resource should be supplemented and endorsed by consultation with the relevant communities and the preparation of an Aboriginal Heritage Management and Conservation Strategy and/or Interpretation Plan.
Policy 33. The archaeological resource associated with the Aboriginal and European use of the Reserve must be conserved and managed as appropriate to the level of significance afforded to each site. This may include active conservation and/or protection.

Policy 34. Proposed change affecting items of identified cultural heritage (including the known and potential archaeological resources and moveable heritage items) must be conducted with the least amount of impact possible on the item as appropriate to the level of significance. Proposed change that is likely to impact on a known archaeological resource must be informed by an appropriate archaeological assessment prepared prior to design or concept.

10.8.1 Aboriginal Archaeological Resource

Policy 35. The contribution of the Aboriginal archaeological resource to the heritage significance of the Reserve must be recognised through the addition of individual archaeological sites and/or items to the Aboriginal Heritage Information Management System (AHIMS) and/or relevant statutory lists.

10.8.2 European Archaeological Resource

Policy 36. The contribution of the European archaeological resource to the heritage significance of the Reserve must be recognised through the addition of individual archaeological sites and/or items to the Historic Heritage Information Management System (HHIMS).

Policy 37. If sites of European heritage that have not been previously recorded are discovered, the discovery must be reported and the advice of a qualified heritage practitioner sought to determine the significance of the site, and provide clear strategies for future management.

10.9 Managing Moveable Heritage

Moveable heritage is inclusive of external and internal elements such as furnishings, services and historic and cave infrastructure.

Policy 38. Items of moveable heritage, if in their original location, must be recorded, retained and conserved in situ wherever possible.

Policy 39. Items of moveable heritage that have been removed from their original locations should be catalogued and stored with their original provenances, to avoid a total loss of context.

10.10 Precincts within the Visitor Use and Services Zone

There are seven precincts within the Visitor Use and Services Zone of the Reserve. Policies in Section 10.2 to 10.9 in this report apply to all precincts (unless otherwise stated). The following additional policies apply to a specific precinct or building within a precinct.

10.10.1 Grand Arch Precinct

Policy 40. The Grand Arch precinct is of exceptional significance. The character and significant elements within this precinct must be maintained and conserved to the highest standard.

Caves House (Building 1)

Policy 41. Nothing of a structural nature should be permanently fixed to external surfaces on the primary façades of Caves House. Any fixings, such as signage, downpipes and guttering, should be fixed to joints only.

Policy 42. The use of Caves House must predominantly be retained and conserved as hotel/guest accommodation and related facilities. The public hotel reception rooms could incorporate additional uses such as interpretive displays.
Policy 43. The form, detail and elements of Caves House must be retained and conserved or adapted in accordance with the gradings of significance, new works should not detract from the authenticity of original significant fabric which should be retained wherever possible.

Policy 44. Sample rooms within Caves House must be identified and conserved, including bathrooms, accommodation rooms and public spaces.

**Gatehouse (Building 6)**

Policy 45. The external and internal form of the building should be retained and conserved, including a representative sample of 1950/60s bathrooms.

Policy 46. Modifications to allow the original verandah configuration to be more clearly discernable should be considered in order to recover the significance. Original roughcast external finishes should be retained.

**Seismograph Station (Building 13)**

Policy 47. The seismographic equipment may be owned by Sydney Water Corporation, and this should be confirmed. It is preferable that the equipment be retained and interpreted in its current location. If the equipment is to be removed under the care and control of Sydney Water, the building may then be considered for demolition and the use of seismographic equipment at Jenolan should be interpreted elsewhere at the Reserve.

**The Nest (Building 16)**

Policy 48. The building should preferably be occupied for accommodation, retained and conserved. The building is currently unoccupied and a use must be identified to encourage ongoing maintenance.

**The Engineer’s House (Building 17)**

Policy 49. The terraced gardens below the Engineer’s House may relate to the design by Maiden and should be retained and conserved.

**The Former Post Office (Building 18)**

Policy 50. The Old Post Office building may be relocated within the Grand Arch Precinct and interpreted so as not to create a false historical context. It could have a more central location and be used as a focal point for interpretation. Relocation of this building should be considered subject to a structural assessment and confirmation that it is possible to reconstruct the building with no further loss of significance.

**Hill Flats (Building 19)**

Policy 51. Should necessary BCA and structural upgrade works alter the character of the building, recording and demolition may be considered.

Policy 52. Any proposed works to or redevelopment of the Hill Flats should consider the visual prominence of the building on the corner of the Oberon Road.

**The School House/Shed (Buildings 25 and 26)**

Policy 53. The School Shed should be demolished or relocated, and the School Building reinstated as a free standing structure.

**Ticket and Guides Office (Building 27)**

Policy 54. The interior of Building 27 is noted as being of little significance and may be modified.

**Grand Arch Toilets (Buildings 31 and 32)**

Policy 55. Male and female toilets (Buildings 31 and 32) within the Grand Arch are considered intrusive and should be demolished. No additional utilities should be constructed within the Grand Arch.

**Substations (Buildings 33 and 34)**
Policy 56. Services within Buildings 33 and 34 may be replaced. The location of further services and utilities within the Grand Arch is not recommended.

The Pump House (Building 35)
Policy 57. The size of the Pump House must not be increased, as it may visually impact on the adjacent DeBurgh’s Bridge.

Old Diesel House (Building 37)
Policy 58. A Geotechnical Engineer should undertake an inspection of the embankment under the south east corner of Building 37 to provide advice regarding its long term stability. Subject to the findings of the report, remediation works must be undertaken to stabilise the slope, underpin the south and western walls, and repair the internal cracks.

Policy 59. The Old Diesel House should be considered for a more public use, due to its significance. This is limited by the fact that there is currently no safe pedestrian access to the building.

Reservoirs (40 and 41)
Policy 60. These structures are not required to be retained. If proposed for removal, they should be recorded prior to any building works.

Landscape Elements
Policy 61. Fencing rails that are currently impacting on L02 must be removed, the damage assessed, and repairs undertaken by a qualified Arborist.

Policy 62. Management and monitoring of the stability of the walling of the Terrace Gardens (L04 and L07) must be undertaken. Where deterioration is localised then rebuilding in original materials should take place. Plant species of an invasive nature should be removed or managed appropriately.

Policy 63. Management and replacement of vegetation should be undertaken as necessary in the terraced gardens at L07.

Policy 64. The Blue Lake Landscape Concept Plan should continue to be implemented and the scientific values of the lake should continue to be managed in accordance with the Blue Lake Management Strategy.

10.10.2 Jenolan Cottages Precinct
The Jenolan Cottages Precinct is of little significance overall. There are no buildings or structures required to be retained. The Jenolan Cottages precinct may support additional uses and may assist with the expansion of visitor services. Additional accommodation and services in this precinct would be supported.

Policy 65. The use of the site as a former market garden should be considered when planning, designing and interpreting any future structures.

10.10.3 Five Mile Road Housing Precinct
Policy 66. Restoration of the verandah to F6 should be undertaken.

Policy 67. Adaptive reuse or alterations to the existing buildings may be considered whilst sympathetic to significance, scale, form and character of the precinct and buildings.

10.10.4 Burma Road Housing Precinct
Policy 68. Potential environmental impacts of the Burma Road precinct, specifically the impacts of buildings on karst should be assessed. Any buildings found to be adversely impacting on the caves must be recorded, removed, relocated or appropriate remedial works undertaken.

Policy 69. Subject to the findings of the environmental impacts of built form on karst, slope stability of the Burma Road precinct should be investigated by a geotechnical engineer, specifically in
relation to the B1- B4 cottages. Subject to the findings of the report consideration should be given to repairs including crack stitching, reconstruction of piers and underpinning where required. A review of subsurface drainage provisions may also be required.

Policy 70. If all or part of the precinct is to be retained (subject to Policy 69), the character of the buildings as post war residences should be retained.

Policy 71. It is preferable that c. 1980s vertical timber cladding should be removed from the exterior façade of the cottages and fibrous-sheet cladding reinstated to restore significance. Where this is not feasible, works should be undertaken to minimise the fire hazard presented by the existing cladding.

10.10.5 Two Mile Road Housing Precinct

Policy 72. Clearing of shrubs and trees in the vicinity of the housing should be undertaken in association with a fire assessment.

Policy 73. If the precinct buildings are to be retained, an ongoing use is required over the long term to facilitate their future maintenance.

10.10.6 Campground and Utilities Precinct

Policy 74. Any proposal for re-use of the precinct must consider the significance of the landscape and the landform.

Policy 75. The equipment in U4 must be maintained to a high standard, including the redundant equipment. Redundant equipment should preferably be kept in situ, however if repositioning is essential, it should be either located within the existing building or in a purpose built interpretive structure adjacent. Any changes to equipment should consider the impact on the heritage significance of the item. Remnant elements of the electrical system (metal towers etc) in the vicinity of the Hydro Station should also be retained.

Policy 76. There is some limited potential to provide alterations and additions to the cottage U4. This should only be undertaken as part of a long term strategy to ensure conservation of the building.

10.10.7 Bellbird Cottage Precinct

Policy 77. The character of the gardens surrounding the cottages (BC1 and BC3) should be conserved.

Policy 78. Site disturbance or works should be avoided in the vicinity of the archaeological remains of Wallace’s Guest House (E01).

Policy 79. The slope stability under Cottage BC3 must be stabilised with drainage and downpipes redirected.

Policy 80. Consider restoration works to re-open the enclosed verandahs on the BC3 and BC1 cottages, as well as re-cladding of BC1 in fibro sheeting, to recover significance.

Policy 81. There is some limited potential to provide alterations and additions to the cottages BC1 and BC3. This should only be undertaken as part of a long term strategy to ensure conservation of the buildings.
**10.11 Managing Use**

The management of the site has some constraints and opportunities relating to the existing use or potential adaptive reuse of buildings, areas and elements, which must be taken into consideration.

**Policy 82.** Buildings should be adapted and or re-used in accordance with their level of significance. Buildings of exceptional, high or medium significance with an established accommodation use, whether guest or staff, should be actively used for this purpose to ensure long-term maintenance is undertaken.

**Policy 83.** Future uses of buildings proposed to be retained and conserved must not have an adverse impact on the overall heritage significance of the place.

**Policy 84.** A masterplan should be developed for the Reserve to determine design envelopes, heights and footprints for future development.

**10.11.1 Managing Visitor Use**

**Policy 85.** As part of the preparation of a masterplan the on-going monitoring of vehicular traffic movement should take place to ensure transport arrangements over time do not detract from the visitor experience or the presentation of the heritage of the Reserve.

**Policy 86.** Cave tours will continue to be the primary interpretive tool for presenting the karst system to the public, as long as visitor impacts are monitored and managed. Should visitor impacts adversely affect the karst system, alternatives will be investigated.

**Policy 87.** Any expansion of facilities for visitor use must not impact on the Aboriginal, natural or cultural heritage of the Reserve including the karst system.

**Policy 88.** Any substantial expansion of facilities for day use visitors should occur in precincts of lesser significance (e.g. the Jenolan Cottages Precinct) or within the existing built footprint of the Grand Arch Precinct.

**10.12 Interpretation**

There is existing interpretation at the Reserve, such as signage and cave tours. There are opportunities to further interpret the diverse values within the Reserve to the public. Interpretation should be easily accessible by physically and/or intellectually disadvantaged visitors.

**Policy 89.** The collection and use of cultural heritage information from individuals or communities associated with the Reserve must be undertaken in accordance with the NPWS Cultural Heritage Information Policy.

**Policy 90.** Provide visitors with opportunities for understanding of the Reserve’s indigenous cultural heritage, potentially employing Aboriginal Guides.

**Policy 91.** The interpretation plan for the Reserve should be updated to cover Aboriginal, built, European cultural and natural heritage to determine the long-term interpretation requirements for the site. The interpretation plan should present a direction for signage and other interpretive devices, and develop graphic systems for the Reserve as a whole in accordance with DECC corporate signage strategies.

The interpretation plan should include opportunities for the interpretation of:

- the European archaeological resource, including the Pomona Grove Farm (E04) and early market gardens, the site of Wallace’s Guest House (E01) and the site of Rose Cottage (E03);

- the development of infrastructure, such as hydro electric and hydraulic infrastructure, as well as associated buildings and elements including the substations (Buildings 3, 32 and
33 in the Grand Arch precinct), boiler buildings (Buildings 2 and 14), the Old Diesel House (Building 38) the Hydro electricity station (U4) and Pumping House (U3), the raised concrete water pipeline (U9) and the remnant technologies remaining on the site and in the caves themselves; and

- moveable heritage items associated with the development of the caves.

Policy 92. The Grand Arch Precinct should remain the location for the focus of interpretation, providing interpretation on the following: the caves themselves, the School House (Building 25) and education within the Reserve, the Ticket and Guides office (Building 28) and vicinity, the former garage and blacksmith use in the area of the Mountain Lodge (Building 8), the early function of the old Diesel House (Building 37), the Seismographic Station (Building 13) and the cultural landscape, in addition to interpretation of the staged development of Caves House.

Policy 93. Investigate opportunities to feed interpretation of the site into school curriculums for high school and primary school students as recommended in the 2009 Draft Plan of Management.

Policy 94. The balance required to manage historic cultural landscape in a national park setting should be conveyed as one of the interpretation themes on the site.

10.13 Management, Compliance and Review

For ongoing management of the site, appropriate legislation, policies and guidelines, as amended from time to time should be followed. Section 11 of this Report provides a full discussion of relevant approval processes, based on future DECC management of the site.

10.13.1 Management of Site

Policy 95. All persons responsible for the management and maintenance of the Reserve should be familiar with the significance of the place and the conservation policies in this Conservation Management Plan.

Policy 96. A copy of this conservation management plan must be retained on site at all times for use by those responsible for the management and maintenance of the place.

Policy 97. This conservation management plan must be endorsed by the Heritage Council, and adopted by present and future owners and used as a guide for the management, conservation and maintenance of the place.

Policy 98. Priorities set-out in the Total Asset Management Strategy (2008) should be amended to reflect the conservation policies contained in this CMP.

10.13.2 Compliance with Legislation, Plans and Policies

Policy 99. The impact of any works to the place should be considered and appropriate approvals or exemptions obtained prior to undertaking works. A heritage impact statement or archaeological assessment may be required to assess any works to the place.

Policy 100. A schedule of site specific exemptions under the Heritage Act should be prepared and endorsed by the Heritage Council based on the recommendations of this CMP.

Policy 101. Any works to make the place comply with Building Code of Australia requirements should have regard to the heritage significance of the place.

Policy 102. Any works to the place should be carried out in accordance with the principles set out in the Australia ICOMOS Burra Charter.
10.13.3 Qualified Consultants and Tradespersons

Policy 103. Changes to the place should be through liaison with appropriately qualified consultants and works undertaken by suitably qualified tradespersons.

10.13.4 Review of CMP

Policy 104. This conservation management plan should be reviewed within five years. If substantial change in the management or use of the place is proposed that are not covered by policies in this report then the policy and implementation sections should be reviewed.

10.14 Further Research and Studies

This report has identified opportunities for further research which are recommended to be pursued to gain a better understanding of the Reserve, which will also assist in interpretation and appreciation of its diverse values.

10.14.1 Further Research

Policy 105. An ‘Archive’ should be established to house all building plans, recordings and other available information, including copies of the CMP, TAMS and PoM for the Reserve. There is also an opportunity to develop a library, and to make the existing DECC Karst Resources database more widely available to staff, consultants, students and researchers.

Policy 106. Recording of certain buildings proposed for demolition or alteration has been recommended. “Recording” is defined as “archival recording” and should be undertaken by a qualified heritage consultant to the standards of the Heritage Branch Guidelines including Photographic Recording of Heritage Items Using Film or Digital Capture (2006).

Policy 107. All built elements of identified exceptional significance must have significance mapping undertaken in association with architectural plans and elevations to show what areas and fabric may have different grades within the overall element. Original fabric would be highly significant, but alterations may be of lower significance.

Policy 108. Additional research should be undertaken in relation to the history of the form and structure of the cultural landscape of the Reserve, particularly the influence of Charles Maiden and the specifics of his design for the Jenolan terraced gardens.

Policy 109. Additional research should be undertaken to establish the chronology of the Police Prefecture in the Five Mile Precinct. The exact date of the F6 cottage has been disputed and this should be clarified. There is some suggestion of a former gaol at the rear of the police cottage which should also be investigated.

Policy 110. Additional research should be undertaken in relation to the original form of the Coach House in the Grand Arch Precinct (Building 37) to confirm the assumption that the existing building dates from 1925.

Policy 111. Additional research should be undertaken to confirm the date and function of the Slaughterhouse (U7) in the Campground and Utilities Precinct.

Policy 112. Further research must be undertaken for the Caves House complex of buildings. It should address additional research on construction methods, interior finishes, collection of furniture, impact of future sustainability requirements, representative examples of rooms that should be retained, and detailed repair methods.

Policy 113. Further investigation should be undertaken to record the historic walking tracks and the information used in future interpretation.

Policy 114. Future research, survey and consultation must focus on areas where Aboriginal heritage has not yet been surveyed.
10.14.2 Further Archaeological Research

Policy 115. Further research and archaeological assessment should be undertaken in relation to the former planting and landscaping of the site of Wallace’s Guest House (E01) and the remnant built fabric of Rose Cottage (E03) prior to undertaking any future works within the Bellbird Cottage Precinct, to understand the occupants and the service they provided to the cave tourists.

Policy 116. The archaeology of the fabric of Bellbird Cottage (BC1) in the Bellbird Precinct should be further researched to confirm the date of construction.

Policy 117. Further archaeological investigation is required to identify and confirm the integrity of the potential archaeological resource of Pomona Farm (E4) in the Campground and Utilities Precinct. Research into the farm will contribute to the information about the history and development of an important element in the growth and sustainability of the Reserve.

Policy 118. Further archaeological investigation into the A13-18 sites should be undertaken to characterise and clarify the sites, and establish the representativeness and rarity of the elements.

Policy 119. Further archaeological investigation should be undertaken to determine the authenticity of the Lucas Rocks (A04) site within the Grand Arch Precinct.

10.15 Conservation Policy Matrix

The following matrix table has been provided as a guide for referring to the above conservation policies. Where the policies relate in general to all precincts and other areas within the Reserve, the relevant topic is cross-referenced by shading. If policies relate to specific buildings or precincts, then the relevant precinct area is also cross-referenced by shading.
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11 Implementation – Strategies and Actions

This section lists strategies and actions for implementing the conservation policies from Section 10 of this Report. There are some overarching strategies and actions that apply to the Visitor Use and Services Zone (VUSZ), and additional strategies and actions that specifically apply to infrastructure, precincts and maintenance works within the VUSZ. The archaeological strategies and actions apply to the VUSZ and Conservation Management Zone.

Strategies and actions have been prioritised in the following tables as high, medium or low if they are single actions. Unless specified, high priority works should ideally be undertaken within the next two to four years, medium priority works should be undertaken within the next four to six years, and low priority works should be undertaken within the next six years. If the actions are cyclical, the required timeframes are nominated. The applicable conservation policies from Section 10 of this report have been noted in each table for cross-referencing, along with the policy matrix table in Section 10.10.

11.1 Overarching Strategies and Actions

The following strategies and actions apply to all seven precincts within the Visitor Use and Services Zone of the Jenolan Karst Conservation Reserve. Some of these strategies and actions were recommended in the 2009 Plan of Management for the site.

Table 17 – Strategies, Actions and Timeframes for Implementing Conservation Policies

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<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
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<tbody>
<tr>
<td>Use the Heritage Asset Maintenance Strategy and the Conservation policies in this CMP to request specific Standard Exemptions under the Heritage Act for certain works in the Reserve.</td>
<td>1-119</td>
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<td>Prepare a masterplan providing design and management guidelines for new built form elements, such as signage, furniture, lighting and paving and identify actions for preservation and replacement to ensure new developments or alterations are aesthetically compatible with the desired character of the precincts.</td>
<td>84, 85</td>
<td>✓</td>
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<td>Upgrade DECC Aboriginal Heritage information Management System and the Historic Heritage Information Management System to include the items surveyed as part of this CMP.</td>
<td>35, 36</td>
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<td>Prepare an inventory of moveable heritage items, these may include but are not limited to furniture items within Caves House, and any cave infrastructure. The inventory should where possible include those items that have been removed from their original locations, with their original provenances, to avoid a total loss of context.</td>
<td>21, 112</td>
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<td>Undertake research in relation to the history of the cultural landscape of the Reserve, particularly the influence of Maiden in the Grand Arch and Bellbird Cottages Precinct, and the specifics of his design for the Jenolan terraced gardens.</td>
<td>108</td>
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<td>Strategy / Action</td>
<td>Policies</td>
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<td>Prepare a Landscape Management Plan and Concept Plan to ensure that cultural plantings and weed species that have established in the visitor precincts do not impact on the flora / environment of the Reserve through invasion / infestation. This has already been prepared for Blue Lake.</td>
<td>29, 30</td>
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<td>Review existing Interpretation Plan for the Reserve. Ensure strategy takes into account broader issues of indigenous history in consultation with relevant parties.</td>
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<td>✔️ High Priority</td>
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<td>The existing conservation and maintenance works schedule should be updated to include works outlined in policies in Section 10 of this Report and in the individual inventory forms (Volume 2 of this Report).</td>
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<td>✔️ High Priority</td>
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<td>Prepare, adopt and implement a risk management strategy for the Grand Arch precinct that includes assessing existing recreational activities and opportunities and provides an on going process for reviewing the Strategy. This should be undertaken in association with the existing Risk Assessment Report (1996).</td>
<td>4, 42</td>
<td>✔️ High Priority</td>
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<td>Investigate the alternative options for traffic management options in regard to reducing impact on karst (e.g. car park 2) and the aesthetic impact on the Grand Arch Precinct and Caves House.</td>
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<td>✔️ Medium Priority</td>
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<td>Commence consultation with relevant Aboriginal community members to prepare a detailed Aboriginal Heritage Management and Conservation Strategy identifying Aboriginal heritage values and management options for the Reserve.</td>
<td>7, 114</td>
<td>✔️ High Priority</td>
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<td>Review this CMP in five years.</td>
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<td>✔️ Medium Priority</td>
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<tr>
<td>Establish an “Archive” to house all building plans, recordings and other available information including copies of the CMP, TAMS and the Plan of Management.</td>
<td>105</td>
<td>✔️ Medium Priority</td>
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<td>Establish active links with the DECC Cultural Heritage Division to assist in guiding appropriate management and works.</td>
<td>1-119</td>
<td>✔️ Medium Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manage the entry and spread of introduced flora species as recommended in the Plan of Management.</td>
<td>PoM</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A focus of future Aboriginal archaeological research for the Reserve should be in areas of the Reserve that have yet to be formally investigated.</td>
<td>7, 114</td>
<td>✔️ Medium Priority - Ongoing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy / Action</td>
<td>Policies</td>
<td>Single Action</td>
<td>Every 1 Year</td>
<td>Every 3 Years</td>
<td>Every 5 Years</td>
<td>Every 10 Years</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Review the Karst Reserves Interpretation and Visitor Orientation Plan and visitor surveys to establish the essence of the Jenolan brand and how this relates to the physical treatment of the landscape (landscape treatments, written and visual communication materials, staff uniforms etc.)</td>
<td>PoM</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop and implement a formal program for stakeholder consultation.</td>
<td>PoM</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirm the ownership of the Seismological Equipment in Building 13, and confirm ongoing maintenance responsibilities.</td>
<td>47</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continue monitoring activities to ensure that impact of recreational and operational activities on critical ecosystems and their components is minimised.</td>
<td>86</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a library and make DECC karst resources database available to staff, consultants, students and researchers.</td>
<td>105</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake recording of the historic walking systems for use in Interpretation planning.</td>
<td>113</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain or strengthen relationships with research institutions and relevant karst management agencies/ organisations.</td>
<td>PoM</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continue the program of upgrading works within the Caves, including provision of new stainless steel access infrastructure and new LED lights, with a representative example of previous infrastructures to remain.</td>
<td>21</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitor land use and development activities within the viewshed of the Reserve to determine actions required to influence outcomes that may have an impact on the integrity of the setting.</td>
<td>28, 29</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake maintenance works as identified in the Asset Maintenance Strategy.</td>
<td>AMS</td>
<td>As necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake archival recordings of structures proposed for demolition. Any recording should also document technologies specific to Jenolan including UV filter systems utilised instead of chlorine filters.</td>
<td>106</td>
<td>As necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Some of the heritage conservation actions recommended in the Plan of Management are not supported or have not been reiterated for the following reasons:

- Constitute a state karst advisory committee – this has already been achieved;
- Refine and enhance bush walking experience – “develop 2 iconic walks and phase out remaining walks” – it would be preferred if historic walks were not phased out but were closed on a cyclical basis to ensure that maintenance can occur as required to ensure their longevity; and
- Strategy 73 – “Ensure that new developments additions or alterations carried out in the Greater Reserve Area visually complement the form, mass, colour and character of the Main Precinct”. Urbis would prefer that new guidelines are developed on a precinct by precinct basis, as it is not considered that new works in all precincts should reflect the character of the main precinct (assumed to be Grand Arch Precinct).

11.2 Strategies and Actions for Managing the Archaeological Resource

The following strategies and actions apply to the Visitor Use and Services Zone and the Conservation Management Zone of the Reserve in relation to managing the archaeological resource.

Table 18 – Strategies, Actions and Timeframes for Managing the Archaeological Resource

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undertake works to conserve, protect, enclose, secure or limit public or vehicular access to identified archaeological sites as per the recommendations of the policies in Section 10. May include track diversion and relocation, re-vegetation and/or fencing around sites.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>High Priority</td>
<td></td>
<td>High Priority</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake recordings of Aboriginal art sites and European graffiti as identified (A12, A20 and E08). An Archival recording should be prepared by a professional photographer with experience in archival photography, and/or a qualified heritage practitioner. This recording must be a non-invasive method of protecting the information of this cave and a range of lighting techniques should be employed to record the images as clearly as possible.</td>
<td></td>
<td>High Priority</td>
<td></td>
<td></td>
<td>High Priority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>106, 114</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake further historical research and investigation of known archaeological sites.</td>
<td></td>
<td>Medium Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>115-118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal Archaeology</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Further research to be undertaken on the deposits at the Lucas Rocks (A04) site.</td>
<td></td>
<td>High Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>119</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### IMPLEMENTATION – STRATEGIES AND ACTIONS

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>The car park use of McKeown’s Valley 10 (A18) artefact scatter and potential archaeological deposit should cease, to avoid any further damage or disturbance to the site. Should the A18 site continue to need to be used as a vehicular track and/or car parking area, an archaeological assessment should be undertaken and appropriate actions should be taken to minimise or mitigate impacts to the site.</td>
<td>33</td>
<td>✓</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Appropriate action should be taken to conserve and protect art sites A12 and A20. Consideration should be given to the practicality of preventing access by people and animals to these sites through methods such as fencing, to prevent damage and/or defacing of the art. Consideration should be given to obtaining the advice of a professional conservator who would be able to provide methods to manage and minimise damage of the art due to environmental factors.</td>
<td>33</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Where sites are located within or in close proximity of the McKeown’s Creek tourist walking track (sites A12-A20), appropriate management and/or mitigation strategies should be adopted to conserve the sites and minimise damage and disturbance, which may include limiting vehicles. Mammoth Flat (A14) is currently considered an Aboriginal site. Therefore, no camping or other associated activities that may cause impact should be undertaken in this area until appropriate archaeological investigation is undertaken to ascertain the nature, extent and significance of Aboriginal objects (if present) within the Flat’.</td>
<td>33</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If previously unrecorded Aboriginal heritage sites are found they should be documented in the DECC AHIMS database in accordance with DECC standards and guidelines. During the documentation process the significance and appropriate management of the site should be identified in consultation with the relevant Aboriginal stakeholders.</td>
<td>33, 34</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The A01/A02 burial should be appropriately managed in consultation with the relevant Aboriginal communities due to its high scientific and potentially high cultural significance values.</td>
<td>33</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### European Archaeology

The archaeological resource associated with Wallace’s Guest House (E01) should be conserved and the area fenced to avoid further impact to the resource by vehicles using the area as a turning circle or lay-by. Site disturbance works to the area should be avoided.

The rock overhang containing the European Graffiti over Aboriginal paintings (E08) should have an archival recording undertaken. Prevention of animals in this area is recommended to prolong the life of these artworks. In addition to the archival recording listed in the policy above, consideration should be given to the practicality of fencing or preventing access to the site. The current poor condition of the art works are a direct result of animal usage of this overhang.

The site of Rose Cottage (E03) should be conserved and the associated archaeological resource protected from damage by bush pigs. Site disturbance/works on or in the immediate vicinity of the site should be avoided. Prior to any work being undertaken on or around the site, further historical research and an archaeological assessment of the site should be undertaken.

If the Campground precinct is to be reinstated as a public camping area, an archaeological assessment should be undertaken to determine the integrity of the archaeological resource, and ensure minimal impact to the remains of Pomona Grove Farm (E04) by park visitors.

The Leffel Wheel (E06) should be cleared of vegetation and conserved in situ to prevent further deterioration. Its associated pipe work should also be cleared and conserved in situ by a qualified conservator. The pipes and enclosure should be maintained regularly to avoid further decay and loss of fabric.

The remnants of the sewerage systems at E07 in the Grand Arch precinct should be regularly maintained including regular clearing of vegetation.

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>European Archaeology</strong></td>
<td>78, 115</td>
<td>✓</td>
<td>High Priority</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>✓</td>
<td>High Priority</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>115</td>
<td>✓</td>
<td>High Priority</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>74, 91</td>
<td>✓</td>
<td>Prior to finalisation of plans</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>33</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>✓</td>
<td></td>
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</tr>
</tbody>
</table>
11.3 Strategies and Actions for Managing Infrastructure

The following strategies and actions apply to the Visitor Use and Services Zone and the Conservation Management Zone of the Reserve in relation to managing infrastructure.

Table 19 – Strategies, Actions and Timeframes for Managing Infrastructure

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fire management and fire infrastructure</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Undertake management to prevent fire risk, particularly with regard to the more isolated precincts. This should inform development of precincts and proposed restoration works to buildings. All services should be audited in accordance with BCA standards. Ensure bushfire protection plans are implemented to ensure protection of the cultural and natural landscape setting.</td>
<td>23, 32</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any historic fire service infrastructure (excluding the fire shed in the Burma Rd Precinct) should have basic maintenance undertaken, but be clearly marked as “non-operational”.</td>
<td>91, 101</td>
<td>✓ Medium Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Retaining walls and drainage</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retaining walls are to be visually monitored for signs of distress (i.e. tilting, bulging, cracking). Much of the stonework is historic fabric and should be conserved and repaired where possible. Where deterioration or damage is localised then rebuilding in original materials should take place. Where deterioration is affecting a more extensive area (i.e. due to landslip) then geotechnical advice is required.</td>
<td>16, 17</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify and modify vulnerable drainage inlets to reduce vulnerability to blockage.</td>
<td>20</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Landscape</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Undertake assessments to identify and manage risk posed by development and infrastructure to significant trees. Works should be undertaken by a qualified arborist.</td>
<td>28, 31</td>
<td>✓ Medium Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11.4 Strategies and Actions for Precincts within the VUSZ

The following strategies and actions apply to implementing conservation policies for specific precincts within the Visitor Use and Services Zone of the Reserve.

11.4.1 Grand Arch Precinct

Table 20 – Strategies, Actions and Timeframes for Grand Arch Precinct

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site maintenance regimes should include frequent and regular checks on vulnerable inlets such as those around the Caves House complex, the drainage ditches at the rear of the Gatehouse (Building 6) and the Workshop (Building 15).</td>
<td>20</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure reuse of currently vacant but significant building The Nest (Building 16), or manage in a ‘mothballed’ state.</td>
<td>48</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake detailed structural assessment of the Hill Flats (Building 19) and continue with BCA upgrade.</td>
<td>51, 52</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geotechnical Engineer to undertake an assessment and inspection of the embankment under the south-east corner of the Old Diesel House (37).</td>
<td>58, 59</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare, lodge and implement an Environmental Management System for the Grand Arch Precinct.</td>
<td>PoM</td>
<td>✓</td>
<td></td>
<td>Medium Priority</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitor and review the implementation of the Environmental Management System for the Grand Arch Precinct.</td>
<td>PoM</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake regular visual monitoring of the Blue Lake weir for signs of distress.</td>
<td>16, 18</td>
<td>✓</td>
<td></td>
<td>Medium Priority</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The shed to the Engineer’s House (Building 17) should be demolished and the slope reinstated with appropriate graded retaining wall or embankment to control slope erosion.</td>
<td>17, 22</td>
<td>✓</td>
<td></td>
<td>Medium Priority</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The remnant ivy on the verandah of Engineer’s House (Building 17) should be systematically removed and the timber repainted and repaired as required.</td>
<td>5, 30</td>
<td>✓</td>
<td></td>
<td>Medium Priority</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake works to remove any invasive vegetation, including ivy, affecting built</td>
<td>5, 30</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11.4.2 Jenolan Cottages Precinct

Table 21 – Strategies, Actions and Timeframes for Jenolan Cottages Precinct

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undertake interpretaion of significant historical uses and archaeological elements, in association with a revised interpretation plan.</td>
<td>91</td>
<td>✓</td>
<td>Low Priority</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>If statutory obligations have been fulfilled (i.e. if the relevant permits at under the NPW Act 1974 are in place) then no further management of the Top Farm artefact scatter (A07) and the Top Farm 3 artefact scatter (A08) is required.</td>
<td>33</td>
<td>✓</td>
<td>Low Priority</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
11.4.3 Five Mile Road Housing Precinct

Table 22 – Strategies, Actions and Timeframes for Five Mile Housing Precinct

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undertake further research to establish the chronology of the Police Prefecture in the Five Mile precinct.</td>
<td>109</td>
<td>✓ Low Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is preferable that the external cladding to modified cottages F1, F3 and F4 is replaced with fibro sheeting.</td>
<td>67, (71)</td>
<td>✓ Low Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restore verandah of cottage F6.</td>
<td>66</td>
<td>✓ Low Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake restoration, conservation and maintenance works to a high level on cottages F1, F6 and F7.</td>
<td>67</td>
<td>✓ Low Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11.4.4 Burma Road Housing Precinct

Table 23 – Strategies, Actions and Timeframes for Burma Road Housing Precinct

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undertake an assessment of the impact of the built forms sited over the karst.</td>
<td>68</td>
<td>✓ High Priority(</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If necessary based on the above, prepare and implement a strategy for the staged removal/ relocation of cottages located on karst.</td>
<td>68</td>
<td>✓ High Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If buildings are proposed to be retained, a Geotechnical Engineer should provide recommendations for repair of structural damage to cottages B1-B4.</td>
<td>69</td>
<td>✓ Medium Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If all or part of the Precinct is to be retained, it is preferable that the external cladding to the cottages is replaced with fibro sheeting.</td>
<td>71</td>
<td>✓ Low Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 11.4.5 Two Mile Road Housing Precinct

Table 24 – Strategies, Actions and Timeframes for Two Mile Road Housing Precinct

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undertake clearing of additional shrubs and trees in the vicinity of housing.</td>
<td>72</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 11.4.6 Campground and Utilities Precinct

Table 25 – Strategies, Actions and Timeframes for Campground and Utilities Precinct

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undertake regular management and monitoring of the stability of the weir and trout ladder walling.</td>
<td>16</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake archaeological investigations to confirm the integrity of the potential archaeological resource of Pomona Farm, the farmhouse and toolshed, the piggery and market garden.</td>
<td>117</td>
<td>Medium Priority</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 11.4.7 Bellbird Cottage Precinct

Table 26 – Strategies, Actions and Timeframes for Bellbird Cottage Precinct

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geotechnical Engineer to assess slope stability adjacent to cottage B3, and repairs to be undertaken including redirection of downpipe.</td>
<td>22</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undertake further historical research and archaeological assessment of the site of Wallace’s Guest House.</td>
<td>78, 115</td>
<td>Medium Priority</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research archaeology of BC1 in the Bellbird Precinct to confirm the date of construction.</td>
<td>116</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is preferable that the external cladding to the cottage BC1 is replaced with fibro sheeting, and that consideration is given to re-opening the verandahs on BC1 and BC3.</td>
<td>(71), 80</td>
<td>Low Priority</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 11.5 Cyclical Maintenance Works

The following ongoing cyclical maintenance works apply to all seven precincts within the Visitor Use and Services Zone of the Reserve. These cyclical maintenance works are not exhaustive or exclusive, and should be undertaken in addition to the existing works noted in the existing maintenance schedule for the Reserve.

### Table 27 – Ongoing cyclical maintenance works

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Policies</th>
<th>Single Action</th>
<th>Every 1 Year</th>
<th>Every 3 Years</th>
<th>Every 5 Years</th>
<th>Every 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning of the caves (vacuum and high pressure clean) should be undertaken as part of a cyclical maintenance program with appropriate technical advice.</td>
<td>3</td>
<td>✅ Medium Priority (as advised by Caves Operational Manager)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retaining walls should be visually monitored for signs of distress (i.e. tilting, bulging, cracking).</td>
<td>16</td>
<td></td>
<td></td>
<td>✅</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roofing and guttering of all existing buildings should be cleaned on a cyclical basis as part of an overall site maintenance program.</td>
<td>PoM</td>
<td></td>
<td></td>
<td>✅</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular inspection, monitoring and cleaning of the areas behind buildings constructed against retaining walls and embankments. In particular, including the slope behind the buildings 7 (Diesel Generator House); 8 (Mountain Lodge); 11 (Cottage) and 14 (workshop); within the Grand Arch Precinct, the F3, F4 and F6 cottages within the Five Mile Precinct, the BC3 cottage in the Bellbird Precinct.</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide for maintenance of the pedestrian stairs and paths to a high level to ensure public safety. Use traditional methods and materials for path repair. Railings should continue to be replaced as stainless steel as has recently occurred.</td>
<td>16</td>
<td>As necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site maintenance regimes should include frequent and regular checks on vulnerable inlets such as those around the Caves House complex where stormwater drains into low spots drained by grated outlets, the drainage ditches at the rear of Building 6 (the Gatehouse), inlets at the rear of Building 15 (workshop) and the Boiler House (2), unless drainage modified.</td>
<td>20</td>
<td>✅ High Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish a program of checking and repainting any galvanised materials with the potential to affect karst.</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>✅</td>
<td></td>
</tr>
<tr>
<td>Strategy / Action</td>
<td>Policies</td>
<td>Single Action</td>
<td>Every 1 Year</td>
<td>Every 3 Years</td>
<td>Every 5 Years</td>
<td>Every 10 Years</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>----------</td>
<td>---------------</td>
<td>--------------</td>
<td>---------------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Pruning of cultural plantings</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish a program for monitoring weatherboard buildings for pest infestation</td>
<td>2, 27</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>and/or damage.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repairs to brickwork and limestone of all existing buildings should be</td>
<td>13</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>undertaken as required. New pointing should closely match the original mortar</td>
<td></td>
<td>Low Priority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in profile, joint size and materials.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12 Bibliography and References

12.1 Bibliography


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Department of Environment and Climate Change 2006, Blue Lake Management Strategy, June, Department of Environment and Climate Change, Bathurst.


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Godden Mackay Logan 2007, Heritage Asset Management Strategy, February, for Jenolan Caves Reserve Trust, Oberon.


Griffin, A, 2009, Personal communication regarding various issues at Reserve, Jenolan Caves Reserve Trust, Oberon.


Lithgow Mercury 1899.


NRMA 2009, Tourism article on Jenolan Caves and events within the Reserve in ‘Open Road’ Magazine, NRMA, Sydney.


Williams, P. 2009, Personal communication regarding various issues at Reserve, Jenolan Caves Reserve Trust, Oberon.

[Note: Various government agencies have changed their name, however the above publications state their name at the time of publication.]

### 12.2 References


Appendix A  Management History of Reserve
A.1 Management of Jenolan Karst Conservation Reserve

The information for 1866 to 1987 is sourced from the CMP 1988.

1866 - 1879 Lands Department
1879 – 1907 Department of Mines
1907 – 1915 Tourist Bureau, within Department of Intelligence and Bureau of Statistics
1915 – 1919 Immigration and Tourist Bureau
1919 – 1936 Tourist Bureau, transferred to Chief Secretary’s Department then reorganised on the plan of a State Industrial Undertaking
1936 – 1938 Tourist Bureau and Resorts again a sub-department of Chief Secretary’s Department
1938 – 1946 Tourist Bureau and Resorts transferred to Commissioner for Railways
1946 – 1962 Department of Immigration and Tourist Activities
1962 – 1968 Department of Tourist Activities
1968 – 1982 Department of Tourism
1982 – 1984 Department of Leisure, Sport and Tourism
1984 – 1989 Tourist Commission
1989 - 2006 Jenolan Caves Reserve Trust, reporting to the Minister for Climate Change, Environment and Water
2006 - 2008 Visitor Use and Services Zone - Jenolan Caves Reserve Trust

Conservation Management Zone – Department of Environment and Climate Change
Appendix B  World Heritage Listing
B.1 World Heritage Values of the Greater Blue Mountains

Location
The Greater Blue Mountains consists of 10,000 km² of mostly forested landscape on a sandstone plateau extending 60 to 180 kilometres inland from central Sydney, New South Wales.

Description of place
The property includes very extensive areas of a wide range of eucalypt communities and large tracts of wilderness. The high wilderness quality of much of the Greater Blue Mountains constitutes a vital and highly significant contribution to its World Heritage value and has ensured the integrity of its ecosystems and the retention and protection of its heritage values.

The Greater Blue Mountains is an area of breathtaking views, rugged tablelands, sheer cliffs, deep, inaccessible valleys and swamps teeming with life. The unique plants and animals that live in this outstanding natural place relate an extraordinary story of Australia's antiquity, its diversity of life and its superlative beauty. This is the story of the evolution of Australia's unique eucalypt vegetation and its associated communities, plants and animals.

The property is comprised of eight protected areas in two blocks separated by a transportation and urban development corridor. These protected areas are the Blue Mountains, Wollemi, Yengo, Nattai, Kanangra-Boyd, Gardens of Stone and Thirlmere Lakes National Parks, and the Jenolan Karst Conservation Reserve.

The area is a deeply incised sandstone plateau rising from less than 100 metres above sea level to about 1300 metres at the highest point. There are basalt outcrops on the higher ridges. This plateau is thought to have enabled the survival of a rich diversity of plant and animal life by providing a refuge from climatic changes during recent geological history. It is particularly noted for its wide and balanced representation of eucalypt communities ranging from wet and dry sclerophyll to mallee heathlands, as well as localised swamps, wetlands, and grassland. One hundred and one species of eucalypts (over 14 per cent of the global total) occur in the Greater Blue Mountains. Twelve of these are believed to occur only in the Sydney sandstone region.

The evolution of eucalypts
The property has been described as a natural laboratory for studying the evolution of eucalypts. The largest area of high diversity of eucalypts on the continent is located in southeast Australia and the Greater Blue Mountains includes much of this eucalypt diversity.

As well as supporting such a significant proportion of the world's eucalypt species, the property provides examples of the range of structural adaptations of the eucalypts to Australian environments. These vary from tall forests at the margins of rainforest in the deep valleys, through open forests and woodlands, to shrublands of stunted mallees on the exposed tablelands.

The ancient Wollemi pine
In addition to its outstanding eucalypts, the Greater Blue Mountains also contains ancient, relict species of global significance. The most famous of these is the recently-discovered Wollemi pine, *Wollemia nobilis*, a "living fossil" dating back to the age of the dinosaurs. Thought to have been extinct for millions of years, the few surviving trees of this ancient species are known only from three small populations located in remote, inaccessible gorges within the Greater Blue Mountains. The Wollemi pine is one of the world's rarest species.

Fauna
More than 400 different kinds of animals live within the rugged gorges and tablelands of the Greater Blue Mountains. These include threatened or rare species of conservation significance, such as the spotted-tailed quoll, the koala, the yellow-bellied glider, the long-nosed potoroo, the green and golden bell frog and the Blue Mountains water skink. Flora and fauna of conservation significance and their habitats are a major component of the World Heritage values of the area.
The area is widely renowned and extensively used for sight-seeing, bushwalking, rock climbing, canyoning and other outdoor recreational pursuits.

Criteria

9 Outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals.

The Greater Blue Mountains provides outstanding examples representing on-going ecological and biological processes significant in the evolution of Australia's highly diverse ecosystems and communities of plants and animals, particularly eucalypt-dominated ecosystems.

The World Heritage values include:

- primitive species with Gondwanan affinities that are of outstanding significance in terms of the evolution of plant life, including the Wollemi Pine (Wollemia nobilis) and the primitive gymnosperm Microstrobos fitzgeraldii;
- a centre of diversification of the eucalypts which provides an outstanding record of the products of evolutionary processes associated with the global climatic changes of the late Tertiary and the Quaternary;
- the highly unusual juxtaposition of diverse scleromorphic species with Gondwanan taxa;
- an exceptional representation of the major eucalypt groups and aspects of their evolution and radiation, including species in the following groups:
  - genera: Eucalyptus (including Corymbia) and Angophora;
  - subgenera: Eucalyptus, Corymbia and Symphyomyrtus;
- examples of species divergence occurring in a relatively small area, including:
  - differentiation of eucalypt taxa in isolation in response to persistent habitat islands (e.g. those associated with sandstone plateaux isolated by deep valleys)
  - mutually exclusive distributions of taxa in the series Strictae (the mallee ashes) and Haemostomae (the scribbly ashes) resulting from long-term isolation of breeding populations (allopatric speciation);
- eucalypt taxa demonstrating very high levels of hybridisation;
- representative examples of dynamic processes in eucalypt-dominated ecosystems, including the full range of interactions between eucalypts, understorey, environment and fire, extending from forests with rainforest boundaries to mallee communities with heath boundaries, demonstrating the exceptional ecological amplitude of the eucalypts.

10 Contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

The Greater Blue Mountains includes significant habitats for in situ conservation of biological diversity, including the eucalypts and eucalypt-dominated communities, taxa with Gondwanan affinities, and taxa of conservation significance. The World Heritage values include:

- outstanding levels of plant diversity expressed at different taxonomic levels (152 families, 484 genera, ca 1500 species) and for all three measures of species diversity (local species richness or "alpha" diversity, species turnover across environmental gradients or "beta" diversity, and regional species richness or "gamma" diversity);
- plant taxa with very high levels of species diversity, including the families - Fabaceae(149 species), Myrtaceae (150 species), Orchidaceae(77 species), Poaceae(57 species), Asteraceae(69 species), Proteaceae(77 species), Cyperaceae(43 species), and the genera - Eucalyptus (91 species), Acacia (64 species);
exceptional diversity of habitats that contribute to the property being one of the three most diverse areas on earth for scleromorphic species and the only one of these areas that is dominated by trees and without a Mediterranean climate, including plateau tops, ridges, exposed rocks, cliffs, rocky slopes and sheltered gorges and valleys;

exceptional diversity of habitats providing outstanding representation of the Australian fauna within a single place, including 400 vertebrate taxa - 52 native mammals, 265 birds or 33 percent of the Australian total, 63 reptiles, more than 30 frogs, and examples of species of global significance such as the platypus (*Ornithorhynchus anatinus*) and the echidna (*Tachyglossus aculeatus aculeatus*), and invertebrate taxa - butterflies (120 species) and moths (estimated 4000 species);

very high diversity of scleromorphic taxa represented within 20 plant families including Myrtaceae, Proteaceae, Epacridaceae, Fabaceae (Faboideae and Mimosoideae), Dilleniaceae, Rutaceae, and Euphorbiaceae (Tribe Stenolobeae);

ancient, relict species with Gondwanan affinities that have survived past changes of climate within refugia, for example in recessed canyons and perpetually moist areas, including:
- the Wollemi Pine (*Wollemia nobilis*); and
- the primitive gymnosperm *Microstrobus fitzgeraldii*;

other primitive species with Gondwanan affinities, including:
- Lomatia, Dracophyllum, and Podocarpus;
- taxa in the family Lauraceae;
- Atkinsonia, the most primitive extant root parasitic genus; and
- taxa in the family Winteraceae, such as Tasmania.

taxa contributing to an exceptional diversity of eucalypts and eucalypt-dominated ecosystems, including:
- 2 eucalypt genera (*Eucalyptus* including Corymbia, Angophora);
- 3 eucalypt subgeneric groups (*Eucalyptus*, Corymbia, Symphyomyrtus);
- 91 eucalypt species (13 percent of the global total); and
- highly diverse understoreys of flora and fauna species;

structural forms contributing to an exceptional diversity of eucalypts and eucalypt-dominated ecosystems, including:
- tall open forest (towering, single-stemmed trees);
- open forest;
- woodland;
- low, open woodland; and
- mallee shrubland (small, multi-stemmed shrubs);

more than 70 plant communities, including 56 open forest and woodland communities contributing to an exceptional diversity of eucalypt-dominated ecosystems associated with:
- wet environments (including the margins of rainforests);
- dry environments (rapidly-draining, drought-prone sandstone plateaux);
- low-nutrient environments (including sandstone-derived substrates);
- fire-prone environments (including the sandstone plateaux); and
- fertile environments (remnants of formerly widespread Tertiary basalts).
APPENDICES

- high levels of diversity of invertebrate fauna, including Lepidoptera (4000 moth species, 120 butterfly species), and cave invertebrates (67 taxa recorded at Jenolan Caves);

- plant taxa of conservation significance and their habitats, including:
  - endemic species (114 plant species);
  - relict species;
  - species with a restricted range; and
  - rare or threatened species (127 species).

- animal taxa of conservation significance and their habitats, including:
  - endemic species;
  - relict species;
  - species with a restricted range; and
  - rare or threatened species (40 vertebrate taxa - including 12 mammal species and 15 bird species - and 12 invertebrate taxa).

### C.1 Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Australia ICOMOS</strong></td>
<td>The national committee of the International Council on Monuments and Sites</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
<tr>
<td><strong>Burra Charter</strong></td>
<td>Charter adopted by Australia ICOMOS, which establishes the nationally accepted principles for the conservation of places of cultural significance</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
<tr>
<td><strong>Conservation</strong></td>
<td>All the processes of looking after an item so as to retain its cultural significance; it includes maintenance and may, according to circumstances, include preservation, restoration, reconstruction and adaptation, and will be commonly a combination of more than one of these</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
<tr>
<td><strong>Conservation Management Plan</strong></td>
<td>A document explaining the significance of a heritage item, including a heritage conservation area, and proposing policies to retain that significance; it can include guidelines for additional development or maintenance of the place</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
<tr>
<td><strong>Conservation policy</strong></td>
<td>A proposal to conserve a heritage item arising out of the opportunities and constraints presented by the statement of heritage significance and other considerations</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
<tr>
<td><strong>Curtilage</strong></td>
<td>The geographical area that provides the physical context for an item, and which contributes to its heritage significance; land title boundaries do not necessarily coincide</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
<tr>
<td><strong>Heritage item</strong></td>
<td>A landscape, place, building, structure, relic or other work of heritage significance</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
<tr>
<td><strong>Heritage significance</strong></td>
<td>Of aesthetic, historic, scientific, cultural, social, archaeological, natural or aesthetic value for past, present or future generations</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
<tr>
<td><strong>Heritage value</strong></td>
<td>Often used interchangeably with the term ‘heritage significance’; there are four nature of significance values used in heritage assessments (historical, aesthetic, social and technical/research) and two comparative significance values (representative and rarity)</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
<tr>
<td><strong>Integrity</strong></td>
<td>A heritage item is said to have integrity if its assessment and statement of significance is supported by sound research and analysis, and its fabric and curtilage and still largely intact</td>
<td>Heritage Office and Department of Urban Affairs &amp; Planning 1996, <em>Heritage Terms and Abbreviations</em></td>
</tr>
</tbody>
</table>
Appendix D  Oberon Community Needs 2006
## D.1 Oberon Community Needs 2006

<table>
<thead>
<tr>
<th>Need</th>
<th>Target Group</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate accommodation for the elderly and disabled (respite care)</td>
<td>Older People, People with Disabilities</td>
<td>Aims to keep people in their own homes and with in-home support packages. Council also targeted an additional 8 beds to support the delivery of aged care services in Oberon.</td>
</tr>
<tr>
<td>Multi-Purpose Community Centre (passive activities)</td>
<td>Children, Young People, Women, Older People, People with Disabilities, Culturally &amp; Linguistically Diverse</td>
<td>Use an existing building or site as a Community Centre for passive activities. Examples include schools or the library.</td>
</tr>
<tr>
<td>Multi-Purpose Recreation Centre (active activities)</td>
<td>Children, Young People, Women, People with Disabilities</td>
<td>Use existing centres for a Sport and Recreation Centre for active activities, examples of possible sites include swimming pool or high school.</td>
</tr>
<tr>
<td>Child-Care</td>
<td>Children, Women</td>
<td>Financial Assistance (interest Free Loans) made available for people to set up accredited Child-Care Places.</td>
</tr>
<tr>
<td>Communication and knowledge of existing services</td>
<td>All</td>
<td>Council to coordinate a comprehensive data base of available community services and activities.</td>
</tr>
<tr>
<td>Policing (road safety, drugs &amp; alcohol, domestic violence, sexual abuse, unruly behaviours, bullying)</td>
<td>Young People, Women</td>
<td>Organise community sessions that look at developing a local “Crime Prevention” or “Well-Being Plan” that highlights the role of individuals in being part of a positive community.</td>
</tr>
<tr>
<td>Public Transport</td>
<td>Women, Older People, People with Disabilities, Culturally &amp; Linguistically Diverse</td>
<td>Council to investigate public transport options, recommendations are taxi vouchers and expanding care car service.</td>
</tr>
<tr>
<td>Disabled Parking</td>
<td>People with Disabilities</td>
<td>Provide more appropriate and accessible facilities Action Plan.</td>
</tr>
<tr>
<td>Recognition of the Aboriginal Community in Oberon</td>
<td>Aboriginal &amp; Torres Strait Islander</td>
<td>Instigate an Action Plan by bringing together Aboriginal &amp; Torres Strait Islander people and Councillors to achieve recognition in the local community.</td>
</tr>
<tr>
<td>Education of the community regarding Aboriginal culture</td>
<td>Aboriginal &amp; Torres Strait Islander</td>
<td>Discussions with Aboriginal &amp; Torres Strait Islander people and Councillors to develop a better understanding of Aboriginal culture and the significance of sites.</td>
</tr>
<tr>
<td>Access to Interpreting Services</td>
<td>Culturally &amp; Linguistically Diverse</td>
<td>Council staff are to become aware of Migrant Support Services at the Bathurst Information and Neighbourhood Centre. Council are to promote sources of this information in newsletters, information centres and publications</td>
</tr>
<tr>
<td>Men’s Health</td>
<td>Men</td>
<td>Oberon Health Council has a current focus on Men’s Health and Council will become informed of related information.</td>
</tr>
<tr>
<td>Better Co-operation between Oberon Council and villages</td>
<td>Newly Incorporated Area Burraga/Black Springs</td>
<td>Aims to introduce new target group for Community Planning Consultation sessions to replace the names Burraga/Mt David to Villages and Rural.</td>
</tr>
<tr>
<td>Rural Infrastructure</td>
<td>Newly Incorporated Area Burraga/Black Springs</td>
<td>Roads, rubbish tips, cemeteries &amp; recreation areas.</td>
</tr>
<tr>
<td>Needs and Strategies</td>
<td>Stakeholder</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Need to balance environment requirements and economic developments</td>
<td>Business</td>
<td>Oberon must have well developed long term land management plans</td>
</tr>
<tr>
<td>Economic development in business and industry needs Council’s helps and support</td>
<td>Business</td>
<td>Council to develop an economic development function of Council to support and attract business.</td>
</tr>
<tr>
<td>Strategic Planning</td>
<td>Councillors</td>
<td>Elected members time can be taken up with day-to-day issues so they have no time for strategic issues, awareness and time allocation can resolve this.</td>
</tr>
<tr>
<td>Information for Councillors</td>
<td>Councillors</td>
<td>More information sessions for Councillors on strategic management, asset management, reading and understanding financial reports and legislation</td>
</tr>
<tr>
<td>Leadership</td>
<td>Councillors</td>
<td>Community Social Planning to become an annual engagement.</td>
</tr>
</tbody>
</table>

[Source: Oberon Council Community and Social Plan 2006]
Appendix E  Research to Accompany
Analysis of Social and Cultural Context
E.1 Regional context and population profile

According to the 2006 Census, there were 5,030 residents in the LGA, of which 52.4% are male and 47.6% female. The highest population age groups were 5 to 14 years and 55 to 64, both populations being approximately 750 persons. Other than the population over 65 the age groups of 0 to 4, 15 to 19 and 20 to 24 were relatively low, ranging 290 and 360, however these age groups were calculated for over a five year age group rather than a ten year age group.

As can be viewed in the graph below which were obtained from the 2006 Census of Population and Housing, there are two strong characteristics in total population:

- Compared to the national average the total population between the ages of 20 and 30 in Oberon are between one to one and half a percent lower.
- Between 55 and 65 the percentage of total population in Oberon outweighs the national average by two percentage points.

The total population percentages outside of these age groups are relatively similar in Oberon, Central West NSW and the national average.

The graph below complements these findings. Focusing on the population average as opposed to the total population, between the ages of 20 and 35 both Oberon and the Central West of NSW have a negative variation from Sydney’s average population.

### Figure 41 – Comparative age distribution profile, Oberon LGA

The graph below complements these findings. Focusing on the population average as opposed to the total population, between the ages of 20 and 35 both Oberon and the Central West of NSW have a negative variation from Sydney’s average population.

### Figure 42 – Variation from National Average, Oberon LGA and Central West
Age profile
The median age of Oberon residents is 38, which is higher than that for the Sydney SD (35 years).

Approximately 38.2 percent of the people living in Oberon are aged 25 to 54, which is lower than the Sydney (SD) average of 44.10%.

Comparatively in the next age bracket of 55 to 64 there were 15.48 percent of people that live in Oberon compared to 10.2 percent of people in the same age group in the Sydney SD average.

Table 28 – Oberon Age Profile (2006 Census)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number of people</th>
<th>Percentage of total population</th>
<th>Sydney SD Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 years</td>
<td>300</td>
<td>5.96%</td>
<td>6.60%</td>
</tr>
<tr>
<td>5-14 years</td>
<td>744</td>
<td>14.79%</td>
<td>13.00%</td>
</tr>
<tr>
<td>15-24 years</td>
<td>648</td>
<td>12.88%</td>
<td>13.80%</td>
</tr>
<tr>
<td>25-54 years</td>
<td>1,913</td>
<td>38.20%</td>
<td>44.10%</td>
</tr>
<tr>
<td>55-64 years</td>
<td>779</td>
<td>15.48%</td>
<td>10.20%</td>
</tr>
<tr>
<td>65 years and over</td>
<td>646</td>
<td>12.84%</td>
<td>12.30%</td>
</tr>
</tbody>
</table>

E.2 Place of birth and language spoken
Of 5,030 people living in the Oberon LGA, 130 speak a language other than English at home, the top languages are German with 13 speakers, Greek 12, Chinese 11, Spanish 11 and Italian 8. There was a small number born in these countries with a combined number from China, Hong Kong, Malaysia and Singapore amounting to 6. Germany had 26, Italy 17, Greece 5, and Spanish speaking countries were combined in the born elsewhere list. There were no significant trends relating these statistics. However when analysing the country of birth, the United Kingdom and New Zealand had the highest migration rate to Oberon with a joint number of 235 out of 450 people that were born overseas. Based on these statistics Oberon is more appealing to migrants with English speaking backgrounds.

The proportion of indigenous people in Oberon LGA (1.69%) is higher than that for the Sydney SD (1.1%), the combined Aboriginal and Torres Strait Islander population is 2.15%.

E.3 Employment
Based on statistics from the 2006 Australian Bureau of Statistics of the Oberon locality, 96 Oberon residents are employed by tourism and hospitality occupations. This is very few compared to the township population of 2,473, therefore based on the fact there are a large number of accommodation and dining facilities, it appears that local employment opportunities are not taken up by the people living in the Oberon township.

The unemployment rate in Oberon is 2.7 percent, and this is significantly lower than Sydney SD (5.3%). About 66% of those employed work full-time and 26.4% work part-time. The most common form of employment was agriculture, forestry and fishing which had a total of 409 (17.5%) and manufacturing which totalled 508 (21.7%).

The job description which specifically relates to tourism is ‘tour guide’ which employs seven Oberon residents, four male and three female. The other occupations listed relate to hospitality which would be strongly influenced by tourist popularity. Of these occupations, females are three times as likely to be employed, with waitressing, bar attending and kitchen hand positions only being occupied by females. Males occupy all caravan park and camping ground managerial roles however females occupy all the café and restaurant managerial roles. It is also interesting to note that the residents of Oberon are not employed as accommodation managers, bed and breakfast operators or conference and event...
organisers, albeit that the conference and event management industry is likely to be an important one, particularly at the Jenolan site itself.

Based on these statistics the Jenolan Caves and the tourism they draw have a lower than expected impact on local resident job uptake. Other tourist facilities that may compete with or complement the Jenolan Caves within the Oberon region include Abercrombie Caves, Kanangra Boyd, Evans Crown and the Oberon Museum.

E.4 Education

Only 10 percent of people in Oberon attended University or other Tertiary Institutions or Technical or Further Education Institutions. However 29% of people did not specify the type of educational institution they attended. It is interesting to note that 494 people went to primary school and only 355 went to secondary school, this may reflect the high proportion of people both under 14 years and over 55, however it is difficult to draw conclusions about educational attainment with a high number of residents not specifying this.
Appendix F  Stakeholder Consultation Question Guide
### F.1 Stakeholder Consultation Question Guide

<table>
<thead>
<tr>
<th>Question (Literal)</th>
<th>Impetus</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are some of the features that you feel signify Jenolan as a significant place?</td>
<td>Understanding the aggregate (or ‘whole’) environmental social, cultural, economic values that signify Jenolan as a significant place.</td>
<td>The interviewer would ask generally, then prompt for deeper insights about what makes Jenolan special or significant as a whole place.</td>
</tr>
<tr>
<td>What do you feel are the most important physical features of the site (buildings, structures, areas, places)?</td>
<td>Introducing/understanding what individual, physical site features of the Jenolan Reserve are significant to the interviewee.</td>
<td>What are these areas? Where are these areas?</td>
</tr>
<tr>
<td>Are there any buildings or facilities at Jenolan that have not been conserved or protected?</td>
<td>Understanding values around conservation (and restoration) of physical site features.</td>
<td>Where are these features? What makes these buildings/facilities socially, culturally, environmentally valuable?</td>
</tr>
<tr>
<td>What decisions or changes have been made over the past at Jenolan that have upset you the most or that you have agreed with?</td>
<td>Have there been “mistakes”? (real or perceived)</td>
<td>What were these decisions? What changes resulted?</td>
</tr>
<tr>
<td>What sort of social function or role does Jenolan provide to the public?</td>
<td>What is the visitor profile of the Reserve? What sort of function do the caves provide to visitors? What sort of function do the caves provide to young people/students/learners?</td>
<td>Who visits Jenolan? What sort of social values may be associated with the place by people inside and outside the Oberon region?</td>
</tr>
<tr>
<td>Are there specific places within the Jenolan reserve that you feel are important to visitors and the community? Where are these places?</td>
<td>How can these features be better accessed by visitors?</td>
<td>Are there areas that are more important to “locals” than to “visitors”?</td>
</tr>
<tr>
<td>In what ways is Jenolan culturally significant in relation to European histories in Australia or local history within the region?</td>
<td>What is culturally significant for European histories? Do you feel that signage and interpretation of this at the site is appropriate?</td>
<td>Note: Aboriginal history is being explored as a separate subject by an Indigenous Heritage specialist</td>
</tr>
<tr>
<td>Do you feel that the current facilities for visitors at Jenolan are appropriate?</td>
<td>Allow for identification of facilities and assessments of use/appropriateness.</td>
<td>Could these facilities be updated/improved? Could these facilities be more appropriate? In what ways?</td>
</tr>
<tr>
<td>What sort of economic contributions does Jenolan provide to the region and its communities?</td>
<td>What can we learn about the ‘specifics’ associated with economic contributions</td>
<td>Specifics such as spending patterns of visitors, onward travel patterns of visitors who come to the caves, number of visitors accommodated at Jenolan and in the region, would be explored at this point.</td>
</tr>
<tr>
<td>Are there any other comments or suggestions you would like to make?</td>
<td>Provide a space for open discussion, to run over issues raised in further detail or discuss individual (or interest-group/agency specific) conservation concerns at Jenolan.</td>
<td></td>
</tr>
</tbody>
</table>