

Cadia Interpretation Plan



Prepared for Cadia Valley Operations

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July 2005
Revised Oct 2005

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Executive Summary

Mining and mineral exploration has been a feature of the history and landscape at Cadia since the 1860s, interspersed with grazing and agriculture. Since the 1860s, successive mining ventures have used the latest technologies to exploit the mineral resources, and overcome the difficulties of working with mostly low-grade ores. Each successive mining phase has overlaid the evidence of earlier mining activity, recycling the sites and remaining resources, including movable heritage.

The earliest phase of mining activity from the 1860s is represented by the Cornish engine house, which was erected in 1865. It was built to hold a beam engine made by J. Thomas and Co of Cornwall, which was used, among other things, to pump water from the shaft for the concentrating process, and for crushing and jiggling. The Cornish engine house is a very rare and significant remnant of the nineteenth century introduction of Cornish mining technology to Australia. It has strong associations with Josiah Holman who supervised the installation and operation of the beam engine. He and his wife are buried in the now relocated cemetery, or 'garden of remembrance' which is adjacent to the Cornish engine house precinct. Their descendants, some of whom still live in central NSW, have strong associations with Cadia, giving the place living social value. The evocative Cornish engine house precinct is now on the NSW State Heritage Register and the Register of the National Estate.

Cadia is also significant for the range of minerals mined on the site, which include copper, gold, silver and iron ore. The presence of gold in low grade ore and more efficient mining techniques, led to a revival of interest in mining at Cadia in the 1990s. In 1991, Newcrest Mining Limited, a partnership between BHP Gold Mines and Newmont Australia, acquired ownership of the Cadia resource. After extensive studies, which included the preparation of a Conservation Plan, production mining began in 1998.

Unlike the earlier phases of mining at Cadia, which overlaid and obliterated evidence of previous mining, current mining practice includes careful investigation and recording before surviving evidence of previous activity and occupation is destroyed. Since the 1995, substantial funds have been invested in heritage conservation work, research and archaeological investigations. This includes repair of the fabric of the Cornish engine house, excavation, analysis and relocation of the cemetery, excavation of the site of Tynan's slaughterhouse 2001, archival recording of Waringa homestead 2001, excavation of smelter No.1 2002, and excavation of Cadia village 2002-3.

All this work represents a considerable financial investment for Cadia Valley Operations and an important archive of research and information about Cadia as a dynamic mine site, and a mining cum rural landscape since the 1860s. Interpretation is the means of translating this resource into material that will

enlarge community understanding of the heritage of Cadia, and appreciation of the commitment of Cadia Valley Operations to best heritage practice.

Most of the research was prepared as part of the expansion and development of mining operations, which are consuming the sites of earlier mines and settlement. When Cadia Valley Operations was given permission by the NSW Heritage Council to excavate and then mine the site of smelter No.1, the conditions of consent required the preparation of a comprehensive interpretation strategy that outlines how the archaeological results will be publicly interpreted. A similar requirement was also imposed with Heritage Council permission to remove parts of Cadia village.

This plan has been prepared to fulfil these specific conditions of consent, but takes a broader look at interpreting the heritage and history of Cadia. This approach is consistent with best practice heritage interpretation. The strategies outlined in this plan are designed to interpret the heritage significance of Cadia, maximise audiences, generate material of lasting value, develop local and other partnerships to undertake and deliver most of the interpretation, and enhance community recognition of the heritage work undertaken by Cadia Valley Operations.

The size and scale of current mining operations dominates the interest and attention of visitors on the guided bus tours of the mine site, and is in most cases their primary interest in taking the tours. The task of communicating the significance of earlier mining activity is complicated by the fact that is difficult for the untrained person to see the remaining heritage elements in the landscape, given the changes in the landform, the removal of many key structures and the difficulty of creating an accessible vantage point that will not interfere with mine operations.

Given the continuing mine operations for at least the span of this plan, the emphasis is on developing off-site programs, in a variety of formats, in ways that can be enjoyed without the time constraints of a structured tour. The staged implementation of the plan will build audiences over time as each new program or product complements the existing components. Each element of the program may have a separate public launch, creating more opportunities to raise the profile of the heritage program and Cadia Valley Operations. The plan also includes longer term interpretive proposals and recommendations.

The original recommendation in the Conservation Plan was to develop an on-site interpretive centre, but for various reasons this is not feasible and is not recommended, see 8.1 and appendix 1. Instead, this plan proposes a staged five to eight year interpretation program that includes:

- Collation, management and digitisation of the heritage and archaeological resources to facilitate conservation, use and access
- ✓ ➤ Development of a CD and on-line education program about investigating Cadia's heritage
- An interpretive display about the history and heritage of Cadia as part of the orientation for site visits, either at Millthorpe or as a sturdy, simple,

portable display that can be readily moved and erected at the departure point for bus trips

- Preparation of a free brochure about Cadia's heritage for use and distribution at open days, for site visits and schools
- A scholarly publication about the history and heritage investigations at Cadia, pending further discussion with a publisher and consideration of its relationship with the CD Rom program
- Support for a program of temporary exhibitions at local museums and the Orange Regional Gallery, the themes to include water, Cornish and Welsh immigration to the district, and villages of the Orange district featuring Cadia village. These exhibition themes are part of Orange City Council's museum program, developed in collaboration with community museums in the district
- Documenting and interpreting the living history and social values of Cadia, working with families with connections to historic Cadia, and with current employees to build a contemporary archive about current mining and Cadia workers, for use in future interpretive projects
- A longer term partnership with Orange City Council to develop a permanent mining exhibition in the proposed regional museum, featuring Cadia, among other significant mine heritage sites and enterprises in the district.

As discussed above, preparation of this plan was prompted by excavation work on Smelter No.1 and conditions of consent required by the NSW Heritage Council. The brief for this plan expanded with subsequent work on Cadia Village, which has enlarged our understanding of the significance of Cadia and underlined the need for a more holistic interpretation of its history and significance. Research and excavation work at Cadia is continuing as mine operations expand, and the results of this work may also change assessment of the significance of Cadia. In line with good practice guidelines for heritage interpretation and archaeology, this work will also require interpretation. The strategies outlined in this plan are designed to be flexible to accommodate the results of new investigations, but they may also require review and fine tuning as our understanding of the significance of Cadia develops with further research and excavations.

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Cover photo, Cornish beam engine house at Cadia, c1910, collected by Brian French

1. Background

Cadia is 20km south-south west of Orange in central NSW. The Cadiangullong Creek, originally known as Oakey Creek, flows through the valley into the Belubula River. (At present the creek has been diverted as part of the current mining operations.) Since the 1830s the land around Cadia has been used for grazing, overlaid by more intensive mining, beginning in the late 1850s or early 1860s. Copper was the primary metal mined and smelted in the nineteenth and early twentieth century, with some gold, small amounts of silver, and later iron ore.

In common with copper mines around the world, mining activity at Cadia fluctuated with the price of copper and the costs and efficiency of extraction, smelting and transport to markets. In the first phase of mining from the early 1860s to the 1870s, there were three main mine areas at Cadia: East Cadia, Little Cadia and West Cadia. The Cadiangullong Mine at west Cadia was the largest operation, managed by Captain Josiah Holman from 1862. It was under Captain Holman's direction that the Cornish beam engine was erected in 1865. While many Cornish miners worked underground in the Cadia mines, the smelting of the copper ore was undertaken by predominantly Welsh smelters working under Captain John Christoe.

There was a revival in copper mining at Cadia in the 1890s and again in the early twentieth century. Copper mining and smelting finished at Cadia in 1917, but other minerals were also mined as opportunities arose. There was intermittent gold mining at Cadia from the 1860s. Alluvial gold was extracted along the creek from the 1860s, and reef gold was mined in the 1880s and 1890s by various companies. In 1905 the Cadia Gold Syndicate was employing 80 men in open cut low-grade mining. Iron ore was mined for the blast furnaces at Lithgow from 1918 to 1927, assisted by the construction of a rail line between Cadia and Spring Hill, with a brief revival of iron ore mining during World War II.

As mining activity intensified in the 1860s, Cadia village developed on the eastern side of Cadiangullong Creek, and to a lesser extent on the western bank, in close proximity to the mine workings. It was a private township that included a range of buildings required to sustain community life such as huts, hotels, shops, stockyards and sheds, meetings hall, post office, cemetery and the Cadia National School established in 1864, which is still extant. The *Sydney Mail* in 1865 reported that about 220 men, boys and girls were employed in the mines¹. After World War II, when mining activity ceased, the village was abandoned and its structures moved, salvaged or left to deteriorate.

In the 1960s and 1970s there was renewed interest mining at Cadia, and several companies conducted exploratory test drills. There was also a growing awareness of the significance of Cadia's remaining heritage, particularly the precinct around the Cornish engine house. McCarthy and Connell's 1989 Cadia

¹ *Sydney Mail*, 16 September 1865

Conservation Study² confirmed the high degree of significance of the engine house, which is now on the NSW State Heritage Register and the Register of the National Estate.

In 1991, ownership of the Cadia resource was acquired by Newcrest Mining Limited, a partnership between BHP Gold Mines and Newmont Australia. Before production mining began in 1998, Newcrest undertook detailed environmental impact assessments, community consultations and the preparation of a Conservation Plan for the Cadia Mining Precinct³. Based on the research and survey work the Conservation Plan concludes:

As a result of some 130 years of sporadic mining, both underground and open cut, the landscape exhibits a complex layering of fabric and a sculpted landscape associated with the various phases of mining activity. The landscape itself represents the various phases of activity and each successive mining operation has overlaid and destroyed evidence of the foregoing operations. The overlaying of mining operations and the economics of mining saw successive operators sell off and remove as much equipment as possible, or recycle the equipment and construction materials of the previous operators. As a result of the ongoing mining interest in the place, there is very little fabric associated with any of the mining phases which is intact.....⁴

In many respects, the current mining operation continues this 130 year old pattern of overlaying mining activities and sculpting the landscape, albeit working today on an almost biblical scale. Mining low-grade ores from vast amounts of rock and overburden, the mining operation includes Cadia Hill open cut and Ridgeway Underground. The ore is ground into a fine slurry, a process of flotation concentrates the precious minerals, and the mixture piped to Blayney for rail transport and then shipment to overseas smelters.

Unlike the earlier phases of mining at Cadia, which overlaid and obliterated evidence of previous mining, current mining practice includes careful investigation and recording before surviving evidence of previous activity and occupation is destroyed. Since the 1995 Conservation Plan, substantial funds have been invested in implementing the main recommendations and policies in the Plan, including undertaking further research, archaeological excavations and heritage conservation works.

The fabric of the Cornish engine house and chimney has been repaired, stabilised and reinforced. In 1997-98 the original Cadia cemetery, which stood on the banks of Cadiangullong Creek, was excavated and the skeletal remains were analysed. With family and community consultation, the remains were reburied, the surviving headstones relocated, and the otherwise unmarked

² J.P.McCarthy and J.E.Connell, Cadia Conservation Study, prepared for the Australasian Institute of Mining and Metallurgy, June 1989

³ Godden Mackay, Cadia Mining Precinct Conservation Plan, prepared for Newcrest Mining Limited, January 1995. Six volumes: Conservation Plan, Archival Recording, Portable Relics, Interpretive Advice, Archaeological Assessment, Cadia Mining Precinct Inventory of Historic Sites and Relics.

⁴ Godden Mackay, Conservation Plan, vol.1, p.78

graves were commemorated by boulders as part of a 'garden of remembrance' located within the historic Cornish engine house precinct. Consultation with the families and the wider community during this process generated tremendous goodwill for the mine operation, and enlarged community interest in the heritage of Cadia.

Other archaeological and heritage studies include excavation of the site of Tynan's slaughterhouse 2001, archival recording of Waringa homestead 2001, excavation of smelter No.1 2002, the report on the Cadia cemetery work 2002, and excavation of Cadia village 2002-4⁵. Historian Brian French has also undertaken extensive research on Cadia, sharing his research, which includes a collection of historic photographs copied from families and other sources. As part of the research and analysis of Cadia village and related excavations, archaeologist Edward Higginbotham and historian Terry Kass have made a thorough study of archaeological and heritage resources for Cadia, highlighting the significance of the combined heritage resources for the 'community study' of Cadia.⁶ All this work represents a considerable financial investment for Cadia Holdings, and an impressive intellectual resource. It has generated a significant archive of historical material about Cadia as a dynamic mine site, and a mining cum rural settlement and landscape since the 1860s.

Much of the above research was prepared as part of the expansion and development of the mining operations, which are consuming the sites of earlier mines and settlement. When Cadia Holdings was given permission by the NSW Heritage Council to excavate and then mine the site of smelter No.1, the conditions of consent required the preparation of a comprehensive interpretation strategy outlining how the archaeological results will be publicly interpreted.⁷ This report was commissioned in response to this requirement.

After commencing work on the interpretation plan, Cadia Holdings was also given a similar excavation permit for Cadia village, prior to mining operations partially removing some of the remains of the village. This too required an interpretation plan. As the next section of this report argues, rather than see these sites in isolation, it was proposed to prepare an interpretation plan for the whole site to better contextualise these particular sites, to explore functional relationships and present the significance of the place to a wide audience.

Ted Higginbotham's recent work on Cadia village, which explores Cadia as a 'community study' underlines the benefits of an integrated approach to the interpretation of Cadia's history, places and heritage resources. See chapter 2 for more information on this work.

⁵ See appendix 3 for a list of heritage reports and excavations

⁶ Edward Higginbotham, Report on the Archaeological Excavation of Part of Cadia Mining Village, near Orange, NSW, Volumes 1-3, Cadia Holdings Pty Limited, 2005

⁷ Excavation permit 2001/ S144/ 025, clause 5: A comprehensive interpretation strategy, which outlines how the archaeological results will be publicly interpreted must be prepared and implemented to the satisfaction of the Director of the NSW Heritage Office. The strategy should help the public understand the history and significance of the site and must include recommendations regarding the display of selected artefacts and/or other relevant material to help achieve this, publications and a multimedia strategy.

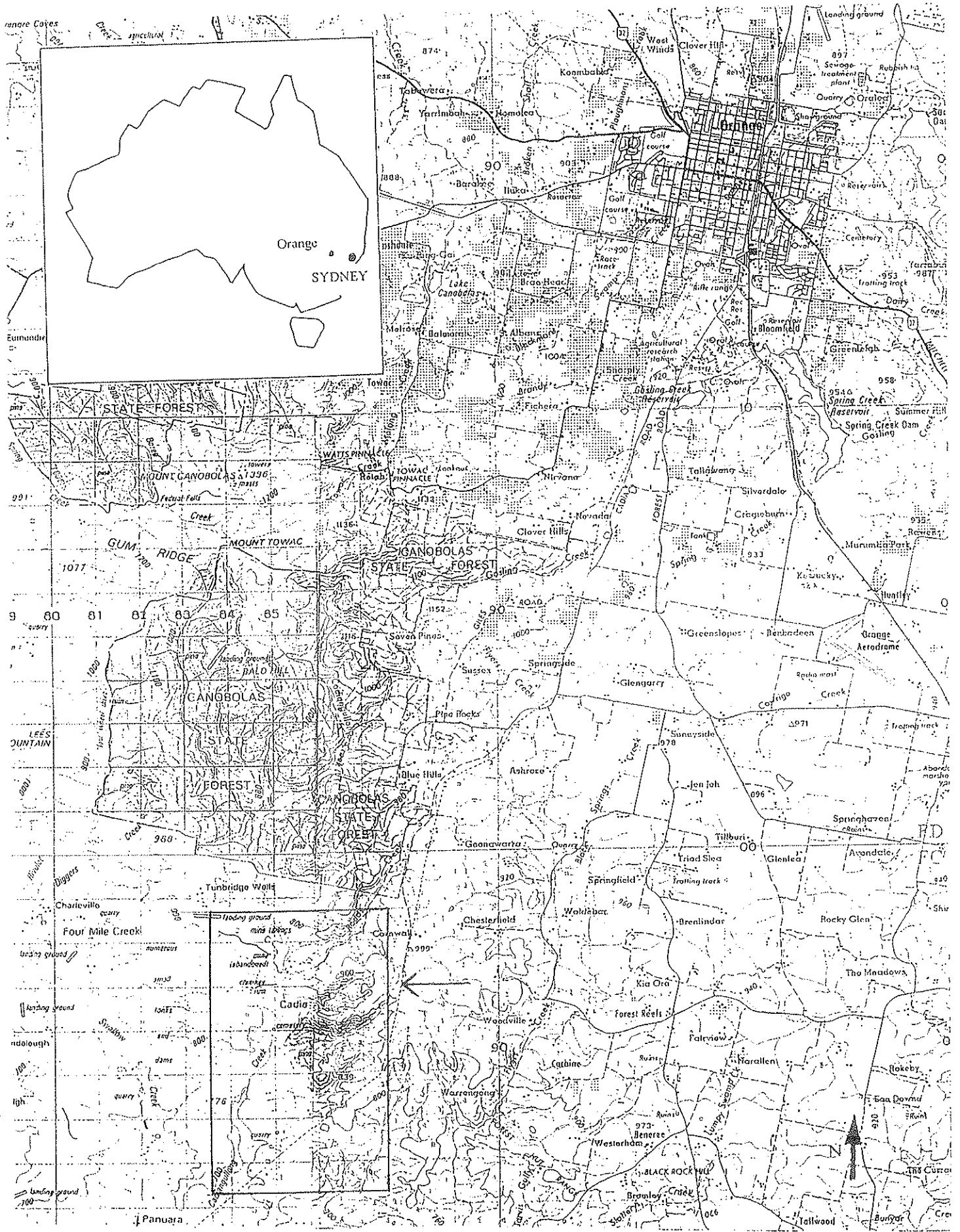


Figure 1.1 Approximate site location and context (inset)

1.2 Interpretation

Recognition of interpretation has been a relatively recent development in historic heritage practice in Australia. Local government and heritage agencies now understand that interpretation is the primary means of building community appreciation and enjoyment of heritage. Interpretation is now included in the 1999 revised Australia ICOMOS Burra Charter.⁸ However, increasing requests to developers and mining companies to prepare interpretation programs for their sites is raising a number of issues about the brief, the scope, content, storyline, implementation and management of interpretation. The NSW Heritage Office has recently undertaken a study of heritage interpretation with a view to developing a clearer policy framework, a set of principles and advice on how interpretation plans and practice may be better developed and implemented.⁹

The theory and practice of interpretation developed in 1960s in the national parks movement in America and Canada. Freeman Tilden wrote the definitive guide in 1967, giving interpretation a strongly educational focus. He defined interpretation as an “educational activity which aims to reveal meaning and relationships through the use of original objects, by first hand experience, and by illustrative media, rather than simply to communicate by factual information”.¹⁰ His six principles of environmental interpretation are still highly relevant guides to developing effective interpretation, including relating interpretation to the experience of the visitor, that information is not interpretation, and that the chief aim of interpretation is not instruction but provocation. In Australia, the philosophy and practice of interpretation has also developed through national parks and other agencies whose core business is heritage management.¹¹ McArthur and Hall have noted that interpretation practice has tended to give more emphasis to promoting heritage agencies and their programs, than to providing an enriching visitor experience. In recent years there has been a growing recognition of the importance of an audience-centred approach to interpretation, shaping programs and content to appeal to and reach specific audiences, rather than delivering information and analysis generated through the process of heritage investigation.¹²

The purpose of interpretation in a heritage context is to communicate the significance of the place. It is a process of discovery, response and reflection by

⁸ The Burra Charter, the Australia ICOMOS Charter for Places of Cultural Significance, 1999. Article 25: *The cultural significance of many places is not readily apparent, and should be explained by interpretation. Interpretation should enhance understanding and enjoyment, and be culturally appropriate.* The Charter’s definition says: *Interpretation means all the ways of presenting the cultural significance of the place*, 1.17.

⁹ Meredith Walker and Elaine Lawson, *Heritage Interpretation Policy*, NSW Heritage Office, 2004. See Appendix 5 for a summary of the key principles or ingredients for best practice heritage interpretation. This plan is devised to be consistent with the interpretation principles and other advice developed as part of the NSW Heritage Office’s review of interpretation practice.

¹⁰ Freeman Tilden, *Interpreting Our Heritage*, University of North Carolina Press, 1967

¹¹ For an outline of the evolution of heritage interpretation practice in Australia see McArthur and Hall, *Interpretation – Principles and Practice in Heritage Management in Australia and New Zealand, the Human Dimension*, OUP, 1996

¹² Linda Young, ‘Interpretation – Who is it For?’ paper to the 2003 ICOMOS Australia Conference *Telling Tales: interpretation in the conservation and design process*

the visitor, rather than a package of information and facts. From its American roots, interpretation is a concept that strongly emphasises active engagement, and the discovery of ideas, relationships and understanding of why the place is important.

Interpretation enables visitors to respond to, and find meaning in their experience of a place. It is a way of telling stories about people, places and objects. Interpretation is a communication process that helps audiences relate to the place. It bridges the gap between the past and the present, helping modern audiences to discover the meaning of the place in its setting and fabric, and associated stories about people and their experiences. Interpretation engages not just the mind but the emotions, senses and imagination.

In many respects, interpretation is inherent in all heritage processes and decisions, from identification, research and assessment, to management and promotion. All of these activities entail synthesising information, understanding significance, developing strategies to conserve and manage the place, and communicating its values. Conservation plans and archaeological reports are works of interpretation. They are also an important resource for further programs to build appreciation and understanding of heritage places, values and practice.

Heritage interpretation draws on a great variety of potential tools, media and techniques. It may include signs, brochures, guided and self guided walks, audio or acoustic guides, installations, displays, models, dioramas, lighting, holograms, film, video, oral history and sound, books, catalogues, public art commissions, artist and writer in-residence programs, events, activities, demonstrations, educational programs, web sites and CD Rom programs, and sound and light shows.

The choice of interpretive media is guided by a range of factors: the budget, maintenance and management issues; access, safety and supervision of the site; the nature of the environment and its constraints; visitor demographics and their needs, interests and available time; and human resources to develop and manage the interpretation and its infrastructure. The character of the site, and its associated historical resources, always guides ideas about the best way to tell the story of the place, drawing on its important attributes and opportunities. In practice, most complex and significant heritage sites require a staged program, using a layering of interpretive infrastructure, education programs and activities.

In Australia, the practice of interpretation has mainly developed through work at places that are publicly accessible and managed primarily for their heritage values, such as national parks and historic houses. The development of interpretation for a place that is a working mine, managed by a mining company, with limited public access, creates a number of challenges.

The NSW Heritage Council's conditions of consent refer specifically to the interpretation of smelter No.1, but this would be of limited interest to potential audiences without looking at the significance of the site as a whole. It is not practical to limit the interpretation to one part of the mining process, from one

phase of the history of the site, nor is this consistent with best practice interpretation.¹³ Indeed, it makes good sense to place Cadia, then and now, in the context of the wider mining history of central NSW. This argument was developed in more detail in a paper to the 2003 ICOMOS conference on interpretation, reflecting on 20 years of interpretation practice in Australia. The paper raised a number of issues about the sustainability and fragmentation of heritage interpretation through a focus on individual sites, at the expense of more regional and thematic interpretation.¹⁴

The paper argues that:

Too often, interpretation is constrained by the boundaries of land ownership and management. Yet, some of the most engaging and successful interpretive programs are those that transcend particular sites and take the visitor on a journey. Limiting interpretation to land ownership boundaries, risks ignoring important linkages and heritage management issues....

The interpretation of mining in central NSW is subdivided by the patchwork of different heritage sites and management regimes. No single site gives the visitor the bigger picture, or looks at the interlocking relationships between different mines, companies and cultural groups who worked around the region. The big untold story is about the economic and cultural impact of mining on the region and the State. There is a case for consolidating fragmented interpretive resources into regional or local heritage centres, run by local government, with the resources to interpret the wider regional story, as well as orienting visitors to particular heritage and mining sites in the locality.

The inclusion of Cadia village in the scope of this plan, with the web of stories and relationships researched in the 2005 Higginbotham report on the excavation, highlights the importance of a more holistic approach to interpreting Cadia in its local, regional, national and even international context.

Building on these issues, the strategies outlined in this plan are based on a five to eight year program,¹⁵ which is designed to reach a wide audience, generate interpretive material of lasting value, and develop local and other partnerships to undertake and deliver most of the interpretation. Staging the development and implementation of the interpretation in this way enables implementation of a logical program in line with the NSW Heritage Office's Heritage Interpretation Policy and the Ingredients for Best Practice Heritage Interpretation. In the section on using themes the policy notes, "for heritage places with complex stories and values, the interpretation may be implemented over some years, with

¹³ See Heritage Interpretation Policy, NSW Heritage Office, 2004, and Freeman Tilden's fourth principle — "interpretation should aim to present a whole rather than a part..." *Interpreting Our Heritage*, University of North Carolina Press, 1967

¹⁴ Kylie Winkworth, 'Sustainability, Big Pictures and Other Reflections on Australian Heritage Interpretation', *Historic Environment*, Telling Tales: interpretation in the conservation and design process, Volume 18, Number 3, July 2005

¹⁵ The draft implementation plan proposed a five year interpretation program, but given some of the uncertainties associated with working collaboratively with local groups, it is reasonable to provide a margin for some of the elements in the plan to take longer to come to fruition.

a staged program of events, displays and activities exploring different aspects of the significance of the place”.¹⁶ Staging the interpretation over a number of years means that the program can begin with a process of consolidating and digitising the heritage resources, it allows different elements to be targeted to different audiences, it uses varied media, it provides for monitoring and review of the effectiveness of the work, and it maximises local collaborations and the audience reach of the program. Importantly too, a staged program will also enhance community recognition of the very substantial heritage work undertaken by Cadia Valley Operations.

On current projections Cadia will continue to be a working mine during implementation of the interpretation plan. However, if and when mining ceases, the interpretation plan should be reviewed and updated to reflect the changed circumstances which will affect access, management of the sites and movable heritage, security and of course interpretation opportunities.



Cadia village, Chilcott Street looking south, Brian French collection

¹⁶ Meredith Walker and Elaine Lawson, Heritage Interpretation Policy, NSW Heritage Office, 2004

2. Overview of Cadia Valley Mining and its Significance

Copper and gold mineralisation was first formally identified at Cadia in 1851. At around the same time that Samuel Stutchbury, and before him John Nicholson, identified copper and iron deposits at Cadia, Hargraves, Lister and Tom announced payable gold on Summer Hill Creek near Orange. The site was called Ophir and became the focus of Australia's first gold rush.

Gold discoveries at Ophir, Hill End, Sofala, Lucknow and other sites, have tended to overshadow the role of Cadia in the mining history of central NSW. But with the reopening of mining at Cadia, there has been a renewed appreciation of its mining heritage, particularly in copper mining. Much of this community interest and appreciation has developed through the research, conservation works, archaeological investigations and public tours undertaken as part of the current mining development program.

The history, context and significance of Cadia is given in some detail in the Conservation Plan and subsequent heritage and excavation reports, most notably the Higginbotham and Kass research on Cadia village which pulls together and updates much of the earlier research.¹⁷

The Godden Mackay Conservation Plan summarises the significance of Cadia:

The Cadia mining precinct is representative of a class of landscapes which have long associations with mining and evidence progressive overlaying of cultural activity in the resulting landscape. Cadia is unusual for the range of minerals mined on the site, which included copper, gold, silver, and iron ore. The earliest period of copper mining is represented by the Cadia Engine House, a very rare and significant remnant of the nineteenth century introduction of Cornish mining technology to Australia, and that early period has strong associations with Josiah Holman, an important local figure. The Cadia Engine House is a local landmark and icon representative of the district's mining heritage. The Cadia mining precinct has associations with the early period of the development of the steel industry in Australia and with Sandford and Hoskins. It was also briefly an important primary resource during World War II. Surface historical mining fabric related to all post 1880s phases is fragmented, partial and often ephemeral, but the precinct has high potential to contain significant archaeological deposits related to the lifestyle and technology of the former community and mining activity.¹⁸

Other significant sites for Cadia's mining heritage include the Cornish Engine House, smelter No.1, and Cadia village.

¹⁷ Edward Higginbotham, Report on the Archaeological Excavation of Part of Cadia Mining Village, near Orange, NSW, Volumes 1-3, Cadia Holdings Pty Limited, 2005. See appendix 3 for a full list of heritage and excavation reports

¹⁸ Godden Makay, Cadia Mining Precinct, Final Conservation Plan, 1995, volume 1, 5.6, p.88

Since this statement of significance was prepared there has been a 10-year program of research and archaeological investigations, including work on smelter No.1 and Cadia village. To reflect this substantial body of research it is recommended that a statement of significance is prepared for Cadia as a whole, as part of the work of digitising, consolidating and securing the heritage reports and resources.

Cornish Engine House

The Cornish engine house and beam engine was erected in 1865 for use on the South Section of the West Cadia mines. The plain stone building, with a stone and brick chimney, contained the Cornish condensing engine with a 25 inch cylinder and a ten ton boiler, with pumping, winding, stone-breaking, crusher and jiggging machinery.

The McCarthy and Connell Conservation study summarises the significance of the engine house and its associated machinery:¹⁹

The Cadia engine house, associated buildings and surrounding mine infrastructure constitute a historic site of national significance. The high level of integrity of the surviving structural elements, and the physical evidence of the mine layout, combined with the presence of unique components of the engine and crushing machinery, as well, the manufacturer's original drawing of the engine and engine house, make the site one of the most important of its kind in Australia.

The engine house, crusher and boiler house are a typical arrangement of Cornish mining machinery and represent the peak of mining technology of the period. The evidence of the layout of the machinery is clear and demonstrates the role of the engine with the peripheral devices such as driving the crusher, winding over the headframe and operating flat rods to dewater the shaft.

This Cornish engine house is one of only four in Australia that has its chimney still standing. The associated mine layout with its several levels, ore floors, drainage channels, buddles, tailing heaps and other features is a complete example of a Cornish-based operation of this type. The extremely brief main mining phase from 1865 to 1867, and the relative lack of subsequent reworking has resulted in the preservation of all the main elements of the above ground workings from the historic period.

The site gains historical significance from its association with Captain Holman, James Sim and the Scottish Australian Mining Company....Although the individual structural remains are not unique within Australia, the combination of all the elements prescribes a level of cultural significance which is greater than the sum of its parts. This

¹⁹ J.P. McCarthy and J.E. Connell, Cadia Conservation Study, for the Australian Institute of Mining and Metallurgy, June 1989

significance is further enhanced by the presence and rarity of the machinery remains which also exist at the site.

The Cornish engine house is undoubtedly the most impressive and significant element of the Cadia story. The hilly site of the engine house, the strong character of the building, and the surrounding landscape of eroding gullies and dead trees, contributes to a landscape of great power and beauty. One is impressed by the ingenuity, skill and optimism of the Cornish miners in erecting such a substantial structure and transporting the heavy machinery to this remote site. And there is poignancy in the fact that all this effort was to see the engine operate for such a brief period from 1865-1867.

It is possible that the assessment of significance does not fully consider the importance of the landscape setting of the engine house, and the role of the landscape in interpreting the history and impact of nineteenth century mining practices at Cadia. Some further consideration of the importance of the setting and ways of protecting the landscape elements and *in situ* relics may be required before there is any widening of public access in the future. It is likely that future public access after mine operations have ceased will entail difficult choices about conservation of the setting, the dead trees and the *in situ* relics. In my view this is a site that will always need strict security and limited guided access.



The Cornish engine house precinct: remote, apparently sturdy yet arguably a fragile landscape where access should be carefully supervised and managed.

Smelter No.1

Located on the east side of Cadiangullong Creek, south of Hoares Creek, this site operated from 1861-1864. At the time of the excavations in 2001, the site was marked mainly by brick scatters and slag deposits and remnant footings and floors. In common with the pattern of mining development and decline at Cadia, each development utilised the existing infrastructure and/or salvaged what remained of earlier works.

Ted Higginbotham's excavation report summarises the significance of this site²⁰:

The site of smelter No.1 at Cadia is associated with the pioneering or initial development stage of copper mining in NSW. Cadia was the first mine to have a relatively efficient and complete range of copper smelting furnaces, as described by Stutchbury or Carne. Only the larger and more economic mines possessed smelters. Less than 37 mine sites out of a total of 80 copper mines listed by Carne before 1908 possessed smelters.

The smelting of copper at Cadia has strong associations with both Cornish mining technology and Welsh smelting technology and the immigration of the Welsh and Cornish to NSW. The locations of Cornish and Welsh settlement and workplace in NSW have a strong association for the descendants of these communities. The Scottish Australian Mining Company was to have an ongoing involvement in copper mining in NSW.

The site of smelter No.1 at Cadia has revealed evidence relating to traditional Welsh smelting technologies, the development of these technologies to suit Australian conditions and the use of traditional building techniques in industrial construction. The smelting furnaces at Cadia are standard reverberatory furnaces of Welsh design, but unlike the Welsh smelting houses or halls of an earlier period, the smelting hall at Cadia was connected to a single large chimney stack by a principal and subsidiary flues. This development only appears to have taken place in NSW in the 1830s and 1840s, so the use of it at Cadia represents the rapid transfer of technological improvements to Australia.

The presence of a conical furnace at Cadia, with six fire boxes (furnace 7) is extremely unusual in the available historical documentation. It is clearly identified as a calcining furnace and was therefore used in the initial stages of the smelting process. The only parallels to this type of furnace are the conical furnaces in Anglesey, North Wales for calcining or roasting, although the latter are associated with the condensing of the sulphur and then its melting into a marketable product.

²⁰ Edward Higginbotham, Report on the Archaeological Excavation of Smelter No.1, Old Cadia Road, Cadia, prepared for Cadia Holdings, October 2001

The smelting processes used at Cadia in 1865 indicate adaptation to local conditions, suitable for the smelting of sulphide ores, mixed with carbonate ores. They differed from the processes used in Swansea and Anglesey at this time, because the latter were designed for the efficient processing of pyritic ores.

The site of smelter No.1 at Cadia is therefore of State significance. The closest parallels to this are in South Australia, Swansea in South Wales, and in Anglesey, North Wales. Cadia was the first mine to have a relatively efficient and complete range of copper smelting furnaces in NSW. The site possessed typical Welsh reverberatory furnaces, while the smelting process was adapted to local conditions. It also possessed a very rare example of a conical furnace for calcining. Smelter No.1 represents the final stage of development for the standard reverberatory furnace before improvements led to the construction of much larger furnaces during the 1870s and 1880s onwards.

This site has now been removed through mining activity, but research and archaeological investigations have developed a substantial information resource, as well as recovering movable items, such as smelting tools for potential interpretation as part of the story of mining at Cadia.



Artefacts excavated from smelter No.1

Cadia Village

Ian Jack summarises the significance of Cadia village

The overall significance of the residential heart of Cadia cannot be divorced from its industrial milieu. The beam engine house ... is the most famous and visible part of the industrial heritage of Cadia, but the recently excavated remains of smelter No.1 near the village site are also of state significance, while aspects of the iron-ore quarry and its transportation system are also of importance. The village and industrial plant were and remain intertwined and the high historical and heritage significance of the industrial areas at Cadia is part of the value of the village site.

Although the village has some unusual features (in its mix of Cornish and Welsh families and its lack of an executive precinct), its significance is representative rather than rare. The village site has significance at the State level when it is compared with other copper-processing sites and mining villages in Australia and America.

The village site has high historical significance because of the concentration of Cornish miners and Welsh smelter men living in an integrated community in the mid-Victorian period, not in separate ethnic villages as at Burra or Byng. It has social significance because of the continuing community respect for the site shown by the descendants of those involved in extracting copper, iron and gold there, now widely scattered, but with a focal group around Orange....²¹

Since this statement of significance was prepared, Edward Higginbotham has undertaken archaeological investigations prior to mining activity over part of the village remains. His report incorporates updated research on Cadia and its village, prepared in association with historian Terry Kass.²² The research, excavations and analysis raise questions about some aspects of the earlier statement of significance, in particular the view that Cadia village is representative rather than rare. Higginbotham's excavation and analysis highlights unusual characteristics of the early village, including the important role of Cornish immigrant miners and the close-knit group of mine management and commercial interests responsible for the development of the village.²³

Higginbotham writes: "the archaeological investigations of Cadia village have provided a major impetus to the study of the history and archaeology of a whole community, including mine, village and surrounding rural settlement. The investigation is termed a "community study".²⁴

²¹ Ian Jack, Cadia Village Site, Statement of Significance in a Comparative Context, for Cadia Holdings, September 2001, p.16

²² Edward Higginbotham, Report on the Archaeological Excavation of Part of Cadia Mining Village, near Orange, NSW, Volumes 1-3, Cadia Holdings Pty Limited, 2005

²³ *ibid*, Executive summary, pp. ix

²⁴ *ibid*, Executive summary, pp. vii

Community studies provide a methodological basis for understanding historical contexts in specific geographical locales. Community studies involve the description of the geography of the settlement, its subsistence basis, its material culture, the demography of its population, the social structures that it supported, and the relation of that place to the world around it.²⁵

This approach is creating a more holistic framework for understanding the significance of Cadia in a regional, national and international context. The research underpinning this wide ranging analysis has generated useful resources for the interpretation, in particular it is giving more focus to the people of Cadia, and the cultural, family and social structures that sustained community life and the work of mining at Cadia.



Cadia people dressed for an occasion, c.1895. Brian French collection.

2.2 Interpretation Resources and Constraints

The interpretation of Cadia's heritage presents a number of challenges and opportunities.

²⁵ S. Lawrence, "Gender and community structure on Australia colonial goldfields", in A. Bernard Knapp (ed), *Social Approaches to an Industrial Past, the archaeology and anthropology of mining*, 1998, Quoted from Edward Higginbotham, Report on the Archaeological Excavation of Part of Cadia Mining Village, near Orange, NSW, Volumes 1-3, Cadia Holdings Pty Limited, 2005

To the untrained eye, there is little heritage fabric remaining in the landscape as a focus for interpretation during site visits, apart from the Cornish engine house and adjacent relocated cemetery. Access to the mine site is restricted and the current mining operations are the overwhelming focus of visitor interest and attention during structured visits to the site.

The dramatic changes to the landscape with the current mine operations makes orientation to the historic mine workings particularly difficult during the limited time available on structured bus trips around the current mine workings. In any case, with the exception of the viewing pavilion adjacent to the relocated cemetery, where access is restricted, it is difficult to find a meaningful vantage point that might help the visitor understand the mining heritage. There is no useful vantage point outside the mine boundary that gives visitors a view of the historic landscape.

The Conservation Plan emphasises the importance of providing public access to the engine house and its environs, and interpretation of its significance.²⁶ Mine operations currently restrict access, although Cadia Valley Operations does try to accommodate special requests. However, in the short and medium term, while the mine operations are restricting access, there are ways of interpreting the heritage of Cadia through publications, education kits, CD Rom programs, off-site displays, models, dioramas and on-line access.

In the longer term, general unsupervised access to the Cornish engine house precinct will require very careful planning and evaluation. The presence of *in situ* movable relics spread around the site is part of its history, as are the dead trees and eroding gullies. The precinct is in many respects a fragile landscape and it is doubtful that general public access would be consistent with the long term conservation of this significant place. Recent experience at accessible mine sites in Queensland is highlighting the vulnerability of the remaining relics and structures.

In view of the access restrictions, this interpretation plan for the next 5-8 years focuses on ways of telling the stories of Cadia through off site interpretation, including exhibitions, a publication and CD Rom.

The main resources for interpreting Cadia's heritage are found in the detailed histories and assessments in the heritage and archaeological reports, and in the sites and associated artefacts, albeit with limited physical access to the places.

Voluminous documentary resources have been generated through the heritage research, investigation and assessment work. Sites and themes covered in this research work include the Cadia engine house, copper smelter No. 1, Little Cadia, mine prospecting, water races and West Cadia mines, Cadia cemetery, Cadia village, and rural settlements and sites including Tynan's slaughterhouse, Waringa homestead, Waringa hut and alluvial goldmining on Flyers Creek.²⁷

²⁶ Godden Mackay, Conservation Plan, vol 1, p.100, 6.7, 6.8, and p.117, 7.3.11

²⁷ I am grateful to Dr Edward Higginbotham for his guidance on the physical and documentary resources relating to Cadia, and for his comments on this section and the draft interpretation plan. A list of these reports is included in appendix 4.

The collection of historic photographs researched and copied by Brian French is a rich archive for reading the site and imagining Cadia village and its people. This will be an important resource for the interpretive programs. Many of these photographs have been borrowed from local families with connections to Cadia. However public use of this resource for interpretation will be complicated without fuller details of the original owners, so their permission can be obtained and ownership acknowledged. If possible it would also be desirable to improve the documentation about the time, place and people in the photos. This is a priority in the first phase of the interpretation work.

The physical resources for the interpretation include surviving sites and archaeological artefacts recovered during excavations prior to mining.²⁸ The main archaeological collections are those relating to Tynan's slaughterhouse, Waringa hut, Cadia village and smelter No.1. These are all currently housed at Cadia. In my view, most of this material has limited interpretive potential for exhibitions, with the exception of the items recovered from smelter No.1. This is not to say that the artefacts do not have further research value, and depending on how the proposed CD Rom is structured, may be reproduced in this format and in scholarly publications. The artefacts may also be used in education activities if a suitable, accessible local repository is established in the longer term. It is recommended that there is a review of the movable heritage policies and management regime in the long term, or at the conclusion of the interpretive program mapped out in this plan. There may be scope for some cautious culling of the archaeological and movable items after a period of review, with expert archaeological advice.



Cadia football team and supporters, not dated, Brian French collection

²⁸ Dr Higginbotham has provided a list of the principle archaeological remains which is included in appendix 4

3. Current Interpretation at Cadia and other Mining Sites and Museums in the Region

3.1 Introduction

Given the constraints on access to the Cadia Valley mining and heritage sites, Cadia Valley Operations makes a substantial commitment to providing access to the mine site and its heritage. They are also generous supporters of museums and cultural activities in surrounding local communities. Newcrest considers relations with the local community to be fundamental to their licence to operate and a key measure for their success.²⁹ The idea of community partnerships is an important principle underpinning community relations and interpretive programs for Cadia Valley Operations. It is also identified as one of the ingredients of best practice heritage interpretation in the NSW Heritage Office policy on interpretation. Cadia Valley Operations identifies three main elements in building their community partnerships:

- sharing of information about current and future mining activities, including community meetings and newsletters
- access to the mine operations through an annual open day and an active program of educational visits for schools and community groups
- direct funding of local charities, community activities and cultural programs

The Company's brochure notes that in this way Cadia Valley Operations is seeking to ensure that the benefits flowing from its activities are shared by the largest proportion of the community. The interpretive strategies and programs proposed in the following sections of this report are designed to support and enhance this policy.



Pavilion with interpretive signs overlooking the valley and open cut operations, adjacent to the relocated cemetery. This area is not generally accessible to visitors.

²⁹ Newcrest Mining's Cadia Valley Operations, undated brochure

3.2 Cadia Valley Operations Current Interpretation

In summary the current interpretation and cultural programs include:

Interpretive signs in a pavilion shelter installed in 2000, and sited near the relocated cemetery, (see appendix for copies of the signs). The pavilion has views over the valley and mining operations, but access to the site is very restricted and will be for some time. At present the open days and bus tours do not include visits to the cemetery or engine house, due to the current mining arrangements, and the steepness of the location which requires a 4WD vehicle.

There are also interpretive signs overlooking the cemetery, including a reproduction of the burial register showing the age and date of death.

Current tours and interpretation cater mainly to the following groups:

- students from years 5-6 studying gold mining. These students come from all over NSW on a 2-3 day excursion that includes other mining sites and attractions at Ophir, Hill End, and Bathurst
- students from year 12 studying earth sciences
- some tertiary students studying geology
- local clubs and residents visiting the site on booked tours and open days, including friends and relatives of mine staff

School groups use education kits and resources published by the NSW Minerals Council and Mineral Resources. The education kit Discover Gold Today is for year 6, and explores the stages in extracting, processing and transporting Cadia's mineral ore into gold. The NSW Minerals Council web site hosts education resources and a virtual tour of the Cadia Hill gold mine aimed at secondary science students. Although there are some references to the history and heritage of mining at Cadia, the material is primarily focussed on the science and current mining operations.

Bus tours during the week, by appointment, are generally made up of people from local clubs and community groups including Rotary, Probus and View clubs. These visits include an orientation and overview of the mine, and an introduction to the history and heritage of the valley. This introduction takes place in the administration building with a power point presentation. Site tours take in views of the main pit from the lookout, and a walk through the grinding circuit or concentrator. For safety reasons there are no inspections of the underground workings, and school groups are not taken through the grinding circuit. The predominant focus of the tours is the modern mining operation.

Over 3,000 visitors inspect the site per year on pre-booked bus tours. In addition, around 3,000 people participate in the regular open days. This is about the maximum number that can be accommodated on a single day.

The annual open day is advertised locally and mainly draws visitors from the central west, including friends and relatives of staff. Buses depart from a central pick up point. Recent open days have used the Orange City Bowling Club as a departure point, with space provided for a display from the NSW Minerals

Council, geology and trade exhibits, and material on the underground mining which is not accessible.

The level of demand for access to the site on a single day is a logistical challenge involving numerous staff and impacts on mining operations. There are concerns about the safety risks with so many buses traversing mine haul roads. Consideration is now being given to replacing the large open days with a more regular booked schedule of tours on one afternoon per week. This might entail setting up a more permanent introductory display and orientation, including possibly a scale model of the valley, which would be accommodated as part of the planned expansion of the administrative buildings.



Cadia copper mine, State Library of NSW, looking west, note engine house, dewatering and water wheel

3.3 Cadia Valley Operations, Cultural Programs and Sponsorship

Newcrest Mining through its subsidiary Cadia Valley Operations, is a generous supporter of local museums and cultural activities. The company is highly regarded in the region through its sponsorship of local cultural and community organisations.

The Age of Fishes Museum in Canowindra received \$150,000 in sponsorship in 1999, and a further \$30,000 has been offered for the development of an outdoor entertaining area, which has not yet be finalised.

Cabonne Council received \$100,000 for conservation and interpretation work at Ophir, the site of the first public discovery of payable gold in 1851.

Newcrest has promised the Golden Memories Museum at Millthorpe \$40,000 for the development of its new rural technology shed. They also provided financial assistance for the Museum to purchase and relocate a stamper battery from Trunkey Creek to the Museum.

The Orange Regional Gallery has also received generous sponsorship for various exhibition projects, including *Land\$cape: Gold and Water*, an exhibition in 2003 based on works by local artists responding to Cadia and the surrounding landscape, with a catalogue edited by Mandy Martin.

In addition to supporting local museums and cultural programs, Newcrest contributes to local communities through section 94 funds and numerous other charitable and community donations. They have recently made a generous contribution to the development of a new BMX bike track in Orange.

3.4 Interpretation at Other Mining Heritage Sites and Museums

Mining is a key theme in the heritage and history of the Central West and a number of heritage sites and museums offer programs around the linked themes of mining, minerals and fossils.

Ophir

Ophir was the site of the first official discovery of payable gold in 1851. A brochure available from the Orange Tourism Information Centre provides a guide for walks around the site. The site itself has minimal interpretation and lacks quality interpretive signs that present the history and significance of the place in a logical manner. The privately operated Gunnadoo mine near Ophir offers a gold mine tour and gold panning, souvenirs, refreshments, as well as guided tours of Ophir. Metal detectors are also available for hire.

Hill End

The National Parks and Wildlife Service manage the gold mining village of Hill End as an open-air museum. A museum/visitor centre anchors the site interpretation, together with interpretive signs and education programs. Craigmore House is managed by the Service as a house museum. In addition, there are various tours offered by independent businesses in the area. Hill End

attracts around 30,000 visitors per year with the busiest time of the year at Easter. School groups studying gold in years 5-6 form the bulk of the schools audience, assisted by the availability of suitable accommodation. Students also visit the Bathurst Goldfields Museum on Mt Panorama as part a 2 or 3 day excursion to the region.

Canowindra

The Age of Fishes Museum opened in Canowindra in 1999 with displays focussed on the area's significant fossil deposits. The Museum interprets the fossil deposits and has a temporary exhibition space funded by generous donations from Newcrest. It is managed by a full time manager reporting to the Age of Fishes Board, Cabonne Council and the Australian Museum. The Age of Fishes Museum is working with related sites to develop a mineral and fossil heritage trail across NSW, linking the new Australian Fossil and Mineral Museum in Bathurst, Wellington Caves and Lightning Ridge. However the Museum is currently experiencing some difficulties in operating on a sustainable basis, given relatively small visitor and tourism numbers to Canowindra, limited support from Cabonne Council, and difficulty in sourcing adequate recurrent funding for staffing, temporary exhibitions and education and public programs.

Millthorpe

The Golden Memories Museum in Millthorpe has an interest in the mining history and heritage at Cadia and in the district. The Museum is keen to develop a partnership with Cadia Valley Operations in the development of its new rural technology centre. There is the possibility of a small orientation display about Cadia in the new building, with the Museum working as a departure point for bus tours to Cadia. The Museum recently acquired and relocated a stamper battery from Trunkey Creek, with assistance from Cadia. It has some important artefacts from the first phase of mining in the region, including John Lister's pick. Lister, along with Edward Hargraves and William Tom, discovered of the first payable gold at Ophir in 1851. It also has an 1865 or 66 wage book from Cadia. (Orange and District Historical Society has another wage book of a similar date.) The Millthorpe Golden Memories Museum is operated by volunteers and is open weekend afternoons and daily during school and public holidays.

Bathurst

Bathurst City Council and a consortium of interest groups including Charles Sturt University and the Australian Museum are behind the Australian Fossil and Mineral Museum, based on the Somerville collection. This museum opened in 2004 in the 1876 public school. The museum is centred on two themes: fossils and the mineral collection, and it also has a small a temporary exhibition space. The minerals are presented primarily as type specimens. Although the collection has many locally acquired specimens, it has no particular focus on local sites or mining history. However the museum is seen as the base for a multi-campus regional museum in Bathurst, connecting the Somerville collection, Chifley's cottage, railway heritage, and the Historical Society, as well as improving links with the Regional Gallery and Miss Traill's house, operated by the National Trust.

In addition to the developing multi campus regional museum, the Bathurst Goldfields Museum on Mt Panorama provides exhibitions, tours and demonstrations of gold panning. The exhibition is free, while the two-hour tour and gold panning are \$9.90.

Lucknow

Lucknow is an historic mining village east of Orange on the Mitchell Highway. Gold was discovered at Lucknow at around the same time that the discovery of payable gold was announced at Ophir in 1851, and Cadia's copper deposits were identified by Samuel Stutchbury. Lucknow is within Orange City Council's boundaries and Council has in place a program of heritage development and interpretation. Council has acquired the Wentworth Main shaft mine site, the former Lucknow schoolhouse and Barker's Cottage. Current interpretation includes interpretive signs through the village and a walking tour brochure, which is available in Lucknow and from the Orange Visitor Information Centre. A walking track with picnic shelters is currently under development. The Wentworth site is not yet accessible to the public, but an interpretation plan is gradually being implemented, closely linked to interpretive strategies for Lucknow village. The interpretation plan for the Wentworth site includes a walking path around the site and into the village, leading to a proposed picnic area, a viewing platform, lighting and interpretation of the poppet head, orientation displays, public art and public programs.³⁰

Orange

Orange has a well-established tourism profile as a centre for food and wine, heritage and gardens. Like Bathurst it is well known for its heritage streetscapes and mining history. Council has developed some excellent programs to interpret the city's parks and gardens, heritage buildings and historic villages through brochures, interpretive signs, walking trails, CD Roms and education programs. The Visitor Centre offers high quality visitor guides and brochures and maps for walking and driving tours. Orange City Council has pioneered the idea of heritage trails in NSW, with its work on the Cobb and Co trail and an award winning education kit.

The major museum facility in Orange is the highly regarded Orange Regional Gallery which offers a strong program of temporary exhibitions on both Australian and local themes. The Library also shows small-scale travelling exhibitions such as the Powerhouse Museum's *Births of Nation*, which had satellite exhibitions at museums in Millthorpe and Carcoar.

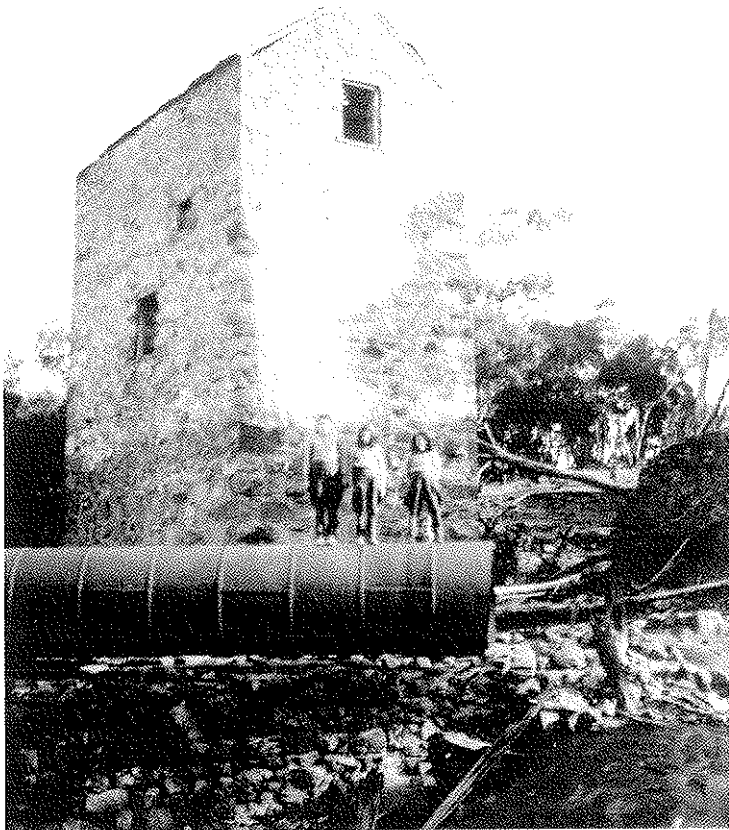
Council has plans to develop a regional museum for Orange that will focus on mining as a key theme. Current museum activities are supported by a museum adviser and Council staff, and offer training and assistance to community museums and historical societies in the district. Exhibition plans include the forthcoming Watermarks exhibition in 2005, in partnership with the Orange Regional Gallery and community museums. Collaboration with community museums and groups is a key element of the museum program. A major

³⁰ Kylie Winkworth, Interpretation Plan for Wentworth Main Shaft Mine Site, Lucknow, for Orange City Council, 2001

exhibition in 2007 is proposed on the cultural history of Cornish and Welsh people, developed in collaboration with community museums and historical societies, and a possible partnership with the NSW Migration Heritage Centre. Community consultations held in March 2005 strongly supported a focus on mining heritage in the regional museum, as well as exhibitions on the villages of the district past and present, and the Cornish settlers.

3.5 Conclusions

There is a long continuity of mining operations in central NSW, showing a remarkable range of mining and processing technologies, from the first alluvial mining at Ophir, to the monumental open cut operations at Cadia. Since 1851 mineral wealth and mining activity has underpinned the development of major regional cities such as Orange, and made a great contribution to the economy of NSW. However, in central NSW no single site gives people the bigger picture or looks at the relationships between different mine sites, companies and villages, or the wider contribution of cultural groups such as the Cornish. Site based interpretation tends to underplay the bigger picture of an industry that has made a tremendous contribution to the economy and development of NSW. There is a case for consolidating fragmented interpretive resources into a regional heritage centre or museum, run by local government, with the resources to interpret the whole mining history of the region, putting each site in its context, and drawing out historic, technological, spatial and cultural relationships between the sites and mining villages. Importantly too, local government can provide the essential recurrent funding and tap into government grant programs to assist with development and running costs.



Cornish engine house with children standing on the boiler, c1948, Brian French collection

4. Current and Potential Audiences

Over time, considerable resources may be invested in interpretation materials and programs so they must be tailored to particular audiences to get good value from the investment. Understanding and identifying audiences for interpretation is now a better recognised aspect of heritage interpretation practice. Where previously heritage interpretation philosophy simply stressed the obligation to interpret the significance of the place, current thinking now acknowledges that the needs, interests and visiting patterns of the audience must be taken into account. Audience analysis helps guide the selection of media, the content, and the mode of delivery of the interpretation.

4.1 Current Visitors

The current audiences visiting Cadia and using the existing education materials include:

- local clubs and residents visiting the site on booked tours and the annual open day, including friends and relatives of mine staff
- students from around NSW in years 5-6 at school studying gold, and visiting the site as part of a program of excursions to a range of mining sites in the region
- students from year 12 studying earth sciences
- tertiary students studying geology

Cadia Valley Operations devotes considerable resources to the organisation of large scale open days and regular bus trips by clubs and community groups. Visitor numbers to the site are around 6,000 per year. This is probably close to the maximum number without creating more substantial impacts on mining operations.

4.2 Potential audiences for Cadia interpretive programs

- Residents in central NSW, particularly Orange and district where most of the workforce is drawn
- Descendants and families with connections to the history of mining, settlement and farming at Cadia
- Cultural groups with an interest in the history of the site, such as members of the Cornish Association
- Members of local museums, historical societies, arts and heritage groups
- School students in years 5-6
- Senior secondary students in science courses
- Tertiary geology students
- Tertiary students studying history, heritage and historical archaeology
- Heritage practitioners and those interested in NSW history and heritage
- Tourists to central NSW

4.3 Tourism to Central NSW

Central NSW attracted 2.2 million domestic overnight visitors in the 12 months to June 2002.³¹ Nearly half of the overnight visitors were staying in the area for holidays or leisure. Most visitors are from NSW, particularly Sydney. The focus of current marketing and promotion is aimed at a number of distinct visitor segments, based on the See Australia psychographic profiles: Wanderers, True Travellers, Pompadours and Compatriots.³² The region is now promoting itself as Central NSW, rather than the Central West or Explorer Country. Orange, Blayney and Cabonne are working together to promote the area's food, wine, heritage and rural life. Developing themed exhibitions about history, heritage and culture is one of the identified opportunities in meeting the needs of the region's target markets. Because of the constraints on access to Cadia through booked bus tours, reaching these tourism markets will require the development of off site interpretation, primarily through collaborative exhibitions and programs with local museums and cultural institutions.

4.4 Conclusions

Safety and access constraints associated with the current mining operations restrict the numbers who can visit the site. Visitors to the open days are primarily interested in the current mining operation, which inevitably dominates how people see the mining landscape, particularly given time constraints during the tour. Under current conditions it is not feasible or cost effective to install site interpretation. However it is recommended there is a brochure about the history and heritage of Cadia for distribution on the tours, and a small portable orientation display, to be seen before or after the bust tours. Building a wider audience for the heritage and conservation interpretation program means weighting the work to off site activities, programs and products, and undertaking collaborative work with local government, museums and communities in the district, among other partners.

³¹ Information drawn from Central NSW Tourism Business Plan, March 2004, and Central West Regional Tourism Organisation Marketing Plan 2003-2004

³² In 2002-2003 visitor demographics to Central NSW include:

Compatriots – 40% of visitors, families with an interest in Australian holidays, they like being looked after, includes slightly more women, they tend to spend less per head than other segments

Wanderers – 23% of visitors, about half this segment are older retired couples

True Travellers – 13% of visitors, they see themselves as travellers rather than tourists, interested in discovering things for themselves rather than guided visits

Pompadours – 10% high value, demanding and sought-after visitors with an interest in food, wine and culture

5. Aims for the Interpretation Program

- 5.1 Interpret the heritage significance of Cadia Valley mining operations.
- 5.2 Stimulate appreciation and understanding of the long history of mining activity, and the continuities and changes in this history between past and present.
- 5.3 Recognise the miners, pioneers and families connected to mining operations in the Cadia Valley, and the cultural history that has helped shape its development.
- 5.4 Develop an understanding of the geography and spatial relationships between various elements of mining activity, and interpret the functional operations of the site, past and present.
- 5.5 Link the interpretation of mining in Cadia Valley with the broader story of mining in the central west, highlighting the importance of mining in the history, development and economy of NSW and the region.
- 5.6 Develop an interpretive program that is cost effective, sustainable, and of long term value in building appreciation and understanding of Cadia's heritage.
- 5.7 Maximise the audience by providing a range of interpretive programs that work at different levels, that have different forms of access, and are aimed at a wide audience.
- 5.8 Build community appreciation of the heritage investigations and conservation work undertaken by Cadia Valley Operations, enhancing the investment made in these studies, and the reputation of the Company.
- 5.9 Develop local government and community partnerships through collaborative interpretive programs that contribute to local museums, heritage and cultural development and tourism in the surrounding communities.
- 5.10 Document all facets of contemporary mining work to create an interpretive resource for the present and future.

6. Key Themes and Storylines for the Interpretation

Themes provide a framework for the interpretation to structure the interpretation, to tell stories and draw out the meaning of significant heritage sites and elements. Not all themes or aspects of significance can or should be interpreted. The NSW Heritage Office's Interpretation Policy provides the following advice on using themes as part of the policy's ingredients for best practice:

The significance of many places is multi-faceted, and it is often impractical to communicate every facet...Not all themes and stories are necessarily appropriate or relevant to the identified audience, and strategic choices need to be made...Storytelling is an important dimension of interpretation. Conveying a lot of information and facts about a place is not the purpose of interpretation...For heritage places with complex stories and values, the interpretation may be implemented over some years, with a staged program of events, displays and activities exploring different aspects of the significance of the place....³³

The core themes for the interpretation include:

- Cadia mining activities in context, including copper, iron and gold
- Copper mining, smelting and industrial technology
- Cornish and Welsh immigration and their contribution to Cadia and central NSW
- The way of life and way of death in Cadia village, social and community structures and ongoing family and community connections to Cadia
- Rural settlement near Cadia and its intersection with mining

Within these broad themes, there are a number of sub themes or storylines of varying potential for particular aspects of the interpretive program and its audiences. These storylines will be refined as each component of the interpretive program is developed.



The relocated cemetery and headstones, or 'garden of remembrance' with rocks marking the sites of previously unmarked graves.

³³ Meredith Walker and Elaine Lawson, Heritage Interpretation Policy, NSW Heritage Office, 2004

An effective way to structure and present the interpretation is to counter pose the historic mining technologies and practices with the current mining works. This can be presented in a highly visual form to dramatise the continuities and differences between the past and the present including:

- Prospecting, mapping and identifying ore bodies
- Extracting and moving ore
- Power sources and technologies
- Processing ore
- Managing water in mine operations
- Transport on site and to markets
- Using and managing water in mine operations
- Building technologies, materials and mine structures
- Environmental impacts and programs
- Risks, accidents and safety
- The skills and jobs in mining operations then and now, both on site and ancillary services
- The community then and now

This approach is proposed as a way of helping visitors relate the current mine operations to historic mining practices. Long experience shows that interpretation is most effective when it's linked to contemporary life, to visitors' everyday experience and when it's about people.

Giving mining activity a human face is an important way of engaging contemporary audiences and bridging the unfamiliar past. People relate best to people stories. Contrasting the way of life and work practices of miners today with those of the past will give audiences an insight into the challenges and hardships of mining in Cadia in the nineteenth and early twentieth century. Profiling the contribution and skills of the current workforce will build social and community recognition and wider understanding of the modern mining enterprise. It will also create documentation and interpretive resources for the future.

Contrasting miners of the past with those of today might cover:

- Clothing and equipment
- Skills and work practices
- Age and gender
- Cultural diversity then and now
- Home life, food and recreation
- Social, religious and community structures

It is recommended that orientation displays and interpretive material include some of these suggested points of contrast as a way of weaving the heritage of Cadia into the presentation of the current mine operations.

As discussed earlier, the size and scale of current mining operations dominates the interest and attention of visitors on the guided bus tours, and is in most cases their primary interest in taking the tour. The task of communicating the significance of earlier mining activity is complicated by the fact that is difficult for the untrained person to see the remaining heritage elements in the landscape,

given the changes in the landform, the removal of many key structures and the difficulty of creating an accessible vantage point that will not interfere with mine operations. For this reason, the emphasis in this plan is on developing off-site programs, in a variety of formats, in ways that can be enjoyed without the time constraints of a structured tour. The staged implementation of the plan will build audiences over time as each new program or product complements the existing components. Each element of the program may have a separate public launch, creating more opportunities to raise the profile of the heritage program and Cadia Valley Operations.



Workforce at water-jacket smelter, not dated, Brian French collection. Contemporary photographs of the current mine workforce in a similar format or poses will set up interesting parallels and contrasts between the past and present mine workers and operations.

7. Interpretation Policies

These policies guide the interpretation program and are to be read in conjunction with other heritage management policies and advice in the relevant commissioned reports and conservation management plans. They also embody the key principles of the NSW Heritage Office's Interpretation Policy.

7.1 Interpret the significance of the Cadia Valley heritage sites, their history, development and sequence of changes to the present.

7.2 Interpret the spatial and functional relationships between the various heritage sites, structures, technologies, and processes.

7.3 Within the constraints of current mining activity, provide an enjoyable and engaging experience for visitors to the site, drawing out the continuities and changes between the historic and current mining operations.

7.4 Develop education opportunities and programs for people to learn about the principles and practice of heritage research, investigation and conservation at Cadia.

7.5 Maintain and interpret cultural, family and community connections to Cadia Valley and its mining operations.

7.6 Provide family and community access to the relocated cemetery and Cornish Engine House, consistent with visitor safety, mine operations and organisational capacity.

7.7 Protect the heritage and archaeological resource documented in the various commissioned studies, plans, archaeological investigations and reports, by careful management of the heritage resources.

7.8 Enhance community and scholarly access to the results of various the heritage studies, excavations and investigations.

7.9 Interpretive infrastructure and programs to be compatible with the Australia ICOMOS Burra Charter (revised 1999), and NSW Heritage Office policies, consistent with the safety of visitors on the site.

7.10 Work in partnership with local councils and communities to develop the interpretation of Cadia's mining heritage, themes and history.

7.11 Manage, conserve and interpret significant movable heritage and archaeological relics and artefacts.

8. Interpretation Strategies

To maximise audiences, spread development costs, and develop interpretive materials of long-term value, this plan proposes a five to eight year staged program combining a range of media, publications, temporary exhibitions and local partnerships. This more diverse set of strategies is a replacement for the interpretive centre proposed in the 1995 Godden Mackay Conservation Plan. In recommending the strategies outlined below, the plan recognises that organisations that are not primarily in the museum, tourism or heritage business, need to find other delivery platforms to produce, develop and maintain the interpretation. This underlines the importance of building local partnerships and making other arrangements for the development, maintenance and marketing of the interpretation. In line with the aims and interpretation policies, local partnerships also produce a range of other benefits such as community awareness of Cadia Valley Operations' commitment to heritage management as an integral part of the mine's development.

8.1 Comments on the Proposed Interpretive Centre

The Godden Mackay Conservation Plan made the following recommendations for interpretation.

An interpretive plan should be prepared for the precinct.

An interpretive centre with views over the valley including historic sites and the proposed new works should be constructed.

The interpretive centre should not interfere with views to and from the Cadia Engine House.

The interpretive centre should be in a relatively low key architectural style complementary to the Cadia engine house.³⁴

The interpretive pavilion adjacent to the cemetery fulfils most aspects of these recommendations, giving views over the valley and the new mining operations, with a low key design that references the character and materials of the Cornish Engine House. However as an open air structure with only three interpretive panels, this is better termed an interpretive shelter, rather than the interpretive centre that was envisaged in the Conservation Plan. In volume 4 of interpretation advice, Godden Mackay recommended the development of an interpretive centre with walking access to the relocated cemetery and Cornish Engine House. Sketch plans proposed a building that included open air and indoor display areas, storage, toilets and administration offices. This is the minimum level of facilities that would be commonly understood as an interpretive centre. Since the Conservation Plan was completed, several of the assumptions that underpinned the recommendation for an interpretive centre have changed. These include:

- Expansion of mining activity making general visitor access and walking around the site unsafe
- The changed public liability regime is limiting open access and unsupervised interpretive programs on mining sites

³⁴ Godden Mackay Conservation Plan, Volume 1, 1995, 7.3.7, p.116

- The significance, fragility and public safety issues around the Cornish Engine House, with its *in situ* movable relics, suggest that general unguided access would not be advisable
- Cadia Valley Operations' stated desire not to provide staff for the proposed centre³⁵
- The difficulty of staffing the centre with volunteers who in any case require recruitment, supervision and training

In addition, there is a growing awareness that sustainable interpretation centres need a central location, critical mass, recurrent funding, staffing, temporary displays, public programs, a café and shop. In general, they should only be developed and operated by organisations, like local government, whose core business is heritage management.³⁶

Given constraints on general access to the site, and in order to reach the widest audience, this plan recommends the development of a staged program of interpretation over five to eight years, including a publication, exhibitions and web based resources and education materials.

8.2 Information Conservation, Management and Access

Since the development of latest phase of mining activity at Cadia, a very substantial investment has been made in research, heritage reports, archaeological investigations, site documentation and conservation. This has generated an archive and resource of long-term value. It is material that is particularly important given that a number of heritage sites and items have been erased. Conservation and management of this resource is vital.

The experience at other heritage sites shows that this resource is easily lost and eroded over time. Implementation of the interpretation program will require access to photographs, reports and movable heritage. The following recommendations are for further discussion and planning, to ensure protection and access to what is the main Cadia heritage resource:

- Cataloguing and archiving of the original reports and images with no access to the original materials
- Digitise all maps, photos and slides relating to heritage sites, investigations, excavations and conservation work
- Develop a series of map overlays of Cadia Valley, in CD and online formats, showing how the mine and settlement evolved over time, drawing on historic maps, archaeological investigations and the memories of former residents.
- Deposit a set of heritage and archaeological reports in Orange City Council's local studies library
- Investigate digitising all heritage resources
- Clarify ownership and access issues with the historic photos of Cadia, compiling a master file of images for use in the interpretation, with

³⁵ Godden Mackay Conservation Plan, Volume 4 Interpretive Advice, 4.6, p.37

³⁶ For further discussion on the feasibility, management and costs in developing interpretive centres, see notes in the appendix.

complete contact details for those that have been copied from families and private owners. Brian French would need to be engaged to undertake this work. It will be difficult to use the historic photos in any public interpretation without acknowledging the original owners and, as far as possible, seeking their permission.

- In the course of research for his book about Cadia, Brian French has assembled a substantial archive of primary sources, including photographs, oral histories and copies of material held by local families. Access to this material would be essential in the development of publications, exhibitions and online programs. Discussions should be held with Brian French with a view to engaging him to develop a chronology of primary sources about Cadia for use in the interpretation program. This would avoid duplicating research that has already been done, and ensure that his important research has a long term future after the publication of his own book.

Heritage promotion is an integral part of the conservation and interpretation program. As the archaeological and interpretation program develops, opportunities will emerge to promote awareness of Cadia's heritage research and conservation program, such as through participating in conferences, presenting lectures, highlighting recent work in industry newsletters and developing web-based information access. Cadia Valley Operations should continue to work with its heritage consultants and the NSW Heritage Office to promote awareness of its heritage work through a variety of media and heritage forums.

Target audiences: ultimately all users of the interpretive programs, but this will also facilitate access by scholars, and other archaeologists and heritage practitioners.

8.3 Investigating Cadia's Heritage, CD and education program

Digitisation of the heritage resources will facilitate development of a CD Rom and/ or web based program about investigating Cadia's heritage, with a special focus on the archaeological research and excavations. Making the process of archaeological investigation and research accessible is one of the best ways to build community appreciation of the work.³⁷ Access constraints and safety issues meant that public open days to show the work in progress were not possible. A CD and/ or web program would create a virtual excavation. The Orange Court House CD, now in the Orange City Library is a possible model. A number of investigations and conservation work from Cadia could be featured, including Cadia village, smelter No.1 and the cemetery. Inclusion of the latter would require some consultation with descendants and care about the way the work is featured. This would be a valuable teaching resource for heritage studies, historical archaeology and history. An education kit for years 5-6 would

³⁷ Natalie Vinton, *Interpreting Archaeology, the home of archaeology lies in the heart of modern communities*, 2001. Available on the NSW Heritage Office web site. A possible model is the CD developed about the Orange Courthouse excavations, which explores both the archaeological process and the layering of history on the site.

translate the material into a program for HSIE students, to complement the existing focus on gold.

Target audiences: Primary and secondary students, local residents and families with connections to the site, Cornish descendants, tertiary students studying history, geology, heritage and historical archaeology.

8.4 Site Visits and Brochure about Cadia Heritage

Cadia Valley Operations is considering restructuring its tours and major open day to a regular booked program with most tours booked on one day a week. It is recognised that the current level of tours and open days places a considerable demand on the staff and raises some concerns about safety risks on mine haul roads.

It is recommended that the program for site tours include some interpretation of the history and heritage of the site, with the development of some new interpretive displays to facilitate this. There are several options for how this might be achieved.

As discussed, the existing program for site tours provides an orientation and background with a power point presentation. With the proposed changes to the tour arrangements, and if there is further development of the mine administrative centre, this would create the opportunity for a small scale exhibition space, perhaps with a sectioned working model of the Cornish Engine House and beam engine, a model of smelter no 1, a display of archaeological relics and a short audio visual.

An alternative would be the development of an introductory heritage display as part of Cadia's sponsorship of the Millthorpe Golden Memories Museum's new rural technology building. This would entail the Museum being the departure or pick up point for bus tours to Cadia, with visitors having free access to inspect the displays before leaving for the mine site. There are number of issues that need further discussion and clarification if this option is developed, including principally the Museum's agreement and support. In addition, other matters for consideration include the amount of space available for the display, the opening hours and free access to the Cadia display, the development and design of the exhibition, and the relationship with other displays and activities in the museum.

A question may be raised that the development of either option would be a reasonable replacement for the interpretation centre proposal. However the following points should be noted:

- The focus of the site visits to Cadia is inevitably on the current mining activity. The scale, impact and visitor interest in the mine operations will always outweigh any program of heritage interpretation, given restricted access to the Cornish Engine House and the lack of other visible heritage in the mine landscape.
- In addition, with the on-site interpretation there is very limited capacity to provide an extended display within the highly structured arrangements for the mine orientation and tour. Unstructured viewing time for interpretive displays will be limited, placing constraints on the amount of

material that might can be covered in displays and other forms of interpretation.

- The format of pre-booked tours limits the numbers and kinds of visitors that can access the site. 6,000 visitors per annum on booked tours may be around the upper limit for access to the site.
- With the exception of the 'Wanderers', other visitor segments targeted in Central NSW tourism marketing might be resistant to booked tours.

Therefore, while it is recommended that site visits and orientation include more material on the heritage of Cadia Valley, there are limits to what can be reasonably presented within the format of the organised bus tours.

A further option is the development of a light weight portable exhibition that can be set up for community talks, promotional activities, field days and trade shows. If other pick up sites were to be used, such as the Orange City Bowling Club, this would give those booked on tours a chance to understand the history and heritage of the Cadia before seeing the mine. The future of the annual open days may influence whether this option is feasible and useful.

In addition to providing an orientation display, it is recommended that an introductory brochure about the history and heritage of Cadia is prepared and given to those on organised visits to the mine. This will augment the material presented during the site visit and in any displays, and it will complement the existing colour brochure on Cadia Valley Operations. The brochure could be in a similar style, giving 6 A4 colour pages as a roll fold or accordion fold design. The content of the brochure should include material on the heritage investigations, archaeology and conservation work, with particular attention to the Cornish Engine House, the cemetery, smelter No1, and Cadia village. The brochure could also be available for sale at visitor information centres in the region.

Target audiences: local residents and families with friends staying in the district, families and associates of Cadia workers, families with historical connections to Cadia, members of museums and history and heritage groups

8.5 Publication

Depending on the scale, design and cost of the CD Rom, a well illustrated publication should be considered on the history and heritage investigations at Cadia, drawing on the wealth of research undertaken for the archaeological and heritage conservation work, and translating this into a more accessible yet scholarly format. This publication will give the archaeological investigations at Cadia a more permanent and accessible record, reaching a national and international audience. It will cover Cadia themes and topics at a level that cannot be explored through other interpretive media. The book should be designed to complement and support the CD Rom and enhance its use in many educational contexts. It should give a sense of the discoveries made at Cadia through the archaeological program and associated research, revealing the story with a strong narrative and high quality photographs and maps. Chapters or essays might include:

- mining at Cadia in an Australian and international context
- mining technologies at Cadia and technology transfer and adaptations
- research and relocation of the cemetery
- social value and maintaining family and community connections to Cadia
- Cornish and Welsh immigration to Cadia and in the region
- investigating Cadia as a mining village and rural settlement
- heritage management in the context of ongoing mine operations.

The scope, themes and content of the essays should be refined in discussions with the NSW Heritage Office, those involved in the research and heritage work at Cadia and the publisher. For senior secondary and tertiary students, the book will provide an introduction to the main skills and methodologies in heritage research, investigation, conservation and management.

It is recommended that Cadia seeks a commercial publisher such as Allen and Unwin to commission, edit, publish and distribute the book. Depending on negotiations with the publisher, Cadia Valley Operations should fund the writers' fees, illustrations and some publication costs, in return for a significant number of books that it can give to local libraries, schools, historical societies and as corporate gifts to promote its important contribution to heritage conservation. The historian Brian French is currently preparing a publication based on his own extensive research about Cadia. He estimates the manuscript will be ready by the end of 2004. The proposed publication described above is designed to complement Brian French's narrative history of the development and decline of Cadia as a mining settlement.

Target audiences: to be refined in discussions with the publisher, however it should be a readable and accessible publication for a general audience, as well as reaching a scholarly audience of academics and students of heritage, history, local studies, historical archaeology, and technology; as well as families with connections to Cadia, local heritage and family history interest groups, archaeologists and heritage practitioners, mining companies in heritage sites and those with a general interest in Australian and regional history.

8.6 Temporary Exhibitions

It is recommended that Cadia Valley Operations contributes to the development of temporary history and heritage exhibitions, developed in collaboration with local museums and Orange City Council's museum program. These exhibitions would be held in Orange Regional Gallery, with satellite displays in participating community museums in Millthorpe, Canowindra and other venues in the district. Each exhibition includes a catalogue and web site, hosted as part of Orange City Council's museum and heritage program, giving the exhibition material long-term currency. This collaborative approach is more cost effective, will reach a wider audience, and is in keeping with best practice interpretation and Cadia Valley Operations' community development philosophy.

The exhibition themes outlined below were canvassed in community consultations held in March 2005 as part of Orange City Council's museum

program. Participants expressed a high degree of support for each of these listed exhibitions. These exhibitions are now incorporated into Orange City Council's Museum Development Plan. There was also unanimous support for the development of a regional museum in Orange, with a core focus on mining heritage in the district.

Watermarks, Orange Regional Gallery October-November 2005

Developed in collaboration with community museums and historical societies in the district, this exhibition about the water history, culture, places and stories of the Orange district, will include a component on mining past and present in the Orange region. A web site, catalogue and driving tour of water places and sites are also proposed. The interpretive material about water in the management and development of Cadia mining past and present could be recycled in other formats such as part of the introduction and orientation during site visits, or as a portable travelling display. The project is underway with funding assistance from Orange City Council and the NSW Ministry for the Arts.

Cornish and Welsh Immigration to the Orange region, 2007

In collaboration with Orange City Council, community museums and families, this exhibition explores the important contribution of Cornish and Welsh migrants to the region's mining history, agricultural development and civic and cultural life. The exhibition will include a catalogue, web site and satellite exhibitions in community museums in the district. Initial discussions have been held with the NSW Migration Heritage Centre, with the possibility of developing an exhibition with Powerhouse Museum that looks at the broader contribution of Cornish and Welsh immigration at other mining settlements such as Broken Hill.

Villages of the Orange District, 2008/9

Temporary exhibition about the history and development of villages and settlements, past and present, including Cadia and Spring Hill, with the material developed as a web site to promote tourism to the region.

Target audiences: local residents and families with current and historical connections to Cadia, community and cultural groups with an interest in Cadia, visitors to the district, members of local museums, historical societies and galleries, and local students.

8.7 Documenting the Living History and Social Values of Cadia

In many respects the current mining operations are also part of the heritage significance of Cadia Valley, which has been a focus of mining activity on and off since the 1860s. It is recommended that Cadia Valley Operations build a contemporary archive about the current mining operations that will be an interpretive resource for the future, by photographing people at work, using a leading photographer working in a number of image formats, as well as interviews with mine staff. A single photographer could be commissioned to document the site and people at work each year for the next five years, or Cadia Valley Operations could advertise an annual fellowship or grant.

In addition, there is a need to better record the attitudes and feelings of descendants of Cadia miners and settlers, and the social value that Cadia has for people in the district. This would have a bearing on future conservation and interpretation programs, feed into exhibitions and be used in other public affairs material.

Target audiences: employees and their families, local residents, community and cultural groups with an interest in Cadia, visitors to the district, members of local museums, historical societies and galleries, local students and historians in the future.

8.8 Partnership with Orange City Council for Permanent Mining Exhibition in the Proposed Regional Museum

Orange City Council has long term plans to develop a regional museum in the civic precinct about the history and heritage of the region. The mining history of the region would be a key theme in the museum. In line with other comments in this plan (see 3.4), interpretation is best developed in partnership with local government, particularly a major regional council that can provide the infrastructure, recurrent funding, long opening hours, and staffing to develop an active education program. The development of regional museums is supported with grant funding from the NSW Ministry for the Arts for capital works, exhibitions and staffing. A partnership with Orange City Council to interpret the history, heritage and development of Cadia as a major theme in the mining heritage of the region, would give the interpretation a long term presence in the centre of population and tourism in the region. The inclusion of an archaeological repository and teaching space is also an option in such a facility.

Orange City Council has decided in principle to establish a regional museum and it has a museum program of activities and exhibitions. It does not yet have a design or firm starting date for building works. However, it is recommended that Cadia Valley Operations consult with Orange City Council about the opportunity for a partnership to interpret Cadia's mining history in the proposed regional museum. An injection of funding into such a development is the key interpretive strategy in year five of this program.

Implementation

The following section itemises the strategies and the main tasks involved in developing and delivering the interpretation program. It is designed to assist Cadia Valley Operations to implement the interpretive program outlined in this plan. As with any program staged over a number of years, the itemised tasks may vary as the program is refined and developed. Given the collaborative nature of some of the strategies, the timeframes may also vary to accommodate community capacity and scheduling within museum and gallery programs. As part of the implementation plan, it is recommended that CVO provides an annual report on its heritage interpretation program to be included in its Environmental Management Report and forwarded to the NSW Heritage Office.

9 Cadia Interpretation Plan and Implementation

SHORT TERM 5 – 8 YEARS

Key Strategies	Actions/Tasks	Who	Time	Est. \$
<p>1</p> <p>Information Management and Access: Conserve and manage information and heritage resources</p> <p>This work underpins development of other elements of the interpretive program, including the CD Rom</p> <p>CVO to identify a staff member to take carriage of the implementation of the interpretation plan, alongside other heritage conservation programs</p> <p>Continue to promote awareness of heritage investigations, conservation and interpretation through lectures, participating in conferences, articles in industry newsletters, web-based news and information and general media coverage</p>	<ul style="list-style-type: none"> ▪ Review security and access to heritage reports and images held at Cadia ▪ Catalogue heritage and archaeological reports and create a reference set, held in a secure area, separate from a working library of reference reports ▪ Deposit a set of heritage reports in Orange City Council's Local Studies Library ▪ Investigate digitising all heritage reports and images; estimate number of images in all formats and requirements for cataloguing and dating images ▪ Review holdings of historic images and primary sources to see how complete and fully referenced they are, and prepare a brief for Brian French to complete report providing ownership details of historic photographs and chronology of primary sources. Clarify ownership and access issues, and negotiate agreement for the use of the historic photos in the interpretation program ▪ Commission an overview history (if required) and statement of significance for all of Cadia, creating an holistic view of the evolution and development of the whole site in its rural, regional, national and international context ▪ Develop a series of overlay maps showing the development, evolution and key features of the various sites ▪ Depending on the outcome of the above, prepare a brief for digitisation of photos, reports and primary sources. ▪ Ensure material is digitised at publication quality ▪ Seek quotes and implement digitisation program, or undertake work in-house 	<p>CVO, Archaeologist, Historian as required</p>	<p>2005-6</p>	<p>\$10,000?</p> <p>guess around \$10,000 or less if no new work is required</p> <p>Could be done in house?</p>

	Key strategies	Actions/tasks	Who	Time	Est. \$
2	Investigating Cadia's heritage, CD and education programs Links to 4	<ul style="list-style-type: none"> ▪ Meet with Opal Media to consider options and ideas for the development of a CD Rom program about Cadia's heritage, with a special focus on the archaeological research and excavations, possibly focussed on Cadia village? ▪ Develop a brief for commissioning a CD Rom program, considering audiences, education uses, curriculum linkages, scope, structure, and how the program will be distributed and promoted ▪ Develop brief to engage education consultant to assist on CD Rom project ▪ Engage education/ curriculum specialist to assist development of CD Rom content in a way that meets the needs of target education users and that complements existing products ▪ Consult with local teachers and councils on the potential market for an education kit about gold/mining in Central NSW for years 5-6 HSIE students, to complement existing education resources on gold mining. Review current education resources on gold used in NSW and other states. Develop file of comparable kits and resources. Possible scope of proposed program to include Ophir, Lucknow and Cadia ▪ Depending on outcomes of consultations, commission education kit to complement and enhance use of the CD Rom ▪ Provide care and secure storage of significant movable heritage items, commission quality photographs of key items as required for the CD Rom, publications and collection management (Ted should we have a separate strategy for care and management of movable items?) 	<p>CVO, Archaeologist</p> <p>CVO Archaeologist Interpretation and education specialists</p> <p>CVO Education specialist</p> <p>Education specialist with CVO and Orange City Council</p> <p>Education specialist Archaeologist</p>	<p>2006-7 depending on completion of program of digitisation and permission to use historic photos</p> <p>2006-7</p> <p>2007-8</p> <p>2006-7</p>	<p>\$50,000- \$60,000 depending on size, use of video etc</p> <p>+ fees for archaeologist and education consultant</p> <p>\$3,000</p> <p>\$6-10,000 depending on production qualities</p>

X

	Key strategies	Actions/tasks	Who	Time	Est. \$
3	<p>Site visits: Maintain community access, consistent with safety and the efficiency of mine operations, and improve orientation and interpretation of heritage values for site visits and open days</p> <p>This will include development of a small display at the Millthorpe Golden Memories Museum, and development of a light weight portable display that can be set up at departure points for regular open days, or at other community events</p> <p>Commission a model of the Cornish engine house with working beam engine to illustrate the heritage significance and operations of the building/ assemblage while public access is limited by mine operations. The model would be the centrepiece of temporary and orientation displays in a range of venues</p>	<ul style="list-style-type: none"> ▪ Discuss options for a small display in the new technology building at the Millthorpe Golden Memories Museum. (2005) Identify space, display environment, lighting, audiences, relationship with other displays in the building etc. ▪ Draft agreement about the display with the Museum ▪ Develop concept brief for display, including key themes and content, possible objects, display technologies, graphics etc. ▪ Commission content development, text, images, design, and production ▪ Develop brief for portable exhibition, content, themes, design and production for a light-weight, portable exhibition for use as an orientation display at open days and other community events ▪ Explore feasibility of a model of the Cornish engine house for use in temporary and orientation displays, possibly a working model to demonstrate operations and the work of the beam engine ▪ Obtain publication quality reproduction of working drawing, links to strategy 1, and assemble file of technical and research information to brief the model maker ▪ Develop brief for model maker, seek quotes 	<p>CVO Interpretation specialist or curator, exhibition and graphic designer, advice from archaeologist</p> <p>As above</p> <p>CVO Interpretation Consultant Archaeologist Model maker</p>	<p>Site visits ongoing 2005-7</p> <p>2005-7</p> <p>2005-6</p>	<p>Depends on size of space and nature of the agreement with the Museum. Allow \$40,000 for all costs, depending on space</p> <p>Depends on size, allow \$50-60,000 for content, fees & production</p> <p>Depends on brief, size, whether it's a working model etc</p>

	Key strategies	Actions/tasks	Who	Time	Est. \$
4	<p>Publish the history of Cadia and the research and results of archaeological investigations</p> <p>Links to 2.</p> <p>The scope, formats and content of the publication program and associated CD Rom and education kit, framed to meet the needs of particular sectors of the audience identified for the Cadia interpretation programs, from families and local residents to tertiary students</p>	<ul style="list-style-type: none"> ▪ Prepare brochure about the history and heritage of Cadia as background for the site visits, 3 x A4 pages ▪ Depending on the scope, content and audience for the CD Rom program, investigate options for a book about Cadia, possibly a volume of essays on different aspects of the site and its history. The book could be structured to complement and support the CD Rom program ▪ Identify the market and audience for the book, eg scholars, universities, heritage practitioners, families with connections to Cadia, local historians and museums ▪ Consult with commercial publishers to ascertain their interest ▪ Draft book proposal and submit to publishers ▪ Commission authors, prepare draft, edit and publish 	<p>Brochure text and images by interpretation consultant with graphic designer</p> <p>CVO Archaeologist Historian</p>	<p>2006-7</p> <p>2006-7</p>	<p>\$6-10,000 depending on size and number of copies</p> <p>Cost will depend on the nature of the agreement with the publisher, but some subsidy would be required in addition to supplying the text</p>
5	<p>Collaborate with local councils and museums on a program of temporary exhibitions</p> <p>Links to 3, possible Millthorpe Museum display</p>	<ul style="list-style-type: none"> ▪ Consult with Orange City Council about inclusion of Cadia's heritage and current operations in the Watermarks exhibition ▪ Discuss with Orange City Council opportunities to incorporate aspects of the heritage work at Cadia in future exhibitions, eg exhibition on Cornish and Welsh migrants for 2007-8 ▪ Villages of the Orange district 2008/9 	<p>CVO archaeologist</p> <p>CVO</p>	<p>2005</p> <p>2006</p>	<p>Depends on discussions and possible agreement with Orange City Council</p>

	Key strategies	Actions/tasks	Who	Time	Est. \$
6	<p>Documenting the living history and social values of Cadia, links with 3, 5 and 8</p> <p>Explore the social values of Cadia for family descendants and people of the Orange district</p>	<ul style="list-style-type: none"> ▪ Maintain links with descendants of families buried in the cemetery and hold memorial activities as family needs and access restrictions permit ▪ Maintain a database of contact details for people with family associations with Cadia, with their permission, for use in planning activities around social value ▪ Hold a public program as part of the exhibition on Cornish and Welsh migrants to discuss and document social values and family connections ▪ Feed results of the public program, and ideas about the meaning and significance of Cadia into the statement of significance of the whole site ▪ Document and photograph the work, lives and experience of contemporary miners and Cadia staff. ▪ Collect representative examples of work clothes – documented to particular miners and staff, for use in future exhibitions and interpretation ▪ Commission high quality contemporary photographs of the site and people for use in future interpretation and contemporary exhibitions. Photographs to be in digital and print or slide form. Document stories behind the photos with direct quotes from those in the photo ▪ Consider future artistic commissions in conjunction with Orange Regional Gallery 	<p>CVO</p> <p>Orange City Council Specialist in social value</p> <p>CVO with OCC museum program staff</p> <p>CVO</p> <p>CVO with OCC museum program staff</p>	<p>ongoing</p> <p>2007-9</p> <p>2007-10</p> <p>ongoing 2006-10</p>	<p>\$1-2,000</p> <p>? depends on brief</p>
7	<p>Report progress on implementation of the interpretation plan</p>	<p>Provide annual report on heritage interpretation program as part of CVO's annual Environmental Management Report</p>	<p>CVO</p>	<p>annual</p>	

LONG TERM 5-10+ YEARS

Key Strategies	Actions/Tasks	Who	Time	Est. \$
<p>8 Cadia heritage and mining exhibition as part of the proposed Orange Regional Museum</p> <p>This centrally located museum development will provide optimum public access to the history and heritage of Cadia, in the context of the mining history of the Orange district from early European settlement to the present. It will be a platform for education programs and will maximise community and education access to Cadia and its heritage sites and themes</p>	<ul style="list-style-type: none"> ▪ Initiate preliminary discussions with Orange City Council ▪ Explore options for a mining gallery as part of the regional museum development, with a key part of the gallery dedicated to Cadia ▪ Develop sponsorship agreement with Council, possibly staged over a number of years ▪ Consider audiences, themes, content and possible objects 	<p>CVO</p> <p>CVO, Orange City Council</p>	<p>2006 preliminary</p> <p>2010?</p>	<p>Depends on agreement</p>
<p>9 Care of moveable heritage and artefacts</p>	<ul style="list-style-type: none"> ▪ Review moveable heritage policies and management regime for artefacts. Provide safe storage, ideally in a local repository that can support the collection with hands-on education activities. Assess the significance of the artefacts and their interpretive potential. Consider management and storage costs and implications. Assess conservation and interpretation requirements 	<p>CVO</p> <p>Archaeologist and moveable heritage/interpretation specialist</p>	<p>2010, depending on mine program and operations</p>	
<p>10 Review overview statement of significance and history of Cadia as research and exploration develops</p>	<ul style="list-style-type: none"> ▪ Incorporate results of social value program into the statement of significance ▪ Review importance of the landscape setting of the Cornish engine house and the role of the landscape setting in interpreting the history and impact of 19th century mining practices at Cadia. Review and fine tune conservation and management policies for the whole precinct 	<p>CVO</p> <p>archaeologist</p>	<p>2010 - 12</p>	

11	<p>Protect and conserve the heritage values of Cadia, consistent with mine developments and access restrictions</p> <p>Review interpretation plan and opportunities when mining ceases</p>	<ul style="list-style-type: none"> ▪ As mining activities develop or wind down, review current conservation plans and policies and update as required ▪ Review provisions of the interpretation plan to reflect new access possibilities ▪ Develop / update management plan for Cornish engine house precinct to conserve its significance and minimise impacts from public access. Carefully consider the security of in situ archaeology and conservation of landscape elements, including dead trees and eroded terraces, which all contribute to the setting, significance and story of the precinct 	CVO Archaeologist	2010? Or earlier if mining work requires	
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Appendix 1

Comments on the Feasibility and Management of Interpretation Centres

In a meeting on the interpretation plan between Cadia staff and archaeologist Ted Higginbotham, the NSW Heritage Office archaeologist Natalie Vinton requested that the plan include in the appendix some further discussion around the issues and costs involved in developing and managing interpretation centres, together with some estimates for what the 1995 proposal might cost in capital and recurrent figures.

A range of issues and criteria intersect to determine the feasibility and sustainability of interpretation centres.

1. The core business of the operator must be heritage management. Interpretation centres established by companies and organisations whose core business is not the management of heritage and museum programs will generally fail. There are a number of reasons for this, including the incompatibility of business goals with the requirements for running community and cultural facilities, lack of appropriate staff to take charge of the program, and the demands for recurrent funding and public programs.
2. The centre must be well located, generally in the centre of towns and cities, to maximise public access and justify the capital and recurrent costs. There is a growing trend to attach heritage and interpretation centres to visitor information centres, as they can share staff and coordinate marketing, promotion and interpretation. Centrally located interpretation or heritage centres generate the larger visitor numbers required to justify the cost of developing and maintaining the interpretation programs.
3. Interpretation centres need to be of a certain size and critical mass, to offer the range of services and facilities sought by increasingly discerning heritage visitors, including a shop and café.
4. Interpretation centres need to be open a minimum of five days a week including weekends, and they must be staffed.
5. Recurrent funding is essential for the development of public programs, activities and events, temporary displays and the maintenance and replacement of displays, audiovisuals, and other exhibition technology.
6. Public programs and changing displays are an essential component of the work of heritage and interpretation centres as this is what attracts return visitors from the local community. Interpretation centres with permanent displays operating without public programs are generally those in areas with high tourism numbers. They have less need to attract return visitors from the local community to sustain their operations. In the case of central NSW, where many visitors stay with friends and families, if the interpretation facility does not offer new and

changing displays, the local residents are less likely to go to the centre with their visitors.

7. The costs of developing and operating interpretation centres are rising as display technology becomes more sophisticated and visitors have higher expectations of the experience. Heritage visitors are well travelled and have seen halls of fame and theme based museums around Australia. Many of these recently opened developments are in architect designed buildings with extensive exhibitions and interactives, funded with multi million dollar government grants as part of the Centenary of Federation. (As a pointer to the sustainability problems with interpretation centres, a number of these facilities in inland areas are in financial difficulties, as visitor numbers are insufficient to fund operational costs.) This underlines the need for a central location that will maximise visitor numbers and justify the investment and recurrent costs.

Local government is the best-equipped organisation to operate museums, heritage and interpretation centres. It sits well with their legislation and responsibilities to provide community and cultural services. They can provide staff, a recurrent budget and access government grant programs. It also offers a potentially close relationship with the visitor information centre, with the chance of sharing costs, staff and marketing. In a paper to the 2003 ICOMOS Conference on interpretation I argued for the development of partnerships with local government, for multidisciplinary museum, cultural and heritage centres, and for heritage interpretation programs that transcend site boundaries to focus on broader stories and themes of regional and state significance.

There are four main cost elements in the development and operation of heritage and interpretation centres, covering capital and recurrent costs:

- Design and capital works for the building, including areas for displays, storage, working areas and toilets.
- Planning, design, production and installation of the interpretation, typically a mix of exhibitions, interactives, dioramas, audiovisuals and other technology.
- Staff to welcome and manage general visitors and school groups
- Recurrent funding for public programs, activities and temporary displays to attract return visitors

A visitor centre with the above facilities would be around 300 square metres in size¹

Building design, construction and fit out: roughly \$2,000* per sqm x 300sqm = \$600,000

Planning, design & production of the interpretation: roughly \$1,500** per sqm = \$450,00

Staffing 5 days per week, 2 staff, salary and on costs at new teacher rates: \$110,000pa

¹ This allows for 200sqm exhibition/interpretation space and 100sqm for working areas, storage and amenities. The addition of an education studio or a hands-on archaeology workshop would increase the size of the interpretation centre.

Budget for public programs, events, temporary displays and maintenance:
\$50,000pa

Total: \$1,050,000 minimum for design and construction of the building and exhibition,
\$160,000 per annum running costs.

*The building design and construction estimate is conservative. As a comparison, the recently opened book shop/ visitor centre in the Botanic Gardens is 240 square metres and cost \$1.3m for design, construction, and fit out. Construction costs for public facilities are higher than equivalent square metre rates for domestic buildings.

** This per square metre rate for the interpretation is also on the conservative side. The National Museum exhibition fit out was \$4,500 per square metre. In the case of an exhibition about Cadia's heritage, where there is a paucity of interpretive resources such as artefacts, and limited surviving fabric in the landscape, there would need to be some investment in models, dioramas, computer interactives and audiovisuals. As a rough calculation, the production of an audiovisual is \$1,000 per minute, not counting script development or the delivery technology and fit out of the space, so a 5 minute AV would be \$5,000 for production alone. The base cost for developing a computer interactive is roughly \$10,000 per unit. A minimum of two would be required. New technology quickly eats into the interpretation budget.

Appendix 2

Acknowledgements

From Newcrest Mining and its subsidiaries I would like to thank Tim Lehany, Bob Drury, Nedra Burns, Greg Morris and Belinda Perry.

I am grateful for the assistance and advice of archaeologist Ted Higginbotham whose reports, insights and suggestions have shaped the many of the recommendations for the interpretation.

NSW Heritage Office archaeologist Natalie Vinton provided valuable advice and suggestions.

This plan has relied on the research of a number of historians, heritage practitioners and archaeologists. Their work has formed the basis for understanding the history, themes and significance of the various Cadia sites on which the interpretation recommendations rest. In particular, J.P. McCarthy and J.E. Connell on the Cadia engine house, staff at Godden Mackay for their work on the Conservation Plan, Ted Higginbotham's extensive archaeological work and research on smelter No.1, and research on Cadia village undertaken with historian Terry Kass, Brian French and Ian Jack.

Declaration of interest

Kylie Winkworth is museum adviser for Orange City Council, a contract position providing museum development advice to Council, and advice on museum matters to museums in surrounding towns and villages, including Millthorpe and Canowindra. A number of the strategies in this plan involve developing cooperative exhibitions and programs with local councils and community museums. The recommendations in the interpretation plan are a good fit with work already underway and proposed as part of Orange City Council's museum development plan.

It should be noted that conflict of interest provisions for museum advisers means that they cannot also work as consultants in that council area. The writer therefore has no pecuniary interest in proposing in this plan collaborative exhibitions with local museums and councils. As museum adviser I may assist councils and community museums in developing exhibitions related to Cadia themes, but any work resulting from this advice would be put out to contract or tender and would not involve further fees or consultancies for me.

Kylie Winkworth is also a member of the NSW Heritage Office's movable heritage panel and interpretation committee, and a member of the NSW Migration Heritage Centre's advisory panel.

Appendix 3

Bibliography and Heritage Reports

J.E. Carne, 'The Copper Mining Industry', Mineral Resources No.6, Department of Mines and Agriculture Geological Survey NSW, 1899

L.F. Carne, 'Iron', Bulletin No.4, Department of Mines Geological Survey, 1923

Chris Dunkerley, The Cornish in NSW in the Context of Federation of the Australian Colonies, 2001

Ian Jack, 'Cadia Village Site, Statement of Significance in a Comparative Context', prepared for Cadia Holdings Pty.Ltd., September 2001

Godden Mackay, Cadia Mining Precinct, Conservation Plan, 6vols, prepared for Newcrest Mining Ltd, January 1995

Edward Higginbotham, Historical and Archaeological Assessment of Cadia Village in Advance of the Proposed Mining of Cadia Quarry, prepared for Cadia Holdings, 2000

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Edward Higginbotham, Report on the Archaeological Excavation of Part of Cadia Mining Village, Near Orange, NSW, 3 vols, for Cadia Holdings Pty. Ltd, February 2005

Heritage NSW, Cemetery Reveals Past Lives, Vol.7, No.3, Winter 2000

Mandy Martin, *LandScape: Gold and Water*, Land and Water Australia, ANU, 2003

J.P. McCarthy and J.E.Connell, Cadia Conservation Study, for the Australian Institute of Mining and Metallurgy, June 1989

Natalie Vinton, 'Interpreting Archaeology: The Home of Archaeology lies in the Heart of Modern Communities', report for NSW Premier's Department and SGE Credit Union Travelling Fellowship Project, 2001. Available on the NSW Heritage Office web site.

North Queensland's Mining Heritage Trails, Queensland Environmental Protection Agency and Department of Mines and Energy, 1999

Kylie Winkworth, 'Sustainability, Big Pictures and Other Reflections on Australian Heritage Interpretation', *Historic Environment*, Telling Tales: interpretation in the conservation and design process, Volume 18, Number 3, July 2003

See also:

Cornish Association of NSW at www.ozemail.com.au/~jlsymo/cansw

Newcrest Mining at www.newcrest.com.au

NSW Heritage Office at www.heritage.nsw.gov.au

A History of the Greta Coal Measures 1861-1995, Brian Delaney at www.amol.org.au/newcastle/greta/index.html also available for purchase as a CD

See over for a list of Cadia heritage reports and sites provided by Dr Edward Higginbotham.

Apart from work on the Cadia Engine House, most other heritage reports have been prepared since the commencement of mining in 1996. They are listed in the table below:

The mining company and mining activities.	
Cadia Engine House	J. P. McCarthy & J. E. Connell. 1989. Cadia Conservation Study. Australasian Institute of Mining & Metallurgy.
	Edward Higginbotham & Associates Pty Ltd. Report to determine the curtilage of the Cadia Engine House, Cadia, N.S.W., for the purpose of redefining the boundary of the permanent conservation order. Newcrest Mining Limited, Cadia Project. 1997
	Edward Higginbotham & Associates Pty Ltd. Cadia Engine House PCO. Report on the proposed Garden of Remembrance, Cadia, NSW. 1999. Cadia Holdings Pty Ltd.
	Edward Higginbotham & Associates Pty Ltd. Archival recording of conservation works. Cadia Engine House, forthcoming.
Copper Smelter No. 1.	Edward Higginbotham & Associates Pty Ltd. Archaeological assessment of proposed development, site of Smelter No. 1, Old Cadia Road, Cadia, NSW. Cadia Holdings Pty Limited. 2001
	Edward Higginbotham & Associates Pty Ltd. Report on the archaeological excavation of Smelter No. 1, Old Cadia Road, Cadia, NSW. Volumes 1 and 2. Cadia Holdings Pty Limited. 2001
Little Cadia	Edward Higginbotham & Associates Pty Ltd. Historical and archaeological assessment of proposed development, Little Cadia Copper Mine and neighbouring property, near Orange, NSW. Cadia Holdings Pty Limited. July 2004.
Mine prospecting	Edward Higginbotham & Associates Pty Ltd. Historical and archaeological evidence for mining activity on the route of the proposed underground conveyor, Cadia Ridgeway Project (MLA 103), 'Tunbridge Wells', Four Mile Creek Road, near Orange, NSW. Ridgeway Project. 2001.
Water races and West Cadia Mines, etc.	Edward Higginbotham & Associates Pty Ltd. Progress Report on archaeological investigations, Cadia Hill Gold Mine and the Ridgeway Project, Cadia, NSW. 1996-2000. Cadia Holdings Pty Limited. 2001
	Edward Higginbotham & Associates Pty Ltd. Progress Report on archaeological investigations, Cadia Hill Gold Mine and the Ridgeway Project, Cadia, NSW. Progress report 2. 2001-2002. Cadia Holdings Pty Limited. 2002
Cadia Village and its community.	
Cadia Cemetery	Edward Higginbotham & Associates Pty Ltd. Report on the test-excavation of the Cadia Cemetery, Cadia Road, Cadia, N.S.W. Newcrest Mining Limited, Cadia Project. 1997.
	Edward Higginbotham & Associates Pty Ltd. Report on the excavation of the Cadia Cemetery,

	Cadia Road, Cadia, NSW, 1997-1998. Volumes 1 to 5. Cadia Holdings Pty Limited. 2002.
Cadia Village	Edward Higginbotham & Associates Pty Ltd. Report on site survey of archaeological remains at the site of the East Cadia Village, Cadia, N.S.W. Newcrest Mining Limited, Cadia project. 1997.
	Edward Higginbotham & Associates Pty Ltd. Historical and archaeological assessment of Cadia Village in advance of the proposed mining of Cadia Quarry, Cadia, NSW. Cadia Holdings Pty Limited. 2000.
	Edward Higginbotham & Associates Pty Ltd. Report on excavations of Cadia Village, forthcoming.
Rural settlement near Cadia.	
Processes of change in rural settlement -- Ridgeway Project	Edward Higginbotham & Associates Pty Ltd. Historical and archaeological assessment of the Cadia Ridgeway Project on 'Tunbridge Wells', Four Mile Creek Road, Near Orange, N.S.W. Resource Strategies Pty Ltd. 1998.
Tynan's Slaughterhouse and example of settlement under Conditional Purchase.	Edward Higginbotham & Associates Pty Ltd. Report on the archaeological excavation of Tynan's Slaughterhouse, Old Cadia Road, Cadia, NSW. Cadia Holdings Pty Limited. 2001
Waringa Homestead, 1885-1886.	Edward Higginbotham & Associates Pty Ltd. Archival recording of Waringa Homestead, Cadia Hill Gold Mine, near Orange, N.S.W. Cadia Holdings Pty Limited. 2001.
Waringa Hut, 1879-1885 -- example of settlement under Conditional Purchase.	Edward Higginbotham & Associates Pty Ltd. Report on the archaeological excavation of Waringa Hut, near Cadia, N.S.W. Cadia Holdings Pty Limited. 2003.
Alluvial goldmining on Flyers Creek	Edward Higginbotham & Associates Pty Ltd. Archival recording of sites in advance of the extension of mining works, Cadia Valley Operations, Cadia, NSW. Cadia Holdings Pty Limited. 2003.

Other reports on the archaeology at Cadia include:

Margaret Morris. The Scottish Australian Mining Company Limited and the early copper mines at Cadia, NSW, 1861-1870. Thesis for BA Honours Degree in History. UWS. 1997 -- Scholarly account of the interrelationships of the mining company and the landholders.

B. A. French. 'A chronology of records of Cadia, 1828 - 1999', 2000. -- Transcripts of historical records.

B. A. French. 'Extracts from the Directors Reports of the Scottish and Australian Mining Company, 1868-1909. September 2000. -- Transcripts of historical records.

B A French, Cadia. An investigation into some aspects of the social background and economy of an abandoned mining community. April 2000.

B A French, Recollections and histories of Cadia September 2000.

B. A. French. Collection of historical photographs.

3.1.4 The physical resource.

Although access to the historical remains of mining activity is limited by the current mining activities, nonetheless the physical resources are extensive, though often difficult for the layman to interpret and understand.

The principal archaeological remains at Cadia are listed below. From north to south (for a more detailed appraisal, see the conservation plan):⁶

1. Railway siding, inclined plane and aerial ropeway.
2. Iron Duke iron ore quarry.
3. West Cadia Copper Mine.
4. Smelter No. 4.
5. East Cadia copper mine, together with alluvial gold sluicing and water race.
6. Mine Managers Residence.
7. East Cadia tramway and Smelter No. 2.
8. Cadia Schoolhouse and grounds.
9. Alluvial gold workings at West Cadia.
10. West Cadia, North Section copper mine workings.
11. West Cadia, South Section copper mine workings.
12. Cadia Engine House (SHR Listing).
13. Cadia Village – part removed by current mining.
14. Water race and gold stamper batteries – part removed by current mining.
15. Cyanide plant – removed by current mining.
16. Cadia Cemetery – removed by current mining, replaced by Garden of Remembrance.
17. Little Cadia copper mine workings and site of Smelter No. 3.
18. Tynan's Slaughterhouse – removed by current mining.
19. Waring Hut and Homestead – removed by current mining.

⁶ Godden Mackay Pty Ltd, Cadia Mining Project, Final Conservation Plan. Newcrest Mining Limited. 1995. Volumes 1-6.

Appendix 4

Summary of the NSW Heritage Office's Interpretation Principles or Ingredients for Best Practice Heritage Interpretation

1 Interpretation, People and Culture

Respect the special connections between people and their heritage.

Recognise local communities and use a collaborative approach to interpretation

2. Significance

Understand the item and convey its significance

3. Records and Research

Good research is at the heart of effective interpretation

Use existing records of the item, research additional information, and make the records and research publicly available (subject to security and cultural protocols). Provide for the safekeeping and future access to the research, maps, images and conservation reports by depositing the material in libraries or archives, securing original copies.

4. Audience

Explore, respect and respond to the identified audience

5. Themes

Make reasoned choices about themes, ideas and stories

It is often impractical to communicate every facet of significance. Storytelling is an important dimension of interpretation. For heritage places with complex stories and values, interpretation may be implemented over some years, with a staged program of events, displays and activities exploring different aspects of the significance of the place.

6. Engaging the Audience

Providing an enjoyable and stimulating experience is one of the objectives of interpretation.

7. Context

Research and understand the physical, historical, spiritual and contemporary context of the item and related items; and respect local amenity and culture. Consider interpreting spatial and functional relationships, and links with related places outside the immediate boundaries of the site.

8. Sustainability

Develop interpretation that assists in the conservation of the significance of the item, its character and authenticity.

9. Conservation Planning

Integrate interpretation in conservation planning, and in all subsequent stages of a conservation project.

10. Maintenance, evaluation and review

Include interpretation in the ongoing management of the item; provide regular maintenance, evaluation and review.

11 Skills and Knowledge

Involve people with relevant skills, knowledge and experience.

This may include people associated with the place, historians and interpretation planners.

12. Collaboration

Collaborate with organisations and the local community.

Meredith Walker and Elaine Lawson, Heritage Interpretation Policy, NSW Heritage Office, 2004

Appendix 5

Copies of Interpretive Signs in the Shelter adjacent to the cemetery

HISTORY

Exploration and mining at Cadia dates back to the middle of the nineteenth century and to the discovery of copper and gold mineralisation in 1851. The discovery was followed by mining of secondary copper and low-grade iron ores from a number of small mines, including those now referred to as Big and Little Cadia. Cadia Hill was never a significant mining site, but the various prospecting pits and small shafts scattered across the ridge, and the small open-cut to the south-east, show that the area attracted some interest.

By 1859 land beside Cadiangullong Creek had been bought by a mixture of mineral speculators and pastoralists.

The first indication of gold in the area was confirmed in 1868, but at the time warranted only small scale exploitation.

Cadia School, Circa 1916



Cadia Cricket Team - Village Schoolmaster Front Row, Second from Left

Iron ore also occurs in the area. Production commenced at the Iron Duke in 1899 and a branch railway carried the ore to Hoskin's Blast Furnace at Lithgow between 1918 and 1928. Iron ore production stopped at that time, recommencing briefly during the Second World War.

Chilcott Street Post Office and Shops, Circa 1920



School Play

Smelter 3 With Views of the Villians About 1916

The search for substantial gold deposits began in earnest in the 1950s. In the late 1980s BHP Gold Ltd. secured tenure of the leases. In December 1990, BHP Gold Ltd. and Newmont Australia Ltd. merged to form Newcrest Mining Ltd., and the operation before you began with the company's occupation of the land in April 1991.

ENGINE HOUSE AND CHIMNEY

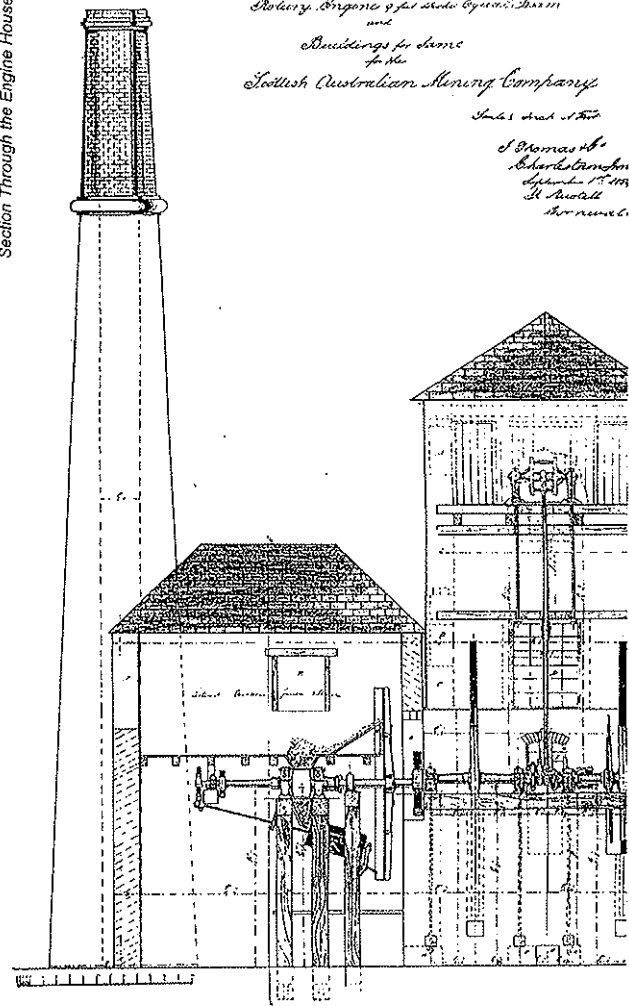
The engine house and chimney are the most prominent structural remains of the early mining operations.

The engine house was constructed under the supervision of Captain Josiah Holman for the Scottish Australian Mining Company in 1861 and operated from that time until 1868, then sporadically only thereafter.

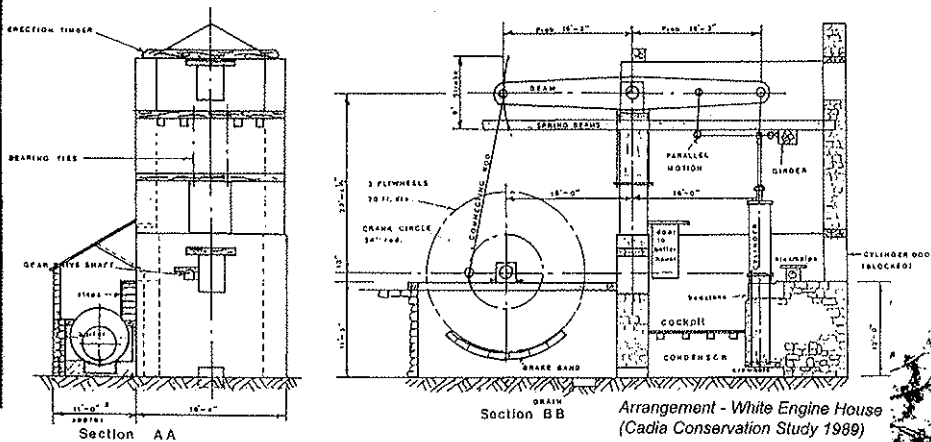
The engine house contained the "block" of the engine, a steam driven piston that operated vertically onto one end of a large beam pivoted at or near its centre. Steam was provided by a conventional boiler. The other end of the beam moved up and down to operate two fly wheels which in turn drove other machinery. The technology was developed in Cornwall, hence the term Cornish engine house. The engine had originally been imported from Cornwall, for a mine near Yass.

At Cadia the engine drove a crusher, a winder to haul ore out of the mine and a pump to dewater the workings. The pump is still present beside the shaft and the piston is still in the floor of the engine house. Little else remains except the structure itself and parts of a wooden brake near the pushrod.

Section Through the Engine House



Water Jacket Workforce About 1916



Arrangement - White Engine House (Cadia Conservation Study 1989)

In order to preserve the heritage significance, Cadia Holdings, in conjunction with the Heritage Council of New South Wales, has restored the old engine house. The engine house is now located within a State Heritage Register area.



Old Beam Engine Cadia

CADIA VILLAGE AND CEMETERY

With mining operations becoming established following the discovery of ore deposits in 1851, a small village developed at Cadia, near the Cadiangullong Creek. There were stores, a hotel, churches and a school, plus numerous huts occupied by miners.

Cadia Football Club



Cadia - Chilcott Street Looking North, Circa 1920



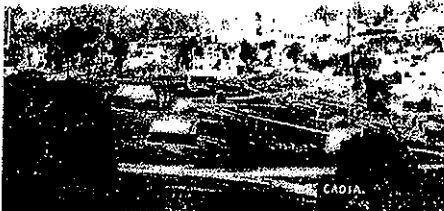
Located on the banks of Cadiangullong Creek - a location which is now within the open pit - the Cadia cemetery received its first burial in 1864. The cemetery served the mining and local farming community for 63 years, with the last burial occurring in 1927.



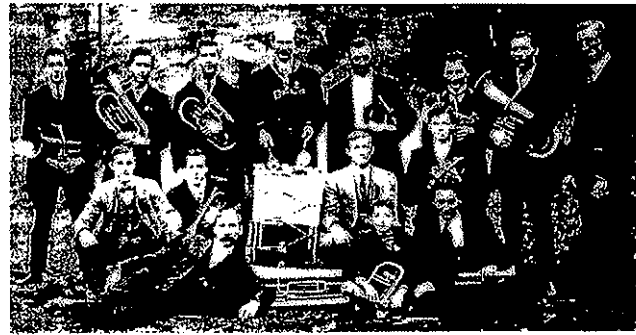
Cadia Village Looking West, Circa 1908



Cadia Barber



Cadia Band



Of the 109 burials, 61 were children, providing testimony to the high level of child mortality in the 19th century, but pointing also to the conditions of life on the mining settlement. Many adults would not have stayed in Cadia other than for employment, moving on to seek work or more pleasant surroundings for retirement. Of the 48 adults buried in Cadia Cemetery, some had met with mining accidents, others had worked in Cadia Village or lived on surrounding farms. Several of those buried had come from Cornwall, bringing with them their mining skills for which they were renowned.

Since 1927, the Cadia Cemetery had fallen into disrepair. Only 6 burials still had headstones, while all the timber or other grave markers had disappeared long ago, leaving 103 unmarked graves.

Due to its location it was necessary to excavate the cemetery, removing all remains for reburial. The excavations were conducted with due dignity and reverence. A detailed examination of the skeletal remains was carried out in an endeavour to identify individuals, so that their links could be established to living descendants. The remains are reburied in the relocated cemetery, constructed in close proximity to the engine house.

The re-established cemetery uses large local basalt boulders to mark each grave site, forming the same pattern and having the same orientation as the original cemetery, at Cadiangullong Creek.

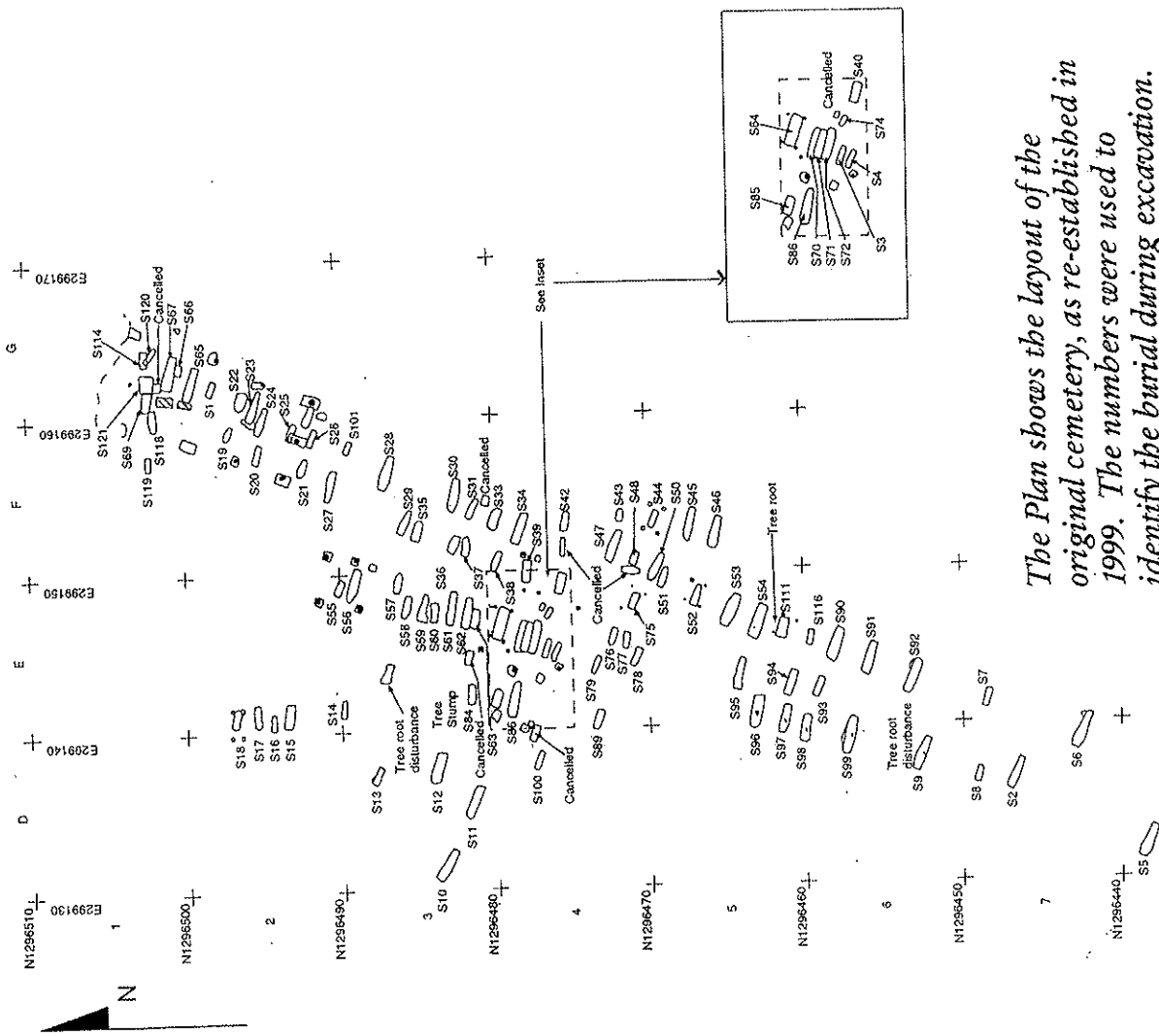
Details of the burials are provided within the re-established cemetery.

EXCAVATION AND REBURIAL

The site of the original cemetery now lies within the pit limits of the Cadia Hill Mine. All burials were excavated in 1997-1998 and reburied in 1999 in the new cemetery, which follows the same layout and orientation of the former site beside Cadiangullong Creek. Surviving headstones have been re-erected, while basalt boulders now mark burials which had no other surviving marker.

- Each basalt boulder is marked with a number. The numbers were used to identify the burials during excavation.
- Information on the 109 burials at Cadia Cemetery is derived from the NSW Register of Deaths, providing name, age, date and cause of death.
- Where the burial is identified, the burial number has been replaced with the name of the individual.

During the archaeological excavations, detailed analysis was completed in an attempt to identify each individual burial, so that links with living descendants could be re-established.



The Plan shows the layout of the original cemetery, as re-established in 1999. The numbers were used to identify the burial during excavation.

BURIAL REGISTER

Name	Died	Aged
Henry ALLIS	6 April 1887	53
John ASPINALL	16 January 1884	68
John BICE	3 April 1880	14
Sarah BICE	14 April 1880	4
Joseph BINGHAM	4 June 1883	72
Cecil Thomas BIRKS	2 September 1927	22
Dora Annie BLOOD	31 January 1879	4 months
Emily Louisa BLOOD	4 October 1883	32
William Smyth BLOOD	31 March 1905	65
Harry BRENNAN	14 July 1915	5 hours
unnamed BRENNAN	17 October 1885	42 days
Henry BUTLER	7 October 1884	56
Alfred Cecil CARTER	4 December 1906	22 days
Edward Roy CARTER	1 December 1906	20 days
Evan CHARLES	2 May 1909	68
Joseph COPPOCK	1 January 1866	56
Thomas CORNISH	8 November 1881	45
Edward CORSE	31 January 1877	12 days
Catherine COSTELLO	13 June 1868	15 months
William CREWE	29 May 1872	3
Harriet DANIEL	8 May 1902	38
Jervis DEER	12 May 1865	16 hours
Owen EVANS	18 June 1927	About 65
Patricia EVANS	16 August 1879	60
Charles Henry FAULL	27 December 1883	3 months
Hannah FIELD	8 March 1879	55
Ada FLOYD	4 November 1884	7
Mary Jane FORD	30 November 1864	3
Mildred FRESON	12 November 1902	5
Olive FRESON	12 November 1902	3
Abraham Joseph GALLWAY	16 January 1879	8 weeks
Ann GALLWAY	10 January 1878	3 months
Caroline Emma GARVIN	25 January 1865	2
Catherine GAY	20 February 1889	82
Ernest Albert GAYNER	6 April 1878	12 months

Name	Died	Aged
Florence May GRAHAM	1 October 1916	2
Rebecca GRAY	6 May 1866	15 months
HEFFERMAN	12 January 1919	5 minutes
Laurette Isabel HEFFERMAN	18 September 1917	7 days
James Joseph HEGARTY	25 August 1927	64
Catherine HICKS	15 March 1887	78
Harry HICKS	29 December 1864	14 days
James HICKS	13 May 1867	11 months
Elizabeth HOLMAN	28 March 1898	74
Elizabeth Mary HOLMAN	15 February 1896	22
Irena Emma HOLMAN	19 January 1887	9 weeks
Josiah HOLMAN	18 September 1893	72
Josiah Dorey HOLMAN	27 September 1881	2
Unnamed Female HOLMAN	15 May 1891	6 weeks
James Raymond HUGHES	10 October 1900	3 weeks
Thomas HUGHES	10 June 1866	34
Henry HUNT	10 December 1879	17 months
Elizabeth Ann JEFFREE	3 October 1877	6 months
Eileen JENKIN	7 March 1904	56
Francis JENKIN	26 May 1919	76
John JENKIN	23 June 1877	61
John Oswald JENKIN	12 February 1907	1 month
Ruby Ellen JENKIN	19 October 1916	3
William James JENKIN	11 July 1899	5 months
John Francis JENKIN	18 February 1866	16 days
JENNER	8 December 1867	5 months
George JENNER	3 February 1894	10 months
Catherine Mary JOHNSON	4 July 1865	4 months
Winifred JONES	19 August 1868	50
Alice Marianne LANCE	24 November 1878	5 months
Edith Hilda LIVINGSTON	29 November 1899	4 months
Male, unknown	20 March 1866	30 hours
Male, unknown	1 August 1907	1
William Francis MARTIN	9 April 1882	1
James Michael MARTIN	23 February 1889	37

Name	Died	Aged
Grace Harriett MICHELL	20 October 1914	20 days
Edward MINER	20 October 1876	182
Eliza NICHOLS	3 October 1867	18
Robert NORTHEY	4 July 1866	46
Dulcie Violet OWEN	1 February 1902	9 months
Edward James OWEN	15 June 1902	37
Marianne Simmons PARISH	15 November 1899	2 months
Nina Pearl PARISH	5 February 1885	3 weeks
Beatrice Nina PAYNE	13 February 1906	3 weeks
Jane PERRY	8 September 1888	70
Mary Anne REYNOLDS	15 January 1865	5
Arthur ROBERTS	1 April 1875	9 days
Clara ROBERTS	10 July 1871	9 months
Clare ROBERTS	26 July 1873	4 days
Fanny ROBERTS	24 July 1870	12 months
Olive Clara ROBERTS	10 January 1878	17 months
William Henry ROBERTS	16 October 1871	3 months
Elizabeth Simmons ROBSON	2 February 1895	52
Thomas Henry ROTHERY	5 March 1889	3
Martin RYAN	10 July 1878	6 days
Sue RYAN	13 March 1885	3 days
Anastasia SCHULTZ	19 August 1909	73
Jessie SKELLY	8 January 1886	72
William SMALL	26 June 1875	1
James SPEARS	20 June 1875	65
Elizabeth STRATHEN	5 November 1869	2 weeks
Matthew STRATHEN	10 November 1868	7 months
Peter TERRY	25 January 1880	3
John TRATHEN	27 May 1866	3
Edith WALLACE	5 February 1892	21 months
Horace Augustus WALLACE	19 September 1901	18
Olive WALLACE	7 March 1905	17
Sydney Evans WALLACE	22 December 1876	13 months
Dulcie Alice WEBSTER	29 March 1910	3 months