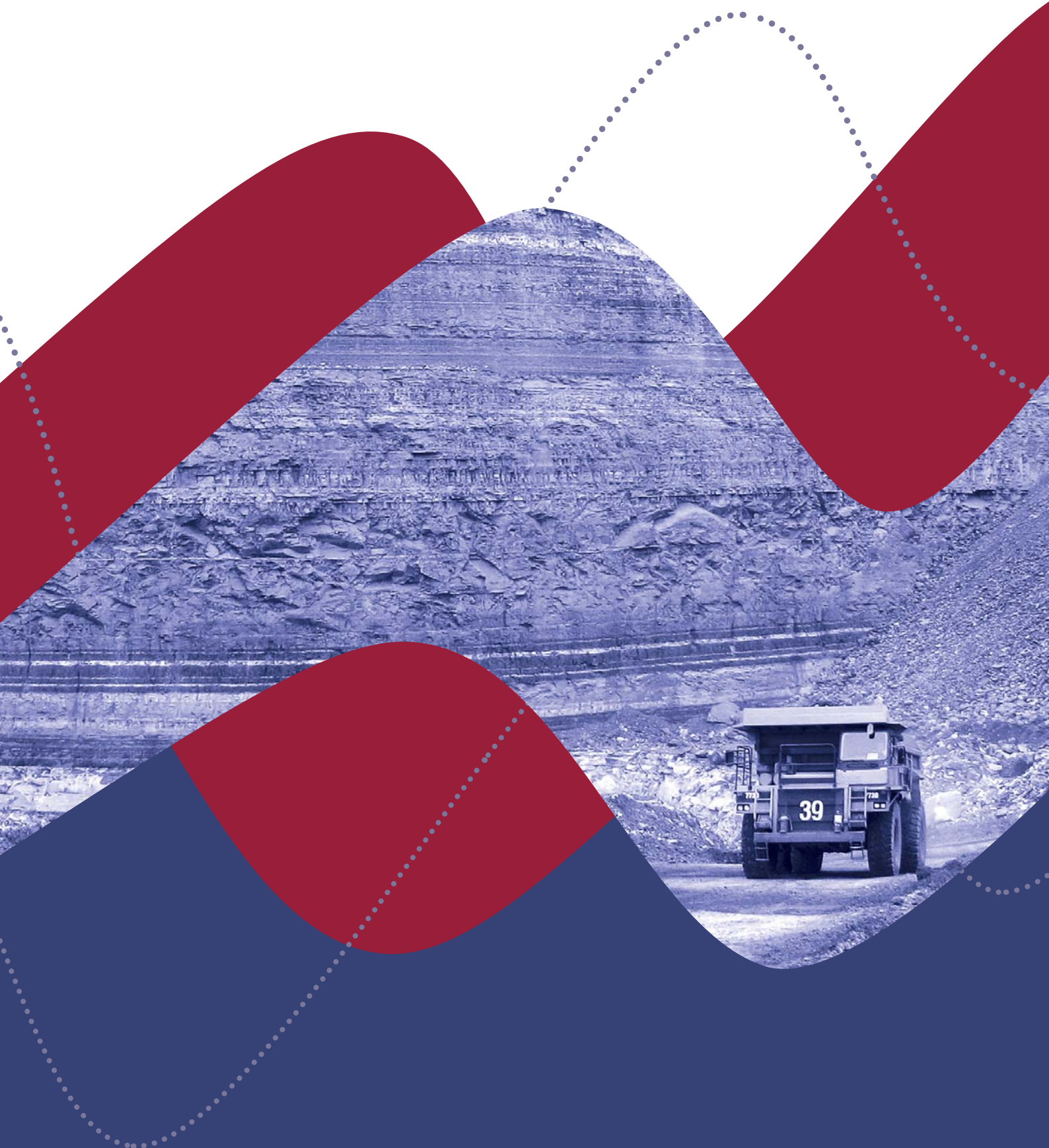


APPENDIX M

Historic Heritage Assessment





Cullen Valley Heritage
Hansen Bailey Pty Limited
23 November 2011

Historic Heritage Assessment: Coalpac Consolidation Project

Cullen Bullen, NSW





Historic Heritage Assessment: Coalpac Consolidation Project

Cullen Bullen, NSW

Prepared for

Hansen Bailey Pty Limited

Prepared by

AECOM Australia Pty Ltd

Level 8, 17 York Street, Sydney NSW 2000, Australia
T +61 2 8023 9333 F +61 7 8023 9399 www.aecom.com
ABN 20 093 846 925

23 November 2011

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Quality Information

Document Historic Heritage Assessment: Coalpac Consolidation Project

Ref 60164433

Date 23 November 2011

Prepared by Geordie Oakes

Reviewed by Ruth Baker

Revision History




Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
1	10-02-11	1 st Draft	Ruth Baker	
2	17-05-11	Final	Ruth Baker	
3	18-10-11	Post adequacy	Luke Kirkwood	

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Executive Summary

AECOM Australia Pty Ltd was commissioned by Hansen Bailey on behalf of Coalpac Pty Ltd to undertake an historic heritage assessment for the Coalpac Consolidation Project. Coalpac is seeking Project Approval under Part 3A of the *Environmental Planning and Assessment Act 1979* to consolidate its existing Cullen Valley Mine and Invincible Colliery operations under a single contemporary planning approval to allow coal mining operations largely within its current mining tenements to continue for an additional 21 years.

A search of relevant historic registers and inventories identified two historic heritage items within or within close proximity to the Project Boundary. These comprised the Cullen Bullen General Cemetery, listed on the Register of the National Estate and National Trust of Australia and Carleon 'Coach House', listed on the City of Lithgow Heritage Study Inventory (Jack 2000). These are not located within the Project Disturbance Boundary however.

Archaeological survey of lands within the Project Boundary (hereafter 'Project area') was undertaken from 15 November 2010 to 10 December 2010. During the assessment, three historic heritage items were identified within the Project area. These comprised an abandoned underground mine adit, a surface scatter of broken historic bottle glass and a sandstone assemblage of unknown origin and function.

To manage potential impacts to historic heritage items within the Project area a Historic Heritage Management Plan (HHMP) will be prepared. The commitment for the development of this HHMP will be addressed in the EA.

The Project will directly impact two potential historic heritage sites: the Underground Mine Adit and the Sandstone Assemblage. To mitigate impacts to the mine adit, it is recommended that an archival photographic recording be undertaken. Due to insufficient information available concerning the nature of the Sandstone Assemblage, it is recommended that a Section 140 application to permit test excavation be completed and submitted to the NSW Heritage Branch prior to impacts to the site.

A further three sites may potentially be indirectly impacted: the Cullen Bullen General Cemetery, Carleon Coach House, and the Sandstone Building Footings. In addition, there is potential for the Project to impact natural elements of the cultural landscape of Cullen Bullen consisting of sandstone formations.

To mitigate potential impacts to the Cullen Bullen General Cemetery, a Statement of Heritage Impact (SOHI), archival recording, site monitoring program and remediation strategy for potential impacts is recommended.

To mitigate potential impacts to the Carleon Coach House, a detailed assessment including SOHI, archival recording, structural assessment, site monitoring program and remediation strategy for potential impacts is recommended.

To mitigate impacts to the Sandstone Building Footings it is recommended that the site be fenced during construction of the conveyor, including a 20 m buffer. Once construction of the conveyor is completed, the fencing can be removed, and no further management required.

To mitigate impacts to sandstone formations, a baseline condition assessment should be prepared to assess potential impacts as a result of subsidence and vibration impacts to sandstone formations visible from the town and heritage items. The baseline condition assessment should be undertaken prior to potential impacts from mining activities and act as a starting point for an annual program of monitoring, in addition to informing detailed mine plans. The baseline assessment and program of monitoring for subsidence and vibration impacts should be undertaken by a qualified geotechnical professional. In addition, the proposed boundary of at least 50 m should be maintained between all open cut and highwall mine face areas and significant sandstone features in the Project area.

Details for the above mitigation measures should be addressed within the HHMP.

1.0 Introduction and Background

1.1 Introduction

AECOM Australia Pty Ltd (AECOM) was commissioned by Hansen Bailey on behalf of Coalpac Pty Ltd (Coalpac) to undertake an historic archaeological and cultural heritage impact assessment for the Coalpac Consolidation Project (the Project). Coalpac is seeking Project Approval under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to consolidate its existing Cullen Valley Mine and Invincible Colliery operations under a single contemporary planning approval to allow coal mining operations within its current mining tenements to continue for an additional 21 years.

This historic archaeological and cultural heritage impact assessment forms part of an Environmental Assessment (EA) being prepared by Hansen Bailey to support Coalpac's Part 3A Project Application under the EP&A Act. In keeping with the Director-General's Environmental Assessment Requirements (EARs) for the Project, the purpose of this assessment is to identify and provide management/mitigation recommendations for previously and newly recorded historic heritage sites within the Project Boundary (hereafter referred to as the 'Project area').

1.2 The Project Area

Cullen Valley Mine and Invincible Colliery are located on the western slopes of the Great Diving Range on lands surrounding the township of Cullen Bullen, approximately 25 km north-west of Lithgow, NSW (**Figure 1**). As indicated on **Figure 1**, the Project area incorporates a large part of the Ben Bullen State Forest as well as the existing Cullen Valley Mine and Invincible Colliery operations. In broad terms, the Project area is bounded to the north by the Baal Bone Colliery and its associated rail loop, to the east by the Great Dividing Range, to the south by Mount Piper Power Station and to the west by the lower agricultural lands of Cullen Valley. The Project area falls wholly within the Lithgow City Council Local Government Area (LGA).

1.3 Project Description

The Project seeks to consolidate the mining operations of Cullen Valley Mine and Invincible Colliery under a single contemporary planning approval to allow the continuation of open cut and highwall mining activities and to further develop a thermal coal resource of approximately 70 Mt ROM coal. The Project also seeks approval for the commencement of quarrying operations targeting an estimated 6 million bank cubic metres (Mbcm) deposit of Marangaroo Sandstone below the Lithgow Seam (**Figure 2**).

In summary, Project Approval is sought for the following:

- consolidation and extension of the existing Cullen Valley Mine and Invincible Colliery operations to produce up to a total of 3.5 Mtpa product coal, including:
 - the continuation of mining operations at Cullen Valley Mine via open cut and highwall mining methods to access an additional resource of approximately 40 Mt ROM; and
 - the continuation of mining operations at Invincible Colliery and an extension north into the East Tyldesley area via open cut and highwall mining methods to access an additional 60 Mt ROM;
- continuation of coal supply to the local Mount Piper Power Station (MPPS) and (emergency supply to) Wallerawang Power Station, with flexibility for supply to additional domestic destinations and Port Kembla for export;
- upgrades to existing administration, transport and other infrastructure;
- construction of the previously approved Coal De-shaling Preparation Plant (CDP) at the Cullen Valley Mine;
- construction of a bridge over the Castlereagh Highway to link operations east and west of the highway and the development of required access roads to the East Tyldesley area;
- construction of a bridge and haul road across the Wallerawang – Gwabegar Railway line to permit access to mine the previously approved Hillcroft resource;

- the extraction of the Marangaroo Sandstone horizon from immediately below the Lithgow Coal Seam in the northern coal mining area of Cullen Valley Mine. This material is to be trucked for crushing on site prior to sale into the Sydney industrial sand market;
- construction of a rail siding with loading infrastructure to permit transport of product coal and sand products;
- integration of the water management of both sites into a single system; and
- integration of the management of mine rehabilitation and conceptual final landform outcomes for Cullen Valley Mine and Invincible Colliery.

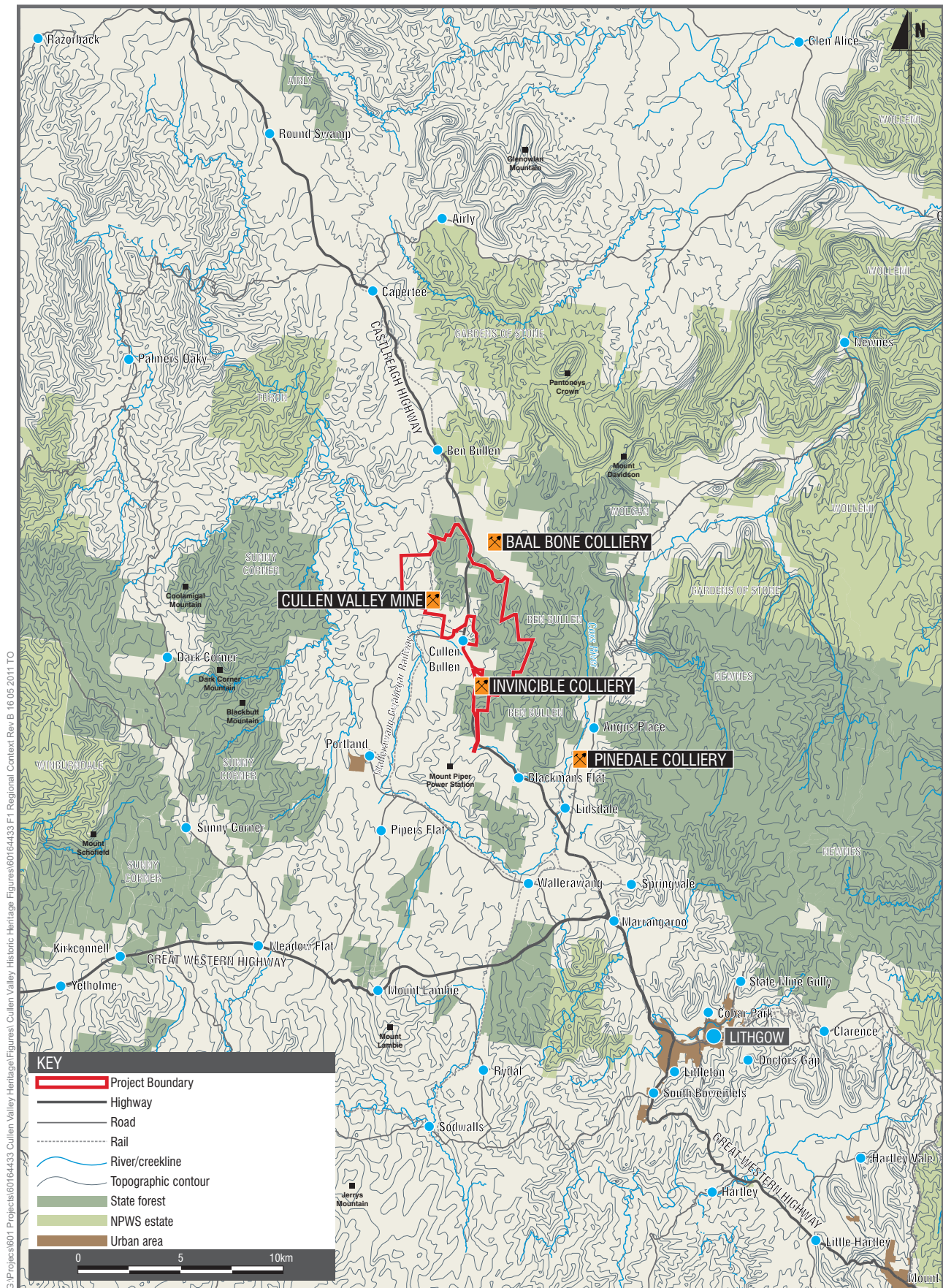
1.4 The Project Team

The following AECOM personnel worked on this assessment. Geordie Oakes (AECOM archaeologist) managed the project with Andrew McLaren (AECOM archaeologist) providing support. Oakes and McLaren undertook field survey. Oakes was the primary author of this report, with contributions by Susan Lampard (AECOM archaeologist). Ruth Baker (Associate Director, AECOM) provided QA review of all project outputs. Unless otherwise specified, Tim Osborne (Designer, AECOM) created all figures within this report. Jodie Glennan (IAP Team Secretary, AECOM) provided administrative support throughout the assessment process.

1.5 Report Structure

This report contains eight sections. This section, **Section 1**, has introduced, and provided background information on, the assessment undertaken.

- **Section 2** outlines the statutory framework within which this assessment has been undertaken;
- **Section 3** outlines the methodology used to undertake this assessment;
- **Section 4** provides a brief summary of the history and development of the Cullen Bullen area. The results of searches of relevant historic registers and inventories are also described;
- **Section 5** describes the results of the archaeological survey component of AECOM's assessment;
- **Section 6** provides a significance assessment of identified historic heritage sites within the Project area;
- **Section 7** provides an assessment of the potential impacts of the Project on identified sites; and
- **Section 8** details appropriate management options and/or recommendations.



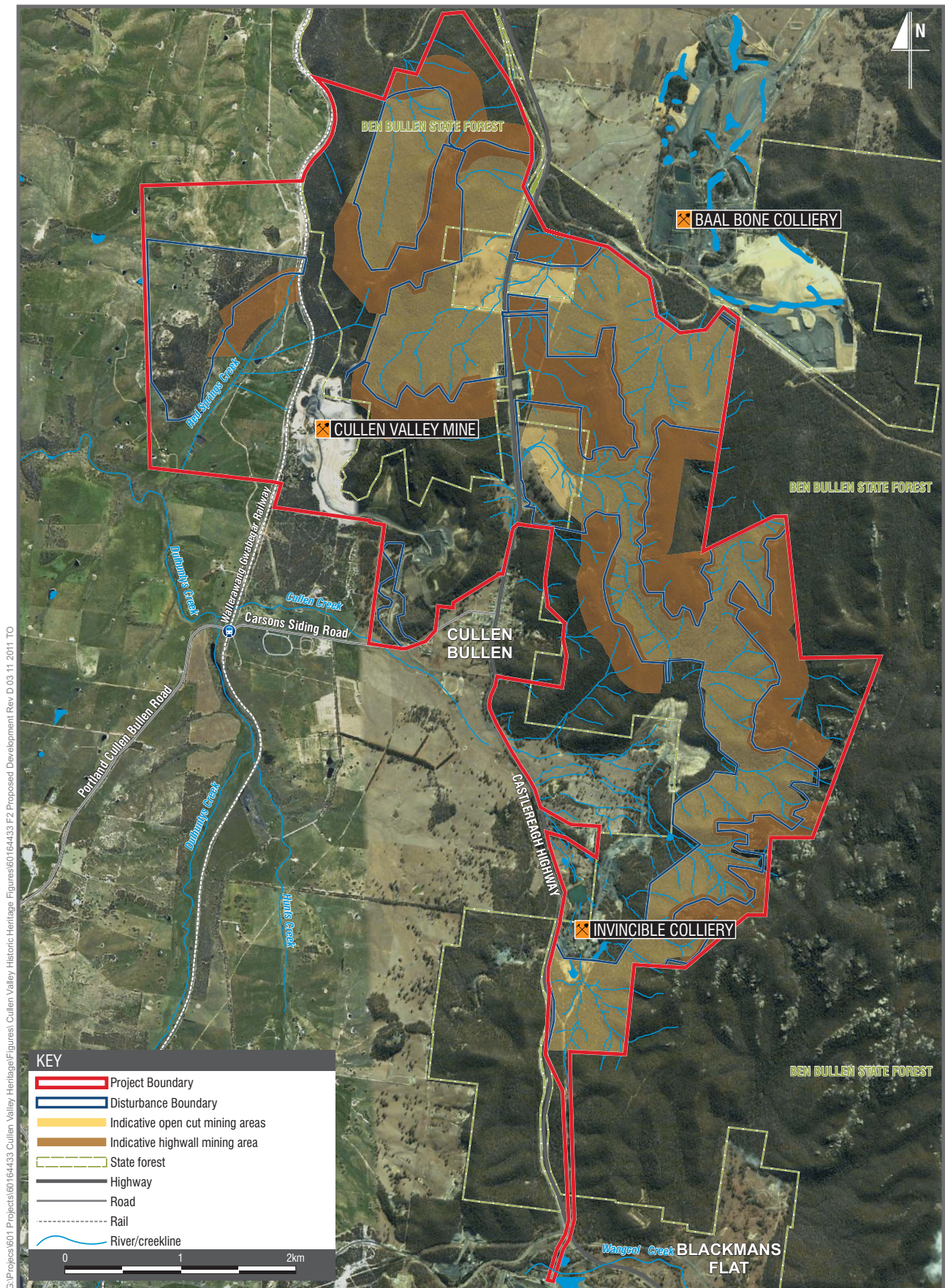
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AECOM

REGIONAL CONTEXT

Coalpac Consolidation Project - Historic Heritage Assessment
Cullen Valley, New South Wales

FIGURE 1



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AECOM

PROPOSED DEVELOPMENT
Coalpac Consolidation Project - Historic Heritage Assessment
Cullen Valley, New South Wales

FIGURE 2

2.0 Legislative Context

A number of planning and legislative documents govern how heritage is managed in NSW and Australia. The following section provides an overview of the requirements under each as they apply to the Project.

2.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act; the Act) took effect on 16 July 2000.

Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a matter of National Environmental Significance (known as a Controlled Action under the Act), may only progress with approval of the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities. An action is defined as a project, development, undertaking, activity (or series of activities), or alteration. An action will also require approval if:

- It is undertaken on Commonwealth land and will have or is likely to have a significant impact;
- It is undertaken outside Commonwealth land and will have or is likely to have a significant impact on the environment on Commonwealth land; and,
- It is undertaken by the Commonwealth and will have or is likely to have a significant impact.

The EPBC Act defines 'environment' as both natural and cultural environments and therefore includes Aboriginal and historic cultural heritage items. Under the Act, protected heritage items are listed on the National Heritage List (items of significance to the nation) or the Commonwealth Heritage List (items belonging to the Commonwealth or its agencies). These two lists replaced the Register of the National Estate (RNE). While the RNE has been suspended and is no longer a statutory list, Section 391A of the Act requires the Minister to consider RNE listing if a referral is made. This requirement expires in 2012, by which time all RNE listings are to be transferred to a relevant heritage register. Items on the RNE can have a variety of statuses, including Registered (it is inscribed on the Register) and Indicative (it is in the database, but no formal nomination has been received or an assessment has not been completed).

The heritage registers mandated by the EPBC Act have been consulted and one item is listed on the RNE as an Indicative Place. The Cullen Bullen General Cemetery will not be directly impacted by the proposed mine plan and a referral under the EPBC Act will therefore not be required for this purpose (discussed in **Section 4.2**).

2.2 Environmental Planning and Assessment Act 1979

The EP&A Act allows for the preparation of planning instruments to direct development within NSW. This includes Local Environment Plans (LEP), which are administered by local government, and principally determine land use and the process for development applications. LEPs usually include clauses requiring that heritage be considered during development applications and provide a schedule of identified heritage items. Of relevance to this project is the Lithgow City LEP (1994), as discussed in **Section 2.3**.

2.3 Lithgow City Local Environmental Plan 1994

The *Lithgow City Local Environment Plan 1994* (LEP) is the comprehensive statutory planning document that applies to the LGA. Part 4 of the LEP provides specific provisions for the protection of heritage items and relics within the LGA. Developmental constraints are placed on developers not to engage in activities that may:

- a) demolish or alter the a heritage building or work;
- b) damage, despoil or destroy a heritage place, tree, or relic;
- c) erect a building on, or subdivide the land; without the consent of Council. Before granting such consent the council must consider the heritage significance of any item impacted and the extent of the impact.

Schedule 1 of the LEP provides a list of heritage items within the Lithgow City LGA. There are no heritage items listed in the heritage schedule of the LEP that fall within the boundaries of the Project area.

2.4 The Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) was enacted to conserve the environmental heritage of New South Wales. Under section 32, places, buildings, works, relics, moveable objects or precincts of heritage significance are protected by means of either Interim Heritage Orders (IHO) or by listing on the State Heritage Register (SHR). Items that are assessed as having State heritage significance can be listed on the SHR by the Minister on the recommendation of the Heritage Council.

Archaeological relics (any relics that are buried) are protected by the provisions of Section 139 of the Heritage Act. Under this section, it is illegal to disturb or excavate any land knowing or suspecting that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed. In such cases an excavation permit under Section 140 is required. Note that no formal listing is required for archaeological relics; they are automatically protected if they are of local significance or higher.

Proposals to alter, damage, move or destroy places, buildings, works, relics, moveable objects or precincts protected by an IHO or listed on the SHR require an approval under Section 60. Demolition of whole buildings will not normally be approved except under certain conditions (Section 63). Some of the sites listed on the SHR or on LEPs may either be 'relics' or have relics associated with them. In such cases, a Section 60 approval is also required for any disturbance to relics *associated* with a listed item.

Under Section 170 of the Heritage Act, NSW Government agencies are required to maintain a register of heritage assets. The SHR places obligations on the agencies, but not on non-government proponents, beyond their responsibility to assess the impact on surrounding heritage items. The Heritage Act will control development activities within the curtilages of the items listed on the SHR.

However, in accordance with Section 75V of the EP&A Act, approvals under the Heritage Act are not required, should a Project Approval under Part 3A be granted for the Project.

3.0 Assessment Methodology

The heritage assessment employed the following two stage methodology to identify heritage items within and adjacent to the Project area:

1. Background research, including archival research; and
2. Fieldwork – survey and assessment.

3.1 Stage 1 – Background Research

The following tasks were undertaken during Stage 1 of the assessment:

- a search of heritage registers including:
 - World Heritage List;
 - Commonwealth Heritage List;
 - National Heritage List;
 - Register of the National Estate;
 - State Heritage Inventory;
 - Section 170 registers for relevant Government Agencies (eg. RTA); and
 - Lithgow City LEP.
- search of Parish Maps relevant to the Project area;
- search of the NSW State Library and online review of state records;
- liaison with the Lithgow City Council Heritage Advisor;
- consultation with the Lithgow & District Family History Society; and
- a desktop review of previous historic heritage reports relevant to the local area.

3.2 Stage 2 – Survey and Assessment

The Project field survey involved the following:

- pedestrian survey by two AECOM archaeologists of the following:
 - items or areas identified on heritage schedules within the Project area;
 - items or areas of heritage potential identified during Stage 1, but not listed; and
 - inspect areas where archival sources or heritage reports indicate historic archaeological sites may occur.

The following data was collected during the survey:

- location and extent of the item or area, to aid in the development of a curtilage;
- a description of the item or area for inclusion in the report and (if required) the Heritage Inventory Sheet;
- photographic record for inclusion in the report and Heritage Inventory Sheet and to aid in the analysis of vistas; and
- initial impression on the heritage significance of the item or area to be cross-referenced with documentary data.

4.0 Historic Context

4.1 Chronological Historic Background

4.1.1 The Early Years of Cullen Bullen

European settlement at Cullen Bullen commenced with the construction of Cox's Road across the Blue Mountains in 1815. Cox's Road was constructed to connect settlement around Emu Plains and the Nepean River, west of Sydney, with the rich fertile country west of The Great Dividing Range. The road, described at the time as a 'Cart Road' (Sydney Gazette 1814), allowed settlers relatively easy access across The Great Dividing Range and subsequently stimulated settlement in areas such as Cullen Bullen and the Bathurst region.

The first landowner in Cullen Bullen was Robert Venour Dulhunty, who arrived in Sydney in 1824. Originally born in Paignton, Devonshire, in 1802, Dulhunty received a grant of 2,000 acres (809 ha) and was assigned six convict servants upon his arrival in Sydney, at the age of 22 (McGrath 1973). Using his land grant, Dulhunty selected a property on the banks of Dulhunty's Creek, west of what is now Cullen Bullen town, and located his house on Back Cullen Road, outside the current Project area. There he imported and bred stock, specialising in Arab horses, and later acquired a near-by property at Ben Bullen (Adbonline 2010). According to McGrath (1973), in 1828 the property carried 75 head of cattle and 600 head of sheep. In 1839 Dulhunty married Eliza Gibbes in Sydney, choosing Penrith for their home. The property at Cullen Bullen was retained as a half-way house between their Penrith and Dubbo properties (Christison 2009).

Parish maps available from the Department of Lands (2011) show Dulhunty's property as a large rectangular shaped area listed as "Cullen Bullen" (Figure 3). Dulhunty must have sold the property at some stage prior to 1894 as the title holder is shown as Sir John Jamison on the 1894 parish map. Christison (2009) believes the property was sold around the 1840s to Jamison, a compatriot of Dulhunty's. Jamison died in 1844 and the property was subsequently listed for sale in 1851, being described as abounding "with coal, which is easily obtained, and could readily be adapted to smelting purposes". In 1866 the property was listed as owned by Captain Russell of Penrith. Eventually, however, the property was taken over by Patrick Brown who sold it to the Bulkeley family who changed its name to Beaumaris, a name later used by a colliery on the south side of Tyldesley Hill (Christison 2009: 15).

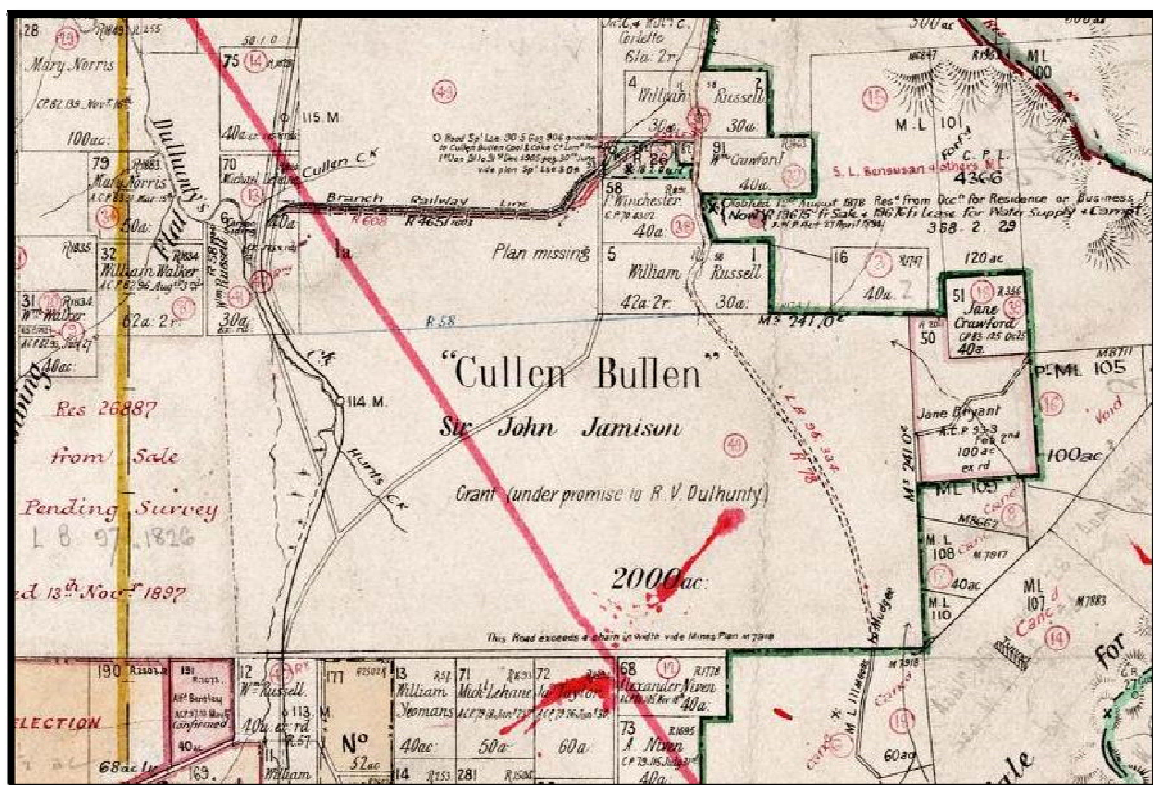


Figure 3: 1894 Parish Map Showing Dulhunty's Land Grant

During the 1840s, with the discovery of gold in the region, settlement in the district increased. The road to Mudgee, originally surveyed by Major Edmund Lockyer in 1828, was improved and a steady flow of traffic began to grow. Wayside Inns were established alongside the road to cater for the increased traffic and the village of Cullen Bullen is likely to have started from one of these early stopping places. By 1861, a post office was established and apparently became a well-known stopping place on the Mudgee mail route (McGrath 1973). The post office doubled as a store, and provided meals and accommodation for passengers travelling the route. Interestingly, the mail route was one of the first taken over by Cobb and Co. when they commenced operations in NSW. A hotel was built in 1889 on the Mudgee Rd, named the Royal Hotel, and the building, which later functioned as a school, was erected directly opposite in 1890.

By 1926, the original Dulhunty property is listed as "Urban Area Proclaimed (28th January 1927) on the 1926 parish map (Department of Lands), indicating the town of Cullen Bullen was firmly established by this time. The town's prosperity from its early beginnings was fundamentally tied to mining ventures.

4.1.2 Coal, The Railway and Growth of Cullen Bullen

Coal mining has, and still plays an important role in the local economy of Cullen Bullen. Early in Cullen Bullen's history, despite European knowledge of the coal reserves in the area, commercial exploitation of the resource was not viable due to the difficulty of transporting it over The Great Dividing Range to Sydney. It was not until the Great Western Railway crossed the Blue Mountains between 1867 and 1869 that coal mining became a viable industry for the local area. The rail line constructed to Lithgow, known as the Zig Zag Railway due to its winding course, was completed in 1869. Following this, the rail line reached Wallerawang in 1870 and Capertee in 1882. The completion of the railway heralded a boom in coal mining and associated industries in the region.

While it is likely that a number of small private mining ventures had been operating in the Cullen Bullen district prior to 1880, it was not until William Hart Jnr. opened a coal mine on his own land in 1880 that investment began in earnest. Hart invested considerable amounts of money building barracks, employing workers and opening a shop to sell provisions to the miners. However, despite his great expenditure the mine failed (Christison 2009, McGrath 1973). Regardless of this initial failure, a number of other mines were established in the latter part of the 1880s. Due to their importance to the development of the region, a summary of the larger mining ventures within or associated with the Project area is provided below.

Cullen Bullen Colliery

The Cullen Bullen Colliery was the first major coal mining development undertaken at Cullen Bullen. It began operating in 1888 and was owned by the Cullen Bullen Coal and Coke Company. An underground mine, it consisted of two tunnels, on the eastern side of Mudgee Road (just east of the current town), driven into the coal seam. Underground operations are likely to have extended under the existing town and also into the current Project area. A railway siding, called the Carson Siding, was constructed connecting to the Mudgee railway line, to transport coal from the mine. The siding is visible on the 1894 Cullen Bullen parish map (Department of Lands 2011) and runs in an easterly direction from the main Mudgee railway line along what is now Portland - Cullen Bullen Road and Carson Siding Road. McGrath (1973) identifies the original siding as being opened in 1882. The siding was renamed Cullen Bullen on 30 July 1896 after an elevated wooden platform had been constructed for passengers. Initially the mine employed 50 men, who likely lived at Cullen Bullen village, however by 1900 and its closure, only three men worked at the mine (Christison 2009: 98).

Great Western Mine (Invicta Colliery, Tyldesley Colliery, Coronation Colliery)

One of most significant and long lasting (although taken over by various entities) coal mines in the Cullen Bullen area was the Great Western Mine (now the Cullen Valley Mine). The mine was located immediately east of the Mudgee railway line on the western side of Tyldesley Hill, west of Cullen Bullen and is shown on the 1903 Cullen Bullen parish map (Department of Lands 2011 – see below) and listed as designated "for Mining". **Figure 4** below shows the original mining grant on the 1903 Cullen Bullen parish map with an insert of the current aerial view of the site.

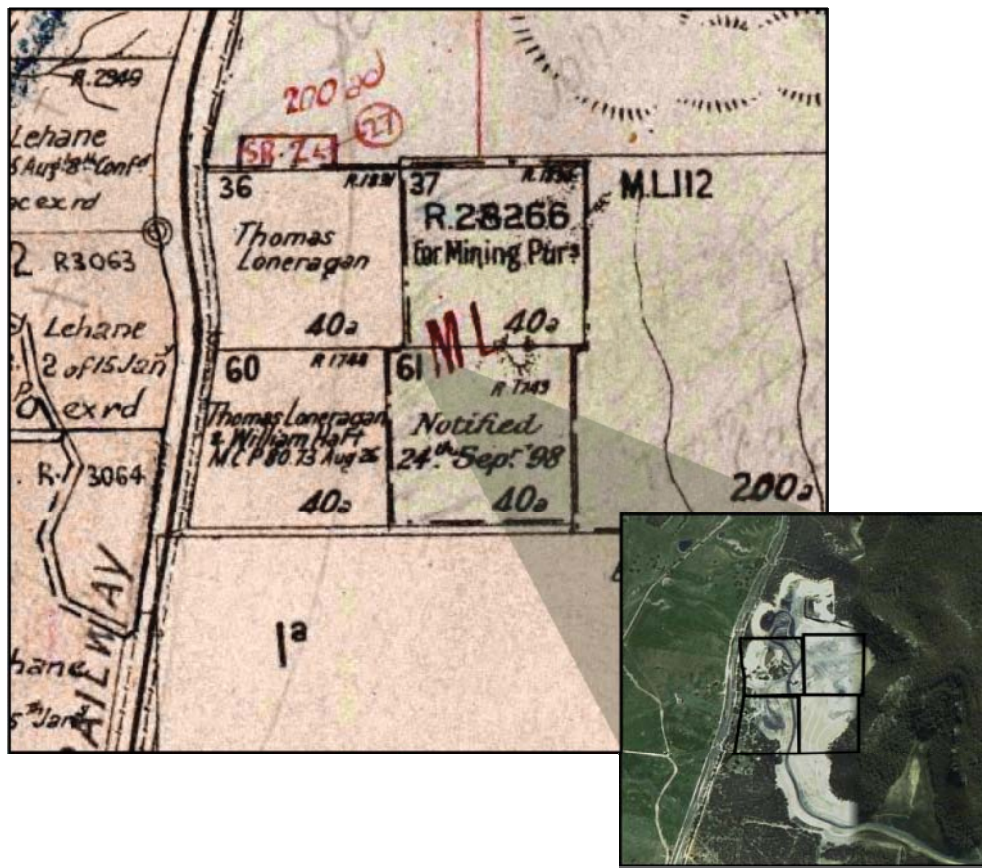


Figure 4: Showing 1903 Parish Map (Dept. Of Lands) with Current Aerial View

Initially, the mine was a small underground operation and worked only intermittently between 1904 and 1912, and was eventually abandoned in 1914 (Christison 2009: 51).

In 1914 the mine lease was taken over by James Errington, representing the Australian Coal Supply Company and renamed Invicta Colliery. Mining continued until 1917 when Tyldesley Colliery Co. Ltd. purchased the colliery and made substantial investments and increasing the mine's capacity. Tyldesley Colliery operated the mine until 1939, increasing employment from a maximum of 39 people in 1910 while it was managed by Great Western Mine Colliery, to 151 people in 1929 (Christison 2009).

The mine was taken over again in 1939 – this time by Coronation Coal Pty Ltd, who operated it until 1960. Coronation Coal also operated Beaumaris Colliery a small series of open cuts immediately to the south. It is likely that open cut workings commenced at the site of Great Western Mine in the 1950s. After a variety of difficulties, the Tyldesley Colliery was officially abandoned in 1960.

From the time of the establishment of the Great Western Mine until its closure as Tyldesley Colliery, a small village known as Tyldesley grew around the mine's headworks. Tyldesley Village consisted of houses, a post office, shop and a small school built in a disorganised manner on company land. Maps of the village show that it was located between the Colliery tunnel mouth and the coal-loading gantry. Archaeologically it is unlikely that much of this small settlement (which at its peak was home to approximately 200 people) remains as houses were typically constructed of waste materials from the mine, such as brushes and mud, hessian bags, brattice, packing cases and kerosene tins (Christison 2009: 22). The village prospered in the 1920s and 1930s but eventually declined in the 1950s due to changes in mining practices and government actions to improve living conditions at the site, which were extremely poor (Christison 2009: 45). Tyldesley's post office closed in 1956 and the school in 1963, however the last resident left in 1987. The site on which the original village was located is now the location of open cut operations at Cullen Valley Mine.

Tyldesley Colliery officially closed in 1960 and was remediated until being re-opened by the Lithgow Coal Company for open cut operations in 2000. Today the former operational areas of the Tyldesley and Beaumaris

Collieries form part of Cullen Valley Mine, with sections of these areas having been subjected to open cut operations at various stages throughout this time (**Figure 3**).

Invincible Colliery

Invincible Colliery operated from approximately 1905 until 1957, making it one of the longest continuously operated mines in the region. Initially mining consisted of long-walling, however this ceased after about eight years and mining continued underground at its No.1 Tunnel, east of the Royal Hotel (Christison 2009: 102). The Carson Siding rail line was extended travelling under Mudgee Road to the site in 1907. The colliery opened its No.2 Tunnel on the western side of Tyldesley Hill in 1925, directly south of Tyldesley Colliery, calling it Cockatoo Colliery.

In 1957, the colliery was relocated four kilometres to the south to its current location where underground operations continued until 1998. Much of the rail siding was removed in 1962; however a short section was retained (Christison 2009: 109). Limited open cut operations began at the new site in 1998 and continued until 2001, before recommencing in 2006 (Hansen Bailey 2010).

Renown Colliery

Renown Colliery was located south of the town of Cullen Bullen at the southern end of the current Project area. The colliery operated during the years of 1921-1929, 1934-1954 and was an underground operation. During its initial phase a rail siding was constructed from the Wallerawang - Gwabegar Branch line Railway to transport the coal. Due to loss of coal contracts the mine ceased operations in 1930 and remained closed during the Great Depression. The mine re-opened in 1934 and continuously operated until 1954. Open cut operations were undertaken between 1946 and 1954 (Christison 2009: 113).

Ben Bullen Colliery

Ben Bullen Colliery began operation in 1919, located north of Cullen Bullen, west of Mudgee Road, and north of the Project area, and adjacent to Baal Bone Colliery. The mine began as an underground operation in 1919 and lasted only one year before closing in 1920. The mine re-opened in 1926 as an above ground operation until work ceased again in 1929. In 1946, open cut mining re-commenced at the site and continued until 1954, after which soil reclamation and remediation works were undertaken.

4.1.3 Summary and Implications

Coal mining has been prevalent at Cullen Bullen, including underground and open cut operations, since the late 19th Century. Only through the years of The Great Depression in late 20s and early 30s and the closure of number of collieries in the area, including Renown and Tyldesley, did the growth of mining in the area slow. Evidence of open cut operations in the Cullen Bullen area is generally visible from aerial images. However, the area has also been subject to large amounts of underground mining. The summary of mines provided above reflect some of the larger operations in the area, however other mines were active throughout Cullen Bullen's history but in many cases were small operations or short lived.

Results of the above background research indicate that there is some potential for historic heritage items to be located within the Project area, and should such items exist they are likely to be associated with mining pursuits such as old mine workings, equipment, rail lines and worker housing. This potential however, must be balanced against the significant and sustained impacts some parts of the Project area has undergone due to historic mining.

4.2 Historic Register Searches

A search of historic registers was undertaken for the Project area and the local area. Results of the searches are provided in **Table 1**.

Table 1: Historic Register Searches

Listing	Results
World Heritage List	The Blue Mountains, including the Gardens of Stone National Park are listed on UNESCO's World Heritage List for its Natural Heritage values. A review of mapping for the listing places it outside the Project area.

Listing	Results
Register of the National Estate	One item was identified within the Project area: the Cullen Bullen General Cemetery.
National Heritage List	There are no items within the Project area listed on the National Heritage List.
Commonwealth Heritage List	There are no items within the Project area listed on the Commonwealth Heritage List.
NSW State Heritage Inventory (SHI)	There are no items within the Project area listed on the State Heritage Inventory.
National Trust of Australia (NSW)	One item was identified within the Project area: the Cullen Bullen General Cemetery.
Lithgow Local Environment Plan (LEP)	There are no items within the Project area listed on the Lithgow City LEP.

One item was identified within the Project area listed on the historic register searches – the Cullen Bullen General Cemetery, as discussed in **Section 5.2.1**.

4.3 City of Lithgow Heritage Study

City of Lithgow Heritage Study 1997 & 2000

The University of Sydney in association with Jocelyn Collieran, JRC Planning Services and Graham Edwards and Associates undertook an inventory of historic heritage items with the Lithgow LGA. Of those listed within the inventory, two items fall within or within close proximity to the Project area: Cullen Bullen General Cemetery and Carleon “Coach House”. A further seven sites were identified outside the Project area but within Cullen Bullen town and the local area – Beaumaris, Blackmans Flat Roman Catholic Cemetery, Cottage, Cottage 2, Cullen Bullen Public School, Miners Cottages, and Royal Hotel.

4.4 Summary

As a result of historic research, a search of heritage registers and a review of relevant heritage reports, the following historic heritage items have been identified as being located within or within close proximity to the Project area:

- Cullen Bullen General Cemetery; and
- Carleon “Coach House”.

5.0 Archaeological Survey

An archaeological survey was undertaken from 15 November 2010 to 10 December 2010, and was carried out in conjunction with and in addition to the Aboriginal heritage assessment also being prepared for the Project by AECOM.

The aim of the survey was to identify historic heritage values within the Project area. To achieve this, previously identified historic heritage items were relocated and assessed, in addition to seeking out historic heritage items not previously identified within and adjacent to the Project area. This was achieved through background research and pedestrian survey over the Project area. Surveyed areas included all access tracks, and potential sites of historic heritage.

5.1 Results

The following section identifies and describes historic heritage items identified through background research and archaeological survey occurring within or within the local area of the Project area. A summary of findings is presented in **Table 1**, while a full description of each item is provided below the table.

Table 2: Summary of Identified Heritage Items

Historic Heritage Items Identified Within the Project area		
Site Name:	Location:	Comment:
Cullen Bullen General Cemetery	Three kilometres north of Cullen Bullen town. Within Project area but outside proposed mining areas.	Identified on the Register of National Estate, National Trust and City of Lithgow Heritage Study Inventory and inspected during survey.
Carleon "Coach House"	Approx. 700 m north of Cullen Bullen town. Within Project area but outside proposed mining areas & disturbance area.	Identified in the City of Lithgow Heritage Study (2000). Not inspected during survey, due to location on private land, however location confirmed.
Underground Mine Adit	Located on the Hillcroft property at the western border of the Project area.	Identified during field survey.
Sandstone Assemblage	Located on the Hillcroft property at the western border of the Project area.	Identified during field survey.
Bottle Scatter CV-RCK1-10	Located at the south-eastern corner of the Project area.	Identified during field survey.
Historic Heritage Items Identified Outside Project area		
Sandstone Building Footings	Located at the southern end of the Project area, approx 40 m from the proposed conveyor.	Identified during field survey.
Miners Cottages	Located in Cullen Bullen Town.	Identified in the City of Lithgow Heritage Study (2000).
Cullen Bullen Public School	Located in Cullen Bullen Town.	Identified in the City of Lithgow Heritage Study (2000).
Royal Hotel	Located in Cullen Bullen Town.	Identified in the City of Lithgow Heritage Study (2000).
Beaumaris	Located south of Cullen Bullen Town.	Identified in the City of Lithgow Heritage Study (2000).
Blackmans Flat Roam Catholic Cemetery	Located south of the Project area.	Identified in the City of Lithgow Heritage Study (2000).

Historic Heritage Items Identified Within the Project area		
Cottage	Located south of Cullen Bullen Town.	Identified in the City of Lithgow Heritage Study (2000).
Cottage 2	Located south of Cullen Bullen Town.	Identified in the City of Lithgow Heritage Study (2000).

5.2 Within Project Area

5.2.1 Cullen Bullen General Cemetery

Location & Description (MGA 223906E 6313586N) (Plate 1, Plate 2)

Cullen Bullen General Cemetery is located on the Castlereagh Highway between Lithgow and Capertee. It is situated approximately three kilometres to the north of the township of Cullen Bullen on the eastern side of the Castlereagh Highway.

The Cemetery is roughly one hectare in size and surrounded by a fence. The Castlereagh Highway defines its western boundary, while the remaining three sides are delineated by woodland from the Ben Bullen State Forest. The cemetery itself is divided into four denominational sections, marked by concrete pyramids, with a central access track.

The Cemetery is not listed on the Commonwealth Heritage List, National Heritage List, the State Heritage Inventory or the Lithgow City LEP. The Cemetery is listed on the Register of the National Estate as an Indicative Place, meaning that it was not fully inscribed before the Register was closed. The listing is not statutory but shows that it was identified as a site of historic interest, potentially worthy of listing. The Register of the National Estate listing states that the Cemetery holds a diverse range of monument and markers including several homemade monuments of note. This includes two graves surrounded by sandstone drill core sections, as a reminder of the area's mining history.

To be classified as a relic under the Heritage Act the item must be assessed as having local or State heritage significance. As outlined in **Section 7.0** the Cullen Bullen General Cemetery meets the threshold for local significance. As such, the Cemetery is protected under the Act and would require an excavation permit under section 139 to be disturbed, however no disturbance or excavation will be undertaken in or in close proximity to the Cemetery.

History

There is currently little information available regarding the Cullen Bullen Cemetery. The earliest surviving headstone is that of Percival Spencer Sara, who died on 4 January 1917. The Cemetery is still in use, with the recent establishment of a lawn cemetery section and a columbarium (wall for the storage of ashes). The Cemetery is currently administered by the Lithgow City Council under the provisions of the *Local Government Act* 1993. The land is Crown Reserve.

5.2.2 Carleon "Coach House"

Location and Description (MGA 223868E 6312688N) (Plate 3)

Carleon is located approximately 700 m north of Cullen Bullen town on the western side of the Castlereagh Highway, approximately 25 m from the road. The house is not easily seen from the roadway. No access to the property (privately owned) was available during the assessment survey.

History

The following summary of the history of Carleon comes from McGrath's *History of Cullen Bullen* (1973). Carleon was originally built by William Hart Jnr in 1873. Constructed of sandstone blocks, with a shingle roof, it was built for Thomas Loneragan, a newcomer to town, who held retail interests in Mudgee and Gulgong. Loneragan purchased land opposite what was then the site of the post office for his home. Loneragan married Margaret Hart, who operated the post office, in 1880 and together they lived in Loneragan's home. When Margaret moved in, Carleon subsequently become the post office and remained so for the next 34 years. The Coach House, as it is now known, also functioned as an inn for travellers, where they could purchase a meal, rent a room or buy provisions. Interestingly, the Coach House was also used as a place of worship as there were no churches in the town at that time.

5.2.3 Underground Adit

Location and Description (MGA 220769E 6313645) (Plate 4, Plate 5)

During the assessment survey, a disused underground adit was recorded on the Hillcroft property, located at the western extent of the Project area. The adit was located on the upper/midslope of a moderate sized hill, with a southwesterly aspect. Six timber props lining the side walls were visible from the entranceway; however, a determination as to the extent and depth of the adit was not possible due to it being in-filled and immersed in water. The entranceway was approximately 60 cm in height, though this measurement is likely not an accurate estimate of the original size due to being partially blocked by infill. Width of the entrance was approximately 180 cm wide. From the entrance, the distance to the visible back wall was 6.1 m. No clear access for large machinery was visible at the site, nor were remnants of mining equipment evident.

History

Exact dates and history for the adit's construction are unknown; however, Parish Maps (Dept. of Lands 2011) show the property on which it lies being granted c.1903 to George Kirby Jnr. a large landholder in the area. The adit could date to any time after this grant. Given the small size of the adit, limited access for machinery, and lack of remnant machinery such as rails it is likely that this was an exploration adit, which were common in the district for extracting bulk samples for coal testing purposes or trial burns for marketing purposes.

5.2.4 Sandstone Assemblage

Location and Description (MGA 220857E 6313840N) (Plate 6, Plate 7)

Approximately 220 m north of the disused adit, located on the upper/middle slope of the same hill, with a westerly aspect, a small sandstone assemblage was recorded during survey. The assemblage consisted of two single layered parallel lines of natural uncut sandstone blocks, approximately 1.1 m apart, 2.25 m long, running in a north/south orientation. At the northern end of the assemblage the sandstone blocks join in an arc, while at the southern end the blocks do not meet. A steel frame measuring 1.6 m long, 0.85 m wide had been erected over the northern portion of the assemblage and covered in chicken wire. It is unknown when the assemblage was originally constructed or what its use was.

History

The current landowner of the Hillcroft Property was contacted in relation to the assemblage. Whilst being aware of the feature, the landowner did not have any information in relation to its construction, use or significance except stating that it was constructed prior to their ownership of the land.

5.2.5 Bottle Scatter CV-RCK-1-10

Location and Description (MGA 226041E 6309096N) (Plate 10, Plate 11, Plate 12, Plate 13, Plate 14)

During survey, a bottle scatter was recorded at Aboriginal site CV-RCK1-10. CV-RCK1-10 consists of a large rockshelter at the head of steep-sided forested valley approximately 1.5 km east-northeast of the main Invincible Colliery site office. The rockshelter is located at the base of a major sandstone cliffline formation at an elevation of approximately 1000 m AHD and has a westerly aspect. CV-RCK1-10 has a maximum width of 36 m and maximum depth of 25 m. The height of ceiling is estimated to be in excess of 20 m. Surface rocks from roof fall are common though for the most part are small. Most of the shelter floor slopes towards the dripline. Approximately 20 glass bottle fragments are scattered across the surface of shelter. There is limited potential for historical archaeological material in subsurface contexts.

History

The rockshelter has likely been periodically visited since Cullen Bullen was settled. Graffiti on the walls, with a 1930s date suggests an earliest date (during 'The Depression'). Fragments of bottle glass of various colours and types are scattered throughout the shelter. The bottle fragments appear to date to c.1930s and later as they are machine made. One particular fragment appears to use the Codd Patent, a method of creating a seal which pushed a marble against a rubber washer in the bottle's neck. This method was used worldwide from the late 19th to the early 20th century. Of the remaining glass fragments, the majority are beer bottles which likely date to the mid 20th century.

5.3 Within Proximity (500 m) of Project area

5.3.1 Sandstone Building Footings

Location and Description (MGA 224468E 6306224N) (Plate 8, Plate 9)

Located at the southern end and slightly outside of the Project area, are the sandstone footings of a building. The footings lie on a prominent spur at the junction of the Castlereagh Highway and Boulder Road, bordered to the east and west by unnamed ephemeral drainage lines. The structure is rectangular shaped, the northern wall 9.8 m long and the eastern wall 8.5 m. Sandstone blocks forming the footings are irregularly shaped and ranging in size from approximately 70 cm in length to small stone rubble, and are generally horizontally double skinned. Four discrete square rooms are visible along a central passageway running north to south. The room sizes are uniform – approximately 3.5 m x 3.5 m. A single vertical layer of sandstone blocks are visible marking the defining the extent of the structure. Interestingly, no walls or remnant sandstone or other material that may have comprised walls is visible, being either removed or not existent. No clearly defined entrance was evident at either end of the passageway, or into the rooms. There is a high potential for subsurface material at the site.

History

A search of historic aerials available from the Department of Lands (2010) and dated from the 1950s to 2010 for the location of the footings do not show any visible evidence of the structure i.e. a roof. As the footings are certainly not modern, an argument can be made that the structure pre-dates the 1950s and has either been dismantled prior to that or was never fully completed.

5.3.2 Miners Cottages**Location and Description (MGA 223710E 6311758N, 223536E 6311251N)** (Plate 15, Plate 16, Plate 17)

The Miner's Cottages are located at 45 Castlereagh Highway, and at 1-6 Old Company Cottages Road within Cullen Bullen town.

History

The cottages are an example of a typical miner's cottage dated between 1890 and 1900. Consisting of weatherboard fronts, fibro clad rears and sides, and brick foundation walling. A gabled iron roof lies over two rooms and skillions at the rear, and a bull-nosed veranda fronts the Cottages.

5.3.3 Cullen Bullen Public School**Location and Description (MGA 223753E 6311603N)** (Plate 17)

Cullen Bullen Public School is located 15-23 Castlereagh Highway Cullen Bullen, consisting of a group of three buildings.

History

The earliest of the three buildings was constructed in 1875 of timber cladding with gabled roof. A second building was constructed in the 1920s, comprising of two rooms and a fireplace. The third building is a modern demountable structure placed between the first two structures. The original buildings probably functioned as a home only later (c. 1922) becoming the school.

5.3.4 Royal Hotel**Location and Description (MGA 223739E 6311525N)** (Plate 18)

The Royal Hotel is located 20-22 Castlereagh Highway, in the centre of Cullen Bullen town.

History

Rectangular in shape, the Victorian styled hotel was built in two stages along roadside frontage. The first southern section of the hotel was constructed in 1890 of ashlar render with a dentilled parapet wall column and urn. A four panelled doorway with double two pane windows are visible at the skyline. The second section is simpler in design and consists of dry pressed brick with smaller pane windows. A two storey Edwardian verandah continues along the entire street facing facade.

5.3.5 Beaumaris**Location and Description**

Beaumaris is located on Back Cullen Road, Cullen Bullen.

History

Beaumaris is the name of Dulhunty's original property. The house, stables, coach house and other original buildings have been destroyed, however some foundations remain as do some of the original plantings.

5.3.6 Blackmans Flat Roman Catholic Cemetery**Location and Description**

Blackmans Flat Roman Catholic Cemetery is located on the southwest side of the Castlereagh Highway, Blackmans Flat.

History

The cemetery is associated with the Neubeck family from Germany who lived in the area for over a century. The earliest burials at the cemetery are dated to 1877-78.

5.3.7 Cottage**Location and Description**

Cottage is located at 45 Castlereagh Highway, within Cullen Bullen town.

History

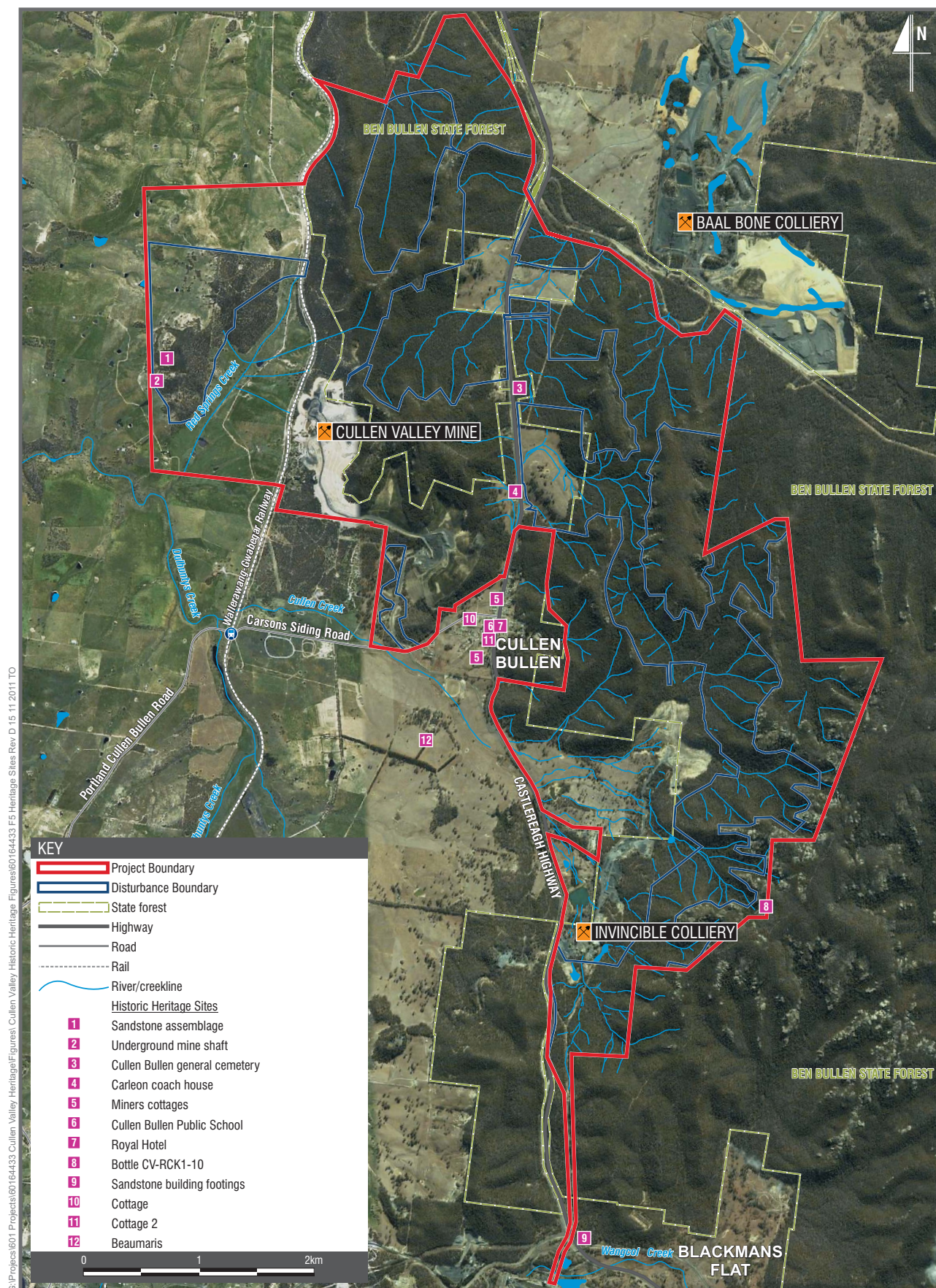
The cottage dated to c. 1890 consists of a typical 19th century miner's cottage. It has a gabled iron roof over a front two rooms and skillions at the rear. At the front, a bull nosed verandah extends from a weatherboard front. With brick foundations, the cottage features Victorian timber, fibro and iron.

5.3.8 Cottage 2**Location and Description**

Cottage 2 is located at 33 Castlereagh Highway, within Cullen Bullen town.

History

The cottage dated to c. 1890 consists of a typical 19th century miner's cottage. The cottage consists of four rooms with hipped roof over the front two room, and skillions at the rear. It features a verandah at the front four pane windows and Victorian brick foundation walling.



HERITAGE SITES

Coalpac Consolidation Project - Historic Heritage Assessment
Cullen Valley, New South Wales

FIGURE 5

6.0 Cultural Landscape Heritage Assessment

A cultural landscape is defined as a geographical area that reflects the interaction between humans and the natural environment. A cultural landscape therefore requires a review of geographic data, historic textual information, remnant cultural heritage within the landscape and understanding of the interaction of these factors. In completing this assessment, reference was made to the NSW Heritage Manual (Heritage Office 1996).

The town of Cullen Bullen and its surrounds embodies multiple layers of historic meaning created through different phases of its natural and human history, and their interaction through time. Since colonial times, Cullen Bullen has developed in an organic way through a process of exploration, settlement and industrial exploitation. Each of these stages in Cullen Bullen's development represents common historical themes in Australian history and form part of a broader process of colonisation that was occurring in Australia at the time. Physical reminders of each of these historical themes can be seen to some degree in the present-day landscape. However, not all aspects of its history are equally significant and the legacies of some phases of its development are more visible than others. The following section describes the major influences that have shaped the cultural landscape of Cullen Bullen beginning with the environmental context, which the early explorers were confronted with, followed by a review of the different stages of its cultural development and finally a description of how both the natural and cultural elements within the landscape fit together.

6.1 Natural Landscape

6.1.1 Climate

The climate of the Cullen Bullen can be characterised as cool-temperate, with relatively mild summers and cold winters. Rainfall and temperatures vary seasonally with the heaviest rainfalls and highest temperatures occurring in the summer months. Historic (1904-2009) rainfall data from the nearby Portland (Jamieson Street) weather station indicate a mean annual rainfall of 702.7 mm (range: 268.6-1417.3 mm) (Australian Government, Bureau of Meteorology, Online Climate Database, accessed 5 January 2011). Frosts and fogs are common in winter. Snow falls have also been recorded in the area, occurring between April and October. However, these events rarely persist.

Climate has not been an obvious determinant in the development of Cullen Bullen's cultural landscape. However, given the potential for cool weather and snowfall events, the surrounding sandstone escarpments may have afforded the town some protection from winter winds.

6.1.2 Hydrology

Cullen Bullen and the Project area are located in the upper Turon River catchment, approximately 500 m west of its boundary with Cocks River catchment. The Cocks River lies approximately 2.8 km to the east of the Project area, the Turon River approximately 8 km to the north-west. A number of permanent and semi-permanent creeks including Ben Bullen Creek, Jews Creek, Neubecks Creek, Cullen Creek, Dulhuntys Creek, Humes Creek and Wangcol Creek, surround the Project area. The numerous steep-sided gullies associated with the Project area's sandstone escarpments serve as ephemeral drainage lines for most of these creeks. Red Springs Creek is the only named creek to fall within the Project area itself. One of only a handful of higher order (>2nd order) creeklines to exist within the Project area, Red Springs Creek flows in a south-westerly direction through the north-western portion of the Project area. Cullen Creek skirts the western boundary of the Project area adjacent to the Castlereagh Highway and is fed by a several unnamed tributaries within it, including three 3rd order streams.

Access to fresh water is a common determining factor for the choice of settlement location. Dulhunty's choice of location for his homestead, for instance, was almost certainly due to its close proximity to Dulhuntys Creek.

6.1.3 Topography

Cullen Bullen is located on the western slopes of the Great Dividing Range. Several major sandstone escarpments and pagodas dominate the topography of the Project area, with precipitous cliffs and narrow ridgelines (<50 m) resting above steep to very steep (>40%) weathered rock hill slopes. Gently to moderately undulating terrain associated with soils of the Cullen Bullen soil landscape is also well represented, however. Elevations within the Project area range from 880 to 1066 m AHD, with land to the west of the Project area sloping gently downward towards Cullen Valley.

The alignment of the Castlereagh Highway (historically called Mudgee Road) through Cullen Bullen was based on the relative ease of passageway through the surrounding difficult terrain. Its alignment followed Cullen Valley,

avoiding the steep sandstone escarpments to the east and west. Original settlement in the area was obviously dependent upon such ease of access. As a result of the steep surrounding terrain, landuse options in the area were limited. The difficult terrain meant that agricultural pursuits, on a large scale, were not viable except to the southwest. Moreover, given the limiting factor of the terrain, with respect to agricultural pursuits, a settlement the size of Cullen Bullen may not have developed if the availability of an accessible coal resource was not identified.

6.1.4 Geology

Cullen Bullen falls wholly within the Western Coalfield of NSW. The Western Coalfield occupies the north-western and south-western quadrants of the Sydney and Gunnedah Basins respectively, covering an area of approximately 17,000 square kilometres. Basement rocks of these basins comprise folded Palaeozoic metamorphosed rocks of the Lachlan Fold Belt, Late Carboniferous granites and Early Permian Rylstone Volcanics (Yoo et al. 2001: 4). Overlying these basement rocks is a complex Permo-Triassic sequence consisting of rocks of the Permian Shoalhaven Group (Early) and Illawarra Coal Measures (Late) unconformably overlying Triassic aged rocks of the Narrabeen (Early) and Wianamatta (Late) Groups (Yoo et al. 2001: 4).

The local and regional geology of the area was arguably the greatest influencing factor in the development of Cullen Bullen. The discovery of coal was the driving factor for significant settlement in the area and one of the principal reasons for the construction of the railway and the subsequent development of the towns of Lithgow, Wallerawang, Ben Bullen and Cullen Bullen. It is clear from historical records that significant development did not occur until it became economically viable, as a result of the construction of the railway enable the mining of the area's coal resources. Coal mining created an economy, which supported a relatively large workforce that allowed for the growth of commercial interests, and construction of residences and facilities such as the Royal Hotel. The local community's economy is to this day supported by coal mining activities.

6.1.5 Flora and Fauna

The area surrounding Cullen Bullen is predominantly vegetated and contains a variety of fauna habitats including steep forested slopes and gullies, woodlands on lower slopes, and outcropping sandstone with heath and woodland. A recent ecological assessment of the area (Cumberland Ecology 2010) has identified seven vegetation communities within the Project area. These comprise:

Capertee Rough-barked Apple - Red Gum - Yellow Box Grassy Woodland

Capertee Rough-barked Apple - Red Gum - Yellow Box Grassy Woodland Derived Native Grassland

Capertee Rough-barked Apple - Red Gum - Yellow Box Woodland: non grassy

Capertee Rough-barked Apple Red Gum Yellow Box Woodland Derived Native Grassland

Tableland Gully Ribbon Gum Blackwood Applebox Forest

Tableland Gully Ribbon Gum Blackwood Applebox Forest Derived Native Grassland

Tableland Scribbly Gum – Narrow-leaved Stringybark Shrubby Open Forest

Tableland Broad-leaved Peppermint - Brittle Gum - Red Stringybark Grassy Woodland

Tableland Broad-leaved Peppermint - Brittle Gum - Red Stringybark Grassy Woodland Low Diversity Derived Native Grassland

Tableland Slopes Brittle Gum – Broad-leaved Peppermint Grassy Forest

Tableland Slopes Brittle Gum – Broad-leaved Peppermint Grassy Forest Derived Native Grassland

Tableland Gully Mountain Gum - Broad-leaved Peppermint Grassy Forest

Tableland Gully Mountain Gum Broad-leaved Peppermint Grassy Forest Derived Native Grassland

Tableland Gully Mountain Gum Broad-leaved Peppermint Grassy Forest Low Diversity Derived Native Grassland

Tableland Gully Snow Gum - Ribbon Gum Grassy Forest

Tableland Gully Snow Gum - Ribbon Gum Grassy Forest Low Diversity Derived Native Grassland

Pagoda Rock Sparse Shrubland

Cox's Permian Red Stringybark - Brittle Gum Woodland, and

Exposed Blue Mountains Sydney Peppermint - Silvertop Ash Shrubby Woodland

Local flora resources, particularly gum trees, have been exploited historically for mining. Much of the local vegetation has at some stage been selectively cleared and used for props in underground mines. As a result, the large majority of vegetation in the local area is regrowth.

6.2 Cultural Landscapes

6.2.1 The Aboriginal Landscape

In keeping with Attenbrow's (2009: 105, 2010: 27) recent comments on the deficiencies of available ethnohistoric information for contact-period Aboriginal language groups in the Sydney region and adjacent Blue Mountains, determining with any certainty which historically documented group was associated with Cullen Bullen at contact is difficult. Tindale's (1974) oft-cited map puts the Project area in the easternmost extremity of Wiradjuri territory, no more than a few kilometres west of that of the Darug language group. Bowdler (1984), for her part, has suggested that the Newnes Plateau, which borders the Cox River Valley to the immediate east of the Project area, was as 'zone of interaction' between the western Wiradjuri, the Darug and the Gundungurra. Bowdler reasons that it is possible that the Project area functioned in a similar manner, perhaps as part of a larger 'neutral' travel corridor between the Newnes Plateau/Cox Rivers Valley in the east and Cullen Valley/Western Plains in the west. Gollan (1987), meanwhile, based on his own review of available ethnohistoric information for the Newnes Plateau, has argued that the plateau was more likely claimed and occupied by Darug speaking-peoples. Given that Tindale's (1974) map shows the northern boundary of Gundungurra territory as falling to the south of Lithgow, it is tempting to reframe Bowdler's (1984) zone of interaction as one between Wiradjuri and Darug speaking-peoples and not all three groups. It is however, recognised that, as suggested by Tindale's (1974) map, the Project area was claimed and occupied solely by Wiradjuri-speaking peoples. Language groups aside, it is clear from the large number of archaeological assessments undertaken in the region, that Aboriginal people occupied and utilised the Cullen Bullen area for thousands of years prior to European arrival. Such utilisation included the exploitation of flora and fauna resources and the use of sandstone rock overhangs for shelter.

6.2.2 A Landscape of Exploration and Settlement

The story of European exploration of the area west of the Blue Mountains and subsequently Cullen Bullen begins with noted explorer and surveyor George William Evans. Evans crossed the Blue Mountains in 1813, making him the first European to cross the Great Dividing Range, though Blaxland, Lawson and Wentworth also successfully ventured into the Blue Mountains earlier in the same year. His successful expedition, through an inhospitable landscape into the interior, began a period of exploration that was quickly followed by settlement. Two years after his initial crossing, Evans returned to the interior as roadmaker William Cox's guide for the construction of Cox's Road to Bathurst (Karskens 1988). Roads were critical to the movement of white settlers in colonial times and allowed for easy exploration and settlement, and were a visible symbol of the colony's presence in the landscape. This was certainly the case with Cullen Bullen, where it is worth noting the road came first (to Mudgee) and exploration came later, in contrast to more common patterns of settlement.

In 1824, Robert Dulhunty was allocated the first land grant in the area comprising of 2000 acres of land which he chose adjacent to Dulhunts Creek. Dulhunty is likely to have chosen the location due the relatively flat terrain and access to fresh water. Dulhunts intentions for his land were immediately apparent with records indicating that by 1828 his property carried 75 head of cattle and 600 head of sheep (Christison 2009). Differing from the landscape of Cullen Bullen, land surrounding Dulhunts Creek is relatively flat and more amenable to agriculture.

Despite Dulhunty's official settling of the area in 1824, significant development in the area didn't occur until the 1840s as a result of gold being discovered in the region, particularly Mudgee. With the discovery of gold, traffic increased along Cox's Road and the road to Mudgee. Early settlers and travellers from this time probably constructed simple bush shelters, many of which were temporary, in the area. Along the road to Mudgee, wayside inns doubling as stores were established. While there is no record of an inn at Cullen Bullen during the 1840s, there was almost certainly to have been an establishment of some kind. Inns, as reflected in other parts of the colony, were some of the earliest businesses in a locality.

Historic records indicate that Carleon Coach House was the first commercial establishment in Cullen Bullen and had several functions. The Coach House, which is believed to have been a staging stop for Cobb & Co. mail coaches from Hartley to Mudgee, was originally constructed in 1873 and functioned as a store as well as a guest

house, and later the post office (Lithgow Heritage Study 2000). During this period, it is likely to have been the focus of all commercial activity in the fledgling community and the nucleus for future settlement.

During the 1840-1870s, a small community likely developed around the roadside trade and a mixture of agricultural pursuits, with a focus on sheep and cattle grazing. The largest influencing factor in the growth of Cullen Bullen was the construction of the railway through Cullen Bullen c.1870.

6.2.3 Transport

Construction of the railway over the mountains to Lithgow was a major engineering feat, with significant obstacles, most notably the difficulty of a decent into Lithgow. The line, called the Lithgow Zig Zag, formed part of the Main West Line from Sydney. Originally constructed in 1869, the Zig Zag line operated until 1910. Construction of the railway to Lithgow and subsequently through Cullen Bullen had a far-reaching effect on growth in the region. The construction of railways influenced settlement patterns throughout Australia, making possible the growth of small settlements and villages in areas that were previously inaccessible. In Cullen Bullen, the railway had a marked effect. It made possible the transportation of coal to the Sydney market with relative ease. Recognising this, a number of private, then major coal mining ventures were begun in and around Cullen Bullen. To enable transportation of the coal from Cullen Bullen, the Carson Siding was constructed in 1882, which linked the small settlement of Cullen Bullen to the main line to Lithgow. In 1891 a coal loading gantry was constructed and in 1896 the siding was renamed Cullen Bullen station after an elevated wooden platform had been constructed for passengers (McGrath 1973). The construction of the railway and subsequently the siding to Cullen Bullen altered the landscape of the small community forever. From that time, Cullen Bullen became an industrial town with an intensive focus on coal mining.

6.2.4 An Industrial Landscape

From c.1880 the development of Cullen Bullen was intrinsically tied to coal mining. The railway made it infinitely more viable for the rich coal deposits around Lithgow and the Western Coalfields to be exploited, and paved the way for industrial development of the region. What developed was an industrial landscape, where its natural elements were exploited by settlers and companies. It was a landscape where the human constructed elements of housing, mine facilities, transport, and commercial structures developed as a direct result of the exploitation of the natural environment.

The industrial landscape of Cullen Bullen was created from the combination of a number of elements. It includes the mines themselves, the labour force, workers accommodation, related commercial activities and the natural landscape. The mines were mostly underground ventures, featuring elements such as shafts, rail loaders and gantries, weighbridges and screens, though technical attributes of the infrastructure changed over time. Open cut mining commenced in the 1950's at Ben Bullen (now Baal Bone Mine), Beaumaris (now Cullen Valley Mine) and Commonwealth (now Invincible Colliery) as modern open cut mining equipment began to emerge.

Population in the Cullen Bullen area grew significantly from 1890. The boom in mining in Cullen Bullen brought workers from other mining centres such as Lithgow, and also brought men from other occupations. In 1890, 31 men were working at the Cullen Bullen Coal mine – the only mine operating at the time. The population of mine workers in Cullen Bullen varied over time and was influenced by upturns and downturns in the economy but enjoyed peaks during the 1920s and 1950s when several hundred men were employed in the area. Facilities such as housing and food were required for the workers. Mine workers lived in a variety of places – some on company-owned land where they paid rent, others lived in Cullen Bullen village, some commuted from Sydney for weeks at a time and others lived in shantytowns such as Tyldesley. Most workers purchased stores and food from Cullen Bullen Village, which was the closest shopping destination (Christison 2009).

6.2.5 Regional Development

Cullen Bullen's development was part of the historic exploitation of the Western Coalfields. Coal mining in the region began in Lithgow on a small scale in the 1840s and didn't expand significantly until the coming of the railway in the 1860s. Lithgow was an ideal location for the rail as it supplied both coal to power the trains and steel for rail. With the success of Lithgow, and the known coal resources in the region, the railway was extended to Wallerawang in 1870 and eventually reached Bathurst in 1870, passing through Cullen Bullen. Mining towns such as Portland, Wallerawang, Ben Bullen, Capertee and Cullen Bullen grew along the railway. Settlement and the development of the mining industry at Cullen Bullen was one in a series of town developments in the Central Tablelands as a result of the rich coal resources. It was part of the pattern of development that was occurring throughout NSW and Australia during the time in areas such as Newcastle (coal), Bathurst (gold, copper), Mudgee (gold, copper), Broken Hill (Silver, lead, zinc) Mt. Bischoff (tin) and Iron Knob (iron).

6.2.6 Land Disturbance Summary

The Project area consists of lands that have been variably disturbed by a number of land uses including coal mining, forestry, grazing and recreational activities such as hunting, four-wheel driving and motorbike riding. As noted above, a large portion of the Project area falls within the Ben Bullen State Forest, which largely remains as remnant vegetation, albeit having been disturbed by selective logging since the late 19th century. Recreational users and Forest NSW have also created numerous tracks and trails within the forest, some of which have promoted significant sheet erosion. Outside of the Ben Bullen State Forest, dominant land uses within the project area comprise grazing and coal mining, with the former largely restricted to private lands to the west of the Wallerawang-Gwabegar Railway.

6.3 Boundaries

6.3.1 Boundaries & Relationships

Cullen Bullen lies in a valley setting amongst broad sandstone escarpments and pagodas at the western edge of the Great Diving Range. The town is bounded to the north, east and south by the Ben Bullen State Forest with its rugged precipitous sandstone cliffs and narrow ridgelines, and to the west by the Cullen Bullen State Forest. Cullen Bullen is, to a large extent, surrounded on all sides by thick native bushland and steep hills that create an impression of isolation. Boundaries in Cullen Bullen, in terms of its historical landscape, can be divided into several spaces or landscape subsets, including the townscape, industrial spaces, agricultural land and natural landscape. The town itself with its residential and commercial space is huddled around the Castlereagh Highway. Surrounded tightly on three sides by thick bushland, the footprint of the town has undergone only modest expansion over the past century. On all sides, with the exception of the southwest, a number of mines are scattered throughout the adjacent bushland. However due to the town being surrounded on the north, east and south by the Ben Bullen State Forest with its rugged precipitous sandstone cliffs and narrow ridgelines, it is largely shielded from any visual exposure to these mines. Farmland reserved for cattle grazing is found taking advantage of the relatively flat terrain associated with Cullen and Dulhunty's Creeks to the southwest. Rugged landscape forms a protective boundary between the town and the mines.

6.3.2 Vistas

The heritage significance of some properties includes a visual link between elements in the landscape such as harbours, rivers, structures and topographic features (Heritage Office 1996). Views and vistas from and to historic elements in Cullen Bullen consist primarily of views of bushland, and sandstone formations surrounding the town. These visual 'corridors' are important in retaining the original physical and visual space of an area. They form part of the experience of the landscape. Due to the nature of the surrounding landscape, Cullen Bullen has largely been shielded from views of mining activities in the local area.

6.4 Specific Elements

Elements that make up the cultural landscape of Cullen Bullen have been identified through register searches, background research and field survey. A summary of these is provided below and outlined in **Figure 6**.

6.4.1 Geography

The steep escarpments and sandstone formations that surround Cullen Bullen are part of the boundary that delineates the functional space of the town from the surrounding landscape, and the mine sites scattered throughout the surrounding bushland. They form an important boundary between these spaces.

6.4.2 Views and Vistas

Views of the surrounding landscape incorporate sandstone escarpments and thick vegetation, and are part of the fabric that creates the atmosphere of the town.

6.4.3 Planted Trees & Gardens

While historic tree plantings may be present within the town landscape, none were identified within the Project area.

6.4.4 Roads & Rail

The Mudgee Road is the only historic road relevant to the Project area. The original alignment of the road is likely to have followed the current alignment of the Castlereagh Highway through Cullen Bullen, given the location of the Carleon Coach House and Royal Hotel. No original remains of the road were identified in the Project area.

The Carson Siding is the only historic rail element relevant to Cullen Bullen. While evidence of the Siding still exists, this does not occur within the Project area.

6.4.5 Buildings and Structures

Buildings and structures have significance for their historical, architectural, aesthetic, archaeological, social and technical values. They are important reference points in the landscape and are a reminder of an area's historic past and link elements of the landscape together. An inventory of Cullen Bullen's historic standing structures is provided below and in **Section 5.0**. These standing structures are now mostly privately owned and managed and include:

- Carleon Coach House (c.1873) (located 250 m from open cut);
- Cullen Bullen Public School (original buildings constructed c. 1875) (located 1 km from open cut);
- Beaumaris (located 2 km from open cut);
- Blackmans Flat Roman Catholic Cemetery (located 5 km from open cut);
- Cottage (located 1 km from open cut);
- Cottage 2 (located 1 km from open cut);
- Miners Cottages (c.1890) (1 km from open cut);
- Royal Hotel (c.1890) (1 km from open cut); and
- Cemetery (c.1917) (170 m from open cut).

The buildings represent stages in the growth of Cullen Bullen from the construction of Carleon prior to the railway's arrival and the mining boom, to the construction of housing for miners and the Royal Hotel during the early days of mining.

6.4.6 Industrial Elements

Cullen Bullen's industrial heritage is a distinctive feature in the historic landscape. The focus of past mining activity has principally been underground mining, making it exceptionally difficult to ascertain the location and survival of historic or archaeological material. Given that mining, both underground and in many instances open cut, is still active throughout the area, it is likely that both underground and surface historic and archaeological elements have been destroyed. Regardless of the likely destruction of historic mining features, the active mines themselves are a physical reminder of the industrial heritage of Cullen Bullen.

6.4.7 Archaeological Elements

Archaeological values are embedded in all built and cultural elements in the landscape, and relate to its historic past. In addition to identified buildings and structures, several sites of potential archaeological value have been identified. These include:

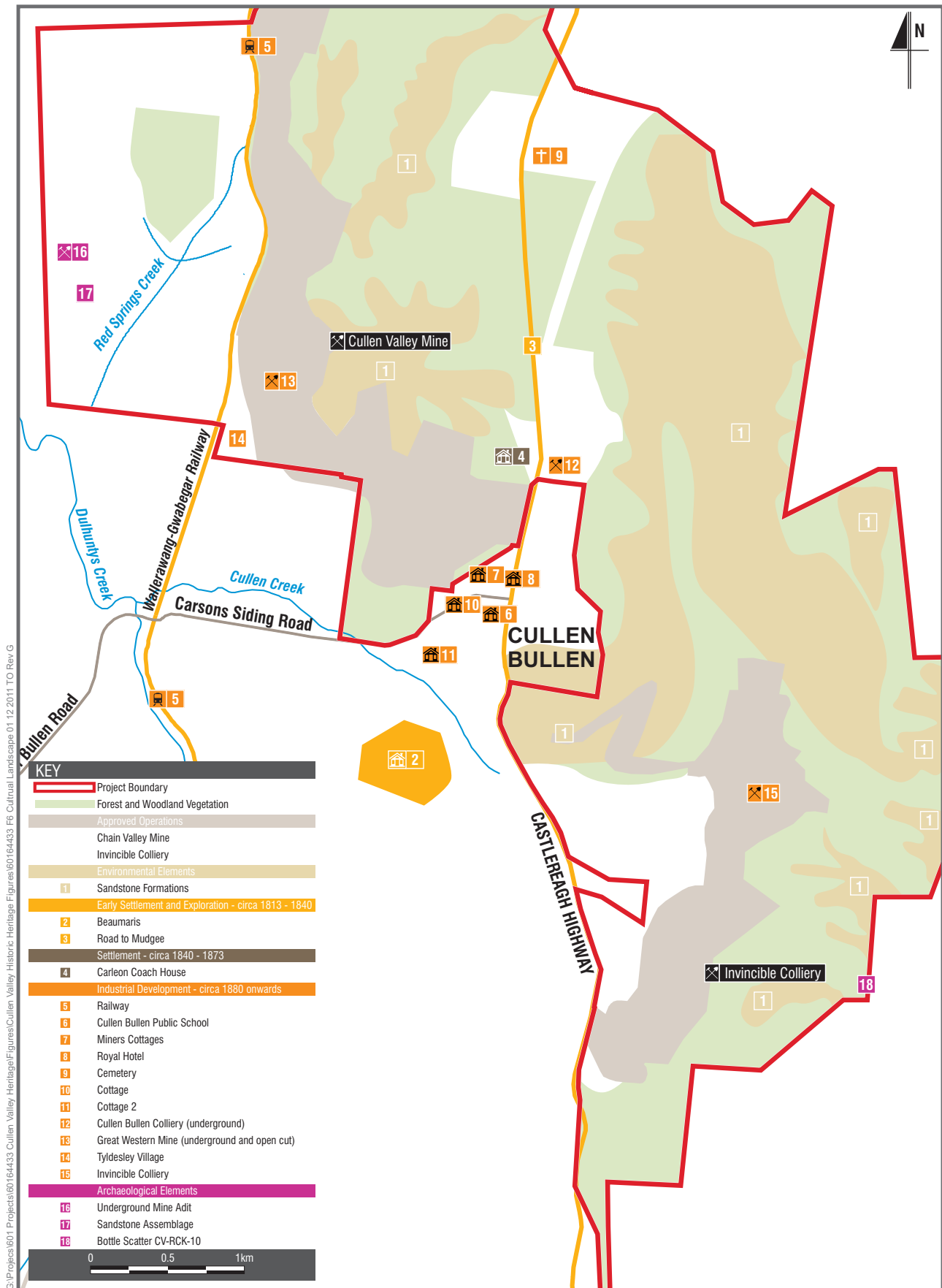
- Underground Mine Adit;
- Sandstone Assemblage;
- Sandstone Building Footings; and
- Bottle Scatter CV-RCK1-10.

These archaeological elements are likely from several phases of Cullen Bullen's historic past.

6.5 Conclusion

The story of Cullen Bullen is one of a geographically isolated landscape settled by early explorers which develops from a frontier style settlement to a vibrant industrial landscape. The legacy of its development and interaction with its surrounds are still present today in its buildings and structures, the continuation of industry, and its

surrounding landscape. The process of settlement and the growth of industry in Cullen Bullen mirror aspects of settlement and resource exploitation that were occurring in broader Australia at the time. In places like Lithgow, Wallerawang, Mudgee and Bathurst, this model of settlement and exploitation was, and continues to be, repeated.



AECOM

CULTURAL LANDSCAPE

Coalpac Consolidation Project - Historic Heritage Assessment
Cullen Valley, New South Wales

FIGURE 6

7.0 Assessment of Significance

The following section provides a significance assessment of each of the nine items identified within the Project area and within proximity to the Project area (500 m). In order to understand how a development will impact upon a heritage item, it is necessary to understand why an item is historically significant. To achieve this, a significance assessment is undertaken to explain why a particular site is important and therefore allow for relevant management options to be developed.

Cultural significance is defined in the *Australia ICOMOS Charter for the conservation of places of Cultural Significance* (the *Burra Charter*) as meaning "aesthetic, historic, scientific or social value for past, present or future generations" (Article 1.1). Cultural significance may be derived from a place's fabric, association with a person or event, or for its research potential. The significance of a place is not fixed for all time, and what is of significance to us now may change as similar items are located, more historical research is undertaken and community tastes change.

The NSW Heritage Council has adopted specific criteria for undertaking a significance assessment that are outlined in the guideline *Assessing Heritage Significance*, which forms part of the *NSW Heritage Manual* (Heritage Branch, Department of Planning). There are seven evaluation criteria under which an item is evaluated with reference to state and local importance.

This heritage assessment uses the following criteria for assessing significance:

Table 3: Significance Rating Criteria

Criterion	Definition
Criterion (a) Historical	an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area). The site must show evidence of significant human activity or maintains or shows the continuity of historical process or activity. An item is excluded if it has been so altered that it can no longer provide evidence of association;
Criterion (b) Associative	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 (or the cultural or natural history of the local area). The site must show evidence of significant human occupation. An item is excluded if it has been so altered that it can no longer provide evidence of association;
Criterion (c) Aesthetic	an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area). An item can be excluded on the grounds that it has lost its design or technical integrity or its landmark qualities have been more than temporarily degraded.
Criterion (d) Social	an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons. This criterion does not cover importance for reasons of amenity or retention in preference to proposed alternative.
Criterion (e) Research Potential	an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area). Significance under this criterion must have the potential to yield new or further substantial information. Guidelines for exclusion are if the information would be irrelevant or only contains information available in other sources.
Criterion (f) Rarity	an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area). The site must show evidence of the element/function etc proposed to be rare.
Criterion (g) Representativeness	an item is important in demonstrating the principal characteristics of a class of NSW's: cultural or natural places; or cultural or natural environments. An item is excluded under this criterion if it is a poor example or has lost the range of characteristics of a type.

7.1 Cullen Bullen General Cemetery

Criterion (a) Historical – Cullen Bullen Cemetery is an important part of the early development of the town of Cullen Bullen. It has been in use since the 1917 and is strongly associated coal mining families in the area. The cemetery is still in use and has a high level of local significance.

Rating: Local Significance

Criterion (b) Associative – Cullen Bullen General Cemetery has a strong association with the local residents - this is especially the case as the cemetery is still in use. For this reason, the Cemetery has a high level of local significance.

Rating: Local Significance

Criterion (c) Aesthetic – Cullen Bullen General Cemetery does not meet this criterion as it does not demonstrate aesthetic characteristics and/or a high degree of creative or technical achievement in the local area.

Criterion (d) Social – Cullen Bullen General Cemetery has a special association with the Cullen Bullen community for social, cultural and spiritual reasons. Should the Cemetery be impacted, the community would experience a sense of loss. The cemetery is important for its contribution to the community's sense of identity. For these reasons, the cemetery has a high level of local significance.

Rating: Local Significance

Criterion (e) Research Potential – Cullen Bullen General Cemetery does not meet this criterion as it does not have the potential to yield new or further substantial scientific and/or archaeological information.

Criterion (f) Rarity – Cullen Bullen Cemetery does not meet this criteria as it does not possess uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).

Criterion (g) Representativeness – Cullen Bullen General Cemetery does not meet this criteria as it does not demonstrate the principal characteristics of a class of the local area's cultural environment.

Statement of Significance

Cullen Bullen General Cemetery is of local significance for the role it has played in the early development of Cullen Bullen Town and for its association with local families. The cemetery is still in use and has social, cultural and spiritual significance for local residents.

7.2 Carleon Coach House

Criterion (a) Historical – Carleon Coach House is of local significance for its importance in the development of the local area. Having several functions, including Inn, shop, post office and place of worship, the Coach House played a key role in the development of Cullen Bullen town.

Rating: Local Significance

Criterion (b) Associative – Carleon Coach House has a special association with residents of Cullen Bullen for the role it played in the development of the town. It also has a strong association with two prominent local families – the Harts and Loneragans. For these reasons, it is of local significance.

Rating: Local Significance

Criterion (c) Aesthetic – Carleon Coach House has local significance for its aesthetic characteristics. It is aesthetically distinctive from other houses and structures being the one of the only surviving buildings from the 19th Century. Constructed from sandstone blocks with a shingle roof, the house is of particular cottage style not represented by other houses in the town. Nestled below a hill in a rural setting outside of Cullen Bullen, the house is aesthetically inspiring.

Rating: Local Significance

Criterion (d) Social – Carleon Couch House has a strong association with residents of Cullen Bullen, in particular two prominent families; the Harts and Loneragans for social, cultural and spiritual reasons.

Rating: Local Significance

Criterion (e) Research Potential – Carleon Couch House does not meet this criterion as it does not have the potential to yield new or further substantial scientific and/or archaeological information.

Criterion (f) Rarity – Carleon Couch House meets this criterion as one of the only surviving structures from the 19th century in Cullen Bullen.

Rating: Local Significance

Criterion (g) Representativeness – Carleon Couch House does not meet this criterion as it does not demonstrate the principal characteristics of a class of NSW's cultural or natural places, or cultural or natural environments.

Statement of Significance

Carleon Couch House is of local significance for the role it played in the development of Cullen Bullen. As one of the first significant homes in the township, it operated as a 'coach-halt', the post office, store, and improvised church, making it important in the development of the town and its people.

7.3 Underground Adit

Criterion (a) Historical – Underground Adit is of local historical significance as it is reflective of the long history of coal mining in the greater Cullen Bullen area. Such adits are common in the local area.

Rating: Local Significance

Criterion (b) Associative – Underground Adit does not meet this criterion as there is no known association with local residents.

Criterion (c) Aesthetic – Underground Adit does not meet this criterion as it does not demonstrate aesthetic characteristics and/or a high degree of creative or technical achievement in the local area.

Criterion (d) Social – Underground Adit does not meet this criterion as it does not have a special association with the local community for social, cultural or spiritual reasons.

Criterion (e) Research Potential – Underground Adit does not meet this criterion as it does not have the potential to yield new or further substantial scientific and/or archaeological information.

Criterion (f) Rarity – Underground Adit does not meet this criterion as it does not possess uncommon, rare or endangered aspects of the local area's or the cultural history.

Criterion (g) Representativeness – Underground Adit does not meet this criterion as it does not demonstrate the principal characteristics of a class of NSW's cultural or natural places, or cultural or natural environments.

Statement of Significance

The Underground Adit is of local historic significance as it is reflective of the long history of coal mining in the greater Cullen Bullen area. The site is in poor condition and is not considered rare in the local or regional area, as adits are a common occurrence, being a common exploration method during the 20th century.

7.4 Sandstone Assemblage

Given the limited information available for the site, it is not possible to undertake an assessment of significance. Once further information is known about the site, a significance assessment can be completed (see **Section 9.1**).

7.5 Sandstone Building Footings

Given the limited information available for the site, it is difficult to undertake an assessment of significance. The nature of the footings indicate the building was most likely a simply constructed, early/middle 20th century, dwelling. As no definitive significance rating can be given for this item, a cautious approach should be applied to management (see **Section 9.1**).

7.6 Bottle Scatter CV-RCK1-10

Criterion (a) Historical – Bottle Scatter CV-RCK1-10 does not meet this criterion as the item is not important in the course or pattern of the local area's cultural or natural history.

Criterion (b) Associative – Bottle Scatter CV-RCK1-10 does not meet this criterion as there is no known association with local residents.

Criterion (c) Aesthetic – Bottle Scatter CV-RCK1-10 does not meet this criterion as it does not demonstrate aesthetic characteristics and/or a high degree of creative or technical achievement in the local area.

Criterion (d) Social – Bottle Scatter CV-RCK1-10 does not meet this criterion as it does not have a special association with the local community for social, cultural or spiritual reasons.

Criterion (e) Research Potential – Bottle Scatter CV-RCK1-10 is of local research significance as it is a previously unrecorded site and holds some potential to provide insight into historical land use.

Rating: Local Significance

Criterion (f) Rarity – Bottle Scatter CV-RCK1-10 does not meet this criterion as it does not possess uncommon, rare or endangered aspects of the cultural or natural history of the local area.

Criterion (g) Representativeness – Bottle Scatter CV-RCK1-10 does not meet this criterion as it does not demonstrate the principal characteristics of a class of NSW's cultural or natural places, or cultural or natural environments.

Statement of Significance

Bottle Scatter CV-RCK1-10 is of local historical research significance as it is a previously unrecorded site and holds some potential to provide insight into historical land use.

7.7 Miners Cottages

Criterion (a) Historical – The Miners Cottages are important examples of housing that illustrate the development of Cullen Bullen. They are an interesting feature in the streetscape and testament to the industrial heritage of the town. For these reasons they are of local significance.

Rating: Local Significance

Criterion (b) Associative – The Miners Cottages have a strong association with Cullen Bullen residents and are important to the cultural history of the local area. Therefore, are of local significance.

Rating: Local Significance

Criterion (c) Aesthetic – The Miners Cottages are important in terms of their aesthetic characteristics. They are aesthetically distinctive from other dwellings in the town, making them of local significance. The Miner Cottages make an important contribution to the streetscape and residential environment of Cullen Bullen town.

Rating: Local Significance

Criterion (d) Social – The Miners Cottages has a special association with residents of Cullen Bullen for social and cultural reasons. As a mining town, the Miner Cottages are important to the community's sense of place.

Rating: Local Significance

Criterion (e) Research Potential – The Miners Cottages do not meet this criterion as they do not have the potential to yield new or further substantial scientific and/or archaeological information

Criterion (f) Rarity – The Miners Cottages meet this criterion as they are rare outside of Lithgow.

Rating: Local Significance

Criterion (g) Representativeness – The Miners Cottages meet this criterion as they demonstrate the principal characteristics of a class of the local area's cultural places. The cottages are a good example of early 20th century miner's homes, and illustrate the socio-economic situation of their occupants.

Rating: Local Significance

Statement of Significance

The Miners Cottages are of local historical significance for the role they played in the development of Cullen Bullen. As examples of early 20th century miner's homes, they reflect the socio-economic situation of the occupants.

7.8 Cullen Bullen Public School

Criterion (a) Historical – The construction of Cullen Bullen Public School is important in demonstrating the growth of Cullen Bullen and indirectly the growth of mining in the area.

Rating: Local Significance

Criterion (b) Associative – Cullen Bullen Public School has a strong association with Cullen Bullen residents and is important to the cultural history of the local area.

Rating: Local Significance

Criterion (c) Aesthetic – Cullen Bullen Public School is important in terms of its aesthetic characteristics. Constructed in 1875, the original building is aesthetically distinctive.

Rating: Local Significance

Criterion (d) Social – Cullen Bullen Public School has a special association with residents of Cullen Bullen for social and cultural reasons. It reflects social and demographic aspects of the town in the late 19th century.

Rating: Local Significance

Criterion (e) Research Potential – Cullen Bullen Public School does not meet this criterion as it does not have the potential to yield new or further substantial scientific and/or archaeological information

Criterion (f) Rarity – Cullen Bullen Public School does not meet this criterion as it does not possess uncommon, rare or endangered aspects of the cultural or natural history of the local area.

Criterion (g) Representativeness – Cullen Bullen Public School meets this criterion as the site demonstrates the principal characteristics of a class of the local area's cultural places. The school is a good example of a late 19th century school building in a mining town.

Rating: Local Significance

Statement of Significance

Cullen Bullen Public School is of local historical significance due to the role it played in the development of Cullen Bullen. As examples of 19th century school building in a mining town, it reflects social and demographic aspects of the town development.

7.9 Royal Hotel

Criterion (a) Historical – The Royal Hotel was important to the development of Cullen Bullen. It demonstrates the growth of the town.

Rating: Local Significance

Criterion (b) Associative – The Royal Hotel has a strong association with Cullen Bullen residents, as the only hotel in town and is important to the cultural history of the local area.

Rating: Local Significance

Criterion (c) Aesthetic – The Royal Hotel is important in terms of its aesthetic characteristics. As an example of a Victorian style Hotel in a NSW mining town, it is aesthetically important. The Royal Hotel also makes an important, distinct contribution to the streetscape.

Rating: Local Significance

Criterion (d) Social – The Royal Hotel has a special association with residents of Cullen Bullen for social and cultural reasons. Pubs play an important role as social foci, particularly for men, and particularly for a mining community.

Rating: Local Significance

Criterion (e) Research Potential – The Royal Hotel does not meet this criterion as it does not have the potential to yield new or further substantial scientific and/or archaeological information

Criterion (f) Rarity – The Royal Hotel does not meet this criterion as it does not possess uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).

Criterion (g) Representativeness – The Royal Hotel meets this criterion as it demonstrates the principal characteristics of a class of the local areas cultural places and is a fine example of a Victorian hotel in a NSW mining town.

Rating: Local Significance

Statement of Significance

The Cullen Bullen Royal Hotel is of local historical significance as it played important role in the town's history and development. The pub has a strong association with local residents and is aesthetically distinctive, being an example of a Victorian style hotel in a NSW mining town.

7.10 Beaumaris

Criterion (a) Historical – Beaumaris was important to the development of Cullen Bullen being the original land grant in the area.

Rating: Local Significance

Criterion (b) Associative – Beaumaris has an association with Cullen Bullen residents, as the first settlement in the town and is important to the cultural history of the local area.

Rating: Local Significance

Criterion (c) Aesthetic – Beaumaris is important in terms of its aesthetic characteristics for its cultural plantings.

Rating: Local Significance

Criterion (d) Social – Beaumaris has an association with residents of Cullen Bullen for social and cultural reasons.

Rating: Local Significance

Criterion (e) Research Potential – Beaumaris meets this criterion as it has potential to yield further archaeological information about the early settlement of Cullen Bullen.

Rating: Local Significance

Criterion (f) Rarity – Beaumaris meet this criterion as being the first property settled in Cullen Bullen it is rare in the local area.

Rating: Local Significance

Criterion (g) Representativeness – Beaumaris meets this criterion as it demonstrates the principal characteristics of a class of the local areas cultural places as the remains of an early 1820s homestead.

Rating: Local Significance

Statement of Significance

Beaumaris of local historical significance for the role it played in the town's history and development.

7.11 Blackmans Flat Roman Catholic Cemetery

Criterion (a) Historical – Blackmans Flat Roman Catholic Cemetery is an important part of the early development of the town of Cullen Bullen. It has been in use since the 1877 and is associated with families in the area.

Rating: Local Significance

Criterion (b) Associative – Blackmans Flat Roman Catholic Cemetery has a strong association with the local residents.

Rating: Local Significance

Criterion (c) Aesthetic – Blackmans Flat Roman Catholic Cemetery does not meet this criterion as it does not demonstrate aesthetic characteristics and/or a high degree of creative or technical achievement in the local area.

Criterion (d) Social – Blackmans Flat Roman Catholic Cemetery has a special association with the Cullen Bullen community for social, cultural and spiritual reasons.

Rating: Local Significance

Criterion (e) Research Potential – Blackmans Flat Roman Catholic Cemetery does not meet this criterion as it does not have the potential to yield new or further substantial scientific and/or archaeological information.

Criterion (f) Rarity – Blackmans Flat Roman Catholic Cemetery does not meet this criteria as it does not possess uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).

Criterion (g) Representativeness – Blackmans Flat Roman Catholic Cemetery does not meet this criteria as it does not demonstrate the principal characteristics of a class of the local area's cultural environment.

Statement of Significance

Blackmans Flat Roman Catholic Cemetery is of local significance for the role it has played in the early development of Cullen Bullen Town and for its association with local families.

7.12 Cottage

Criterion (a) Historical – Cottage is important examples of housing that illustrate the development of Cullen Bullen. It is an interesting feature in the streetscape and testament to the industrial heritage of the town. For these reasons, it is of local significance.

Rating: Local Significance

Criterion (b) Associative – Cottage has a strong association with Cullen Bullen residents and is import to the cultural history of the local area. Therefore, is of local significance.

Rating: Local Significance

Criterion (c) Aesthetic – Cottage is important in terms of its aesthetic characteristics. It is aesthetically distinctive from other dwellings in the town, making it of local significance. Cottage makes an important contribution to the streetscape and residential environment of Cullen Bullen town.

Rating: Local Significance

Criterion (d) Social – Cottage has a special association with residents of Cullen Bullen for social and cultural reasons. As a mining town, the cottage is important to the community's sense of place.

Rating: Local Significance

Criterion (e) Research Potential – Cottage does not meet this criterion as it does not have the potential to yield new or further substantial scientific and/or archaeological information

Criterion (f) Rarity – Cottage meets this criterion as it is rare outside of Lithgow.

Rating: Local Significance

Criterion (g) Representativeness – Cottage meets this criterion as it demonstrates the principal characteristics of a class of the local area's cultural places. The cottage is a good example of early 20th century miner's home, and illustrates the socio-economic situation of their occupants.

Rating: Local Significance

Statement of Significance

Cottage is of local historical significance for the role it played in the development of Cullen Bullen. As an example of an early 20th century miner's home, it reflects the socio-economic situation of the occupants.

7.13 Cottage 2

Criterion (a) Historical – Cottage 2 is important examples of housing that illustrate the development of Cullen Bullen. It is an interesting feature in the streetscape and testament to the industrial heritage of the town. For these reasons, it is of local significance.

Rating: Local Significance

Criterion (b) Associative – Cottage 2 has a strong association with Cullen Bullen residents and is import to the cultural history of the local area. Therefore, is of local significance.

Rating: Local Significance

Criterion (c) Aesthetic – Cottage 2 is important in terms of its aesthetic characteristics. It is aesthetically distinctive from other dwellings in the town, making it of local significance. Cottage makes an important contribution to the streetscape and residential environment of Cullen Bullen town.

Rating: Local Significance

Criterion (d) Social – Cottage 2 has a special association with residents of Cullen Bullen for social and cultural reasons. As a mining town, the cottage is important to the community's sense of place.

Rating: Local Significance

Criterion (e) Research Potential – Cottage 2 does not meet this criterion as it does not have the potential to yield new or further substantial scientific and/or archaeological information

Criterion (f) Rarity – Cottage 2 meets this criterion as it is rare outside of Lithgow.

Rating: Local Significance

Criterion (g) Representativeness – Cottage 2 meets this criterion as it demonstrates the principal characteristics of a class of the local area's cultural places. The cottage is a good example of early 20th century miner's home, and illustrates the socio-economic situation of their occupants.

Rating: Local Significance

Statement of Significance

Cottage 2 is of local historical significance for the role it played in the development of Cullen Bullen. As an example of an early 20th century miner's home, it reflects the socio-economic situation of the occupants.

7.14 Cullen Bullen Landscape

Criterion (a) Historical – The Cullen Bullen Landscape, including its cultural and natural elements, is important in the course of the local area's history. Its cultural elements are important as features that demonstrate the development of the town and its environmental elements, namely its sandstone formations, are important natural elements in the landscape.

Rating: Local Significance

Criterion (b) Associative – The Cullen Bullen community has a strong association with the surrounding landscape, both in terms of its cultural and natural elements.

Rating: Local Significance

Criterion (c) Aesthetic – The Cullen Bullen Landscape with its views, form, layout and relationship between elements has local aesthetic value for its scenery and is demonstrative of the development of an industrial landscape.

Rating: Local Significance

Criterion (d) Social – The Cullen Bullen community has a strong association with the surrounding landscape, both in terms of its cultural and natural elements.

Rating: Local Significance

Criterion (e) Research Potential – The Cullen Bullen Landscape, in particular, its cultural elements, have some potential for historic investigation and comparative analysis for the development of industrial towns in NSW. Its natural elements have potential to contribute to an understanding of the local area's natural history.

Rating: Local Significance

Criterion (f) Rarity – The Cullen Bullen Landscape's cultural elements are of local significance for rarity. Its natural elements i.e. its sandstone formations are not rare locally or at a state level, as they are found throughout the Gardens of Stone National Park and the broader Blue Mountains (which are listed on UNESCO's World Heritage listing).

Rating: Local Significance

Criterion (g) Representativeness – The Cullen Bullen's cultural elements meet this criterion as it demonstrates the principal characteristics of a class of the region's cultural places and is an example of an early mining town in NSW. Its natural elements i.e. its sandstone formations are represented at a state level by similar formations in the Garden of Stones National Park and the broader Blue Mountains.

Rating: Local Significance

Statement of Significance

The Cullen Bullen cultural landscape is of local significance for its cultural heritage values and its natural heritage values.

8.0 Impact Assessment

8.1 Project Construction Details & Impacts

As outlined in **Section 1.0**, Coalpac seeks Project Approval from the Minister for Planning under Part 3A of the EP&A Act to consolidate the operations and management of the Cullen Valley Mine and Invincible Colliery sites under a single, contemporary planning approval. The Project would allow coal mining operations within its current mining tenements to continue for an additional 21 years. As part of this continuation of operations, open cut and highwall mining will continue at Cullen Valley Mine and Invincible Colliery within the Project area.

In addition, surface infrastructure consisting of administration buildings, transport infrastructure, and processing facilities will need to be developed to support the continuing mining operations. The proposed disturbance area for the Project is shown in blue on **Figure 7**. A discussion is made below of each proposed activity and their potential impact on historic heritage values within the Project area.

8.2 Open Cut Mining

Description

Extension of existing open cut operations is proposed for areas adjacent to existing operations at both Cullen Valley Mine and Invincible Colliery. Open cut mining refers to a method of extracting rock or minerals from the earth by their removal through an open pit. This involves the sequential removal of soil, overburden and interburden above and between each coal seam, coal removal and progressive backfilling and rehabilitation of mined-out areas. The method of extraction will result in disturbance or destruction of the ground surface.

Potential Impacts

As open cut mining is destructive to ground surfaces all historic sites recorded directly within these areas will be greatly impacted or destroyed. In addition, heritage items, in particular built structures, may be impacted indirectly from vibration as a result of blasting and the operation of large earthmoving equipment. The following historic heritage sites have been identified as being impacted directly by open cut operations:

- Underground Adit; and
- Sandstone Assemblage.

In reference to potential indirect impacts from vibration as a result of blasting, Bridges Acoustics undertook a vibration assessment for the EA. The assessment found that aside from the Cullen Bullen General Cemetery, 'all other heritage sites are located at greater distances from proposed blasting activities and are unlikely to be affected by the Project' (Bridge Acoustics 2010). Effects from vibration to the Cullen Bullen Cemetery were calculated to be below ANZEC guideline criteria, and therefore impacts from vibration are not anticipated. In addition, Bridges Acoustics found there was an extremely low likelihood of superficial or cosmetic damage to occur to privately owned residences in the area. Bridges Acoustics make recommendations in the assessment for the regular review of suggested vibration criteria for the Cullen Bullen cemetery and ongoing monitoring to occur within 1500 metres of blasting to avoid potential impacts.

A cautious approach has been adopted here for the privately owned Carleon Coach House that lies to the north of Cullen Bullen town. While Bridges Acoustics found there was a low likelihood for Carleon to be impacted by vibration, given its age and proximity to the Project, it has been included in the below list of heritage items that may potentially be indirectly impacted by the Project:

- Cullen Bullen Cemetery; and
- Carleon Coach House.

8.3 Highwall Mining

Description

Continuation of high-wall mining is proposed for a number of areas within the Project area as shown on **Figure 7**. Highwall mining enables coal to be mined without the need for overburden or interburden removal. Coal is recovered via the excavation of unmanned entries beyond the final highwall position and allows for the recovery of coal that would otherwise be sterilised beyond the open cut highwall.

Potential Impacts

Potential impacts from highwall mining may result from subsidence. Geonet Consulting Group undertook a subsidence assessment for the EA. The assessment found that total subsidence, as a result of highwall mining, would be in the range of 10 to 15 mm above areas of previous underground mining in the Lithgow Seam. As no historic heritage sites occur within or adjacent to proposed highwall mining areas, and given maximum subsidence will be limited to less than 20 mm, no impacts to historic heritage are anticipated.

8.4 Sand Extraction

In addition to coal, there is a significant resource of sand contained within a friable, weakly-cemented sandstone seam which is stratigraphically located within a few metres of the floor of the Lithgow Seam. It is proposed to quarry this material, treat the sandstone by washing and separating out the matrix of clay and minerals in the sandstone and load and transport the washed sand via rail.

As the proposed development of this sand resource will be within the footprint of the proposed open cut mining areas, no additional environmental impacts are expected. No known historic heritage sites will be impacted by the proposed sand extraction operations.

8.5 Upgrades to Infrastructure

Upgrading of infrastructure will include construction of the following:

- Construction and operation of additional Offices at Cullen Valley Mine;
- Construction and use of previously approved Coal De-shaling Plant at Cullen Valley Mine;
- Construction of a coal handling and preparation plant at East Tyldesley;
- Construction and operation of a bridge and haul road across Wallerawang – Gwabegar Railway line to permit access to mine the previously approved Hillcroft resource;
- Construction of a rail siding and associated infrastructure to transport product;
- Integration of water management of both sites into a single system; and
- Integration of the management of mine rehabilitation and conceptual final landform outcomes for Cullen Valley Mine and Invincible Colliery.

The following site may be indirectly impacted by proposed upgrades to infrastructure as it occurs within 50 m of the proposed coal conveyor from Invincible Colliery to MPPS:

- Sandstone Building Footings.

8.6 Cullen Bullen Cultural Landscape

The Cullen Bullen cultural landscape is comprised of both cultural and natural elements. Cultural heritage values of the Cullen Bullen landscape have been identified as built structures and items relating to historical themes of exploration, settlement and industrial development. Natural heritage elements have been identified as sandstone formations that surround and are visible from the town.

Cultural heritage values within the Project disturbance area are limited. Human activity that has occurred within this area, at least in terms of European interaction, has largely been associated with mining – an activity that the Project is proposing to continue. Continuation of mining for the Project represents a continuation of the human pattern of interaction that has occurred in the area over the past century. Therefore, no impacts to cultural heritage elements of the Cullen Bullen landscape are anticipated.

Natural heritage elements of the Cullen Bullen cultural landscape including sandstone formations, and views and vistas have the potential to be impacted by open cut and highwall mining activities. As a result of potential impacts to sandstone formations, Coalpac has proposed that a boundary of at least 50 m be maintained between all open cut and highwall mining face areas and significant sandstone formations or pagodas. A subsidence impact assessment undertaken by Geonet Consulting Group has determined that surface subsidence will be less than 20 mm below sandstone escarpments and pagodas, and therefore surface impacts are not considered likely. Coalpac commits in the Geonet report to a programme of survey and inspection of highwall areas to manage potential impacts to sandstone formations. Results from these surveys and inspections will be used for detailed designing of highwall mining panels in order to reduce potential impacts to sandstone formations. With the

implementation of the above mitigation measures, potential impacts to natural elements of the Cullen Bullen landscape are considered low.

A visual assessment undertaken by Integral Landscape Architecture & Visual Planning (2010), found visual impacts to Cullen Bullen township are predicted to be minimal. One visual impact has been identified as 'a sliver of the south-west corner of the East Tyldesley mining area; however this view is more related to highway users than elements of the Project visible to receptors located in Cullen Bullen' (Integral Landscape Architecture & Visual Planning 2010). As all identified historic heritage items, with the exception of the Cullen Bullen Cemetery, are largely within Cullen Bullen town, no visual impacts to views from the town or heritage items within the town are anticipated.

Conversely, the visual assessment found that the Cullen Bullen General Cemetery has potential for views of the East Tyldesley mining areas from Year 2 in early mine plan designs. An increase to this effect is expected in Year 15, with the progression of open cut mining on the elevated ridgeline adjacent to the cemetery. As a result of potential visual impacts the section of East Tyldesley where open cut was planned, mine plans were modified and highwall mining proposed to reduce visual impacts. In addition to this modification to the Project mine plans, Integral Landscape Architecture & Visual Planning proposed further mitigation measures including the retention of a screen of vegetation. As a result of proposed mitigation measures, visual impacts to the cemetery are considered to be low.

8.7 Sites Not Impacted

The following sites will not be impacted by the Project:

- Miners Cottages;
- Cullen Bullen Public School;
- Beaumaris;
- Blackmans Flat Roman Catholic Cemetery;
- Cottage;
- Cottage 2;
- Royal Hotel; and
- Bottle Scatter CV-RCK1-10.

8.8 Impact Assessment Summary

A summary of the impacts predicted for each site identified in proximity to the Project is provided in **Table 4**.

Table 4: Impact Assessment Summary

Activity	Historic Sites	Comment
Direct Impacts		
Open Cut Mining	Underground Mine Adit Sandstone Assemblage	Within proposed open cut area Within proposed open cut area
Indirect Impacts		
Vibration	Cullen Bullen General Cemetery Carleon Coach House Sandstone Formations	Located approx. 170 m from open cut Located approx. 250 m from open cut Various locations – greater than 50 m from open cut and highwall
Infrastructure	Sandstone Building Footings	Approx. 50 m from proposed coal conveyor
Visual Impacts	Cullen Bullen General Cemetery Sandstone Formations	Located approximately 170 m from open cut Various locations visible from Cullen Bullen town, however the closest

		open cut is greater than 100 m from sandstone formations visible from Cullen Bullen.
Not Impacted		
	Miners Cottages Cullen Bullen Public School Royal Hotel Bottle Scatter CV-RCK1-10 Beaumaris Blackmans Flat Roman Catholic Cemetery Cottage Cottage 2	Located approx. 1 km from open cut Located approx. 1 km from open cut Located approx. 1 km from open cut Located approx. 130 m from open cut Located approx 2 km from open cut Located approx 5 km from open cut Located approx. 1 km from open cut Located approx. 1 km from open cut



9.0 Management Recommendations

The following management recommendations have been prepared with consideration to the *NSW Heritage Manual 1996* (Heritage Branch, Department of Planning).

The management of cultural heritage is determined in accordance with the cultural significance of the heritage site, place or heritage resource. This assessment has identified historic sites which will be impacted by the proposed development.

9.1 Management Strategy

The Project will directly impact two historic heritage sites; the Underground Mine Entrance and the Sandstone Assemblage.

The Project has the potential to indirectly impact three historic sites; the Cullen Bullen General Cemetery, Carleon Coach House, and Sandstone Building Footings. In addition, there is potential for the Project to impact natural elements of the cultural landscape of Cullen Bullen i.e. sandstone formations.

Management strategies to mitigate direct and indirect impacts are provided below and summarised in **Table 5**. These strategies will be detailed in a Historic Heritage Management Plan (HHMP) for the Project. The commitment for the development of this HHMP will be addressed in the EA. Prior to the HHMP being adopted, it will be reviewed by the NSW Heritage Council.

9.1.1 Sites Directly Impacted

Two potential historic heritage sites will be directly impacted by the extension of open cut mine operations.

Archival Recording

Underground Mine Adit

The Underground Mine Adit is of local historical significance as it is reflective of the long history of coal mining in the greater Cullen Bullen area. This said, the site is in poor condition and is a locally and regionally common site type. Conservation is not considered warranted, however, photographic recording of the site as defined in *How to Prepare Archival Records 1996* (NSW Heritage Branch) is recommended prior to impacts to the site. It is recommended that provision for the photographic recording of the site be included within the HHMP.

Further Investigation

Sandstone Assemblage

Due to insufficient information available concerning the nature of the Sandstone Assemblage, it is recommended that further archaeological investigation be undertaken prior to impacts to the site. All potential sources of information about the site (including consultation with the current landholder) have been exhausted without successfully obtaining additional information as to what the site is. Impacts to the site cannot be supported without knowledge of what the site is. Therefore, further investigation should be undertaken and include small scale or limited test excavation of the assemblage in order to determine what the structure is. Excavation should be undertaken by hand. Results of the excavation will be used to inform appropriate management strategies. Further investigation of the site should be undertaken prior to impacts and in consultation with the NSW Heritage Branch. A Section 140 application should be completed and submitted to the NSW Heritage Branch to permit test excavations.

9.1.2 Sites Indirectly Impacted

The Project has the potential to indirectly impact three historic sites; the Cullen Bullen General Cemetery, Carleon Coach House, and Sandstone Building Footings. In addition, there is potential for the Project to impact natural elements of the cultural landscape of Cullen Bullen.

Archival Recording & Monitoring

Cullen Bullen Cemetery

The Cullen Bullen General Cemetery is currently listed on the Register of the National Estate as an Indicative Place and listed on the National Trust of Australia Register. Given its significance to the local community, particularly as it is still in use, a detailed assessment including SOHI and archival recording should be undertaken for the cemetery to establish its condition prior to potential vibration and visual impacts from Project open cut and

highwall activities. Ongoing condition assessments should be undertaken annually by a qualified heritage consultant to monitor the cemetery's condition over the life of the Project. Visual mitigation strategies recommended by Integral Landscape and Visual Planning (2011) measures including the retention of a screen of vegetation should be adopted to reduce visual impacts. A remediation strategy should also be developed to address unexpected damage caused by the Project to the cemetery. It is recommended that provisions for a detailed assessment of the site, archival recording, program of monitoring, and remediation strategy be included within the HHMP.

Carleon Coach House

Carleon Coach House is a locally significant structure; therefore, a detailed assessment including a SOHI, archival recording, and structural assessment including photography should be undertaken for the item to establish its condition prior to potential vibration impacts from the Project. Ongoing condition and structural assessments should be undertaken annually to monitor the Coach House's condition for the life of the Project. A remediation strategy should also be developed by Coalpac to address any damages caused by the Project to the Coach House. It is recommended that provisions for a detailed assessment of the site, archival recording, structural assessment, program of monitoring, and remediation strategies be included within the HHMP.

Cullen Bullen Cultural Landscape

The Cullen Bullen cultural landscape comprises of cultural heritage elements and natural heritage elements which are both of local significance. While impacts to cultural elements are addressed above, there is potential for impacts to natural elements, consisting of sandstone formations, as a result of subsidence and vibration and visual impacts.

Therefore, a baseline condition assessment should be prepared to assess potential impacts as a result of subsidence and vibration to sandstone formations visible from the town and heritage items. The baseline condition assessment should be undertaken prior to potential impacts from mining activities and act as a starting point for an annual program of monitoring for the life of the Project, in addition to informing detailed mine plans. The baseline assessment and program of monitoring for subsidence and vibration impacts should be undertaken by a qualified geotechnical professional. In addition to the above, the proposed boundary of at least 50 m should be maintained between all open cut and highwall mine face areas and significant sandstone features in the Project area.

Fencing

Sandstone Building Footings

There is potential for the Sandstone Building Footings to be indirectly impacted during the construction of the coal conveyor to MPPS. It is therefore recommended that the site be fenced during construction, including a 20 m buffer. Once construction of the conveyor is completed, the fencing can be removed, and no further management required. It is recommended that provisions for the fencing of the site be included within the HHMP.

Table 5: Management Recommendations

Activity	Historic Sites	Management
Direct Impacts		
Open Cut Mining	Underground Adit Sandstone Assemblage	Archival recording Further investigation
Indirect Impacts		
Vibration	Cullen Bullen Cemetery Carleon Coach House Sandstone Formations	Archival recording and ongoing monitoring Archival recording and ongoing monitoring Baseline assessment and ongoing monitoring
Infrastructure upgrades	Sandstone Building Footings	Fencing
Visual Impacts	Cullen Bullen Cemetery Sandstone Formations	Ongoing monitoring and visual impact strategies adopted Baseline recording and ongoing monitoring
Subsidence	Sandstone Formations	Baseline recording and ongoing monitoring
Not Impacted		
	Miner's Cottages Cullen Bullen Public School Royal Hotel Bottle Scatter CV-RCK1-10 Beaumaris Blackmans Flat Roman Catholic Cemetery Cottage Cottage 2	No management required No management required No management required No management required No management required No management required No management required No management required

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Plates

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Plate 1: Cullen Bullen General Cemetery (view east)



Plate 2: Cullen Bullen General Cemetery (view west)



Plate 3: Carleion Coach House (*Lithgow Heritage Study 2000*).



Plate 4: Underground Mine Entrance



Plate 5: Underground Mine Adit



Plate 6: Sandstone Assemblage (view west).



Plate 7: Sandstone Assemblage



Plate 8: Sandstone Building Footings



Plate 9: Sandstone Building Footings



Plate 10: Bottle Scatter CV-RCK1-10 showing shelter



Plate 11: Bottle Scatter CV-RCK1-10 showing bottle fragments



Plate 12: Bottle Scatter CV-RCK1-10 showing bottle fragments



Plate 13: Bottle Scatter CV-RCK1-10 showing bottle fragments



Plate 14: Bottle Scatter CV-RCK1-10 showing bottle fragments

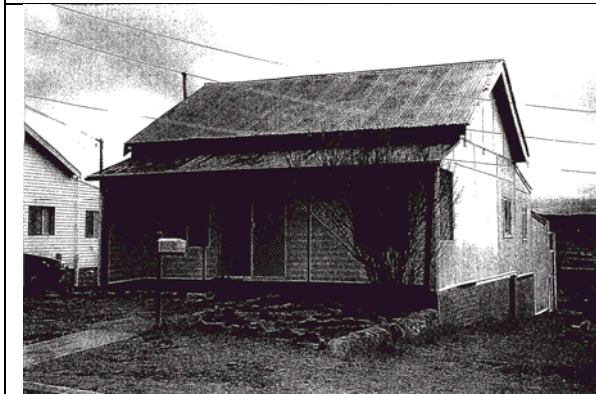


Plate 15: Miners Cottage (*Lithgow Heritage Study 2000*)



Plate 16: Miners Cottages (*Lithgow Heritage Study 2000*)



Plate 17: Cullen Bullen Public School (*Lithgow Heritage Study 2000*)



Plate 18: C-S-1: Cullen Bullen Royal Hotel (*Lithgow Heritage Study 2000*)