Environmental Management System

Bloomfield Open Cut

MANAGEMENT PLAN

Doc No:	EMP001- Historical Heritage Conservation Management Plan
Doc Owner:	Environmental Advisor- Bloomfield Open Cut
Approval:	Group Environmental Manager – The Bloomfield Group
Signed:	Chris Knight
Date:	2/8/21

Revision	Issue Date	Description	Originator	Reviewed	Approved
1.0	28/05/2019	First Draft	GHD	Greg Lamb	
2.0	20/08/2019	Second Draft	GHD	Greg Lamb	
3.0	12/09/2019	Final Draft	GHD	Greg Lamb	
4.0	21/04/2021	Final	GHD	Greg Lamb	Chris Knight
5.0	02/08/2021	Final	GHD	Greg Lamb	Chris Knight

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1. INTRODUCTION

1.1 BACKGROUND

The Bloomfield Colliery is an existing open cut mining operation located approximately 20 kilometres north-west of Newcastle. The Bloomfield Colliery is operated by Bloomfield Collieries Pty Limited (Bloomfield), part of the Bloomfield Group of companies. It currently operates in accordance with Project Approval 07_0087 issued under Part 3A (repealed) of the Environmental Planning and Assessment Act 1979 (EP&A Act), with approved production levels of 1.3 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal.

The current operations at the Bloomfield Colliery also include various mining items and activities that are approved as part of the Abel Project Approval (MP 05_0136) for the Abel Underground Mine, granted by the Minister for Planning to Donaldson Coal Pty Limited on 7 June 2007. These infrastructure items and activities include:

- Coal Handling and Preparation Plant (CHPP) and associated water management;
- Rail loading facility; and
- Coarse reject and tailings disposal and coal handling.

While the Abel Underground Mine is currently in care and maintenance, Bloomfield continue to operate these facilities in accordance with the relevant Abel Project Approval conditions of consent.

On 16 August 2018, Bloomfield Collieries received approval under Section 75W of the EP&A Act to modify Project Approval 07_0087 to allow for the continuation of mining within Consolidated Coal Lease (CCL) 761 and Mining Lease (ML) 1738 to 31 December 2030. As a condition of that Project Approval modification (Mod 4), Bloomfield Collieries is required to prepare and implement a Historic Heritage Conservation Management Plan (HHCMP). This management plan has been prepared in fulfilment of that requirement.

1.2 PURPOSE

The purpose of this HHCMP is to comply with Schedule 3, Condition 31B of Project Approval 07_0087 (as modified) and, in doing so, facilitate the management of historic heritage impacts as a result of Bloomfield Colliery's activities.

1.3 SCOPE

This HHCMP applies to the management of the following historic heritage items:

- Buttai No 1 and No 2 Reservoirs; and
- Buttai Cemetery.

The processes documented in this plan are applicable to all Bloomfield employees and contractors.

1.4 MANAGEMENT PLAN CONTRIBUTORS

A summary of the qualifications and experience of the contributors to this HHCMP is presented in Table 1-1.

Table 1-1 Qualifications and experience of management plan contributors

Contribution	Name	Qualifications	Experience summary
Co-author	James McDonough	BSc, MEnvMgt	12 years' experience in environmental impact assessment and management for mining and infrastructure projects
Co-author	Michelle Kiejda	BEnvSc, PGCertAppSc, CEnvP	18 years' experience in environmental impact assessment and management for mining and infrastructure projects
Technical review – heritage	Dr Mary-Jean Sutton	BA. Hons (Archaeology (Prehistorical and Historical), PhD (Archaeology) MEIANZ, MAACAI, MAAS.	20 years' experience in Aboriginal and historical heritage assessment and management for infrastructure projects
Technical review – structural	Lester Gellatly	BE (Hons 1)	25+ years' experience in civil and structural engineering for building and infrastructure projects

2. STATUTORY REQUIREMENTS

The following comprises a summary of statutory requirements relevant to this HHCMP.

2.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT

The relevant conditions of Project Approval 07_0087 and a reference to where each has been addressed in this HHCMP are presented in Appendix A.

2.2 HERITAGE ACT 1977

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

Proposals to alter, damage, move or destroy places, buildings, works, relics, movable objects or precincts protected by an Interim Heritage Order (IHO) or listed on the SHR require an approval under Section 60. The 'relics provision' requires that no archaeological relics be disturbed or destroyed without prior consent from the Heritage Council of NSW. Therefore, no ground disturbance works may proceed in areas identified as having archaeological potential without first obtaining an excavation permit pursuant to Section 60 of the Heritage Act 1977 or an archaeological exemption.

Under Section 170 of the Heritage Act 1977, NSW Government agencies are required to maintain a register of heritage assets. The register places obligations on the agencies, but not on non-government proponents, beyond their responsibility to assess the impact on surrounding heritage items.

Archaeological features and deposits are afforded statutory protection by the 'relics provision'. Section 4(1) of the Heritage Act 1977 (as amended 2009) defines a 'relic' as follows:

"(a) any deposit, artefact, object or material evidence that:

(b) relates to the settlement of the area that comprises NSW, not being Aboriginal settlement, and

(c) is of State or local heritage significance".

Buttai Reservoir No 1 and No 2 are listed on the NSW State Heritage Inventory under Hunter Water's register of heritage assets, as required under Section 170 of the Act. The significance of the reservoir sites are described in both the State Heritage Inventory listings and Hunter Water register of heritage assets:

> *Buttai Reservoir No 1 is the oldest operating reservoir within the Hunter Water system. Constructed as an intermediate water storage for the original water supply scheme which pumped water from the Hunter River into Newcastle, it continues to function within the modern water supply system. The vaulted brick arch construction is uncommon and includes a finely detailed sandstone entry. The reservoir is unusual in that the tops of the arches are exposed, allowing the structure of the reservoir to be fully viewed.*

Buttai Reservoir No. 2 is part of the 1920s expansion to the Walka system, following the commissioning of Chichester Dam. The Reservoir was built adjoining Reservoir No. 1 and represents an evolution in reservoir construction technique and a continuation of use of the Buttai Reservoir site.

Buttai Reservoir No.1 and Buttai Reservoir No. 2 relate to the Australian historic theme of settlement building, the New South Wales historic theme of utilities, associated with the provision of services on a communal basis and the local theme of water. Buttai Reservoir No.1 meets the State Heritage Register significance criteria of historical, aesthetic and social significance, research potential, rarity and representativeness (refer to Table 2-1). The fabric is relatively intact with some modifications to the entrance portico and the construction of an internal connection to the later Buttai Reservoir No. 2.

Table 2-1 Buttai Reservoir No.1 Significance Assessment

State Heritage Register Criteria	Assessment
a) Historical significance	Buttai Reservoir No 1 was a major component of the Walka Scheme, which pumped water from the Hunter River into central Newcastle. The Reservoir served as an interim storage for the Scheme and helped maintain pressure within the system. It is the oldest operating reservoir within the Hunter Water system.
c) Aesthetic significance	The Buttai Reservoir No 1 has a finely detailed entrance portico constructed in sandstone, which demonstrates the civic pride taken in the public infrastructure of the day, even for remote and inaccessible items such as this site.
d) Social significance	Limited significance against this criterion while bringing water into Newcastle would have been of major social import in the late 19th century, this type of public service is commonplace and expected in modern Australia.
e) Research potential	Limited significance against this criteria the archaeological remains of the former Turncock's House are located near the entrance to the reservoir, however the building was only burnt down recently. The exposed upper surface of the brick arched roof is unusual and allows a good understanding of the construction of the reservoir.
f) Rarity	The item is rare as the oldest operating reservoir within the system.
g) Representativeness	The item is typical of underground brick arched reservoirs.

2.3 CESSNOCK LOCAL ENVIRONMENTAL PLAN 2011

Part 5, Section 5.10 of the Cessnock LEP 2011 deals with heritage conservation. All heritage items listed on the LEP are included in Schedule 5. The Cessnock LEP states:

> *(1) The objectives of this clause are as follows:*
> *a. to conserve the environmental heritage of Cessnock,*
> *b. to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,*
> *c. to conserve archaeological sites,*
> *d. to conserve Aboriginal objects and Aboriginal places of heritage significance.*
> *(2) Development consent is required for any of the following:*
> *a. demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):*
> *i. a heritage item,*
> *ii. an Aboriginal object,*
> *iii. a building, work, relic or tree within a heritage conservation area,*
> *b. altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,*
> *c. disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,*
> *d. disturbing or excavating an Aboriginal place of heritage significance,*
> *e. erecting a building on land:*
> *i. on which a heritage item is located or that is within a heritage conservation area, or*
> *ii. on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,*
> *f. subdividing land:*
> *i. on which a heritage item is located or that is within a heritage conservation area, or*
> *ii. on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.*

The Buttai Cemetery/Elliot Family Graves are listed on the State Heritage Inventory as an item of local heritage significance under Schedule 5 of the Cessnock LEP. The significance of the cemetery is described in the State Heritage Inventory LEP listing as:

> *The cemetery documents the history of the Elliott family over a period of 100 years. The achievement of this family was their successful pioneering of the Hunter Valley District which is manifest in the continuity of their association with this cemetery (Pike, Walker and Associates, 1994).*

The Buttai Cemetery/Elliot Family Graves relate to the Australian historic theme of phases of life, the New South Wales historic theme of birth and death, disposal of the dead, and local historic theme of the lifecycle.

2.4 RELEVANT STANDARDS AND GUIDELINES

2.4.1 AUSTRALIA ICOMOS BURRA CHARTER

The Australia ICOMOS Burra Charter (Burra Charter) is widely accepted in Australia as the underlying methodology used for all works to sites/buildings identified as having national, state and regional heritage significance.

Buttai Reservoir No 1 and No 2 are of demonstrated cultural significance. Buttai Reservoir No.1 demonstrates aesthetic, historic, scientific and social values that meet state heritage significance and future listing on the State Heritage Register (refer to Section 2.2 and Table 2-1). The Buttai Reservoir No.2 contributes to local character and should be conserved. Therefore, procedures for managing changes and activities at the site should be in accordance with the recognised conservation methodology of the Burra Charter. The Buttai Reservoirs Conservation Management Plan (CMP) (Futurepast 2012) was prepared for these assets owned by Hunter Water Corporation, which is still current and the primary management document for these items.

Management at these items set out in the CMP follows the conservation methodology of the Burra Charter and includes for Buttai Reservoir 1:

- Original details should be maintained including doors, windows and original signage.
- New materials should be sympathetic to the nature and character of the original building. - In the event of major proposed changes, prepare a Conservation Management Strategy and undertake an archival recording.
- Wherever possible, changes should be restricted to the interior of the building and be designed to minimise impact to significant fabric.
- Routine maintenance of existing fabric is essential.
- Additionally, management for Buttai Reservoir No.2 should be followed as per: the CMP (FuturePast 2012) to facilitate appropriate long-term management and proposed changes should be assessed against the Standard Exemptions for Works Requiring Heritage Council Approval and, if necessary, seek approval under the Heritage Act.

2.4.2 GUIDELINES ON CONSERVATION MANAGEMENT PLANS AND OTHER MANAGEMENT DOCUMENTS

The Guidelines on conservation management plans and other management documents (Heritage Office, 2002) provide information for the preparation of documents such as statements of heritage significance, conservation policies, conservation management plans and statements of heritage impact. The Guidelines (2002) require that a conservation management plan should state a conservation management policy and statement of significance and provide recommendations to achieve future viability of heritage items and to retain heritage significance in future development proposals.

The guidelines state that a statement of significance should be based on sound research and analysis and summarise:

- Facts about the item gathered from physical and documentary research;
- The nature and degree of an item's significance; and
- Why an item is valued by the community.

The guidelines state that a conservation policy should:

- Explain the principles to be followed to retain or reveal an item's significance;
- Be a positive set of guidelines for enhancing a heritage asset and its significance- not a restrictive set of rules; and
- Be closely related and cross referenced to the statement of significance.

Conservation policies should also consider the following management issues:

- Necessary emergency works;
- Security and maintenance;
- Conservation of the item's setting, where this is part of its significance;
- Financial resources;
- Management resources and issues;
- The need for signs (directional, interpretive, advertising) and how they should be designed and placed;
- Interpretation of heritage significance; and
- Community access to the item.

As the Futurepast (2012) CMP is prepared already for the Buttai Reservoirs this document should be followed as the primary document for future management for these heritage items and it meets the Heritage Division CMP guidelines. As the Buttai Cemetery is not of State heritage significance and is only a local heritage item, already the subject of detailed condition assessments by AECOM (2018), a detailed CMP to Heritage Division requirements is not appropriate.

3. CONSULTATION

Consultation activities relevant to the preparation of this management plan are summarised in Table 3-1.

Table 3-1 Management plan consultation summary

Stakeholder	Consultation summary
Office of Environment and Heritage (OEH)	A letter was provided on 5 April 2019 requesting copies of any historical or technical information relevant to the preparation of the management plan. A response was received on 17 April 2019 confirming receipt of the letter and deferring consultation to the relevant local authority/landholder and to Department of Planning. Heritage Division's library was consulted and reviewed for preparation of this HHCMP for relevant reports and documents.
Department of Planning, Industry and Environment	Draft HHCMP was provided to Department of Planning, Industry and Environment for comment. This HHCMP has been prepared to incorporate their comments (refer to DPIE comments in Appendix C).
Hunter Water	A letter was provided on 5 April 2019 requesting copies of any historical or technical information relevant to the preparation of this management plan. A response was received on 9 April 2019. Hunter Water provided the Buttai Reservoirs Site Conservation Management Plan (Futurepast 2012). A meeting between Bloomfield, GHD Pty Ltd, Virtus Heritage, and Hunter Water was held on Thursday 2 May 2019 to discuss the proposed historic heritage monitoring and contingency plan for inclusion in the management plan. This HHCMP has been prepared to reflect the proposed monitoring and contingency plan discussed at the meeting (refer to meeting minutes in Appendix C).
Cessnock City Council	A letter was provided on 5 April 2019 requesting copies of any historical or technical information relevant to the preparation of this management plan. A response was received on 9 April 2019. The Local Studies Librarian provided the following reports/documents: ▪ Environmental impact statement for proposed quarrying at Buttai (ERM Resource Planning 1995); ▪ Environmental impact statement for proposed rehabilitation program/landfill operation Lot 75 DP 755260, Buttai /Prepared for Carlewie Pty Ltd by Umwelt (Australia) Pty Limited (Umwelt 2000); ▪ Millfield, Ellalong, Brunkerville, Buttai, Glenmore, Mount Vincent, Mulbring and Rothbury cemeteries (Delaney 1982); and ▪ Wilfred Elliot Private Cemetery Buttai (Parnell and Smith undated.) Where relevant, information from these documents is integrated into this HHCMP.
Relevant landowners	As already outlined HWC, as the relevant landowner for the Buttai Reservoirs, has been consulted for preparation of the HHCMP. The Buttai Cemetery is owned by Bloomfield Colliery who has prepared this HHCMP.

4. EXISTING ENVIRONMENT

The existing condition of Buttai Reservoirs No 1 and No 2 and the Buttai Cemetery is described in the following subsections.

4.1 BUTTAI RESERVOIRS NO 1 AND NO 2

Buttai Reservoirs No 1 and No 1 are located on Lot 1, Buttai Road, Four Mile Creek. The site's immediate surrounds are characterised by remnant woodland vegetation, with mining operations to the north, east and south (refer to Figure 4-1). Both reservoirs are currently operational within Hunter Waters water supply system.

4.1.1 HISTORICAL CONTEXT

Construction on the Buttai Reservoir No 1 was completed in 1881. It was constructed of brickwork set in Portland cement with solid concrete foundations on a sandstone bed. The reservoir originally had a capacity of 1,000,000 gallons of water (4.2 megalitres) (Armstrong, 1967). The first water from Buttai came to the reservoir at Newcastle on 31 December 1885.

Originally, Buttai Reservoir No 1 received water from the Walka Waterworks. Extracting water from the Hunter River, Walka Waterworks filtered and treated this water before transferring it into the two summit reservoirs, situated at East Maitland and Buttai, respectively (Armstrong, 1967). As the Hunter River water delivered from Walka Waterworks needed to be sheltered from light to prevent recontamination after treatment, the reservoirs were covered (Armstrong, 1967). Buttai Reservoir No 1 was roofed over with brick arches that were covered with earth and grass, which helped maintain the water at a low temperature and keep it free from contamination (Armstrong, 1967). Buttai Reservoir No 1 was constructed on top of a range about 5 ½ miles (3.4 kilometres) from the pumps at Walka Waterworks and was supplied through a 15 inch (384 millimetre) rising main.

Buttai Reservoir No 1 supplied water, via gravitation, to six district reservoirs at Minmi, Hamilton, Wallsend, Newcastle, Lambton and Obelisk Hill, thus commanding reticulation to the City of Newcastle, Carrington, Wickham, Hamilton, Waratah, Merewether, Adamstown, New Lambton, Lambton, Wallsend, Plattsburg and Minmi (Armstrong, 1967).

In the late 1920s, due to the increases in water reticulation from the construction of Chichester Dam, Buttai Reservoir was extended to hold a further 3,500,000 gallons (14.7 megalitres) of water to obviate shortages of water supply to Cessnock (Armstrong, 1967). The reservoir extension, Buttai Reservoir No 2, was completed in 1928.

In 1984, epoxy injections were used to repair the walls and floor cracks in the Buttai Reservoirs. These repairs included cleaning out and rejoining vertical wall joints, epoxy pressure injections in some of the wall cracks and epoxy pressure injections in some of the floor cracks.

In December 1986, CCTV was used to inspect scour pipes from the No 1 Reservoir. Vitreous Clay pipes in several locations showed signs of severe cracks. Alterations were made so that the No 1 Reservoir would scour into No 2 and the scour line under No 2 Reservoir was abandoned.

Following the 1989 Newcastle Earthquake, increasing cracks were found in the floor of the Buttai Reservoir No 1, as well as cracks in the roof structure at the bottom of the brick arches and at the top of the column supports, with roof intrusion present.

In the late 1990s, it was decided to roof the remaining open reservoirs under the control of the Hunter Water Corporation. By June 1999, construction of the roof of the Buttai Reservoir No 2 had commenced (Hunter Water Corporation, 1999).

In 2002, it was reported that Buttai Reservoir was leaking in a number of places through cracked floor joints, wall joints and cracked floor slabs. Temporary patching was tried but failed. Permanent repairs to the reservoir to stop the leaks were eventually made by Hunter Water and the reservoir remains in service.

4.1.2 PHYSICAL CONDITION OF BUTTAI RESERVOIRS NO 1 AND NO 2

A site inspection of Buttai Reservoirs No 1 and No 2 was undertaken on 6 July 2018 by AECOM (AECOM, 2018a). A pedestrian survey was completed around the exterior of the reservoirs. The purpose of the inspection was to undertake a detailed photographic recording of the exterior of the structure, and inspect the condition of the external reservoir components. A summary of the findings of the site inspection undertaken in 2018, with regard to the physical condition of the reservoirs, is presented in the following subsections. The condition assessment report (AECOM, 2018b) is provided in Appendix E. The layout of the site is illustrated in Figure 4-2. Hunter Water has undertaken repairs since the inspection was undertaken in 2018, and revised baseline conditions have been agreed upon based on recent visual inspections.

4.1.2.1 NORTHERN FAÇADE

The northern façade includes the sandstone portico and entrance, concrete stairs that access the roof area, seven terracotta drainage pipes and five cast iron vents at the front of Reservoir No 1. The northern façade also includes the concrete and steel façade of Reservoir No 2 that abuts, and joints to, the western side of Reservoir No 1.

The condition of the key features along the Northern façade is summarised as follows:

- There is exfoliation of the skin of the sandstone on both columns and around the door within the arched sandstone entrance of the sandstone portico. Some of the sandstone blocks have started to separate around the doorway, and within the top section.
- Terracotta pipes are in good working order. The ends of the pipes have been cracked and fractured.
- The bricks within the façade wall are considered to be in good condition with very few bricks having been repaired or replaced.

- Almost the whole of the northern façade brickwork has been repointed. No repointing has been done along the lowest visible course of brickwork.
- The sandstone capping stones appear in very good condition.
- The steel associated with Reservoir No 2 is all new and is all considered to be in good condition.
- The concrete walls are in good condition. There is one casting joint present approximately five metres in from the western corner that has cracking and some exfoliation of the outer skin of the concrete.

4.1.2.2 EASTERN FAÇADE

The eastern façade of reservoirs includes the brick and sandstone façade of Reservoir No 1, and the concrete façade of Reservoir No 2 that abuts and joins to Reservoir No 1.

The condition of the key features along the Eastern façade is summarised as follows:

- The brickwork along the eastern façade of Reservoir No 1 is generally in good condition. There is evidence of some repointing to the mortar joints and sections where the mortar has severely eroded out. This does not appear to have caused any structural damage.
- There is evidence of water damage to the brickwork, causing discolouration.
- There is mould growing at the southern end of the brickwork and on the sandstone capping and concrete retaining walls.
- The sandstone capping stones are in good condition. There has been some separation between the sandstone capping blocks, which has resulted in chipping occurring along the corners of the blocks.
- The concrete retaining walls are in good condition.

4.1.2.3 SOUTHERN FAÇADE

The southern façade of the reservoirs consists of Reservoir No 2 only. The shape of the reservoir along the southern façade includes two walls. A northeast to southeast orientated wall that comes off the eastern façade, and a southern façade wall. Both walls consist of concrete façade walls with a metal flashing that attaches to the steel roof.

The condition of the key features along the Southern façade is summarised as follows:

- The sandstone wall along the southern façade wall that is orientated northeast to southwest is in good condition.
- The concrete face is covered extensively with mould, but has caused any damage to the integrity of the wall.
- The concrete wall is also in good condition, with the exception of two sections where there is evidence of exfoliation. There is also one continuous crack from the top to below the visible section of the wall.

4.1.2.4 WESTERN FAÇADE

The western façade of the reservoirs is associated wholly with Reservoir No 2, and consists of two separate façade sections. The southern portion of the façade wall consists of a wall running northwest to southeast, and the second section is the western wall that runs north-south. The first portion of the western façade includes the concrete spillway.

The condition of the key features along the Western façade is summarised as follows:

- There is cracking near the corner of the concrete façade wall and approximately 7 metres along the wall to the northwest.
- There is a casting joint present at approximately 12.4 m from the south-western corner. The casting joint has some signs of exfoliation of the outer skin of the concrete.
- The spillway cover has been upgraded recently. This consists of a black rubber cover over the top of a steel mesh. This has been bolted to the concrete façade wall.
- There is another casting joint present approaching the north-eastern end of this section of the western façade. The joint is in good condition, with only minor cracking present along the joint. Two reinforcing rods are exposed at the casting joint.
- From the junction of the first western façade wall to the north-south orientated façade wall the roof of the reservoir is no longer higher than the metal flashing.
- There is one major crack and exfoliation of the concrete skin immediately to the north of this corner of the reservoir where the reinforcing rod has been exposed. This crack extends to the casting joint where it was formed.
- There is another casting joint near the northwest corner of the reservoir. This casting joint shows minimal signs of damage to the corners of the joints.

4.1.2.5 RESERVOIR NO 1 ROOF

The roof consists of six brick arches that have been covered with bitumen. Between each of the arches are curved spoon drains that slope from the south towards the north, that exit through the terracotta pipes in the northern brick façade.

The brickworks associated with the second, inside, course of the façade walls associated with Reservoir No 1 have all been repointed. The repointing has been completed roughly in places and covers over whole sections of bricks. There does not appear to be damage to the inside wall of the brick façade.

4.2 BUTTAI CEMETERY

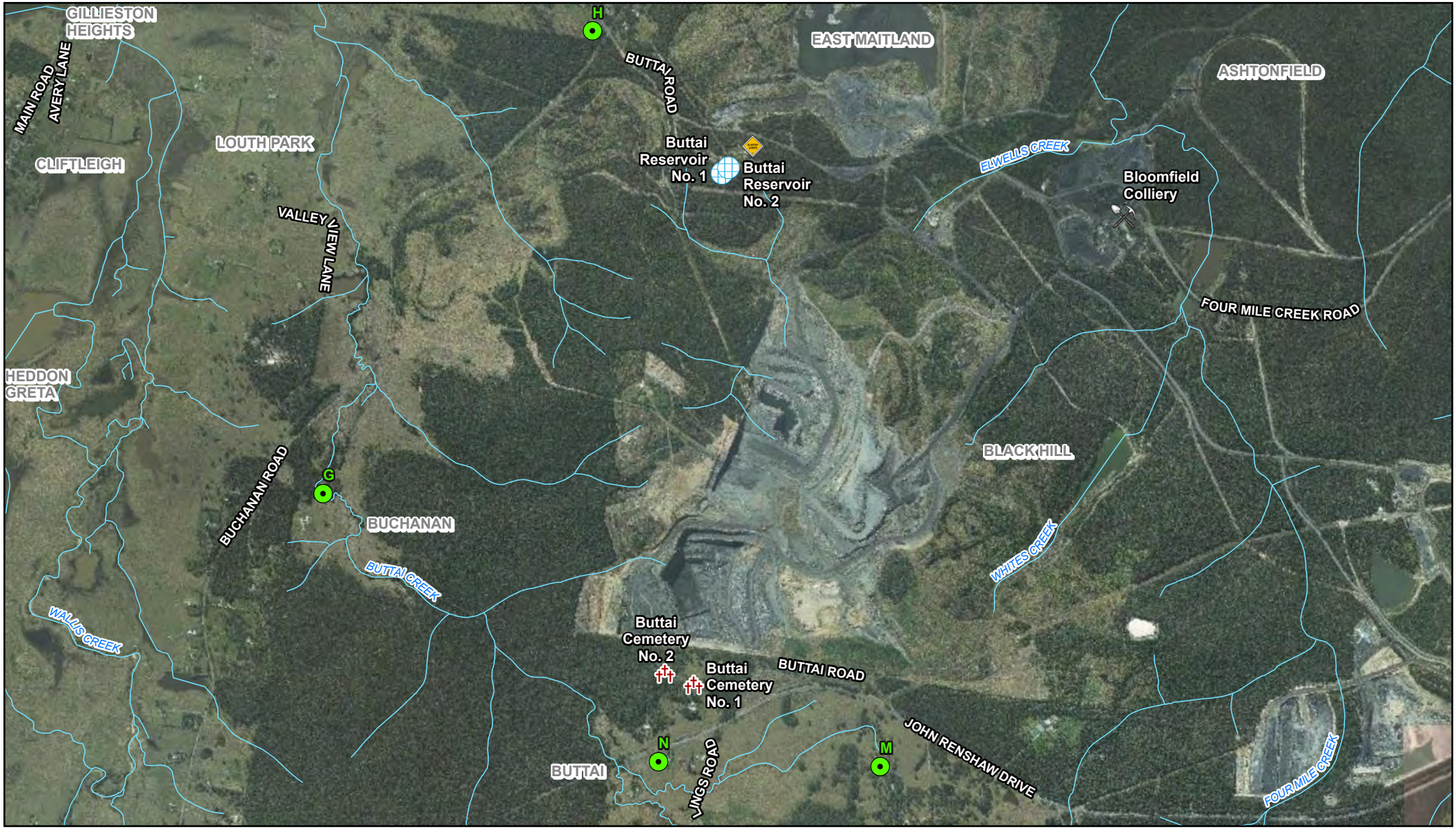
The Buttai Cemetery is located at 659 John Renshaw Drive, Buttai (refer to Figure 4-1). The cemetery is located on private property and fenced to prevent access by the general public and livestock. The cemetery consists of two separate burial areas, known as Buttai Cemetery No 1 and No 2. Buttai Cemetery No 1 consists of 21 headstones, and Buttai Cemetery No 2, located 100 m to the west of No 1, consists of two burials and five plaques.

An inspection of Buttai Cemetery was undertaken on 5 July 2018 (AECOM, 2018b). The inspection recorded the layout and condition of the cemetery, and each individual headstone and grave site that had physical remains present. The layout of the cemetery is illustrated in Figure 4-3. The outcomes of the inspection are summarised below. The condition assessment report (AECOM, 2018b) is provided in Appendix E.

4.2.1 PHYSICAL CONDITION OF BUTTAI CEMETERY

There are five rows of visible extant headstones and graves present in the main section of the cemetery (Buttai Cemetery No 1). There are 21 visible headstones and/or graves present in the main portion of the cemetery. Some of the graves have two or more burials associated with each headstone. Buttai Cemetery No 2 is located 100 m to the west of Buttai Cemetery No 1 and consists of two grave sites.

The condition of the Buttai Cemetery has been impacted in some instances by weathering, breakage and lichen growth. This is to be expected given the age of the cemetery and graves. The overall condition of the grave sites is considered to be good.



Legend

- Watercourse
- Cemetery
- Colliery
- Reservoir
- Residential blast monitoring location
- Heritage blast monitoring location

Paper Size ISO A4

0 0.2 0.4 0.6 0.8

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Bloomfield Collieries Pty Ltd
Bloomfield Heritage Report

Project No. **12545607**
Revision No. **0**
Date **04/08/2021**

Site locations

FIGURE 4-1

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Legend

- Colliery
- Reservoir
- Watercourse
- Residential blast monitoring location
- Heritage blast monitoring location
- Footprint

Paper Size ISO A4

0 90 180 270 360

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Bloomfield Collieries Pty Ltd
Bloomfield Heritage Report

Project No. **12545607**
Revision No. **0**
Date **04/08/2021**

Buttai Reservoirs No1 and No2

FIGURE 4-2

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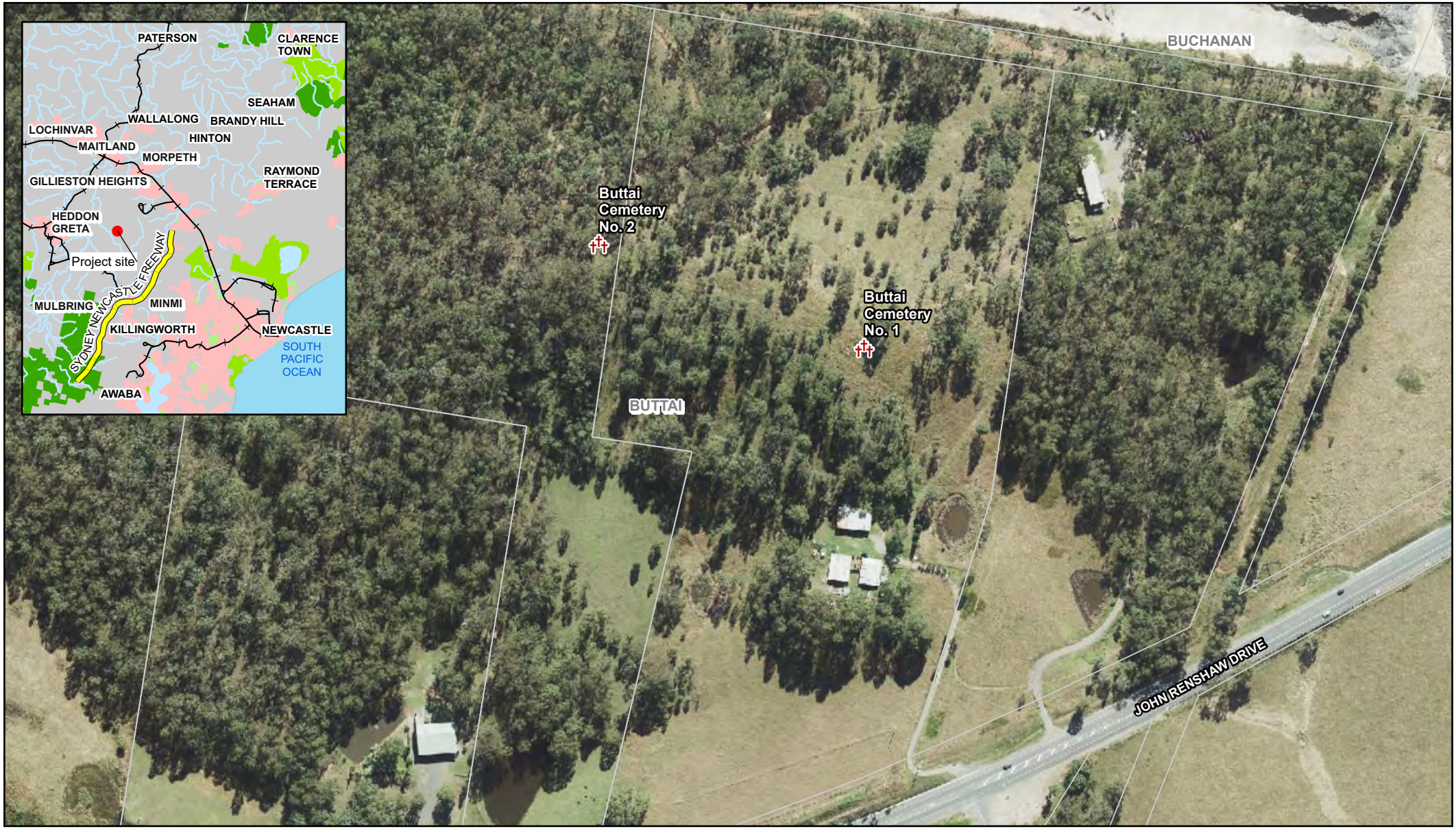
Data source: LPI: DTDB / DCDB, 2017; public_NSW_Imagery: © Department of Customer Service 2020. Created by: fmackay



Legend

- Cemetery
- Cadastre
- Footprint

Paper Size ISO A4

0 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Bloomfield Collieries Pty Ltd
Bloomfield Heritage Report

Buttai Cemetery

Project No. **12545607**
Revision No. **0**
Date **04/08/2021**

FIGURE 4-3

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5. HERITAGE MANAGEMENT

5.1 MONITORING

5.1.1 BLAST MONITORING

Blasting undertaken as part of the mining process at Bloomfield Colliery is the key activity with the potential to adversely impact the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery. Specifically, it is the ground vibration from blasting activities that has the potential to cause superficial and structural damage to these sites.

As described in the Blast Monitoring Program, Bloomfield operate four blast monitors to measure ground vibration levels for residences on private property, listed as follows:

- Blast Monitor Site M – John Renshaw Drive, Buttai;
- Blast Monitor Site N – Lings Road, Buttai;
- Blast Monitor Site G - Buchanan Road, Buchanan; and
- Blast Monitor Site H – Mt Vincent Road, Louth Park.

A new blast monitor at the Buttai Reservoirs No 1 and No 2 will be established and used as the ground vibration monitoring location for heritage management and comparison against trigger values only (refer to section 5.1.2).

The ground vibration measurements undertaken during routine blast monitoring at Bloomfield Colliery will be used as triggers to identify the need for further detailed investigations.

5.1.2 BLAST TRIGGER VALUES

Ground vibration impact assessment criteria contained within the project approval are based on minimising impacts at any residence on privately-owned land. Bloomfield therefore considered a range of information sources in establishing appropriate blast monitoring trigger values for the management of historic heritage impacts. The information sources considered, and an explanation as to the suitability of the each, are presented Table 5-1.

Table 5-1 Information considered for establishment of blast monitoring triggers

Information source	Suitability
Australian Standard AS 2187.2-2006 Explosives storage and use Part 2: Use of explosives	This standard does not specify guideline vibration criteria for heritage buildings and therefore was not considered appropriate.
German Standard DIN 4150-3 1999 Vibration in buildings - Part 3 Effects on structures	This standard is the only standard that includes a vibration criteria category for heritage buildings and is often adopted internationally, given the absence of any suitable Australian standard. However the ground vibration criteria in this standard (3 mm/sec ppv as a 'Level 1 trigger' and 8 mm/sec ppv as a 'Level 2 trigger') were considered too conservative in this setting and application.
ACARP Project C14057 Effect of blasting on infrastructure	This report proposes less conservative trigger values (recommended up to 50mm/ sec ppv), but relies on the reinforcement and framing of structures in order to reliability adopt such values.
Project Approval (PA) 07_0087 for Bloomfield Mine	Condition 6 of PA 07_0087 specifies ground vibration impact assessment criteria of 5mm/ sec ppv (allowable for 5% of the total number of blasts in a 12 month period) and 10 mm/ sec ppv (no allowable exceedances).
Meeting with Hunter Water Corporation on 2 May 2019 where blast trigger values for this HHCMP were discussed	Hunter Water Corporate expressed a preference for Bloomfield to adopt trigger levels consistent with the ground vibration assessment criteria in PA 07_0087 (i.e. 5mm/ sec ppv and 10 mm/ sec ppv).

It was important to consider the existing operational requirements of Buttai Reservoirs No 1 and No 2, the exiting inspection regime undertaken by Hunter Water and any associated limitations these factors create pertaining to establishing a monitoring program. As stated in Table 5-1 Hunter Water expressed a preference for a trigger action response approach and setting different triggers for further investigation, in addition to their existing operational asset monitoring program.

Following consideration of the above information sources, two levels of trigger values for blast monitoring have been determined to be appropriate, as follows:

- Level 1 trigger set at >5mm/ sec ppv; and
- Level 2 trigger set at >10mm/ sec ppv.

5.1.3 VISUAL INSPECTIONS

Visual inspections will be undertaken in response to pre-determined Level 1 blast vibration triggers (refer to Table 5-2) at the Buttai Reservoirs No 1 and No 2 and on an annual basis at the Buttai Cemetery to identify any damage to heritage assets that may have been caused by Bloomfield Colliery's operations.

They will involve inspecting the visible elements of the heritage assets and comparing the condition of relevant elements against the established baseline conditions outlined in the physical condition reports referred to Section 4 (AECOM 2018a; 2018b), or subsequent physical condition reports which have been confirmed as the revised baseline. In the case of Buttai Reservoirs No 1 and No 2, revised baseline conditions will be agreed in consultation with Hunter Water.

Inspections of Buttai Reservoirs No 1 and No 2 will be commissioned by Hunter Water. The first inspection would be undertaken by suitably qualified and experienced reservoir inspectors, and depending on the outcome of the inspection, further investigations by a historic heritage management practitioner may be required. Hunter Water would recoup the cost of inspections from Bloomfield where they have been initiated due to the exceedances of trigger values. Inspections of Buttai Cemetery will be commissioned by Bloomfield. Further details regarding the triggers for inspections and the response actions to be undertaken by Bloomfield and Hunter Water are presented in Section 5.2.

5.1.4 DETAILED INTERNAL INSPECTIONS

Detailed internal inspections will be undertaken in response to pre-determined Level 2 blast vibration triggers (refer to Table 5-2) to identify any damage to the internal structure of the Buttai Reservoirs No 1 and No 2 that may have been caused by Bloomfield Colliery's operations. The inspections will be undertaken using divers or Remote Operated Vehicles to inspect the inside of the water storage reservoirs to identify any structural damage that may require rectification.

Detailed internal inspections will be completed by suitability qualified and experienced personnel with appropriate scuba diving certifications. As Buttai Reservoirs No 1 and No 2 are operational water supply reservoirs the inspections will be commissioned by Hunter Water. Hunter Water would recoup the cost of inspections from Bloomfield where they have been initiated due to the exceedances of trigger values. Further details regarding the triggers for inspections and the response actions to be undertaken by Bloomfield and Hunter Water are presented in Section 5.2.

5.2 CONTINGENCY PLAN

The contingency plan for managing impacts to historic heritage items as a result of Bloomfield Colliery operations is presented as a Trigger Action Response Plan (TARP) in Table 5-2 and Table 5-3.

Table 5-2 Trigger Action Response Plan Buttai Reservoirs No 1 and No 2

TRIGGER	HERITAGE SITE(S)	ACTION	RESPONSE
LEVEL 0 TRIGGER: **Bloomfield blast monitor records ground vibration <5mm/ sec peak particle velocity (ppv)**	Buttai Reservoirs No 1 and No 2	No action required	No response required
LEVEL 1 TRIGGER: **Bloomfield blast monitor records ground vibration >5mm/ sec ppv**	Buttai Reservoirs No 1 and No 2	• Bloomfield provides written notification of Stage 1 blast trigger to Hunter Water within 7 days. • Hunter Water coordinates a visual inspection of Buttai Reservoirs No 1 and No 2 (as per Section 5.1.3). • Hunter Water provides a copy of the visual inspection report to Bloomfield.	The response will be dependent on the outcomes of the visual inspection, as follows: **No impacts identified during visual inspection** • If the visual inspection identifies no change to the condition of the Buttai Reservoirs No 1 and No 2, then no remedial actions will be undertaken. • Bloomfield will report the outcomes of the Stage 1 trigger and response in the Annual Review, and if required, update this management plan. **Impacts identified during visual inspection** • If the visual inspection identifies a change to the condition of the Buttai Reservoirs No 1 and No 2 which is considered attributable to Bloomfield's operations, then Bloomfield will liaise with Hunter Water to facilitate remedial works in accordance with relevant standards and guidelines. • Hunter Water will then coordinate a follow-up inspection of the Buttai Reservoirs No 1 and No 2 to establish a revised baseline for ongoing management and provide a copy of the follow-up inspection report to Bloomfield. • Bloomfield will report the outcomes of the Stage 1 trigger and response in the Annual Review, and if required, update this management plan.

TRIGGER	HERITAGE SITE(S)	ACTION	RESPONSE
LEVEL 2 TRIGGER*: **Bloomfield blast monitor records ground vibration >10mm/ sec ppv**	Buttai Reservoirs No 1 and No 2	• Bloomfield provides written notification of Stage 2 blast trigger to Hunter Water within 3 days. • Hunter Water coordinates detailed internal inspection of Buttai Reservoirs No 1 and No 2 (as per Section 5.1.4). • Hunter Water provides a copy of the detailed internal inspection report to Bloomfield.	The response will be dependent on the outcomes of the detailed internal inspection, as follows: **No impacts identified during detailed internal inspection** • If the detailed internal inspection identifies no change to the condition of the Buttai Reservoirs No 1 and No 2, then no remedial actions will be undertaken. • Bloomfield will report the outcomes of the Stage 2 trigger and response in the Annual Review, and if required, update this management plan. **Impacts identified during visual inspection** • If the detailed internal inspection identifies a change to the condition of the Buttai Reservoirs No 1 and No 2 which is considered attributable to Bloomfield's operations, then Bloomfield will liaise with Hunter Water to facilitate remedial works in accordance with relevant standards and guidelines. • Hunter Water will then coordinate a follow-up inspection of the Buttai Reservoir No 1 and No 2 to establish a revised baseline for ongoing management and provide a copy of the follow-up inspection report to Bloomfield. • Bloomfield will report the outcomes of the Stage 2 trigger and response in the Annual Review, and if required, update this management plan.

*Note: *if the Level 2 Trigger is exceeded, the actions and responses will include those for the Level 2 Trigger in addition to those for the Level 1 Trigger.*

Table 5-3 Trigger Action Response Plan Buttai Cemetery

TRIGGER	HERITAGE SITE(S)	ACTION	RESPONSE
Annual Visual Inspection	Buttai Cemetery	Bloomfield commissions visual inspection of Buttai Cemetery (as per Section 5.1.3)	The response will be dependent on the outcomes of the visual inspection, as follows: **No impacts identified during visual inspection** • If the visual inspection identifies no change to the condition of the Buttai Cemetery, then no remedial actions will be undertaken. • Bloomfield will report the outcomes of the annual visual inspection and response in the Annual Review, and if required, update this management plan. **Impacts identified during visual inspection** • If the visual inspection identifies a change to the condition of the Buttai Cemetery which is considered attributable to Bloomfield's operations and is considered a risk to public safety, then Bloomfield will facilitate remedial works in accordance with relevant standards and guidelines. • Bloomfield with then coordinate a follow-up inspection of the Buttai Cemetery to establish a revised baseline for ongoing management. • Bloomfield will report the outcomes of the visual inspection and response in the Annual Review, and if required, update this management plan.

5.3 ROLES AND RESPONSIBILITIES

The roles and responsibilities relevant to this HHCMP are presented in Table 5-4.

Table 5-4 Roles and Responsibilities

Roles	Responsibilities
Manager of Mining Engineering/Mine Manager	• Ensure adequate resources are available to enable implementation of this HHCMP; • Provide the requisite personnel and equipment to enable this HHCMP to be implemented effectively; and • Report exceedances of trigger levels to Hunter Water.
Environment Manager	• Authorise the HHCMP and future amendments; • Ensure inductions and training relevant to the HHCMP are implemented; • Review and ensure implementation of the HHCMP; • Coordinate historic heritage monitoring and, if required, corrective actions; • Act as the interface for environmental matters between government authorities, private industry, contractors, community groups and the wider community; • Inform the relevant Operations Manager and Manager of Mining Engineering of unexpected or serious environmental impact issues; • Respond to community complaints (including the completion of appropriate corrective and presentative actions); • Promptly notify relevant regulatory agencies of any incidents or non-compliances; • Assess the implementation of this HHCMP; and • Report exceedances of trigger levels to Hunter Water.
Shift Supervisors	• Maintain accountability for the overall environmental performance of the Mine; • Respond to any unplanned events that may potentially result in, or cause, negative environmental impacts; • Ensure reportable incidents are investigated and reported to the Environmental Officers; and • Report exceedances of trigger levels to Hunter Water.
All personnel	• Adhere to the requirements of this HHCMP; • Report any events that may potentially result in, or cause, negative environmental impacts immediately to their Supervisor; and • Report exceedances of trigger levels to Hunter Water.

5.4 INCIDENT RESPONSE

All environment incidents will be reported to the Bloomfield Environment Manager. Following an incident, the Bloomfield Environment Manager is responsible for assigning any corrective or preventative actions.

In accordance with Schedule 5, Condition 6 of the Project Approval, Bloomfield will notify, at the earliest opportunity, the Department of Planning and Environment and any other relevant agencies of any incident that has cause, or threatens to cause, material harm to the environment. For any other incident associated with the project, Bloomfield will notify the Secretary of the Department of Planning and Environment (the Secretary) and any other agencies as soon as practicable after Bloomfield becomes aware of the incident. Within 7 days of the date of the incident, Bloomfield will provide the Secretary and any other relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Where an exceedance of trigger values at the Reservoirs or the annual inspection at the cemetery identifies impacts have occurred, Bloomfield will, at the earliest opportunity:

- In the case of trigger value exceedances at the Reservoirs, take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- Consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Secretary describing those options and any preferred remediation measures or other courses of action; and
- Implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.

5.5 MANAGEMENT OF DISCOVERY OF NEW HISTORIC HERITAGE OBJECTS

If during the course of works any previously unknown historical archaeological material or heritage sites/items are uncovered or identified, all work in the area of the item(s) shall cease immediately and the Environment Manager will arrange for a suitably qualified and experienced archaeologist to be consulted.

Should the archaeologist determine that the find is an Aboriginal Site, the find will be managed as detailed in the Aboriginal Heritage Management Plan (Bloomfield).

If the archaeologist considers the archaeological material uncovered constitutes an archaeological ‘relic’, the Heritage NSW will be consulted, in accordance with Section 146 of the Heritage Act 1977 (NSW), to determine an appropriate course of action prior to the recommencement of work in the area of the item.

A ‘relic’ under the Heritage Act is defined as any deposit, object or material evidence that:

- Relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement; and
- Is of state or local heritage significance.

5.6 MANAGEMENT OF SKELETAL REMAINS

In the unlikely event that a burial site or human skeletal material is exposed during works, all relevant procedures for excavation and removal will be undertaken in accordance with:

- Policy Directive –Exhumation of Human Remains (NSW Department of Health 2008);
- Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977 (NSW Heritage Office 1998) (Skeletal remains guidelines); and
- The Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1997). determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or forensic).

As soon as remains are exposed:

- Work is to halt immediately and the find will be reported to the relevant supervisor who will notify the Open Cut Examiner (OCE) and Environmental Manager to allow assessment and management.
- The Environment Manager will contact NSW Police.
- A 20 m buffer (or as advised by the NSW Police) around the known or suspected human remains will be established using temporary fencing. Works can continue outside of this area providing there is no risk of interference to the human remains or the assessment of human remains.
- A physical or forensic anthropologist will be commissioned by the Police to inspect the remains in situ (organised by the police unless otherwise directed by the police), and make a determination of antiquity (pre-contact, historic or modern) and ancestry (Aboriginal or non-Aboriginal) and:
    - If the remains are identified as modern the area is deemed as crime scene and will be managed by NSW Police. Work will only recommence when NSW Police advise;
    - If the remains are identified as historic and non-Aboriginal, the site is to be secured and Heritage NSW notified, and the site managed in liaison with Heritage NSW. Work will only recommence when Heritage NSW advise;
- If the remains are identified as Aboriginal (pre-contact or historic), the site is to be secured and Heritage NSW notified, and the site managed in liaison with Heritage NSW. Work will only recommence when Heritage NSW advises.

If the remains are identified as Aboriginal, they will be managed as detailed in the Aboriginal Heritage Management Plan (Bloomfield). Prior to removal a site specific management plan for the removal of any potential human skeletal remains uncovered will be developed in consultation with a suitably qualified and experienced archaeologist and consider the requirements of the Skeletal Remains guidelines.

5.7 COMMUNITY COMPLAINT MANAGEMENT

Complaints will be managed in accordance with the Environmental Management Strategy. The Bloomfield Mine Community and Blasting Hotline is provided on the Bloomfield website at (bloomcoll.com.au). In the event that a community complaint is received regarding historic heritage impacts, the Shift Supervisor will record the complaint on the Bloomfield complaint/incident form, and notify the Environment Manager.

As a minimum, records of the complaint will include:

- Date and time the complaint was logged;
- Personal details provided by the complainant;
- Nature of the complaint;
- Action taken regarding the complaint, or if no action was taken, the reason why; and
- Follow up contact with the complainant.

A complaints register will be published on the Bloomfield website, which will be updated monthly, and a summary of complaints will be provided in the Annual Review.

6. REPORTING AND REVIEW

6.1 REPORTING

In accordance with Schedule 5, Condition 3 of the Project Approval, Bloomfield will include the following information in the Annual Review, as relevant to the conservation and management of the historic heritage:

- Describe the works that were carried out in the past year, and the works that are proposed to be carried out over the next year;
- Include a comprehensive review of the monitoring results and complaints records over the mine complex over the past year, which includes a comparison of these results against the:
  - Relevant statutory requirements, limits or performance measures / criteria;
  - The monitoring results from the previous years; and
  - The relevant predictions made in the Environmental Assessment.
- Identify any non-compliance over the last year, and describe what actions were (or are being taken into consideration to ensure compliance;
- Identify any trends in the monitoring data over the life of the Project;
- Identify any discrepancies between the predicted and the actual impacts of the Project, and analyse the potential cause of any significant discrepancies; and
- Describe what measures will be implemented over the next year to improve the environmental performance of the Project.

6.2 PLAN REVIEWS

In accordance with Schedule 5, Condition 4 of the Project Approval, Bloomfield will review, and if necessary revise, this HHCMP within three months of:

- The submission of an Annual Review under Schedule 5, Condition 3 of the Project Approval.
- The submission of an incident report under Schedule 5, Condition 6 of the Project Approval.
- The submission of an audit report under Schedule 5, Condition 7 of the Project Approval.
- Any modification of the conditions of the Project Approval (unless the conditions require otherwise).

Any revision of this HHCMP will be made to the satisfaction of the Secretary.

7. REFERENCES

AECOM, 2018a, Butta Reservoirs No 1 and No 2 Heritage Condition Assessment, Sydney, NSW, Bloomfield Colliery.

AECOM, 2018b, Buttai Cemetery Heritage Condition Assessment, Sydney, NSW, Bloomfield Colliery.

Armstrong, J.W., 1967, Pipelines and People: The History of the Hunter District Water Board, Newcastle, NSW, The Hunter District Water Board.

Delaney, J. W. 1982, Millfield, Ellalong, Brunkerville, Buttai, Glenmore, Mount Vincent, Mulbring and Rothbury cemeteries

ERM Resource Planning, 1995, Environmental impact statement for proposed quarrying at Buttai Maitland, N.S.W.

Futurepast Heritage Consulting Pty Ltd., 2012, Buttai Reservoirs Site Conservation Management Plan.

NSW Heritage Office, 2002, Guidelines on Conservation Management Plans and Other Management Documents.

Parnell, D. and Smith, C. (undated) Wilfred Elliot Private Cemetery Buttai.

Pike, Walker & Associates, 1994, City of Cessnock Heritage Study.

Umwelt 2000, Environmental impact statement for proposed rehabilitation program/landfill operation Lot 75 DP 755260, Buttai. Prepared for Carlewie Pty Ltd by Umwelt (Australia) Pty Limited. Umwelt (Australia) Pty Limited, Toronto, NSW.

8. GLOSSARY

Term/acronym	Definition
ACARP	Australian Coal Industry Research Program
Bloomfield	Bloomfield Collieries
CCTV	Closed-circuit television
CHPP	Coal Handling and Preparation Plant
CMP	Conservation Management Plan
Heritage Act	Heritage Act 1977
HHCMP	Historic Heritage Conservation Management Plan
Hunter Water	Hunter Water Corporation
IHO	Interim Heritage Order
LEP	Local Environment Plan
m	metres
Mtpa	million tonnes per annum
NSW	New South Wales
OEH	Office of Environment and Heritage
OCE	Open Cut Examiner
ROM	Run of Mine
sec ppv	Second peak particle velocity
SHR	State Heritage Register
TARP	Trigger Action Response Plan

Appendix A
Approval Conditions and where they are addressed in the HHCMP

Table A1 Approval conditions and where they are addressed in this HHCMP

Schedule / Condition		Where addressed
Schedule 3, Condition 31B,	The Proponent must prepare a Historic Heritage Conservation Management Plan for the Buttai No 1 and No 2 reservoirs and the Buttai Cemetery, to the satisfaction of the Secretary. This plan must:	
(a)	Be prepared by a suitably qualified and experience person/s;	Section 1.4
(b)	Be prepared in consultation with OEH, Hunter Water, Council and relevant landowners;	Section 3
(c)	Be prepared in accordance with Heritage Council of NSW guidelines (where relevant);	Section 2.2
(d)	Outline the results of the condition surveys required under Condition 31A of Schedule 3;	Section 4
(e)	Include a program for the regular monitoring of the condition of the No 1 and No 2 reservoirs throughout the life of the project; and	Section 5.1
(f)	Include a contingency plan in the case of any damage to the No 1 or No 2 reservoirs, or Buttai Cemetery cause by Modification 4.	Section 5.2
	The Proponent must implement the Historic Heritage Conservation Management Plan as approved by the Secretary.	
Schedule 5, Condition 2	The Proponent must ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	Section 2.4
(a)	Detailed baseline data	Section 4
(b)	A description of: The relevant statutory requirements (including any relevant approval, licence or lease conditions); Any relevant limits or performance measures/criteria; The specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;	Section 2 and Section 5
(c)	A description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria	Section 5

Schedule / Condition		Where addressed
(d)	A program to monitor and report on the: Impacts and environmental performance of the project; Effectiveness of any management measures (see (c) above);	Sections 5.1 and 6.1
(e)	A contingency plan to manage any unprecedented impacts and their consequences;	Section 5.2
(f)	A program to investigate and implement ways to continually improve the environmental performance of the project over time;	Section 6
(g)	A protocol for managing and reporting any: Incidents; Complaints; Non-compliances with statutory requirements; and Exceedances of the impact assessment criteria and/or performance criteria; and	Section 5.4 and 5.7
(h)	A protocol for periodic review of the plan.	Section 6.2

Appendix B
Consultation

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Suburb or town: CESSNOCK State: NSW 2325

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Cessnock Family History Group

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For the attention of: Dawn Reid / Lynette Hamer
PO Box number or street address: c/ Cessnock City Library PO Box 152
Suburb or town: CESSNOCK State: NSW 2325

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For the attention of:
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Suburb or town: PARRAMATTA State: NSW 2124

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Suburb or town: NEWCASTLE State: NSW 2300

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Postal Address: PO Box 101, Pottsville NSW 2489 | ABN: 86 889 757 693

05 April 2019

Heritage Advisor,
Cessnock City Council
PO Box 152
Cessnock NSW 2325
Email: council@cessnock.nsw.gov.au

Dear Sir/Madam,

Re: Consultation for Conservation Management Plan Inputs for Buttai Reservoirs No 1 and No 2 and Buttai Cemetery for Bloomfield Colliery

We are writing to formally consult with your organisation on behalf of Bloomfield Colliery as part of the preparation and research for preparation of a conservation management plan (CMP) for the Buttai Reservoirs No 1 and No 2, and a CMP for the Buttai Cemetery (refer to attached Figure 1). We have been engaged by GHD Pty Ltd (GHD) on behalf of Bloomfield Colliery to prepare the revised CMP and CMP for these items.

The preparation of the CMPs is a requirement of Schedule 3, Condition 31B of the Project Approval (MP 07_0087), this requirement is condition of Modification 4 of MP 07_0087, which was approved 16 August 2018. The requirement for preparation of the CMPs was as a result of concerns raised by the Heritage Council of NSW during exhibition of the environmental assessment (EA), in relation to potential for adverse impacts on the Buttai Reservoirs No 1 and No 2 and the Buttai Cemetery.

As part of this consultation, we are requesting formally if Cessnock City Council has any information, including technical or historical reports or archival documents (plans, photographs, correspondence or aerial imagery), sources for oral history or other resources that may assist with understanding the:

a) History of land tenure for lands where the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery are identified (refer to Figure 1) (for example, settlement history or changes of ownership or management, historical and title searches or portion plans)

b) History of the construction and use/disuse of the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery

c) Understanding the significance of the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery.

This information would be integral to developing a well-informed CMP and your assistance would be greatly appreciated.

We will be undertaking research and collating this information over the next fortnight and would appreciate if Cessnock City Council could respond by **Thursday 18 April**. We are happy to make a time to collect/copy any records or discuss this research over the telephone at a time that suits. Any information provided would be appropriately sourced and acknowledged within the CMP report.

Should you wish to provide feedback or comments to be considered during the development of the CMPs, please reply to mj.sutton@virtusheritage.com.au, or directly on (02) 6676 4354 or 0439 703 886.

Yours Sincerely

Mary-Jean Sutton
Principal Archaeologist

VIRTUSHERITAGE
Ph: (02) 6676 4354 | Mobile: 0439 703 886 | Email: consultation@virtusheritage.com.au
Postal Address: PO Box 101, Pottsville NSW 2489 | ABN: 86 889 757 693

5 April 2019

Att: Dawn Reid or Lynette Hamer
Cessnock Family History Group/Cessnock and District Historical Society
C/- Cessnock City Library
PO Box 152, Cessnock NSW 2325
Email: council@cessnock.nsw.gov.au

Dear Dawn and Lynette,

Re: Consultation for Conservation Management Plan Inputs for Buttai Reservoirs No 1 and No 2 and Buttai Cemetery for Bloomfield Colliery

We are writing to formally consult with your organisation on behalf of Bloomfield Colliery as part of the preparation and research for preparation of a conservation management plan (CMP) for the Buttai Reservoirs No 1 and No 2, and a CMP for the Buttai Cemetery (refer to attached Figure 1). We have been engaged by GHD Pty Ltd (GHD) on behalf of Bloomfield Colliery to prepare the revised CMP and CMP for these items.

The preparation of the CMPs is a requirement of Schedule 3, Condition 31B of the Project Approval (MP 07_0087), this requirement is condition of Modification 4 of MP 07_0087, which was approved 16 August 2018. The requirement for preparation of the CMPs was as a result of concerns raised by the Heritage Council of NSW during exhibition of the environmental assessment (EA), in relation to potential for adverse impacts on the Buttai Reservoirs No 1 and No 2 and the Buttai Cemetery.

As part of this consultation, we are requesting formally if Cessnock and District Historical Society has any information, including technical or historical reports or archival documents (plans, photographs, correspondence or aerial imagery), sources for oral history or other resources that may assist with understanding the:

a) History of land tenure for lands where the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery are identified (refer to Figure 1) (for example, settlement history or changes of ownership or management, historical and title searches or portion plans)

b) History of the construction and use/disuse of the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery

c) Understanding the significance of the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery.

This information would be integral to developing a well-informed CMP and your assistance would be greatly appreciated.

We will be undertaking research and collating this information over the next fortnight and would appreciate if Cessnock and District Historical Society could respond by **Thursday 18 April**. We are happy to make a time to collect/copy any records or discuss this research over the telephone at a time that suits. Any information provided would be appropriately sourced and acknowledged within the CMP report.

Should you wish to provide feedback or comments to be considered during the development of the CMPs, please reply to mj.sutton@virtusheritage.com.au, or directly on (02) 6676 4354 or 0439 703 886.

Yours Sincerely

Mary-Jean Sutton
Principal Archaeologist

VIRTUSHERITAGE

Ph: (02) 6676 4354 | Mobile: 0439 703 886 | Email: consultation@virtusheritage.com.au
Postal Address: PO Box 101, Pottsville NSW 2489 | ABN: 86 889 757 693

5 April 2019

Heritage Division
Locked Bag 5020,
Parramatta NSW 2124
Email: heritage@heritage.nsw.gov.au

Dear Sir/Madam,

Re: Consultation for Conservation Management Plan Inputs for Buttai Reservoirs No 1 and No 2 and Buttai Cemetery for Bloomfield Colliery

We are writing to formally consult with your organisation on behalf of Bloomfield Colliery as part of the preparation and research for preparation of a conservation management plan (CMP) for the Buttai Reservoirs No 1 and No 2, and a CMP for the Buttai Cemetery (refer to Figure 1). We have been engaged by GHD Pty Ltd (GHD) on behalf of Bloomfield Colliery to prepare the revised CMP and CMP for these items. AECOM have previously prepared detailed condition reports on the two reservoirs and Futurepast have prepared an earlier CMP for the reservoirs.

The preparation of the CMPs is a requirement of Schedule 3, Condition 31B of the Project Approval (MP 07_0087), this requirement is condition of Modification 4 of MP 07_0087, which was approved 16 August 2018. The requirement for preparation of the CMPs was as a result of concerns raised by the Heritage Council of NSW during exhibition of the environmental assessment (EA), in relation to potential for adverse impacts on the Buttai Reservoirs No 1 and No 2 and the Buttai Cemetery.

We note the conditions of consent refer to the Heritage Division's CMP standard as a reference point for guidance only, and that the actual CMPs for these items would be structured to an operations document. This would allow the CMPs to be used on the ground without a formal thematic history or detailed development of conservation policies. Therefore, while the CMPs would be prepared to address the requirements of Schedule 3, Condition 31B of MP 07_0087, this document does not strictly meet the Heritage Division guidelines for a formal CMP. We are working with GHD to develop this document.

As part of consultation for the development of the CMP, Bloomfield Colliery are required to consult with the Heritage Division. As part of this consultation, we are notifying the Heritage Division that this project has commenced and we will be consulting with the Heritage Division's library and other online databases and publications to utilise relevant research and source material. In addition, consultation would be carried out with the Cessnock and District Historical Society, Hunter Water Corporation, Cessnock City Council and other local landholders as part of the research for this project.

Please contact me directly on (02) 6676 4354 or 0439 703 886, if you need to discuss anything further.

Yours Sincerely

Mary-Jean Sutton
Principal Archaeologist

VIRTUSHERITAGE
Ph: (02) 6676 4354 | Mobile: 0439 703 886 | Email: consultation@virtusheritage.com.au
Postal Address: PO Box 101, Pottsville NSW 2489 | ABN: 86 889 757 693

5 April 2019

Hunter Water Corporation
Section 170 Heritage Register
36 Honeysuckle Drive
Newcastle NSW 2300

Dear Sir/Madam,

Re: Consultation for Conservation Management Plan Inputs for Buttai Reservoirs No 1 and No 2 and Buttai Cemetery for Bloomfield Colliery

We are writing to formally consult with your organisation on behalf of Bloomfield Colliery as part of the preparation and research for preparation of a conservation management plan (CMP) for the Buttai Reservoirs No 1 and No 2, and a CMP for the Buttai Cemetery (refer to attached Figure 1). We have been engaged by GHD Pty Ltd (GHD) on behalf of Bloomfield Colliery to prepare the revised CMP and CMP for these items.

The preparation of the CMPs is a requirement of Schedule 3, Condition 31B of the Project Approval (MP 07_0087), this requirement is condition of Modification 4 of MP 07_0087, which was approved 16 August 2018. The requirement for preparation of the CMPs was as a result of concerns raised by the Heritage Council of NSW during exhibition of the environmental assessment (EA), in relation to potential for adverse impacts on the Buttai Reservoirs No 1 and No 2 and the Buttai Cemetery.

As part of this consultation, we are requesting formally if Hunter Water Corporation has any information, including technical or historical reports or archival documents (plans, photographs, correspondence or aerial imagery), sources for oral history or other resources that may assist with understanding the:

a) History of land tenure for lands where the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery are identified (refer to Figure 1) (for example, settlement history or changes of ownership or management, historical and title searches or portion plans)

b) History of the construction and use/disuse of the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery

c) Understanding the significance of the Buttai Reservoirs No 1 and No 2 and Buttai Cemetery.

This information would be integral to developing a well-informed CMP and your assistance would be greatly appreciated.

We will be undertaking research and collating this information over the next fortnight and would appreciate if Hunter Water Corporation could respond by **Thursday 18 April**. We are happy to make a time to collect/copy any records or discuss this research over the telephone at a time that suits. Any information provided would be appropriately sourced and acknowledged within the CMP report.

Should you wish to provide feedback or comments to be considered during the development of the CMPs, please reply to mj.sutton@virtusheritage.com.au, or directly on (02) 6676 4354 or 0439 703 886.

Yours Sincerely

Mary-Jean Sutton
Principal Archaeologist

Appendix C
Evidence of Consultation in preparation of this Management Plan

Minutes

20 August 2019

Project	Bloomfield Heritage Report	From	Michelle Kiejda
Subject		Tel	+61 2 4979 9034
Venue/Date/Time	GHD Offices/2 May 2019/9am	Job No	2220119
Copies to	All attendees and Name (Company)		
Attendees	Chris Knight (Bloomfield) Greg Lamb (Bloomfield) Margaret Balandin (Hunter Water) Jarrod Wynn (Hunter Water) Mary-Jean Sutton (Virtus Heritage) Michelle Kiejda (GHD)	Apologies	

Minutes

Key discussion points:

- Hunter Waters planned repairs to both reservoirs to be undertaken in late May
- Repairs works will require a new baseline for condition
- What the blast level triggers should be for investigation and discussions
- Who would undertake further investigation and what types of investigation would be undertaken

Points of agreement

- Hunter Water agree with a TARP approach and setting different triggers for further investigation
- Hunter Water and Bloomfield will both undertake dilapidation surveys following the repair works as a new baseline
- Bloomfield will install a new monitoring point just outside Hunter Water land to be used as the monitoring point
- Bloomfield will notify Hunter Water if the new monitor registers a reading over the trigger value threshold to instigate an investigation
- Investigation actions would be undertaken by Hunter Water, initial investigation would be a visual assessment if the monitor registers higher than the lower trigger value threshold and internal inspection using drivers if the readings over the higher trigger value threshold
- Heritage structure impact based trigger value and trigger value based on earthquake loading

GHD Level 3 GHD Tower 24 Honeysuckle Drive Newcastle NSW 2300 PO Box 5403 Hunter Region Mail Centre NSW 2310 Australia
T 61 2 4979 9999 F 61 2 4979 9988 E ntlmail@ghd.com W www.ghd.com

Minutes

- Following further investigation Bloomfield and Hunter Water would discuss and agree on any further actions

Actions

- Hunter Water to confirm point of contact for reporting of exceedance of trigger values for further investigation
- Bloomfield to provide the draft management plan to Hunter Water for comment

Michelle Kiejda
Technical Director - Environment

Attachment A

Bloomfield Colliery - Open Cut

Historic Heritage Conservation Management Plan Review – July 2021

Historic Heritage Conservation Management Plan, Schedule 3, Condition 31B	**Satisfactory (Yes/No)**	**Comment**	**Action Required**	**Bloomfield comments / changes made to Management Plan**
31B. The Proponent must prepare a Historic Heritage Conservation Management Plan for the Buttai No 1 and No 2 reservoirs and the Buttai Cemetery, to the satisfaction of the Secretary: This plan must:	**Partial**	-	Update the Management Plan to incorporate this review and DPIEs comments.	Updated
(a) be prepared by a suitably qualified and experienced person/s;	**Yes**	Section 1.4, Table 1-1 summarises the qualifications and experience of management plan contributors. The Plan does not require endorsement of professional personnel appointed to the Plan development.	No action required.	
(b) be prepared in consultation with OEH, Hunter Water, Council and relevant landowners;	**Yes**	Section 3, Table 3-1 and Appendix B includes evidence of consultation to Council, the Cessnock Family History Group, Cessnock and District Historical Society, Heritage NSW, and Hunter Water Corporation (HWC).	No action required.	
(c) be prepared in accordance with Heritage Council of NSW guidelines (where relevant);	**Partial**	Sections 2.4.1 and 2.4.2 reference the Buttai Reservoirs Conservation Management Plan (2012), but a summary of the CMP is not appended to the Plan.	Include a summary (paragraph of text or a few dot points) of Hunter Water's Buttai Reservoirs Conservation Management Plan in Section 2.4 of the Plan.	Dot points in section 2.4.1 do cover this, amended to make it clear that this is a summary of the CMP
(d) outline the results of the condition surveys required under condition 31A of Schedule 3;	**Partial**	Sections 4.1 and 4.2 refer to initial condition surveys (Heritage Condition Assessments) conducted in 2018. Section 4.1.2 also states that Hunter Water has undertaken repairs and baseline conditions have been agreed. It is unclear if revised baseline conditions are incorporated in to Section 4 of the Plan.	Revise the Plan text to confirm if section 2.4.1 summarises the original and contemporary condition surveys, or just the original condition surveys.	Made changes to section 4.1.2 to confirm that the summary is from the AECOM survey.

Historic Heritage Conservation Management Plan, Schedule 3, Condition 31B	Satisfactory (Yes/No)	Comment	Action Required	Bloomfield comments / changes made to Management Plan
(e) include a program for the regular monitoring of the condition of the No 1 and No 2 reservoirs throughout the life of the project; and	**Partial**	Section 5 describes heritage management. Section 5.1.2 (Table 5-1) summarises references used to develop the blast monitoring triggers, however these are not necessary as the Project Approval (PA) 07_0087 includes ground vibration impact assessment criteria.	Revise Section 5.1.2 to include only the approval impact assessment criteria, delete extraneous criteria such as German Standard.	Included text that the CoA criteria is only for residences on privately owned land and not heritage items. Have keep all information in the table as it provides justification and explanation for Bloomfield approach.
		Section 5.1 references regular condition monitoring of the reservoirs throughout the life of the project, but no schedule of regular monitoring is provided within the Plan.	Include a schedule for regular Condition Monitoring of the reservoirs throughout the life of the project in Section 5.	Included text outlining that the Reservoirs are operational and therefore there are limitations on monitoring, are a Hunter Water asset and that Bloomfield discussed/agreed on monitoring requirements with them.
		Section 5.1.3 (visual inspections) and Section 5.1.4 (detailed inspections) are based on exceedance of vibration triggers, rather than regular monitoring.	Include the scope for regular condition monitoring in Section 5.	Scopes for inspections included in Table 5-2 and 5-3
		Section 5.1.1. states four blast monitor locations, but does not detail what these sites are representative of, rationale for selection or distance to the heritage items.	Include details of which heritage items are monitored by each of the blast monitoring locations in Section 5.	Added text to clarify
		Figure 4-2 appears to relate to section 5.1.1, however Figure 4-2 does not include the blast monitoring locations (M, N, G and H).	Include monitoring locations on Figure 4-2. Reference Figure 4-2 in the relevant plan text sections.	Changes made to Figures 4.1 and 4.2
		Section 5.1.1 states that a new blast monitor at the Buttai Reservoirs No 1 and No 2 will be established. It is unclear if a 5th blast monitor location been established and its location.	Include the location of the 5th (new) blast monitor on Figure 4-2.	Monitor location shown on Figure 4.2
(f) include a contingency plan in the case of any damage to the No 1 or No 2 reservoirs, or Buttai Cemetery caused by Modification 4.	**Yes**	Heritage management is described in Section 5, including contingency planning in Section 5.2, Section 5.4 and Table 5-2 (TARP - Buttai Reservoirs No 1 and No 2) and Table 5-3 (TARP - Buttai Cemetery).	No action required.	

Other Comments on Historic Heritage Conservation Management Plan		**Bloomfield comments / changes made to Management Plan**
Comment	**Action Required**	
1. The Department notes that contemporary conditions include best practice that in the case that suspected human remains or bones are discovered on the site, all work surrounding the area must cease, and the area must be secured. The Applicant must immediately notify NSW Police Force and BCD, and work must not recommence in the area until authorised by NSW Police Force and BCD.	Consider inclusion of contemporary best practice into the Plan.	Added new section 5.5 with a Management of skeletal remains procedure
2. The Department notes that contemporary conditions include best practice that management of, or a protocol for, unexpected finds is not included in the Plan.	Consider inclusion of contemporary best practice into the Plan.	Added new section 5.6 with a Management of skeletal remains procedure
3. Section 4 for Buttai Reservoirs and Section 4.2.1 regarding the condition of Buttai Cemetery does not include details of protection measures for the Buttai Cemetery, for example if there is fencing around the items, or if public access is permitted or restricted.	Include details of protection measures for the Buttai Cemetery.	Added text to Section 4.2 to address comment
4. Section 5.5 (Community Complaint Management) does not include a complaints management method (e.g. website or telephone contact for community stakeholders), in line with condition 2 (g) of Schedule 5.	Include a complaints management method in the Plan. If referencing method in EMS include a paragraph summary or dot points of process.	Section 5.7 amended to include reference to hotline/ website/ complaints register and reporting in Annual Review
5. No Glossary of Terms has been provided in the Management Plan.	Include a glossary for the Plan.	Added new section 8
6. Review of Table A1 identified many inaccuracies of references to the Plan. E.g. A1 identifies that Section 2.3 addresses condition 31B of Schedule 3, however section 2.4.2 refers to the standards and guidelines that apply to the site.	Update Table A1 for accurate referencing to correct sections of the Plan.	Checked and updated Table A1
7. Photographs and Condition Reports of the heritage items are not included in the Plan.	Consider including photographs and condition reports of the heritage items.	Condition Reports included in Appendix E

Appendix D
Copy of Approvals- DPE

Mr Chris Knight
Environmental Manager
The Bloomfield Group
Four Mile Creek Rd
Ashtonfield, NSW, 2323

15/12/2021

Dear Mr Knight

Bloomfield Coal Project (MP 07_0087)
Historic Heritage Conservation Management Plan

I refer to the Historic Heritage Conservation Management Plan which was submitted in accordance with condition 31B of Schedule 3 of the consent for the Bloomfield Coal Project (MP 07_0087).

The Department has carefully reviewed the document and is satisfied that it meets the relevant requirements of the conditions of consent.

The Department notes that the monitoring program for Buttai Reservoirs No 1 and No 2 was developed in consultation with Hunter Water, and with Hunter Water's existing operational asset monitoring program and ongoing operational requirements, a trigger action response approach has been adopted to monitor the condition of the reservoirs.

As such, the Department requests that any change to the condition of Buttai Reservoirs No 1 and No 2 that is identified during Hunter Water's existing operational asset monitoring program, and is considered attributable to Bloomfield's operations, is also managed in accordance with the Historic Heritage Conservation Management Plan.

Subject to the above, the Planning Secretary has approved the Historic Heritage Conservation Management Plan (Revision 5, dated August 2021). Please ensure that the approved plan is placed on the project's website at the earliest convenience.

If you wish to discuss the matter further, please contact Jarrod Blane on 02 8275 1831 or jarrod.blane@dpie.nsw.gov.au.

Yours sincerely

JEvans

Jessie Evans
Director
Resource Assessments

As nominee of the Planning Secretary

Appendix E
Condition Assessment Reports

AECOM Imagine it. Delivered.

Buttai Reservoirs No 1 and No 2

Heritage Condition Assessment

Buttai Reservoirs No 1 and No 2

Heritage Condition Assessment

Client: Bloomfield Colliery

ABN: 76 000 106 972

Prepared by

AECOM Australia Pty Ltd
Level 21, 420 George Street, Sydney NSW 2000, PO Box Q410, QVB Post Office NSW 1230, Australia
T +61 2 8934 0000 F +61 2 8934 0001 www.aecom.com
ABN 20 093 846 925

04-Oct-2018

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

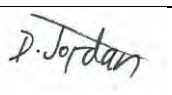
Document Buttai Reservoirs No 1 and No 2

Date 04-Oct-2018

Prepared by Chris Lewczak

Reviewed by Darran Jordan

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	27-Sep-18	Draft	Simon Murphy Project Manager	
1	4-Oct-2018	Final	Dr Darran Jordan Senior Heritage Specialist	

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List of Figures

1.0 Introduction

1.1 Background

The Bloomfield Colliery (the Colliery) is an existing open cut mining operation located approximately 20 kilometres north-west of Newcastle. The Colliery is operated by Bloomfield Collieries Pty Limited (Bloomfield), part of the Bloomfield Group of companies. The Colliery currently operates in accordance with Project Approval 07_0087 issued under Part 3A (repealed) of the *Environmental Planning and Assessment Act 1979*, with approved production levels of 1.3 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal. Mining operations under the existing approval may take place until 31 December 2021.

As part of the ongoing operations at the mine site, Bloomfield sought to extend mining operations to allow for the continuation of mining within Consolidated Coal Lease 761 and Mining Lease 1738, to process up to 1.3Mtpa of ROM coal until 31 December 2030 (Application Number 07_0087).

Project approval was determined on 16 August 2018 and granted with conditions attached to this approval. Heritage conditions were included in the approval that required that condition surveys of Buttai No 1 and No 2 reservoirs, and of the Buttai Cemetery (Wilfred Elliot Private Cemetery) including memorial headstones, graves, fences and trees be undertaken.

This report satisfies the requirement of the condition survey of Buttai No 1 and No 2 reservoirs. A separate report has been prepared for the Buttai Cemetery site.

1.2 Site location

The subject property is located at Lot 1, Buttai Road, Four Mile Creek. The Reservoirs are situated in an isolated area that is characterised by a mixture of largely uncleared native bushland and mining operations, east of Heddon Greta and north of John Renshaw Drive (Figure 1, Figure 2 and Figure 3).

1.3 Scope of work

The objectives of this investigation are to:

- Undertake a detailed site inspection and condition assessment of Buttai No 1 and No 2 reservoirs to record the current condition of the reservoirs; and
- Prepare a detailed condition assessment report of the reservoirs that can be used as a baseline assessment for future use.

\\AUNTL1FP001\Projects\60289290_RixCreek_Mine\4. Tech work area\4.6 Heritage\9.0 Bloomfield Condition Assessments

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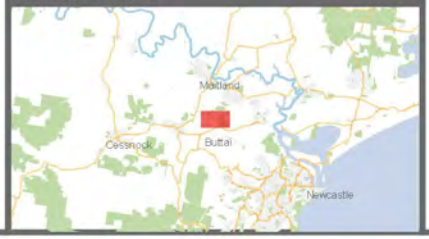
KEY

- Project Area
- Vehicle Track
- Local Road
- Main Road

Main Map Extent



PROJECT AREA

Buttai No1 and 2 Reservoirs and Buttai Cemetery
Heritage Condition Assessment

Figure 1

AECOM

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Aerial Imagery used under licence NearMap

KEY

- Vehicle Track
- Local Road
- Main Road

Main Map Extent

BUTTAI RESERVOIR NO.1 AND 2

Buttai No1 and 2 Reservoirs
Heritage Condition Assessment

Figure 2

\\AUNTL1FP001\Projects\60289290_RixCreek_Mine\4. Tech work area\4.6 Heritage\9.0 Bloomfield Condition Assessments

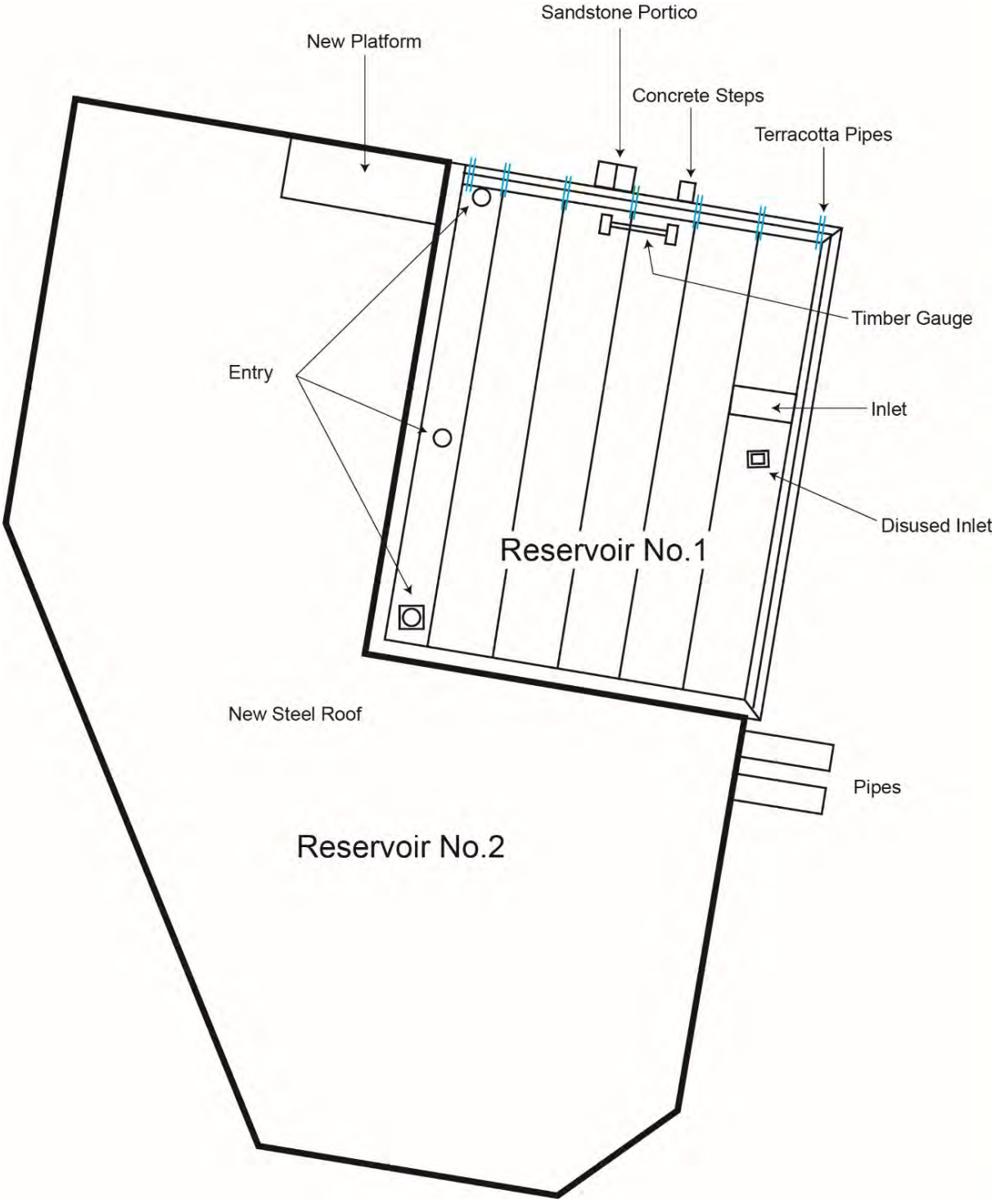

Figure 3 Elements associated with Reservoirs No 1 and No 2 (adapted from (Futurepast Heritage Consulting Pty Ltd, 2012)

1.4 Report methodology

This heritage condition assessment has been prepared to satisfy the Project Approval granted to Bloomfield Colliery Mod 4 extension (P 07_0087 MOD 4). This report has been prepared in accordance with the New South Wales (NSW) Heritage Division guidelines, including *NSW Heritage Manual* (NSW Heritage Office & NSW Department of Urban Affairs and Planning, 1996).

A Conservation Management Plan (CMP) has previously been prepared for the Buttai Reservoirs No 1 and No 2 for Hunter Water Corporation by FuturePast (Futurepast Heritage Consulting Pty Ltd, 2012). Components of this CMP have been used in the preparation of this condition assessment report.

A detailed site inspection was undertaken on 6 July 2018. The focus of this inspection was to undertake a detailed photographic recording of the whole of the exterior of the building, and inspect the condition of the external fabric of reservoir components. This included the sandstone entrance, brick external fabric and concrete roof of Reservoir No 1, and the concrete and metal roof of Reservoir No 2

1.4.1 Report authorship and acknowledgements

This report has been prepared by Chris Lewczak (Senior European Heritage Specialist and Maritime Archaeologist). The site inspection was undertaken by Chris Lewczak and Luke Atkinson (Senior Heritage Specialist). Dr Darran Jordan (Senior Archaeologist and Heritage Specialist) provided a technical review of the content.

1.5 Report limitations

This report has been prepared by undertaking an external inspection of the heritage elements associated with the reservoirs only. An internal inspection of the reservoirs was not possible at the time of the survey.

2.0 Statutory legislation

Buttai Reservoir No 1 and Buttai Reservoir No 2 are listed as separate heritage items on the Hunter Water Corporation's Section 170 Heritage and Conservation Register (Section 170 register). Buttai Reservoir No 1 has previously been nominated for listing on the State Heritage Register (SHR) (Futurepast Heritage Consulting Pty Ltd, 2012). This nomination has been removed and Buttai Reservoir No 1 has not been added to the SHR. The current legislative protection for the item is associated with the Section 170 register listing.

2.1 State legislation

2.1.1 Heritage Act 1977

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

Proposals to alter, damage, move or destroy places, buildings, works, relics, movable objects or precincts protected by an Interim Heritage Order (IHO) or listed on the SHR require an approval under Section 60. The 'relics provision' requires that no archaeological relics be disturbed or destroyed without prior consent from the Heritage Council of NSW. Therefore, no ground disturbance works may proceed in areas identified as having archaeological potential without first obtaining an excavation permit pursuant to Section 60 of the *Heritage Act 1977* or an archaeological exemption.

Under Section 170 of the *Heritage Act 1977*, NSW Government agencies are required to maintain a register of heritage assets. The register places obligations on the agencies, but not on non-government proponents, beyond their responsibility to assess the impact on surrounding heritage items.

Archaeological features and deposits are afforded statutory protection by the 'relics provision'. Section 4(1) of the *Heritage Act 1977* (as amended 2009) defines 'relic' as follows:

a. "any deposit, artefact, object or material evidence that:
b. relates to the settlement of the area that comprises NSW, not being Aboriginal settlement, and
c. is of State or local heritage significance".

3.0 Historical context

A detailed historical background of Buttai Reservoirs No 1 and No 2 has previously been prepared in the CMP (Futurepast Heritage Consulting Pty Ltd, 2012). This history is reproduced below to understand the context of the reservoirs, including the relationship between reservoirs No 1 and No 2.

3.1 Historical Development of Buttai Reservoir No 1

Construction on the Buttai Reservoir No 1 commenced in 1880, after the passage of the Country Towns Water Supply Act by NSW Parliament. Completed in 1881, it was transferred to the Hunter District Water Supply and Sewerage Board at the time of its formation in 1892.

Constructed of brickwork set in Portland cement with solid concrete foundations on a sandstone bed, Buttai Reservoir No 1 originally measured approximately 120 feet (36.9 metres) by 95 feet (29.2 metres), was 15 feet (4.6 metres) deep, and had an original capacity of 1,000,000 gallons of water (4.2 megalitres) (Armstrong, 1967). The first water from Buttai came to the reservoir at Newcastle on 31 December 1885.

Originally, Buttai Reservoir No 1 received water from the Walka Waterworks. Extracting water from the Hunter River, Walka Waterworks filtered and treated this water before transferring it into the two summit reservoirs, situated at East Maitland and Buttai, respectively (Armstrong, 1967). As the Hunter River water delivered from Walka Waterworks needed to be sheltered from light to prevent recontamination after treatment, the reservoirs were covered (Armstrong, 1967). Buttai Reservoir No 1 was roofed over with brick arches that were covered with earth and grass, which helped maintain the water at a low temperature and keep it free from contamination (Armstrong, 1967). Buttai Reservoir No 1 was constructed on top of a range about 5 ½ miles (3.4 kilometres) from the pumps at Walka Waterworks and was supplied through a 15 inch (384 millimetre) rising main. The high elevation of Buttai Reservoir No 1, which saw a direct lift of about 270 feet (83 metres), combined with the friction losses through the 9,084 yards (8,307 metres) of mains, necessitated special gears on the engines that had the task of forcing the water from the waterworks to the reservoir (Armstrong, 1967).

Buttai Reservoir No 1 supplied water, via gravitation, to six district reservoirs at Minmi, Hamilton, Wallsend, Newcastle, Lambton and Obelisk Hill, thus commanding reticulation to the City of Newcastle, Carrington, Wickham, Hamilton, Waratah, Merewether, Adamstown, New Lambton, Lambton, Wallsend, Plattsburg and Minmi (Armstrong, 1967). From Buttai, the 15 inch cast iron gravitation main extended for about 17 miles (27 kilometres) across hills, ravines and swamps as far as the reservoir in Tyrrell Street.

The old water line was tapped at various places along the route. A 15 centimetre diameter branch pipe, just over three kilometres long, supplied Minmi Reservoir. Wallsend and Plattsburg received water through an eight inch (205 millimetre) branch pipe, and at the junction of Tudor and Beaumont Street, a 380 millimetre branch pipe supplied the reservoir at Glebe. Lambton Reservoir was located adjacent to the main delivery pipe (Hunter District Water Supply and Sewerage Board Annual, 1904).

In 1898, the pipeline from Walka Waterworks to Buttai was duplicated. This new rising main was constructed of 20 inch (512 millimetre) riveted steel pipes and was completed and vested in the Board on 10 May 1898. In 1903-04, a 20 inch trunk main was laid from Buttai Reservoir No 1 to Heddon Greta following approval of a scheme to extend the water mains to the townships of the coalfields to the south of Maitland (Hunter District Water Supply and Sewerage Board Annual, 1904).

New outlet works were constructed in 1908-09 at Buttai Reservoir No 1 to feed the old 15 inch and the new 20 inch gravitation mains that supplied the Newcastle District. These works comprised a valve house with valves and a Venturi water meter for controlling and measuring the flow of water. The work was completed in late 1908 and the permanent connection of the new 20 inch main was made in 9 February 1909 (Hunter District Water Supply and Sewerage Board Annual, 1909).

As part of the scheme prepared by the Constructing Authority for the Public Works Department in the mid-1910s, which would lead to the construction of Chichester Dam, it was proposed that a steel gravitation main of 8 million gallons per day capacity be constructed from the dam to connect with the existing pipeline to Buttai Reservoir No 1, as well as constructing an additional

gravitation main from Buttai Reservoir No 1 to Waratah Reservoir (Hunter District Water Supply and Sewerage Board Annual, 1916).

In the late 1920s, due to the increases in water reticulation from the construction of Chichester Dam, Buttai Reservoir was extended to hold a further 3 500 000 gallons (14.7 megalitres) of water to obviate shortages of water supply to Cessnock (Armstrong, 1967). The reservoir extension, Buttai Reservoir No 2, was completed in 1928 and made available for the summer of 1928 (Hunter District Water Supply and Sewerage Board Annual, 1929).

In 1947/48, a scheme to amplify the water distribution was investigated, which included the augmentation of supply from the Buttai Reservoirs to Neath Pumping Station. In 1956, a 24 inch (615 millimetre) pipeline was laid for 2 ½ miles (four kilometres) between Stoney Pinch and the Buttai Reservoirs to improve supply. In 1960-61, a 20 inch cement lined, cast iron water main was completed between Buttai Reservoirs and Heddon Greta, replacing an 18 inch (462 millimetre) wood stave main (Hunter District Water Board, 1961).

In 1984, epoxy injections were used to repair the walls and floor cracks in the Buttai Reservoirs, according to a report dated 17 July 1986. These repairs were undertaken by L&R Epoxy Apps Pty Ltd. Stage I included cleaning out and rejoining vertical wall joints, epoxy pressure injections in some of the wall cracks and epoxy pressure injections in some of the floor cracks. Stage II began on 21 September 1984 and was completed on 10 October of the same year. Stage II included approximately 225 linear metres of injections in the floor, “v-ing” out approximately 75 linear metres of cracks and refilling with epoxy mortar, repairs to the spalled concrete on top of the old reservoir wall with an epoxy mortar and cleaning and rejointing of approximately 62 linear metres of wall floor joints.

In December 1986, CCTV was used to inspect scour pipes from the No 1 Reservoir. Vitreous Clay pipes in several locations showed signs of severe cracks. Alterations were made so that the No 1 Reservoir would scour into No 2 and the scour line under No 2 Reservoir was abandoned.

Following the 1989 Newcastle Earthquake, increasing cracks were found in the floor of the Buttai Reservoir No 1. Prior to 1991, glass plates spanning across the existing horizontal cracks in the western and northern walls were epoxy glued on. A report from 1992 discusses these glass plates within the old Buttai Reservoir, as well as cracks in the roof structure at the bottom of the brick arches and the appearance of cracks at the top of the column supports, with roof intrusion present.

In 2000, Milbant Constructions constructed a water main from Buttai to Ashtonfield.

In 2002, it was reported that Buttai Reservoir was leaking in a number of places through cracked floor joints, wall joints and cracked floor slabs. Temporary patching was tried but failed. Permanent repairs to the reservoir to stop the leaks were eventually made by Hunter Water and the reservoir remains in service.

3.2 Historical Development of Buttai Reservoir No 2

The question of increased storage at Buttai Reservoir was addressed in the Newcastle Herald on Wednesday 31 October 1928. The article reported that the question of increasing water supply to Maitland and Cessnock via the provision of increased water storage facilities at or near Buttai Reservoir had come before the Board on 20 October of that year. The article mentioned that two proposals had emerged in the Chief Engineer’s Report dated 6 March 1928 in relation to this issue. The first option was decided upon, being the enlargement of the present reservoir by 3.5 million gallons to 4 600 000 gallons. The second option, being the construction of a much larger reservoir at a point about 800 metres south of the 8 mile (12.8 kilometre) point on the existing mains between the junction with the Chichester Trunk Gravitation Main and the Buttai and Stoney Pinch mains, was deferred until a later date. The Board did, however, take action to secure the necessary land at Stoney Pinch so that it would be available when required, when the second option was put into action.

Consequently, work commenced on the extension of the Buttai Reservoir in 1928. In July 1928, however, workers took strike action due to a dispute with the Hunter Water Board. This action was resolved at a meeting on the night of 12 July 1928 and work resumed on Monday 16 July 1928.

The Buttai Reservoir extension was completed and made available for the summer of 1928-29 (Hunter District Water Supply and Sewerage Board Annual, 1929).

In 1947-48, a scheme to amplify the water distribution was investigated, which included the augmentation of supply from the Buttai Reservoirs to Neath Pumping Station 2 (Hunter District Water Board, 1948). In 1956, a 24 inch (615 millimetre) pipeline was laid for 2 ½ miles (four kilometres) between Stoney Pinch and the Buttai Reservoirs to improve supply. In 1960-61, a 20 inch cement lined, cast iron water main was completed between the Buttai Reservoirs and Heddon Greta, replacing an 18 inch wood stave main (Hunter District Water Board, 1961).

In the late 1990s, it was decided to roof the remaining open reservoirs under the control of the Hunter Water Corporation. By June 1999, construction of the roof of the Buttai Reservoir No 2 had commenced (Hunter Water Corporation, 1999).

In 2000 Milbant Constructions constructed a water main from Buttai to Ashtonfield.

4.0 Physical Condition Report

A site inspection of Buttai Reservoirs No 1 and No 2 was undertaken on 6 July 2018 by Chris Lewczak and Luke Atkinson. A pedestrian survey was completed around the exterior of the reservoirs only.

4.1 Buttai Reservoir No 1

4.1.1 Northern façade

The northern façade consists of the front of the Reservoir No 1 that includes the sandstone portico and entrance, concrete stairs that access the roof area, seven terracotta drainage pipes and five cast iron vents. The northern façade also includes the concrete and steel façade of Reservoir No 2 that abuts, and joints to, the western side of Reservoir No 1.

Reservoir No 1 consists of nine courses of brick laid in English bond that are visible above the current ground level that surrounds the reservoir on this side (Plates 1 to 16). On the top of the brick wall sits a sandstone capping block. The sandstone blocks have been cut with a gable, with the blocks ranging between 0.8 metres and 1.2 metres long by 0.18 metres on the vertical face, and from the bottom of the face to the top of the gable is approximately 0.30 metres in height (Plates 1 to 16).

At the base of the visible façade are seven terracotta pipes that are evenly spread along the wall. These penetrate through the brick wall and take water off of the roof of Reservoir No 1. Each of the terracotta pipes are in working and good condition. The ends of the pipes have been cracked and fractured (Plates 37 to 43).

The bricks within the façade wall are considered to be in good condition with very few bricks having been repaired or replaced. There is one section of bricks approximately 1.6 metres in from the western end of the Reservoir No 1's northern façade that shows signs of the surface eroding. The bricks and surrounding brickwork has not failed (Plates 1 to 16).

Almost the whole of the northern façade brickwork has been repointed. This has included around the six grills present in the brickwork. The tops of the decorative grills are located four courses below the capping stone. The brickwork immediately above the cast iron grills were cut on an angle when the wall was constructed to fit the grills, but more recent repointing work has covered over some of the bricks and attempted to recreate the detail in the original cut brickwork (Plates 44 to 48).

No repointing has been done along the lowest visible course of brickwork. It appears the repointing has only been done to the bricks that were visible above the level of the ground level at that time. A section of the wall at the western end is visible below the level where the terracotta pipes were located. The mortar around these bricks has thinned and errored out on the façade wall (Plate 15).

There are four steps that are present on the eastern side of the sandstone portico that allow access to the roof of Reservoir No 1. These are concrete steps that may have once been brick (Plates 5 and 6).

The sandstone capping stones appear in very good condition. The condition of the stones appear to be complete, with very few capping stones showing any cracking or fragmented sections. There are some joints between the capping stones that do appear to have widened, however, this does not appear to have caused damage to the stones themselves.

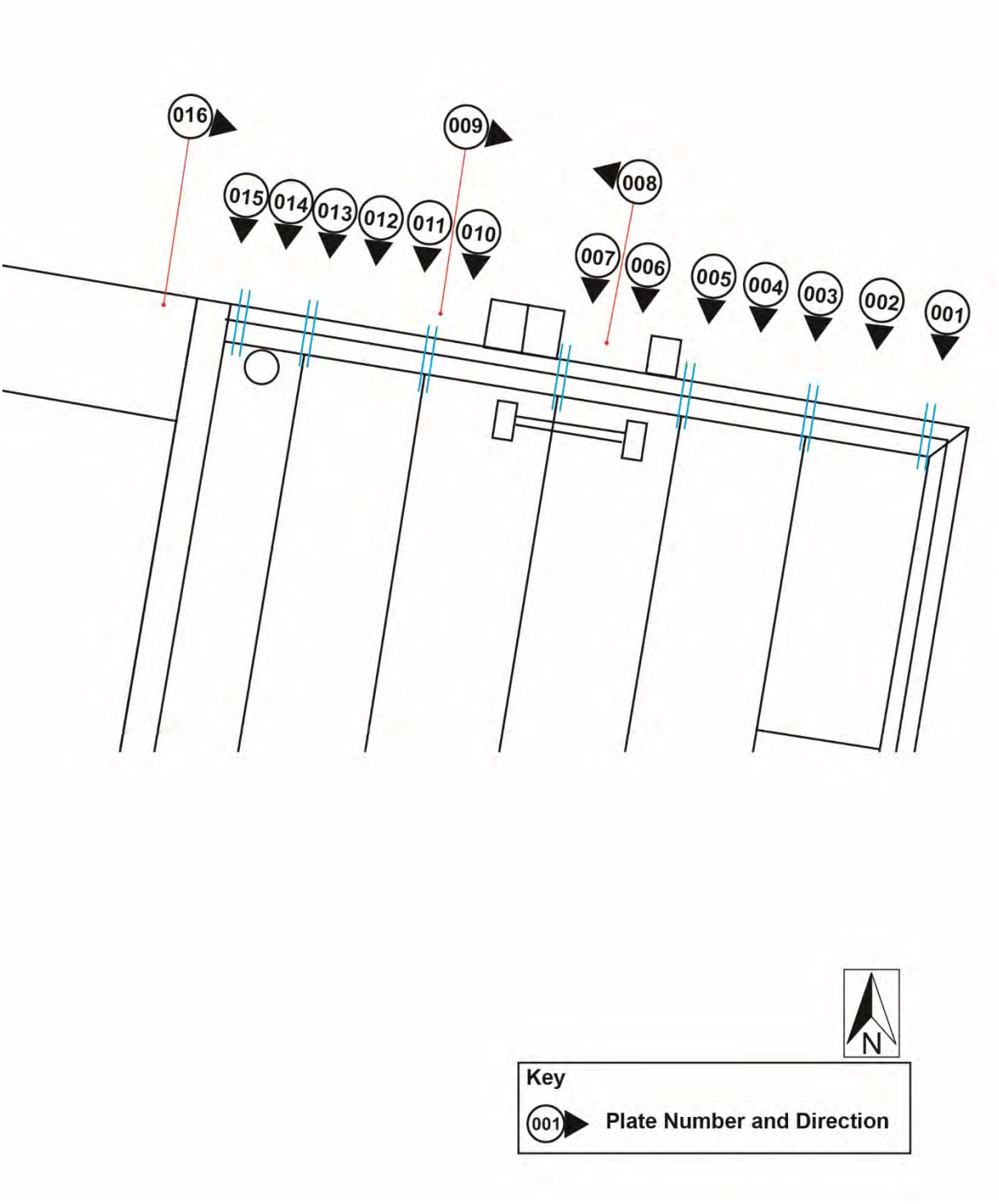

Figure 4 Location photographic plates were taken from

Plate 1

Plate 2

Plate 3

Plate 4

Plate 5

Plate 6

Plate 7

Plate 8

Plate 9

Plate 10

Plate 11

Plate 12

Plate 13

Plate 14

Plate 15

Plate 16

The sandstone portico consists of a decorative sandstone façade set onto the front of a small brick entry structure with an arched brick roof. There is a round window at the back of the portico, overlooking the reservoir, the glass of which has been replaced with a rusting steel grille. Entrance to the portico is gained through an arched panelled timber door, which is painted green. The portico has a cement peaked roof that is unflashed. There is exfoliation of the skin of the sandstone on both columns and around the door within the arched sandstone entrance. Some of the sandstone blocks have started to separate around the doorway, and within the top section around the date (Plates 17 to 22).

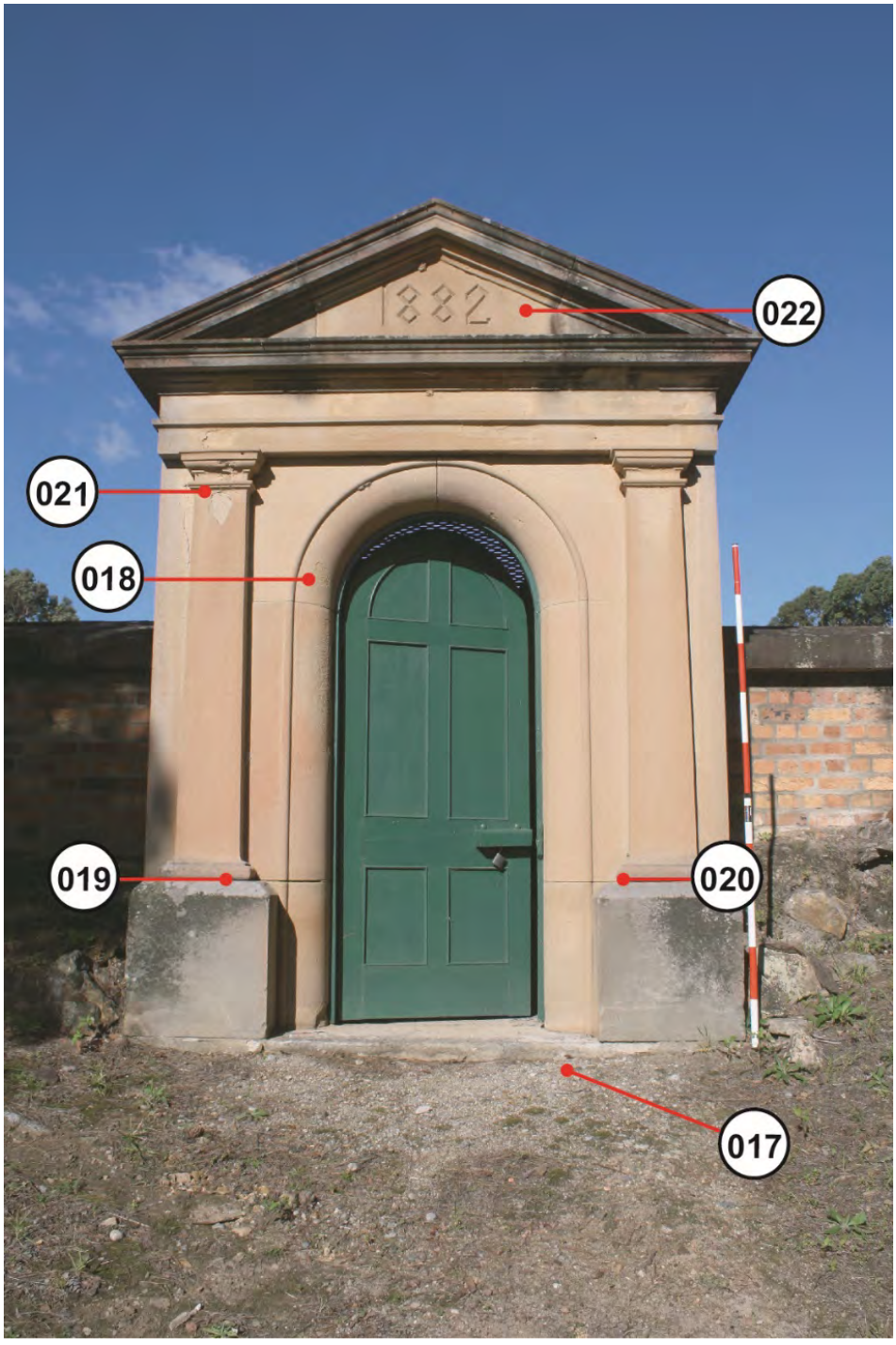

Figure 5 Location of the photographic plate 17 to 22.

Plate 17

Plate 18

Plate 19

Plate 20

Plate 21

Plate 22

Reservoir No 2 abuts and joins to Reservoir No 1. The steel sheeting and flashing that connects the two is set back from the façade of the Reservoir No 1, and has been cut around and over the top of the brick and sandstone work present on the western wall of Reservoir No 1. The lower concrete wall of Reservoir No 2 is only visible for approximately 0.4 metres above the current ground level around the reservoir. The roof of Reservoir No 2 is higher than that of Reservoir No 1, which slopes from the east where it meets with Reservoir No 1 down towards the western corner of Reservoir No 2. The roofing section consists of a steel flashing immediately on top the concrete wall, with a steel profile panel wall forming the façade to the roof. The steel associated with Reservoir No 2 is all new and is all considered to be in good condition (Plates 23 to 36).

The concrete walls appear to have been cast *in situ*, with the timber formwork impression and casting joint still present in the concrete, with the wall raking inward. The concrete wall is in good condition. There is one casting joint present approximately five metres in from the western corner that has cracking and some exfoliation of the outer skin of the concrete (Plate 34).

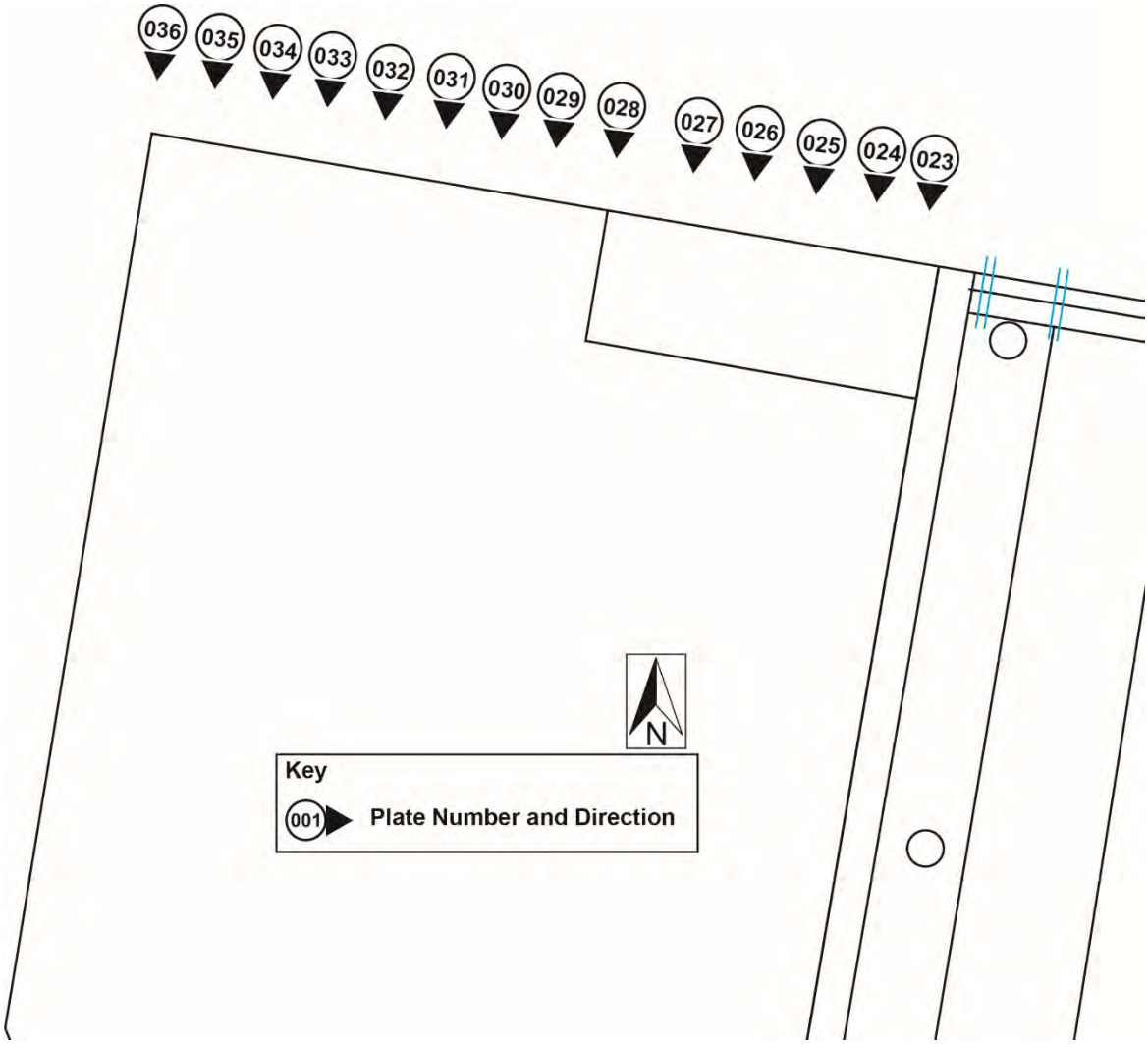

Figure 6 Location photographic plates were taken from

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Plate 24

Plate 25

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Plate 31

Plate 32

Plate 33

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Plate 35

Plate 36

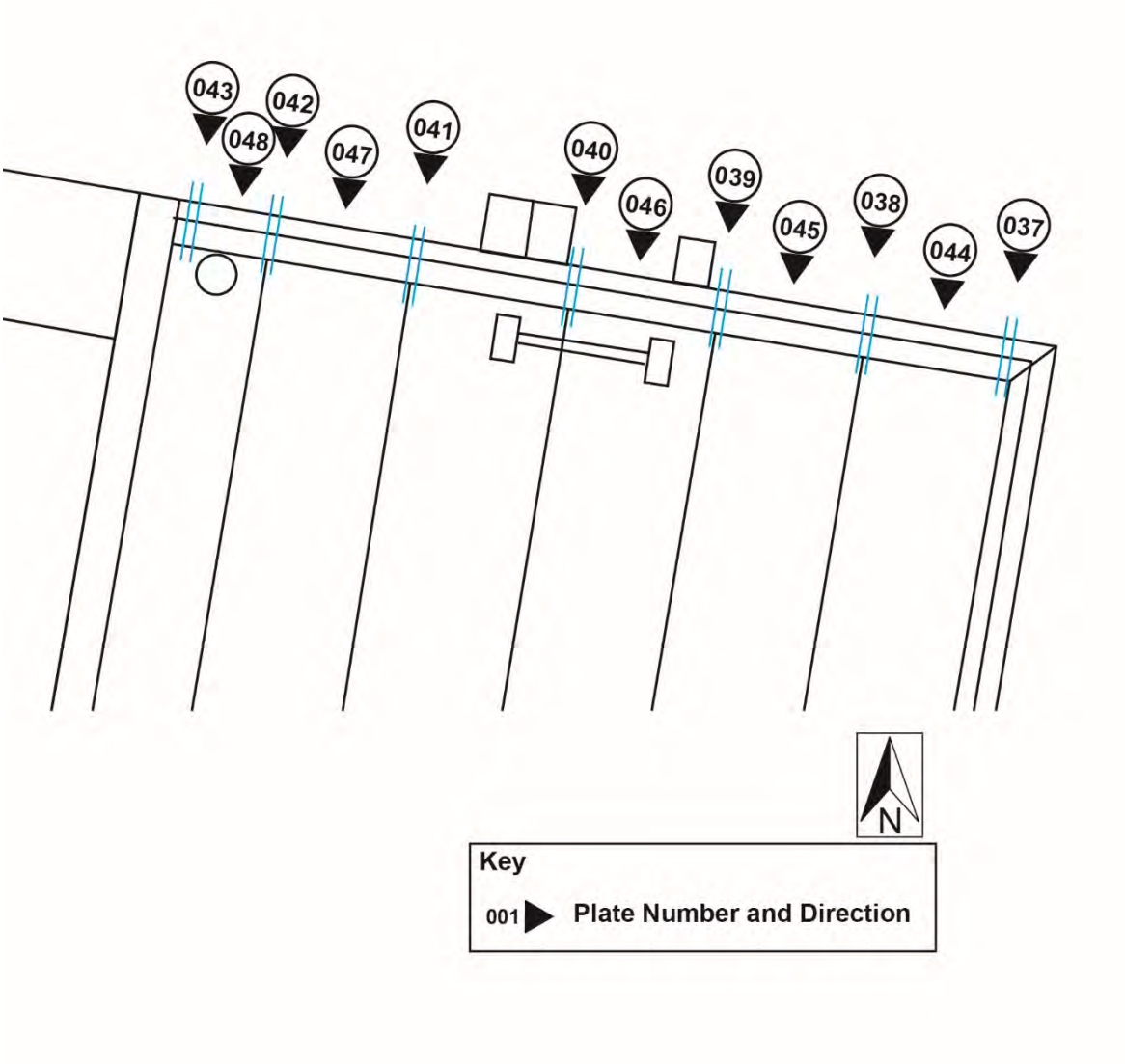

Figure 7 Location photographic plates were taken from

Plate 37

Plate 38

Plate 39

Plate 40

Plate 41

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Plate 44

Plate 45

Plate 46

Plate 47

Plate 48

4.1.2 Eastern façade

The eastern façade of reservoirs includes the brick and sandstone façade of Reservoir No 1, and the concrete façade of Reservoir No 2 that abuts and joins to Reservoir No 1. There are also two inlet pipes that are immediately to the south of the connection between the two reservoirs that enter Reservoir No 2 via the roof.

The eastern brick façade of Reservoir No 1 is between six and nine courses tall, laid in English bond, visible above the ground level that surrounds the reservoir on this side. Like that of the northern façade, the top of the brick work is capped with a sandstone gabled capping (Plates 49 to 72).

The brickwork along the eastern façade of Reservoir No 1 is generally in good condition. There is evidence of some patches of repointing that have occurred to the mortar joints (Plates 53, 54, 55, 59 and 69). Also, at the southern end of the brick façade, there has been some major repatching between the top of the brickwork where it meets with the underside of the sandstone capping (Plate 72).

Along the bottom visible course immediately above the current ground level around the reservoir, there are sections where the mortar has severely eroded out between the horizontal and vertical joints. This does not appear to have caused any structural damage to the eastern façade (Plate 72).

There is evidence on the brickwork of water damage occurring. These generally line up with the joints between the sandstone capping blocks, where they have separated slightly and allowed water to channel between them and onto the brickwork (Plates 56, 58 – 61, 63 – 64 and 67 – 72). This does not appear to have caused any damage to the bricks, only to have discoloured the outer skin. There is also a section of mould growing at the southern end of the brickwork, where the brickwork of Reservoir No 1 meets with Reservoir No 2.

The sandstone capping stones are also considered to be in good condition. Cut marks associated with the working of the stones is present on all of the stone work, which indicates they have not eroded or degraded over time (see Plate 69 for example).

There is mould growth present on the sandstone, however, this is only present on the exterior of the stone, and is unlikely to have caused any damage to the stones themselves. There has been some separation between the sandstone capping blocks, which has resulted in chipping occurring along the corners of the blocks.

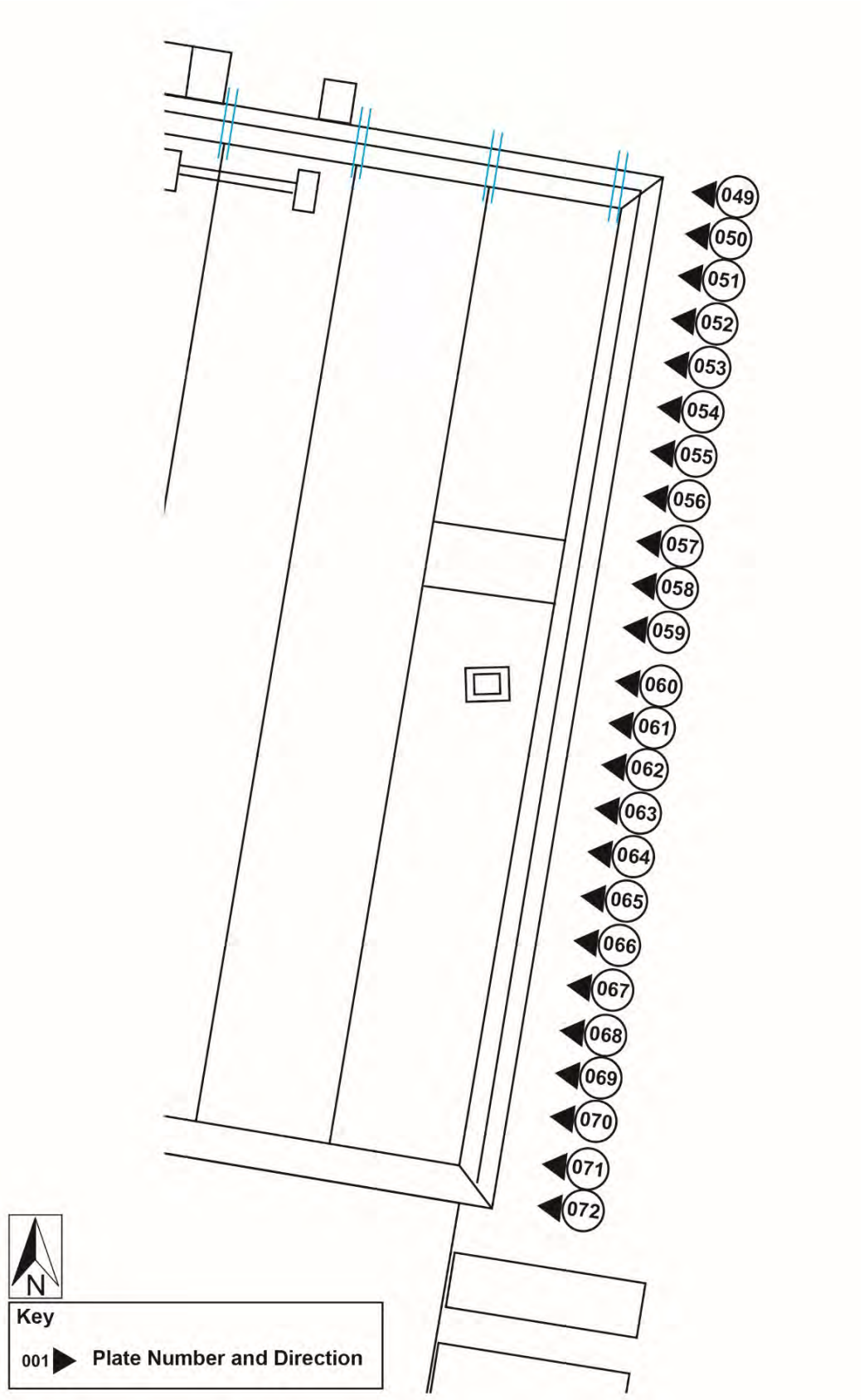

Figure 8 Location photographic plates were taken from

Plate 49

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Plate 58

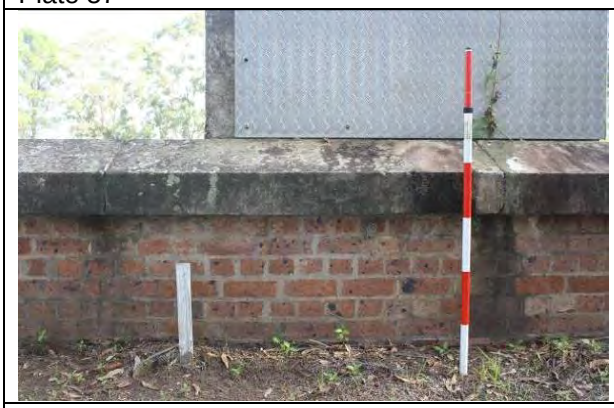

Plate 59

Plate 60

Plate 61

Plate 62

Plate 63

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Plate 66

Plate 67

Plate 68

Plate 69

Plate 70

Plate 71

Plate 72

The junction of Reservoir No 1 with Reservoir No 2 is set back from the end of the brickwork, by three full courses, and Reservoir 2 is significantly lower than Reservoir No 1 in this location. The eastern façade of Reservoir No 2 consists of the concrete retaining walls with a steel flashing around the top that attaches to the steel roof. The concrete wall is the same as constructed along the northern façade.

The condition of the concrete work is considered to be good. There is widespread mould growing on the concrete work, however, this is unlikely to have caused any damage to the structure of the concrete façade (Plates 73 – 84).

There is one casting joint present along this section of the concrete work. It appears to be a joint created during the construction works during the pouring phases. The joint is pronounced, but does not appear to be damaged or causing damage to the exterior of the structure (Plate 77).

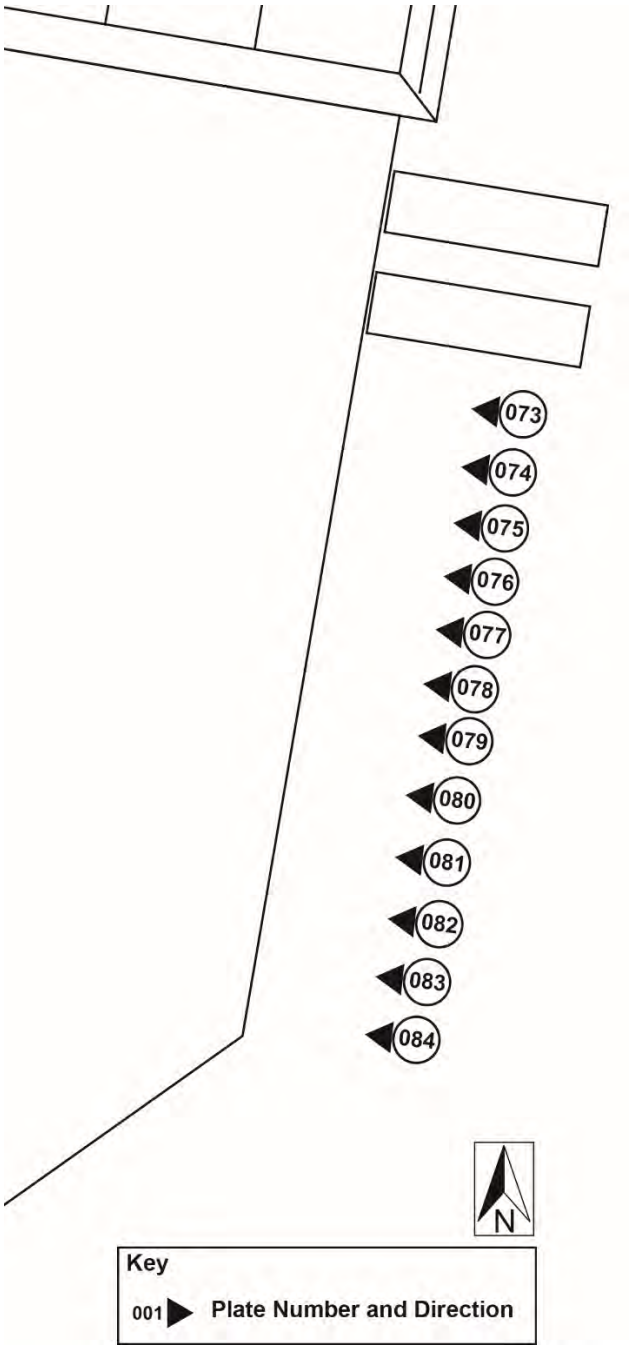

Figure 9 Location photographic plates were taken from

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Plate 80

Plate 81

Plate 82

Plate 83

Plate 84

4.1.3 Southern façade

The southern façade of the reservoirs consists of Reservoir No 2 only. The shape of the reservoir along the southern façade includes two walls. A northeast to southeast orientated wall that comes off of the eastern façade, and a southern façade wall (Figure 3). Both walls consist of concrete façade walls with a metal flashing that attaches to the steel roof. The angle of the roof changes and increases in height towards the west. A steel profile sheeting has been used to form the wall between the top of the concrete façade wall and the pitch of the roof.

The condition of the sandstone wall along the southern façade wall that is orientated northeast to southwest also appears to be in good condition. The concrete face is covered extensively with mould, but is not believed to have caused any damage to the integrity of the wall (Plates 85 – 91).

Similar to that on the eastern façade wall, there appears to be one casting joint in the concrete wall. There appears to be some separation between the joints of the two concrete walls. The separated sections also include fracturing to the joint edges between the two casting joints (Plate 88).

The east-west orientated wall of the southern façade is the same construction as that of the previous section associated with Reservoir No 2. The pitch of the steel roof on top of the concrete façade wall increases towards the western end of the wall (Plates 92 – 99).

The concrete wall is also in good condition, with the exception of two sections of the wall where the exterior of the wall has evidence of exfoliation, to the point where the timber formwork imprint that is present on the other sections of the concrete wall, are no longer visible (Plates 98 and 99). The second of the two sections is located near the western end of the southern façade and appears to have been repaired. There is also one continuous crack that has formed from the top of the concrete wall to below the visible section of the wall. It is likely that this repair was undertaken near where an existing casting joint was present, and the wall has been repaired, but did not include a separation in the repaired wall.

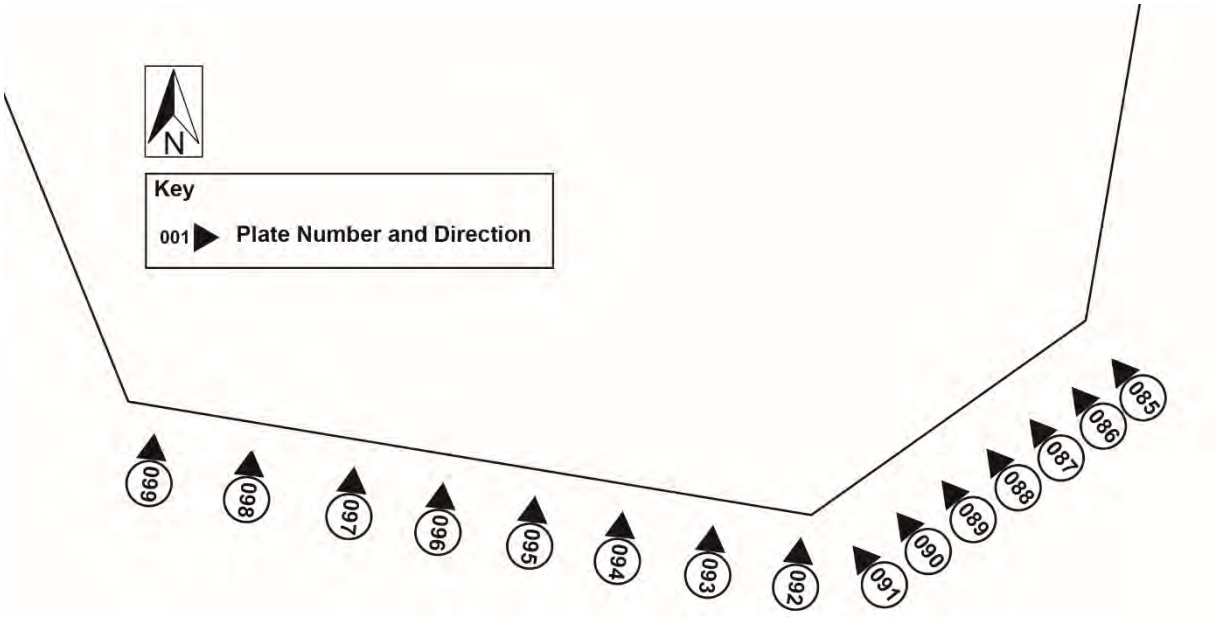

Figure 10 Location photographic plates were taken from

Plate 85

Plate 86

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Plate 89

Plate 90

Plate 91

Plate 92

Plate 93

Plate 94

Plate 95

Plate 96

Plate 97

Plate 98

Plate 99

4.1.4 Western façade

The western façade of the reservoirs is associated wholly with Reservoir No 2, and consists of two separate façade sections. The southern portion of the façade wall consists of a wall running northwest to southeast, and the second section is the western wall that runs north-south (Figure 3). The first portion of the western façade includes the concrete spillway. This wall is also higher than all other visible sections of the walls around the reservoirs. The concrete portion of the wall is visible to a height of one metre above the ground level to the north of the spillway. This is likely due to the grading of the topography around the outside of the reservoir that has catered for the presence of the spillway (Plates 100 – 117).

From the south-western corner of Reservoir No 2 the height of the roof is maintained and is no longer rising. There is cracking present near the corner of the concrete façade wall (Plate 100). There is also a large crack present approximately seven metres along this wall towards the northwest. This crack appears in a section that has been repaired along the top of the concrete wall, with the crack running from the top of the concrete wall to below ground (Plate 102).

There is a casting joint present at approximately 12.4 metres from the south-western corner. The casting joint has some signs of exfoliation of the outer skin of the concrete, however, the damage appears to be only on the face of the concrete work (Plate 104).

The spillway cover has been upgraded recently, likely at the same time that the new roof was installed. This consists of a black rubber cover over the top of a steel mesh. This has been bolted to the concrete façade wall (Plates 109 and 110).

There is another casting joint present approaching the north-eastern end of this section of the western façade. The joint is in good condition, with only minor cracking present along the joint. Two reinforcing rods are exposed at the casting joint (Plate 113).

From the junction of the first western façade wall to the north-south orientated façade wall the roof of the reservoir is no longer higher than the metal flashing (Plate 118).

There is one major crack and exfoliation of the concrete skin immediately to the north of this corner of the reservoir where the reinforcing rod has been exposed. This crack extends to the casting joint where it was formed (Plate 119).

This is the only major cracking that appears along this section of the wall. There is another casting joint near the northwest corner of the reservoir. This casting joint shows minimal signs of damage to the corners of the joints (Plate 125).

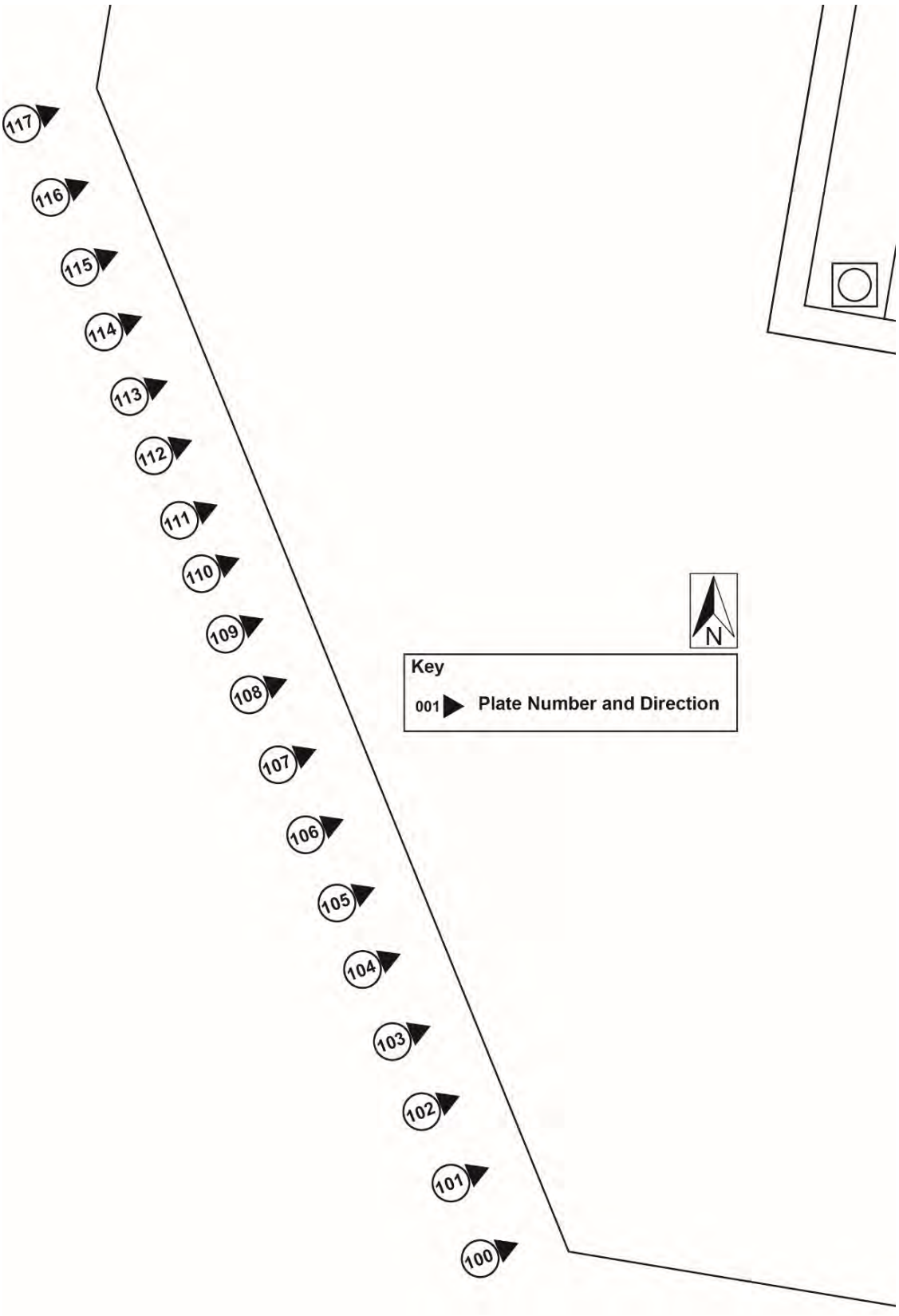

Figure 11 Location photographic plates were taken from

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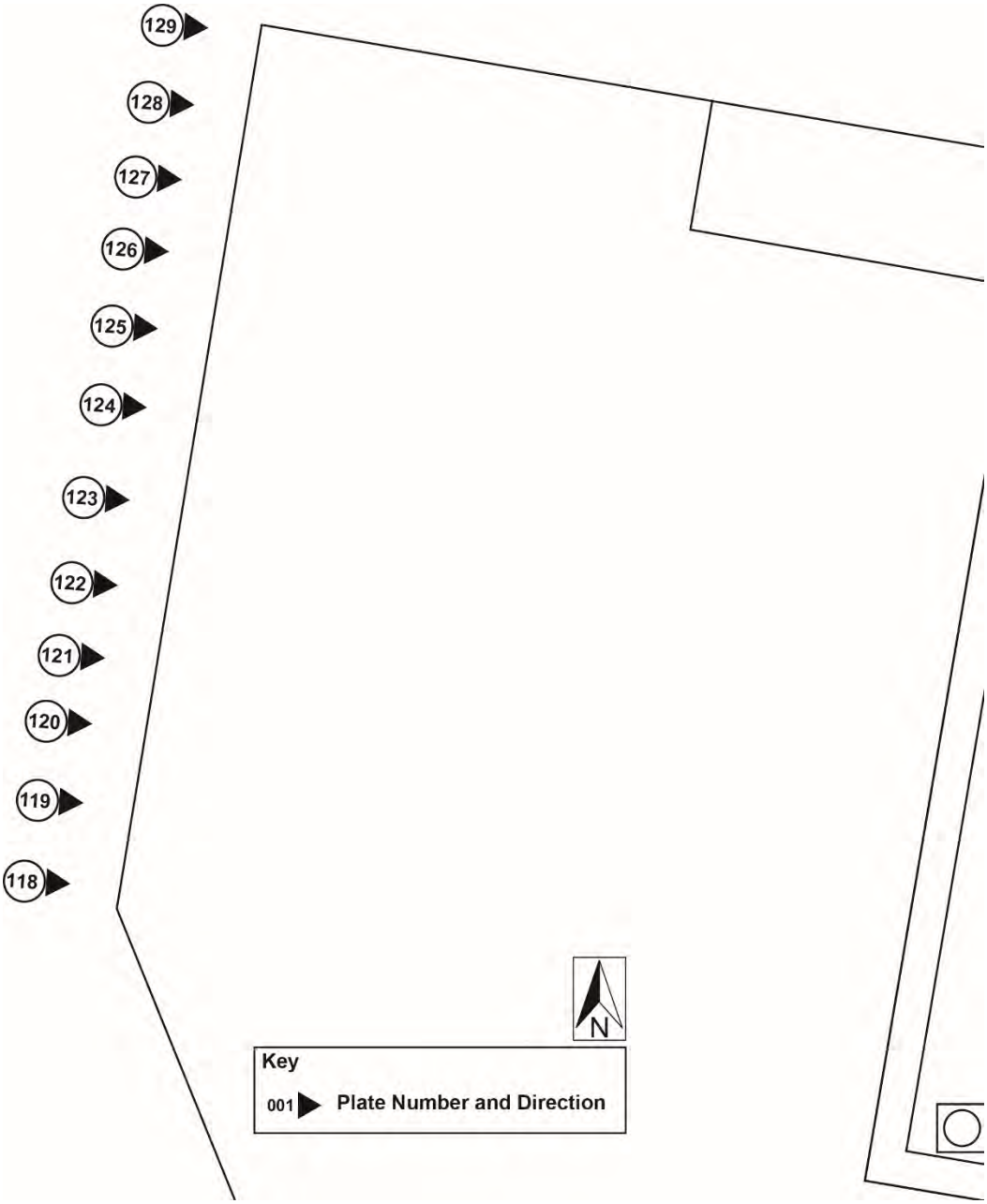

Figure 12 Location photographic plates were taken from

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Plate 129

4.1.5 Reservoir No.1 Roof

The roof consists of six brick arches that have been covered with bitumen (Plates 130 – 133). Between each of the arches are curved spoon drains that slope from the south towards the north, that exit through the terracotta pipes in the northern brick façade (Plate 133).

The brickworks associated with the second, inside, course of the façade walls associated with Reservoir No 1 have all been repointed. The repointing has been completed roughly in places and covers over whole sections of bricks. There does not appear to be damaged to the inside wall of the brick façade (Plates 138 to 159).

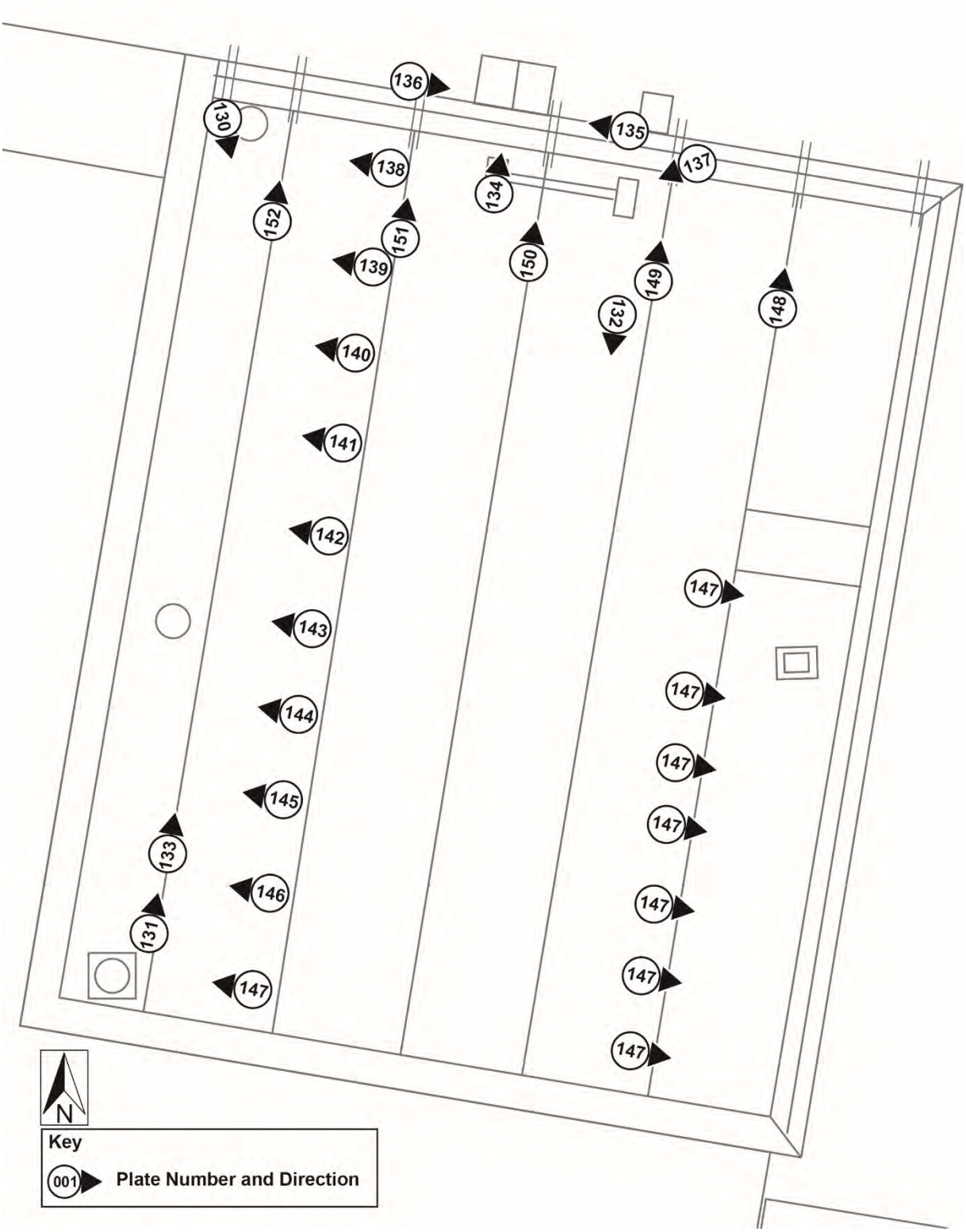

Figure 13 Location photographic plates were taken from

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Plate 159

5.0 Conclusion

The condition of the Buttai Reservoir No 1 is considered to be good. The original reservoir's brick and sandstone façade and roof have been maintained through repointing of the brick work; this has been the only external maintenance work that has been required. The condition inspection has only inspected the external façade that was visible above the current ground level. The few areas where the current ground level drops away or has been removed did reveal some of the mortar, that was present, has eroded away, but the structure of the wall did not appear to be damaged.

Reservoir No 2 was also considered to be in good condition. The remaining original fabric present relating to this reservoir was limited to the concrete raked façade wall. The roof, including the steel panel wall, has all been replaced and is new condition. Damage to the concrete wall was very specific to individual spots where there was a casting joint in the concrete pour, and that joint has weathered over time, or to areas that appear to have been direct repaired to the wall.

This condition assessment provides a baseline recording that may be used as a point of comparison during future inspections of the Buttai Reservoirs No 1 and No 2.

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Buttai Cemetery

Heritage Condition Assessment

Buttai Cemetery

Heritage Condition Assessment

Client: Bloomfield Colliery

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Level 21, 420 George Street, Sydney NSW 2000, PO Box Q410, QVB Post Office NSW 1230, Australia
T +61 2 8934 0000 F +61 2 8934 0001 www.aecom.com
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12-Oct-2018

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Quality Information

Document Buttai Cemetery

Date 12-Oct-2018

Prepared by Chris Lewczak

Reviewed by Darran Jordan

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	09-Oct-18	Draft	Simon Murphy Project Manager	
1	12-Oct-18	Final	Simon Murphy Project Manager	

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1.0 Introduction

1.1 Background

The Bloomfield Colliery (the Colliery) is an existing open cut mining operation located approximately 20 kilometres north-west of Newcastle. The Colliery is operated by Bloomfield Collieries Pty Limited (Bloomfield), part of the Bloomfield Group of companies. The Colliery currently operates in accordance with Project Approval 07_0087 issued under Part 3A (repealed) of the *Environmental Planning and Assessment Act 1979*, with approved production levels of 1.3 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal. Mining operations under the existing approval may take place until 31 December 2021.

As part of the ongoing operations at the mine site, Bloomfield sought to extend mining operations to allow for the continuation of mining within Consolidated Coal Lease 761 and Mining Lease 1738, to process up to 1.3 Mtpa of ROM coal until 31 December 2030 (Application Number 07_0087).

Project approval was determined on 16 August 2018 and granted with conditions attached to this approval. Heritage conditions were included in the approval that required that condition surveys of Buttai No 1 and No 2 reservoirs, and of the Buttai Cemetery (Wilfred Elliot Private Cemetery) including memorial headstones, graves, fences and trees, be undertaken.

This report satisfies the requirement of the condition survey of Buttai Cemetery (Wilfred Elliot Private Cemetery). A separate report has been prepared for the Buttai No 1 and No 2 reservoirs.

1.2 Site location

The Buttai Cemetery is located at 659 John Renshaw Drive, Buttai. The cemetery is located approximately 280 m to the north of John Renshaw Drive, located on top of a hill. The cemetery consists of two separate burial areas, known as Buttai Cemetery No 1 and No 2. Buttai Cemetery No 1 consists of 21 headstones, and Buttai Cemetery No 2, located 100 m to the west of No 1, has 2 burials and 5 plaques (see Figure 1 and Figure 2).

1.3 Scope of work

The objectives of this investigation are to:

- Undertake a detailed site inspection and condition assessment of headstones, graves, fences and trees that form the Buttai Cemetery site to record the current condition of the cemetery; and
- Prepare a detailed condition assessment report of the cemetery that can be used as a baseline assessment for future use.

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KEY

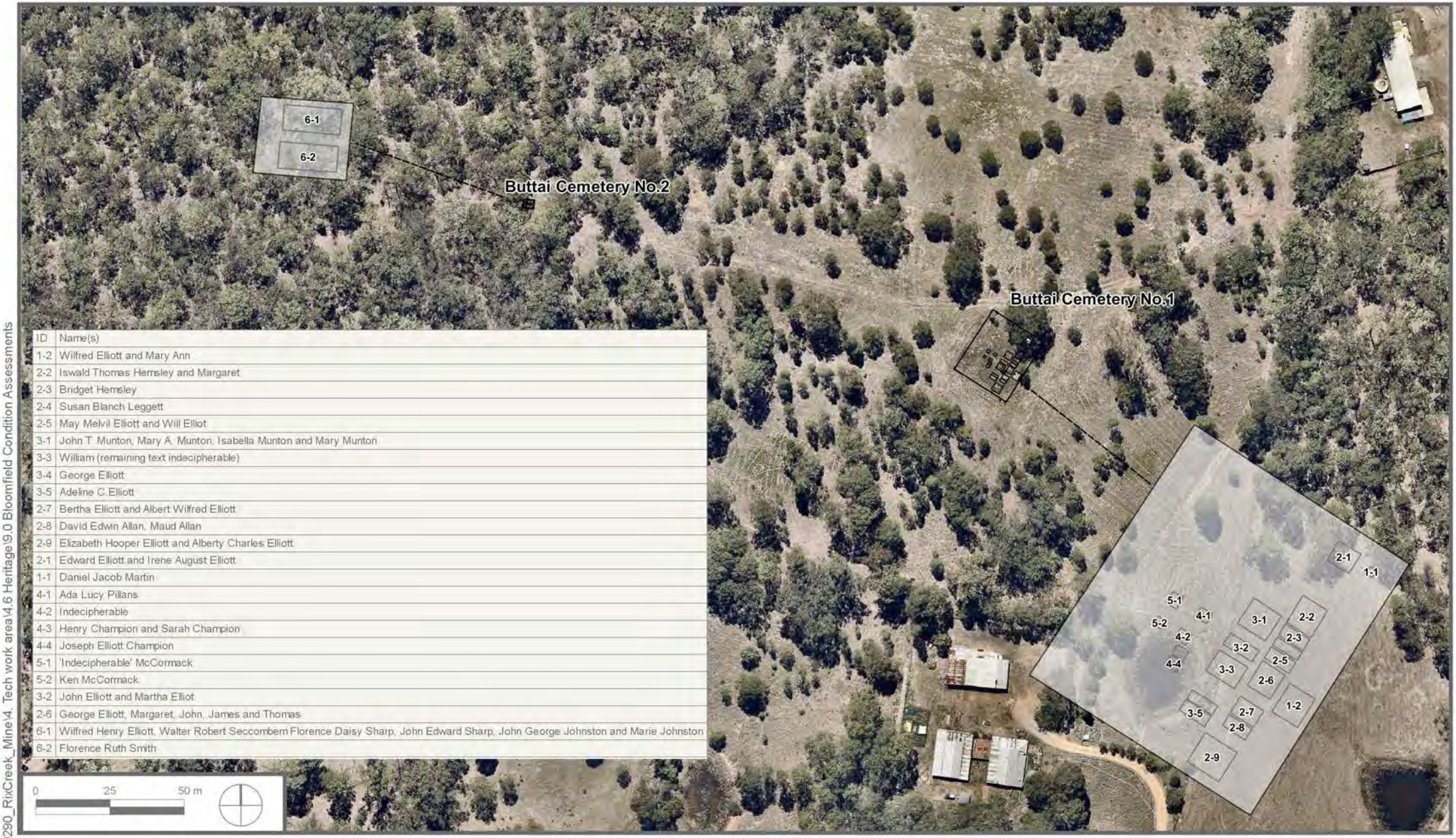
- Project Area
- Vehicle Track
- Local Road
- Main Road

Main Map Extent

PROJECT AREA

Buttai No1 and 2 Reservoirs and Buttai Cemetery
Heritage Condition Assessment

Figure 1



ID	Name(s)
1-2	Wilfred Elliott and Mary Ann
2-2	Iswald Thomas Hemsley and Margaret
2-3	Bridget Hemsley
2-4	Susan Blanch Leggett
2-5	May Melvil Elliott and Will Elliot
3-1	John T. Munton, Mary A. Munton, Isabella Munton and Mary Munton
3-3	William (remaining text indecipherable)
3-4	George Elliott
3-5	Adeline C.Elliott
2-7	Bertha Elliott and Albert Wilfred Elliott
2-8	David Edwin Allan, Maud Allan
2-9	Elizabeth Hooper Elliott and Alberty Charles Elliott
2-1	Edward Elliott and Irene August Elliott
1-1	Daniel Jacob Martin
4-1	Ada Lucy Pillans
4-2	Indecipherable
4-3	Henry Champion and Sarah Champion
4-4	Joseph Elliott Champion
5-1	'Indecipherable' McCormack
5-2	Ken McCormack
3-2	John Elliott and Martha Elliot
2-6	George Elliott, Margaret, John, James and Thomas
6-1	Wilfred Henry Elliott, Walter Robert Seccombem Florence Daisy Sharp, John Edward Sharp, John George Johnston and Marie Johnston
6-2	Florence Ruth Smith

0 25 50 m

KEY

- Road
- Graves
- Fence

Main Map Extent

BUTTAI / ELLIOTT FAMILY CEMETERY

Heritage Condition Assessment

Figure 2

\\AUNTL1FP001\Projects\60289290_RixCreek_Mine\4. Tech work area\4.6 Heritage\9.0 Bloomfield Condition Assessments

1.4 Report methodology

This heritage condition assessment has been prepared to satisfy the Project Approval granted to Bloomfield Colliery Mod 4 extension (P 07_0087 MOD 4). This report has been prepared in accordance with the New South Wales (NSW) Heritage Division guidelines, including *NSW Heritage Manual* (NSW Heritage Office & NSW Department of Urban Affairs and Planning, 1996).

There are no previous heritage assessments, condition assessments or management plans prepared for this cemetery.

A detailed site inspection was undertaken on 5 July 2018. The focus of this inspection was to undertake a detailed photographic recording of the cemetery as a whole, as well as of each individual headstone and grave site that remained visible.

1.4.1 Report authorship and acknowledgements

This report has been prepared by Chris Lewczak (Senior European Heritage Specialist and Maritime Archaeologist). The site inspection was undertaken by Chris Lewczak and Luke Atkinson (Senior Heritage Specialist). Dr Darran Jordan (Senior Archaeologist and Heritage Specialist) provided a technical review of the content.

1.5 Report limitations

This report has been prepared to detail the condition of the still extant headstones and graves. Where there are no visible remains of a headstone or grave were present, no recording was undertaken.

A history for the cemetery has not been researched or included in this report. Historical research was limited to names that were identified on the headstones during the site inspection.

2.0 Statutory legislation

Buttai Cemetery, also known as the Elliott Family Cemetery, is listed on the Cessnock City Council Local Environmental Plan 2011 only.

2.1 Local legislation

2.1.1 Cessnock Local Environmental Plan 2011

Part 5, Section 5.10 of the Cessnock LEP 2011 deals with heritage conservation within the area covered by this LEP. All heritage items listed on the LEP are included in Schedule 5. The Cessnock LEP states:

"(1) The objectives of this clause are as follows:

a. to conserve the environmental heritage of Cessnock,

b. to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,

c. to conserve archaeological sites,

d. to conserve Aboriginal objects and Aboriginal places of heritage significance.

(2) Development consent is required for any of the following:

a. demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):

i. a heritage item,

ii. an Aboriginal object,

iii. a building, work, relic or tree within a heritage conservation area,

b. altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,

c. disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,

d. disturbing or excavating an Aboriginal place of heritage significance,

e. erecting a building on land:

i. on which a heritage item is located or that is within a heritage conservation area, or

ii. on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,

f. subdividing land:

i. on which a heritage item is located or that is within a heritage conservation area, or

ii. on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance."

3.0 Physical Condition Report

A site inspection of Buttai Cemetery was undertaken on 5 July 2018 by Chris Lewczak and Luke Atkinson. The inspection recorded the layout and condition of the cemetery as a whole, as well as each individual headstone and grave site that had physical remains present.

A grid was laid over the site to record the location of each grave site present within the cemetery.

3.1 Buttai Cemetery No 1

There are five rows of visible extant headstones and graves present in the main section of the cemetery. There are 21 visible headstones and/or graves present in the main portion of the cemetery. It must be noted that each grave does not constitute an individual burial. Some of the graves have two or more burials associated with each headstone.

A recording grid was established over the site to number and record each of the graves sites. The grid ran east to west, with Row 1 being in the eastern most line of graves. Numbering ran from the northern most grave continuously to the south, that is, the northern most grave in the eastern most row was Row 1-1, and numbering continued southwards to Row 1-2 etc (Figure 2).

3.1.1 Row 1

Row 1-1: Daniel Jacob Martin

This grave site consisted of a single headstone, approximately 0.5 x 0.38 m, possibly made from concrete, laid directly on ground. There is a decorative name plate at the top (western side) and pebbles laid below marking out “RIP”, some of which are missing. The concrete headstone is cracked and chipped all around the edges (Plate 1).

Plate 1

Row 1-2: Wilfred Elliott and Mary Ann

This burial consists of a single headstone and a double sized plot. The headstone is made of granite that is inserted into a sandstone plinth. The top is a decorative rounded end that includes a dove with an olive branch in its beak (Plates 2, 3 and 4). The inscription consists of lead embossed lettering attached to the headstone (Plate 5). The headstone is intact, and all edges and corners remain well defined. The face of the headstone does show some degradation and laminating from weathering.

The graves are marked by a four piece granite top that has been laid at the same level as the surrounding ground level. The top surface of the grave is in good condition and is not cracked or weathered.

Plate 2

Plate 3

Plate 4

Plate 5

3.1.2 Row 2

Row 2-1: Edward Elliott and Irene August Elliott

This grave is a double sized plot with two individual headstones, separated with another kerb. The headstone consists of three separate sections, being the central stone with a peaked top, and two sandstone abutting sections either side of the central one. The central headstone piece includes the inscriptions that have been engraved into a single piece of granite. This granite piece has been inlaid into the central sandstone piece (Plates 6 and 9). The inscription stone and inscription are in good condition with no signs of cracking or other damage. All three pieces of sandstone that made up the headstone have weathered, with the decorative crosses and other patterns heavily faded and covered with lichen.

The kerb wall of the grave consists of four separate large sandstone sections that form the outside of the grave, and one sandstone divider stone separating the two graves internally. Each of the four outside walls consists of a single piece of sandstone that abuts the two connecting pieces. The pieces of the sandstone walls are joined together with the use of a sandstone pin that connects on the external face of the blocks (plates 8). Both sides (northern and southern sides) of the kerb walls have separated from the bottom (eastern) sandstone piece, but are still attached to the top (western) kerb wall.

The top of the grave has been tiled over with decorative blue and white tiles. The bottom section of the northern grave has sunken over time. Also, the north-eastern corner of the southern grave has tiles that are missing (Plates 6 and 7). Otherwise the top of the graves appear to be in good condition.

Plate 6

Plate 7

Plate 8

Plate 9

Row 2-2: Iswald Thomas Hemsley and Margaret

This is a double grave consisting of a kerbed grave site and a sandstone headstone with an inlaid granite stone with inscription (Plates10). The headstone consists of two pieces, a lower plinth and a second forming the headstone with a racked face. The plinth and headstone section are both sandstone, and are covered with lichen. There is no evidence of damage from cracking or other fracturing (Plates 10, 12 and 15). The inscription is engraved into a separate granite stone that is inset into the top sandstone block, and appears to be in good condition.

The grave site is marked by four sandstone kerb sections. Each of the four outside walls consist of a single piece of sandstone that abuts the two connecting pieces. The kerb walls do not appear to be joined together with any mortar or other pinning method. The northern kerbed wall has separated from the top (western) and bottom (eastern) kerb and is leaning outward towards the north (Plates 11 – 14).

The top of the grave has been covered with a fine pebble aggregate concrete surface. The slab has been laid in one piece. The surface has cracked and there are signs of subsidence in the north-eastern corner and in the centre, as well as some upheaval around the cracks (Plate 15).

Plate 10

Plate 11

Plate 12

Plate 13

	
Plate 14	Plate 15

Row 2-3: Bridget (wife of Joseph Hemsley)

This grave is a single grave that has a sandstone kerb and headstone (Plate 16). The headstone consists of a single sandstone piece that spans the width of the grave that rests on top of the western kerb wall. The centre of the headstone is a rectangular section with a curved top, with two decorative side pedestals. The sandstone detail is still visible and complete, however, the sandstone is covered in lichen on the eastern face. The headstone has an inlaid granite inscription stone in the same shape as the central section headstone. The inscription has been engraved into the granite, and is still clear and legible. The headstone, including the sandstone and granite are in a good condition (Plate 16, 17 and 20).

The kerb walls of the grave are formed by four sandstone blocks. Each one abuts the other, and may have been joined with mortar. There is no evidence of mortar between the kerbing blocks, and the eastern sandstone kerb block has separated away from the western block in the south-east corner (Plates 16, 18 and 19).

The top of the grave has been covered with a fine pebble aggregate and concrete surface. The slab has been laid in one piece. There are no other cracks or subsidence present in this surface.

Plate 16

Plate 17

Plate 18

Plate 19

Plate 20

Row 2-4: Susan Blanch Leggett

This is a single grave, narrower than others that are present within the cemetery. The headstone consists of a single piece of sandstone and is in good condition, with all of the edges and corners intact, with no chipping or other fracturing evident (Plates 21 and 23).

A granite inscription stone is inset into the sandstone headstone. The inscription is an embossed lead lettering that has weathered, but is still clearly legible (plate 22).

The sandstone kerb walls that form the grave consist of four sections that abut each other. The kerb walls are kept together by mortar at all four joints. There has been no separation between any of the sandstone kerb walls (Plates 21 and 24).

The top of the grave has been covered with a fine pebble aggregate concrete surface. The slab has been laid in one piece. There is no cracking or subsidence present in this surface (Plate 21).

Plate 21

Plate 22

	
Plate 23	Plate 24

Row 2-5: Will Elliott

This is a single sized grave that includes a decorative headstone, rounded sandstone kerb walls and the remains of a former wrought iron fence (Plate 25).

The headstone consists of a sandstone plinth and two granite plinths resting on top that support the granite headstone. The headstone has a slight cracked face. The headstone also includes decorative scroll on each side and along the top. The corners and some of the edges of the headstone and plinths have worn smooth, however the detail is still visible. There are patches of lichen on the sides and front eastern portion of the granite, however, this has not caused any damage to the stone. The inscription consists of lead stencilling embossed onto the granite headstone. All lettering is still present, and the inscription is legible (Plates 27, 30 and 31).

The kerb walls have rounded tops and are squared on the corners which support the wrought iron bow and picket style fence. The northern kerb has subsided at the north-east corner, and has fractured at the south-east corner. The remainder of the kerbed wall is intact and completed. The fence remains installed in the kerbed wall at the western end, and partially installed on the southern kerbing. The lower, eastern end, fence is presently leaning against the southern portion of the remaining fence. The northern kerb wall fence has been removed and is no longer on site (Plates 26, 28, 29 and 31).

	
Plate 25	Plate 26

Plate 27

Plate 28

Plate 29

Plate 30

Plate 31

Plate 32

Row 2-6: George Elliott, Margaret, John, James and Thomas

This grave site is a larger, triple plot sized grave with a monument gravestone marker (Plate 33). The monument headstone consists of a sandstone plinth with a bevelled top edge, which supports two additional granite plinths (Plates 34 – 37). The fourth course is a rectangular block of granite that contains the inscriptions, along with the two granite plinths below. The top of this block forms rounded corners at the top (Plates 36 – 38). This is part of the transition to a tapering column that has a granite urn carved into the top (Plate 39).

The sandstone plinth at the base has minimal wear from weathering, with one corner containing a small fracture. The two granite plinths and the memorial stone are in good condition, with no cracking, fracturing, or other damage present on the stone. The stone is covered with lichen and is discoloured in places, but this has not caused any damage. There has been some minor weathering and loss of finer edge detailing relating to the top of the column and urn sections, however, there has been no substantial loss of form (Plates 36 – 38). The joints between each of the sandstone and granite sections have remained intact and together, with no separation visible.

The inscription has been laid using lead lettering on all four panels of the monument stone, and on some of the panels on the two granite plinths. All inscriptions appear to be intact and can be read. There is some general weathering and lichen that has discoloured the granite in sections, but not the lead lettering (Plates 36 – 38).

The sandstone kerb walls for the grave site are formed by using two sandstone kerb sections for each of the four sides, all with a chamfered top. The kerb walls were once held together with a sandstone pin that sat in a recess on the outer face of the wall. These are missing, and the kerb wall has failed all around the grave site. The northern and western walls have subsided with the surrounding ground, and the remaining sandstone kerb blocks have moved and are out of alignment with each other (Plates 40 – 43).

The top of the grave site consists of a small pebble aggregate concrete and grass sections that appear to have subsided along the northern side. The top may also have cracking elsewhere however, with the grass that is growing across the site, it is difficult to tell (Plate 33 and 42).

Plate 33

Plate 34

Plate 35

Plate 36

Plate 37

Plate 38

Plate 39

Plate 40

Plate 41

Plate 42

Plate 43

Row 2-7: Bertha Elliott, Andrew Wilfred Elliott and Lynette Elliott

This grave site is a single plot that is kerb walled and has two separate headstones, one at the eastern end, and a separate one laying on top of the grave surface in front of the first (Plate 44). The headstone at the eastern end is a single sandstone block that has a peaked top that has steps at the ends. There are no other decorative details on the sandstone. The headstone had a granite stone inscription block that was inlaid into the headstone. This was a similar shape to the headstone, with a peaked top. This stone has fallen out of the headstone and rests against it. The inscription is engraved, and the granite does not appear to be damaged (Plates 45 – 47).

The second headstone is situated in front of the first and is laid on a slight upright angle on top of the concrete surface of the grave. The headstone consists of a white tiled plinth with a granite headstone resting directly on it. The tiles are cracked and are missing in the north-western corner, exposing the sandstone plinth the tiles are laid on. The headstone is covered in lichen and the inscription is engraved. Other than the covering of lichen, the headstone is in good condition (Plates 44, 48 and 49).

The kerb wall has been made of four sandstone blocks. The walls are still joined together with mortar present between all four of the joints. The wall has not separated or subsided (Plates 44 and 50).

The top of the grave consists of a small pebble aggregate concrete surface. There is some minor cracking present along the edges, however there has not been any subsidence or collapsing.

Plate 44

Plate 45

Plate 46

Plate 47

Plate 48

Plate 49

Plate 50

Row 2-8: David Edwin Allen and Maud Allen

This is a single plot grave site, with a single headstone, kerb walls and a granite slab cap. The grave has subsided to the south (Plate 51). The headstone is a single sandstone block that has decorative scrolled edges that lead off from the central section of the headstone. These also contain embossed crosses on both sides. Some of the sharp edges of the original stonework have weathered, however the remainder of the stonework is in good condition, with all decorative detail still visible. There is some lichen covering (Plates 52 and 53).

The central section of the headstone has a granite inscription stone inlaid. The inscription is engraved into the granite, and there is no other damage or deterioration present (Plates 52 and 53).

The sandstone kerb walls are all intact and are connected, despite the subsidence that has occurred. A single granite slab forms the cover to the gravestone. The granite slab is intact and does not have any visible cracking. The slab has shifted to the south, however the granite slab has not fallen into the grave (Plates 51 and 54).

Plate 51

Plate 52

	
Plate 53	Plate 54

Row 2-9: Elizabeth Hooper Edwin and Albert Charles Elliott

This site is a triple grave plot that consists of a single granite headstone, sandstone kerb walls and a concrete and grassed surface. The headstone is made up of a sandstone plinth that supports a granite headstone. The granite headstone has a smooth racked face that is engraved with the inscription, with rough cut top, sides and back. The sandstone plinth does not have any evidence of fracturing, cracking, or any other damage other than lichen cover in places. The granite headstone is also in good condition (Plates 55 and 56).

The kerb walls that surround the grave site are made from sandstone and consist of two sandstone blocks along each side of the grave to form the wall. The blocks are jointed at the corners to each other with the use of sandstone pins, which are still in place on some of the corners (Plates 58 and 60). There has been some subsidence along the northern side of the grave that has caused the northern, eastern and southern walls to separate from the adjoining blocks near the centre. Additional sandstone walling has been added underneath the kerb wall on the southern side of the grave, possibly because of localised erosion on the site (Plates 57 and 58). This has disintegrated and has failed.

Internally, the top of the grave has subsided at the northern and southern ends. A central section of the former pebble aggregate concrete surface remains, but it is cracked and has subsided with the remainder of the internal grave surface.

	
Plate 55	Plate 56

Plate 57

Plate 58

Plate 59

Plate 60

3.1.3 Row 3

Row 3-1: John T Munton, Mary A Munton, Isabella Munton and Mary Munton Hooper Edwin and Albert Charles Elliott

This grave site is a double sized plot with a monument headstone (Plate 61). The monument headstone consists of a sandstone plinth with a bevelled top, which supports two additional granite plinths (Plates 64, 67 – 69). The fourth course is a rectangular block of granite that contains the inscriptions, along with the two granite plinths. The top of this block has rounded corners at the top. This is part of the transition to a tapering column that has a granite urn carved into its top (Plate 66).

The monument as a whole has subsided back towards the south-west. The sandstone plinth at the base has much weathering that has occurred but has not lost its shape. There is a boarder and a pitted pattern that has been worked into the stone on all four sides. Some are more visible and detailed than others due to the weathering of the stone (Plate 64). The two granite plinths and the memorial stone are in good condition. All three have discolouration that has occurred, but there has not been any fractures or cracking that has occurred (Plates 65 – 69). There has been some minor weathering and loss of finer edge detailing relating to the top of the column and urn sections, however, there has been no substantial loss of form. The joints between each of the sandstone and granite sections have remained intact and together, with no separation visible despite the subsidence at ground level.

The inscription has been laid using lead lettering on all four panels of the monument stone, and on some of the panels on the two granite plinths. All inscriptions appear to be intact and can be read. There is some general weathering and lichen that has discoloured the granite in sections, but not the lead lettering (Plates 67 and 68).

The sandstone kerb walling is made up of various sized sandstone blocks that are all similar in shape and detail to each other. The kerb wall is highly fractured in places and has separated for the other blocks. This separation has occurred at almost every mid-section along the walls due to subsidence.

There has been substantial cracking and fracturing of the sandstone kerb wall blocks at the corners and along the mid-point on the eastern wall. There is evidence of a former fence that was installed on top of the kerb wall, however this has been removed and is no longer on site (Plates 61 – 63, 70 – 74).

Plate 61

Plate 62

Plate 63

Plate 64

Plate 65

Plate 66

Plate 67

Plate 68

Plate 69

Plate 70

Plate 71

Plate 72

Plate 73

Plate 74

Row 3-2: John Elliott and Martha Elliott and 3-3: William (?)

Both headstones 3-2 and 3-3 are located within one double sized grave site. Both headstones are highly decorative sandstone headstones that are surrounded by a single sandstone kerb walls and a wrought iron fence (Plates 75 – 78).

John Elliott and Martha Elliott's headstone was made from sandstone that has fractured off at the Mortis and Tenon joint, and the headstone is resting against the adjacent headstone (3-3) (Plate 85). The plinth of the headstone is still *in situ* with the mortis joint still present. The headstone of both John Elliott and Martha Elliott and William (?) are identical, with a rounded and scrolled top that includes a dove with an olive branch in its beak. The central portion of the headstone has a raised centre where the inscription has been engraved (Plates 88 and 89). The dove and the olive branch portion of John and Martha's headstone has broken off and is missing (Plate 86). Sections of the inscription are also weathered or covered in lichen and are no longer legible.

The William (?) headstone is still intact but has subsided back towards the west (Plate 75). The inscription and decorative features associated with the William (?) headstone had also weathered and the inscription has been lost in places.

The sandstone kerb wall around the grave has been made up of two sandstone blocks on each side. The top of the kerb has chamfered edges on both the inside and outside edges. The blocks also have recesses in the corners and one in the middle that holds the iron fence posts around the site. The kerb walls have subsided and separated at the joints from the other sandstone kerb blocks. The iron fence is still present along the western, northern and eastern walls of the grave site, with the southern fence section missing, and is a bow and picket style fence (Plates 75 – 81).

The inside surface of the grave is earthen and covered in places with grass. There does not appear to be any subsidence that has occurred within the grave plot itself.

Plate 75

Plate 76

Plate 77

Plate 78

Plate 79

Plate 80

Plate 81

Plate 82

Plate 83

Plate 84

Plate 85

Plate 86

Plate 87

Plate 88

Plate 89

Row 3-4: George Elliott

This is a single grave site that abuts immediately against grave 3-5 (described below) (Plate 90). The grave has a sandstone headstone that sits inside and low within the grave. A separate granite stone with the inscription has been attached to the sandstone block. The sandstone and granite components of the headstone are highly weathered and covered in sections with lichen. The inscription is an embossed lead lettering that has faded but is still attached and legible (Plate 93).

The sandstone used for the kerb walls are intact and are in good condition. There are chamfered corners on all inside and outside edges, except at the corners, where they are square (Plates 91 and 92).

The surface of the grave is sunken and set below the level of the surrounding ground. The surface has been formed from small pebble aggregate concrete. There has been no subsidence or any cracking.

Plate 90

Plate 91

Plate 92

Plate 93

Row 3-5: Adeline C. Elliott

This is a single grave plot that includes a granite headstone, a single raised sandstone kerb and slab as the cover (Plate 94). The headstone has been laid directly onto the granite cover stone, and is a low racking profile plinth with a separate granite inscription stone resting immediately on top of it. Both the granite plinth and headstone are in good condition with no signs of damage to either.

The kerb of the grave appears to be a single piece of granite. There does not appear to be any joins to the kerb section. There is also no cracking or other damage present to this wall (Plates 94 – 97).

The grave is topped with a single piece of granite. This slab rests on top of the kerbing piece. There does not appear to be any fracturing or cracking to this element (Plates 94 and 97).

Plate 94

Plate 95

Plate 96

Plate 97

3.1.4 Row 4

Row 4-1: Ada Lucy Pillans

This is a single grave site that includes only the headstone and no other features (Plate 98). The headstone consists of a sandstone plinth at the base that is rectangular with a bevelled edge around the top. The headstone is on top of a single, separate, rectangular sandstone block. A separate granite inscription block is attached to the headstone. The granite piece is rectangular with cut-out rounded corners. The inscription is made of lead lettering, with all lettering present and legible. There is no cracking, fracturing or other damage to the plinth, headstone or granite inscription stone (Plates 98 – 100).

Plate 98

Plate 99

Plate 100

Row 4-2: Indecipherable

This grave consists of a headstone only. The headstone is made up of a sandstone plinth that supports the sandstone headstone. The headstone has subsided and leans back towards the west onto the iron fence of the grave behind it (5-2). The plinth is similar to the others that are present in the cemetery, being rectangular base with chamfered corners along the top. The condition of the plinth is good, with only minor fracturing at the corners (Plates 101 and 102).

The headstone is a single sandstone slab with a rounded top. The headstone does not have any decorative or ornate features and is intact. The inscription that was engraved on the headstone is no longer visible, due to the weathering of the sandstone and lichen cover.

	
Plate 101	Plate 102

Row 4-3: Henry and Sarah Champion

This grave site consists of a headstone only. The headstone is made up of a sandstone plinth with chamfered top. This supports the granite headstone. The headstone includes the engraved inscription with no other decorative styling (Plate 103 – 105).

The headstone has subsided to the north but the plinth and headstone are still joined and are not damaged.

	
Plate 103	Plate 104

Plate 105

Row 4-4: Joseph Elliott

This grave consists of a headstone as a grave marker. The headstone is a single piece of granite laid flat on the ground. The inscription has been made onto a metal plate, possibly lead, that is screwed to the stone below. The headstone is surrounded by a timber kerb with aluminium flashing tacked onto the timber kerb (Plates 106 and 107).

Plate 106

Plate 107

3.1.5 Row 5

Row 5-1: (?) McCormack

This grave includes only a headstone. The headstone is a simple rectangular sandstone plinth that supports a single rectangular sandstone slab with a double curved top headstone (Plate 108 – 110). There are no ornate or other decorative components to the headstone. The sandstone is completed, with no chipping, fracturing or loss of detail on the edges or corners, but is extensively covered with lichen. The inscription was once engraved, but has worn away in sections and is no longer legible (Plate 111).

	
Plate 108	Plate 109
	
Plate 110	Plate 111

Row 5-2: Ken McCormack

This single grave site consists of a headstone, sandstone kerb walls and a wrought iron fence. The headstone is a two-piece construction, being a sandstone plinth and a granite headstone. The plinth is a simple rectangular sandstone block. The corners and edges of the block have weathered and fractured. The headstone is a single piece of granite. The headstone includes a lower rectangular section with double peaked top that transitions into a crucifix head. The inscription is made up of lead lettering. All lettering is present and can be read. The granite piece has some discolouration on the front, eastern facing side, but there is no other damage to the stone (Plates 114 and 115).

The sandstone kerb walls are made of four sandstone blocks, one on each side of the grave. The sandstone kerb has been shaped to have a curved surface along the top, with squared ends. These are to support the iron fence on top of the kerb wall. The top surface of the kerb walls have exfoliated, but the stones remain intact. The north-west corner of the kerb wall has fractured (Plates 112 and 113). The wrought iron fence is present all around the grave site. The fence is a bow and picket style that has been damaged and pushed inwards and is heavily rusted (Plates 112 and 113).

Plate 112

Plate 113

Plate 114

Plate 115

3.2 Buttai Cemetery No 2

Buttai Cemetery No. 2 is located 100 m to the west Buttai No. 1 and consists of two grave sites.

3.2.1 Row 6

Row 6-1: Wilfred Henry Elliott (including Walter Robert Seccombe, John Sharp, Florence Sharp, John Johnston and Marie Johnstone).

This is the first of two graves located in this area. The grave has a granite headstone that is inset inside the kerb wall. The headstone is a rectangular granite piece with lead lettering for the inscription. The granite has discolouring but is considered to be good condition (Plates 116 and 117).

The sandstone kerb walls are formed by four separate sandstone blocks joined together. The tops of the sandstone kerb is rounded with raised rectangular corners. There is some cracking present in the tops and sides of the kerb walls, but they are intact and complete (Plates 116, 118 and 119.

The surface of the grave is sunken and set below the level of the surrounding ground, and consists of gravel and other debris that has accumulated.

Here are five plaques that have been added to this grave site. These include plaques for Walter Robert Seccombe, John Sharp and Florence Sharp attached to the kerb walls, and another two that haven been added to a separate footstone at the head (western end) of the grave for John Johnston and Marie Johnstone.

This grave also once had a cast iron fence associated with it. The fence has been removed and remains intact behind, southwest, of the grave and is not associated with a separate grave site (Plate 116). The fence is a bow style with a decorative an alternate bow design (Plate 120 and 121).

Plate 116

Plate 117

Plate 118

Plate 119

Plate 120

Plate 121

Row 6-2: Florence Ruth Smith

This is a single grave sized plot that includes a headstone, sandstone kerb walls and gravel surface (Plate 122). The headstone is a two-piece sandstone and granite style, with a low-profile sandstone plinth that holds a granite inscription stone. The granite stone is a simple rectangular piece that sits on top of the plinth. The inscription is engraved into the granite and is in good condition (Plate 124).

The sandstone kerb walls are made from four separate sandstone blocks joined together with mortar. The blocks are a simple rectangular style, except for the corners that have a bevelled edge along the outside face. The individual blocks are in good condition and the kerbing as a whole is intact (Plates 122and 123).

The internal surface of the grave is a pebble aggregate concrete. The surface does not have any signs of cracking or subsiding (Plate 122).

Plate 122

Plate 123

Plate 124

4.0 Conclusion

The condition of the Buttai Cemetery has been impacted in some instances by weathering, breakage and lichen growth. This is to have been expected given the age of the cemetery and its graves. The overall condition of the gravesites are considered to be good.

This condition assessment provides a baseline recording that may be used as a point of comparison during future inspections of the Buttai Cemetery.

5.0 References

NSW Heritage Office, & NSW Department of Urban Affairs and Planning. (1996). *NSW Heritage Manual*. Parramatta: Heritage Office & Department of Urban Affairs & Planning. Retrieved from http://www.heritage.nsw.gov.au/03_index.htm#M-O