



Foxground and Berry Bypass: Archaeological Methodology

Prepared for Roads and Maritime Services

1 July 2014

Biosis offices

AUSTRALIAN CAPITAL TERRITORY

Canberra

Unit 16 / 2 Yallourn Street
Fyshwick ACT 2609

Phone: (02) 6228 1599
Fax: (02) 6280 8752
Email: canberra@biosis.com.au

NEW SOUTH WALES

Sydney

18–20 Mandible Street
Alexandria NSW 2015

Phone: (02) 9690 2777
Fax: (02) 9690 2577
Email: sydney@biosis.com.au

Wollongong

8 Tate Street
Wollongong NSW 2500

Phone: (02) 4229 5222
Fax: (02) 4229 5500
Email: wollongong@biosis.com.au

QUEENSLAND

Brisbane

Suite 4 First Floor, 72 Wickham Street
Fortitude Valley QLD 4006

Phone: (07) 3831 7400
Fax: (07) 3831 7411
Email: brisbane@biosis.com.au

VICTORIA

Ballarat

506 Macarthur Street
Ballarat VIC 3350

Phone: (03) 5331 7000
Fax: (03) 5331 7033
Email: ballarat@biosis.com.au

Melbourne (Head Office)

38 Bertie Street
Port Melbourne VIC 3207

Phone: (03) 9646 9499
Fax: (03) 9646 9242
Email: melbourne@biosis.com.au

Wangaratta

16a Templeton Street (PO Box 943)
Wangaratta VIC 3677

Phone: (03) 5721 9453
Fax: (03) 5721 9454
Email: wangaratta@biosis.com.au

Document information

Report to:	Roads and Maritime Services
Prepared by:	Alexander Beben of the Wollongong office.
Biosis matter no.:	17911

Document Control

Reviewer:	Iain Stuart, JCIS Consultants
Mapping:	Ashleigh Pritchard
Project:	Foxground to Berry Bypass
Biosis Project No.:	17911
Report Title:	Foxground to Berry Bypass Archaeological Methodology.
LGA:	Shoalhaven

Revision	Prepared	Internal Review	External Review	Amended
DR01	Alex Beben	-	Iain Stuart	21/05/2014
DR02	Alex Beben	Sam Gibbons	-	21/05/2014

Revision	Issued	Name	Signed
DR02	21/05/2014	Alex Beben	Electronic
FIN01	01/07/2014	Alex Beben	Electronic

© Biosis Pty Ltd

This document is and shall remain the property of Biosis Pty Ltd. The document may only be used for the purposes for which it was commissioned and in accordance with the Terms of the Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Disclaimer:

Biosis Pty Ltd has completed this assessment in accordance with the relevant federal, state and local legislation and current industry best practice. The company accepts no liability for any damages or loss incurred as a result of reliance placed upon the report content or for any purpose other than that for which it was intended.

Acknowledgements

Biosis gratefully acknowledges the contributions of the following people and organisations (listed alphabetically) in preparing this report:

- Iain Stuart, JCIS Consultants
- Dr Samantha Gibbins, Biosis
- Dr Siobhan Lavelle, Heritage Division
- Saman Liyanaarachchi, Roads and Maritime Services
- Michelle Toms, Roads and Maritime Services

Abbreviations

c.	Circa
CHL	Commonwealth Heritage List
DGRs	Director General's Requirements
DP	Department of Planning
DP	Deposited Plan
EA	Environmental Assessment
EPA	Environment Planning and Assessment
REF	Review of Environmental Factors
LEP	Local Environmental Plan
m	Metre
mm	Millimetre
SoHI	Statement of Heritage Impact
OEH	Office of Environment and Heritage, Department of Premier and Cabinet
SHI	State Heritage Inventory
SHR	State Heritage Register

Contents

Acknowledgements	ii
Abbreviations.....	ii
1 Introduction	5
1.1 Project Background.....	5
1.2 Report Methodology.....	5
1.3 Assessment Objectives.....	6
1.4 Investigators and Contributors.....	7
1.5 Consultation.....	7
1.6 Limitations of the report.....	9
2 Archaeological Methodology.....	10
2.1 Remnant portions of previous road alignments	11
2.1.1 Synopsis of the Previous Investigation.....	12
2.1.2 Further Detailed Historical Research.....	12
2.1.3 Research Questions.....	13
2.1.4 Excavation Methodology.....	13
2.2 Former Tenant Farmers Dwellings	15
2.2.1 Research Questions.....	18
2.2.2 Excavation Methodology.....	18
2.3 Broughton Creek Village	21
2.3.1 Research Questions.....	23
2.3.2 Excavation Methodology.....	23
2.4 Finds Conservation.....	26
2.5 Reporting.....	27
3 References	29

List of Tables

Table 1: Conditions of approval pertinent to this archaeological methodology.....	5
Table 2: Consultation with regulatory bodies.....	7
Table 3: List of Heritage Items requiring archaeological investigation including description and level of impact.....	10

List of Plates

Plate 1: Location of G2B H11 (red rectangle) and associated tenant farms (blue circles), closer analysis has identified that these are not located near the existing twentieth century building of Glen Devon (G2B H11). Source: 1892 Roads in the Berry Estates, Parishes of Broughton and Cooloomgatta (Department of Lands: Crown Plan 424716-03).....	16
---	----

Plate 2: Location of G2B H48 (red rectangle) and associated tenant farms (blue circle), there appears to be several issues with this mapping with the creeks being improperly mapped. This had made it impossible to accurately georeference this image. Analysis of the property boundaries indicates that the tenant farms are located to the south-west of the modern buildings. Source: Plan of the Berry Estate (ZM Series 4000/1 ML MSS315/Map 17)..... 16

Plate 3: Location of G2B H49 (red rectangle) and associated tenant farms (blue circle), there appears to be several issues with this mapping with the creeks being improperly mapped. This had made it impossible to accurately georeference this image. Analysis of the property boundaries indicates that the tenant farms are located approximately 40m south-east of the modern buildings. Source: Plan of the Berry Estate (ZM Series 4000/1 ML MSS315/Map 17) 17

Plate 4: Location of G2B H53 PAD tenant farm (blue circle), there appears to be several issues with this mapping with the creeks being improperly mapped. This had made it impossible to accurately georeference this image. Analysis of the property boundaries indicates that the tenant farm is located at the site of the NOHC coordinates. Source: Plan of the Berry Estate (ZM Series 4000/1 ML MSS315/Map 17)..... 17

Plate 5: Configuration of Broughton Creek Village according to NOHC 2012: Figure 6.1, page 81. The Red annotation denotes the approximate area of open area excavation..... 22

1 Introduction

1.1 Project Background

Roads and Maritime Services (Roads and Maritime) is undertaking a series of upgrades to sections of the Princes Highway between Gerringong and Bomaderry in order to provide a continuous four lane divided highway between Waterfall and Jervis Bay Road, Falls Creek. The Foxground and Berry Bypass project involves an 11.6 kilometre upgrade of the existing highway between Toolijooa Road north of Foxground and Schofields Lane south of Berry and will involve bypasses of Foxground and Berry.

Project approval, subject to conditions was granted on 22 July 2013, under Part 3A of the Environmental Planning and Assessment Act 1979. Conditions of Approval B17, B18, B19, B21 and B22 require Roads and Maritime to undertake further heritage work. These conditions of approval are based upon the recommendations contained within the *Foxground and Berry Bypass Non-Aboriginal (historic) Heritage Assessment* prepared by Navin Officer Heritage Consultants Pty Ltd. A total of 13 heritage items of local significance have been identified as requiring archaeological investigation in accordance with Conditions B19 and B22 of the project approval.

Biosis Pty Ltd has been commissioned by Roads and Maritime to undertake Archaeological Investigations, Archival Recordings and Historical Research for Non-Aboriginal sites for the Princes Highway Upgrade Foxground and Berry Bypass.

This report presents an archaeological methodology for completing these investigations. Other heritage related conditions of approval B17, B18, B20 and B21 relate to the archival recording, further detailed historical research and Aboriginal investigations and are not addressed as part of this report

1.2 Report Methodology

This report has been based on the information presented in the *Foxground and Berry Bypass Non-Aboriginal (historic) Heritage Assessment* prepared by Navin Officer Heritage Consultants Pty Ltd for Roads and Maritime. The Foxground and Berry Bypass report involved historical research, surveys and test excavations, significance assessments and statement of heritage impacts for all heritage items identified within the project area. The current report builds upon this body of information through presenting supplementary research to allow research questions to be proposed and an archaeological methodology to be implemented which will answer these questions and satisfy the conditions of approval (see Table 1).

Table 1: Conditions of approval pertinent to this archaeological methodology.

Condition	Requirements
B.19	<p>Prior to pre-construction and construction impacts affecting G2B H15, H19, H21, H22, H23, H30 and H55 the Proponent shall carry out further historical and physical archaeological investigations in relation to these road alignments, in consultation with the department and the Heritage Council of NSW, to the satisfaction of the Director- General. These investigations must:</p> <ol style="list-style-type: none"> a) Undertake archaeological investigations in accordance with condition B22. b) Provide for the detailed analysis of any heritage items discovered during the investigations. c) Include management options for these heritage items (including options for relocation and display). d) If the findings of the investigations are significant, provide for the preparation and implementation of a heritage interpretation plan.

Condition	Requirements
<p>B.22</p>	<p>Prior to the commencement of pre-construction and construction activities affecting non-Aboriginal sites H11, H14, H19, H23, H28, H30, H48, H49, H53, and H55, the Proponent shall:</p> <ul style="list-style-type: none"> (a) Undertake an Historic archaeological investigation program in accordance with the Heritage Council's Archaeological Assessments Guideline (1996) using a methodology prepared, in consultation with the OEH (Heritage Branch), and to the satisfaction of the Director-General. This work should be undertaken by an archaeological heritage consultant approved by the Director-General. The nomination for the Excavation Director shall demonstrate ability to comply with the Heritage Council's Criteria for the Assessment of Excavation Directors (July 2011). (b) Report on the results of the non-Aboriginal archaeological investigation program, including recommendations (such as for further archaeological work), in consultation with the Heritage Branch, OEH and to the satisfaction of the Director General, and shall include, but not necessarily be limited to: <ul style="list-style-type: none"> i. consideration of measures to avoid or minimise disturbance to archaeology, where archaeology of non-Aboriginal archaeological significance is found to be present; ii. where impacts cannot be avoided, recommendations for any further investigations for archaeology of historical archaeological significance; and iii. management and mitigation measures to ensure there are no additional impacts due to pre-construction and construction activities. (c) Undertake any further archaeological excavation works recommended by the results of the non-Aboriginal archaeological investigation program. <p>Within 12 months of completing the above work, unless otherwise agreed by the Director General, the Proponent shall submit a report containing the findings of the excavations, including artefact analysis, and the identification of a final repository for finds, prepared in consultation with the OEH (Heritage branch) and to the satisfaction of the Director General.</p> <p>Note: where archaeological testing has occurred as part of the environmental assessment and the results are included in the documents listed in condition A1(b) the sites tested must still form part of the methodology and final report prepared for the non-Aboriginal archaeological investigation program.</p>

Additional documentary sources investigated include primary archival sources including historic maps, plans and photographs, and newspapers. Specifically, this includes information held at the NSW Department of Lands (such as Crown Plans, Torrens and Old System Titles, Primary Applications and Primary Application Packets). Information on the Alexander Berry Estate has been inspected at the NSW Mitchell Library including subdivision plans.

1.3 Archaeological methodology Objectives

The following is a summary of the major objectives of the archaeological methodology:

- Build upon the findings of the *Foxground and Berry Bypass Non-Aboriginal (historic) Heritage Assessment* prepared by Navin Officer Heritage Consultants Pty Ltd and undertake further detailed historical research to propose a research framework for investigating archaeological sites identified in the conditions of approval.
- The archaeological methodology aims to achieve this objective through:

- Provide a brief summary of the archaeological sites identified in the *Foxground and Berry Bypass Non-Aboriginal (historic) Heritage Assessment* prepared by Navin Officer Heritage Consultants Pty Ltd.
- Present further detailed historical research to characterise the archaeological resource for the thirteen sites identified in the conditions of approval.
- Propose a research framework and corresponding archaeological methodology for the completion of physical archaeological investigations for the thirteen sites.
- Outline reporting tasks and deliverables to be undertaken following the completion of the physical archaeological work

1.4 Investigators and Contributors

This report was prepared by Alexander Beben, Senior Archaeologist, with assistance from Dr Samantha Gibbins, Archaeologist at Biosis Pty Ltd. This report has been reviewed by Dr Iain Stuart, Partner, JCIS Consultants who is the nominated Excavation Director for this project.

The archaeological investigation will be directed by Dr Iain Stuart who has and currently holds both section 60 and 140 permits under the NSW Heritage Act. A copy of the letter and email submitted to Heritage Division stating his qualifications and experience in relation to the proposed methodology is attached in Appendix 2.

1.5 Consultation

Clause B22(a) of the conditions of approval states that archaeological investigations should be completed using a methodology prepared, in consultation with the OEH (Heritage Branch), and to the satisfaction of the Director-General. Table 2 details the consultation that has been completed during the preparation of this assessment.

Table 2: Consultation with regulatory bodies.

Milestone	Medium	Detail of communications	Summary of outcomes
Initial Consultation - 14 May 2014 to 20 May 2014	Phone and emails	Initial discussion of the project and its status	Arrangements made that a meeting could be held shortly after receipt of archaeological methodology.
Submission of methodology - 21 May	Email	Archaeological Methodology emailed by Iain Stuart to Siobhan Lavelle	Archaeological Methodology received.
Consultation meeting with Heritage Division to discuss methodology - 2 June 2014	Meeting and Email	Siobhan Lavelle provided comment on the Archaeological Methodology.	Methodology proposed is considered appropriate. In the event that there are State significant finds during the works, heritage Division will expect notification, further discussion and consideration of appropriate interpretation. Comments incorporated into Archaeological Methodology.

1.6 Limitations of the report

The scope of this archaeological methodology extends only to the historical archaeological potential and significance of the subject site. It does not consider the built environment.

The archaeological methodology is principally based upon the findings and conclusions of the *Foxground and Berry Bypass Non-Aboriginal (historic) Heritage Assessment* prepared by Navin Officer Heritage Consultants Pty Ltd (NOHC). As a result, Biosis cannot take any responsibility for errors or inaccuracies in the information contained within the NOHC report.

This report has been undertaken to best archaeological practice and its conclusions are based on professional opinion, it does not warrant that there is no possibility that additional archaeological material will be located in subsequent works on the site. This is because limitations in historical documentation and archaeological methods make it difficult to accurately predict what is under the ground.

Maps and plans used in this archaeological methodology may be subject to inaccuracies caused through surveyor error during their creation and/or later reproduction. All mapping has been georeferenced in ArcGIS to determine the spatial location of the project area. Biosis is not responsible for any inaccuracies or omissions in the original mapping which may influence the implementation of this archaeological methodology.

2 Archaeological Methodology

A total of 13 heritage items of local significance have been identified as requiring archaeological investigation in accordance with Conditions B19 and B22 of the project approval (see Table 3). The methodology proposed for this task is based upon the conclusions presented in the *Foxground and Berry Bypass, Princes Highway Upgrade, Environmental Assessment Volume 2 Appendix K, Technical Paper: Non Aboriginal (historic) Heritage* and further detailed historical research undertaken to build upon these conclusions.

Table 3: List of Heritage Items requiring archaeological investigation including description and level of impact.

Reference No.	Name and description of features to be recorded	Impact
G2B H11	<i>GlenDevan</i> , Federation House, 77 North Street, Berry. A Federation house with a number of additions.	Whole of Site
G2B H14	Archaeological deposit (former 19 th century Broughton Creek town buildings). A number of former town structures were located on the eastern side of the former highway alignment (G2B H15). These include the Berry Butter Factory (1889), Overseers Cottage (1858), Court House (1870s) and the Council Chambers (1868) and Carpenters Cottage.	Partial Impact
G2B H15	Remnant 195 metre portion of 20th century highway. Ceased use as part of highway in 1955 now used as an access road for adjacent residential lots.	Partial Impact
G2B H19	Remnant 430 metre portion of 19th century road. Poorly preserved part of the original Berry Estate Road.	Whole of Site
G2B H21	Remnant 120 metre portion of 20th century highway. The alignment includes a 90 degree bend and upslope embankment which has been revegetated.	Whole of Site
G2B H22	Remnant 460 metre portion of 19th century road. Consists of a part of the original Berry Estate Road including shallow cutting.	Whole of Site
G2B H23	Remnant 320 metre portion of 19th century road. Consists of a part of the original Berry Estate Road, road is evident as a shallow relief and through differences in grass cover.	Whole of Site
G2B H28	Brookside Homestead. The main residential buildings occur outside the construction footprint, acquisition for the project includes a southern outbuilding and associated platforms.	Partial Impact
G2B H30	Remnant 530 metre portion of 19th century road. Consists of a well preserved portion of the Berry Estate Road, the road platform can be identified through side ditches and variably shallow ground relief. The eastern end is bordered by gum trees.	Whole of Site
G2B H48	Potential Archaeological Deposits, former Berry Estate tenant farm, homestead, currently redeveloped into a modern farm building. Remaining archaeological items are likely to be substantially disturbed.	Partial Impact – Compound/Office
G2B H49	Oakleigh farmhouse. Inter War Bungalow style farmhouse.	Whole of Site – Compound/Office
G2B H53 PAD	Potential archaeological deposit associated with a former Berry Estate tenant farm structure to the east of Toolijooa Ridge. The site includes indeterminate rock rubble adjacent to the former 19 th Century Road alignment.	Whole of Site

Reference No.	Name and description of features to be recorded	Impact
G2B H55	Small, 30 metre remnant portion of 19th century road which has substantially impacted by recent road works and the Eastern Gas Pipeline.	Whole of Site

For the purposes of archaeological investigation the heritage items fall into three categories:

- 1) Remnant 19th and 20th Century road alignments (G2B H15, H19, H21, H22, H23, H30 and H55),
- 2) Potential remains from 19th century tenant farms (G2B H11, H28, H53, H48 and H49) and
- 3) The Broughton Creek Village (G2B H14).

A separate methodology will be implemented for each and can be summarised as follows:

- A program of archaeological investigation at selected and representative locations on 19th and 20th century road alignments at sites G2B H15, H19, H21, H22, H23, H30 and H55. This would aim to record any ditch profiles, subsurface foundations and/or former surface treatments.
- Test excavations will be conducted at G2B H11, H28, H48, H49 and H53 in order to identify any remains associated with former Berry Estate tenant farms. These test excavations would aim to identify and record any archaeological features and relics which may be present. Should substantial archaeological features be identified, these would be expanded into open area excavations.
- An open area excavation is to be conducted at G2B H14 to identify and record any archaeological features and relics which may be present. Should archaeological remains associated with the village be encountered, the sequence of occupation, property boundaries, site functions and activity areas will be documented.

Each of these archaeological methodologies is discussed in accordance with the *Foxground and Berry Bypass, Princes Highway Upgrade, Environmental Assessment Volume 2 Appendix K, Technical Paper: Non Aboriginal (historic) Heritage* and further detailed historical research undertaken by Biosis. This is used to provide a research framework to guide the archaeological investigations.

The location of proposed trenches at each site are detailed in Appendix 1.

Consultation with Land Owners

Properties requiring access are either privately owned or owned by Roads and Maritime Services. Private owners or Roads and Maritime Services tenants were approached to obtain consent to enter properties.

Initial notification letters were sent out to all the residents and/or land owners on 1 May 2014 via Express Mail in order to inform them of the upcoming works and contact details. Follow up phone calls were made to each of the land owner/tenant in order to inform them of the start and end dates of archival recording and archaeological excavations. No major issues were raised by tenants. Some of the tenants requested that all the gates should be shut all the time and that no heavy machinery movement is permitted in the event of heavy rain. All of the comments were noted and requests will be incorporated in the procedures prior to excavations.

2.1 Remnant portions of previous road alignments

This section discusses the archaeological methodology for undertaking investigations on the remains of previous road alignments within the project area.

2.1.1 Synopsis of the Previous Investigation

The *Foxground and Berry Bypass, Princes Highway Upgrade, Environmental Assessment Volume 2 Appendix K, Technical Paper: Non Aboriginal (historic) Heritage* identified six portions of 19th Century Road dating to c. 1856 – 1870 (G2B H15, H21, H22, H23, H30 and H55) and one piece of 20th Century Road (G2B H19) as having heritage values suitable for archaeological investigation. These are sections of road which have been replaced by new sections of road on a new alignment thus preserving the abandoned section and associated fabric.

Nineteenth century Berry Estate roads appear to have been identified by NOHC through a review of 19th Century mapping and field surveys. A comprehensive historical timeline for road building within the Project Area is presented in section 4.1.6 of the *Foxground and Berry Bypass, Princes Highway Upgrade, Environmental Assessment Volume 2 Appendix K, Technical Paper: Non Aboriginal (historic) Heritage*. A summary of this timeline is outlined in Table 4.

The condition and intactness of the 19th Century roads within the Project Area is variable. These sites can be characterised broadly as a series of linear depressions, ditches, benched hillslopes and trees avenues located adjacent to the existing Princes Highway. The realignments of the roads appear to have occurred progressively from the 1850's to the 1890's in order to provide a longer and more angular alignment, involving switch-backs and deviations around spurs. This reduced the grade of the road and avoided various property boundaries formed through the subdivision of the Berry Estate.

The remnant sections of the 19th Century Berry Estate road have been identified as possessing local significance for their representative, associative and technological heritage value. NOHC assessed that roads are relatively rare examples of a transport corridor that was locally important as a private road and as the first inland route that bypassed Seven Mile Beach. The 19th century road remnants have an association with Messrs Alexander and David Berry, who were of local importance due to their prominent role in European settlement. The roads have the potential to yield information, through archaeological excavation and survey that would contribute to an understanding of nineteenth century road construction and usage.

A section of 20th century road (G2B H21) which consists of a revegetated 90 degree bend and upslope embankment has been assessed as having heritage significance by NOHC. G2B H21 has been assessed as being a representative example of early twentieth century highway design, construction and modification. As such, G2B H21 has the potential to yield information regarding standards in early twentieth century road design and construction.

2.1.2 Further Detailed Historical Research

The *Foxground and Berry Bypass, Princes Highway Upgrade, Environmental Assessment Volume 2 Appendix K, Technical Paper: Non Aboriginal (historic) Heritage* (NOHC) presents a detailed account of the chronology of road building within the Project Area. The NOHC report includes primary source descriptions of the 19th Century road as being rough, unformed and in places indistinct from cleared paddocks. However, several sources are cited which refer to the construction of numerous and substantial culverts and bridges.¹ The descriptions relating to the 19th Century road alignments presented in NOHC² appear to be broadly consistent with the road construction practices of the period. However, there is little discussion of road building techniques in comparison with NSW road building themes.³

¹ The Sydney Mail, 4 May 1872: p558 cited in NOHC 2012: 39.

² *ibid*

³ *ibid*

From the visual inspection of the road alignments undertaken on 9 May 2014 and the historical accounts of the Broughton Creek Road the early 19th century road appears to have consisted of a cleared route with only the natural soil as a surface. Macadamised and sandstone bases were used during this period but for more important roads closer to colonial centre; accordingly, there is no evidence for early macadam roads within the Project Area.

Further alterations and amendments to the Broughton Creek Road would have been undertaken in accordance with broader road building practices for country roads⁴, most likely with a telford base with one or two coats of waterbound macadam. From the 1860s onwards a cheap process of constructing roads was implemented through cutting down the table drain along the edges of the road and adding extra metal on the centre.⁵ The majority of roads were surfaced with four to five inch stones as a base course over which a finer ballast course was laid. The fine ballast layer was then packed down by traffic after which a running surface of gravel was laid. Where clay occurred, a formation of clay mixed with blue metal was used. Drains were cut along the high side of the road to catch surface drainage and carry it away before it damaged the road surface. Aerials of the Project Area indicate that the current alignment of the Princes Highway was still being maintained in this manner in the 1960's.

2.1.3 Research Questions

As discussed, there were a number of road construction techniques being utilised in NSW during the nineteenth and twentieth century. Documentary evidence presented in the NOHC report details changes in alignment and a chronology for the establishment of roads within the region and the rough dates for the abandonment of sections. These abandoned sections are considered to have archaeological potential in that they are likely to contain evidence of road building techniques of a past era and to have research potential through their ability to answer questions about road building techniques as practiced (rather than as prescribed in text books).

As identified in the historical research, the excavation of the road alignments has the potential to answer the following research questions:

- What is the nature, extent and significance of archaeological remains of associated with nineteenth and early-twentieth century road alignments within the Project Area?
- What variations are there in the construction techniques utilised for the construction of the roads and how do these correlate with known road construction techniques of the period?
- Is it possible to demonstrate a chronology for the construction, maintenance and use of these road alignments?

The archaeological research questions which could be answered through archaeological investigations relate to the construction and maintenance techniques utilised for the road alignments: specifically, whether these conform to the standard road building techniques of the period.

2.1.4 Excavation Methodology

To answer the above research questions a program of archaeological investigation at selected and representative locations within sites G2B H15, H19, H21, H22, H23, H30 and H55 will be undertaken. This would aim to record any ditch profiles, subsurface foundations and/or former surface treatments.

Archaeological excavations will consist of **one 1.2 x 10m** trench excavated across **each road alignment** where the road alignment is visible. A total of seven trenches will be excavated to complete this task.

Excavation and Recording Techniques

⁴ RTA Heritage and Conservation Register – Thematic History – Second Edition 2006: p.24-25

⁵ ibid

Excavation would be undertaken using standard archaeological processes with the aim of removing each stratigraphic layer (or context) in the order in which it was deposited. All excavations will be undertaken in accordance with the following methodology:

- All excavation will be conducted in stratigraphic sequence; the reduction of all occupational/natural deposits will be by stratigraphic unit. This will be undertaken using either machine or hand excavation.
- Should identifiable modern fills be encountered within the trenches these deposits will be machine excavated until occupational or natural depositional horizons are encountered, this stage of excavation will be conducted by the Excavation Director. All machine excavation from this point forward will use a smooth edged mud bucket to scrape back the deposits which cap the archaeologically significant structural and depositional remains.
- Excavation will be undertaken until natural deposits are encountered or where it is determined that further excavation will not yield beneficial diagnostic information.
- Artefacts would be collected and bagged with reference to their stratigraphic location.

The following recording system is based upon that described in the first Port Arthur Manual (Davies and Buckley 1987) and will employ the following recording mechanisms:

- The excavation locations will be recorded with a DGPS and post-processed to sub 1cm accuracy.
- A Survey control for the site would be established, including main and subsidiary datums, a grid system tied to the Map Grid of Australia and the development grid, as well as the cadastre. Further datums for vertical control will be established to allow all trenches to be surveyed in to a nearby point. These will be tied back to Australian Height Datum.
- Surveying techniques for establishing the location of remains and artefacts identified will be undertaken using either a level or a DGPS whichever gives the most precise result.
- Each deposit of sediment or material will be recorded as a context and the relationship between each context will be recorded.
- Stratigraphy and Archaeological features would be recorded through the preparation of plan and sections.
- A comprehensive digital photographic record will be prepared⁶.
- The stratigraphic relationships between contexts would be described through the compilation of a Harris Matrix⁷.
- Analysis of fabric and detailed recording of the remains on context sheets according to best practice standards.

Because of the site history, it is not expected that hazardous material such as friable asbestos cement will be encountered but if such material is encountered the archaeological work would be guided by Work Cover Occupational Health & Safety guidelines for dealing with such material. Biosis does not propose to retain any hazardous materials.

Finds conservation, analysis and reporting requirements are detailed in Section 2.4 and Section 2.5.

⁶ NSW Heritage Branch 2001, revised 2004, 2006

⁷ Harris 1979

2.1.5 Stockpiling of Removed Soil During All Excavations

Turf and topsoil will be removed by mechanical excavator or hand and stockpiled at a safe distance from the edge of excavation. The toe of stockpile will be at least 0.5m from the test pit edge. Spoil will be stockpiled on the downhill side where possible and the area will be fenced off with the silt fence to ensure that silt does not move in the event of rain. The majority of excavations soil will be stockpiled for at most a couple of days at a time and the excavated pits will be backfilled after the completion of the excavation. The trenches will be reinstated through placing the turf over the topsoil to vegetate. Uncompleted test pits will be fenced off.

2.2 Former Tenant Farmers Dwellings

The NOHC report identified that the Project Area traverses the former Berry Estate, established by Alexander Berry and Edward Wollstonecraft in 1822 as "Cullengatty Farm". A comprehensive contextual history of land grants and the development of the Berry Estate is presented in NOHC section 4.1.3 to 4.1.5. G2B H11 has been subject to a separate assessment Navin Officer Heritage Consultants 2013 '*Glen Devon' Cultural Heritage Assessment Documentary and Physical Investigation: Supplementary Investigation Environmental Assessment Princes Highway Foxground and Berry Bypass* which presents a detailed overview of the sites occupation and current physical configuration.

Berry developed his land along the British model of a landed estate in the UK with a steward or manager who managed the estate and dealt with issues on the spot and a series of tenants who farmed the land. The NOHC report and the conditions of approval have identified that several current dwelling sites within the Project Area are associated with former tenant farms which were dispersed across the estate; this includes G2B H11, H28, H48, H49 and H53. A review of historical mapping undertaken for this assessment has identified that G2B H11, H48, H49 and H53 PAD were cited in close proximity to former tenant farm buildings (see Plate 1 to Plate 4).

Despite their nomination in the conditions of approval, there is no reference in the NOHC report relating to archaeological potential associated with G2B H28. To supplement the NOHC report and formulate an archaeological methodology, Biosis has undertaken extensive searches of parish and crown plans held by the NSW Department of Lands. These searches have not identified any evidence for prior occupation within the project area.

For the earlier buildings on these sites which date to the late nineteenth to early twentieth century they are unlikely to yield additional information on the dwelling beyond that obtained through their archival recording. Therefore the archaeological work solely focuses on the early tenant farmers dwellings.



Plate 1: Location of G2B H11 (red rectangle) and associated tenant farms (blue circles), closer analysis has identified that these are not located near the existing twentieth century building of Glen Devon (G2B H11). Source: 1892 Roads in the Berry Estates, Parishes of Broughton and Cooloomgatta (Department of Lands: Crown Plan 424716-03).



Plate 2: Location of G2B H48 (red rectangle) and associated tenant farms (blue circle), there appears to be several issues with this mapping with the creeks being improperly mapped. This had made it impossible to accurately georeference this image. Analysis of the property boundaries indicates that the tenant farms are located to the south-west of the modern buildings. Source: Plan of the Berry Estate (ZM Series 4000/1 ML MSS315/Map 17)

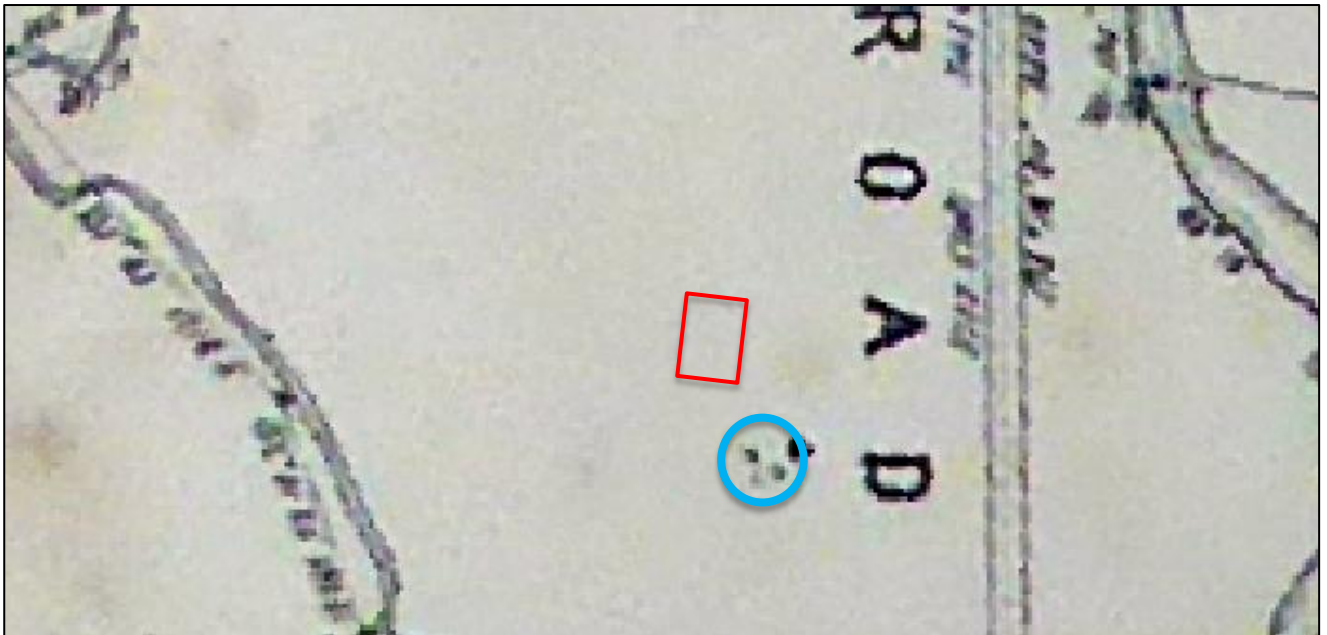


Plate 3: Location of G2B H49 (red rectangle) and associated tenant farms (blue circle), there appears to be several issues with this mapping with the creeks being improperly mapped. This had made it impossible to accurately georeference this image. Analysis of the property boundaries indicates that the tenant farms are located approximately 40m south-east of the modern buildings. Source: Plan of the Berry Estate (ZM Series 4000/1 ML MSS315/Map 17)

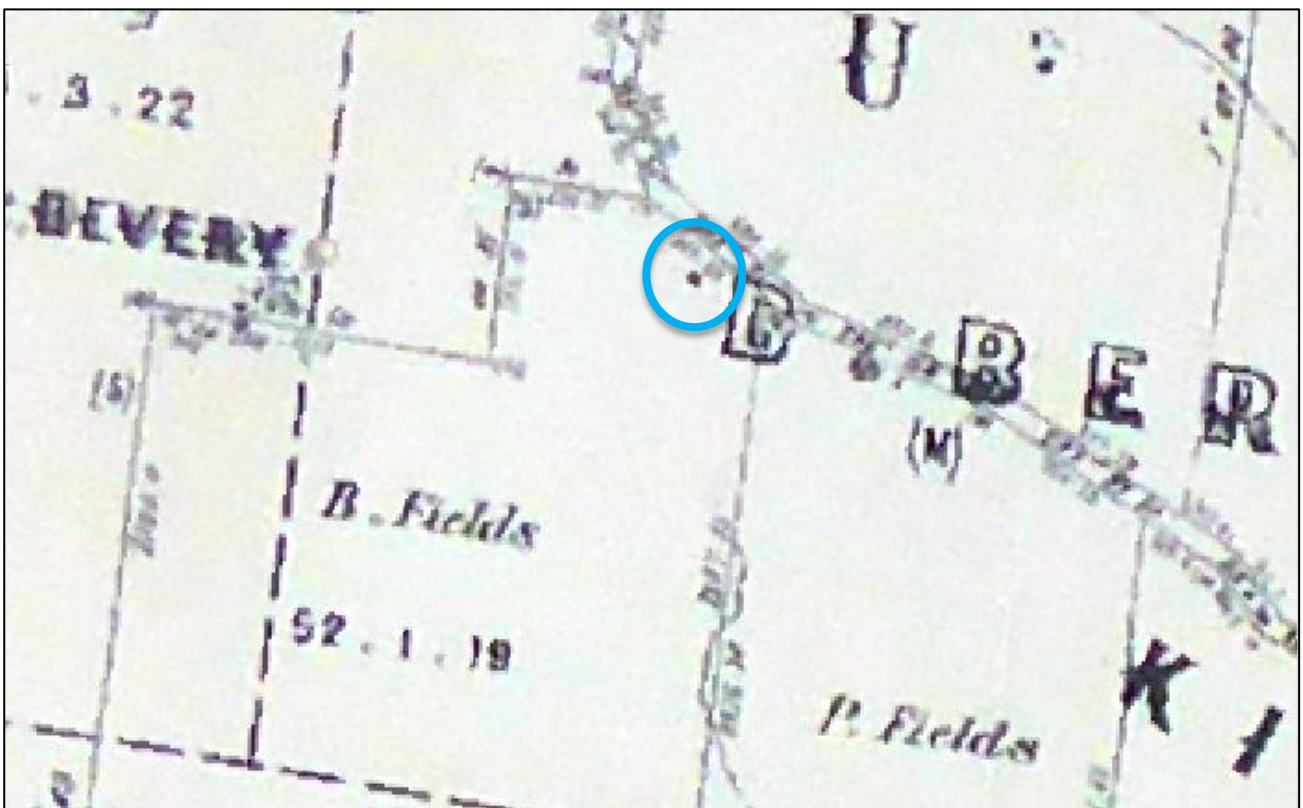


Plate 4: Location of G2B H53 PAD tenant farm (blue circle), there appears to be several issues with this mapping with the creeks being improperly mapped. This had made it impossible to accurately georeference this image. Analysis of the property boundaries indicates that the tenant farm is located at

the site of the NOHC coordinates. Source: Plan of the Berry Estate (ZM Series 4000/1 ML MSS315/Map 17)

2.2.1 Research Questions

The research question relating to these properties revolves around the nature of the tenanted farms within the Project Area. The historical excavations represent an opportunity to gather archaeological information pertaining to the occupation and structural configuration of these dwellings and present a comparative analysis. Research questions relating to this would consider:

- To what extent are tenant farms associated with the Berry Estate present within the Project Area? What can the findings from the tenant farms tell us about the nature and economics of the farms prior to the advent of dairying in the 1880-1890 period?
- How were the tenant farms occupied and constructed? How did these tenant farms compare to other small farms on freehold land and what are the differences between them?
- What are the similarities between the tenanted farms, their construction and occupation? Is there any evidence of conformity which suggests overarching control by Berry and his superintendents?

2.2.2 Excavation Methodology

The purpose of this stage of the excavation methodology is to establish the nature of potential archaeological remains relating to tenant farms within the Project Area. Given the uncertainty around the precise location of suspected tenant farms, the archaeological investigations will consist of large shallow trenches designed to remove the top soil and reveal any subsurface archaeological structures or deposits (referred to as "top soil testing"). The removal of top soil will be undertaken at undisturbed locations within G2B H11, H28, H48, H49 and H53. The purpose of this is to quickly identify archaeological profiles concealed by vegetation and the upper depositional profile. Given the shallow nature of soils within the project area, this approach should enable potential archaeological remains of tenant farms to be identified and targeted for investigation through open area excavations. The size and justification for the removal of topsoil and their positioning is as follows:

- *G2B H11* – archaeological test trenches to be excavated as a **10m x 10m** area to be excavated within the location of identified tenant farms identified in Plate 1. The purpose of these trenches will be to test the areas identified as containing former tenant farmer dwellings.
- *G2B H28* – **10m x 25m** area is to be sited in the impact corridor south of the existing buildings. This trench will test whether there is any potential for structural or occupational deposits within the Project Area. No buildings or structures have been identified through the historical research undertaken by NOHC or Biosis; therefore this trench is being excavated to satisfy the conditions of approval.
- *G2B H48* – Given the levels of disturbance present and uncertainties relating to the location of potential tenant farmer dwellings at the property, Biosis proposes to excavate a **30m x 30m** area identified in Plate 2, which equates to the area between the modern house and out buildings and swimming pool at the rear of the property. Due to the uncertain nature of the disturbance and location of tenant farms at this location, these trenches are designed to be dispersed in order to identify whether any tenant farms were present within this location.
- *G2B H49* – The location of the tenant farms at this location fall within the area of garden to the south of the property. It is unlikely that any archaeological remains further to this south of this location will have survived due to the farming of turf (and associated cutting activities) which would have heavily displaced any archaeological remains at this location. A **20m x 20m** area will be excavated at in an undisturbed portion of this location.

- *G2B H53 PAD* – According to the documentary sources reviewed the tenant farm at this location is cited at the location identified as G2B H53 PAD, a cleared area to the south of the modern building at this location. A visual inspection by Biosis identified the rubble identified in the NOHC report as G2B H53 PAD however archaeological remains are unlikely due to the slope and shallow nature of the soils at this location. A **5m x 20m** area is to be excavated at the location identified in Plate 4.

It is intended to excavate these area to a maximum depth of 0.25m, however this may need to be revised in the event that archaeological structures or deposits are encountered. Should substantial archaeological remains be located the removal of topsoil will cease and open area salvage excavation will commence to establish the nature of the structural and depositional archaeological remains. Testing of topsoil horizons may cease or be heavily reduced where it can be established that archaeological remains of significance are unlikely occur.

Stage 2: Salvage Excavation

Based on the results of the top soil testing, Biosis will determine whether salvage excavations are required for portions of the above sites. At present Biosis believes that open excavation will be required should any of the following criteria be met by the top soil testing:

- Complex and/or substantial remains of local significance are identified which warrant further investigation.
- Potential archaeological remains are identified and further investigation is required to ascertain their nature, extent, and significance.

In the event that salvage of archaeological remains or monitoring of bulk earthworks is warranted, this will be undertaken through expanding the test pits into an open excavation which reveals the extent of all archaeological remains. Excavation will be undertaken through a combination of machine and manual excavation. Should intact archaeological structures or deposits be exposed then machine excavation at that point will cease and the archaeological material will be investigated by conventional manual archaeological techniques under the direction of the nominated Excavation Director. Following initial open area excavations should features or deposits of potential significance be detected, then it may be necessary to widen the trench to allow these to be investigated and recorded.

Excavation and Recording Techniques

Excavation would be undertaken using open area techniques⁸ with the aim of removing each stratigraphic layer (or context) in the order in which it was deposited. All trenches (included salvage areas) investigated as part of the test excavation will conform to the following methodology:

- Should identifiable modern fills be encountered within the trenches these deposits will be machine excavated until occupational or natural depositional horizons are encountered, this stage of excavation will be conducted by the Excavation Director. All machine excavation from this point forward will use a smooth edged mud bucket to scrape back the deposits which cap the archaeologically significant structural and depositional remains.
- Following the initial period of monitored machine excavation the site will be evaluated by the Excavation Director. The location of some of the trenches may have to be adjusted should the areas located prove to be unsuitable (i.e. unexpected services, heavy disturbance, dangerous materials etc.).
- Excavation of trenches will be conducted in stratigraphic sequence; the reduction of all occupational/natural deposits will be by stratigraphic unit. This will be undertaken using either machine or hand excavation.

⁸ Barker 1983

- Each trench will be excavated until natural deposits are encountered, or significant in situ structural or depositional remains prevent further excavation, or where it is determined that further excavation will not yield beneficial diagnostic information.
- Artefacts would be collected and bagged with reference to their stratigraphic location.
- Once excavation is completed the trenches will be lined with geotextile and markers left at the base of the trench indicating the excavation date before being backfilled.

The following recording system is based upon that described in the first Port Arthur Manual⁹ and will employ the following recording mechanisms:

- Trench locations will be recorded with a DGPS and post-processed to sub 1cm accuracy. A site grid will be established and surveying techniques for establishing the location of remains and artefacts identified will be undertaken.
- A Survey control for the site would be established, including main and subsidiary datums, a grid system tied to the Map Grid of Australia and the development grid, as well as the cadastre. Further datums for vertical control will be established to allow all trenches to be surveyed in to a nearby point. These will be tied back to Australian Height Datum.
- Detailed archaeological scale plans and sections of the site and individual features. Archaeological features would be recorded through the preparation of plan and sections. Structural elements such as brick walls and timber posts would be recorded in situ to observe phases in construction and removed in stratigraphic sequence.
- Rubble fill will only be recorded only where it provides specific information regarding masonry and construction (i.e. wall finishes, material etc.).
- A comprehensive digital photographic record.¹⁰
- The stratigraphic relationships between contexts would be described through the compilation of a Harris Matrix.¹¹
- Analysis of fabric and detailed recording of the remains on context sheets according to best practice standards.

Because of the site history, it is not expected that hazardous material such as friable asbestos cement will be encountered but if such material is encountered the archaeological work would be guided by Work Cover Occupational Health & Safety guidelines for dealing with such material. We do not propose to retain any hazardous materials.

Contingency for Excavation at Depth in the event a well is encountered:

Given the dates of occupation associated with the tenant farms there is the potential for wells to be present within the project area. Therefore, contingencies for excavation at depth have been considered as part of this methodology. This will be completed through systematically reducing the well in appropriate increments by machine and hand. Given the depth of the potential archaeological resource, stepping of the trench may be required. If stepping of the trench is undertaken, this will only occur after all archaeological remains have been investigated, recorded and removed. The following will apply:

⁹ Davies and Buckley 1987

¹⁰ NSW Heritage Branch 2001, revised 2004, 2006

¹¹ Harris 1979

- In the event of evidence of occupation occurring near the 1.2 metre depth cut off for safe excavation, it will be necessary to step or shore the pits to provide a safe work environment.
- The exact nature of the extent and the depth of that expansion will be dependent on the ground characteristics and stability during excavation. Relevant NSW Work Cover excavation guidelines will be used to guide any excavation, stepping and shoring of deposits at depth.
- Where safe work practices differ from the excavation permit methodology, safe work practice and a safe work environment will be take precedence over any archaeological considerations.
- At depth certain test pits may be considered to be a confined space under NSW Occupational Health and Safety legislation. Should any test pits be identified as constituting a confined space then these will only be excavated by members of staff with appropriate training.

2.2.3 Stockpiling of Removed Soil During All Excavations

Turf and topsoil will be removed by mechanical excavator or hand and stockpiled at a safe distance from the edge of excavation. The toe of stockpile will be at least 0.5m from the test pit edge. Spoil will be stockpiled on the downhill side where possible and the area will be fenced off with the silt fence to ensure that silt does not move in the event of rain. The majority of excavations soil will be stockpiled for at most a couple of days at a time and the excavated pits will be backfilled after the completion of the excavation. The trenches will be reinstated through placing the turf over the topsoil to vegetate. Uncompleted test pits will be fenced off.

2.3 Broughton Creek Village (G2B H14)

The NOHC report presents an analysis of documentary evidence for Broughton Creek Village in (Section 4.1.4). A program of test excavation was undertaken on the site and are summarised in section 6 of the NOHC report. A 1870s plan of the village indicates multiple buildings were present at this location, identified by NOHC as a Carpenters Cottage, Butter Factory, Overseer's Cottage, Court House, Council Chambers and Church. Additional research conducted by Biosis at the NSW Department of Lands has not revealed specific information pertaining to buildings or properties located at Broughton Creek Village. The village is all located under a single title with no records of individual properties present. A review of the old system and Primary Application packet identified a list of tenants, however there was no map showing the locations of individual buildings.

Archaeological salvage was recommended within the construction footprint associated with G2B H14 for the area to be lowered and under the road platform. The site visit conducted by Biosis has indicated that archaeological remains are unlikely to occur underneath the road platform given the extent of disturbance which has taken place within this area. As a result, Biosis is proposing to undertake an open area excavation between the current Princes Highway and old alignment which has the highest potential to contain intact archaeological structural and depositional remains.



Plate 5: Configuration of Broughton Creek Village according to NOHC 2012: Figure 6.1, page 81. The Red annotation denotes the approximate area of open area excavation.

The excavations undertaken by Navin Office are not fully reported in their report. It appears a “series” (27?) of 1m square test pits were excavated and as archaeological material was found these were expanded. There was no summary reporting of stratigraphy or archaeological contexts or archaeological features uncovered. There was little attempt made to address research questions about identifying structure know from the historical evidence to have been located there and the comparative chronology of archaeological features. The excavation methodology of excavating numerous test trenches was in fact unsuitable for investigating questions relating to buildings as it is almost impossible to identify buildings in this way as it is difficult to relate contexts from one “test pit” to another and similarly to determine whether any archaeological features are part of the same structure or another one.

The NOHC report summarised the results of the excavation as follows:¹²

“The test excavation program at G2B H14 has demonstrated that there are sections, albeit limited areas, of relatively intact deposits from the turn of the nineteenth-twentieth century. Examples of such deposits include the cobbled floor identified in F30-F31, artefacts in association with the old ground surface identified in B60-C61 and A64-C64, the post hole identified in C80 and the burnt layers and associated artefacts in B100 and D100-E100. There are also examples of more disturbed deposits that, while compromised in integrity, appear to contain artefacts that have the potential to provide information about the chronology and function of the site (eg at F20 and F39-F40). However, the northernmost portion of the site, around C110 and E120, appears to be largely sterile below the cap of modern fill.

On the basis of historical research, including analysis of aerial photographs and available maps, it appears that the archaeological deposits at G2B H14 relate primarily to an area of street frontage, as opposed to the site of prior structures. There is however potential for traces of the eastern limits of buildings to occur along the western margins of the site, in the vicinity of A30-B80. The differences in archaeological features and associated artefact assemblages across the site may also be indicative of a series of street blocks, which could potentially be confirmed through additional excavations along a north-south transect.

In summary, archaeological deposits at G2B H14 are assessed as having potential to provide information on the following aspects of the site's history:

- *The width of the street frontage and the activities that took place in this area.*
- *The location of individual buildings or portions of their eastern limits.*
- *The location of individual lot boundaries that extend east to west across the site.*
- *Differing site functions across these lots.*
- *Overall site chronology from the mid nineteenth to mid twentieth-century.”*

2.3.1 Research Questions

The purpose of the archaeological methodology is to clearly articulate the anticipated outcomes from a program of work; what questions we are asking of the program and how the work will be undertaken to address these questions. In the case of the program of salvage excavation proposed for G2B H14 several questions are proposed as the operating framework. These are:

- To what extent does the project area contain archaeological remains relating to the Broughton Creek Village? Are sufficient archaeological profiles present so as to establish dates or specific associations for archaeological evidence revealed in them?
- Is it possible to identify changes in the configuration of the village?
- If present, what can depositional remains from Broughton Village site tell us about the lifestyles and economy of people who lived in and frequented in the area? How does this contrast between the various structures located within the village and the tenant farms?

2.3.2 Excavation Methodology

Given the research questions the most appropriate excavation methodology is to use open area excavation using a combination of machine and hand excavation with the aim of opening a large area to identify and record the archaeological remains of structures and associated features (such as pits).

¹² NOHO 2013:94

The open area excavation will consist of an open area excavation 110m by 15m covering the entire area. This will be bounded by the Princes Highway and the old alignment which is now utilised as access to the adjacent properties. The excavation will avoid the mature trees located in the centre of the road verge with a 1.5m buffer being extended around the trunk of the tree. Excavation would be undertaken using open area techniques¹³ with the aim of removing each stratigraphic layer (or context) in the order in which it was deposited. The salvage area at G2B H14 will conform to the following methodology:

- The initial excavation work will consist of the removal of the topsoil layer by machine (using a batter bucket) under archaeological supervision. For logistical reasons this will be done in halves – with one half the site excavated in the first week, followed by the second half the following week.
- Following the initial period of monitored machine excavation the excavated surface will be cleaned by hand and potential features recorded and excavated as determined by the Excavation Director.
- Should identifiable modern fills be encountered within the trenches these deposits will be machine excavated until occupational or natural depositional horizons are encountered, this stage of excavation will be conducted by the Excavation Director.
- Excavation of site will be conducted in stratigraphic sequence; the reduction of all occupational/natural deposits will be by stratigraphic unit. This will be undertaken using either machine or hand excavation.
- Each archaeological feature will be excavated until natural deposits are encountered, or there is some other reason to discontinue excavation (e.g the presence of services)
- Artefacts would be collected and bagged with reference to their stratigraphic location (i.e. context).
- Once excavation is completed the site will be backfilled.

The following recording system is based upon that described in the first Port Arthur Manual (Davies and Buckley 1987) and will employ the following recording mechanisms:

- The site would be surveyed using a cm accurate GPS.
- A Survey control for the site would be established, including main and subsidiary datums, a grid system tied to the Map Grid of Australia and the development grid, as well as the cadastre. Further datums for vertical control will be established to allow all archaeological features to be surveyed in to a nearby point. These will be tied back to Australian Height Datum.
- Archaeological recording would be based on contexts with details of every context recorded on a pro-forma context sheet. All features and archaeological finds would be related to the context.
- Archaeological features and structural elements are collections of features.
- Detailed archaeological scale plans and sections of the site and individual features. Archaeological features would be recorded through the preparation of plan and sections. Structural elements such as brick walls and timber posts would be recorded in situ to observe phases in construction and removed in stratigraphic sequence.
- Rubble fill will only be recorded only where it provides specific information regarding masonry and construction (i.e. wall finishes, material etc).
- A comprehensive digital photographic record.¹⁴

¹³ Barker 1983

¹⁴ NSW Heritage Branch 2001, revised 2004, 2006

- The stratigraphic relationships between contexts would be described through the compilation of a Harris Matrix.¹⁵
- Analysis of fabric and detailed recording of the remains on context sheets according to best practice standards.

Because of the site history, it is not expected that hazardous material such as friable asbestos cement will be encountered but if such material is encountered the archaeological work would be guided by Work Cover Occupational Health & Safety guidelines for dealing with such material. We do not propose to retain any hazardous materials.

Contingency for Excavation at Depth in the event a well is encountered:

Given the dates of occupation associated with the tenant farms there is the potential for wells to be present within the project area. Therefore, contingencies for excavation at depth have been considered as part of this methodology. This will be completed through systematically reducing the well in appropriate increments by machine and hand. Given the depth of the potential archaeological resource, stepping of trench may be required. If stepping of the trench is undertaken, this will only occur after all archaeological remains have been investigated, recorded and removed. The following

- In the event of evidence of occupation occurring near the 1.2 metre depth cut off for safe excavation, it will be necessary to step or shore the pits to provide a safe work environment.
- The exact nature of the extent and the depth of that expansion will be dependent on the ground characteristics and stability during excavation. Relevant NSW Work Cover excavation guidelines will be used to guide any excavation, stepping and shoring of deposits at depth.
- Where safe work practices differ from the excavation permit methodology, safe work practice and a safe work environment will be take precedence over any archaeological considerations.
- At depth certain test pits may be considered to be a confined space under NSW Occupational Health and Safety legislation. Should any test pits be identified as constituting a confined space then these will only be excavated by members of staff with appropriate training.

2.3.3 Stockpiling of Removed Soil during All Excavations

Turf and topsoil will be removed by mechanical excavator or hand and stockpiled at a safe distance from the edge of excavation. The toe of stockpile will be at least 0.5m from the test pit edge. Spoil will be stockpiled on the downhill side where possible and the area will be fenced off with the silt fence to ensure that silt does not move in the event of rain. The majority of excavations soil will be stockpiled for at most a week at a time and the excavated pits will be backfilled after the completion of the excavation. The trenches will be reinstated through placing the turf over the topsoil to vegetate. Uncompleted test pits will be fenced off.

G2B H14 is located within the vicinity of a number of mature trees. The excavation proposes to avoid these trees through not conducting excavations within the drip line of each tree (approximately 5m). Prior to excavations commencing the drip line of each tree will be demarcated to ensure machinery does not enter this area or impact upon the trunk, branches or root systems associated with them.

Care will be taken during the on site works to place site huts, portaloo's, spoil and machinery away from the access road to the properties to the east of the proposed works. This can reasonably be achieved through utilising portions of the site which are not proposed for excavation.

¹⁵ Harris 1979

2.3.4 Impacts to Traffic on the Princes Highway during excavation

Excavation activities at G2B H14 will take place within the southbound road shoulder of the Princes Highway. Biosis has obtained a Road Occupancy Licence (ROL) (SR5573) to conduct excavation works within 3 metres proximity of the Princes Highway in a 90kmph zone. This ROL includes a Roadworks Speed Zone Authorisation to reduce the 90kmph speed zone to 40kmph during the period of excavation activities between 9:00 and 16:00. Traffic control measures including traffic personnel, road signage, cones, barrier boards and bollards which will be employed in accordance with the Traffic control plan submitted as a part of the ROL application. The reduction in speed zone and traffic control measures will impact upon the south bound traffic on the Princes Highway and may result in a slower movement of traffic during excavation activities. Excavation activities will cause a minor increase in vehicles accessing and egressing from the site onto the Princes Highway. Vehicles involved in the initial mobilisation and demobilisation of the site (mechanical excavator, transport of temporary site building and erection of temporary fencing) will be able to use the private road immediately east of G2B H15 before accessing and egressing from the site onto the Princes Highway and will occur on the first and last day of the excavation period. Vehicles and personnel involved in traffic control and the set up and dismantling of signage will be accessing and egressing from the site onto the Princes Highway in the morning and in the afternoon during the excavation period.

Biosis propose to engage Traffic Management Services (Aust) Pty Ltd, an approved Roads and Maritime Services contractor to implement the traffic control measures for the project.

2.4 Finds Conservation

Any artefacts recovered from the excavation will be recorded as inclusions in specific contexts. The artefacts will be retrieved from the site, stored in labeled context boxes and will be analysed within three months of the completion of the excavation. The latter will include cleaning, cataloguing and photography where appropriate. The information will be included in the analysis of the results of this excavation. The artefacts will be lodged with the local historical society or local Museum depending on the significance and conservation requirements of the artefacts encountered.

During Field Work

A simple computerised archaeological database will be used as the cataloguing and inventory software for artefacts.

Primary artefact processing [sort into fabric / wash, brush or other cleaning / raw counts / labelled bagging / data entry] is to be undertaken as part of the field program. This will necessitate an artefact processing 'lab' being set up in the field. As far as possible, artefact cleaning and cataloguing will occur on site during the excavation. The cataloguing will be a simple catalogue of material by type and context.

The collection as a whole would then be evaluated in connection with the results of the excavation to develop a plan for further artefact analysis. This will allow the artefact analysis to focus on artefacts from relevant stratigraphic contexts.

Post-Excavation Analysis

Specific artefact processing routines are to be developed for all artefact types. As an example, glass will be primarily sorted by colour into black cylindrical / black case / olive – green tint / clear / etc. The next stage of sorting will be minimum number of individual [MNI] counts for defined aggregates of stratigraphic units. Specialist analyses will then be undertaken on classes of material [fabric type or artefact function], with all data being added to the database.

Authoritative and experienced analysts will be sought to undertake typological and descriptive work if available, or to peer review the analysis. Provision will also be made for students and researchers to catalogue parts of the collection under supervision.

Assemblages from each element will be described in terms of their quantity, representation of different fabric and forms and other broad descriptive characteristics. More importantly, the assemblages will be interpreted according to possible functional evidence of how people lived and interacted with each other. This form of analysis is qualitative rather than quantitative, relying upon interpreting how artefacts are used in their social context.

Collection Management Policy

Artefact material recovered will be analysed in response to what is recovered and the research questions posed earlier. Different retention methods and processing depending on its information potential will be undertaken. These will be decided once the excavation works have clarified the situation regarding artefacts.

A materials conservator will be engaged to assist in preparing artefact processing and storage protocols and for advice on recovery of delicate remains.

Hazardous materials will be recorded by photographs and discarded appropriately.

Building materials will be recorded photographically and catalogued and a small sample of items kept for further analysis and the remaining items discarded.

Once the scope of the artefact collection is established, a further discard policy will be developed in consultation with the Heritage Branch, Department of Planning identifying what materials are to be discarded, retained only as samples, retained for long-term storage and retained for possible display. Following confirmation of the policy, the collection will be culled and the remainder prepared for long-term storage.

Roads and Maritime will negotiate with relevant heritage groups (e.g. Berry Historical Society) to establish the preferred recipient of the permanent artefact collection regarding storage, conservation, curation and display of the collection.

2.5 Reporting

Report on the results of the non-Aboriginal archaeological investigation program, including recommendations (such as for further archaeological work), in consultation with the Heritage Branch, OEH and to the satisfaction of the Director General, and shall include, but not necessarily be limited to:

- Consideration of measures to avoid or minimise disturbance to archaeology, where archaeology of non-Aboriginal archaeological significance is found to be present;
- Where impacts cannot be avoided, recommendations for any further investigations for archaeology of historical archaeological significance; and
- Management and mitigation measures to ensure there are no additional impacts due to pre-construction and construction activities.

To address the above points, Biosis will produce a Historical archaeological assessment and investigation report for items G2B H11, H14, H15, H19, H21, H22, H23, H28, H30, H48, H49, H53 and H55 which complies with the requirements of the NSW Heritage Division. Dependent on the findings of the excavation, the final archaeological report will also include the following points:

- The compiled results of areas investigated and contexts or units encountered.

- A stratigraphic matrix and discussion of the sites phasing.
- GIS and CAD mapping where appropriate to illustrate the findings.
- A detailed description of the excavation results including discussion on phasing and possible land use.
- An artefact catalogue compiled on a commercially available computer database designed to reflect the research questions.
- A functional analysis of artefacts uncovered with reference to their provenance and pertinence to research questions.
- A synthesis of results to allow for comparison to other sites.
- Additional historical research to aid understanding of the archaeological evidence.
- A detailed interpretation of the results and addressing of the research questions.
- Illustration of significant artefacts in drawn or photographic form, and a photographic archive of excavation in progress.

A draft of the Historical archaeological assessment and investigation report will be submitted in MS Word format including all appendices to Roads and Maritime, OEH and P&I and will be subject to 2 rounds of comments. The final report including all appendices and colour figures to be submitted as four hard copies, one bound copy and two electronic copies on CD will be made to each of the above agencies.

2.6 Unexpected Recovery of State Significant Finds

If at any point State significant finds are encountered during the works, Heritage Division will be notified and further discussion regarding consideration of appropriate interpretation will be undertaken.

3 References

- Barker, P. 1982. *Techniques of archaeological excavation, 2nd edition*. Batsford, London.
- M. Davies & IS. Buckley, 1987. *Port Arthur Conservation Project Archaeological Procedures Manual*, Department of Lands, Parks and Wildlife, Tasmania, Occasional Paper No. 13
- Harris, E. 1979. *Principles of archaeological stratigraphy*. Academic Press London.
- Kass, T. 2006. *Roads and Traffic Authority Heritage and Conservation Register – Thematic History – Second Edition*. Published by the Roads and Traffic Authority.
- Navin Officer Heritage Consultants 2013 '*Glen Devon*' *Cultural Heritage Assessment Documentary and Physical Investigation: Supplementary Investigation Environmental Assessment Princes Highway Foxground and Berry Bypass*. Report prepared for Roads and Maritime Services.
- Navin Officer Heritage Consultants 2012. *Foxground and Berry Bypass, Princes Highway Upgrade, Environmental Assessment Volume 2 Appendix K, Technical Paper: Non Aboriginal (historic) Heritage*. Report prepared for Roads and Maritime Services.
- NSW Heritage Branch 2001, revised 2004, 2006 *Photographic recording of Heritage Items using Film or Digital capture*. Department of Urban Planning and Development.

Documentary Sources

- Plan of the Berry Estate (ZM Series 4000/1 ML MSS315/Map 17)
- 1892 Roads in the Berry Estates, Parishes of Broughton and Cooloomgatta (Department of Lands: Crown Plan 424716-03).

4 Appendix 1: Location of Proposed Trenching

**PLAN SHOWING
NON ABORIGINAL HERITAGE SITES
HW1 - PRINCES HIGHWAY**

Reduction Ratio 1:10000

Lengths are in metres

**ROADS & MARITIME SERVICES
MAJOR INFRASTRUCTURE**

LGA: SHOALHAVEN CITY

Locality: BERRY

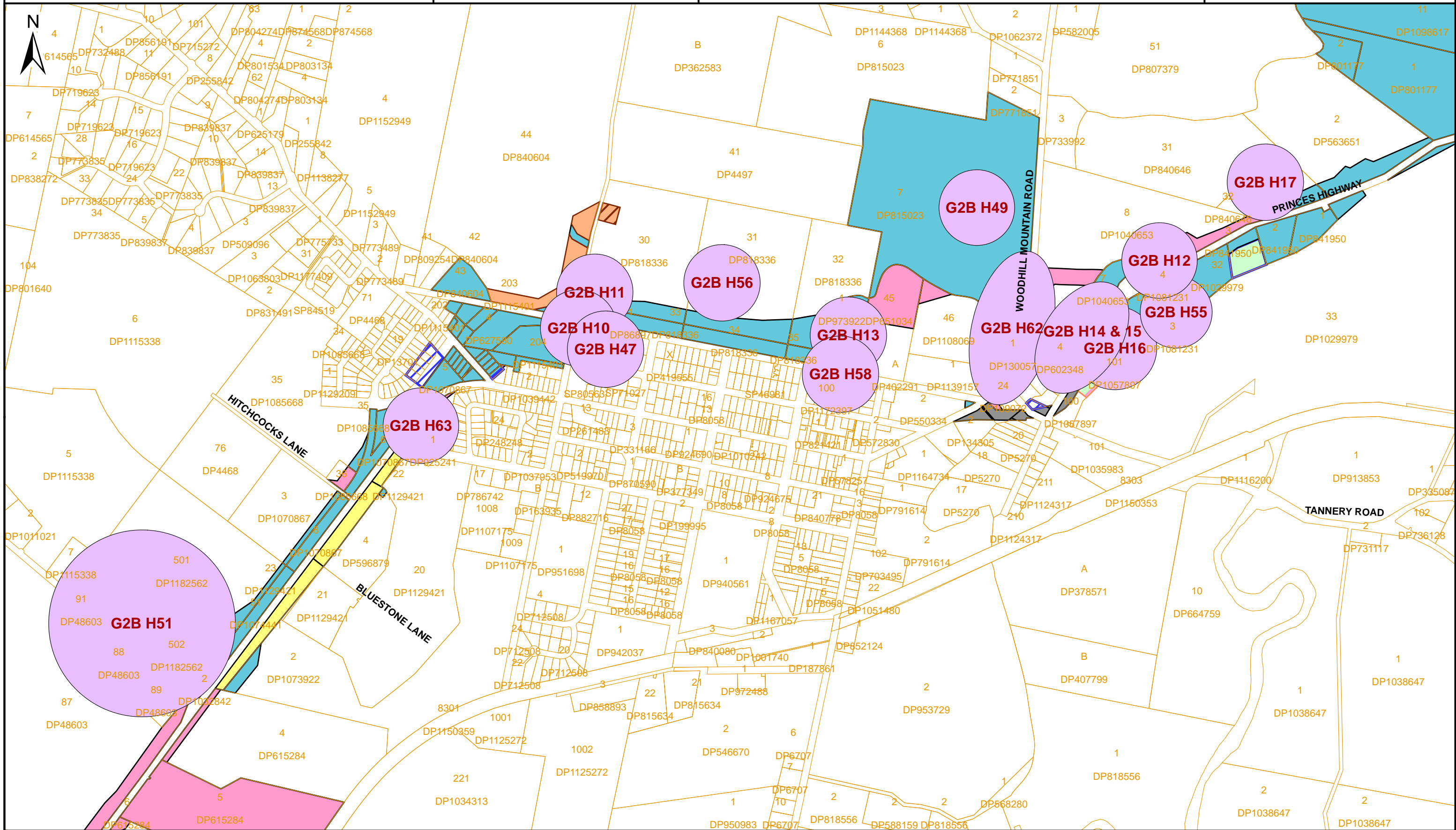
Parish: COOLANGATTA

County: CAMDEN

SKETCH

0001 404 SK 0002A



DRAWN 25/06/2014



Dimensions and positions of improvements in relation to the boundaries are subject to final survey
Offsets are 90° to property boundaries





- Legend**
-  Proposed Trenching
 -  Site Mid Points

G2B H11





0 10 20 30 40 50
 Metres
 Scale: 1:1,250 @ A3
 Coordinate System: GDA 1994 MGA Zone 56



Ballarat, Brisbane, Canberra, Melbourne,
 Sydney, Wangaratta & Wollongong


Matter: [Matter No.]
 Date: 30 June 2014
 Checked by: [Cons.], Drawn by: [GIS], Last edited by: apritchard
 Location: P:\17900s\17911\Mapping\17911_Proposed_Trenching_20140630



- Legend**
-  Proposed Trenching
 -  Site Start Points
 -  Site Mid Points
 -  Site End Points

G2B H14 & 15

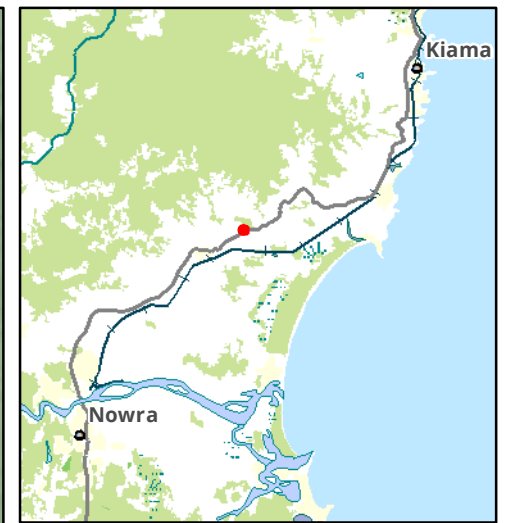
0 7.5 15 22.5 30 37.5
 Metres
 Scale: 1:750 @ A3
 Coordinate System: GDA 1994 MGA Zone 56




Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne,
 Sydney, Wangaratta & Wollongong

Matter: [Matter No.]
 Date: 30 June 2014
 Checked by: [Cons.], Drawn by: [GIS], Last edited by: apritchard
 Location: P:\17900s\17911\Mapping\17911_Proposed_Trenching_20140630



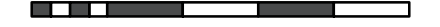
Legend

 Proposed Trenching

G2B H19
(10m x
1.2m)

G2B H19

0 2.5 5 7.5 10 12.5



Metres




Scale: 1:250 @ A3

Coordinate System: GDA 1994 MGA Zone 56

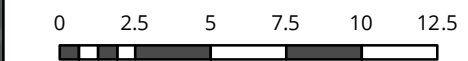


Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong



- Legend**
-  Proposed Trenching
 -  Site Mid Points
 -  Site End Points

G2B H21



Scale: 1:250 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong





G2B H23



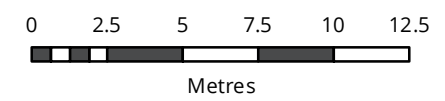
G2B H22
(10m x
1.2m)



Legend

-  Proposed Trenching
-  Site Mid Points

G2B H22



Scale: 1:250 @ A3
Coordinate System: GDA 1994 MGA Zone 56



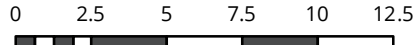
Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong



Legend
[Red rectangle with diagonal line] Proposed Trenching

G2B H23
(10m x
1.2m)

G2B H23



Metres
Scale: 1:250 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

Matter: [Matter No.]
Date: 30 June 2014
Checked by: [Cons.], Drawn by: [GIS], Last edited by: apritchard
Location: P:\17900s\17911\Mapping\17911_Proposed_Trenching_20140630



Legend
[Red hatched box] Proposed Trenching

G2B H28
(25m x
10m)

G2B H28

0 2.5 5 7.5 10 12.5

Metres
Scale: 1:250 @ A3
Coordinate System: GDA 1994 MGA Zone 56



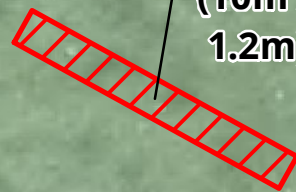
Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

Matter: [Matter No.]
Date: 30 June 2014,
Checked by: [Cons.], Drawn by: [GIS], Last edited by: apritchard
Location: P:\17900s\17911\Mapping\17911_Proposed_Trenching_20140630



G2B H30



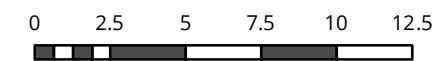
G2B H30
(10m x
1.2m)



Legend

-  Proposed Trenching
-  Site Mid Points

G2B H30





Metres
Scale: 1:250 @ A3
Coordinate System: GDA 1994 MGA Zone 56



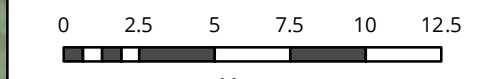
Biosis Pty Ltd
Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

Matter: [Matter No.]
Date: 30 June 2014
Checked by: [Cons.], Drawn by: [GIS], Last edited by: apritchard
Location: P:\17900s\17911\mapping\17911_Proposed_Trenching_20140630



- Legend**
-  Proposed Trenching
 -  Site Mid Points

G2B H48





Scale: 1:250 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

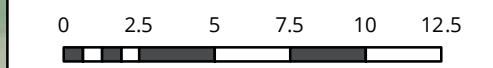
Matter: [Matter No.]
Date: 30 June 2014
Checked by: [Cons.], Drawn by: [GIS], Last edited by: apritchard
Location: P:\17900s\17911\Mapping\17911_Proposed_Trenching_20140630



- Legend**
-  Proposed Trenching
 -  Site Mid Points

G2B H49
(20m x 20m)

G2B H49





Scale: 1:250 @ A3
Coordinate System: GDA 1994 MGA Zone 56



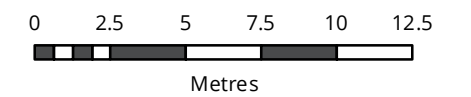
Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong



Legend

-  Proposed Trenching
-  Site Mid Points

G2B H53





Scale: 1:250 @ A3
Coordinate System: GDA 1994 MGA Zone 56



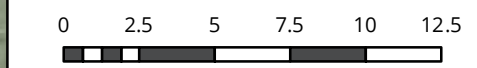
Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

Matter: [Matter No.]
Date: 30 June 2014
Checked by: [Cons.], Drawn by: [GIS], Last edited by: apritchard
Location: P:17900s17911\mapping\17911_Proposed_Trenching_20140630



- Legend**
-  Proposed Trenching
 -  Site Mid Points

G2B H55



Scale: 1:250 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

5 Appendix 2: Nominated Excavation Director



ABN 15 673 291 522

PO Box 2397
Burwood North
NSW 2134

Ph/Fax (02) 9701 0191
info@jcis.net.au

Heritage Office www.jcis.net.au

Our Ref 14-005

1 July 2014

Dr Siobhan Lavelle
Senior Team Leader Archaeological Heritage
in the Conservation Branch,
Heritage Division, OEH
Locked Bag 5020
PARRAMATTA NSW 2124

C/o Ms Katrina Stankowski
Acting Senior Team Leader Archaeological Heritage
Via email <mailto:Katrina.Stankowski@environment.nsw.gov.au>

Dear Siobhan,

The Department of Planning and Environment (DOPE) requires that I formally submit my resume to the Heritage Division so I can be Excavation Director for the Berry By Pass project which BIOSIS and I are teaming on and which we have consulted with the Heritage Division about.

Therefore please find attached a short resume which outlines relevant recent experience and addresses the Heritage Divisions Criterion for being an Excavation Director.

If you want to discuss this matter further, please do not hesitate to contact Dr Iain Stuart on 9701 0191 or by email ian_stuart@optusnet.com.au

A handwritten signature in black ink, appearing to read 'Iain Stuart', is written over a faint, circular watermark or stamp.

Dr Iain Stuart
Partner

DR IAIN M STUART

PARTNER: JCIS CONSULTANTS

Dr Stuart has over 25 years' professional experience in historical archaeology, archaeological survey and assessment, heritage management, historical research, industrial archaeology, cultural landscapes, maritime archaeology, conservation planning and management, archaeological excavation, site analysis, Aboriginal archaeology, community liaison and consultation. He has worked for Government and in private industry.

Education:

- Bachelor of Arts (Hons) La Trobe University 1979
- Master of Environmental Science, Monash University 1988
- Doctor of Philosophy, University of Sydney 2000

Employment:

- Northern Territory Museum, 1980-1981
- Victoria Archaeological Survey, 1982-1993
- NSW Heritage Office, 1993, 2008
- HLA-Envirosciences Pty. Ltd., 1994 -2004
- Godden Mackay Logan, 2005-2006
- JCIS Consultants, 2006 –
- NSW Heritage Branch, 2008

Professional Affiliations:

- Australasian Society for Historical Archaeology (elected Board Member 2010)
- Society for Industrial Archaeology
- ICOMOS Australia (full member)
- National Trust of Australia (NSW) Industrial Heritage Committee (Chair 2005-2010)
- The International Committee for the Conservation of the Industrial Heritage (elected Board Member 2009 –).

Qualifications and experience Relevant to the Excavation Directors Role:

Criterion 1

I have a Doctorate in Archaeology from the University of Sydney and over 25 years of professional experience.

Although I am not a member of AACA, I am a full member of Australia ICOMOS and TICCIH International.

Criterion 2

I have a demonstrated understanding of NSW Heritage legislation through my education and through my experience working in the NSW Heritage Branch (as it was), assessing and issuing permits and applications.

I currently hold two Section 60 Permits and several Section 140/139(4) Permits as well as working under consent conditions issued by the Department of Planning on two major infrastructure projects.

Criterion 3

I have supervised a number of complex archaeological projects, such as the project at the Greta Train Support Facility in the Hunter Valley which is similar in size to the current project at Berry.

I have the technical skills to develop research designs and programs of archaeological work that address both the client's requirements and the requirements of the NSW Heritage Division.

Criterion 4

I have had no complaints from the Heritage Council about my completion of work under past and current approvals.

Representative Projects Relating to Archaeological Excavation

Aboriginal Heritage:

- I worked for ten years with the Victorian Archaeological Survey of which about five years were involved in Aboriginal Heritage. During my employment with HLA-Envirosciences, from 1994 to 2004, I held several permits for sub-surface testing under the provisions of the NPWS Act. I am competent and experienced in recognising Aboriginal objects.

Historical Archaeology:

- Archaeological Assessment and Monitoring, Hoechst Site, St Peters
- Archaeological Assessment and Monitoring, Drains at Prince Alfred Sidings, Redfern
- Archaeological Assessment and Salvage Excavations, former Brickworks, Metford
- Archaeological Excavations, 101A-105 George Street, Parramatta

- Historical Archaeological Monitoring of contamination testing, Defence Site, Maribyrnong.
- Archaeological Excavation and Archival Recording of The Stables, the Priory, Gladesville.
- Archaeological Excavations, former Commercial Mill, Aldi Site, Yass.
- Archaeological Assessment of mining remains at Sunny Corner.
- Excavation Director – Archaeological Salvage Excavations at Cabrini, Westmead.
- Excavation Director – Test excavations at Bridge Street Sub-division, Schofields.
- Excavation Director – Archaeological Monitoring and Salvage Archaeology at Eveleigh Workshops.
- Excavation Director – sub-surface testing at the South Grafton Bridge site (with BIOSIS for RMS).
- Excavation Director – excavations of miners’ hut sites, Greta Train Support Facility (Pacific National).
- Excavation Director – sub-surface testing at the Dry Boat Storage Facility, Rozelle (with BIOSIS).
- Excavation Director – sub-surface testing at Thompsons Square, Windsor (with BIOSIS).
- Provision of on-going heritage advice to the Epping to Thornleigh Third Track Project (for Artefact and ETT), including responding to unexpected discoveries of archaeological remains.