Environmental Assessment

Cadia East Project

APPENDIX L

HISTORICAL AND ARCHAEOLOGICAL ASSESSMENT (EUROPEAN HERITAGE) OF THE CADIA EAST PROJECT

Edward A K Higginbotham,
MA (Cambridge), PhD (Sydney),
MAACAI.

EDWARD HIGGINBOTHAM
& ASSOCIATES PTY LTD.

Archaeology • History • & Heritage

A.B.N. 79 072 316 968

HISTORICAL AND ARCHAEOLOGICAL ASSESSMENT (EUROPEAN HERITAGE) OF THE CADIA EAST PROJECT

Edward Higginbotham
MA (Cambridge), PhD (Sydney), MAACAI.
EDWARD HIGGINBOTHAM & ASSOCIATES PTY LTD
PO Box 97
HABERFIELD, NSW 2045.
Phone. (02) 9716-5154
Fax. (02) 9716-8547.

For
Cadia Holdings Pty Limited.

Draft	July 2008
Final Report	April 2009

CONTENTS.

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

ACKNOWLEDGMENTS.

The author would like to thank

Client: Mr. Andrew Wannan and Ms. Alex Reid, Cadia Holdings Pty Limited.

Mr. Richard Kirwood, Mr. Clive Berry and Ms. Kate Flink, Resource Strategies Pty Ltd.

EXECUTIVE SUMMARY.

Cadia Holdings Pty Limited, a wholly owned subsidiary of Newcrest Mining Limited, is the proponent for the development of the Cadia East Project (the Project). The Project is located at the Cadia Valley Operations, approximately 25 kilometres south-west of Orange, in the Central Tablelands of New South Wales.

The Project involves underground mining of the Cadia East orebody adjacent to the existing Cadia Valley Operations.

The study area is defined as the disturbance footprint of the Project. The main components of the Project that would result in additional disturbance areas include:

1. The Cadia East underground mine subsidence zone and associated zone of influence;
2. The expansion areas of the existing Northern Tailings Storage Facility (NTSF) and Southern Tailings Storage Facility (STSF);
3. Augmentation of Rodds Creek Water Holding Dam;
4. The re-aligned section of Cadia Road;
5. The pipeline easement between the Cadia Valley and Blayney, including its extension to the CVO Dewatering Facility;
6. Construction of the CVO Dewatering Facility; and
7. Additional pipe and pumping infrastructure from the Belubula River to Rodds Creek Water Holding Dam.

The Project would potentially impact on a limited number of heritage items, these include:

1. The Little Cadia or Canoblas (historical spelling) Copper Mine (herein referred to as Little Cadia);
2. The Wire Gully Gold Workings; and
3. Railway bridge, Belubula River, Blayney.

A summary of the level and grading of significance of these items is presented in Table ES-1.

Table ES-1
Heritage Items Potentially Impacted by the Project

Site	Portion	Parish	Level of Significance [1]	Grading of Significance [2]
Little Cadia Copper Mine	28, 37 & 38	Waldegrave	Local	Various items graded from exceptional to moderate.
Wire Gully Gold Workings	7 & 8, renumbered 41 in 1952	Blake	Local	Not available.
Railway bridge, Belubula River, Blayney	-	Village of Blayney and Parish of Napier	-	Little or no significance.
Railway culvert, adjacent to CVO Dewatering Facility	-	Napier	Local	Little or no significance.

1 Cultural significance is assessed according to standard criteria.[1]

2 The NSW Heritage Manual describes the methodology for grading of significance for items within a place. This has been further described in "Assessing Heritage Significance", published by the NSW Heritage Office in 2000.[2]

Portions of the proposed visual setting of Little Cadia would be located within the subsidence zone. Some of the heritage items at Little Cadia would be located within the zone of influence. The subsidence zone is expected to subside and the zone of influence could experience some cracking but the ground is not expected to subside. Little Cadia has previously been assessed and recorded to archival standard and archaeological excavations have also been completed in 2005.

The Wire Gully Gold Workings will be partially submerged by tailings as a result of the construction of the STSF as approved in the Ridgeway Environmental Impact Statement. The STSF would be raised by a further 20 metres as a result of the Project, thereby submerging a greater proportion of the Wire Gully Gold Workings. Wire Gully has previously been assessed and recorded to archival standard.

Potential impacts on the Belubula River railway bridge at Blayney and the railway culvert near to the CVO Dewatering Facility should be minimal.

1 Guidelines for the application of these criteria have now been prepared by the NSW Heritage Office. See inclusion and exclusion guidelines in:
NSW Heritage Office. 2000. Assessing Heritage Significance. A NSW Heritage Manual Update.
See also:
Heritage Office and Department of Urban Affairs and Planning. 1996. Heritage Assessments. pp. 4-7.

2 NSW Heritage Office. 2000. Assessing Heritage Significance. A NSW Heritage Manual Update.

This report includes:

- A number of recommendations to mitigate the impact of the development on heritage items located in the Cadia Valley.
- Recommended measures to avoid any impact on other heritage items.
- Interpretation and display of relics recovered from these heritage sites, to fit in with the existing Cadia Interpretation Plan.

L1 INTRODUCTION.

L1.1 Background.

Cadia Holdings Pty Limited (CHPL), a wholly owned subsidiary of Newcrest Mining Limited (Newcrest), is the proponent for the development of the Cadia East Project (the Project). The Project is located at the Cadia Valley Operations, approximately 25 kilometres (km) south-west of Orange, in the Central Tablelands of New South Wales (NSW) (Figure L1-1).

Mining at the Cadia Valley Operations commenced at the Cadia Hill Gold Mine (Cadia Hill) in 1998. The Ridgeway Gold Mine (Ridgeway) commenced production in 2002. A significant extension of Ridgeway, called Ridgeway Deeps, is currently under construction. The development and construction workforce for Ridgeway Deeps forms part of the current Cadia Valley Operations workforce, which currently consists of approximately 1,100 CHPL personnel and on-site contractors.

Approximately 24 million tonnes per annum (Mtpa) of ore is mined at the Cadia Valley Operations and in 2007/2008 approximately 716,000 ounces of gold and 61,000 tonnes (t) of copper was produced by Cadia Hill and Ridgeway. Mineral concentrate containing gold and copper is pumped approximately 30 km from the Cadia Valley Operations to the nearby town of Blayney, where it is dewatered and then loaded onto trains for transport to Port Kembla on the eastern seaboard.

Cadia Hill is scheduled to cease operation in 2013. With the Ridgeway Deeps extension, Ridgeway is scheduled to cease operations in 2017.

In the mid-1990s, CHPL's exploration program in the Cadia Valley identified a zone of low grade gold/copper mineralisation up to a distance of approximately 2.5 km east of the Cadia Hill open pit. The area of mineralisation is known as Cadia East and has been the subject of extensive exploration over the last decade and development planning over the past two years.

The Project would involve development of an underground mine to extract approximately 450 million tonnes (Mt) of ore over a period of 21 years. The ore contains gold, copper and some molybdenum. Development of the Project would occur in conjunction with ongoing operation of the existing Cadia Hill open pit and Ridgeway underground mine, and if approved, the Project would extend the life of the Cadia Valley Operations to approximately 2030.

The key Project extensions to the approved Cadia Valley Operations would include (Figure L1-2):

- underground mining of the Cadia East deposit using a panel caving mining method at a rate of up to 27 Mtpa and the development of an associated 255 hectare (ha) subsidence zone above the underground mining area;
- development of underground crushing, handling and incline conveyor systems to transfer ore and waste rock mined from the Cadia East orebody to the Cadia Valley Operations ore processing facilities;
- development of extensive supporting infrastructure for the underground mine including multiple ventilation shafts, personnel and equipment access systems;
- upgrade of the existing Cadia Valley Operations ore processing facilities and associated stockpiles and materials handling equipment to accommodate the harder ore from Cadia East and enable a total Cadia Valley Operations ore processing rate of up to approximately 27 Mtpa;
- construction and operation of a molybdenum recovery plant with a capacity of up to 460,000 tonnes per annum (tpa) and trucking of molybdenum products off-site;
- placement of additional waste rock produced by the Project (approximately 11.4 Mt) in the existing South Waste Rock Dump;
- raising of the existing Northern Tailings Storage Facility (NTSF) and Southern Tailings Storage Facility (STSF) embankments to accommodate some 450 Mt of Cadia East tailings to be produced over the life of the Project;
- augmentation and upgrade of the existing Cadia Valley Operations water management/supply system including development of additional pipeline/ pumping systems and raising of the Rodds Creek Water Holding Dam;
- obtaining additional mining leases to facilitate the Project extensions of the STSF, NTSF, subsidence zone and Rodds Creek Water Holding Dam;
- re-alignment of a 1.1 km section of Cadia Road;
- construction of a new dewatering facility to the east of Blayney (to be known as the CVO Dewatering Facility)

- maintaining the existing Blayney Dewatering Facility to provide standby additional processing capacity during the peak production period from Year 3 to Year 7 and the decommissioning of this facility if it is deemed redundant after this time;
- installation of a new concentrate pipeline from the Cadia Valley Operations to the CVO Dewatering Facility;
- increased rail transportation of dewatered mineral concentrate from Blayney to the eastern seaboard;
- augmentation, relocation and upgrade of supplementary surface facilities including workshops, administration and site access roads; and
- other associated modifications to existing infrastructure, plant, equipment and activities to allow mining of the Cadia East deposit and integration with the approved Cadia Valley Operations.

CHPL is seeking approval for the Project from the Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act, 1979*.

L1.2 Location of Site.

The study area is defined as the disturbance footprint of the Project. The main components of the Project that would result in additional disturbance areas include:

1. The Cadia East underground mine subsidence zone and associated zone of influence;
2. The expansion areas of the existing NTSF and STSF;
3. Augmentation of the Rodds Creek Water Holding Dam;
4. The re-aligned section of Cadia Road;
5. The pipeline easement between the Cadia Valley and Blayney, including its extension to the CVO Dewatering Facility;
6. Construction of the CVO Dewatering Facility; and
7. Additional pipe and pumping infrastructure from the Belubula River to the Rodds Creek Water Holding Dam.

The existing mining leases include Mining Lease (ML) 1405, ML 1472, ML 1481 and ML 1449. They are located on various parish portions, in the Parishes of Clarendon, Waldegrave, Carlton and Blake, County of Bathurst.

Outside the existing mining leases, the study area includes:

1. Additional Mining Lease Application (MLA) areas, to the east and south of the existing mining leases;
2. The re-aligned section of Cadia Road;
3. The pipeline easement between the Cadia Valley and Blayney, including its extension to the CVO Dewatering Facility;
4. The CVO Dewatering Facility (Figure L1-1); and
5. Additional pipe and pumping infrastructure from the Belubula River to Rodds Creek Water Holding Dam.

The European heritage within the existing mining leases has already been assessed in previous studies. Any additional impact on these heritage items is assessed in Section L2.

The impact on heritage items outside the mining leases is assessed in Section L3.

L1.3 Heritage Listings.

The following heritage listings are located near to the study area (i.e. outside of disturbance areas associated with the Project):

1. The Cadia Engine House and surrounds are listed on the State Heritage Register.
2. Cadia Copper Mine including Engine House and ruins is listed by the Cabonne Shire Council.
3. The former Cadia General Cemetery is listed by the Blayney Shire Council.[3]

The proposed concentrate pipeline easement at Blayney passes the Blayney Railway Station and Yard Group and also the Old School House on Tallwood Road, Beneree. The former item is listed on the State Heritage Register. Both items are listed in the *Blayney Local Environment Plan 1998*, as amended.

[3] Research of NSW Heritage Office Web Site, dated 6 March 2007. Blayney Local Environmental Plan 1998, as amended to 3 May 2005.

L1.4 Study Methodology and Limitations.

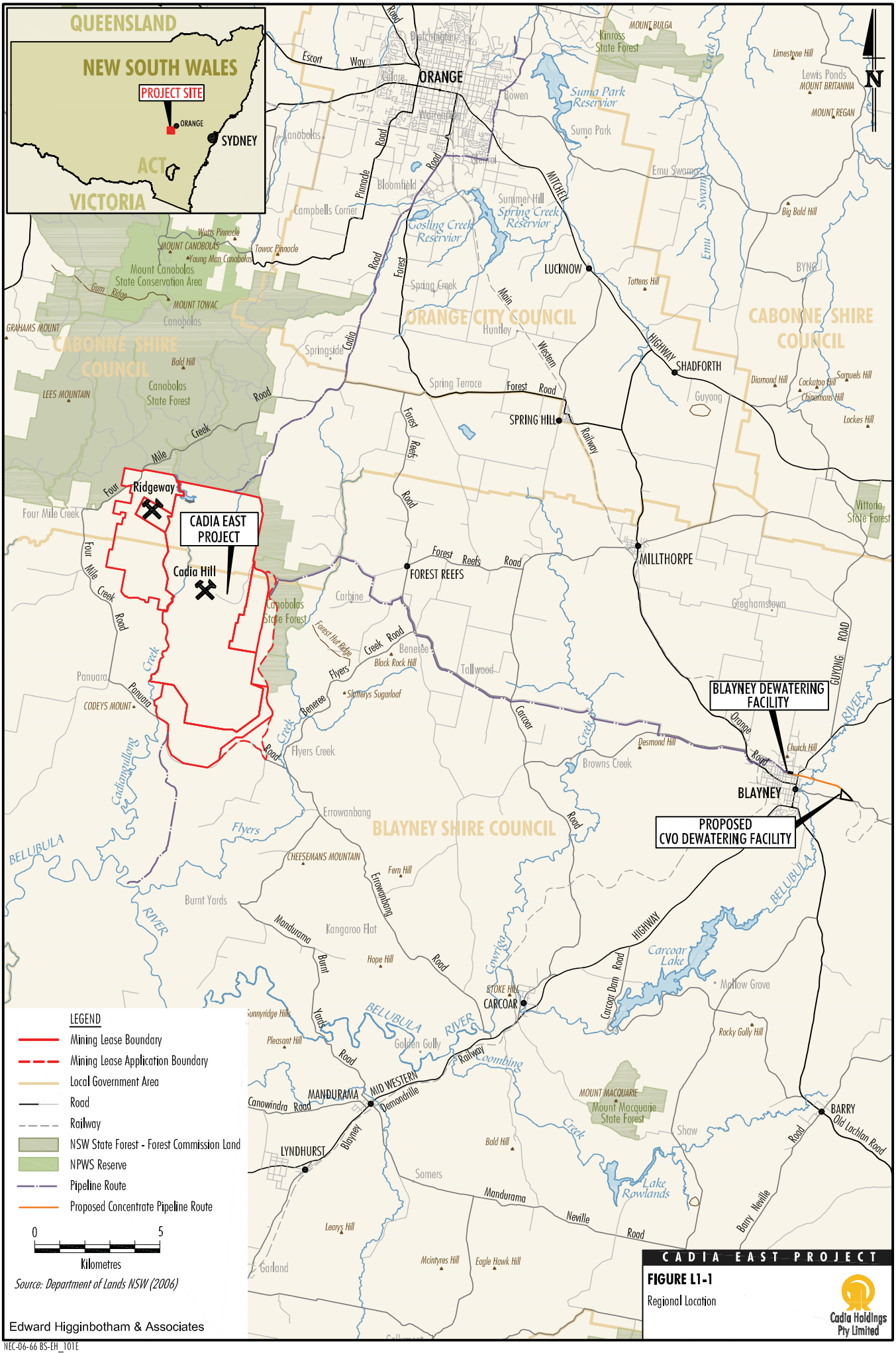
This report has been prepared in accordance with the Heritage Office and Department of Urban Affairs and Planning *NSW Heritage Manual*, and includes:

1. Historical research.
2. Site survey.
3. The assessment of the archaeological significance of the site.
4. Recommendations for management and conservation for the Project.[4]

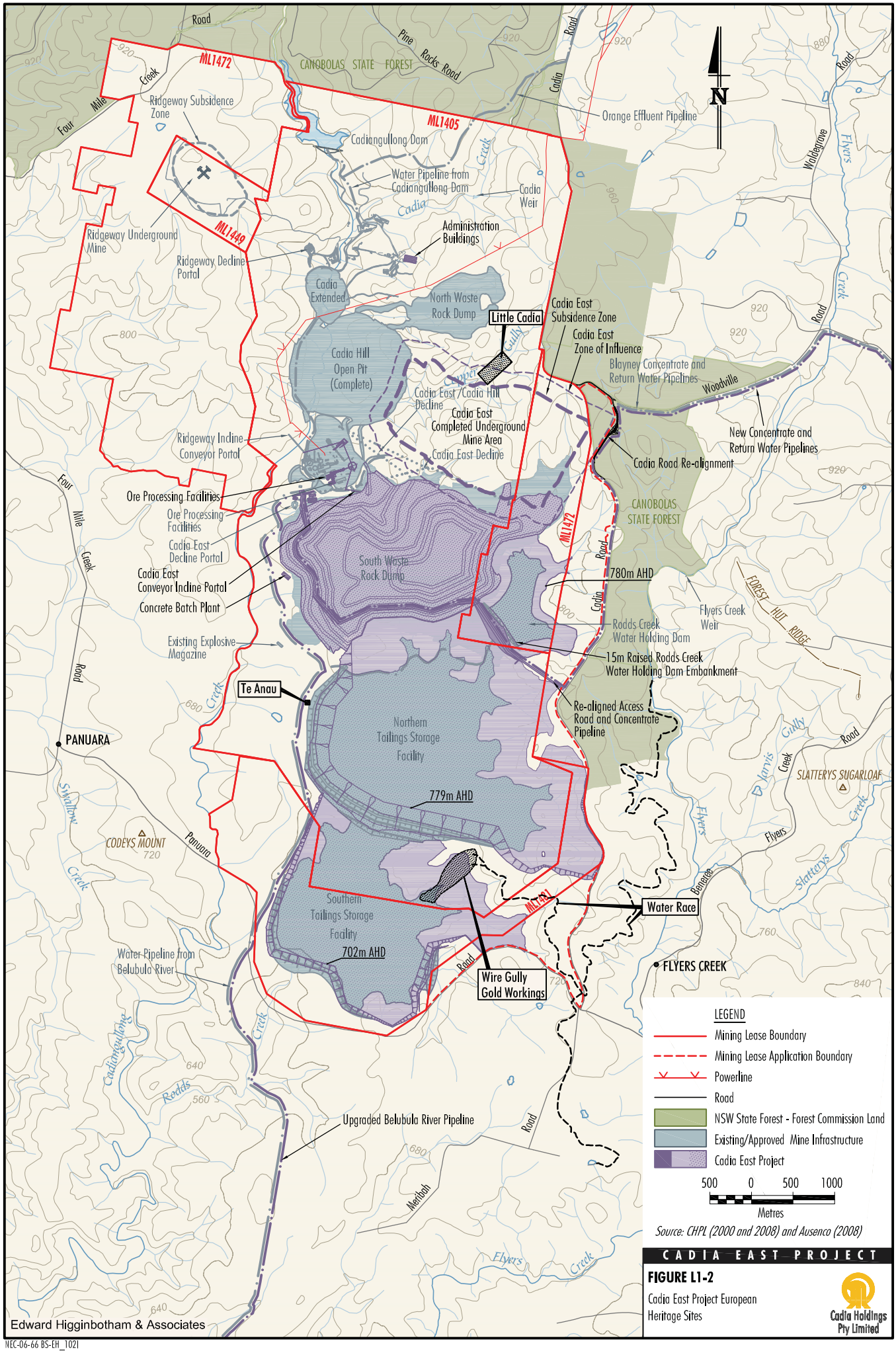
L1.5 Author Identification.

This report was prepared by Dr. Edward Higginbotham. Terry Kass undertook the historical research for all Edward Higginbotham & Associates Pty Ltd reports referenced in this report.

4 Heritage Office and Department of Urban Affairs and Planning. 1996. Statements of Heritage Impact.
Heritage Office and Department of Urban Affairs and Planning. 1996. Conservation Management Documents.
Heritage Office and Department of Urban Affairs and Planning. 1996. NSW Heritage Manual.
Heritage Office and Department of Urban Affairs and Planning. 1996. Archaeological assessment Guidelines.
Heritage Office and Department of Urban Affairs and Planning. 1996. Heritage Assessments.
NSW Heritage Office. 2000. Assessing Heritage Significance. A NSW Heritage Manual Update.
J. S. Kerr's The Conservation Plan.
The ICOMOS Burra Charter.



NEC-06-66 BS-EH_101E


ML1472
ML1405
ML1449
CANOBOLAS STATE FOREST
Pine Rocks Road
Four Mile Creek
Ridgeway Subsidence Zone
Ridgeway Underground Mine
Ridgeway Decline Portal
Ridgeway Incline Conveyor Portal
Cadiangullong Dam
Water Pipeline from Cadiangullong Dam
Cadia Weir
Administration Buildings
Cadia Extended
North Waste Rock Dump
Little Cadia
Cadia Hill Open Pit (Complete)
Cadia East Subsidence Zone
Cadia East Zone of influence
Blayney Concentrate and Return Water Pipelines
Woodville
Cadia East / Cadia Hill Decline
Cadia East Completed Underground Mine Area
Cadia East Decline
New Concentrate and Return Water Pipelines
Cadia Road Re-alignment
Orange Effluent Pipeline
Waldegrave
Flyers Creek
Ore Processing Facilities
Ore Processing Facilities
Cadia East Decline Portal
Cadia East Conveyor Incline Portal
Concrete Batch Plant
Existing Explosive Magazine
South Waste Rock Dump
780m AHD
Rodds Creek Water Holding Dam
15m Raised Rodds Creek Water Holding Dam Embankment
Flyers Creek Weir
FOREST HUT RIDGE
Te Anau
Re-aligned Access Road and Concentrate Pipeline
PANUARA
Northern Tailings Storage Facility
779m AHD
Jarvis Gully
SLATTERYS SUGARLOAF
CODEYS MOUNT
720
Shallow Creek
Panuara Road
Flyers Creek
Benetech
Slatterys Creek
Water Race
Southern Tailings Storage Facility
702m AHD
Water Pipeline from Belubula River
Wire Gully Gold Workings
FLYERS CREEK
Cadiangullong Creek
Rodds Creek
Upgraded Belubula River Pipeline
Meribah
Flyers Creek
Edward Higginbotham & Associates
LEGEND
Mining Lease Boundary
Mining Lease Application Boundary
Powerline
Road
NSW State Forest - Forest Commission Land
Existing/Approved Mine Infrastructure
Cadia East Project
500 0 500 1000
Metres
Source: CHPL (2000 and 2008) and Ausenco (2008)
CADIA EAST PROJECT
FIGURE L1-2
Cadia East Project European Heritage Sites
Cadia Holdings Pty Limited
NEC-06-66 BS-EH_1021

L2 EUROPEAN HERITAGE ASSESSMENT WITHIN THE EXISTING MINING LEASES.

L2.1 Introduction.

The European heritage within the existing mining leases has already been assessed in previous studies.

These studies are:

Godden Mackay, Cadia Mining Project, Final Conservation Plan. Newcrest Mining Limited. 1995.

Heritage Management Consultants. Appendix N. European Heritage Survey & Assessment, in Cadia Holdings Pty Limited. Ridgeway Project. Environmental Impact Statement. 2000.

The latter study drew upon the following report:

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.

In addition to the above, various other reports on archival recordings and archaeological investigations have been referenced in this report where appropriate.

L2.2 Cadia East Underground Mine Subsidence Zone.

Background.

The areas of the Cadia East underground mine subsidence zone and associated zone of influence located in the existing mining leases have been assessed in a separate study (Figure L1-2), namely:

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. 2005.

This assessment recommended the archival recording and archaeological investigation of the historic copper mine at Little Cadia (Figures L1-2, L2-1, L2-2 and L2-3). Both the archival recording and the archaeological investigation (including excavations) were completed in April and September 2005, respectively. The relevant reports are:

Edward Higginbotham & Associates Pty Ltd. Archival Recording of Little Cadia Copper Mine, Near Orange, NSW. Cadia Holdings Pty Limited. 2005.

Edward Higginbotham & Associates Pty Ltd. Report on the archaeological excavations of the Little Cadia Copper Mine, near Orange, NSW. Cadia Holdings Pty Limited. 2006.

The 2005 assessment report also researched those portions of land within ML 1472 (Portions 185, 194 and 41, Parish of Waldegrave, County of Bathurst – partly within the Cadia East underground mine subsidence zone and zone of influence). This research identified a house (mentioned in 1885) on Portion 41, and a slab hut with four rooms on Portion 185 (mentioned in 1875, 1881). Only the hut on Portion 185 was located on a historical plan (to north of ML 1472 – outside study area). Current usage for forestry plantation will have removed any significant heritage items. The sites were not located by site survey.[5]

The portion of the Cadia East underground mine subsidence zone and associated zone of influence located outside the existing mining leases is discussed in Section L3.2.

Historical Background Summary.

Comprehensive historical background research of the Little Cadia Copper Mine (also known as the Canoblas Copper Mine[6]) (herein referred to as Little Cadia) has been undertaken. A summary is presented below.

5 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. 2005: 46-47 (Figures 2.12 and 2.13) and 56-61.

6 Note that the correct spelling for the historical mine is Canoblas. Today Canobolas is the usual spelling of the word, as in Mount Canobolas. Where the word refers to the name of the mine, the historical spelling will be used.

Little Cadia was the first copper resource officially described at Cadia in 1851 by Mr Stutchbury, the Mineralogical Surveyor. Little Cadia vies with East Cadia (located on the east bank of Cadiangullong Creek and not to be confused with the proposed Cadia East underground mine) for the first place to be mined for copper in the locality.

The three portions forming the mine were purchased by Randolph John Want, Saul Samuel and John Savery Rodd, as part of the speculative venture in locating land with copper bearing ores. Portion 28 was purchased by all three partners, but Portions 37 and 38 were purchased in 1855 by Saul Samuel and John Savery Rodd alone. In 1859 the land was divided equally between the three partners.

The landowners leased the land to the Canoblas Mining Company in the late 1850s. In 1861 the *Western Examiner* reported that the mine works were extensive and also advertised for carters to take ore to Sydney.

The Scottish Australian Mining Company conducted trials at the mine in 1863-1864, after the closure of Little Cadia. A joint company was formed by the Scottish Australian Mining Company and the landholders on 30 May 1864. It was named the Cadiangullong Consolidated Copper Mining Company. The new company did not undertake further work at Little Cadia, but concentrated its efforts elsewhere (North and South Section Mines at West Cadia). However, the Company used the sulphide ore from Little Cadia to mix with the Cadia oxide ores to aid smelting in their furnaces.

Little Cadia was reopened for a short time in 1908 (Cadia Extended Copper Mine) (not to be confused with recent Cadia Extended open pit), with a portable water jacket furnace to smelt the ores. No further mining was undertaken and the land was sold in 1918 for £5,000. A number of mining leases were taken up in the 1950s and in 1971, but little work was undertaken.[7]

The dating of the phases of copper mining at Little Cadia are summarised in Table L2-1.

7 Historical summary from Edward Higginbotham & Associates Pty Ltd. Report on the Archaeological Excavations of the Little Cadia Copper Mine, near Orange, NSW. Cadia Holdings Pty Limited. 2006.

Table L2-1
Key Mining Dates at Little Cadia

Period	Company	Date Range
1	Canoblas Copper Mine	1859-1862
2	Scottish Australian Mining Company	1863-1864
3	Cadia Extended Copper Mine	1908
4	Precipitation Works	c. 1960
5	Pacific Copper	1970s

Survey Results Summary.

A survey of the Little Cadia site was completed on 22 June 2004 and archival photography was completed on 6 April 2005.

The copper mine at Little Cadia was recorded as a heritage item in the Cadia Conservation Plan, 1995.[8] The Inventory of the various items recorded at Little Cadia is contained in the Cadia Conservation Plan, and is summarised in Table L2-2 (Figures L2-1 and L2-2).

Table L2-2
Little Cadia Heritage Inventory

Item No.	Item	Period [a]	Significance[b]	Interpretive Potential	Recommendations
1	Small shed	4. Precipitation Works. c. 1960 5. Pacific Copper. 1970s	Low	Low	Photographic recording
2	Shaft	1. Canoblas Copper Mine. 1859-1862 2. Scottish Australian Mining Company. 1863-1864	Low	Low	Photographic recording
3	Remnants of dam or weir.	1. Canoblas Copper Mine. 1859-1862 2. Scottish Australian Mining Company. 1863-1864, or 3. Cadia Extended Copper Mine. 1908	Low	Low	Photographic recording
4	Chimney base	1. Canoblas Copper Mine. 1859-1862 2. Scottish Australian Mining Company. 1863-1864	Moderate	Moderate	Photographic recording and archaeological investigation. [c]
5	Remnants of walls of structure	1. Canoblas Copper Mine. 1859-1862 2. Scottish Australian Mining Company. 1863-1864	High	High	Archaeological investigation. [c]
6	Miscellaneous timbers possibly a former pedestrian bridge	Uncertain	Low	Low	Photographic recording

8 Godden Mackay, Cadia Mining Project, Final Conservation Plan. Newcrest Mining Limited. 1995. Volume VI. Inventory. LC1-LC21. Volume III. R05, R06, R27, R29, R30.

Table L2-2 (Continued)
Little Cadia Heritage Inventory

Item No.	Item	Period [a]	Significance	Interpretive Potential	Recommendations
7	Copper precipitation works	4. Precipitation Works. c. 1960 5. Pacific Copper. 1970s	Low	Low	Photographic recording
8	Dam	1. Canoblas Copper Mine. 1859-1862 2. Scottish Australian Mining Company. 1863-1864, or 3. Cadia Extended Copper Mine. 1908	Low	Moderate	Photographic recording
9	Blast furnace platform with remnants of timber building and pump or generator	3. Cadia Extended Copper Mine. 1908	Low	Low	Photographic recording
10	Timber lined well	3. Cadia Extended Copper Mine. 1908	Low	Low	Photographic recording
11	Slag heap	3. Cadia Extended Copper Mine. 1908	Low	Low	Photographic recording
12 (R30)	Blast furnace smelter site and engine hold down bolts and beams	3. Cadia Extended Copper Mine. 1908	Moderate.	Moderate	Photographic recording and relics removal
13	Prospecting lease corner post	1950s	Moderate	Moderate.	Photographic recording
14	Tramway remains	3. Cadia Extended Copper Mine. 1908	Low	Moderate	Photographic recording
15	Shaft E	3. Cadia Extended Copper Mine. 1908	Low	Moderate	Photographic recording
16	Shaft D	3. Cadia Extended Copper Mine. 1908	Low	Low	Photographic recording
17	Shaft B	3. Cadia Extended Copper Mine. 1908	Low	Low	Photographic recording
18	Shaft C	3. Cadia Extended Copper Mine. 1908	Low	Low	Photographic recording
19	Shaft	Uncertain	Low	Low	Photographic recording
20	Shaft A	1. Canoblas Copper Mine. 1859-1862 2. Scottish Australian Mining Company. 1863-1864	Low	Low	Photographic recording
21	Site of former workings	Uncertain	None.	None	No further action required
R29	Wood and metal box	4. Precipitation Works. c. 1960 5. Pacific Copper. 1970s	Low	Low	Photographic recording

[a] Based on additional historical research conducted by Edward Higginbotham & Associates since the Cadia Conservation Plan was prepared in 1994-1995 – See Table L2-1.

[b] The NSW Heritage Manual describes the methodology for grading of significance for items within a place. This has been further described in "Assessing Heritage Significance", published by the NSW Heritage Office in 2000.[9]

[c] Archaeological investigation (excavations) undertaken by Edward Higginbotham & Associates in 2005.

As noted in Table L2-2, archaeological excavation of Items 4 and 5 was undertaken in 2005. The NSW Heritage Office requested the re-assessment of the significance of the remains at Little Cadia as a result of excavation. The revised statement of significance was completed in 2005 and is summarised in Table L2-3 below.

9 NSW Heritage Office. 2000. Assessing Heritage Significance. A NSW Heritage Manual Update.

Table L2-3
Revised Statement of Significance, Little Cadia

Criterion	Significance Level [1]
a. Historical.	Local.
b. Historical association.	Local.
c. Aesthetic.	Local.
d. Social.	Local.
e. Scientific.	Local.
f. Rarity.	Local.
g. Representativeness.	Local.

[1] Cultural significance was assessed according to standard criteria.[10]

In accordance with standard guidelines, the significance of the archaeological remains is graded in Table L2-4. The complete statement of significance was included in the excavation report (see Attachment L-1).[11]

Table L2-4
Grading of Significance of Items Excavated in 2005, Little Cadia

Item No.	Excavation Area [1]	Item	Period	Significance[2]
4	10	Stone assay furnace or fireplace within a former timber building	1850s to 1860s	High
		Wooden shed	1850s to 1860s	Moderate
	20	Stone assay furnace or fireplace	1850s to 1860s	Moderate
5	30	Assay office remains	1850s to 1860s	High
		Pair of assay furnaces in end wall of Assay Office	1850s to 1860s	Exceptional
		End wall of assay furnace, domestic type fireplace and plastered walls	1850s to 1860s	High

[1] Refer to Figure L2-3 and Plates L2-1 to L2-4 for excavation area.

[2] The NSW Heritage Manual describes the methodology for grading of significance for items within a place. This has been further described in "Assessing Heritage Significance", published by the NSW Heritage Office in 2000.[12]

10 Guidelines for the application of these criteria have now been prepared by the NSW Heritage Office. See inclusion and exclusion guidelines in:
NSW Heritage Office. 2000. Assessing Heritage Significance. A NSW Heritage Manual Update.
See also:
Heritage Office and Department of Urban Affairs and Planning. 1996. Heritage Assessments. pp. 4-7.

11 Edward Higginbotham & Associates Pty Ltd. Report on the Archaeological Excavations of the Little Cadia Copper Mine, near Orange, NSW. Cadia Holdings Pty Limited. 2006.

12 NSW Heritage Office. 2000. Assessing Heritage Significance. A NSW Heritage Manual Update.

Impact Assessment.

Portions of the proposed visual setting of Little Cadia would be located within the subsidence zone (Figure L2-2). Some of the heritage items at Little Cadia would be located within the zone of influence (Figure L2-2). The subsidence zone is expected to subside and the zone of influence could experience some cracking as a result of the underground mining, but the ground is not expected to subside. This area would be fenced to exclude people and vehicles for safety reasons and therefore would not be accessible. Heritage items 1 to 20 and item R29 are located within this zone. Items 4 and 5 were excavated in 2005.

L2.3 Northern Tailings Storage Facility Expansion.

Background.

The historic 'Te Anau' farmhouse is located to the west of the NTSF embankment (Figure L1-2). Te Anau was assessed in 2006 and archival recording completed in the same year.

The reports are as follows:

Edward Higginbotham & Associates Pty Ltd. Historical and archaeological assessment of proposed development, "Te Anau" Homestead and Outbuildings, Old Cadia Road, Near Orange, NSW. Cadia Holdings Pty Limited. 2006.

Edward Higginbotham & Associates Pty Ltd. Archival Report for "Te Anau" Homestead and Outbuildings, Old Cadia Road, Near Orange, NSW. Cadia Holdings Pty Limited. 2006.

Impact Assessment.

The expansion of the NTSF would be undertaken via upstream lifts of the existing embankments, hence the expansion would not require physical disturbance to Te Anau. Therefore, conservation and management of this heritage item is not further discussed in this report.

L2.4 Southern Tailings Storage Facility Expansion.

Background.

The Wire Gully Gold Workings and Water Race are located within and adjacent to the existing approved STSF inundation area. The partial inundation of the Wire Gully Gold Workings by tailings was assessed and approved in the Ridgeway Environmental Impact Statement (EIS) (CHPL, 2000).

This site was assessed in 2000 and an archival recording completed, as described in the following report:

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.

Within the existing STSF, an archival recording of the Spring Dell Homestead site was completed before inundation of the land, as described in the following report:

Heritage Management Consultants (Michael Pearson). Archival Recording. Springdell Homestead Group, Panuara Road, Rodds Creek. Cadia Holdings Pty. Limited. 2001.

The expansion of the STSF would result in a larger proportion of the Wire Gully Gold Workings being inundated by tailings (Figures L1-2 and L2-4).

Historical Background Summary.

Comprehensive historical background research has been undertaken for the Wire Gully Gold Workings. A summary is provided below.

The Wire Gully Gold Workings were located on two parish portions and the Village Reserve in the Parish of Blake, County of Bathurst. Both of the portions were purchased by members of the same syndicate, who had purchased land at Cadia for speculation in mining, namely John Savery Rodd (Portion 7) and William Lawson (Portion 8), of the nearby Errowanbang Estate.

The Village Reserve was dedicated in 1861, but remained unused. It was later subdivided, part as Portion 33. The rest of the reserve was revoked and sold in 1911. A small part of the Portion 33 was used for Boxland Public School between 1915 and 1919. The buildings were demolished in 1922.

Gold workings commenced on this land in the 1880s and 1890s. Applications for early gold leases in the Village Reserve in the 1880s were refused. Other gold leases were taken up from 1897 onwards and later worked by the two Jarvis brothers. The owners of the Errowanbang Estate also mined the area. Mining activity is suggested by 1901, with sluicing and mining mentioned in 1903 and "good results" reported in 1904.

The Jarvis brothers had commenced operations on Flyers Creek, further east, by 1893. They also undertook work at the Wire Gully Gold Workings, both by sluicing and shafts until 1910.

A private mining company was formed in 1934 (the St Jude [Wire Gully] Gold Mine no liability company). It was successful for a few years, before going into liquidation in 1937.

Apart from the one attempt to form a private company, the Wire Gully Gold Workings are best described as small scale diggings of only local importance.

The detailed information from the Department of Mines Annual Reports can be used in conjunction with other historical documentation to define the areas of activity at the Wire Gully Gold Workings (see Table L2-5).

Table L2-5
Main Periods of Mining Activity at Wire Gully Gold Workings

Lease	Date	Leasee	Annual Reports
GL1	Before September 1894, possibly 4 August 1894	Alexander Wilson.	Jarvis's party, 1894. Prospecting, 1896.
GL2	Before September 1894, possibly 4 August 1894	Alexander Wilson.	Jarvis's party, 1894. Prospecting, 1896.
ML3	Refused 5 March 1886	N/A	N/A
PGL1	26 February 1897. Lease cancelled 29 January 1908	F. R. C. Hopkins and L. T. Lloyd, transferred to G. H. & C. S. B. Hebden on 31 July 1897. PGL 2, 3 and 4 worked in conjunction from 3 November 1897.	
PGL2	27 July 1897, lease expired on 26 July 1917	F. R. C. Hopkins and L. T. Lloyd, transferred to G. H. & C. S. B. Hebden on 24 March 1898. PGL 2, 3 and 4 worked in conjunction from 3 November 1897.	**PGL 2, 3 and 4.** Alluvial and reef mining, 1903. L. A. Tom, quartz mine. Jarvis Brothers, sluicing, 1904, 1905. Jarvis Brothers, shaft, 1906, 1907. Mining, 1910. No working from 1911 onwards.
PGL3	15 July 1898, lease expired on 18 February 1911	G. H. & C. S. B. Hebden. PGL 2, 3 and 4 worked in conjunction from 3 November 1897.	
PGL4	15 July 1898, lease expired on 14 July 1918	G. H. & C. S. B. Hebden. PGL 2, 3 and 4 worked in conjunction from 3 November 1897.	
PGL5	8 July 1922, cancelled 22 August 1924	William Thomas. Lease included old mining equipment, probably belonging to Jarvis Brothers.	
PGL6	No details available	N/A	**PGLs 6-10** were centre of activity from 1933 onwards.
PGL7	No details available	N/A	Chellas and party, 1933.
PGL8	No details available	N/A	St Jude Wire Gully Gold Mines NL, 1933
PGL9	No details available	N/A	Construction of battery, shaft and drive, 1934.
PGL10	No details available	N/A	2 shafts opened, water race constructed, 1935. Workings closed and tributers ceased mining on 25 September 1936.

Survey Results Summary.

The Wire Gully Gold Workings are shown on Figures L1-2 and L2-4. The following items were recorded at the Wire Gully Gold Workings during site survey (Table L2-6).

Table L2-6
Wire Gully Gold Workings, Principal Heritage Items

Item	Name or Description
1	Shaft
2	Shaft
3	Mullock heap
4	Crusher plant
5	Machine bed
6	Machine bed and stone pillar or footing
7	Circular concrete footing
8	Mullock heap
9	Wheel and timber post structure
10	Dam and water race feeding into dam
11	Race below dam
12	Alluvial workings
13	Dam
14	Gully below dam
15	Pile of timber members

The Wire Gully Gold Workings were worked with water supplied by water race (10) from a weir on Flyers Creek. The water race followed the 750 to 730 metres (m) Australian Height Datum (AHD) contour to the Wire Gully Gold Workings and then rapidly fell to just above 700 metres, either into a storage dam (10) or by an alternative route directly to the workings. The race itself is over 6 km long, following a winding route to the Wire Gully Gold Workings. A branch of the water race also supplied a dam at Errowanbang.

The historical outline has revealed the association of the Jarvis Brothers with both Wire Gully and Flyers Creek diggings and it is possible that the race was constructed by them to act as a water supply to their various workings by 1905. It is also possible that the race was constructed by the St Jude Wire Gully Gold Mines NL as late as 1935.

The water race is outside the area to be disturbed by the proposed mining works and has not been recorded.

The race feeds into a large agricultural dam with an earthen bank construction (10).

There are two principal surviving shafts (1, 2) within the Wire Gully Gold Workings. The blocked shaft, closer to the dam is associated with a large mullock heap (3).

The sinking of shafts at Wire Gully was mentioned in historical records in 1903, 1906 and 1907 and again later in 1934-1935.

The remains of the crusher plant comprise a "U" shaped machine bed, another machine bed for an engine with fly wheel, a stone pillar and a circular concrete footing (Plate L2-5). The exact purpose of each footing is unclear, though the engine bed with fly wheel can be readily identified (4). The location of the stamper battery has not been identified.

Apart from the mullock heap near the abovementioned shaft (3), there is another mullock heap (8) actually within the former sluicing area (alluvial workings) (12), immediately to the south of the machine beds or crusher plant. This mullock heap is likely to be the waste from the crushing process.

Located to the south of the crusher plant (4), within the area of alluvial workings (12) is an iron spoked cast iron wheel, associated with two fallen timber spars or posts (9). The wheel may be a remnant of the crusher plant machinery or it may be more directly associated with the two timber spars. The spars are possibly a remnant of an "A" frame structure, as yet unidentified.

The evidence for alluvial workings (12) is extensive below the dam, from beside the crusher plant, down almost to the old alignment of Panuara Road (which has now been relocated south of the Cadia Valley Operations). In general, the sluicing has caused the erosion of soils to bare rock in places, leaving steeply sided erosion gullies of varying width and depth (Plate L2.6).

To the south of one of the shafts (1), and between it and the farm buildings, a pile of timbers is located (15). There are a number of possible interpretations of these large timbers. They certainly represent demolition materials, stacked up possibly for re-use or transport to another site. They may have belonged to some of the mining equipment on the site, possibly the framing for the stamper batteries that are mentioned in the historical texts prior to 1922 and in 1934.

A statement of significance for the Wire Gully Gold Workings was included in the archival recording and is summarised in Table L2-7 below. The complete statement of significance was included in the archival report (see Attachment L-2).[13]

Table L2-7
Wire Gully Gold Workings Statement of Significance

Criterion	Significance Level [1]
a. Historical.	Local.
b. Historical association.	None
c. Aesthetic.	None
d. Social.	None
e. Scientific.	Local.
f. Rarity.	None
g. Representativeness.	Local.

1 Cultural significance is assessed according to standard criteria.[14]

Impact Assessment.

The expanded STSF required for the Project would inundate the Wire Gully Gold Workings up to approximately the northernmost dam (10) shown in Figure L2-4.

L2.5 Backbone Water Pipeline and Expanded Rodds Creek Water Holding Dam.

A component of the Project water supply scheme would be a 'backbone' pipeline between Cadiangullong Creek Dam and the Rodds Creek Water Holding Dam.

The route of the proposed backbone water pipeline follows the route of existing pipelines from Cadiangullong Creek towards the ore processing facilities. There are two alternative routes around the ore processing facilities. The pipeline would either skirt the South Waste Rock Dump to the west using existing disturbance areas or would be located on the northern side of the South Waste Rock Dump to Rodds Creek Water Holding Dam (Figure L1-2).

13 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.

14 Guidelines for the application of these criteria have now been prepared by the NSW Heritage Office. See inclusion and exclusion guidelines in:
NSW Heritage Office. 2000. Assessing Heritage Significance. A NSW Heritage Manual Update.
See also:
Heritage Office and Department of Urban Affairs and Planning. 1996. Heritage Assessments. pp. 4-7.

The pipeline route is adjacent to a number of known heritage items in the section from Cadiangullong Dam to the ore processing facilities. These heritage items include the Iron Duke (Iron Ore) Quarry and its associated infrastructure, The East Cadia Tramway and Cadia Village.

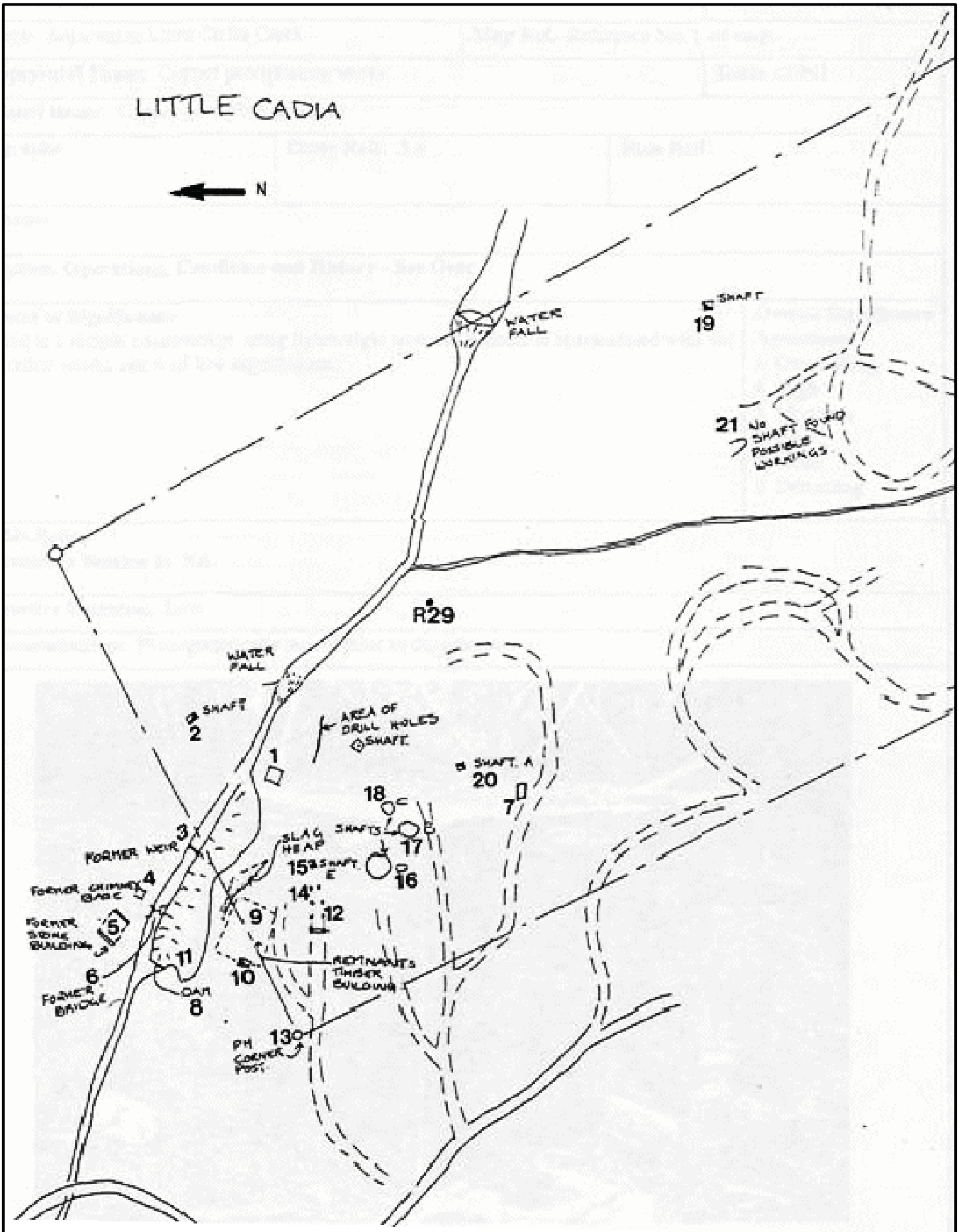
The pipeline route would be located within existing disturbance areas and would be aligned so that it has no impact on these heritage items.

The Rodds Creek Water Holding Dam would be expanded as part of the Project, resulting in a larger inundation area. The majority of this new inundation area is within either land disturbed by existing mining activities or areas now used for forest plantation. These uses will have removed any significant heritage items.

The area was assessed in the Ridgeway Environmental Impact Statement (EIS) (CHPL, 2000). and no items of heritage significance were located.[15]

A portion of the expanded Rodds Creek Water Holding Dam inundation area would be located within a new MLA area, which is discussed in Section L3.2.

15 *Heritage Management Consultants. Appendix N. European Heritage Survey & Assessment, in Cadia Holdings Pty Limited. Ridgeway Project. Environmental Impact Statement. 2000:N1.*



Source: Godden Mackay Pty Ltd (1995)

CADIA EAST PROJECT

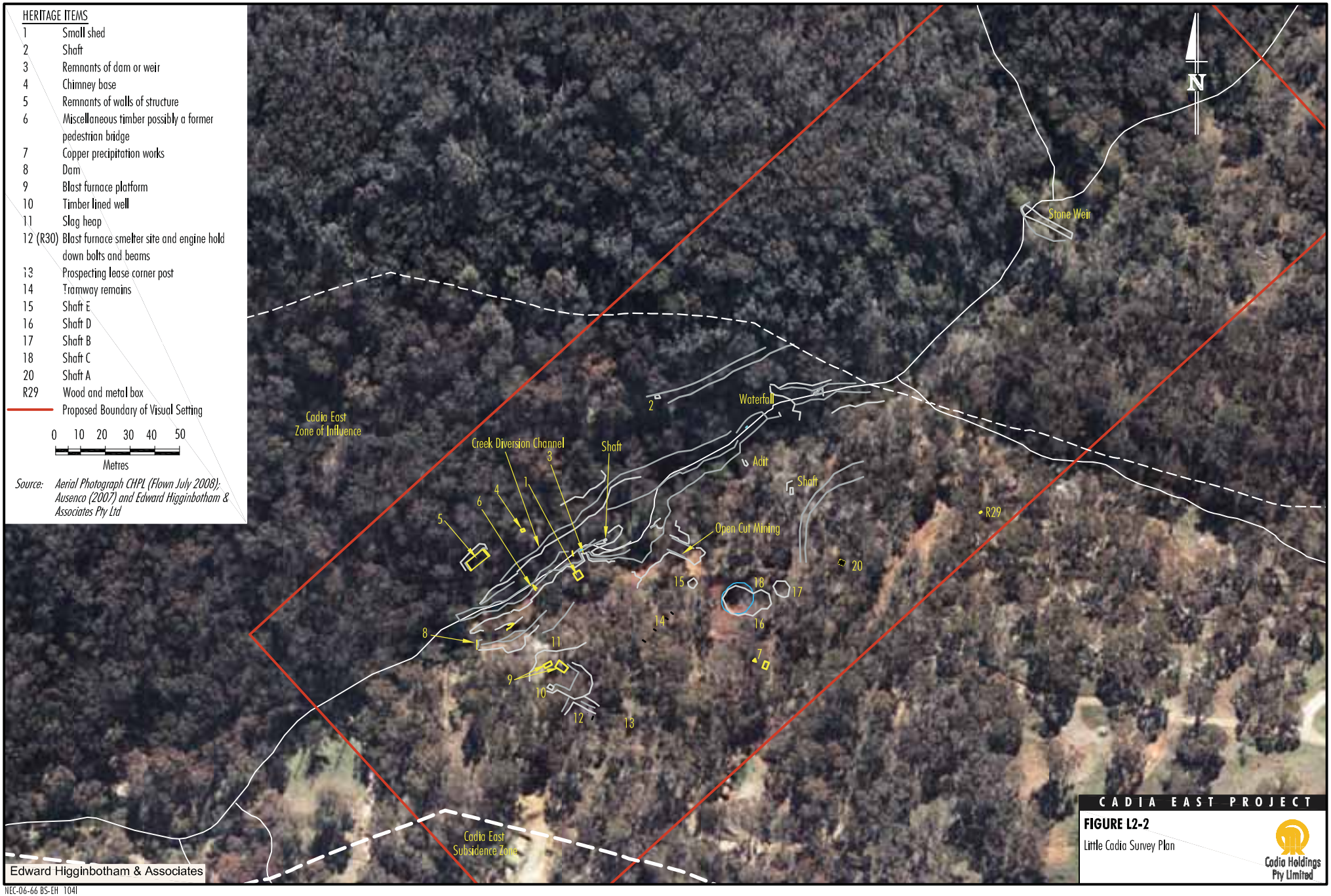
FIGURE L2-1

Little Cadia - Sketch Plan

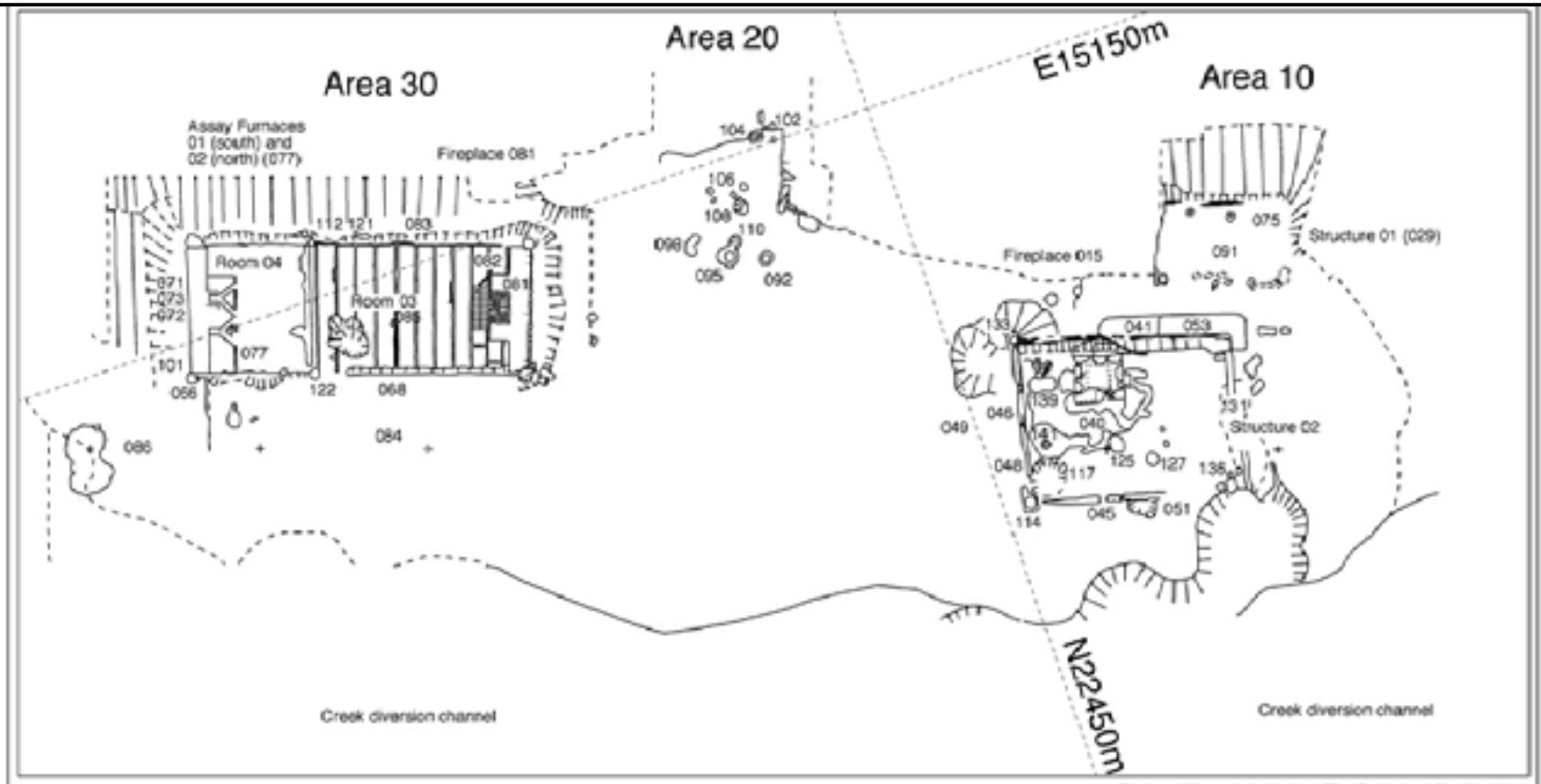
Cadia Holdings Pty Limited

Edward Higginbotham & Associates

NEC-06-66 BS-EH_106C



NEC-06-66 BS-EH_1041



Site plans and draft computer plans by John van Tilburg. Final drawings by Edward Higginbotham

LITTLE CADIA COPPER MINE.
Archaeological excavations 2005, showing construction details of structures.

Source: Edward Higginbotham & Associates Pty Ltd

CADIA EAST PROJECT

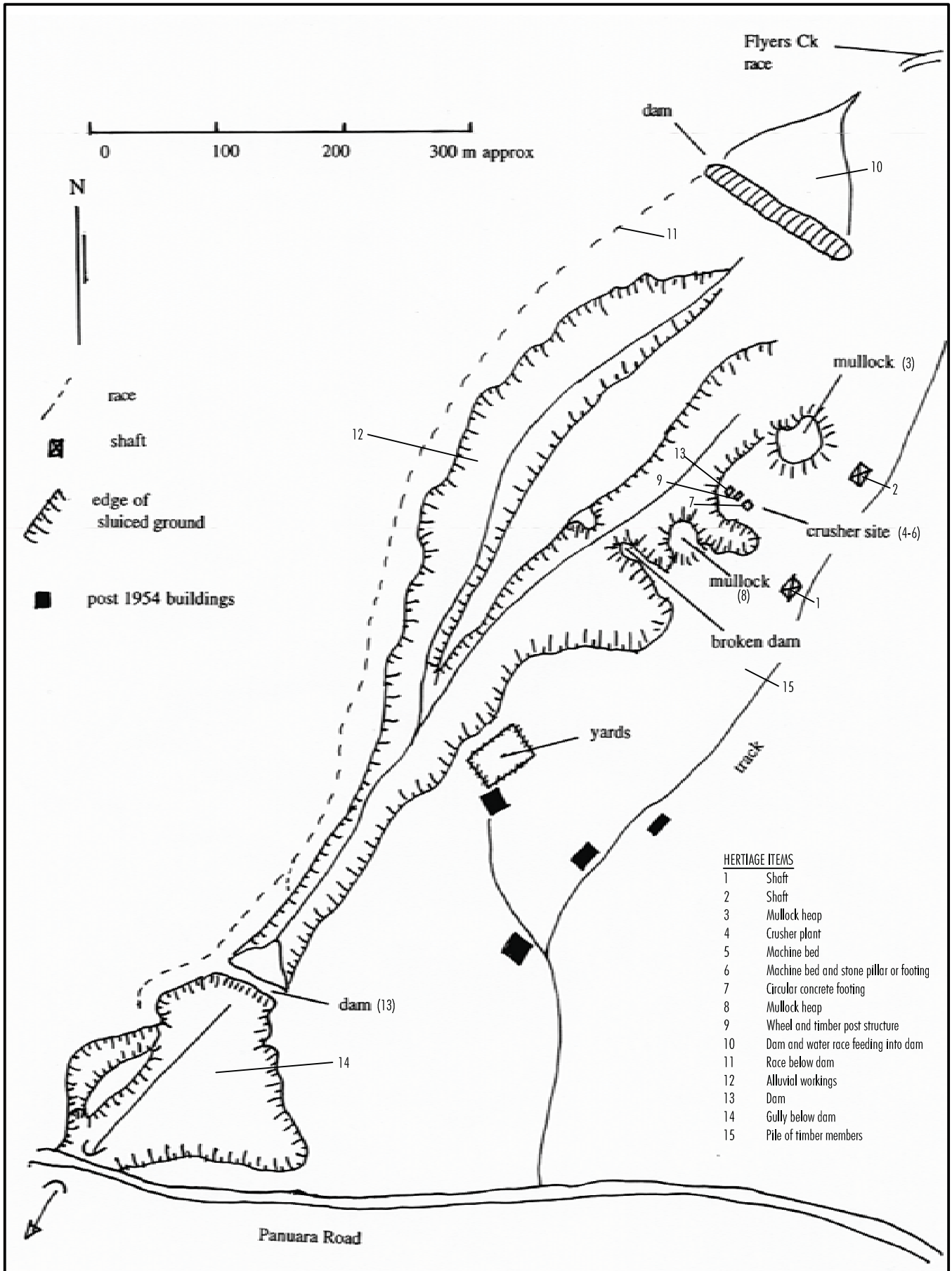
FIGURE L2-3

Little Cadia - Archaeological Excavations

Cadia Holdings Pty Limited

Edward Higginbotham & Associates

NEC-06-66 BS-EH_108C



HERITAGE ITEMS

1	Shaft
2	Shaft
3	Mullock heap
4	Crusher plant
5	Machine bed
6	Machine bed and stone pillar or footing
7	Circular concrete footing
8	Mullock heap
9	Wheel and timber post structure
10	Dam and water race feeding into dam
11	Race below dam
12	Alluvial workings
13	Dam
14	Gully below dam
15	Pile of timber members

Source: Heritage Management Consultants (2000) and Edward Higginbotham & Associates Pty Ltd (2003)

CADIA EAST PROJECT

FIGURE L2-4

Wire Gully Gold Workings - Sketch Plan

Cadia Holdings Pty Limited

Edward Higginbotham & Associates

NEC-06-66 BS-EH_105D

Plate L2-1. Little Cadia, Item 4 Area 10. Stone forge (scale 1 metre with 0.5 metre subdivisions).

Plate L2-2. Little Cadia, Item 4 Area 20. Stone forge (scale 1 metre with 0.5 metre subdivisions).

Plate L2-3. Little Cadia, Item 5 Area 30, showing Assay Office, with masonry end walls. The assay furnaces are located in the west wall of Room 4 (scale 1 metre with 0.5 metre subdivisions).

Plate L2-4. Little Cadia, Item 5 Area 30. Detail of assay furnaces (scale 1 metre with 0.5 metre subdivisions).

Plate L2-5. Wire Gully Gold Workings. Crusher Plant, general view from east.

Plate L2-6. Wire Gully Gold Workings. Wire Gully to south of dam, showing evidence of sluicing.

L3 EUROPEAN HERITAGE ASSESSMENT OUTSIDE THE EXISTING MINING LEASES.

L3.1 Introduction.

Outside the existing mining leases, the study area includes:

1. Additional MLA areas, to the east and south (Figure L1-2);
2. The re-aligned section of Cadia Road (Figure L1-2);
3. The pipeline easement between the Cadia Valley and Blayney, including its extension to the CVO Dewatering Facility (Figures L1-1 and L3-1); and
4. CVO Dewatering Facility (Figures L1-1 and L3-1); and
5. Additional pipe and pumping infrastructure from the Belubula River to Rodds Creek Water Holding Dam (Figure L1-1).

Site surveys for this report were undertaken on 22-23 March 2007, 19-20 May 2008 and 18 December 2008.

L3.2 Mining Lease Application Areas.

The MLA areas include the following heritage item:

1. Water race for Wire Gully Gold Workings (Figure L1-2).

The MLA area to the east of ML 1472 and Cadia (Warrengong) Road is now used for forest plantation. This use will have removed any significant heritage items. No further research or site survey was undertaken in this area (see Section L2.2).

No other heritage items were located in the MLA area adjacent to Panuara Road.[16]

16 Edward Higginbotham & Associates Pty Ltd. Historical and Archaeological Assessment (European Heritage) of Oaky Creek and Adjacent Properties, South of Panuara Road, near Panuara, N.S.W. Cadia Holdings Pty Limited. Draft April 2007.

L3.2.1 Water Race.

The water race at the Wire Gully Gold Workings was surveyed and an archival recording completed in 2003 (see Section L2.4) (Figures L1-2 and L2-4; Plate L3-1).[17]

The water race is at a higher contour than the proposed inundation storage level of the STSF (i.e. 730 m AHD for the water race, 702 m AHD for the STSF), hence would not be inundated by tailings associated with the Project.

L3.3 Re-aligned Cadia Road Easement.

The re-aligned Cadia Road easement to the east the existing Cadia (Warrengong) Road and south of Woodville Road is now used for forest plantation. This use will have removed any significant heritage items. No further research or site survey was undertaken in this area (see Section L2.2).

No heritage items are expected to be located within the proposed re-aligned Cadia Road easement.

L3.4 The Pipeline Easement between the Cadia Valley and the CVO Dewatering Facility.

Background.

The existing concentrate pipeline between the Cadia Valley and the Blayney Dewatering Facility would be duplicated as part of the Project.

The pipeline easement between the Cadia Valley and Blayney, including its extension to the CVO Dewatering Facility was surveyed on 19-20 May 2008 and on 18 December 2008 (Figure L3-1). For most of its length from the Cadia Valley to Blayney the existing pipeline easement is beside the existing roadways, already visible on the earliest editions of the parish maps.

17 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.

Historical Background Summary.

Historical research and the site survey identified five heritage items along the existing easement, including:

1. Blayney Railway Station and Yard Group (Plate L3-2).
2. Railway bridge over the Belubula River (Plate L3-3).
3. Railway culvert, with brick arch, adjacent to CVO Dewatering Facility (Plate L3-4).
4. Site of potential mining activity, adjacent to Long Swamp Road, on Portion 76, Parish of Beneree (Provisional Gold Leases – refused).
5. Old School House, Tallwood Road, Beneree, Parish of Calvert.

Research was confined to inspection of current aerial photography, historical editions of parish maps, mine records and heritage listings along the route.

Impact Assessment.

The Blayney Railway Station and Yard Group is located on the south side of the existing railway tracks, while the existing Blayney Dewatering Facility is located on the north side of the tracks, opposite and to the west of the Railway Station.

The new pipeline would be confined to the existing easement and on the northern side of the railway tracks from the existing Blayney Dewatering Facility to the CVO Dewatering Facility, therefore there would be no impact on this heritage item.

The single track railway crosses the Belubula River, approximately 400 metres to the east of the Railway Station. The railway bridge, originally designed for double tracks, has brick abutments and piers and a deck comprising two steel I-beams. The bridge construction is common throughout the railway network and is of little or no heritage significance. The proposed pipeline would have a minimal impact on this item.

The railway track between the existing Blayney Dewatering Facility to the CVO Dewatering Facility includes three railway culverts. Two of these are concrete pipe culverts, which possess no cultural significance. There is one small brick arch culvert, which possesses local significance (Plate L3-4).

Research of the mining leases on Portion 76, Parish of Calvert, indicates the applications (provisional gold leases) were refused (Figure L3-2). Site survey revealed no trace of any mining activity.

Because the proposed pipeline is confined to the existing roadway, it would have no impact on the site of the former public school on Tallwood Road at Beneree (Figure L3-3).

L3.5 CVO Dewatering Facility.

Assessment of the proposed site of the CVO Dewatering Facility in 2007 indicated that it possessed no heritage items (Figure L3-1). Site survey, completed on 18 December 2008, confirmed that there were no heritage items on site, only an adjacent railway culvert (see above). The new facility would therefore have no heritage impact.

L3.6 Additional Pipe and Pumping Infrastructure from the Belubula River.

The existing extraction point and water pipeline route from the Belubula River was surveyed for items of European heritage for the Ridgeway European Heritage Survey and Assessment (Heritage Management Consultants, 2000).

The additional pipe and pumping infrastructure for the Project from the Belubula River would be situated adjacent to the existing infrastructure and would not impact on any heritage items.

CADIA EAST PROJECT

FIGURE L3-1

Concentrate Pipeline

Cadia Holdings Pty Limited

NEC-06-66 BS EH_1071

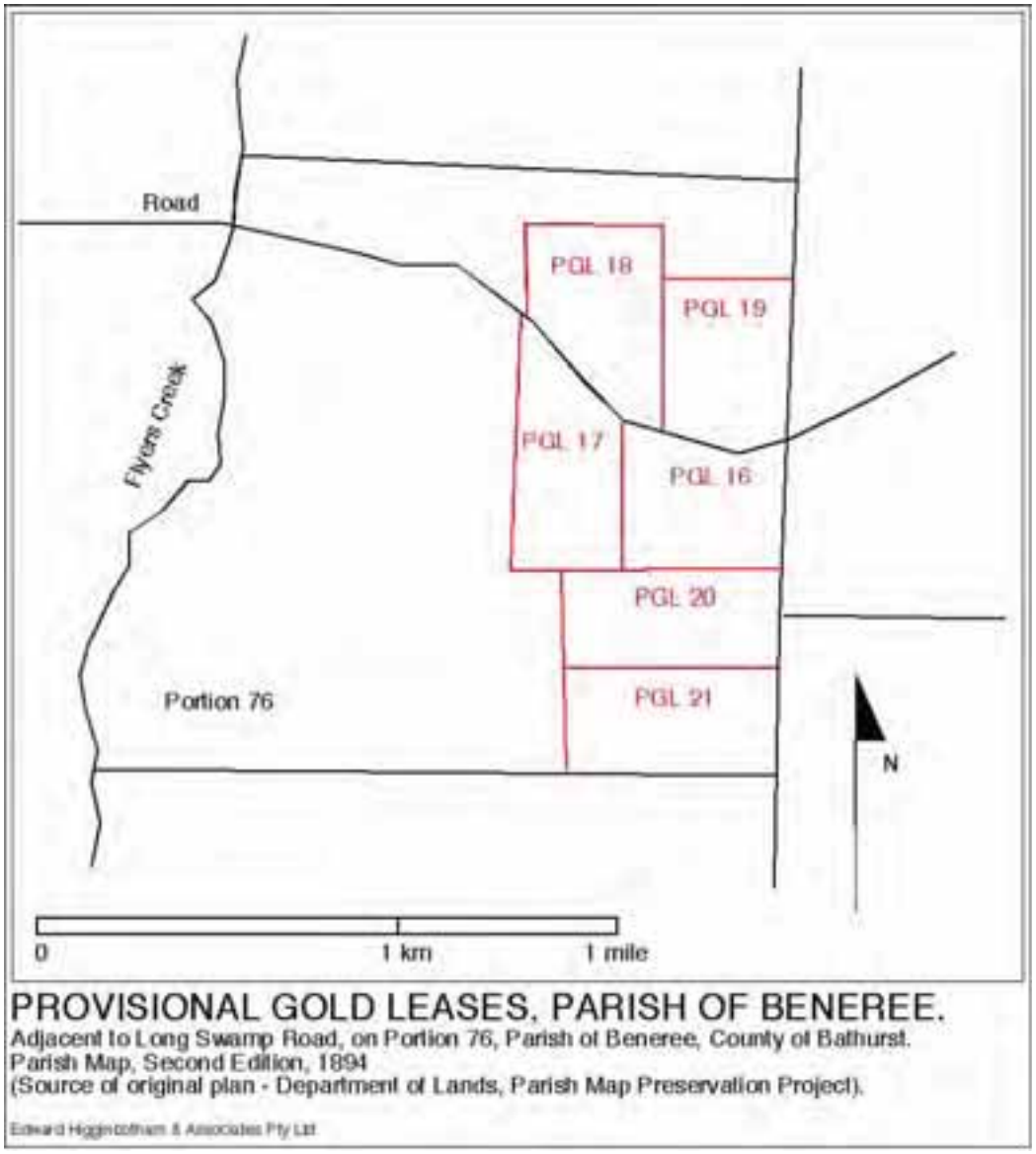


Figure L3-2. Map showing the location of Provisional Gold Leases, adjacent to Long Swamp Road, on Portion 76, Parish of Beneree, County of Bathurst. The applications were refused in 1900.

Source. Department of Lands. Parish Map Preservation Project. Parish of Beneree, County of Bathurst, Second Edition. 1894.

Figure L3-3. Map showing the location of the former public school at Beneree, Parish of Calvert.

Source. Department of Lands. Parish Map Preservation Project. Parish Map, Parish of Calvert, County of Bathurst, 1884.

Plate L3-1. View of water race above the Wire Gully Gold Workings, Wire Gully, near Cadia, looking east.

Plate L3-2. Blayney Railway Station buildings, Blayney, looking south-east.

Plate L3-3. Railway bridge, over Belubula River, 400 metres east of Blayney Railway Station, Blayney, looking south-east.

Plate L3-4. Railway culvert, with brick arch, at north-west corner of site for proposed CVO Dewatering Facility, Blayney.

L4 RECOMMENDATIONS FOR CONSERVATION AND MANAGEMENT OF EUROPEAN HERITAGE SITES.

L4.1 Preamble.

The following points are important considerations when determining heritage recommendations for the Project:

1. Heritage significance of the site.
2. Potential for interpretation and display.
3. Conservation and management initiatives undertaken to date, including the existing excavation permits and excavation status.

L4.1.1 Heritage Significance.

Little Cadia and a portion of the Wire Gully Gold Workings would be impacted by the Project. The statement of significance of Little Cadia is presented in Table L2-3 and is considered to be of local significance for all criteria. The statement of significance for Wire Gully Gold Workings is presented in Table L2-7 and is considered to be of local significance for some of the criteria, and no significance for the remainder.

L4.1.2 Interpretation and Display.

The International Council on Monuments and Sites (ICOMOS) Burra Charter states that "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."[18]

Provision should be made to display the evidence and contribution of the heritage items and sites recovered by historical research, site survey and archaeological excavation.

Previous reports on the heritage items in the study area include recommendations for interpretation and display (see Section L4.2).

18 Australia ICOMOS Inc. The Burra Charter. The Australia ICOMOS Charter for Places of Cultural Significance. 1999. p. 8.

The requirements for interpretation and display should fit in with the overall strategy outlined in the Cadia Interpretation Plan.[19]

L4.1.3 Existing Excavation Permits.

In 1997, the NSW Heritage Office approved an excavation permit under Section 139 of the *Heritage Act, 1977* for the monitoring of minor works and archival recording. The nominated excavation director was Dr Edward Higginbotham.

The permit covers most of the existing mining leases, including Little Cadia, the Wire Gully Gold Workings, together with the water race.

Where archaeological excavation has been undertaken, separate excavation permits have been obtained. For example, a separate excavation permit for the Little Cadia archaeological excavation was obtained on 21 April 2005.

L4.2 Recommendations.

The Table L4-1 lists those heritage items, which would potentially be impacted by the Project.

Table L4-1
Heritage Items Potentially Impacted by the Project

Site	Portion	Parish	Level of Significance [1]	Grading of Significance [2]
Little Cadia Copper Mine	28, 37 & 38	Waldegrave	Local	Various items graded from exceptional to moderate.
Wire Gully Gold Workings	7 & 8, renumbered 41 in 1952	Blake	Local	Not available.
Railway bridge, Belubula River, Blayney	-	Village of Blayney and Parish of Napier	-	Little or no significance.
Railway culvert, adjacent to CVO Dewatering Facility	-	Napier	Local	Little or no significance.

1 Cultural significance is assessed according to standard criteria.[20]

2 The NSW Heritage Manual describes the methodology for grading of significance for items within a place. This has been further described in "Assessing Heritage Significance", published by the NSW Heritage Office in 2000.[21]

19 Kylie Winkworth. 2005. Cadia Interpretation Plan. Cadia Holdings Pty Limited.

20 Guidelines for the application of these criteria have now been prepared by the NSW Heritage Office. See inclusion and exclusion guidelines in:
NSW Heritage Office. 2000. Assessing Heritage Significance. A NSW Heritage Manual Update.
See also:
Heritage Office and Department of Urban Affairs and Planning. 1996. Heritage Assessments. pp. 4-7.

21 NSW Heritage Office. 2000. Assessing Heritage Significance. A NSW Heritage Manual Update.

Recommendations for each of the heritage items in Table L4-1 are presented in the subsections below.

L4.2.1 Little Cadia Copper Mine.

It is recommended that:

1. The remains of Little Cadia, outside the subsidence zone (Figure L2-2), should be protected from disturbance. In order to preserve the historical setting of the mine, the upstream creek environment around Little Cadia should not be disturbed (area bounded by red line in Figure L2-2).
2. The archaeological excavation site (Items 4 and 5 on Figure L2-2 and as described in Table L4-2 below) should be backfilled and the archaeological remains in the excavated area should be conserved *in situ*, in accordance with the following recommendations.
   A. The excavated surface should be covered with geotextile, including (Figure L2-3):
   - the stone forge (Item 4, Area 10);
   - the stone forge cut into the slope (Area 20);
   - the base of the assay office wall footings to the top of the assay furnace brickwork; and
   - the arch of the fireplace in the opposite end wall (Item 5, Area 30).

Table L4-2
Little Cadia Archaeological Excavation Site

Item No.	Excavation Area	Item
4	10	Stone forge within a former timber building
		Wooden shed
	20	Stone forge, cut into hill slope
5	30	Assay Office remains
		Pair of assay furnaces in end wall of Assay Office
		End wall of Assay Furnace, domestic type fireplace and plastered walls

   B. The above items should then be sandbagged to protect the masonry, including all brickwork of the assay furnaces.
   C. The sandbagging should be covered with a layer of soil, 200 mm thick.
   D. The soil for the backfill of the excavation should be recovered from the excavation soil dump (fill of creek diversion channel).

E. The implementation of the above Recommendations 3A-D should be supervised by the archaeologist.
F. Since public access to these remains would be limited given that it is within an operating mining lease, interpretation and display relating to the site should be located elsewhere, in accordance with the Cadia Interpretation Plan.[22]

L4.2.2 Wire Gully Gold Workings and Water Race and Expanded Rodds Creek Water Holding Dam.

The archival recording of the Wire Gully Gold Workings was completed in 2003.[23] The assessment in 2000 made no further recommendations.[24]

Various relics are visible at the site and should be salvaged before disturbance.

It is recommended that:

1. The relics in the study area should be collected in accordance with the "Relics Collection Policy" of the 1995 Conservation Plan.[25]
2. The above work should be supervised by the archaeologist.
3. The following relics should be recorded and collected, including:
    - Wheel and timber post structure (Item 9).
    - Pile of timber members (Item 15).
    - Other items, if identified.

There are no heritage recommendations in regards to the expanded Rodds Creek Water Holding Dam.

22 Kylie Winkworth. 2005. Cadia Interpretation Plan. Cadia Holdings Pty Limited.

23 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.

24 Heritage Management Consultants. *Appendix N. European Heritage Survey & Assessment*, in Resource Strategies. Ridgeway Project. Environmental Impact Statement. Cadia Holdings Pty Limited. 2000.

25 Godden Mackay, Cadia Mining Project, Final Conservation Plan. Newcrest Mining Limited. 1995. Volume III. Page 23.

L4.2.3 Backbone Water Pipeline.

The route of the proposed backbone water pipeline would avoid known heritage items.

It is recommended that:

1. The proposed backbone water pipeline should not be laid through the site of Cadia Village, but be routed around the side of the backfilled Cadia Extended open pit.
2. Elsewhere the proposed backbone water pipeline follows the route of existing pipelines, where they have been laid to avoid heritage items.

L4.2.4 The Pipeline Easement between the Cadia Valley and the CVO Dewatering Facility.

It is recommended that:

1. The pipeline easement between the Blayney Dewatering Facility and the CVO Dewatering Facility should run along the north side of the railway tracks at Blayney Railway Station, so as to avoid any heritage impact.
2. The pipes should avoid any structural impact on the railway bridge over the Belubula River at Blayney.
3. Nonetheless, the proposed pipeline may use the existing cavities (cut by previous pipework) in the masonry abutments, as required.
4. The proposed development of the pipeline and CVO Dewatering Facility should not disturb the brick arch railway culvert, adjacent to the CVO Dewatering Facility.

L4.2.5 Interpretation Plan.

The recommendations for the recovery of relics from the Wire Gully Gold Workings may result in the recovery of a number of large items.

It is recommended that:

1. The interpretation and display of those heritage items impacted by the proposed development should be completed in accordance with the Cadia Interpretation Plan.[26]

26 Kylie Winkworth. 2005. Cadia Interpretation Plan. Cadia Holdings Pty Limited.

ATTACHMENT L-1. STATEMENT OF SIGNIFICANCE FOR THE LITTLE CADIA COPPER MINE.

The following statement of significance was revised after the completion of the archaeological excavations in 2005.[27]

A. an item is important in the course, or pattern, of NSW's cultural or natural history; Little Cadia Copper Mine (Little Cadia) exhibits the historical theme of the exploitation of copper.

Little Cadia was the first copper resource officially described at Cadia in 1851 by Mr Stutchbury, the Mineralogical Surveyor.

Copper mining began at Little Cadia in the late 1850s, between 1856 and 1859. Little Cadia vies with East Cadia for the first place to be mined for copper in the locality. Little Cadia was bought by a number of businessmen, interested in speculation in the mining industry. They were Randolph John Want, Saul Samuel and John Savery Rodd. These men became influential in the mining of the much larger copper and gold resources at East and West Cadia. The Canoblas Mining Company was established to mine the copper at Little Cadia in the period 1859-1862[28]. The Scottish-Australian Mining Company undertook trials there in 1863 and 1864, before excluding it from any further mining. From then on work concentrated on the North and South Section mines at Cadia. Little Cadia went into a long period of abandonment until 1908, when a portable water jacket smelter made exploitation of the copper resources economic. Although L. J. Davis took out a number of mining leases in the 1950s, little further work was done at Little Cadia until the 1960s and 1970s.

A number of small copper mines operated in the Orange, Bathurst, Oberon and Carcoar areas from 1845 onwards. Little Cadia falls into this group. It was never as successful as the North or South Section mines at Cadia, nor did it have the copper resources of the Blayney Copper Mine. Little Cadia was a small mine among this group. It did not have a smelter until 1908, and then only for one year. The absence of any other smelter at the site gives a true indication of the economic viability of this resource, compared to others in the region, several of which had one or more smelters erected throughout the historical period of exploitation. (The mention of a smelting works in the course of erection in the *Western Examiner* of 1861 is confusing the Canoblas Copper Mine with the Scottish-Australian Mining Company's activities at Cadia itself.)

27 Edward Higginbotham & Associates Pty Ltd. Archival Recording of Little Cadia Copper Mine, near Orange, NSW. Cadia Holdings Pty Limited, 2005.

28 Note that the correct spelling for the historical mine is Canoblas. Today Canobolas is the usual spelling of the word, as in Mount Canobolas. Where the word refers to the name of the mine, the historical spelling will be used.

The abandonment of Little Cadia after 1864 allowed the remains of mining to survive largely intact. The 1908 spurt of activity, with the portable smelter and several large shafts, was luckily on the east side of the creek, leaving the remains of the former mine buildings undisturbed, through probably in ruins.

Level of significance: Local. The copper mine at Little Cadia (Canoblas Copper Mine) is of local significance. It made only a minor impact compared to the other mines in the region.

B. an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history;
Little Cadia and the land on which it was located have a historical association with the careers of a number of prominent businessmen, including John Want, Saul Samuel and John Savery Rodd. The mine also has an association with Cornish immigration and Cornish miners in particular. The names of a number of these families are associated with the company, including William Tom (Tom Family), George Hawke, Richard Lane, Edward Nicholls, James Lane, Thomas Geake Lane, John Peisley and John Johns, some or all of whom with further research may be of Cornish or Welsh origin.

The Cornish and Welsh influence at the mine has been confirmed by archaeological excavation. It uncovered the remains of an assay furnace, which can be directly compared with the example at Smelter No. 1 at Cadia (1861-1862). Mr. John Christoe, born at Swansea in South Wales, but probably of Cornish ancestry, was responsible for the construction of Smelter No. 1 and Cornish or Welsh influence can be confirmed by the similarities between the assay furnaces at both sites. The Cornish involvement in the mine is also apparent through the use of Cornish type crucibles.

Level of significance: Local.

C. an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;
The aesthetic significance of Little Cadia has been confirmed by archaeological excavation. Traditional building and furnace technology, using stone and brick construction, was visible in the two structures before excavation (LC 4 and LC 5 in the 1995 Conservation Plan Inventory), while the early mine shafts also exhibit traditional Cornish mining technology (LC 2, LC 20 and unnamed shaft). The setting of the mine is also in a natural woodland landscape, with waterfalls on Little Cadia Creek [also known as Copper Gully].

Excavation revealed the presence of three assay furnaces, two of which were of simple stone construction (Area 10 [LC4] and Area 20), while the most sophisticated pair of assay furnaces were located within a building (Area 309 [LC5]) that must have served as an assay office. The area of excavation is the 19th century equivalent of a modern day "Met Lab" or metallurgical laboratory.

The pair of brick furnaces, located in the large assay office, can be compared to the more poorly preserved and now destroyed assay furnaces at the site of Smelter No. 1 at Cadia (1861-1862). The two sites demonstrate identical assay furnace technology and are clearly related to Cornish or Welsh influence.

The survival of a well preserved group of assay furnaces of late 1850s to early 1860s date at Little Cadia is an excellent example of Cornish and Welsh mining and smelting technology transferred to New South Wales.

Level of significance: Local. The finding of the group of 1860s assay furnaces does not change the overall significance of the mine from being significant at a local level. Under previous terminology, it would have been recognised as possessing a regional level of significance, since the comparative group is within the Central Western Region. A high level of local significance is the equivalent today or alternatively local level of significance with an exceptional or high grading.

D. an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons;
Little Cadia has an association with Cornish and possibly Welsh immigration. It would be of interest to the New South Wales branch of the Cornish Association and perhaps also to those persons who have general associations with Cadia, as witnessed by the community that became involved in the relocation of Cadia Cemetery.

Level of significance: Local.

E. an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history;
Little Cadia possesses the potential to reveal additional information, not available from other sources, which may contribute to current research themes in historical and archaeological study, particularly in copper mining technology.

The archaeological evidence has contributed to a number of research questions, as follows:

1. What evidence is available to indicate the layout of the mine and its development through the various mining phases?
2. What was the function of the various features associated with the early exploitation of the mine (particularly LC4, LC5)?
3. What evidence is there for Cornish or Welsh immigrants working on the site? For example, the stonework associated with this mine and also Cadia as a whole can be associated with mine construction by Cornishmen (Cadia Engine House) or Welshman (Cadia Smelter No. 1).
4. What evidence is available for the development and adaptation of traditional mining technology?
5. What evidence survives to indicate the construction of the portable water jacket furnace (LC09 to LC12, R30)?
6. What evidence is provided of the living and working conditions of the miners?

The results of the archaeological investigation of a 19th century equivalent of a modern day "Met Lab" or metallurgical laboratory will make a major contribution to the above research themes and questions.

Level of significance: Local. The finding of the group of 1860s assay furnaces does not change the overall significance of the mine from being significant at a local level. Under previous terminology, it would have been recognised as possessing a regional level of significance, since the comparative group is within the Central Western Region. A high level of local significance is the equivalent today or alternatively local level of significance with an exceptional or high grading.

F. an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history;
The survival of a well preserved group of assay furnaces of late 1850s to early 1860s date at Little Cadia is an excellent example of Cornish and Welsh mining and smelting technology transferred to New South Wales.

It is expected that the occurrence and good preservation of assay furnaces of this type would be rare in New South Wales. Apart from the presence of a similar assay furnace at Smelter No. 1 at Cadia, no other examples are known to the author. It would be expected that a number of historical copper mines of similar date range in New South Wales might possess similar assay furnaces, but the comparable sites have not been subject to detailed investigation.

Level of significance: Local. The finding of the group of 1860s assay furnaces does not change the overall significance of the mine from being significant at a local level. Under previous terminology, it would have been recognised as possessing a regional level of significance, since the comparative group is within the Central Western Region. A high level of local significance is the equivalent today or alternatively local level of significance with an exceptional or high grading.

G. an item is important in demonstrating the principal characteristics of a class of NSW's
cultural or natural places; or
cultural or natural environments.
Little Cadia is one of a group of small copper mines in Central Western NSW, dating from the mid 19th century onwards. The larger of these mines possessed their own smelters, in order to reduce transportation costs for the ore. Little Cadia demonstrates a number of other characteristics, including the short life of the mine, and was subject to all the same economic factors affecting other mines in the region, including nature of resource, transportation requirements, availability of labour force and energy sources.

Level of significance: Local.

ATTACHMENT L-2. STATEMENT OF SIGNIFICANCE FOR THE WIRE GULLY GOLD WORKINGS.

The following statement of significance is an edited extract from the archival report.[29]

A. *an item is important in the course, or pattern, of NSW's cultural or natural history;*
The Wire Gully Gold Workings were worked in two principal stages, namely the 1890s to 1911 and then again in the 1930s. The site is comparable to many other sites in the Central Western Region and reflects the pattern of gold extraction by individuals and small groups or companies during the later 19th and early 20th centuries.

Level of significance: Local.

B. *an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history;*
The subject site does not possess significance relating to this criterion.

Level of significance: None.

C. *an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;*
The subject site does not possess significance relating to this criterion.

Level of significance: None.

D. *an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons;*
The subject site does not possess significance relating to this criterion.

Level of significance: None.

E. *an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history;*
The remains of the water races, dams, shafts, mullock heaps, engine beds, alluvial sluicing and other features possess an ability to demonstrate the nature of small scale gold workings of the 19th and 20th centuries. The survey and recording of the remains adds to available evidence of mineral extraction in the Central Western Region.

Level of significance: Local.

29 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.

F. *an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history;*
The subject site does not possess significance relating to this criterion.

Level of significance: None.

G. *an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places; or cultural or natural environments.*
While the nature and survival of other gold working sites has not been thoroughly researched, inspection of similar sites at Cadia and Junction Reefs, together with research of topographic maps and other historical documentation indicates that the type of evidence found at Wire Gully Gold Workings is widespread in the Central Western Region.

Level of significance: Local.