

Appendix F
Historical heritage assessment

PRELIMINARY HISTORICAL HERITAGE ASSESSMENT

QUEENSLAND HUNTER GAS PIPELINE



*The Petrified Tree Stump, Moobi Road,
Scone The Scone Advertiser, 7 Sept 1937*

PREPARED ON BEHALF OF
MANIDIS ROBERTS

AHMS

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CONTENTS

Contents.....	2
Abbreviations	5
Figures.....	6
Tables.....	7
Executive Summary	9
Preamble	9
Aims	9
Results	9
Recommendations.....	10
1. Background	11
1.1 The Pipeline Project	11
1.2 Approach and Scope of Work	12
1.3 Study Limitations.....	13
1.4 Authorship	13
1.5 Acknowledgements	14
2. Statutory Context	15
2.1 Environmental Planning & Assessment Act, 1979	15
2.1.1 Regional and Local Environmental Plans	16
2.2 Heritage Act, 1977	17
2.2.1 The State Heritage Register (SHR)	18
2.2.2 Archaeological sites and ‘Relics’ not listed on the SHR or Subject to an IHO	19
2.2.3 Section 170 Heritage & Conservation Registers	20
2.3 Environment Protection Biodiversity & Conservation Act, 1999	20
2.3.1 National and Commonwealth Heritage Lists	21
2.4 Non-Statutory Lists.....	21
2.4.1 The Australian Heritage Database	21
2.4.2 Register of the National Trust of Australia.....	22
3. Thematic history of places along the pipeline route	23
3.1 Methodology	23
3.2 Environment.....	23
3.3 Aboriginal Cultures.....	25
3.4 Exploration	27
3.5 Forestry	29
3.6 Mining.....	29
3.7 Pastoralism	31
3.8 Agriculture.....	33
3.9 Industries	35
3.10 Transport.....	35
3.10.1 Rivers	35
3.10.2 Roads.....	36

3.10.3	Railways	38
3.10.4	Travelling Stock Routes	39
3.11	Towns	40
3.11.1	Hexham	40
3.11.2	Maitland	40
3.11.3	Morpeth	40
3.11.4	Singleton	41
3.11.5	Muswellbrook	41
3.11.6	Scone	41
3.11.7	Murrurundi	42
3.11.8	Quirindi	42
3.11.9	Gunnedah	42
3.11.10	Boggabri	43
3.11.11	Narrabri	43
3.11.12	Moree	43
3.11.13	Soldier Settlements	44
3.12	Law and Order	44
3.13	Birth and Death	46
4.	Known heritage items & places	48
4.1	Methodology	48
4.2	Lists of Known Items & Places within 0-1km of the Proposed Pipeline Study area.	49
4.2.1	Moree Plains Shire Council	49
4.2.2	Narrabri Shire Council	50
4.2.3	Gunnedah Shire Council	50
4.2.4	Liverpool Plains Shire Council	50
4.2.5	Upper Hunter Shire Council	50
4.2.6	Muswellbrook Shire Council	51
4.2.7	Singleton Shire Council	51
4.2.8	Maitland City Council	51
4.2.9	Port Stephens Council	52
4.2.10	Newcastle City Council	52
4.3	List of Known Items Located within 1-3km of the Proposed Pipeline Study area	53
4.3.1	Moree Plains Shire Council	53
4.3.2	Narrabri Shire Council	53
4.3.3	Gunnedah Shire Council	53
4.3.4	Liverpool Plains Shire Council	54
4.3.5	Upper Hunter Shire Council	54
4.3.6	Muswellbrook Shire Council	55
4.3.7	Singleton Shire Council	55
4.3.8	Maitland City Council	55
4.3.9	Port Stephens Council	55
4.3.10	Newcastle City Council	56
4.4	Maps	56

4.5	Summary	57
5.	Predictive model - potential items & places.....	59
5.1	Methodology.....	59
5.1.1	Identifying	59
5.1.2	Mapping.....	60
5.1.3	Grouping and Further Identification	60
5.2	Thematic framework Interpretation of Potential Heritage Items	61
5.3	Maps and Lists of Potential Items	62
5.4	Potential Items located within the Pipeline Study area up to 1km of the Pipeline.....	62
5.5	Rural Fencing in NSW	62
6.	Significance.....	74
6.1	Known Items and Places	74
6.2	Themes assigned to known heritage items	75
6.3	Maps and Lists of Known Items	76
6.4	Potential Places and Items	76
6.5	Maps and Lists of Potential Items	77
7.	Impacts and Constraints Assessment	78
7.1	Impacts - Methodology	78
7.2	Constraints - Methodology.....	79
7.3	Heritage Items Excluded from Constraints Assessment	80
7.3.1	Heritage Items located between 1km and 3km of the Pipeline Study area	80
8.	Recommendations.....	81
8.1	Known Heritage Items.....	81
8.1.1	Hard Constraints and Recommendations	81
8.1.2	Recommendations for Known Items and Places that are Hard Constraints .	82
8.1.3	Moderate Constraints and Recommendations	83
8.1.4	Recommendations for Known Items and Places that are Moderate Constraints.....	84
8.1.5	Low Constraints and Recommendations	85
8.1.6	Recommendations for Known Items and Places that are Low Constraints ..	88
8.2	Potential Heritage Items.....	88
8.2.1	Recommendations for Potential items that are Hard Constraints.....	89
8.2.2	Recommendations for Potential Items that cannot be identified - Default Hard constraints	92
8.2.3	Recommendations for Potential Items that are Moderate Constraints....	92
8.2.4	Recommendations for Potential Items that are Low Constraints.....	95
8.3	Rural Fencing situated within the pipeline study area which has potential heritage values (representing Hard and Moderate Constraints).....	98
9.	References.....	99

ABBREVIATIONS

AHC	Australian Heritage Council
CHL	Commonwealth Heritage List
CEMP	Construction Environmental Management Plan
OEMP	Operational Environmental Management Plan
DoP	Department of Planning
ICOMOS	International Council on Monuments and Sites
LEP	Local Environmental Plan
LGA	Local Government Area
MGA	Map Grid of Australia - unless otherwise specified all coordinates are in MGA94
NHL	National Heritage List
NTA	National Trust of Australia
REP	Regional Environmental Plan
RNE	Register of the National Estate
SHI	State Heritage Inventory
SHR	State Heritage Register
SOHI	Statement of Heritage Impact
S.170	Section 170 of the NSW Heritage Act 1977
S.140	Section 140 of the NSW Heritage Act 1977
S.60	Section 60 of the NSW Heritage Act 1977

FIGURES

Figure 3.1	Newcastle Railway Station	App B
Figure 3.2	Hexham Bridge, 1952	App B
Figure 3.3	West Maitland, 1837	App B
Figure 3.4	High Street, West Maitland, c 1900	App B
Figure 3.5	Flood at Maitland Railway Station, 1950	App B
Figure 3.6	Aborigines at St Clair near Singleton, 1903	App B
Figure 3.7	Muswellbrook from Hospital Hill, 1880	App B
Figure 3.8	St Helier's Colliery, Muswellbrook, 1928	App B
Figure 3.9	Blood horse sale at 'Turanville', near Scone	App B
Figure 3.10	Scone Railway Station, 1910	App B
Figure 3.11	Murrurundi shale works, 1925	App B
Figure 3.12	Royal Hotel, Murrurundi, 1890	App B
Figure 3.13	Castle Mountain, Quirindi, 1900	App B
Figure 3.14	Bullock teams in Quirindi, 1910	App B
Figure 3.15	Flood at Quirindi, 1910	App B
Figure 3.16	Bird's eye view of Quirindi, 1930	App B
Figure 3.17	Trunk road 72 two miles north of Boggabri, 1957	App B
Figure 3.18	Trunk Road 72 eight miles north of Gunnedah, 1957	App B
Figure 3.19	Gunnedah-Narrabri road between Turrawon and Tarriaro, 1933	App B
Figure 3.20	Flood at Narrabri Post Office, 1910	App B
Figure 3.21	Flood in Maitland St, Narrabri, 1920	App B
Figure 3.22	Narrabri from Town Hall tower, 1939	App B
Figure 3.23	Newell Highway near Gurley, 1966	App B
Figure 3.24	Moree Bore	App B

TABLES

Table 2.1	Environmental Planning Instruments Reviewed	17
Table 4.1	Summary of known heritage items within and up to a distance of 1km of the pipeline study area organised by Local Government Area	57
Table 4.2	Summary of known heritage items between 1km and 3km of the pipeline study area organised by Local Government Area	58
Table 5.1	Thematic framework for interpreting of potential heritage items	64-73
Table 5.2	Number of Potential heritage items arranged by Local Government Areas	62
Table 6.1	Significance Gradings for Known Heritage Items.	75
Table 6.2	Historical Themes assigned to known heritage items assessed within the pipeline study area and up to 1km of the study area	75-76
Table 6.3	Significance Gradings colours for Potential Heritage Items.	77
Table 7.1	Impact Assessment Criteria	79
Table 7.2	Constraint Assessment Table	79
Table 8.1	Hard Constraints - Known heritage items of high or medium heritage Significance that are located within the pipeline study area	82
Table 8.2	Moderate Constraints - Known heritage items of Low heritage significance that are located within 100m of the pipeline study area	83-84
Table 8.3	Moderate Constraints - Known heritage items of high or medium heritage significance that are located within 100m of the pipeline study area.	84
Table 8.4	Low Constraints - Known heritage items of high, medium or low	85-88

heritage significance that are located between 100m and 1km of the pipeline study area.

Table 8.5	Hard Constraints - Potential Heritage Items of likely high or medium heritage significance that are located within the pipeline study area	90-91
Table 8.6	Default Hard constraints - Potential Heritage Items of unknown heritage significance that are located within the pipeline study area	92
Table 8.7	Moderate Constraints - Potential Heritage Items of likely Low Heritage significance that are located within the pipeline study area	93
Table 8.8	Moderate Constraints - Potential Heritage Items of likely unknown heritage significance that are located within 100m of the pipeline study area	93-94
Table 8.9	Low Constraints - Potential Heritage Items of likely high, moderate, low and unknown heritage significance that are located between 100m of the pipeline study area and 1km from the study area	95-97

EXECUTIVE SUMMARY

Preamble

Hunter Gas Pipeline Pty Ltd is proposing a 850km high pressure gas pipeline from the Wallumbilla Gas Hub in South Central Queensland, to near Hexham, NSW.

Archaeological & Heritage Management Solutions Pty Ltd has prepared a preliminary historic heritage assessment of the NSW part of the pipeline route. The assessment is required to inform the Environmental Assessment development application for the project.

The gas pipeline Proposal has been declared a 'critical infrastructure' Major Development project under Part 3A of the *Environmental Planning and Assessment Act 1979 (EP&A Act)*. Part 3A of the EP&A Act voids the operation of key heritage provisions of the *Heritage Act 1977* and Environmental Planning Instruments that would otherwise apply to the pipeline project.

Aims

The primary aims of the heritage assessment were to:

- Identify known heritage items and potential sites and places with heritage values that may be adversely impacted by the proposal and
- Recommend measures to manage and mitigate heritage impacts and constraints to the project.

Results

The assessment has identified twelve (13) known heritage items that could be considered a hard constraint to the proposal, nine (9) known items that could be considered a moderate constraint to the proposal and just over one hundred (114) known items and places that could be considered a low (or unlikely) constraint to the proposal. The 13 hard constraint known items are of high or medium heritage significance and located within the 200m pipeline study area.

The heritage impact assessment identified 49 potential heritage items that could be considered a potential hard constraint, 20 potential items could be considered a potential moderate constraint and to the proposal and 142 low constraint potential items. The 49 potential items that could be a hard constraint are located within the 200m pipeline study area and of potential high heritage significance.

Recommendations

In summary, the assessment recommends that:

- Further heritage and impact assessment is undertaken for known and potential heritage items that are hard and moderate constraints. The assessments to include heritage impact and project constraint mitigation recommendations.
- This preliminary assessment and the further comprehensive heritage assessments, inform the alignment design detail of the pipeline to avoid and minimise adverse heritage impacts and project constraints.
- Consultation with Heritage Branch, Department of Planning, local councils and other relevant stakeholders with regards to further heritage assessments and the proposed mitigation measures is maintained.
- The heritage constraints and heritage impact mitigation and management recommendations and measures are included in the Construction and Operation Environmental Management Plans (CEMP and OEMP).

1. BACKGROUND

In late 2007 Archaeological Heritage Management Solutions (AHMS) was engaged by Manidis Roberts Pty Ltd to undertake Preliminary Historic Heritage Assessment on behalf of Hunter Gas Pipeline Pty Ltd, for a proposed 850km long high pressure gas pipeline from the Wallumbilla Gas Hub in South Central Queensland to near Hexham, NSW. The gas pipeline project has been declared a 'critical infrastructure' major development pursuant to Part 3A of the *Environmental Planning and Assessment Act 1979* and staged approval is being sought.

The Preliminary Historic Heritage Assessment (the assessment) is required to inform the Environmental Assessment Application (EA). If required, a separate, more detailed historical heritage assessment and report would be undertaken to inform and assess later project applications and approvals.

1.1 The Pipeline Project

From north to south in NSW, the pipeline would generally be located in agricultural or pastoral land near the NSW/ Queensland border, skirt around Moree, cross the Gunnedah-Tamworth Pipeline, traverse the Liverpool Ranges near Murrurundi and follow the New England Highway towards Muswellbrook. The pipeline travels to the east of Muswellbrook in a southerly direction on the northern side of the Hunter River. It skirts Morpeth and crosses the Hunter River twice at Raymond Terrace and finishes at the south-eastern end of Koongang Island in Stockton. The pipeline would provide a missing link in the eastern Australia gas supply network securing the supply of gas to Sydney and Newcastle for industrial, commercial and domestic use.

The proposed pipeline would be buried underground for its entire length except at supply and delivery points en-route and at main line valves. Construction would require a minimum easement 20 metres wide to provide vehicle access and room for temporary stockpiling of spoil during excavation. Where the pipeline route would cross major roads, rail lines, rivers or major creeks, horizontal directional drilling techniques would be employed that would prevent disturbance of soil and vegetation.

1.2 Approach and Scope of Work

The work undertaken for this assessment has generally complied, where relevant, with the heritage assessment and evaluations approaches outlined in the *NSW Heritage Manual* published in 1996 (updated in 2001)¹.

The assessment has focused on identifying the potential impact of the pipeline and its construction on:

- the heritage values of known sites and places of heritage significance that would be directly or indirectly impacted by the pipeline and
- the likely heritage values of potential (currently unidentified) sites and places along the pipeline route could be of high heritage significance.

The primary aim of the focused approach has been to identify sites and places with high heritage values that may be adversely impacted by the proposal and which would require a route adjustment and/or detailed mitigation measures to be set out in the EA.

In summary, the work undertaken included:

- Identifying and mapping known historical heritage sites within the 200m pipeline study area and up to approximately 3km from the proposed pipeline study area route(s) including 'places, buildings, works, relics, moveable objects or precincts' as defined by the *Heritage Act, 1977*.
- Undertaking a thematic history of the study area to assist and contextualize site identification and significance impacts and constraints assessments.
- Consultation with local Councils, relevant state agencies and local historical societies.
- Inspection of heritage registers, schedules or lists in Local or Regional Environmental Plans, including the Register of the National Trust, the Australian Heritage Database and the State Heritage Register.

¹ *NSW Heritage Office 1996 & 2001*

- Identifying and mapping previously unrecorded sites or places of potential heritage value within 1km of the pipeline and assigning them a likely level of heritage significance (low, medium, high).
- Identifying key heritage themes², cultural values and research issues.
- Identifying the likely impact of the proposal on sites, places and areas of known heritage significance and sites, places and areas of potential heritage significance.
- Identifying and mapping known and potential heritage items that may be constraints to the proposal (hard, moderate or low constraints).
- Developing recommendations to manage and mitigate heritage impacts and constraints to the project including identifying any further assessment or survey that may be required.

1.3 Study Limitations

The preliminary historic heritage assessment has largely relied on secondary written material along with pictorial evidence, early maps and information provided by local historians. Field survey and detailed primary research was not undertaken.

Historical evidence of Aboriginal occupation of the study area was not included in the scope of works, as it is the subject of a separate Preliminary Aboriginal Heritage Assessment prepared by Archaeological & Heritage Management Solutions Pty Ltd.

1.4 Authorship

This report was written by a number of AHMS staff including Sophie Brettell, Adam Paterson, Matthew Kelly and Felicity Barry. Dr. Anne-Maree Whitaker undertook the Thematic History and Michael Andon undertook the ARCGIS mapping in conjunction with Laura Matarese and Felicity Barry, also of AHMS.

This report was reviewed by Lisa Newell, Associate Director, AHMS.

² *NSW Heritage Council 2001*

1.5 Acknowledgements

AHMS would like to acknowledge the assistance of the following people and organizations during the production of this report:

- Sandi Shrimski, Marcus Sainsbury and Daniel Hall of Manidis Roberts.
- The following Local Historical Societies and Family History Groups for providing advice for this project including: Murrurundi & District Historical Society; Gunnedah & District Historical Society Inc; Veritas Archaeology & History Service for Muswellbrook Local & Family History Society; Quirindi & District Historical Society; Boggabri & District Historical Society; Raymond Terrace & District Historical Society; Narrabri & District Historical Society; Scone & Upper Hunter Historical Society and the Morpeth Heritage Conservation Group. In particular we would like to thank Barbara Riddell, Judy Smart, Bob Tickle and Shirley Coote.
- Mari Metzke and the staff of the Royal Australian Historical Society.
- Dr. John Pickard, Macquarie University.
- Ms. Lillian Cullen (Heritage Advisor, Upper Hunter Shire Council).
- Ms. Pamela Daniel (NSW Dept of Lands).
- Mr. Murray Amos, (Planning Officer, Moree Shire Council).
- Ms. Sarah Cameron (Heritage Officer, Newcastle City Council).
- Mr. Stewart Watters (Heritage Officer, Heritage Branch, Dept of Planning).

2. STATUTORY CONTEXT

The *Environmental Planning and Assessment Act 1979* (EP&A Act) in conjunction with the *Heritage Act 1977* provide the statutory framework for managing non-Indigenous (historic) heritage in New South Wales. A further level of heritage protection can be established under the Commonwealth *Environment Protection Biodiversity Conservation Act, 1999* (EPBC Act) in certain circumstances.

The system of heritage management in NSW and Australia more broadly comprises a system of heritage listings associated with the legislation (identified above). Historic heritage listing in NSW currently consists of both statutory and non-statutory registers administered by local and State Government agencies in addition to 'not for profit' community organizations.

The relevant historic heritage legislation and associated statutory and non-statutory registers reviewed for this project are outlined below.

2.1 Environmental Planning & Assessment Act, 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the dominant piece of legislation that provides a statutory framework for planning processes required for development in NSW. The Act sets out specific statutory assessment processes for proposed developments within the State under Parts 3A, 4 and 5.

Part 3A of the EP&A Act establishes the approval process for projects which qualify as being of 'State or Regional Environmental Planning Significance' within the meaning of both this Act³ and the *State Environmental Planning Policy (SEPP) for Major Projects (2005)*. Part 3A also makes allowance for a higher level of state significant project to NSW, which are known as 'critical infrastructure projects' and which follow a slightly different process of assessment⁴. Projects which are

³ Section 75B(2) of the EP&A Act enables the Minister, through an Order made under Section 75B(1) of the EP&A Act, to declare a development to be of 'State or Regional Environmental Planning Significance'.

⁴ Section 75C of the EP&A act defines Critical Infrastructure projects and differences in the legislation and processing of a Part3A critical infrastructure project and one being assessed only as a State Significant project under Part 3A.

assessed under Part 3A (regardless of whether they are critical infrastructure projects or not), undergo a streamlined development assessment and approval process. This means separate approvals, normally required under certain pieces of NSW legislation (including the *Heritage Act, 1977*), are not required. Part 3A Projects are determined by the (NSW) Minister for Planning.

Section 75U⁵ of the EP & A Act specifically outlines sections of the *Heritage Act, 1977* that do not require separate approval for a project approved under Part 3A of the EP&A Act. These sections include:

1. Approval under Part 4 or an excavation permit under Section 139 (This means no approvals are required for items listed on the State Heritage Register (SHR) or places subject to an Interim Heritage Order. It also means no approval is required for excavation of archaeological relics/sites on land subject to part 3A Approval); and
2. Approval under Division 8 of Part 6 of the Act (This means items which are not listed on the SHR or subject to an IHO cannot be protected by 'protection orders' e.g. under s136).

Notwithstanding the application of Part 3A to the Pipeline Project, historic heritage has been included as a matter for consideration for the Environmental Assessment development application documentation.

2.1.1 Regional and Local Environmental Plans

Part 3 of the *Environmental Planning and Assessment Act, 1979* relates to the preparation of Environmental Planning Instruments (EPI) within the State of NSW. These instruments include Local Environmental Plans (LEPs) which are intended to assist local councils within NSW to prepare EPIs to direct and assess development within the area to which it relates. The EP&A Act also allows for the preparation of Regional Environmental Plans (REPs) which provide a broader (regional) level of developmental protection and State Environmental Planning Policies (SEPPs).

LEPs, and in some cases REPs, generally contain specific provisions for protecting heritage items in development contexts.

⁵ Section 75U (1) (d)

While the heritage provisions of any LEP or REP that may apply to land affected by the pipeline route would be voided by its determination as a Part 3A project, the heritage schedules of the following Environmental Planning Instruments were reviewed for the QHGP preliminary historic heritage assessment:

Table 2.1 Environmental Planning Instruments Reviewed

LOCAL GOVERNMENT AREA	ENVIRONMENTAL PLANNING INSTRUMENT
Moree Plains	Moree Plains LEP 1995
Narrabri	Narrabri LEP 1992 Narrabri LEP No. 2
Gunnedah	Gunnedah LEP 1998
Liverpool Plains	Quirindi LEP 1991 Parry LEP 1987 Murrurundi LEP 1993
Upper Hunter	Murrurundi LEP 1993 Scone LEP 1986 Merriwa LEP 1992 Hunter REP 1989 (Heritage)
Muswellbrook	Hunter REP 1989 (Heritage) Muswellbrook LEP 1985
Singleton	Singleton LEP 1996
Maitland	Maitland LEP 1993
Port Stephens	Port Stephens LEP 2000
Newcastle	Newcastle LEP 2003

2.2 Heritage Act, 1977

The *Heritage Act, 1977* is a statutory tool designed to conserve the environmental heritage of New South Wales.⁶ It is used to regulate development impacts on the state's heritage assets, predominately those items identified as having state heritage significance.

While the provisions of Part 3A of the *EP&A Act, 1979* have removed most of the application of the *Heritage Act, 1977* for the QHGP project, the following summary assists to identify heritage management in NSW and how listing under the Heritage Act occurs.

The Heritage Act defines a heritage item as "a place, building, work, relic, moveable object or precinct". A number of heritage item types are defined further in the following manner:

⁶ NSW Heritage Act, <http://www.legislation.nsw.gov.au/>, p1

"building" includes a part of a [building](#), a structure or a part of a structure.

"moveable object" means a [moveable object](#) that is not a [relic](#).

"place" means an area of land, with or without improvements.

"precinct" means an area, a part of an area, or any other part of the State.

"relic" means any deposit, object or material evidence:

(a) which relates to the settlement of the [area](#) that comprises New South Wales, not being Aboriginal settlement, and

(b) which is 50 or more years old.

To assist the identification and management of Heritage items within NSW, the Act distinguishes between items of local and State heritage significance. These are defined by fulfilling the criterion for significance to either the Local area or the State in relation to the 'historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item'⁷.

The Heritage Act (when it applies) essentially provides statutory protection for items of State Heritage Significance through listing of items on the State Heritage Register and Interim Heritage Orders (IHOs). It further provides statutory protection for archaeological 'relics' regardless of whether they are listed on the SHR or subject to an IHO within NSW.

Protection can also be afforded to items of Local heritage significance through protection of items from demolition (under s136) and authorisation of some Local Councils to place IHOs on items of Local significance. Other aspects of the Act provide for State Government Agencies to identify heritage items of local and state significance within their jurisdiction under Section 170 of the *Act* and the ability of the NSW Heritage Council to comment on certain development applications relating to items of local and state heritage significance within NSW.

2.2.1 The State Heritage Register (SHR)

The State Heritage Register is list of heritage items of State heritage significance established under the Heritage Act . The Register lists a diverse range of items that are deemed to be of particular importance to the State and which enrich our

⁷ *Heritage Act, 1977 Section 4A*

understanding of the history of NSW. Heritage items listed on the Register are legally protected under the Act and (except for Part 3A projects and in some other circumstances) approval from the Heritage Council of NSW or its delegate is required prior to undertaking work that results in their alteration or modification.

Interim Heritage Orders (IHOs) provide statutory protection for a period of one (1) year. This essentially means that during this time the item is afforded the same protection as an item listed on the State Heritage Register with approvals (where applicable) required from the Heritage Council of NSW for any works within the gazetted boundary. The limited timeframe provides for time to investigate whether the item is of State heritage significance and should be formally listed on the SHR.

Items listed under the State Heritage Register or subject to an Interim Heritage Order along or near the pipeline route have been identified in this study.

2.2.2 Archaeological sites and 'Relics' not listed on the SHR or Subject to an IHO

Archaeological relics and sites as defined by the Heritage Act are provided automatic protection under the Heritage Act of NSW. These provisions are set out in Section 139 which establishes the need for an approval under either s139(4) or s140 of the Act (where applicable) to:

*'disturb or excavate any land 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'*⁸

Provision is made within the Act to enable 'relics' to be assessed according to their level of heritage significance and where appropriate a lesser form of approval may be granted. This type of approval is provided for under s139(4) as an exception to the requirement for a s140 permit.

There are a number of Archaeological Management Plans (AMPs) and Archaeological Zoning Plans (AZPs) which have been prepared for certain areas within NSW. These plans generally indicate where 'relics' may survive in certain locations. The only relevant document of this type affecting the pipeline route is the Newcastle AMP.

⁸ Section 139(1) of the Heritage Act, 1977

However this document does not extend outside the Newcastle Central Business District and as such does not present items or constraints to the proposed development.

The predictive modelling exercise for this project has been devised to identify where 'relics' may survive.

2.2.3 Section 170 Heritage & Conservation Registers

The Heritage Act also provides for identifying and managing heritage assets in the care, control and management of State government agencies (section 170 (s170)). To assist this process, all State government agencies in NSW are required to prepare S170 Heritage and Conservation registers (S170 Registers). These registers identify items of both State and local heritage significance within the jurisdiction of that agency for their future protection and conservation.

Four (4) S170 Heritage and conservation Registers were reviewed for this project and include:

STATE GOVERNMENT AGENCY	ABBREVIATION
Roads and Traffic Authority, NSW	RTA
RailCorp	RailCorp
Australian Rail Track Corporation	ARTC
Dept of Primary Industries	DPI

2.3 Environment Protection Biodiversity & Conservation Act, 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) provides a statutory framework for the protection and management of Commonwealth, National and internationally significant heritage places, flora, fauna and environmental communities. Protection under the Act is provided to items which classify as being of National significance, of World Heritage Significance and/or which hold heritage significance and are located within the jurisdiction or ownership, of a Commonwealth Government Agency. Approvals are required where a 'significant' impact is identified to the heritage values of an item listed on the National Heritage List, World Heritage List or the Commonwealth Heritage List established under the Act.

2.3.1 National and Commonwealth Heritage Lists

The National Heritage List provides statutory protection for heritage places (natural, historic and Indigenous) which have been determined by the Australian Heritage Council to hold 'outstanding' national heritage significance to Australia.

The Commonwealth Heritage List consists of those natural, historic or Indigenous heritage places which are situated on Commonwealth lands, waters or under Australian Government control, and have been listed under the *EPBC Act*.

The *Environment Protection and Biodiversity Conservation Act 1999* provides for the statutory protection of items listed on the National Heritage List (NHL) and the Commonwealth Heritage List (CHL). This means federal approval must be obtained before any action takes place which has, will have, or is likely to have, a significant impact on the national heritage values of a listed place.

No historic place or item currently included on the National or the Commonwealth Heritage Lists, was identified within 3km of the QHGP.

2.4 Non-Statutory Lists

2.4.1 The Australian Heritage Database

The Australian Heritage Database (AHD) is a non-statutory register, maintained by the Commonwealth Department of Environment & Water Resources (DEW), of sites, places and landscapes with either Aboriginal or historic heritage values. It encompasses the current National Heritage List, Commonwealth Heritage List, World Heritage List, List of Overseas Places of Historic Significance to Australia and the former Register of the National Estate.

The Register of the National Estate was a database established under the previous Federal heritage act and remains a non-statutory list.

The former Register of the National Estate was reviewed for the QHGP project and items identified within 3km of the route have been included in this report. Many of these items are also listed on the SHR and in LEPs and REPs.

2.4.2 Register of the National Trust of Australia

The National Trust of Australia is a non-statutory community charity which advocates the protection and conservation of natural, built and cultural heritage in Australia. It is an independent community organization which maintains a list of over 11,000 items which it has identified as holding heritage significance within Australia. The NSW chapter of the National Trust of Australia holds a register relevant to the heritage of this State. Some of these items have been formally registered within statutory heritage registers while others have not.

A copy of the 2006 National Trust Register for NSW was reviewed for this project. At the time of this report preparation it was the most recent copy made available for review.

3. THEMATIC HISTORY OF PLACES ALONG THE PIPELINE ROUTE

Thematic histories are built on themes that describe a major force or process which has contributed to historical development. Thematic histories provide the context within which heritage significance can be understood, assessed and compared. The Australian and NSW historical themes which are drawn from the NSW Historical Themes⁹ are listed in Appendix A.

3.1 Methodology

This history was intended as a strategic thematic history designed to identify key themes and significance values relevant to the local areas that the pipeline is proposed to traverse. It did not include site-specific or chain-of-title research.

The ultimate aim of this study was to produce a contextual framework to understand both known and potential heritage items and identify physical elements/sites/areas which embody these themes along the pipeline route. Both this thematic history and the associated contextual framework which demonstrate elements of these themes were then incorporated into a system for attributing significance values to potential heritage items along the route. This is discussed further in Chapters 5 and 6 of this report.

3.2 Environment

The area between Newcastle and Maitland incorporates the floodplains of the Hunter, Williams and Paterson rivers. The Hunter River coastal catchment at 22,000 square kilometres is the third largest in NSW. At the time of European arrival the Hunter River delta was a complex of intersecting tidal channels, tidal flats and mangrove swamps, much of which has now been altered by reclamation. The river channel is bounded by a floodplain up to 40 kilometres wide, with alluvial deposits known to be eight metres thick at Maitland tapering to four metres near Hexham.

⁹ NSW Heritage Council 2001

The wetlands still comprise 20 per cent of the Newcastle LGA, most notably the Hexham Swamp Nature Reserve.¹⁰

The pipeline route crosses the Great Dividing Range at the Liverpool Range between Murrurundi and Gunnedah. The northern part of the study area is located in another large alluvial system known as the Barwon Basin formed by the Bogan, Macquarie and Castlereagh Rivers flowing north, and the Namoi, Gwydir and Barwon-McIntyre Rivers flowing southwest, all eventually feeding into the Darling River. The Barwon basin is characterised by black alluvial cracking clays and extensive flood plains. This soil is not conducive to retaining archaeological material and it has been noticeable that traces of Aboriginal occupation have been mainly confined to red soil uplands rather than the black soil plains.¹¹

An unusual natural phenomenon in the Upper Hunter near Scone is Mount Wingen, known as the ‘burning mountain’. It was first mentioned in *The Australian* newspaper on 30 July 1828 as a volcano with flame and smoke coming from it but no lava. The site was also visited by Major Mitchell on his journey of exploration in 1831-1832. Mount Wingen is actually a slowly-burning coal seam.¹²

The rivers of the Hunter Valley and northern plains not only create fertile soil but also subject both regions to frequent severe floods. The largest was probably the flood in 1955 which inundated 10,000 homes in 20 towns and killed 22 people, 11 of them in Maitland. Affected towns on the pipeline route include Maitland, Quirindi, Gunnedah, Boggabri, Narrabri and Moree. Most recently there have been serious floods in Quirindi, Gunnedah and Narrabri in 2000, Narrabri and Moree in 2004 and Maitland in 2007. Over 200 floods have occurred on the Hunter River since settlement, an average of nearly one a year.

Apart from the rivers the main source of irrigation is the Great Artesian Basin, which has an area of about 600,000 square miles and covers one-fifth of Australia. The first flowing water from the Great Artesian Basin was from a bore on ‘Kallara’

¹⁰ *Australian Museum Business Services, ‘Aboriginal Heritage Study: Newcastle local government area’, 2004, p 28*

¹¹ *Heritage Concepts Pty Ltd, ‘Aboriginal Heritage Study: Moree Plains Shire Council Local Environmental Plan’, 2007, pp 29, 39*

¹² *J H M Abbott, ‘Mount Wingen: burning mountain of the Kingdon Ponds Valley, its story during the last century’, Journal of the Royal Australian Historical Society, volume 7, part 3, 1921, pp 131-147*

Station in north-western NSW in 1878. Water from bores was generally used for domestic and stock use, but not for irrigation owing to its mineral content, although the Walgett town water supply was from bores. The deepest bore (at 4338 feet) was at Boronga north of Moree. At Moree the temperature of the water is 100°F (37°C), and it is thought to have curative properties for rheumatism. The Moree bore was sunk in 1895 and therapeutic baths soon drew tourists to the town.¹³

3.3 Aboriginal Cultures

The territory of the Awabakal people covered Newcastle, the Central Coast and out to Maitland. Their lifestyle was based around the rivers which provided birds, plants and fish. The high proliferation of axe grinding grooves in Newcastle and at sites along the Hunter River confirms the existence of a large scale stone implement manufacturing industry, which also used fire to harden points and melt gum used in tool-making. Canoes were made from bark tied with vines and sealed with river gum. Before the establishment of heavy industry in Newcastle, shell middens extended along the river banks from Port Waratah to Sandgate.¹⁴

After the convict settlement of Newcastle was wound down in the 1820s the Reverend Lancelot Threlkeld established a mission to the Aborigines at Lake Macquarie and witnessed the decline of their numbers and way of life. Harry Brown, considered the 'last of the Newcastle tribe', died in 1854, followed in 1900 by Margaret, known as the 'last of the Awabakal'. When the Board for the Protection of Aborigines set aside land in 1883 for reserves in areas of high Aboriginal population they bypassed Newcastle in favour of Karuah and Singleton.¹⁵ Under the Aboriginal Re-Settlement Programme which wound down the reserves, Newcastle became one of the locations to which people were moved from towns such as Moree, Brewarrina, Walgett and Bourke in the 1960s and 1970s.¹⁶

¹³ Laurie Walker, 'Irrigation in NSW 1884-1940', *Journal of the Royal Australian Historical Society*, volume 27, part 3, 1941, pp 224-226; *Moree Bore Hot Water Baths*, NSW Government Tourist Bureau, Sydney, 1900

¹⁴ John Maynard, 'Muloobinbah (Newcastle) an Aboriginal industrial presence: past and present', *Journal of the Royal Australian Historical Society*, volume 87, part 2, December 2001, pp 249-250, 252

¹⁵ Suters Architects, 'Newcastle City Wide Heritage Study', 4 vols, 1997, p 2/13

¹⁶ Maynard, John, 'Muloobinbah (Newcastle) an Aboriginal industrial presence: past and present', *Journal of the Royal Australian Historical Society*, volume 87, part 2, December 2001, p 258

The Upper Hunter River region was the land of the Wonnarua people. European settlement of the area began in earnest in the 1820s and in 1825-26 large parties of Aboriginals attacked settlers and shepherds and plundered farms. Subsequently the mounted police shot several Aborigines which brought an end to their widespread resistance to settlement. By the middle of the nineteenth century the pre-European social structures and lifestyle were eradicated. In 1883 an Aboriginal reserve was established at St Clair between Singleton and Muswellbrook which operated until 1923. After its closure many of the families moved to Taree and Kempsey.¹⁷

From Murrurundi to the Queensland border the pipeline crosses the land of the Kamilaroi people, whose language was spoken across a large part of northern and western NSW. The Kamilaroi population was estimated to have been 7000 in the 1840s, and Major Mitchell described two Kamilaroi villages he encountered with huts built of sticks and reeds. Surviving Aboriginal sites in the study area include carved trees and ceremonial bora grounds.¹⁸ Traces of such bora grounds were reported in 1962 at 'Northcote' near Boomi, 'Tikitere' and 'Derra' near Croppa Creek, and 'Old Pokataroo'.¹⁹

The most famous Aboriginal of the period before European settlement was Gambu Gunera, a warrior and leader who lived in the Gunnedah district during the seventeenth-eighteenth centuries. He was buried sitting upright below a tree which was carved with intricate totemic designs, and his remains were dug up in the 1880s. Gambu Gunera was immortalised by Ion Idriess in his novel *The Red Chief* (1953).²⁰ Conflict between Aborigines and Europeans included massacres of Aborigines in 1838 by Major Nunn at Waterloo Creek (west of Gurley), followed by a murderous rampage by settlers across the district, described as 'the drive' or 'the bushwack', in which up to 300 Aborigines were said to have been killed around

¹⁷ John W Turner, 'Muswellbrook Shire Heritage Study: historical themes of the Shire of Muswellbrook', 1995, pp 8-10

¹⁸ Heritage Concepts Pty Ltd, 'Aboriginal Heritage Study: Moree Plains Shire Council Local Environmental Plan', 2007, pp 31-33, 39-40. See also Lindsay Black, *Burial Trees, Robertson and Mullens*, Melbourne, 1941 and Lindsay Black, *The Bora Ground*, author, Sydney, 1944

¹⁹ R J Webb, *The Rising Sun: a history of Moree and district*, Moree Municipal Council, Moree, 1962 (reprinted 1972), p 13

²⁰ Ron McLean (ed), *The Way We Were: sesquicentenary of Gunnedah 1856-2006*, Gunnedah and District Historical Society, Gunnedah, 2006, p 8

‘Terry Hie Hie’. Reprisal killings continued virtually unabated by both Aborigines and Europeans across northern NSW until the formation of the native police in 1849 specifically to counteract frontier violence.²¹

As in many other country towns, race relations in Moree remained troubled, and an ABC radio team visited Moree in the 1950s to report on worsening racism. Aborigines were not allowed in the swimming pool, the memorial hall, the town clubs and most of the bars. There were separate sections for them in the hospital and cemetery. In 1965 a group of university students emulating the ‘freedom rides’ in the southern US states arrived in the town by bus to take Aboriginal children into the town pool. While their action did not immediately end segregation in the town it raised national publicity for the issue and eventually led to long-term change.²²

3.4 Exploration

The first Europeans arrived in the Hunter region by sea from Sydney. Port Stephens was visited twice in 1795; the Hunter River and its coal deposits were officially ‘discovered’ in 1797 and from then coastal ships came to bring timber-getters and coal miners. Exploration of the interior was carried out by parties from Newcastle seeking timber, hunting game and pursuing escapees. Because of the rugged sandstone country north of Sydney the exploration of a land route took considerably longer. In 1819 John Howe and Benjamin Singleton reached the Hunter region near Jerrys Plains from Windsor via the Colo River.²³

Also in 1818 John Oxley heading north from Wellington followed the Macquarie River until he reached the Macquarie Marsh. He then headed east and named the Castlereagh River before crossing the Warrumbungle Range and naming the Liverpool Plains. He recorded in his journal the change from: ‘the miserable harassing deserts through which we had been struggling for the last six weeks, to

²¹ *Heritage Concepts Pty Ltd, ‘Aboriginal Heritage Study: Moree Plains Shire Council Local Environmental Plan’, 2007, pp 53-55; Roger Milliss, Waterloo Creek: the Australia Day massacre of 1838, George Gipps, and the British conquest of NSW, UNSW Press, Sydney, 1992*

²² *Peter Read, Charles Perkins: a biography, Viking, Melbourne, 1990, pp 107-117*

²³ *Suters Architects, ‘Newcastle City Wide Heritage Study’, 4 vols, 1997, p 2/12*

this beautiful and fertile country'. He continued eastwards to reach the coast at the future site of Port Macquarie.²⁴

The opening of the Hunter Valley to free settlers in 1821 marked the start of several exploring and surveying expeditions throughout the district. Henry Dangar made a detailed survey of the Upper Hunter in 1824, showing that the Hunter Valley extended for more than 45 miles. Later he surveyed a passable route and then a stock route over the Liverpool Range, and discovered the confluence of the Goulburn and Hunter rivers. He claimed to have surveyed 579,000 acres, and his favourable reports on the Liverpool Plains pastures caused an immediate rush of land squatters who subsequently applied for formal land grants. Dangar and his four brothers became prominent landholders and businessmen around Singleton and Scone.²⁵

In 1826 convict George Clarke escaped from Singleton and crossed the Liverpool Range. He lived with the Kamilaroi people and taught them to steal the cattle which were being brought into the Liverpool Plains area from 1827 and build stockyards to confine them. Clarke was known as 'The Barber' and this nickname provides the origin of the placenames Barber's Lagoon and Barber's Pinnacle near Boggabri. Clarke was recaptured in 1831 and offered to accompany Mitchell's expedition that year. Clarke was sentenced to death for horse stealing but reprieved, although he was later hanged in Hobart in 1835.²⁶

The next official expedition into the northern part of the study area was Charles Sturt's 1828-1829 expedition to follow the course of the Macquarie River, reaching as far as its confluence with the Barwon River. Perhaps the most significant expedition and early European description of the Moree area was that of Surveyor-General T L Mitchell in 1831-32.²⁷ Mitchell's party travelled from Sydney and crossed the Liverpool Range in December 1831, travelling on to the Namoi River where they

²⁴ Richard Johnson, *The Search for the Inland Sea: John Oxley, explorer, 1783-1828*, Melbourne University Press, Melbourne, 2001, p 127

²⁵ Keith R Binney, *Horsemen of the First Frontier 1788-1900 and the Serpent's Legacy*, Volcanic Publications, Sydney, 2005, pp 224-225

²⁶ Boggabri and District Historical Society, *George Clarke (alias The Barber), the Society, Boggabri*, nd; Dean Boyce, *Clarke of the Kindur: convict, bushranger, explorer*, Melbourne University Press, Melbourne, 1970

²⁷ Heritage Concepts Pty Ltd, *'Aboriginal Heritage Study: Moree Plains Shire Council Local Environmental Plan'*, 2007, p 49

located Clarke's stockyard near modern Boggabri. They then cut across country reaching the Gwydir River in January 1832 and later that month located and named the McIntyre River before returning to the Hunter Valley. Mitchell left valuable descriptions of the countryside and Aboriginal life.²⁸

3.5 Forestry

Timber-getting in the lower Hunter began before 1800 when the first cedar parties arrived from Sydney, and continued from 1804 to 1822 when Newcastle was a convict settlement. With an increased demand for timber after the gold rushes commenced in 1850, the scale of the industry increased. As areas were logged mill villages sprang up, some of them short-lived. In the late nineteenth and early twentieth century the Hunter Valley forest produced millions of tonnes of hardwoods for railway sleepers and building. The timber industry had a massive impact on the landscape and on fauna and flora which is still evident. As well as deforestation this includes the remains of railways, mills, wharves and village sites.²⁹

Timber felling and sawmilling were also important industries in Narrabri which was a service town for the Pilliga Scrub, an area of 5,000 square miles which by the 1880s was heavily timbered with pine and ironbark. Pine was cut for flooring and weatherboards, and ironbark for railway sleepers, fence posts and girders. The Pilliga timber industry continued until 1951 when its gradual decline was accelerated by bushfires.³⁰ The forestry industry in the study area is now largely confined to plantations managed by Forests NSW.

3.6 Mining

The first coal mine in Australia was at the mouth of the Hunter River in 1801. From then until 1831 several small government mines operated in the same vicinity using convicts to extract coal from the upper seams. In 1830 the Australian Agricultural Company opened its first colliery on the south side of Newcastle harbour to supply

²⁸ James Jervis, 'Exploration and Settlement of the North-Western Plains', *Journal of the Royal Australian Historical Society*, volume 48, part 5, December 1962, pp 378-379

²⁹ Suters Busted Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, pp 20-23

³⁰ R Ian Jack and Dennis N Jeans, *Regional Histories of NSW*, Heritage Office, Sydney, 1996, p 82

coal to steamships in the port. In 1848 the company discovered the Borehole Seam at Hamilton, which became the heart of the Newcastle coal industry for over half a century producing over 140 million tons. From around 1900 coal production switched to new mines at Lake Macquarie and South Maitland. Cessnock's population grew from 165 in 1901 to 4000 ten years later. The industry went into decline in the inter-war period but picked up again during World War 2. In the 1960s construction of thermal power stations at Lake Macquarie and Lake Munmorah led to increased demand for coal, and the extension of mining into the mid and upper Hunter, particularly open cut mining around Singleton.³¹

Coal was also mined on a small scale at Muswellbrook from the 1890s but production grew with the opening of Muswellbrook Coal Company's open cut mine during World War 2.³² The Hunter coalfield is now the largest producing area in NSW, containing approximately 60 seams in three measures: the Greta Coal Measures, Wittingham Coal Measures and Wollombi Coal Measures. Most of the coal is at a low depth, making it accessible to large-scale, multi-seam open cut operations near the major regional centres of Singleton and Muswellbrook. The major mining companies operating in the area are Coal and Allied, and Xstrata.³³

Construction of power stations in the Hunter region created an on-going demand for coal. These include Wangi (1953-1986), Vales Point (1963), Munmorah (1970), Liddell (1974), Eraring (1982), Bayswater (1985) and Redbank (1999). Coal is also exported through the Kooragang Coal Loader which opened in 1984.³⁴ Kerosene shale was also mined north-east of Murrurundi from 1905 until the end of World War 1 and possibly into the 1920s.³⁵

³¹ *Suters Busteed Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, pp 23-25*

³² *John W Turner, 'Muswellbrook Shire Heritage Study: historical themes of the Shire of Muswellbrook', 1995, pp 26-27*

³³ *Hunter Valley Research Foundation, Hunter Region Yearbook 2005-2006, Newcastle, 2006, pp 104-110*

³⁴ *Hunter Valley Research Foundation, 'Hunter History Highlights', http://www.hvrf.com.au/pages/hvf/hunter_history_highlights.php, accessed 7 February 2008*

³⁵ *G H Eardley and E M Stephens, The Shale Railways of NSW, Australian Railways Historical Society, Sydney, 2000 edition, pp 182-189*

3.7 Pastoralism

The best farmlands of the Hunter Valley were taken up after 1821 under a new policy to transfer the cost of maintaining convicts onto private employers. This created large estates growing crops such as wheat, maize and tobacco. The owners built large houses with substantial estates and outbuildings. The climate of the lower Hunter district was suited to agriculture while the drier upper Hunter was ideal for sheep, and the Hunter farmers led the squatters' land rushes of the 1820s and 1830s, acquiring vast pastoral runs in the interior. However the severe depression of 1843 followed by the 1850s gold rushes led to labour shortages and, in turn, the breaking up of large holdings to create smaller farms which could be leased.³⁶

Movement of stock north-west over the Liverpool Range began in 1827, and the first known squatter in the district was Sir John Jamison who held 107,520 acres known as 'Baan Baa'. Edward Cox, son of William Cox of Windsor, was in the district in 1835 and held the 'Namoi Hut' station at Boggabri. George Bowman established 'Terry Hie Hie' in 1836 and eventually held 200,000 acres grazing 12,000 cattle and 12,000 sheep by 1874.³⁷

The Australian Agricultural Company was formed in London in 1824 to develop the fine-wool industry and cultivate Mediterranean crops such as grapes, flax and olives. It initially received a grant of 1 million acres at Port Stephens, but in 1830 exchanged part of this land for 127,000 hectares at 'Goonoo Goonoo' on the Peel River near Tamworth and 101,000 hectares at 'Warrah' near Quirindi. The AAC retained this land until the early twentieth century, effectively locking up much of the lower Liverpool Plains to private settlement and pushing the squatters further out.³⁸

³⁶ *Suters Busteed Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, pp 26-30*

³⁷ *James Jervis, 'Exploration and Settlement of the North-Western Plains', Journal of the Royal Australian Historical Society, volume 48, part 5, December 1962, pp 383-386*

³⁸ *Damaris Bairstow, A Million Pounds, a Million Acres: the pioneer settlement of the Australian Agricultural Company, author, Sydney, 2003; Jesse Gregson, The Australian Agricultural Company 1824-1875, Angus and Robertson, Sydney, 1907*

Before the mass production of wire in the 1870s and 1880s allowed for fencing, stock were tended by shepherds.³⁹ The Upper Hunter is significant in the history of the use of dogs for herding stock. The first 'rough colley' sheepdogs were imported from Scotland in 1825 by Thomas Potter Macqueen for use on his property 'Segenhoe' near Aberdeen. In the 1830s Thomas Simpson Hall of 'Dartbrook', north of Muswellbrook, crossed dingoes with Northumberland Blue Merle dogs to create the Australian blue heeler cattle dog.⁴⁰ In the Upper Hunter the shepherds left material evidence in the form of post-and-rail fences and stone pounds and fireplaces, as well as occasional lone graves.⁴¹

For the first 60 years of Australian wool growing the sheep were washed in a stream or pond before shearing, rather than washing the wool afterwards. This system was abandoned in favour of washing or 'scouring' wool after shearing towards the end of the nineteenth century, and the place where this was done moved from the point of shearing to regional processing centres and later to textile factories in Britain. NSW sheep growers exported only 18 per cent of their wool in greasy form in 1873, but this figure grew to 71 per cent by 1900.⁴²

Across the Liverpool Range there were more cattle runs than sheep stations. The wealthy sheep owners preferred New England, which had very few cattle stations. The rough grazing of the plains, and the danger of dingoes, made the plains more suitable for cattle, which were driven down to fattening pastures in the Hunter or Sydney. In 1848, Liverpool Plains had 67 runs with sheep and 94 with cattle: the Gwydir had 26 with sheep and 70 with cattle. Sheep stations required far more employees than cattle, which needed only a few men, a few stockyards, and a grain paddock. Droving cattle was also less labour intensive than transporting wool. The gold rushes in the 1850s saw a new demand for cattle in Victoria, high prices, and a new long-distance droving route via Dubbo.⁴³ Cattle farming also saw the

³⁹ Ted Henzell, *Australian Agriculture: its history and challenges*, CSIRO Publishing, Melbourne, 2007, p 64

⁴⁰ Eric Rolls, *A Million Wild Acres*, Penguin, Melbourne, 1984, p 66

⁴¹ A study of rural fencing funded by the NSW Department of Planning's Heritage Branch is currently being undertaken by Dr John Pickard of Macquarie University, and is due for completion in May 2008.

⁴² Ted Henzell, *Australian Agriculture: its history and challenges*, CSIRO Publishing, Melbourne, 2007, p 65

⁴³ R Ian Jack and Dennis N Jeans, *Regional Histories of NSW*, Heritage Office, Sydney, 1996, pp 80-81

development of saleyards and abattoirs in the towns which provided secondary employment.

Horse breeding has been a significant industry in the Upper Hunter district since the 1820s. Significant early horse breeders included Robert Scott of 'Glendon', George Bowman of 'Archerfield' and James Bowman of 'Ravensworth', all near Singleton, Thomas Potter Macqueen at 'Segenhoe', and William Dumaresq of 'Kingdon Ponds' and the White family of 'Belltrees', both near Scone.⁴⁴ The advent of horse and cattle sales, and race meetings, helped to promote the Upper Hunter's reputation as a major contributor to the development of quality race horses.⁴⁵ Modern horse studs in the area include 'Coolmore' at Jerrys Plains, 'Woodlands' at Denman, 'Arrowfield' at Scone, 'Emirates Park' at Murrurundi and 'Kendel Park' at Willow Tree.

3.8 Agriculture

Wheat was a common crop from the 1820s both in the Hunter Valley and areas surrounding Sydney, generating a demand for flourmills. The introduction of the rust disease in 1857 effectively ended wheat-growing and flour-milling, and the introduction of prickly pear in 1839 and rabbits in the 1850s created challenges for arable farming. The solution adopted was dairy farming which became an important primary industry in the lower Hunter as it did in the Manning Valley and Illawarra. The introduction of centrifugal cream separators from 1881 enabled dairy farmers to make butter more efficiently and boosted production. Dairying spread to the upper Hunter later in the century to serve the growing populations around the South Maitland coal towns and the industrialising city of Newcastle.⁴⁶

By 1895 fruit and vegetables had become important crops in the mid and upper Hunter. Agricultural shows at major towns showcased the produce of the districts, beginning with the Maitland show which was first held in 1847.⁴⁷ The first vineyards

⁴⁴ Keith R Binney, *Horsemen of the First Frontier 1788-1900 and the Serpent's Legacy*, Volcanic Publications, Sydney, 2005

⁴⁵ Brian McDonald and Associates, 'Maitland Heritage Survey Review: thematic history', 1994, p 59; John W Turner, 'Muswellbrook Shire Heritage Study: historical themes of the Shire of Muswellbrook', 1995, pp 18-19

⁴⁶ Suters Busteed Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, pp 29-30

⁴⁷ Brian McDonald and Associates, 'Maitland Heritage Survey Review: thematic history', 1994, p 53-54

were established in the 1830s at Irrawang and Porphy on the Williams River, and by 1847 the Hunter River Vignerons Association was formed. From the 1860s grapes were grown and processed at Pokolbin with 2360 hectares planted there by 1866. Other centres of wine production were Raymond Terrace, Maitland, Singleton and Paterson.⁴⁸ Winemaking was set back by phylloxera insects from 1917 when whole vineyards had to be dug up. Eventually the problem was solved by grafting European plants onto American phylloxera-resistant rootstocks.⁴⁹ Vineyards saw a significant revival in the 1960s with a growth in demand for table wines. Areas around Cessnock and Muswellbrook were planted with vines and along with the economic boost of wine production created an additional dimension to the tourist industry.⁵⁰

The discovery in the twentieth century of new strains of wheat which were resistant to rust and could thrive in high temperatures brought wheat farming to the Moree district, where many farms also run sheep for wool. Along with mechanisation this combination helped to reduce the size of properties, and the average now is 10,000 to 20,000 acres.⁵¹ A more recent crop is cotton which was first grown on the Namoi River near Narrabri following completion of the Keepit Dam in 1959. Experienced farmers from California invested there, making up 27 of the 60 cotton growers on the Namoi by 1967, using large-scale highly mechanised irrigated farming with heavy use of insecticides. A second phase of expansion began in 1977 with the construction of dams on the Gwydir and border rivers. By 1983 the Gwydir Valley supplanted the Namoi as the major cotton-producing region in NSW.⁵²

⁴⁸ *Suters Busted Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, pp 29-30*

⁴⁹ *Ted Henzell, Australian Agriculture: its history and challenges, CSIRO Publishing, Melbourne, 2007, p 262*

⁵⁰ *John W Turner, 'Muswellbrook Shire Heritage Study: historical themes of the Shire of Muswellbrook', 1995, pp 21-22*

⁵¹ *R Ian Jack and Dennis N Jeans, Regional Histories of NSW, Heritage Office, Sydney, 1996, pp 84-85*

⁵² *Ted Henzell, Australian Agriculture: its history and challenges, CSIRO Publishing, Melbourne, 2007, pp 213-216*

3.9 Industries

Early industries in the Newcastle area during the convict era included limeburning, brick making and salt making. From the 1830s factories grew up at strategic points near farming areas and river transport to process primary products including soap-works, tanneries, tobacco curing, flour mills, breweries and boiling down works. Most of these relatively primitive industries did not outlive the nineteenth century, or were moved to more remote locations away from residential areas. From the 1840s other secondary industries developed at Stockton and Merewether, including textile mills to process wool, and foundries and engineering works to take advantage of the region's iron and coal resources. Potteries and brickworks also developed along with copper smelters. A railway line was built from Newcastle to Maitland in 1857, and the regional network developed before the completion of the line from Sydney in 1889.⁵³

Railways and collieries provided a demand for electricity generation, engineering services and rolling stock manufacture. From 1896 the economy of Newcastle and the lower Hunter was dominated for nearly a century by smelting and iron and steelmaking by BHP and its subsidiaries. Shipbuilding was also carried out at Newcastle from the convict era, with river shipping being an important means of communication long before the road and rail network.⁵⁴ Aluminium smelting has also become an important regional industry with Hydro Aluminium at Kurri Kurri (opened as Alcan in 1969) and Tomago (from 1983).⁵⁵

3.10 Transport

3.10.1 Rivers

Lower Hunter valley settlements developed along the rivers because it was easier to move people, stock and produce by water than across swampy land with primitive roads. Settlements grew up on the Williams River (Raymond Terrace,

⁵³ *Suters Busted Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, pp 32-34*

⁵⁴ *Suters Busted Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, pp 32-34*

⁵⁵ *Hunter Valley Research Foundation, 'Hunter History Highlights', http://www.hvrf.com.au/pages/hrf/hunter_history_highlights.php, accessed 7 February 2008*

Seaham and Clarencetown), the Paterson River (Paterson and Vacy) and the Hunter River (Maitland and Morpeth). In 1831 steamships began to replace the sailboats, and in 1835 the construction of the Great North Road from Sydney was lambasted because steamers were providing much better access from Sydney. Water transport continued to dominate the region until the development of the railways and the siltation of the rivers in the 1850s and 1860s. Even so, the regular steamship service from Morpeth to Newcastle continued until 1931 and the Hunter River Steamship Company only ceased operations in 1950.⁵⁶

3.10.2 Roads

The rivers provided access only to a certain point, and the interior could only be reached by roads. Crossing points by ford or punt created a focal point for settlement, and one of the first major towns of the interior was Singleton, where Benjamin Singleton built an inn and a mill in 1829 next to a punt crossing of the Hunter River. Muswellbrook (known as Muscle Brook until 1839) was proclaimed in 1833, followed by Scone and Aberdeen in 1837. The towns provided food and lodging to workers moving stock or timber to and from distant worksites. The Great North Road from Sydney via Baulkham Hills and Wisemans Ferry to Wollombi, with branches to Maitland and to Singleton (via Broke) was built by convict gangs from 1826 to 1836. It was immediately superseded by steamship services from Sydney to Newcastle. Early water crossings were mostly by punt rather than bridges; however there are now over 500 bridges in the Hunter Valley carrying both road and rail traffic.⁵⁷

The pipeline route roughly follows the New England Highway from Hexham to Willow Tree, then the Kamilaroi Highway from Willow Tree to Narrabri, and the Newell Highway from Narrabri to Moree before heading north to the Queensland border. The Great Northern Road from Hexham to Willow Tree, then north via Tamworth to the border, was built in the late 1830s. A report in 1857 stated: 'the want of bridges suspends inter-communication when the rains set in and too frequently lives are lost.' In 1858-1859 deviations were being built to avoid sections

⁵⁶ *Suters Busteed Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, p 36; Brian McDonald and Associates, 'Maitland Heritage Survey Review: thematic history', 1994, p 47*

⁵⁷ *Suters Busteed Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, pp 36, 40*

such as the ascent and descent over the Black Hills near Muswellbrook, the abrupt spur at Warland's Range, and the ascent over the Murrurundi Gap.⁵⁸

Annual floods and wet weather continued to affect the road, which was progressively metalled or gravelled during the 1860s and 1870s. In 1928 the route from Sydney to Newcastle, Hexham and north to the border was named the Great Northern Highway, but the Sydney-Newcastle section was renamed Pacific Highway in 1931 and two years later the section from Hexham to the border was renamed New England Highway.⁵⁹

The road from Willow Tree to Narrabri, now part of the Kamilaroi Highway, was previously known as Trunk Road No 72. In the 1930s it was reported that in wet weather parts of the road were impassable, particularly on the Breeza Plain between Gunnedah and Quirindi, while in hot dry weather further surface damage resulted. In addition old timber bridges were unsatisfactory for modern motor vehicle traffic. At that stage the road from Gunnedah to Moree was known as Main Road No 126, but was renamed Trunk Road No 72 in 1933.⁶⁰ This road was gravelled until the 1950s when sections were progressively surfaced with bitumen.⁶¹

In 1938 a south-north inland highway was proclaimed running from Tocumwal on the Victorian border to Goondiwindi on the Queensland border. This basically consolidated existing roads and was later named the Newell Highway after the Commissioner for Main Roads from 1932 to 1941. In the 1960s the road between Narrabri and Moree was still unsealed, with numerous gravel causeways. The road

⁵⁸ 'Historical Roads of NSW: the story of the New England Highway', *Main Roads*, volume 17, no 3, March 1952, p 72

⁵⁹ 'Historical Roads of NSW: the story of the New England Highway', *Main Roads*, volume 17, no 3, March 1952, p 68, 74

⁶⁰ 'Lower Northern Division', *Main Roads*, volume 1, no 4, January 1930, p 76; 'Lower Northern Division', *Main Roads*, volume 3, no 4, December 1931, p 51; 'North-western Division', *Main Roads*, volume 4, no 3, November 1932, p 35; 'Main Road System in the Shire of Namoi', *Main Roads*, volume 4, no 11, July 1933, p 162

⁶¹ 'Willow Tree-Gunnedah-Narrabri (Trunk Road No 72)', *Main Roads*, volume 23, no 2, December 1957, pp 44-45

was partly surfaced and new bridges and culverts built in the 1960s.⁶² Bitumen sealing of the entire Newell Highway was completed in 1972-73.⁶³

3.10.3 Railways

The northern railway was built in stages starting with Newcastle to East Maitland in 1857, then on to Lochinvar (1860), Singleton and Morpeth (1864), Muswellbrook (1869), Scone (1871), Murrurundi (1872) and Quirindi (1877). The railway then turned north to Werris Creek, with this section opening in 1878, and from there to Boggabri and Narrabri in 1882. The extension to Moree opened in 1897. The railway brought prosperity along its route, both during and after construction, and the by-passed settlements tended to decline.⁶⁴ As well as the government railways carrying passengers and freight, there were also numerous private railway lines associated with mines and sawmills.

From Newcastle to Singleton the line was generally level, but beyond this point the route ascended the Liverpool Range with grades of 1 in 40. One of the biggest engineering projects on this line was the bridge over the Hunter River at Aberdeen, built entirely from imported steel. The bridge had three spans of 150 feet (45.7 metres) with two continuous wrought-iron lattice girders. Because there was no complete rail link between Newcastle and Sydney until 1889, railway workshops were built in Newcastle, and in 1923 a new workshop was opened at Cardiff.⁶⁵ The railway workshops at Murrurundi were transferred to Werris Creek in 1896, and a coal mine was opened to supply the railway, creating a major railway town which went into a decline after the change to diesel locomotives in the 1950s.⁶⁶

The railway line from Newcastle to Maitland was quadruplicated when two separate mineral lines separated from the passenger lines were opened in 1913-1915. From Maitland the main northern line reduces to a double track while two lines also run

⁶² 'The Newell Highway Reconstruction: Narrabri to Moree', *Main Roads*, volume 31, no 3, March 1966, pp 91-93

⁶³ 'The Newell Highway', *Main Roads*, volume 39, no 2, December 1973, p 42-45

⁶⁴ *Suters Busted Corner Clode Pty Ltd, 'Hunter Regional Environmental Plan: heritage register report and thematic study', 1988, pp 40-41*

⁶⁵ *Leonie I Paddison, The Railways of NSW 1855-1955, Department of Railways, Sydney, 1955, pp 33-34, 61-65, 144*

⁶⁶ *R Ian Jack and Dennis N Jeans, Regional Histories of NSW, Heritage Office, Sydney, 1996, p 85*

to the South Maitland coalfields. The age of the facilities and the long history of upgrading and extension mean the Maitland railway area has significant heritage value.⁶⁷ Another significant heritage item on the pipeline route is the Ardglen tunnel near Murrurundi, which was opened in 1877 and is the oldest rail tunnel still in use in NSW. The tunnel is 488 metres long and has a single track, causing a significant bottleneck in the rail network. A study by the Australian Rail Track Corporation released in January 2007 recommended duplication or a new alignment to avoid the Ardglen tunnel, but no action has yet resulted.

3.10.4 Travelling Stock Routes

Travelling stock routes originated from the need to move stock to pastures and markets. Early routes generally followed rivers or roads, and by the 1860s legislation was introduced to protect the rights of adjacent run-holders and drovers. The *Occupation Act* 1861 and the *Pastures and Stock Protection Act* 1880 attempted to regulate the use and administration of stock routes. By this time railway lines were also used as stock routes in some areas. During the 1880s and 1890s improvements were made to administration of travelling stock routes, culminating in the *Pastures Protection Act* 1902 which established Pastures Protection Districts and Boards.⁶⁸

Use and growth of stock routes peaked during the two world wars, and continued in the post-war period particularly during the droughts of the late 1950s. Since then there has been a decline in use of the routes except during drought periods when they are used mainly for grazing stock rather than transporting them. The *Rural Lands Protection Acts* of 1989 and 1998 transferred administration of the routes to Rural Lands Protection Boards. The Boards now manage almost 600,000 hectares of travelling stock routes on crown land throughout NSW. Following renewed use of the routes during the drought of the early twenty-first century, concerns have

⁶⁷ H J Wright, 'The Northern Coal Story', *Australian Railway Historical Society Bulletin*, no 387, January 1970, pp 1-17, and no 388, February 1970, pp 25-38; Derek Rogers, 'The Hunter Valley', *Australian Railway Historical Society Bulletin*, March 1995, pp 16-27

⁶⁸ Tom Lee McKnight, *The Long Paddock: Australia's travelling stock routes*, University of New England, Armidale, 1977, pp 42-69; Maura O'Connor, 'Mapping Australia's Transhumance: snow lease and stock route maps of NSW', *The Globe*, no 56, 2004, pp 17-18

grown about soil erosion and weed control, and protection of wildlife and remnant native vegetation.⁶⁹

3.11 Towns

3.11.1 Hexham

Originally sited in the Ironbark Creek area where the Church of England was built in 1849, the village moved to the north with the opening of the railway which shipped coal from the Minmi mines.⁷⁰ Hexham was named after a town near Newcastle in England. The punt over the Hunter River at Hexham was finally replaced by a bridge in 1952.

3.11.2 Maitland

Convicts formed the nucleus of the first settlement of the Maitland area from 1818-1821 on the future site of West Maitland. This area was flood-prone and therefore in 1829 Governor Darling founded the town of Maitland on higher ground. This was renamed East Maitland in 1835 at the same time as Wallis Plains was renamed West Maitland. The two had been connected by a bridge over Wallis Creek in 1827. East Maitland failed to thrive as it did not have an adequate water supply, and throughout the nineteenth century had less than half the population of its western neighbour. Nevertheless East Maitland was proclaimed a municipality in 1862 the year before West Maitland.⁷¹

3.11.3 Morpeth

This site at the head of navigation of the Hunter River was the government's original choice for an inland town in the region, but the landowner E. C. Close refused to allow sales and laid out his own town in 1832. The town combined deep-water access with high flood-free land, and shipping goods there meant avoiding the then tortuous meanders which took the river up to West Maitland. By 1832

⁶⁹ Maura O'Connor, 'Mapping Australia's Transhumance: snow lease and stock route maps of NSW', *The Globe*, no 56, 2004, p 19; Rural Lands Protection Boards, *Annual Report 2006*, pp 12-13

⁷⁰ Suters Architects, 'Newcastle City Wide Heritage Study', 4 vols, 1997, p 2/18

⁷¹ Brian McDonald and Associates, 'Maitland Heritage Survey Review: thematic history', 1994, pp 20-27, 46

Morpeth was a busy port with inns and wharves. Steamship services to Sydney began in 1831, but the opening of the railway and the reduction of the river traffic caused its gradual decline to a 'quiet backwater'.⁷²

3.11.4 Singleton

The Singleton district was explored by John Howe in 1820, and the following year he and all his exploring party received land grants in the area. One of them was Benjamin Singleton, who opened an inn and gave his name to the adjacent ford over the Hunter River. When the town was gazetted in 1836 it also took his name. Mining began in the area in 1860 and dairying is also a significant local economic activity. In addition to the usual town facilities Singleton hosts a major army base which was established during World War 2.⁷³

3.11.5 Muswellbrook

The plan of Muswellbrook (then called Musclebrook) was gazetted in 1833. As the village grew a hotel was built in 1835 and a post office opened in 1837, and by 1840 it had a population of 215. The coming of the railway line in 1869 confirmed Muswellbrook as the major town of the district and it continued to grow steadily. By 1902 it had 71 businesses including eight hotels and seven general stores. In the late twentieth century coal mining and power generation boosted the town's economy.⁷⁴

3.11.6 Scone

Settlement at Scone began in 1825 with the arrival of Peter McIntyre and a party of settlers from England and Scotland, who were sent out to select and farm 20,000 acres granted to Thomas Potter Macqueen MP. This property was named 'Segenhoe' after his home village in Bedfordshire. The great estate grew and declined rapidly, and by 1871 it was described as 'stone walls, arcades, solitary chimneys, fragments of masonry, a ruined hospital and deserted barracks, looking like a heap of roofless

⁷² Brian McDonald and Associates, *'Maitland Heritage Survey Review: thematic history'*, 1994, pp 28-30

⁷³ *Singleton, Municipality and Shire: 125 years on 1866-1991, the council, Singleton, 1991*

⁷⁴ Turner, John W, *'Muswellbrook Shire Heritage Study: historical themes of the Shire of Muswellbrook'*, 1995, pp 28-30

desolation'. The village was named Scone in 1831 and gazetted in 1837. St Luke's Church of England, built here in 1841, served a parish extending from Muswellbrook to Murrurundi.⁷⁵

3.11.7 Murrurundi

Murrurundi was gazetted in 1839 although an inn had opened there two years earlier. While it began as a roadside stopping place it achieved greater economic self-sufficiency through food processing plants, principally flour mills. The railway reached Murrurundi in 1872, and as the railhead it enjoyed a period of prosperity until the line was extended to Quirindi in 1877. Murrurundi reached a population peak in 1914 and since then has been in a steady but slow decline.⁷⁶

3.11.8 Quirindi

White settlement began in the district of Quirindi in 1829 when the Hawkesbury Benevolent Society sent George Loder to the area to choose 1000 acres on its behalf. Loder and his brother also chose land for themselves, and their overseer Ned Dwyer was 'discovered' by Surveyor-General Mitchell on his 1830-1831 expedition. The district remained essentially rural with inns and a blacksmith to cater to travellers, and the town was not gazetted until 1856.⁷⁷ The local economy is still based on agriculture with wheat and sorghum being major crops.

3.11.9 Gunnedah

The first settlers arrived in Gunnedah soon after the explorers, led by John Johnston who built a slab hut on the future site of the town in 1834. By the late 1840s a large part of the district was taken up by squatters including Johnston's 22,400-acre 'Hartfell' station. The town was gazetted in 1856 and land sales began the following year. In 1864 a massive flood caused the commercial centre to move to higher ground. The courthouse was built in 1879, the same year the railway reached the town from Werris Creek. Coal has been mined in the district since the

⁷⁵ Nancy Gray, *The Promised Land: a summary of early settlement in the shire of Scone, Scone and Upper Hunter Historical Society, Scone, 1975, quote from p 32*

⁷⁶ *Suters Busted Corner Clode Pty Ltd, 'Murrurundi Heritage Study Final Report', 1988, pp 99, 102, 109-111, 113*

⁷⁷ *Dorothy Durrant, Quirindi in the 19th century: how a town began, author, Quirindi, 1994*

1880s and is still an important industry. The last colliery closed in 1998 and was replaced by new open cut mines from 2000.⁷⁸

3.11.10 Boggabri

A licence for a run named 'Boggybry' in 1842 seems to be the first use of the name. The town was gazetted in 1859 and the first sale of town lots took place in 1861 although development was slow until the 1870s when a school, church, hotels and stores were built. The arrival of the railway in 1882 caused further growth and the establishment of saw mills.⁷⁹

3.11.11 Narrabri

The station from which this town derives its name was taken up by Andrew Doyle and Patrick Quinn in 1834. The town was gazetted in 1859 and the first sale of town lots held in 1860. The town developed rapidly with two hotels and three stores within the year, and a school, hospital and church by the end of the decade. The railway arrived in 1882 but the station was about three miles west of the town and attracted a new commercial district. By 1885 Narrabri had three banks, six large stores, and ten hotels, and in 1888 a court house and post office were completed. Artesian water came into use in 1896 when Woolabra bore was opened, providing a flow of 1 million gallons a day for use by the railways.⁸⁰

3.11.12 Moree

Official settlement of the Moree district began in 1836, although there were already around a dozen squatters in occupation. The town already had two hotels, two stores and a post office and court house when it was gazetted in 1862.⁸¹ Wheat cultivation increased after World War 2 and a flour mill was built in 1951. The postwar years also saw the displacement of many Aboriginal people who had

⁷⁸ Ron McLean (ed), *The Way We Were: sesquicentenary of Gunnedah 1856-2006*, Gunnedah and District Historical Society, Gunnedah, 2006

⁷⁹ James Jervis, 'Exploration and Settlement of the North-Western Plains', *Journal of the Royal Australian Historical Society*, volume 48, part 6, March 1963, pp 439-442

⁸⁰ James Jervis, 'Exploration and Settlement of the North-Western Plains', *Journal of the Royal Australian Historical Society*, volume 48, part 6, March 1963, pp 449-452

⁸¹ R J Webb, *The Rising Sun: a history of Moree and district*, Moree Municipal Council, Moree, 1962 (reprinted 1972)

lived and worked on the land, but were forced to move into Moree. Aboriginal people now make up 17 per cent of the area's population. Around 300,000 tourists annually visit the town's artesian spa. Along with wheat which is a staple crop, around two-thirds of Australia's cotton is grown in the district.

3.11.13 Soldier Settlements

Soldier settlement began in 1916 to provide returned servicemen with rural holdings by lease or sale. The scheme attracted many applicants but due to poor land selection and crippling financial arrangements, most left their properties and the scheme was wound up in 1936. Soldier settlements in the study area include Warrah (west of Willow Tree), Walhallow and Piallaway (north of Breeza) and Tibbereena (south of Narrabri).

3.12 Law and Order

Activities by bushrangers have given rise to local legend, with sites of their hideouts or camps entering folklore along with the locations of their robberies. The first was George Clarke, reputedly the first white settler in the north-west. Clarke, known as 'George the Barber', absconded from the service of Benjamin Singleton in late 1825 and crossed the Liverpool Range where he was adopted by the Kamilaroi Aborigines. Clarke taught the Aborigines to steal the cattle then being introduced onto the Liverpool Plains, and built a stockyard near the future site of Boggabri. He was captured in 1831. The landmark Barber's Pinnacle near Boggabri which is named after him was painted by Blagdon Chambers.⁸²

William Macdonald was an ex-convict who was the leader of a large gang by 1832. He was renowned for sudden and daring raids throughout the Wollombi, Patrick's Plains and Liverpool Plains and was a major reason for the decision to shift the headquarters of the Hunter river Mounted Police from Maitland to Jerry's Plains in March 1833. The following year Macdonald's gang raided several stations on the Liverpool Plains and Dumaresq's 'Invermein' near Scone. Macdonald was shot dead in late 1834 after plundering 'George the Barber's' Stockyard'.⁸³

⁸² *Boggabri and District Historical Society, George Clarke (alias The Barber), the Society, Boggabri, nd; Dean Boyce, Clarke of the Kindur: convict, bushranger, explorer, Melbourne University Press, Melbourne, 1970*

⁸³ *Cliff Hanna, Bandits on the Great North Road, Nimrod Publications, Newcastle, 1993, pp 66-73*

Edward Davis, an ex-convict known as 'Teddy the Jewboy', headed a gang which committed robberies at Quirindi, Scone and Murrurundi in late 1840. His targets included 'Warrah' station, William Dangar's 'Turanville' near Scone, Thomas Dangar's store at Scone, and the Traveller's Home Inn at Murrurundi. Davis was captured at Doughboy Hollow in December 1840 and hanged with six other members of his gang the following March.⁸⁴

A site associated with a bushranger's victim is the monument to Peter Clarke near Blandford. Clarke was a 27-year-old stockman from Bulga who was shot dead by Henry Wilson near Murrurundi on 9 April 1863. His murderer was executed six months later at Maitland Gaol. The incident was immortalised in two Australian ballads and the residents of Murrurundi opened an appeal to build a monument to Clarke which received subscriptions from 'all parts of the colony'. The monument survives on the stock route near Blandford, close to the pipeline route.⁸⁵

Frederick Ward, known as Captain Thunderbolt, is most frequently associated with the Uralla district where he was shot dead in 1870. However much of his bushranging career was spent in the Hunter Valley, with centres of activity including Dungog-Stroud-Singleton in 1863-64, and the Liverpool Plains in 1865. In 1866 he held up a hotel in Gunnedah and for the next year conducted a series of robberies of stations and mail coaches in the Barraba-Manilla districts. In 1867 he transferred his attentions to Scone, Merriwa and Singleton. Thunderbolt's criminal career lasted for over seven years, and he was acknowledged as the most successful and the last of the 'professional' bushrangers.⁸⁶

Policing of the rural districts began in 1825 when Governor Brisbane established the military mounted police. Recruits were drawn from army regiments stationed in Sydney, remained under military discipline and were permitted to count their military police service towards the qualifying period for an army pension. In 1826 they dispersed Aborigines from Mudgee who were marauding through the Hunter Valley attacking shepherds and other isolated workers. By 1829 there was a mounted police base at Wallis Plains (Maitland), and they were also called on to

⁸⁴ Colin Roope and Patricia Gregson, *An Organised Banditti: the story behind the 'Jewboy' bushranger gang*, authors, Lake Macquarie, 2002

⁸⁵ Peter Clarke vertical file, Royal Australian Historical Society

⁸⁶ Jillian Oppenheimer, 'Thunderbolt's Mary Ann – an Aboriginal bushranger', *Journal of the Royal Australian Historical Society*, volume 78, parts 3-4, December 1992, pp 92-107

deal with escaped convicts and bushrangers out as far as the Liverpool Plains. The mounted police headquarters moved to Jerrys Plains near Singleton in 1833. The force was disbanded in 1850 when civilian police took over, with the number of districts rising from 42 in 1847 to 77 in 1850. In 1862 a centralised police system was established with bases at Maitland, Tamworth and Armidale.⁸⁷

3.13 Birth and Death

Cemeteries are an important part of local and national heritage. They have a special significance for individuals and communities as a result of personal sentiment or attachment to those buried. This can extend beyond those personally known, to include ancestors, community pioneers or war veterans. Information from monumental inscriptions about people buried in cemeteries is used by family and local historians. Many cemetery monuments have been transcribed by local history and family history societies, and the best collection of transcripts is held by the Society of Australian Genealogists, <http://www.sag.org.au>.

Many cemeteries are examples of formal nineteenth century garden design. In nineteenth century cemeteries evergreen trees such as pine and cypress were favoured for symbolic reasons. Tree plantings were supplemented by grave plantings and other landscaping elements, such as rare species of roses and bulbs, which have not survived elsewhere. In addition cemeteries can provide a reserve for native vegetation. The design of monuments may also have architectural and artistic significance. Some monuments identify local stonemasons or include cast or wrought iron made by local blacksmiths.

In country areas most cemeteries are under the control of local government. Typically cemeteries are non-denominational and are located some way out of the town or settlement. Those cemeteries which are denominational, such as Glenridding Presbyterian Cemetery near Singleton, or St Clement's Church of England at Camberwell, are usually surrounding or adjacent to a church or former church site. Many rural properties throughout NSW include private family cemeteries, which usually contain a small number of graves of early settlers. In addition there are an unknown number of lone burials of people who died away from rural centres. The vast majority of lone graves were marked only by wooden

⁸⁷ John O'Sullivan, *Mounted Police in NSW*, Rigby, Adelaide, 1979

memorials or stone cairns which are no longer visible. The National Trust Cemeteries Committee has been conducting surveys of all known cemeteries and lone graves since the 1980s. A report on the survey of burial grounds in the Hunter region was compiled by the National Trust in 1984. Survey records are retained by the Trust, <http://www.nsw.nationaltrust.org.au>.⁸⁸

⁸⁸ *National Trust NSW, Cemeteries: a policy paper, National Trust, Sydney, 1987, pp 6-8, 15-19*

4. KNOWN HERITAGE ITEMS & PLACES

4.1 Methodology

This section of the report identifies known historic heritage items (places and sites) near the pipeline. The items were identified through a comprehensive desktop review of statutory and non-statutory listings of heritage items located within a maximum of 3km from the proposed pipeline study area. The statutory lists included the State Heritage Register (SHR), Local Environment Plans (LEPs) and Regional Environmental Plans (REPs) pertaining to Local Government Areas (LGAs) impacted by the proposed pipeline study area. Additional items were also identified by the Draft Upper Hunter Regional Heritage Study (UHRHS) which was prepared for the Upper Hunter Shire Council in 2007⁸⁹ and the Moree Plains Draft Heritage Study, 2008⁹⁰. A search of the State Heritage Inventory was not undertaken, as items contained in this list are drawn from the SHR and heritage schedules of LEPs, and as such was considered to be an unnecessary duplication of results.

The desktop survey also included searches of the S170 Registers compiled by the Australian Rail Track Corporation (ARTC), RailCorp, the Roads and Traffic Authority (RTA) and the Department of Primary Industries. ARTC also provided details of a number of items which they considered to be of potential heritage significance despite not being listed on their S170 Register.

The Register of The National Estate, Commonwealth Heritage List and the Register of the National Trust (NSW) were also searched for heritage items within the 3km study area either side of the proposed pipeline study area.

Fifteen (15) Local and Family Historical Societies were identified by the Royal Australian Historical society within relevant Local Government Areas along the study area. These groups were approached during the preparation of this report, and asked to contribute details of items they considered to be of heritage

⁸⁹ Brian Carberry of CoAssociates Architects, 2007, *Upper Hunter Shire Rural Heritage Study*, unpublished report to Upper Hunter Shire Council

⁹⁰ Kirk, Ian (Inheritance Heritage Advisors and Consultants) 2008, *Community Based Heritage Study for Moree and District*, unpublished draft report to Moree Plains Shire Council.

significance along the proposed pipeline. Nine (9) societies provided feedback⁹⁷. Additional information was obtained, where required, to clarify the location of identified heritage items.

Each item identified through this process was given a unique number and these items were then mapped using a Geographical Information System (GIS). The proximity of these items to the pipeline was recorded and where necessary, information was sought to confirm available property/item details from the relevant sources to assist this process.

The following chapters present the results of the searches detailed above. Chapter 4.2 deals with known items that are located between 0 and 1km from the proposed pipeline study area, while Chapter 4.3 presents the known heritage items which are located between 1 and 3km from the proposed pipeline study area. Each chapter is further subdivided into Local Government areas. Tables of known sites between the pipeline study area and 1km of its alignment arranged by LGA are at Appendix C. Tables of known sites located between 1km and 3km of the pipeline study area and organized by LGA are shown in Appendix D of this report.

4.2 Lists of Known Items & Places within 0-1km of the Proposed Pipeline Study area.

A summary of known heritage items located within 1km of the proposed study area is below. Full lists, organized by Local Government Area, are provided in Appendix C of this report.

4.2.1 Moree Plains Shire Council

Fifteen (15) known heritage items have been identified within 0 – 1km of the proposed pipeline study area in the Moree Plains LGA. These items include the Boonanga Bridge over the Barwon River at Boomi, which is identified on the RTA s170 register, the Euraba Mission which is listed on the Register of the National Estate & the Tramby graves near Gurley. A series of underbridges, culverts and

⁹⁷ *Local and Family Historical Societies who provided feedback included Boggabri & District Historical Society Inc., Narrabri & District Historical Society Inc., Gunnedah & District Historical Society Inc., Quirindi & District Historical Society Inc., Scone & Upper hunter Historical society Inc., Murrurundi & District Historical Society, Muswellbrook Local & Family History Society Inc., Morpeth Heritage Conservation Group and the Raymond Terrace & District Historical Society Inc.*

creek and road crossings have also been identified by the ARTC s170 register. ARTC have indicated these items will require further heritage assessment.

4.2.2 Narrabri Shire Council

The Narrabri Local Historical Society has identified 'Barber's Pinnacle' at Boggabri as an item of heritage significance. This item was identified by the Boggabri & District Historical Society Inc. No other known heritage items have been identified within 0 – 1km of the proposed pipeline study area in the Narrabri LGA.

4.2.3 Gunnedah Shire Council

Seven (7) known heritage items have been identified within 0 – 1 km of the proposed pipeline study area within the Gunnedah LGA. These items include five culverts which were identified by the ARTC and an area of plains grass identified by the Dept of Primary Industries' s170 register. Gunnedah & District Local Historical Society Inc also identified two burials at Breeza, which are the interments of Margaret Leary and James Tierney.

4.2.4 Liverpool Plains Shire Council

Three (3) known heritage items have been identified within 0 – 1 km of the proposed pipeline study area inside the Liverpool Plains LGA. These items were identified by the ARTC as an underbridge located to the south of Murrurundi Railway Station, the (former) Ardglen Railway Station and the State Heritage Listed Ardglen Tunnel.

4.2.5 Upper Hunter Shire Council

Sixty-four (64) known heritage items have been identified within 0 – 1km of the proposed study area of the pipeline inside the Upper Hunter Shire Local Government Area (LGA). Most of these items were located within the town of Murrurundi. Of the items identified in this LGA, thirteen (13) comprise residences and homesteads such as Kingdon Park, Invermien and Turanville. A variety of civic, commercial and religious buildings such as the former Literary Institute, Public School, former Sisters of Mercy Convent and St Josephs Church, have also been identified, many of which are located within the Murrurundi Urban Conservation Area. This Conservation area is listed on the Register of the National Estate.

Five (5) of the heritage items are associated with rail and road transport, including the Togonal Railway Signal Box, a Station Master's residence and the State Heritage Listed Ardglen Tunnel. The remainder of the known heritage items include the pumphouse at Aberdeen associated with the Aberdeen Beef Company Abattoir, St Luke's Church and Rectory in Blandford and two items identified by the Scone and Upper Hunter and the Murrurundi & District Historical Societies. These items included a petrified stump and a memorial/grave marking the location where Peter Clark was killed by a bushranger in the 1860s.

4.2.6 Muswellbrook Shire Council

Three (3) known heritage items have been identified inside 0 – 1km of the proposed pipeline study area within the boundaries of Muswellbrook Shire Council. These items were all identified by the Muswellbrook Local & Family History Society Inc and are associated with the homestead of Lieutenant Colonel Henry Dumaresq named St Heliers. St Heliers was built in the 1820s and demolished in the 1850s, with subsequent occupation including the property known as Gelston (see Appendix D). Other features of the St Heliers homestead/town include an early cemetery/burial and outbuildings and industry such as a lime kiln associated with the St Heliers property.

4.2.7 Singleton Shire Council

Two (2) known heritage items have been identified between 0 – 1km of the proposed pipeline study area within the boundaries of Singleton Shire Council. These items comprise two homesteads/residences, named Greylands and Bendeich Cottage, both of which are located near the town of Stanhope.

4.2.8 Maitland City Council

A total of thirty-seven (37) known heritage items have been identified within 0 – 1km of the proposed pipeline study area. Twenty-nine (29) of these items are associated with the township of Morpeth which is identified as a heritage entity in its own right and is listed as such on the Register of the National Estate. The township of Morpeth was also identified by the Morpeth Heritage Conservation Group. The town centre of Morpeth is located approximately 1km west of the proposed study area of the pipeline. Heritage items listed within the township include three private residences ('Kiora', the former 'Morpeth House' and

‘Dunmore House’) and a variety of civic, commercial and religious buildings such as the police station, former railway station, former bank, bakery, courthouse, a grandstand on Edward Street, Morpeth Bridge, Morpeth Museum, the Bond Stores Group on Edward Street and the Primitive Methodist Church on Swan Street. The property known as Berry Park is located outside but in association with the town of Morpeth.

In addition to the items identified within Morpeth township eight (8) properties and residences are identified by the Maitland LEP 1993 and the Register of the National Estate. These include ‘Anambah’ house and gardens in nearby Gosforth (also listed on the State Heritage Register), in addition to ‘Mindaribba’ and ‘Bellevue’ which are located in Mindaribba.

The Maitland LEP identifies the Public School and former Catholic School and Presbytery at Largs as heritage items. It also identifies the Government Railway as an item of heritage significance although it does not detail specific location(s) for this item. Review of the ARCGIS file for Maitland LEP reveals one of these Railway locations to be at Mindaribba. The LEP also identified a stone quarry located within the suburb of Bishops Bridge.

4.2.9 Port Stephens Council

A total of three (3) known heritage items have been identified within 0 – 1km of the proposed pipeline study area in the Port Stephens Council district. These items include a bridge over the Paterson River at Dunmore which is listed on the State Heritage Register in addition to a former church and a general store both located in Woodville.

4.2.10 Newcastle City Council

Three (3) known heritage items were identified within 0 – 1km of the proposed pipeline within the Newcastle LGA. These include a civic building (‘School Master’s House’) and an associated cultural planting known as ‘Tongues Tree Fig’ within Kooragang. The remaining heritage item consists of a radar igloo also located in Kooragang.

4.3 List of Known Items Located within 1-3km of the Proposed Pipeline Study area

The following Report section (4.3) summarises all known heritage items which are located between 1km and 3km of the proposed study area. Full lists organized by Local Government Area, are provided in Appendix D of this report. This chapter contains a word summary of these items only. No further assessment of impacts or constraints was undertaken for these items in this report.

4.3.1 Moree Plains Shire Council

Eleven (11) known heritage items have been identified within 1 – 3km of the proposed pipeline study area. These include two homesteads known as ‘Midkin Homestead’ and ‘Wee Bolla Bolla’, both of which are listed on the Council’s LEP. It also includes a further nine (9) items listed in a draft heritage study prepared for Council in 2008. These items are located within the town of Boomi and include a number of religious, government and commercial items including the St Stephens Presbyterian Church, Boomi Post Office and Pioneer Hotel.

4.3.2 Narrabri Shire Council

Eleven (11) known heritage items have been identified within Narrabri Shire, located 1km – 3km from the proposed pipeline study area and represent a variety of civic, commercial and religious buildings. These items are predominately located within the towns of Narrabri. These items include a Public School, Gaol and Residence, Fire Station, Railway Station, Court House Group (comprising Police Sergeants Residence, Courthouse and Court Office), Post Office, a hotel, a bank, Gallipoli House and the Maitland Street Group (comprising Faulkner’s Cordial Factory, Ice Works and Cold Store). The Narrabri & District Historical Society additionally identified an unusual element known as an ‘Outcrop of salt’.

4.3.3 Gunnedah Shire Council

A total of three (3) known heritage items have been identified within 1 – 3 km of the proposed pipeline study area. These comprise three pastoral stations known as ‘Pullaming’, ‘Gunnible’ and ‘Ruvigne’ which are all listed in the 1998 LEP. As the

town of Gunnedah is located outside the 3km area reviewed, no items from this township were included in the study.

4.3.4 Liverpool Plains Shire Council

Three (3) known heritage items have been identified within 1 – 3km of the proposed pipeline study area. These comprise the Quirindi Railway Station Group which is listed on the SHR. ‘Price Cottage’ in Quirindi, is identified on the Register of the National Estate and the Old Rural Bank Building is listed by the Quirindi LEP. No Heritage items were identified by the Quirindi and District Historical Society Inc.

4.3.5 Upper Hunter Shire Council

A total of sixty (60) known heritage items have been identified within 1 – 3km of the proposed pipeline study area in the Upper Hunter Shire LGA. These items were mostly located within the towns of Scone, Wingen, Murrurundi, Blandford and Aberdeen. Twenty (20) of the identified items are private residences, properties or homesteads such as ‘Bloomfield’ in Murrurundi, ‘Cliffdale Wyoming Stud’ in Wingen, ‘Kelvinside’ at Aberdeen, ‘Cressfield Station’ in Parkville, ‘Mill Cottage’ in Scone and a number of items such as timber houses, located within Wingen. A variety of religious buildings are listed representing Presbyterian, Church of England and Catholic faiths such as the former Sister’s of Mercy Convent, St Luke’s Church and Rectory and the former Presbyterian Church which is now occupied by a Masonic Temple all of which are located in Scone.

Several government buildings including gaols, post offices and structures associated with the railway were identified, in addition to eight (8) industries including the former oil-shale works in Murrurundi, a mill, former Butter Factory and a Meat works, located in Aberdeen as well as a brickworks in Wingen. Many of the remaining items consisted of commercial buildings located within the towns, particularly Scone and Aberdeen and included hotels, banks and shops such as the CBC Bank in Scone, the Belmore Hotel in Scone, the Commercial Hotel in Aberdeen and the Former M. Campbell and Co. Store in Aberdeen.

4.3.6 Muswellbrook Shire Council

One (1) known heritage item was identified inside 1- 3 km of the proposed pipeline study area in the Muswellbrook LGA. This item was a homestead known as Gelston which was built by the Campbell family after the subdivision of the St Heliers property in the mid 1880s. It is located on the original St Heliers grant to Henry Dumaresq.

4.3.7 Singleton Shire Council

Four (4) known heritage items were identified within 1-3km of the proposed pipeline within the Singleton Shire Council LGA. These items include three homesteads/residences located in Westbrook and Stanhope including 'Glen Nevis', Johnstons Cottage and Spottiswood. The Roselands Uniting church at Goorangoola was also listed on the Singleton LEP.

4.3.8 Maitland City Council

Nine (9) known heritage items have been identified within 1 - 3km of the proposed pipeline study area. These include several residences/homesteads including Berry House and the nearby Duckenfield House remains and state heritage listed Closebourne House outside of Morpeth, Maitland Vale and Eelah located within Maitland Vale and Owlpen near Farley. A quarry, located within the suburb of Bishops Bridge and two parts of the Morpeth Cemetery, located just outside the township, were also identified.

4.3.9 Port Stephens Council

Twenty-seven (27) known heritage items were identified within 1 - 3km of the proposed pipeline study area. A large number of these items were identified within the town of Hinton, however items were also identified in Hexham and Wallalong. These heritage items included homesteads/residential sites such as Tomago House and Tressingfield, civic structures like the Grandstand and Police Station at Hinton as well as commercial items such as the Former Broom Factory in Wallalong. The Hinton Bridge, which is listed on the state Heritage Register was also identified by this study.

Other items included religious, civic and commercial buildings such as the Hinton Pioneer Cemetery, the former St John the Evangelist Church, two Schools of Arts, a grandstand in Stuart Park, a War Memorial and the Victoria Hotel. A number of private residences such as 'Prospect House', two timber cottages and a Georgian cottage have also been identified by the Port Stephens LEP as items of heritage significance.

4.3.10 Newcastle City Council

Twenty-two (22) known heritage items have been identified within 3km of the proposed pipeline study area. These include a cultural planting, civic, religious and commercial buildings and a cemetery complex. The cultural planting comprises a Palm located in Kooragang. The remaining heritage items consist of elements of the Sandgate Cemetery and a separate Family Burial in Hexham, industrial items such as the Hexham Shipyards, the Oak Factory, several substations, a pumping station, the 2HD Studio, the J and A Brown Workshops and Railway items in Hexham and Sandgate. Other elements identified include residential, commercial and religious buildings such as the Goninans Administration building, Tarro Community Hall and Our Lady of Lourdes Church as well as the Hexham Road Bridge. Both the Sandgate Cemetery and Former Travellers Rest Hotel were also identified by the Raymond Terrace & District Historical Society Inc.

4.4 Maps

Each known heritage item identified for this study was located through a series of tools including Real Property information sourced from the Department of Land's Six Portal and 1970s topographic map series for NSW also available through the Department of Lands. The sites which were located within the pipeline study area and up to 3km from that study area were mapped in an ARCGIS system. The mapped known sites/items are displayed in the ARCGIS system through a series of coded points and polygons.

Items/sites shown as polygons were based on real property data where available. There were a number of items where discrepancies with the real property data meant another method of displaying the boundary of some items/sites was necessary. Where this occurred the boundary of an extant complex, e.g. a farming homestead, was shown with a polygon around the complex of extant structures

such as the Harben Vale Group in Blandford (ID 102) and the Bickham Homestead group also located in Blandford (ID 104)

In the particular instance of the St. Heliers property (ID 303 & 302), located in the Muswellbrook Local Government Area (LGA), the shape of this polygon attempted to encompass details available in the Parish Map (for the original grant to Dumaresq) in addition to 1970s topographic details and the Geographical Positioning System (GPS) coordinates supplied by the Local Historical Society. Similarly the Tramby Graves (ID 268), located in the Moree Plains LGA was shown as a polygon due to the limited information that could be obtained to clarify the exact position of the graves without field investigation, other than their location on Settlers Road, Coomooma, 6.5km north-east of Gurley. The Murrurundi Urban Conservation Area (ID 275) listed by the Register of the National Estate provided a very broad reference for mapping this item as a 4km radius from the post office. This description has been applied to the ARCGIS polygon which encompasses Murrurundi.

4.5 Summary

One hundred and thirty-nine (138⁹²) known heritage items were identified within a distance of 1km of the pipeline study area (see full list at Appendix C). These items were divided amongst ten (10) local government areas as follows:

Table 4.1 Summary of known heritage items within and up to a distance of 1km of the pipeline study area organized by Local Government Area

Local government Area	Number Identified Heritage Items
Moree Plains	15
Narrabri	1
Gunnedah	7
Liverpool Plains	3*
Upper Hunter	64*
Muswellbrook	3
Singleton	2
Maitland	37**
Port Stephens	3**
Newcastle	3

*The Ardglen Tunnel is listed by both the Liverpool Plains and Upper Hunter Shire Councils; ** The Dunmore Bridge is listed by both the Maitland and Port Stephens Councils

⁹² Two items (The Ardglen Tunnel and Dunmore Bridge) are listed by more than one Local Government Area. Consequently these items have been counted twice in Table 4.1

A further one hundred and fifty-one (151⁹³) known heritage items were identified between 1km and 3km of the pipeline study area. These items are listed in Appendix D of this report and a summary by local government area is provided in Table 4.2 below.

Appendix F is a map of all known heritage items located up to 3km from the pipeline route.

Table 4.2 Summary of known heritage items between 1km and 3km of the pipeline study area organized by Local Government Area

Local government Area	Number Identified Heritage Items
Moree Plains	11
Narrabri	11
Gunnedah	3
Liverpool Plains	3
Upper Hunter	60
Muswellbrook	1
Singleton	4
Maitland	9*
Port Stephens	31* ⁿ
Newcastle	22 ⁿ

* Closebourne House is listed by both the Maitland and Port Stephens Councils; ⁿ Hexham Bridge is listed by both the Port Stephens and Newcastle Councils

⁹³ Two items (Closebourne House and Hexham Bridge) are listed by more than one Local Government Area. Consequently these items have been counted twice in Table 4.2

5. PREDICTIVE MODEL – POTENTIAL ITEMS & PLACES

5.1 Methodology

5.1.1 Identifying

Identifying the locations of potential heritage items along the proposed pipeline route consisted of analysing a series of historic aerial photographs of the entire study area, from Stockton to Boomi. The aerial photographs were obtained from the NSW Department of Lands and range in date from late 1950s to mid 1960s. Over 100 historical aerial photographs were inspected.

For each photo frame, the NSW Department of Lands provided a print showing the complete frame and two A3, half frame enlargements. These enlargements were visually inspected using magnifying lenses or stereoscope for indications of features and elements that would suggest the presence (at that time) of an extant structural or landscape element, or substantial structural remains. A premise of the predictive model was that the elements identified in the 1950s or 1960s aerial photographs, should they still exist, had potential to be of some heritage value, or to be a 'relic' as defined by the NSW Heritage Act.

The predictive modelling, by its overview desk-top nature and the scale and volume of sites examined, did not extend to assessing the potential survival of any element identified until the aerial photograph identified locations were superimposed onto current aerial maps. Those that clearly had not survived, or had been identified in error, were not included in the final maps and plans of potential items.

Historic parish maps for the entire study area were also downloaded from the NSW Department of Lands website. An initial review of these maps indicated that they were likely to include limited information relevant to identifying potential heritage items. They were therefore not reviewed in detail during the preparation of the predictive model.

5.1.2 Mapping

Potential heritage items within three kilometres of the proposed pipeline were plotted on the hard copy of the historic aerial photograph prints using removable adhesive labels. Kilometre points for the proposed pipeline were also plotted to provide spatial reference points to aid with digital mapping. Potential heritage items identified through the review of the historic aerial photographs included structures such as solitary buildings and complexes, and works, such as embankments, drainage ditches and dams. An electronic backup copy of these 'marked up' aerial photographs was made using a flat bed A3 scanner.

Potential items identified during the review of the aerial photographs were then mapped. At this stage, the methodology for the predictive modelling was refined due to the volume of potential sites identified and only potential heritage items identified within one kilometre of the proposed pipeline study area were subsequently digitally mapped. Elements further than one kilometre of the pipeline were considered unlikely to be affected by the pipeline route.

Some potential heritage items such as earthen dams, stock boundaries and roadways were also excluded from the predictive model during the digital mapping. These items were excluded because they were considered either to be ephemeral features that would be unlikely to survive or so numerous that their heritage significance as individual items was considered likely to be negligible.

5.1.3 Grouping and Further Identification

Identification of potential features and elements also included identifying their association with, or potential to demonstrate or embody, an historic theme as identified in the thematic history (Chapter 3). A single theme was assigned to each item and an alphabetic letter code denoting this theme was indicated adjacent to each item as it was mapped (thematic coding).

Details of the themes and the codes that relate to them are discussed in detail below (Section 5.2). The heritage significance of each potential item was also assessed with reference to the framework of historical themes and this is outlined in Chapter 6.

Rural Fencing was also identified as an area where potential heritage items may be identified. Dr. John Pickard, author of a thematic study of rural fencing in NSW⁹⁴ was consulted in regard to the possibility of predicting the location of certain types of fences within the study area. Dr. Pickard reviewed the proposed pipeline route and has provided some brief advice regarding identification of fence-types for this project. This advice is outlined in Chapter 5.5 below.

5.2 Thematic framework Interpretation of Potential Heritage Items

The thematic history presented in Chapter 3 of this report provided a framework with which to interpret known and potential heritage items. In Chapter 3, themes relevant to particular geographical areas were identified and grouped by local government area, and where possible specific places or areas within each local government area were also identified. The likely physical expression of these themes at particular places or areas was also identified, based on information included in the thematic history. Table 5.1 presents a summary of the themes by local government area, place/area and the likely physical expression of these themes at particular sites or locations.

Table 5.1 was then used as the basis for identifying the likely relevant State theme for each potential heritage item within 0-1km of the proposed pipeline. Identifying and grouping items by theme was considered to be the most appropriate way to interpret and assess the large number of sites identified by the initial review of the historical aerial photographs. By applying the framework of themes it was possible to identify and include particular site types where likely to be relevant to the local historical themes of each geographical area and exclude (or rank) sites that were not, or to a lesser degree, associated with historical themes identified for that area.

Potential items for which local historical themes could not be confidently identified were included in the predictive model as unidentified items (UNID).

⁹⁴ *Note this study is due for completion in May 2008 and was assisted with funding from the Heritage Branch, Dept of Planning*

5.3 Maps and Lists of Potential Items

The maps of potential heritage items located up to 1km from the pipeline route are attached at Appendix H.

Lists of the potential items are provided in Appendix E. This appendix identifies each potential item by a discrete number and latitude and longitude. A short description of some items and an indication of what it may be for example, house, tunnel etc., is also included along with its alphabetic thematic coding. Appendix E also includes kilometre points near each potential item, significance values and constraints. Significance and constraints are explained in Chapters 6 and 7.

5.4 Potential Items located within the Pipeline Study area up to 1km of the Pipeline

Two hundred and thirteen (213) potential heritage items were identified within the pipeline study area and up to 1km (0.00km-1.00km) of the proposed pipeline route. These items in ten (10) local government areas as follows:

Table 5.2 No of Potential heritage items arranged by Local Government Area

Local government Area	Number Identified Potential Heritage Items
Moree Plains	40
Narrabri	35
Gunnedah	27
Liverpool Plains	34
Upper Hunter	37
Muswellbrook	5
Singleton	12
Maitland	14
Port Stephens	2
Newcastle	7

5.5 Rural Fencing in NSW

A Thematic Study of Rural Fences in NSW was undertaken by Dr. John Pickard of Macquarie University with financial assistance of the Heritage Office, Department

of Planning in 2006-2008. This study involved a targeted investigation of transects of land across the state. Dr. Pickard was contacted to discuss implications of his study for the proposed pipeline project and confirmed the difficulty in predicting where sections of 'unusual' fence-types (which are likely to have a higher significance value) may be expected to be found in NSW.

In this regard it is considered that the information which Dr. Pickard's study could potentially provide would not assist early or proactive identification of certain fence types, which may have heritage significance values, without full survey of the study area. Dr. Pickard has, however, generously indicated he can provide advice to assist the field identification of fence types which would be considered 'unusual' and require some form of further investigation and management during construction. General recommendations have been prepared in Chapter 8 to allow for Dr. Pickard's advice to be included in the next stage of works for this project if appropriate.

Table 5.1 – Thematic framework for interpreting potential heritage items

NSW Theme	Relevant Local Government Area	Area/Site/Place	Likely Element/Expression	Code
Environment	Newcastle Maitland		Floodplains of the Hunter, Williams and Paterson Rivers	
	Newcastle Port Stephens	Hexham	Hexham Swamp Nature Reserve	
	Upper Hunter Gunnedah	Murrurundi Gunnedah	Liverpool Range	
	Moree Plains	Boomi	Barwon River	
	Upper Hunter	Scone	Mount Wingen	
	Liverpool Plains Gunnedah Narrabri	Quirindi Gunnedah Narrabri	Severe Flooding	
	Moree Plains Maitland	Moree Maitland		
	Moree Plains	Boronga (Moree)	Irrigation - bores, dams, channels, soaks, pumps.	E
	Newcastle	Newcastle, Sandgate	Awabakal people	
	Port Stephens Maitland	Port Stephens Maitland		
Aboriginal cultures	Moree Plains Singleton Muswellbrook	Boomi St Clair (Singleton) Muswellbrook	Aboriginal Reserves /Missions – institutional buildings, remote churches, supply stores	A
	Newcastle	Newcastle	Aboriginal resettlement from Reserves/Missions – institutional buildings, remote churches, supply stores	A
	Upper Hunter		Wonnarua people	
	Upper Hunter Gunnedah	Murrurundi (north) Northcote (Boomi),	Kamilaroi People	
	Liverpool Plains Narrabri	Tikitere, Derra (Croppa Creek), Old Pokataroo		
	Moree Plains			

	Gunnedah		Gunnedah district	Gambu Gunera
	Moree Plains	Waterloo Ck (Gurley) Terry Hie Hie		
Exploration	Moree Plains	Moree	Freedom Rides – Swimming Pool, meeting halls	A
	Port Stephens Newcastle Singleton Liverpool Plains	Port Stephens Newcastle Hunter River Singleton Warrambungle Range	Early Exploration (1790s) 1810s John Howe and Benjamin Singleton	A
	Upper Hunter Singleton	Upper Hunter Liverpool Range Singleton Scone	Henry Dangar (explorer and settler)	
	Upper Hunter	Liverpool Range Boggabri	George Clarke (the Barber)	
	Moree Plains Moree Plains	Macquarie River (Barwon) Moree Namoi River Liverpool Range Boggabri	Charles Sturt (1820s) T.L. Mitchell (1830s)	
Forestry	Muswellbrook	Lower Hunter and Hunter Valley	Timber-getting (pre 1800 – 1820s) - Sawmills, forest roads, camps	F
Mining	Narrabri	Narrabri Pilliga (Wallgett LGA)	Timber felling and sawmilling - sawmills, forest roads, camps	F
	Upper Hunter Newcastle	Hunter River	Coal Mining (1801-1830s) -shafts, tunnels, roads, camps, adits, exposed seams, river jetty remains	M
	Newcastle Maitland Singleton Upper Hunter	Sth Newcastle Hamilton Sth Maitland Lake Macquarie Lake Munmorah Upper Hunter	Australian Agricultural Company (AA Co.) Incl. open cut - shafts, tunnels, roads, camps, towns adits, exposed seams/cuts, river jetty and rail remains	M
	Muswellbrook	Muswellbrook	Coal mining (open cut) - shafts, tunnels, roads, camps, towns adits, exposed seams/cuts, river jetty and rail remains	M

Pastoralism	Muswellbrook Singleton	Hunter Coalfield (Singleton and Muswellbrook)	Coal Mining (open cut) - shafts, tunnels, roads, camps, towns adits, exposed seams/cuts, river jetty and rail remains	M
	Muswellbrook	Hunter Valley Lower Hunter	Crop Farming from 1821 Agriculture	
	Upper Hunter	Upper Hunter	Grazing of Livestock 1820s-1840s – large holding lot subdivision & fencelines, watering holes, muster yard remains	P
	Upper Hunter Muswellbrook	Upper Hunter Lower Hunter	Depression – subdivision of holdings creating smaller farms – smaller lot subdivision and fencelines	P
	Upper Hunter Narrabri Moree Plains	Liverpool Range Baan Baa (Jamison Namoi Hut (Cox) near Boggabri Terry Hie Hie (Bowman)	Stock movement – stock routes, watering holes, Stock routes, watering holes, mustering yard remains	P
	Port Stephens Liverpool Plains	Port Stephens Tamworth Warrah (Quirindi)	Australian Agricultural Co. (AA Co.) Wool and agriculture – Homestead with shearing sheds and quarters, large open paddocks, wool washes on water, open dams.	P
	Muswellbrook Upper Hunter	Segenhoe (Aberdeen) Dartbrook (Muswellbrook) Upper Hunter	Herding Stock (pre-fencing techniques) e.g. dogs Remains of shepherds huts, sapling herding yards	P
	Upper Hunter	Liverpool Plains Upper Hunter (e.g. Aberdeen)	Mostly Cattle - mixed farming, remote stations with few outbuildings. Stock routes, watering holes, mustering yard remains. Abattoirs and saleyards (in towns)	P
	Upper Hunter Singleton	Glendon (R. Scott) Ravensworth (J. Bowman), Archerfield (G. Bowman), Segenhoe (T. Macqueen) and Kingdon Ponds (W. Dumaresq) & Belltrees, (White Family) (Scone)	Horse Breeding – multiple building complexes with large stables/hose yards, smaller holdings, regular fence enclosures, irrigation, exercise yards, on road transport	P

	Upper Hunter	Coolmore (Jerry Plains) Woodland (Denman) Arrowfield, Satur & Invermein (Scone) Emirates Park (Murrurundi) Kendal Park (Willow Tree)	Modern Horse Studs – multiple building complexes with large stables/hose yards, smaller holdings, regular fence enclosures, irrigation, exercise yards, on road transport	P
Agriculture	Muswellbrook	Hunter Valley	Wheat farming (1820s – 1850s). Smaller selections/homesteads, Stone silos, road access.	G
	Muswellbrook Upper Hunter Maitland	Lower Hunter Upper Hunter	Dairy Farming (1880s-) Small holdings, small paddock sizes, milking sheds. Road or river access	G
	Upper Hunter Muswellbrook Maitland		Fruit and vegetable production – very small holdings, packing sheds. Road or river access	G
	Singleton Port Stephens Newcastle	Irrawang Porphy Pokolbin Raymond Terrace Maitland Singleton Paterson (LGA DUNGOG) Cessnock	Wine production. Dense subdivision pattern and small field sizes. N-S oriented tilling, on-site pressing and bottling works.	G
	Moree Plains	Moree district	Wheat Farming (20th century) Smaller selections/homesteads, rail access, local collective silos	G
Industries	Narrabri	Namoi River, Narrabri 'Keepit Dam'	Cotton and Water storage to assist this industry	G
	Newcastle Muswellbrook	Newcastle St Heliers	Early – lime burning, brick making, salt making pans, works/ruins, kilns, quarries	I
		Remote Locations away from residential areas but close to rivers and farms	1803s onwards industry near farms and rivers – soap works, tanneries, tobacco, flour mills, breweries, boiling down works – 1890s	I

Newcastle Upper Hunter Muswellbrook Maitland Port Stephens	Stockton Merewether Murrurundi (oil/shale)	1840s onwards textile mills, foundries, engineering works (iron and coal processing) Potteries and brickworks, copper smelters	I
Newcastle Maitland Muswellbrook	Newcastle Lower Hunter	Railways and collieries – electricity & rolling stock manufacture	I
Liverpool Plains	Werris Creek (town)	Coal Mining used to supply railway	I
Newcastle	Newcastle	Shipbuilding	I
Newcastle	BHP (Newcastle)	Smelting and iron/ steel manufacturing	I
Newcastle Port Stephens	Kurri Kurri Tomago	Aluminum smelting	I
Transport: River Maitland Newcastle Port Stephens	Lower Hunter Valley - Williams River (Raymond Terrace, Seaham, Clarencetown) Paterson River (Paterson, Vacy), Hunter River (Maitland, Morpeth) Morpeth to Newcastle	Early Settlements along Rivers	T
Transport: Roads Singleton Muswellbrook Upper Hunter	Singleton (Hunter River) Muswellbrook Scone Aberdeen	Settlement associated with Punts/fords	T
Upper Hunter Muswellbrook Singleton Port Stephens Newcastle	500+ Hunter Valley e.g. Hexham Bridge, Dunmore Bridge	Road and Rail Bridges crossing rivers	T

Transport: Roadways	Newcastle Muswellbrook Maitland Upper Hunter Liverpool Plains Narrabri Gunnedah Moree Plains	New England Hwy (Hexham - Willow Tree); Kamilaroi Hwy (Willow Tree – Narrabri); Newell Hwy (Narrabri – Moree – boarder); Great Nth Rd (Hexham – Willow Tree)	Main roads	T
	Upper Hunter Muswellbrook	Descent over the Black Hills (Muswellbrook) Spur at Warland's Range Ascent over Murrurundi Gap	Main road deviations to avoid flooding	T
	Narrabri Moree Plains Gunnedah Liverpool Plains	Willow Tree to Narrabri Breeza Plain between Gunnedah and Quirindi	Kamilaroi Hwy (Trunk Road 72)	T
	Gunnedah Narrabri Moree Plains	Main road between Gunnedah and Moree	Main Road 126 later renamed Trunk Road 72	T
	Narrabri Moree Plains	Narrabri to Moree	New bridges and culverts constructed and road paved Newell Hwy	T
	Newcastle Maitland Muswellbrook Upper Hunter Liverpool Plains Gunnedah Narrabri Moree Plains Newcastle	Newcastle to East Maitland Lochinvar, Singleton and Morpeth, Muswellbrook, Scone, Murrurundi, Quirindi, Werris Creek, Boggabri and Narrabri and later Moree	Construction of Northern Railway 1857 – 1897 and decline of settlements away from Railway	T
	Newcastle Singleton Upper Hunter	Minmi Mines (Hexham) Boggabri? Engineering to pass Liverpool Range (Aberdeen bridge)	Private Railway associated with mines and sawmills Newcastle to Singleton Line	T

Liverpool Plains	Newcastle, Cardiff, Murrurundi, Werris Creek	Rail workshops	T
Newcastle Maitland	Maitland to South Maitland Newcastle (Maitland railway area high heritage value)	Newcastle to Maitland Line	T
Upper Hunter	Ardglen Tunnel (high heritage value)	Northern Railway Line	T
Transport: Travelling Stock Routes	Rail lines used as TSRs	Early routes followed rivers/roads	S
	Crown land	1860s onwards saw regulation of use	S
	1849 onwards - Ironbark Creek area (original location); Minmi Mines Bridge over Hunter River at Hexham	Change of use to grazing stock	S
Newcastle	1849 onwards - Ironbark Creek area (original location); Minmi Mines Bridge over Hunter River at Hexham	Hexham	O
Maitland	1818 onwards - West Maitland (original location) now Wallis Plains, moved to East Maitland, Bridge over Wallis Creek	Maitland	O
Maitland	E C Close laid out town in 1832 – deep water access and flood free land, steamship services to Sydney from 1831, after railway opened it declined	Morpeth	O
Singleton	Explored 1820, Benjamin Singleton early grantee (associated with inn and ford over hunter river). Town formed 1836. Mines and dairying major economic activities, major army base established WW2	Singleton	O
Muswellbrook	Town gazetted 1833, grew after railway opened. Late 20th century mining and power generation major industries	Muswellbrook	O

Upper Hunter	Settled 1825 (Peter McIntyre selected & farmed land for Tom Macqueen) – Segenhoe. Gazetted 1837. St Lukes CoE served large parish in this area	Scone	O
Upper Hunter	Gazetted 1839, major industries food processing (e.g flour). Railway assisted development then town declined	Murrurundi	O
Liverpool Plains	1829 settlement began, George Loder selected land, rural area, not gazetted until 1856. Agricultural based economy (wheat, sorghum)	Quirindi	O
Gunnedah	1834 onwards led by John Johnston (Hartfell Station), by 1840s squatters established, town gazetted 1856. 1864 flood moved town centre. Coal mining from 1880s to present day.	Gunnedah	O
Narrabri	Town gazetted 1859, first property (run) in 1842, town development slow, railway assisted development e.g. establishment of saw mills	Boggabri	O
Narrabri	Town named after station of Andrew Doyle and Patrick Quinn (1834). Gazetted 1859, town developed but railway position changed town location to 3miles west. Artesian water from Woolabra bore for use on railways	Narrabri	O

Law and Order	Moree Plains	Official settlement started 1836, squatters already there. Gazetted 1862. Wheat crops increased after WW2 (incl. flour mills). Displacement of Aboriginal people post WW2 into Moree. Cotton another major crop for district.	Moree	O
	Narrabri	Warrah (West Willow Tree)	Soldiers Settlements	O
	Liverpool Plains Gunnedah	Walhallow and Piallaway (Nth of Breeza), Tibberenena (Sth Narrabri)		
	Liverpool Plains	Boggabri (Barber's pinnacle and stockyard near Boggabri)	Bushrangers – George Clarke (the Barber)	L
	Liverpool Plains Upper Hunter	Wollombi, Patrick's Plains and Liverpool Plains (raided Invermein and other stations at Liverpool Plains)	Bushranger - William Macdonald	L
	Liverpool Plains Upper Hunter	Quirindi, Scone and Murrurundi (Warrah Stn, W. Dangar's Turanville, T. Dangar's store in Scone and Traveller's home Inn, Murrurundi)	Bushranger - Edward Davis	
	Upper Hunter	Memorial to Peter Clarke (victim of Henry Wilson) shot dead near Murrurundi. Subscriptions received from all over the colony to construct the monument near Blandford	Bushranger – Henry Wilson	L
	Upper Hunter Singleton Liverpool Plains Gunnedah	Hunter Valley – Dungog, Stoud, Singleton and Liverpool Plains – Gunnedah and Barraba –Manilla districts, Scone, Merriwa and Singleton	Bushranger – Frederick Ward (Capt Thunderbolt)	
	Maitland Singleton Muswellbrook Newcastle	Hunter Valley 1829 Base in Wallis Plains (Maitland) Jerry Plains (Singleton)	Rural Policing – Military Mounted Police 1825 to 1850 –barracks, lock-ups, court houses, police stations	L

Maitland		Based in Maitland, Tamworth and Armidale	Rural Policing –Civilian Police 1850 - –barracks, lock-ups, court houses, police stations, prisons, prison farms	L
Birth and Death	Moree Plains Narrabri Gunnedah Liverpool Plains Upper Hunter Muswellbrook Singleton Maitland Port Stephens Newcastle	e.g. St Heliers Cemetery Singleton Camberwell	Cemeteries (associated with former settlements, current settlements and churches)	D
	Moree Plains Narrabri Gunnedah Liverpool Plains Upper Hunter Muswellbrook Singleton Maitland Port Stephens Newcastle	Breeza Burials Peter Clark Memorial St Heliers Cemetery/grave Peter Clark memorial/grave	Lone Burials	D

6. SIGNIFICANCE

Chapter 6 broadly identifies the significance of known and potential heritage items and places located within 0 – 100m of the pipeline study area and within approximately 1km of the pipeline route.

6.1 Known Items and Places

Known heritage items with existing and readily available significance assessments have not been re-assessed. For the purposes of this report, it has been assumed that all known items and places on the State Heritage Register (SHR) are of high heritage significance. Known items identified on other statutory lists, like Local Environmental Plans, however, (and not included on the SHR) have been mostly graded as either of medium or high heritage significance, depending on their perceived ability to express or embody the relevant historic themes that apply to their local area. All known items identified have been assigned a key thematic context by an alphabetic code (thematic code).

A summary of the thematic codes used for known heritage items is at Table 6.2. Many of the same codes have been used to identify and assess potential heritage items and this is explained in Chapter 5.

Known items graded as low heritage significance are predominantly those about which little is known, that require further assessment or are as yet only nominally identified on lists for example 'culvert'. Sensitive sites like cemeteries and grave sites have all been graded of high heritage significance.

Table 6.1 outlines the significance/values attributed to all known items identified by this study and located between the pipeline study area and 1km away.

Table 6.1 Significance Gradings for Known Heritage Items.

SIGNIFICANCE /VALUE	LOW	MEDIUM	HIGH
KNOWN SHR LISTED ITEM/PLACE	N/A	N/A	
KNOWN OTHER LISTING ITEM/PLACE OF KNOWN VALUES	N/A		
KNOWN OTHER LISTING ITEM/PLACE OF UNKNOWN VALUES.			N/A

All known heritage items have also been generally aligned to likely relevant historical themes identified both by the Thematic History (present in Chapter 3 of this report) and outlined in section 6.2 below.

6.2 Themes assigned to known heritage items

Table 6.2 Historical Themes assigned to known heritage items within the pipeline study area and up to 1km of the study area.

Australian Theme	NSW Themes (and Report Codes)	Code
Theme 1: Tracing the natural evolution of Australia,	Environment – naturally evolved (E) Aboriginal cultures and interactions with other cultures (A)	E A
Theme 2 Peopling Australia	Convict Ethnic influences Migration	
Theme 3 Developing local, regional and national economies	Agriculture (G) Commerce (B) Communication (C) Environment – cultural landscape Events (X) Exploration (K) Fishing Forestry (F) Health Industry (I) Mining (M) Pastoralism (P) Science Technology (H) Transport (T, S)	G B C X K F I M P H T S
Theme 4 Building settlements, towns and cities	Towns, suburbs and villages (O) Land tenure Utilities Accommodation	O

Theme 5 Working	Labour	
Theme 6 Educating	Education (j)	J
Theme 7 Governing	Defence Government and administration (U) Law and order (L) Welfare	U L
Theme 8 Developing Australia's cultural life	Domestic life (W) Creative endeavour (Y) Leisure Religion (R) Social institutions (V) Sport (Sp)	W Y R V Sp
Theme 9 Marking the phases of life	Birth and Death (D) Persons (Q)	D Q

6.3 Maps and Lists of Known Items

The Maps of all known heritage items are attached at Appendix F.

Lists of the known items (0-1km of the pipeline) are at Appendix D.

6.4 Potential Places and Items

Due to the large number of potential heritage items and places identified that could be impacted by the proposal (Chapter 5 and Appendixes E and G) a thematic approach was applied to their strategic significance assessment. This approach has been based on the thematic study (Chapter 3 of this report).

As explained in Chapter 5, each group or typology of likely elements or likely expressions of a certain theme, have been assigned an alphabetic thematic code identifier (A, B, C etc). This identifier has been used to identify the like-groups of potential items on the aerial photographs and maps. Groups of places and sites likely to contain surviving elements relevant to those themes or which would embody or illustrate those themes were identified as categories of places likely to have some potential heritage value.

To indicate likely heritage significance, each alphabetic identifier has also been colour-coded. In some instances, a potential item type (for example, an irrigation line), may be of potentially high significance in one location but will be considered of potentially lower significance at another. This is because certain site types (e.g. an irrigation line) may be considered a critical indicator of the investment and

growth of the cotton industry in e.g. Moree Plains, but is not to be considered critical or of high value in the Hunter where water is less scarce and multiple small irrigation channels exist.

Table 6.3 Significance Gradings Colours for Potential Heritage Items.

POTENTIAL SIGNIFICANCE/VALUE	LOW	MEDIUM	HIGH
POTENTIAL ITEM/PLACE THAT FULFILLS THEMATIC CRITERIA			
POTENTIAL ITEM/PLACE THAT MAY NOT FULFILL THEMATIC CRITERIA			
POTENTIAL ITEM OF UNKNOWN VALUES			

6.5 Maps and Lists of Potential Items

Lists of the potential items are provided in Appendix E. These items are shown with their significance colour coding. This appendix identifies each potential item by a discrete number and latitude and longitude. A short description of some items and an indication of what it may be for example, house, tunnel etc is also included along with its thematic coding. The list at Appendix E also includes kilometre points nearest the potential item, significance values and constraints. Constraints are explained in Chapter 7.

7. IMPACTS AND CONSTRAINTS ASSESSMENT

This section of the report identifies and assesses the potential impacts of the proposal on both known and potential heritage items and identifies if those impacts would potentially be considered a 'constraint' to the proposal. Its primary purpose is to identify which items and places should be subject to further consideration/investigation prior to determining the final location of the pipeline study area. The level of further consideration/investigation has been qualified by the level of significance assigned to the known/potential item and the impact, through its proximity to the identified 200m pipeline study area. Recommendations to mitigate impacts are discussed in Chapter 8 of this report.

7.1 Impacts - Methodology

The impact methodology applied in this report was based on the proximity of known and potential heritage items to the proposed pipeline study area. To enable this identification all known and potential heritage items were located in relation to the pipeline (refer to Appendixes C, D, E, F and G).

All mapped known and potential heritage items were reviewed against the location of the pipeline study area and recorded by distance in kilometers from the study area. Where known or potential items were identified within and up to 1km from the pipeline study area, further review was undertaken to more fully determine their known or likely significance value (Chapter 6).

All known and potential heritage items located within the 200m wide pipeline study area (0.00km) were considered to be potentially impacted by the proposal (high impact items). Moderate Impact items were those assessed as being within 100m of the pipeline study area (0.01-0.10km). Low Impact items were assessed as an item located between 100m of the pipeline study area and up to 1km of the study area (0.11-1.00km). The application of the impact assessment is demonstrated in Table 7.1 below and shown in Appendixes C, D and E.

Table 7.1 Impact Assessment Criteria

IMPACT	CRITERIA
HIGH	LOCATED WITHIN THE 200M PIPELINE STUDY AREA
MODERATE	LOCATED WITHIN 100M FROM THE 200M PIPELINE STUDY AREA
LOW	LOCATED 100M TO 1KM OF THE PIPELINE STUDY AREA

7.2 Constraints - Methodology

Constraints have been identified and ranked by cross referencing (in a matrix) each impacted known or potential item with its significance value. The matrix adopts the approach that the higher the significance value and impact, the higher (and by definition, harder) the constraint on the project.

Table 7.2 outlines the matrix of impact/significance/constraint that was applied to each item located within the pipeline study area and up to 1km of that study area for this project.

Table 7.2 Constraint Assessment Table:

IMPACT LEVEL	LOW SIGNIFICANCE	MEDIUM SIGNIFICANCE	HIGH SIGNIFICANCE
HIGH	MOD CONSTRAINT	HARD CONSTRAINT	HARD CONSTRAINT
MODERATE	LOW CONSTRAINT	MOD CONSTRAINT	MOD CONSTRAINT
LOW	LOW CONSTRAINT	LOW CONSTRAINT	LOW CONSTRAINT

Appendix C presents the results of the assessment of significance values, impact and constraint for all known heritage items located within the pipeline study area and up to 1km from the study area. Appendix F maps those known items (as well as other known items that would not be impacted or could be considered a constraint).

Appendix E is a summary of the results of the assessment of likely significance value, impact and constraint for all potential heritage items identified within the study area alignment and up to 1km of the pipeline study area. Appendix H is a constraints map of potential heritage items up to 1km of the pipeline study area. Hard constraints in Appendix H are dark green, moderate constraints are emerald green, and low constraints are light green.

All known and potential heritage items were mapped in accordance with the assessment of the type of constraint they represent (as outlined above) in a Geographical Information System (GIS).

Recommendations for managing known and potential heritage items identified by and assessed in this report as hard and moderate constraints are detailed in Chapter 8.

7.3 Heritage Items Excluded from Constraints Assessment

7.3.1 Heritage Items located between 1km and 3km of the Pipeline Study area

Known and potential heritage items located between 1km and 3km of the pipeline study area were not considered to represent a direct heritage constraint to the proposed alignment of the QHGP. Consequently these items have been identified in this report as a 'low' constraint. However, substantial deviation to the proposed pipeline route that would bring it within 1km of any such item, has the potential to impact these items. In the event modification to the pipeline study area may impact one or more of these items, further impact, significance, and constraint assessment would be required.

8. RECOMMENDATIONS

8.1 Known Heritage Items

This section of the report provides recommendations for minimising and managing the impacts and constraints explained in Chapter 7. The impact and constraints assessment has concluded that there were thirteen (13) known heritage items that could be considered a hard constraint to the proposal, nine (9) known items that could be considered a moderate constraint to the proposal and just over one hundred (114) known items and places that could be considered a low (or unlikely) constraint to the proposal.

The approach to mitigating constraints has been to identify measures that, if implemented, would avoid or minimise any potential adverse impacts of the proposal on the heritage values of known and potential heritage items and places. The rationale behind this approach is that if heritage impacts are avoided or minimised to an acceptable level and those mitigative measures do not unacceptably constrain or risk the development, then the heritage item does not pose a 'real' constraint to the development.

The items and places that may in some capacity be considered a constraint, are identified below in Figures 8.1 to 8.4.

8.1.1 Hard Constraints and Recommendations

Known heritage items and places that could be considered a likely hard constraint to the proposal are those that are of high or medium heritage significance that are located within the 200m pipeline study area. They could be impacted directly by construction or operation of the pipeline and/or be at high risk should pipeline route deviations be required. They are summarised below.

Table 8.1 Hard Constraints - Known heritage items of high or medium heritage significance that are located within the pipeline study area

SHEET NO.	ID #	LGA	ITEM NAME	CONSTRAINT
1	3	MOREE	Boonanga Bridge over Barwon River	HARD
1	269	MOREE	Euraba Mission	HARD
4	268	MOREE	Tramby Graves	HARD
12	57A-B	LIVERPOOL PLAINS/UPPER HUNTER	Ardglen Tunnel	HARD
12	305	LIVERPOOL PLAINS	Ardglen Railway Station	HARD
12	275	UPPER HUNTER	Murrurundi Urban Conservation Area	HARD
13	284	UPPER HUNTER	Residence, Middle Brook	HARD
12	291	UPPER HUNTER	Peter Clark Memorial (grave)	HARD
12	293	UPPER HUNTER	Residence, Murrurundi	HARD
13	303	MUSWELLBROOK	St Helier's Cemetery	HARD
13	302	MUSWELLBROOK	St Helier's township - associated buildings	HARD
13	301	MUSWELLBROOK	St Helier's township - limestone kiln	HARD
14	173	SINGLETON	Greylands & Outbuildings	HARD

8.1.2 Recommendations for Known Items and Places that are Hard Constraints

- Research, survey and identify the values and heritage curtilage of each known item (in Table 8.1) in a comprehensive heritage assessment.
- Identify the material expression and embodiment of those values in fabric, form and spatial relationships of the item.
- Use this potential heritage assessment and if required, the comprehensive heritage assessment at the detailed design phase to inform the alignment of

the pipeline to avoid and minimise any potential adverse impacts to the values of the item.

- Undertake a detailed heritage impact assessment of the final pipeline route and construction methods on the identified heritage values of the item/place.
- The heritage impact assessment should include recommendations for mitigating any adverse impacts that may arise.
- Maintain consultation with Heritage Branch, Department of Planning, local councils and other relevant stakeholders with regards to any further heritage assessments and the proposed mitigation measures
- Include known and potential heritage constraints and heritage impact mitigation and management recommendations and measures in the Construction Environmental Management Plan (CEMP) and Occupational Environmental Management Plan (OEMP).

8.1.3 Moderate Constraints and Recommendations

Known heritage items and places that could be considered a likely moderate constraint to the proposal are those that are of low heritage significance that are located within the pipeline study area or of high or medium heritage significance within 100m of the study area. They could be impacted directly by construction or operation of the pipeline and/or be at high risk from pipeline route deviations.

Table 8.2 Moderate Constraints - Known heritage items of Low heritage significance that are located within 100m of the pipeline study area

SHEET NO.	ID #	LGA	ITEM NAME	CONSTRAINT
3	307	MOREE	Road Crossing	MODERATE
3	313	MOREE	Road crossing	MODERATE
3	316	MOREE	Road crossing	MODERATE
10	295	GUNNEDAH	culvert	MODERATE
10	296	GUNNEDAH	culvert	MODERATE

10	297	GUNNEDAH	culvert	MODERATE
10	298	GUNNEDAH	culvert	MODERATE

Table 8.3 Moderate Constraints - Known heritage items of high or medium heritage significance that are located within 100m of the pipeline study area.

SHEET NO.	ID #	LGA	ITEM NAME	CONSTRAINT
13	277	UPPER HUNTER	Pumphouse, Aberdeen	MODERATE
17	246	NEWCASTLE	131 Radar Igloo	MODERATE

8.1.4 Recommendations for Known Items and Places that are Moderate Constraints

- Research, survey and identify the values of the culverts and road crossings in a comprehensive heritage assessment.
- Research, survey and identify the values of the Pumphouse, Aberdeen and the Radar Igloo, Kooragang in comprehensive heritage assessments.
- Identify the material expression and embodiment of those values in fabric, form and spatial relationships of the item(s).
- Use this potential heritage assessment and if required, the comprehensive heritage assessment at the detailed design phase to inform the alignment of the pipeline to avoid and minimise any potential adverse impacts to the values of the item.
- Undertake a detailed heritage impact assessment of final pipeline route and construction methods on the identified heritage values of the item/place.
- The heritage impact assessment should include recommendations for mitigating any adverse impacts that may be identified.

- Maintain consultation with Heritage Branch, Department of Planning, local councils and other relevant stakeholders with regards to any further heritage assessments and the proposed mitigation measures.
- Include known and potential heritage constraints and heritage impact mitigation and management recommendations and measures in the CEMP and OEMP.

8.1.5 Low Constraints and Recommendations

Known heritage items and places that could be considered a likely low (or nil) constraint to the proposal are those that are of high, medium or low heritage significance that are located between 100m and 1km of the pipeline study area. It is unlikely that they would be impacted directly by construction or operation of the pipeline, however, they could be at some risk should substantial pipeline route deviations be required. They are summarized below. Many known items in this category are in towns and urban areas and are substantial built structures and as such are unlikely to be singly impacted.

Table 8.4 Low Constraints - Known heritage items of high, medium or low heritage significance that are located between 100m and 1km of the pipeline study area.

SHEET NO.	ID #	LGA	ITEM NAME	CONSTRAINT
3	306	MOREE	culvert	LOW
2	317	MOREE	underbridge	LOW
3	308	MOREE	culvert	LOW
3	315	MOREE	underbridge	LOW
3	309	MOREE	Creek Crossing	LOW
3	314	MOREE	underbridge	LOW
3	310	MOREE	Road crossing	LOW
3	311	MOREE	Road crossing with North Street	LOW
3	312	MOREE	Road crossing	LOW
8	12	NARRABRI	Barber's Pinnacle	LOW
10	27	GUNNEDAH	Plains Grass	LOW
10	299	GUNNEDAH	culvert	LOW
10	26	GUNNEDAH	Breeza Burials	LOW
16	201	LIVERPOOL PLAINS	Dunmore House	LOW
12	294	LIVERPOOL PLAINS	Underbridge south of Murrurundi Station	LOW
12	288	UPPER HUNTER	Lassen Park (homestead)	LOW

12	90	UPPER HUNTER	Roman Catholic Presbytery	LOW
12	290	UPPER HUNTER	Kingdon Park (homestead)	LOW
13	258	UPPER HUNTER	Fitzgerald Bridge	LOW
13	279	UPPER HUNTER	Residence	LOW
13	278	UPPER HUNTER	Togal Railway Signal Box	LOW
13	282	UPPER HUNTER	Yarramoor (homestead)	LOW
13	285	UPPER HUNTER	Residence and shed	LOW
13	153	UPPER HUNTER	Turanville	LOW
12	292	UPPER HUNTER	Railway Signal Box	LOW
13	129	UPPER HUNTER	Invermien	LOW
12	289	UPPER HUNTER	Residence	LOW
12	287	UPPER HUNTER	Residence	LOW
12	100	UPPER HUNTER	St Lukes Church	LOW
13	281	UPPER HUNTER	Jocelyn Park (Puen Nuen) (Homestead)	LOW
12	58	UPPER HUNTER	Rosebank	LOW
12	59	UPPER HUNTER	Temple Court Station and Railway Cottage	LOW
12	62	UPPER HUNTER	Former Tattersalls Hotel	LOW
12	63	UPPER HUNTER	Railway Hotel	LOW
12	64	UPPER HUNTER	Ethelston	LOW
12	65	UPPER HUNTER	Rosedale Cottage	LOW
12	66	UPPER HUNTER	Council Chambers	LOW
12	67	UPPER HUNTER	Post Office	LOW
12	71	UPPER HUNTER	Pink Cottage	LOW
12	72	UPPER HUNTER	Former Telegraph Office	LOW
12	73	UPPER HUNTER	Former "Haydonton Inn"	LOW
12	74	UPPER HUNTER	White Hart Hotel	LOW
12	75	UPPER HUNTER	J. Dooley General Store	LOW
12	76	UPPER HUNTER	Bridge House	LOW
12	77	UPPER HUNTER	Former Manchester Unity Hall	LOW
12	78	UPPER HUNTER	Methodist Church	LOW
12	79	UPPER HUNTER	Former CBC Bank	LOW
12	80	UPPER HUNTER	Royal Hotel	LOW
12	81	UPPER HUNTER	Royal Hotel Stables	LOW
12	82	UPPER HUNTER	Rose Cottage	LOW
12	83	UPPER HUNTER	Bobadil House	LOW
12	84	UPPER HUNTER	St Pauls Church of England	LOW
12	85	UPPER HUNTER	St Pauls Rectory	LOW
12	86	UPPER HUNTER	Police Sergeant's Residence	LOW
12	87	UPPER HUNTER	Gaol and Police Residence	LOW
12	88	UPPER HUNTER	Courthouse and Police Station	LOW
12	89	UPPER HUNTER	Footbridge	LOW
12	93	UPPER HUNTER	Railway Guard's Cottage	LOW
12	95	UPPER HUNTER	Railway Gatekeeper's Cottage	LOW
12	96	UPPER HUNTER	Greenhayes	LOW
12	97	UPPER HUNTER	Murrurundi Railway Station	LOW
12	98	UPPER HUNTER	Glenalvon Group	LOW
13	135	UPPER HUNTER	Petrified Stump	LOW
12	259	UPPER HUNTER	Blandford Bridge	LOW
12	68A – B	UPPER HUNTER	Presbyterian Church	LOW
12	69A – B	UPPER HUNTER	Former Literary Institute	LOW
12	70A – B	UPPER HUNTER	Public School	LOW
12	91A – B	UPPER HUNTER	Former Sisters of Mercy	LOW

			Convent	
12	92A – E	UPPER HUNTER	St Josephs Church	LOW
12	94 A - E	UPPER HUNTER	Station Master's Cottage	LOW
13	167	UPPER HUNTER	Timber house	LOW
13	325	UPPER HUNTER	Aberdeen Beef Co P/L (AMH Abattoir)	LOW
12	276	UPPER HUNTER	Murrurundi Civic Group	LOW
15	177	SINGLETON	Bendeich Cottage	LOW
16	228	MAITLAND/ PORT STEPHENS	Dunmore Bridge	LOW
16	196	MAITLAND	Bellevue	LOW
16	195	MAITLAND	Mindaribba	LOW
16	201	MAITLAND	Dunmore House	LOW
17	328	MAITLAND	Georgian Cottage, Morpeth	LOW
17	329	MAITLAND	Former Roman Catholic School & Convent Group	LOW
17	330	MAITLAND	Roman Catholic Church, Morpeth	LOW
17	331	MAITLAND	State School, Morpeth	LOW
17	332	MAITLAND	Marlborough House, Morpeth	LOW
17	333	MAITLAND	Villa, Morpeth	LOW
17	334	MAITLAND	Former Campbell's Store, Morpeth	LOW
17	335	MAITLAND	Post Office & Residence, Morpeth	LOW
17	336	MAITLAND	White's Factory, Morpeth	LOW
17	337	MAITLAND	Former Cinema, Morpeth	LOW
17	338	MAITLAND	Commercial Hotel, Morpeth	LOW
17	339	MAITLAND	Former CBC Bank	LOW
17	340	MAITLAND	Former Bakery, Morpeth	LOW
17	341	MAITLAND	St James Group	LOW
17	342	MAITLAND	School of Arts	LOW
17	343	MAITLAND	Former Courthouse	LOW
17	344	MAITLAND	Timber Cottage, Morpeth	LOW
17	345	MAITLAND	St James Parish Hall	LOW
16	189	MAITLAND	Fm Cath Sch & Presbytery	LOW
16	190	MAITLAND	Largs Public School	LOW
16	188	MAITLAND	Anambah House	LOW
17	197	MAITLAND	Grandstand, Morpeth	LOW
17	198	MAITLAND	Kiora, Morpeth	LOW
17	199	MAITLAND	Former Morpeth House	LOW
16	191	MAITLAND	Government Railway	LOW
17	183	MAITLAND	Berry Park	LOW
17	200	MAITLAND	Morpeth Bridge	LOW
17	261	MAITLAND	Bond Stores Group	LOW
17	263	MAITLAND	Morpeth Museum	LOW
17	264	MAITLAND	Morpeth Township	LOW
17	265	MAITLAND	Police Station	LOW
17	266	MAITLAND	Primitive Methodist Church	LOW
17	267	MAITLAND	Former Railway Station	LOW
16	222	PORT STEPHENS	Former All Saints Church, Woodville	LOW
16	225	PORT STEPHENS	General store and Post Office, Woodville	LOW

17	247	NEWCASTLE	School Master's House	LOW
17	244	NEWCASTLE	Tongues Tree Fig	LOW

8.1.6 Recommendations for Known Items and Places that are Low Constraints

No further action is recommended for these elements unless substantial pipeline route deviation is proposed (ie, the 200m pipeline study area moves/route changes). In that event, the impact assessment should be re-visited and amended recommendations identified.

8.2 Potential Heritage Items

The heritage impact assessment concluded that there were 49 potential heritage items that could be considered a potential hard constraint to the proposal as they were located within the pipeline study area or very near the pipeline and were considered to be of potential high heritage significance. A further 20 of potential items could be considered a potential moderate constraint to the proposal because they were located within the pipeline study area or very nearby and were of potential medium heritage significance.

Potential items of likely low heritage significance within the pipeline study area and nearby and the remainder of identified potential items in the broader study area are all considered to be low or nil likely constraint to the proposal. There are 142 low constraint potential items.

The vast majority of identified potential items and places are considered to be of likely low or nil constraint to the proposal. This is primarily because most are located outside the pipeline study area and most, both within and outside the study area, because of their likely representative nature, are unlikely to have heritage values that would be so significant or rare that they would warrant deviating or modifying the pipeline route. Nor, because of the sequences of development and change most would have experienced, are they likely to have archaeological or other research values that would warrant or justify intensive archaeological investigation and recording prior to disturbance.

There are some hard constraint potential items, however, that may require further investigation and assessment and/or recording prior to identifying their level of

potential constraint to the proposal. They include some (but not all) items and places of likely high heritage significance within the pipeline study area and within 100m of the pipeline study area. They have been attributed a likely high heritage value because they appear to have the potential to embody and demonstrate with a high degree of material integrity, key historical themes that apply to their local area.

The potential items and places that may in some capacity be considered a constraint have been mapped and are at Appendix H. Those that could be a potential hard constraint to the proposal are those within the pipeline study area and 100m of the study area coloured dark green. Those that could be a moderate constraint to the proposal are those within the pipeline study area and 100m of the pipeline study area that are coloured emerald green and those that are of potential low constraint are coloured light green.

All potential items identified between 100m – 1km of the pipeline study area are considered to be low or nil constraint to the proposal.

8.2.1 Recommendations for Potential items that are Hard Constraints

- Undertake research and survey to identify the survival and integrity of the potential item.
- If item is extant, intact or an archaeological resource of likely high research or other value and likely to be directly impacted, identify the values and heritage curtilage of the item in a comprehensive heritage assessment.
- Identify the material expression and embodiment of those values in fabric, form and spatial relationships of the item.
- Use this potential heritage assessment and if required, the comprehensive heritage assessment at the detailed design phase to inform the alignment of the pipeline to avoid and minimise any potential adverse impacts to the values of the item.
- Undertake a detailed heritage impact assessment of final pipeline route and construction methods on the identified heritage values of the item/place.

- The heritage impact assessment should include recommendations for mitigating any adverse impacts that may arise.
- Maintain consultation with Heritage Branch, Department of Planning, local councils and other relevant stakeholders with regards to any further heritage assessments and the proposed mitigation measures.
- Include known and potential heritage constraints and heritage impact mitigation and management recommendations and measures in the CEMP and OEMP.

Table 8.5 *Hard Constraints - Potential heritage items of likely high or medium heritage significance that are located within the pipeline study area.*

SHEET NO.	POTENTIAL ID NO.	KP	THEME	SIGNIFICANCE VALUE	LOCAL GOVERNMENT AREA	CONSTRAINT
12	P84	635-635	T	high	LIVERPOOL PLAINS	HARD
2	P239	287-288	P	high	MOREE PLAINS	HARD
11	P100	604-601	A	medium	LIVERPOOL PLAINS	HARD
17	P11	809-808	A	medium	MAITLAND	HARD
10	P114	586-584	A	medium	LIVERPOOL PLAINS	HARD
17	P12	808-807	A	medium	MAITLAND	HARD
17	P13	808-807	A	medium	MAITLAND	HARD
9	P133	527-526	A	medium	GUNNDAH	HARD
17	P14	800-799	A	medium	MAITLAND	HARD
17	P15	799-798	A	medium	MAITLAND	HARD
8	P154	494-492	A	medium	NARRABRI	HARD
16	P16	796-795	A	medium	MAITLAND	HARD
7	P176	437-435	T	medium	NARRABRI	HARD
16	P18	794-793	A	medium	MAITLAND	HARD
16	P19	793-792	A	medium	MAITLAND	HARD
16	P20	785-783	A	medium	MAITLAND	HARD

5	P205	383-384	E	medium	MOREE PLAINS	HARD
16	P21	784-780	A	medium	MAITLAND	HARD
5	P213	372-373	E	medium	MOREE PLAINS	HARD
16	P22	781-779	A	medium	MAITLAND	HARD
3	P235	296-297	E	medium	MOREE PLAINS	HARD
2	P237	291-292	E	medium	MOREE PLAINS	HARD
2	P238	287-288	E	medium	MOREE PLAINS	HARD
14	P36	714-713	A	medium	MUSWELLBROOK	HARD
17	P4	817-816	A	medium	NEWCASTLE	HARD
13	P41	703-701	A	medium	MUSWELLBROOK	HARD
13	P45	694-691	A	medium	UPPER HUNTER	HARD
13	P46	694-691	A	medium	UPPER HUNTER	HARD
13	P47	692-691	A	medium	UPPER HUNTER	HARD
13	P48	691-690	T	medium	UPPER HUNTER	HARD
17	P5	816-815	A	medium	NEWCASTLE	HARD
13	P50	690-681	A	medium	UPPER HUNTER	HARD
13	P54	681-680	A	medium	UPPER HUNTER	HARD
13	P62	677-675	A	medium	UPPER HUNTER	HARD
12	P64	671-670	A	medium	UPPER HUNTER	HARD
12	P69	659-658	A	medium	UPPER HUNTER	HARD
12	P77	642-640	O	medium	UPPER HUNTER	HARD
12	P85	635-633	M	medium	LIVERPOOL PLAINS	HARD
11	P87	628-627	A	medium	LIVERPOOL PLAINS	HARD
11	P88	627-625	A	medium	LIVERPOOL PLAINS	HARD
11	P89	625-622	A	medium	LIVERPOOL PLAINS	HARD
11	P92	621-620	A	medium	LIVERPOOL PLAINS	HARD

8.2.2 Recommendations for Potential Items that cannot be identified - Default Hard constraints

- Undertake survey to identify the survival and integrity of the potential item.
- If extant structure or landscape or likely archaeological remains, assess heritage significance.
- If not of likely potential heritage value, undertake general location and photographic recording.
- If assessment indicates item is of potential high heritage value and so a hard constraint, follow procedure outlined in 8.2.1.
- If assessment indicates item is likely of moderate or low constraint, follow procedures outlined in 8.2.3 or 8.2.4 respectively.

Table 8.6 Default Hard Constraints - Potential heritage items of Unknown heritage significance that are located within the pipeline study area.

SHEET NO.	POTENTIAL ID NO.	KP	THEME	SIGNIFICANCE VALUE	LOCAL GOVERNMENT AREA	CONSTRAINT
17	P1	819-818	unided	Default high	NEWCASTLE	HARD
17	P6	816-815	unided	Default high	NEWCASTLE	HARD
11	P93	621-620	unided	Default high	LIVERPOOL PLAINS	HARD
11	P95	619-618	unided	Default high	LIVERPOOL PLAINS	HARD
11	P112	590-589	unided	Default high	LIVERPOOL PLAINS	HARD
9	P137	520-519	unided	Default high	GUNNEDAH	HARD
8	P145	503-502	unided	Default high	GUNNEDAH	HARD

8.2.3 Recommendations for Potential Items that are Moderate Constraints

- Undertake survey to identify the nature, survival and integrity of the potential item.

- If extant structure/landscape or likely archaeological remains, assess heritage significance.
- If not of likely potential heritage value, undertake general location and photographic recording.
- If assessment indicates item is actually of potential high heritage value and so a hard constraint, follow procedure outlined in 8.2.1.
- If assessment confirms moderate constraint, undertake a heritage impact assessment of final pipeline route and construction methods on the identified heritage values of the item/place.
- The heritage impact assessment should include recommendations for mitigating any adverse impacts that may arise.
- Maintain consultation with Heritage Branch, Department of Planning, local councils and other relevant stakeholders with regards to any further heritage assessments and the proposed mitigation measures.
- Include known and potential heritage constraints and heritage impact mitigation and management recommendations and measures in the CEMP and OEMP
- If re-assessment indicates item is a low constraint follow procedures outlined in 8.2.4

Table 8.7 Moderate Constraints - Potential heritage items of Likely Low heritage significance that are located within the pipeline study area.

SHEET NO.	POTENTIAL ID NO.	KP	THEME	SIGNIFICANCE VALUE	LOCAL GOVERNMENT AREA	CONSTRAINT
16	P17	795-794	E	low	MAITLAND	MODERATE
11	P111	591-590	A	low	LIVERPOOL PLAINS	MODERATE

Table 8.8 Moderate Constraints - Potential heritage items of Likely Medium and unknown heritage significance that are located within 100m of the pipeline study area.

SHEET NO.	POTENTIAL ID NO.	KP	THEME	SIGNIFICANCE VALUE	LOCAL GOVERNMENT AREA	CONSTRAINT
17	P2	819-818	A	medium	NEWCASTLE	MODERATE
17	P3	817-816	unided	Default high	NEWCASTLE	MODERATE
17	P9	812-811	E	medium	MAITLAND/NEWCASTLE	MODERATE
15	P27	758-757	A	medium	SINGLETON	MODERATE
13	P43	700-699	A	medium	MUSWELLBROOK	MODERATE
13	P55	681-680	A	medium	UPPER HUNTER	MODERATE
13	P57	679-678	A	medium	UPPER HUNTER	MODERATE
13	P59	678-677	A	medium	UPPER HUNTER	MODERATE
12	P73	654-652	A	medium	UPPER HUNTER	MODERATE
12	P81	639-637	A	medium	UPPER HUNTER	MODERATE
12	P83	637-636	T	medium	UPPER HUNTER	MODERATE
12	P86	632-630	A	medium	LIVERPOOL PLAINS	MODERATE
9	P136	521-519	unided	Default high	GUNNEDAH	MODERATE
8	P149	501-500	unided	Default high	GUNNEDAH	MODERATE
8	P156	488-487	unided	Default high	NARRABRI	MODERATE
8	P162	481-480	unided	Default high	NARRABRI	MODERATE
7	P169	443-442	A	medium	NARRABRI	MODERATE
4	P220	356-357	E	medium	MOREE PLAINS	MODERATE

8.2.4 Recommendations for Potential Items that are Low Constraints

No further action is recommended for these elements unless substantial pipeline route deviation is proposed (ie, the 200m pipeline study area moves). In that event, the impact assessment should be re-visited and amended recommendations identified

Table 8.9 Low Constraints - Potential heritage items of Likely High, Moderate, Low and unknown heritage significance that are located between 100m of the pipeline study area and 1km from the study area.

SHEET NO.	POTENTIAL ID NO.	KP	THEME	Significance Value	LOCAL GOVERNMENT AREA	CONSTRAINT
17	P7	815-814	I	medium	PORT STEPHENS	LOW
17	P8	814-813	unided	Default high	PORT STEPHENS	LOW
17	P10	810-809	E	low	MAITLAND	LOW
16	P23	769-768	A	medium	SINGLETON	LOW
15	P24	759-758	A	medium	SINGLETON	LOW
15	P25	758-757	A	medium	SINGLETON	LOW
15	P28	758-757	A	medium	SINGLETON	LOW
15	P29	757-756	A	medium	SINGLETON	LOW
15	P30	756-755	A	medium	SINGLETON	LOW
15	P31	753-752	A	medium	SINGLETON	LOW
14	P32	741-740	A	medium	SINGLETON	LOW
14	P33	739-738	unided	Default high	SINGLETON	LOW
14	P34	738-737	A	medium	SINGLETON	LOW
14	P35	735-734	A	medium	SINGLETON	LOW
13	P37	712-711	A	medium	MUSWELLBROOK	LOW
13	P39	707-706	E	low	MUSWELLBROOK	LOW
13	P44	697-696	M	low	UPPER HUNTER	LOW
13	P49	691-690	A	medium	UPPER HUNTER	LOW
13	P51	689-688	unided	Default high	UPPER HUNTER	LOW
13	P53	681-680	A	medium	UPPER HUNTER	LOW
13	P56	680-679	A	medium	UPPER HUNTER	LOW
13	P58	679-678	A	medium	UPPER HUNTER	LOW
13	P60	677-676	A	medium	UPPER HUNTER	LOW
13	P61	677-676	A	medium	UPPER HUNTER	LOW
12	P63	672-671	A	medium	UPPER HUNTER	LOW
12	P65	666-665	A	medium	UPPER HUNTER	LOW
12	P66	662-661	A	medium	UPPER HUNTER	LOW
12	P67	660-659	A	medium	UPPER HUNTER	LOW
12	P70	657-656	unided	Default high	UPPER HUNTER	LOW
12	P71	657-656	A	medium	UPPER HUNTER	LOW
12	P74	648-646	O	medium	UPPER HUNTER	LOW
12	P75	645-643	A	medium	UPPER HUNTER	LOW
12	P76	644-643	A	medium	UPPER HUNTER	LOW

12	P78	641-640	unided	Default high	UPPER HUNTER	LOW
12	P79	641-640	unided	Default high	UPPER HUNTER	LOW
12	P80	639-638	A	low	UPPER HUNTER	LOW
12	P82	637-636	T	low	UPPER HUNTER	LOW
11	P90	624-622	M	low	LIVERPOOL PLAINS	LOW
11	P91	622-621	A	medium	LIVERPOOL PLAINS	LOW
11	P94	620-619	unided	Default high	LIVERPOOL PLAINS	LOW
11	P96	618-617	A	medium	LIVERPOOL PLAINS	LOW
11	P97	618-617	A	medium	LIVERPOOL PLAINS	LOW
11	P98	605-606	A	medium	LIVERPOOL PLAINS	LOW
11	P99	605-604	unided	Default high	LIVERPOOL PLAINS	LOW
11	P101	602-601	A	medium	LIVERPOOL PLAINS	LOW
11	P102	601-600	unided	Default high	LIVERPOOL PLAINS	LOW
11	P103	599-597	E	low	LIVERPOOL PLAINS	LOW
11	P104	598-597	A	medium	LIVERPOOL PLAINS	LOW
11	P105	596-595	A	medium	LIVERPOOL PLAINS	LOW
11	P106	595-594	A	low	LIVERPOOL PLAINS	LOW
11	P107	595-594	A	medium	LIVERPOOL PLAINS	LOW
11	P108	595-594	A	medium	LIVERPOOL PLAINS	LOW
11	P109	592-591	A	medium	LIVERPOOL PLAINS	LOW
11	P110	592-591	A	medium	LIVERPOOL PLAINS	LOW
10	P113	586-585	A	medium	LIVERPOOL PLAINS	LOW
10	P115	583-582	A	medium	LIVERPOOL PLAINS	LOW
10	P116	582-581	A	medium	LIVERPOOL PLAINS	LOW
10	P117	579-578	unided	Default high	LIVERPOOL PLAINS/GUNNEDAH	LOW
10	P118	578-577	unided	Default high	GUNNEDAH	LOW
10	P119	569-568	unided	Default high	GUNNEDAH	LOW
10	P120	564-563	A	medium	GUNNEDAH	LOW
10	P121	557-556	unided	Default high	GUNNEDAH	LOW
10	P122	556-555	A	medium	GUNNEDAH	LOW
10	P123	556-555	A	medium	GUNNEDAH	LOW
9	P124	549-548	A	medium	GUNNEDAH	LOW
9	P125	545-544	unided	Default high	GUNNEDAH	LOW
9	P127	539-538	A	medium	GUNNEDAH	LOW
9	P129	531-530	A	medium	GUNNEDAH	LOW
9	P130	531-530	A	medium	GUNNEDAH	LOW
9	P131	529-528	unided	Default high	GUNNEDAH	LOW
9	P132	528-527	A	medium	GUNNEDAH	LOW
9	P134	521-520	A	medium	GUNNEDAH	LOW
9	P135	521-520	A	medium	GUNNEDAH	LOW
9	P138	517-516	A	medium	GUNNEDAH	LOW
9	P139	514-513	A	medium	GUNNEDAH	LOW
8	P143	506-505	A	medium	GUNNEDAH	LOW
8	P146	503-502	A	medium	GUNNEDAH	LOW
8	P147	501-500	A	medium	GUNNEDAH	LOW
8	P148	501-500	unided	Default high	GUNNEDAH	LOW
8	P150	498-497	unided	Default high	NARRABRI	LOW
8	P151	497-496	unided	Default high	NARRABRI	LOW
8	P152	496-495	unided	Default high	NARRABRI	LOW
8	P153	494-493	A	medium	NARRABRI	LOW
8	P155	491-490	A	medium	NARRABRI	LOW
8	P159	485-484	unided	Default high	NARRABRI	LOW
8	P160	485-484	unided	Default high	NARRABRI	LOW

8	P161	483-482	A	medium	NARRABRI	LOW
8	P163	480-479	unided	Default high	NARRABRI	LOW
8	P164	475-474	A	medium	NARRABRI	LOW
7	P166	473-472	A	medium	NARRABRI	LOW
7	P170	442-441	A	medium	NARRABRI	LOW
7	P171	440-439	A	medium	NARRABRI	LOW
7	P173	349-348	A	medium	NARRABRI	LOW
7	P174	349-348	A	medium	NARRABRI	LOW
6	P180	430-429	A	medium	NARRABRI	LOW
6	P182	430-429	unided	Default high	NARRABRI	LOW
6	P183	427-428	A	medium	NARRABRI	LOW
6	P186	427-426	A	medium	NARRABRI	LOW
6	P187	426-425	A	medium	NARRABRI	LOW
6	P189	424-423	A	medium	NARRABRI	LOW
6	P191	418-419	A	medium	NARRABRI	LOW
6	P195	404-405	A	medium	NARRABRI	LOW
6	P196	404-405	A	medium	NARRABRI	LOW
5	P199	395-396	E	medium	NARRABRI	LOW
5	P200	390-391	P	medium	NARRABRI	LOW
5	P201	388-389	P	medium	NARRABRI	LOW
5	P202	388-389	P	medium	NARRABRI	LOW
5	P203	387-388	E	medium	NARRABRI	LOW
5	P204	385	E	medium	NARRABRI	LOW
5	P207	381-382	P	medium	MOREE PLAINS	LOW
5	P208	380-381	unided	Default high	MOREE PLAINS	LOW
5	P209	377-378	P	medium	MOREE PLAINS	LOW
5	P212	372-373	E	medium	MOREE PLAINS	LOW
5	P214	370-371	P	medium	MOREE PLAINS	LOW
5	P215	369-370	E	medium	MOREE PLAINS	LOW
4	P217	364-365	E	medium	MOREE PLAINS	LOW
4	P218	363-364	E	medium	MOREE PLAINS	LOW
4	P221	352-353	E	medium	MOREE PLAINS	LOW
4	P222	351-352	E	medium	MOREE PLAINS	LOW
4	P225	348-349	E	medium	MOREE PLAINS	LOW
4	P226	341-342	E	medium	MOREE PLAINS	LOW
4	P227	339-340	E	medium	MOREE PLAINS	LOW
4	P228	334-335	P	medium	MOREE PLAINS	LOW
3	P229	331-332	P	medium	MOREE PLAINS	LOW
3	P230	319-320	E	medium	MOREE PLAINS	LOW
3	P231	310-311	E	medium	MOREE PLAINS	LOW
3	P232	308-309	E	medium	MOREE PLAINS	LOW
3	P233	303-304	E	medium	MOREE PLAINS	LOW
3	P234	302-303	unided	Default high	MOREE PLAINS	LOW
2	P236	293-294	E	medium	MOREE PLAINS	LOW
2	P240	276-275	P	medium	MOREE PLAINS	LOW
2	P241	272-273	P	medium	MOREE PLAINS	LOW
2	P242	271-272	E	medium	MOREE PLAINS	LOW
2	P243	270-271	E	medium	MOREE PLAINS	LOW
2	P244	267-268	E	medium	MOREE PLAINS	LOW
2	P245	265-266	P	medium	MOREE PLAINS	LOW
1	P246	258-259	E	medium	MOREE PLAINS	LOW
1	P247	248-249	P	medium	MOREE PLAINS	LOW
1	P248	247-248	unided	Default high	MOREE PLAINS	LOW
1	P250	240-241	E	medium	MOREE PLAINS	LOW

1	P251	239-240	O	medium	MOREE PLAINS	LOW
1	P252	228-229	unided	Default high	MOREE PLAINS	LOW

8.3 Rural Fencing situated within the pipeline study area which has potential heritage values (representing Hard and Moderate Constraints)

The advice of Dr. John Pickard, author of a Thematic History of Rural Fencing in NSW, indicates that certain types of rural fencing are likely to hold varying levels of heritage significance in NSW. However due to the nature of this type of item it is virtually impossible to identify where significant types of fencing will be located except through field investigation.

Dr. Pickard has indicated he will be able to provide advice on how to identify 'unusual' types of fencing during survey work for the pipeline. It is most likely this advice will need to be provided to contractors working along the route prior to construction to identify whether impacted fencing meets these criteria. Although Dr. Pickard's criteria are not yet available, in the event that the criteria outlined by Dr. Pickard are met the following recommendations are made:

- Undertake survey to identify the survival and integrity of the potential item.
- If extant assess heritage significance.
- If not of likely potential heritage value, undertake general location and photographic recording.
- If of potential high heritage value and so a hard constraint, follow procedure outlined in 8.2.1.
- If of moderate or low constraint, follow procedures outlined in 8.2.3 or 8.2.4 respectively.

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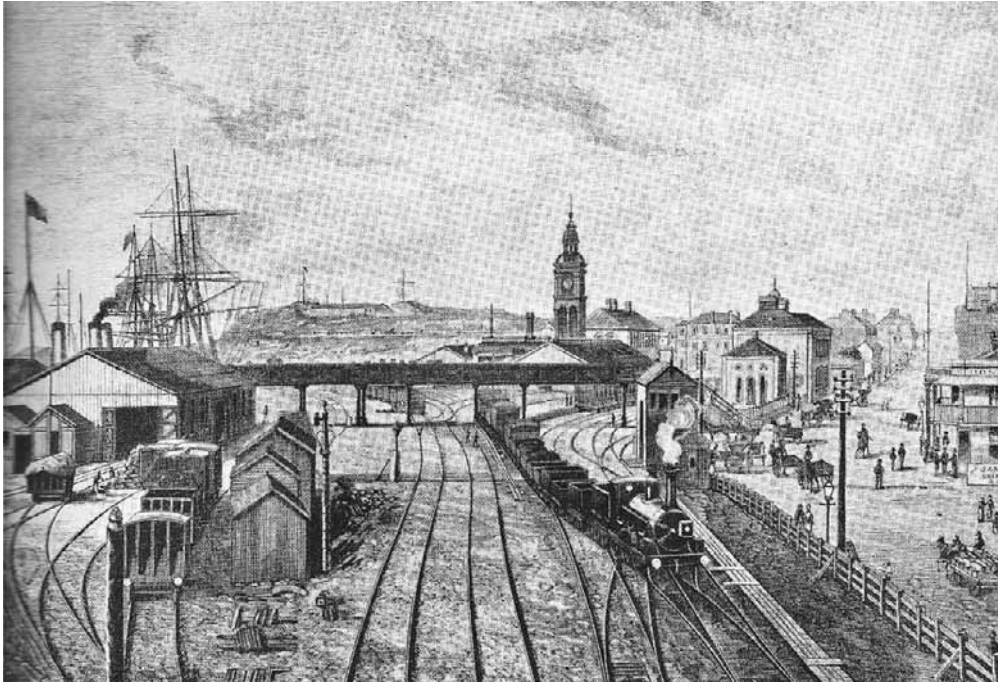
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APPENDIX A: HISTORICAL THEMES AND CODES

AUSTRALIAN THEME	NSW THEMES (AND REPORT CODES)	CODE
Theme 1: Tracing the natural evolution of Australia,	Environment – naturally evolved (E) Aboriginal cultures and interactions with other cultures (A)	E A
Theme 2 Peopling Australia	Convict Ethnic influences Migration	
Theme 3 Developing local, regional and national economies	Agriculture (G) Commerce (B) Communication (C) Environment – cultural landscape Events (X) Exploration (K) Fishing Forestry (F) Health Industry (I) Mining (M) Pastoralism (P) Science Technology (H) Transport (T, S)	G B C X K F I M P H T S
Theme 4 Building settlements, towns and cities	Towns, suburbs and villages (O) Land tenure Utilities Accommodation	O
Theme 5 Working	Labour	
Theme 6 Educating	Education (j)	J
Theme 7 Governing	Defence Government and administration (U) Law and order (L) Welfare	U L
Theme 8 Developing Australia's cultural life	Domestic life (W) Creative endeavour (Y) Leisure Religion (R) Social institutions (V) Sport (Sp)	W Y R V Sp
Theme 9 Marking the phases of life	Birth and Death (D) Persons (Q)	D Q

APPENDIX B: IMAGES FROM THE THEMATIC HISTORY



- 3.1. Newcastle Railway Station. (Leonie I Paddison, *The Railways of NSW 1855-1955*, Department of Railways, Sydney, 1955, p 63)



- 3.2. Opening of Hexham Bridge, 17 December 1952. (NSW State Library, Home and Away - 26836)



3.3. Robert Russell, Entrance to West Maitland, 1837. (National Library of Australia R7209)



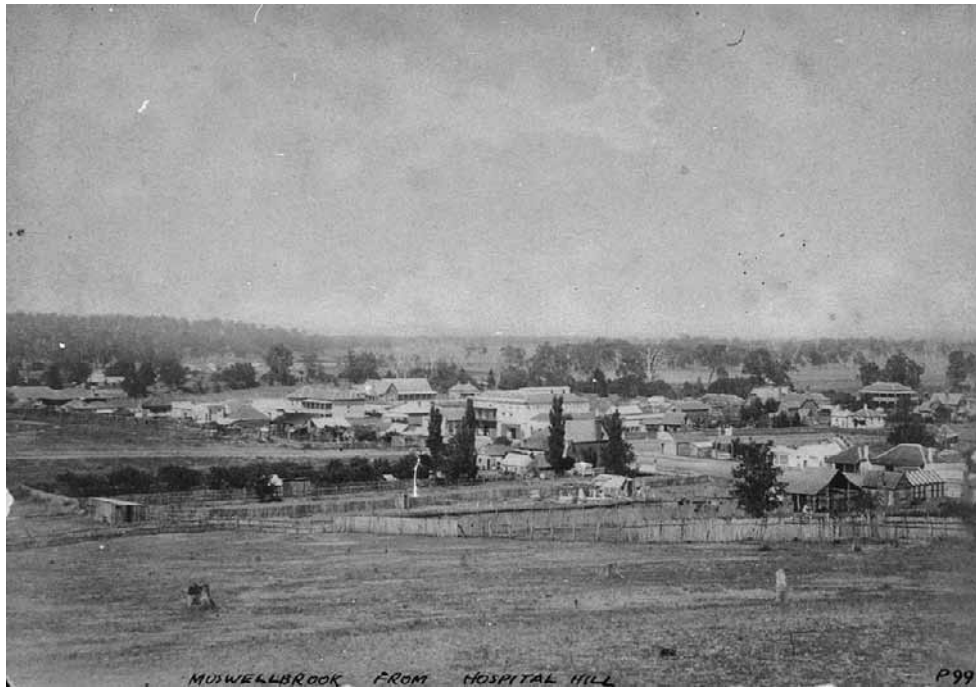
3.4. High Street, West Maitland, c 1900-1910. (NSW State Library, PXE 711/602)



3.5. Flood at Maitland Railway Station, 21 June 1950. (NSW State Library, Home and Away - 26836)



3.6. Aborigines at first Australian Indigenous Ministries station, St Clair near Singleton, c 1903. (NSW State Library, PXA 773/box 6/item 21)



3.7. Muswellbrook from Hospital Hill, c 1880. (NSW State Library, At Work and Play - 05494)



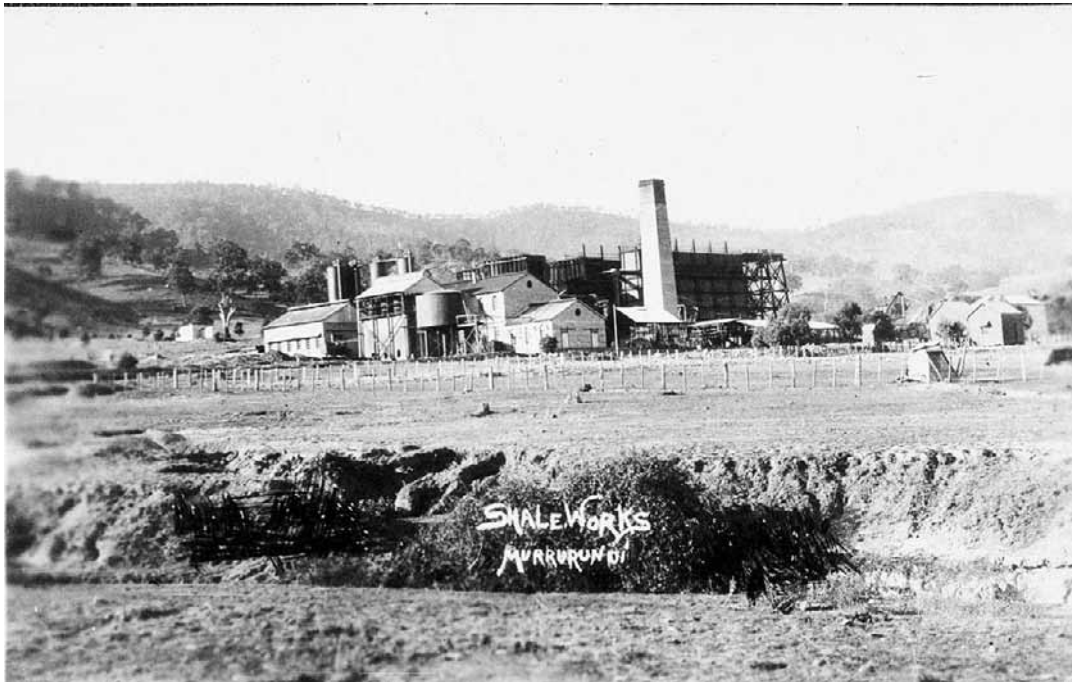
3.8. Rail loading facility at St Helier's Colliery, Muswellbrook, January 1928. (NSW State Library, At Work and Play - 05476)



3.9. Mr T Cook's annual blood horse sale at 'Turanville', near Scone. (NSW State Library, At Work and Play - 03917)



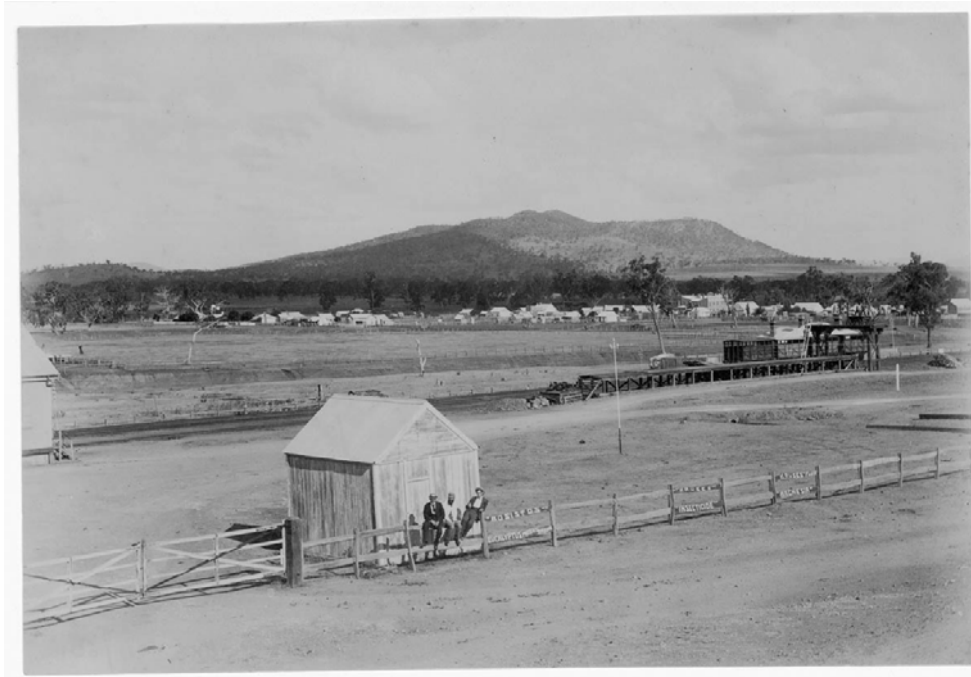
3.10. Scone Railway Station, c 1910. (NSW State Library, At Work and Play - 03811)



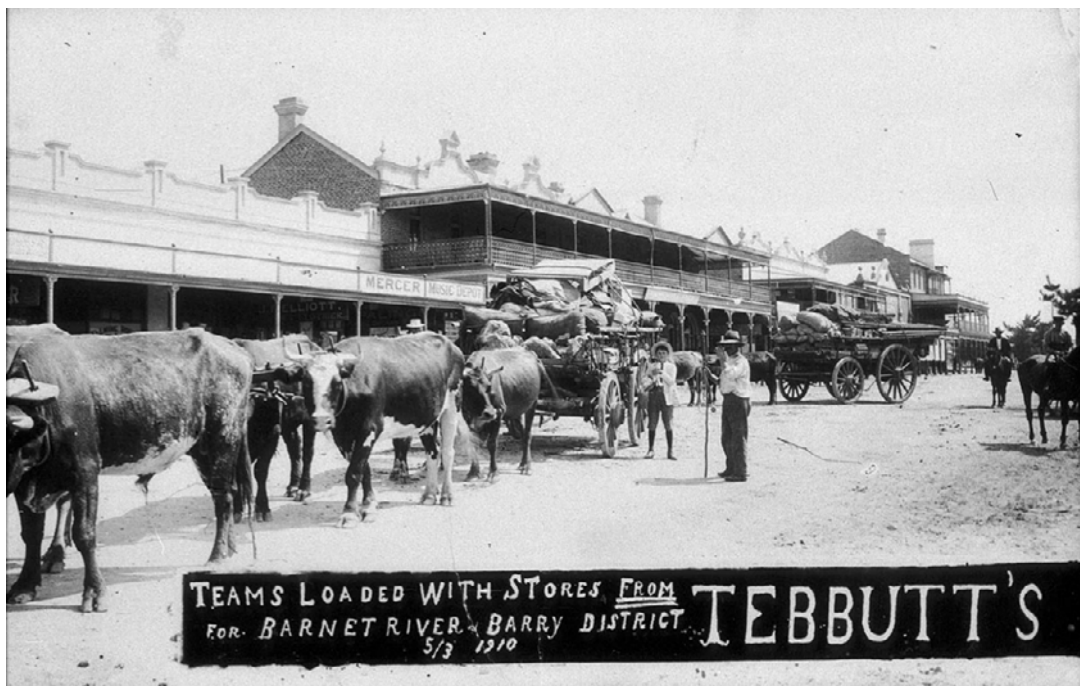
3.11. Murrurundi shale works, c 1925. (NSW State Library, At Work and Play - 03787)



3.12. Royal Hotel, Murrurundi, c 1890. (NSW State Library, At Work and Play - 04146)



3.13. Castle Mountain, Quirindi, c 1900-1910. (NSW State Library, PXE 711/601)



3.14. Bullock teams in George Street, Quirindi, loaded with goods from Tebbutt's stores for Barnet River and Barry district, 5 March 1910. (NSW State Library, At Work and Play - 04165)



3.15. Flood at Quirindi, 15 January 1910. (NSW State Library, At Work and Play – 04011)



3.16. Bird's eye view of Quirindi from 'Who'd a thought it' hill, looking east towards Gaspard, c 1930. (NSW State Library, At Work and Play – 04124)



3.17. Countryside and Trunk road 72, in the Shire of Namoi, two miles north of Boggabri. *Main Roads*, vol 23, no 2 (December 1957), p 44.



3.18. New bitumen surfacing on Trunk Road 72, in the Shire of Liverpool Plains, eight miles north of Gunnedah. *Main Roads*, vol 23, no 2 (December 1957), p 44.

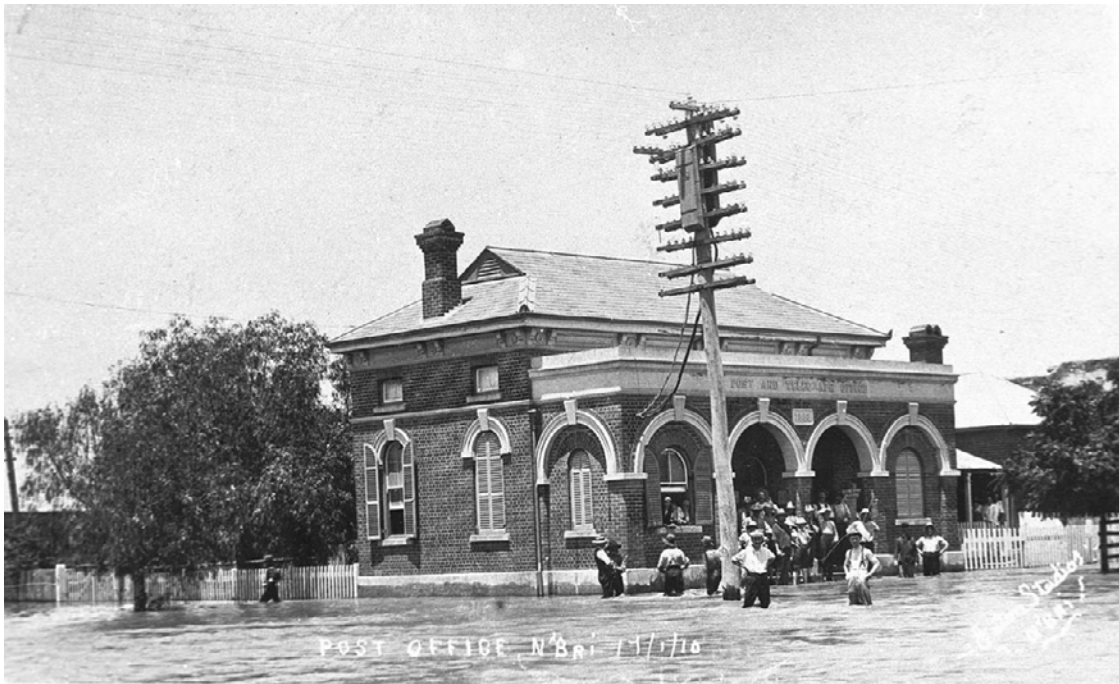


3.19. Gunnedah-Narrabri road between Turrawon and Tarriaro, 1933.

The low-lying black soil section before improvement.

The same road after forming, dressing with 2 ½ inches of sand and gravelling.

Main Roads, vol 4, no 12 (August 1933), p 167.



3.20. Flood at Narrabri Post Office, 17 January 1910. (NSW State Library, At Work and Play - 00352)



3.21. Flooding in Maitland St, Narrabri, 3 July 1920. (NSW State Library, At Work and Play - 04775)



3.22. Narrabri from Town Hall tower, May 1939. (NSW State Library, At Work and Play - 00352)



3.23. Reconstruction of Newell Highway near Gurley, 1966. Main Roads, vol 31, no 3 (March 1966), p 92.



3.24. Moree Bore, depth 2792 ft, flow 1,108,080 gallons, temperature 115 degrees F, no date. (NSW Government Printer, State Library, GPO 1 - 12623)



3.25. Moree in November 1937. (NSW Government Printer, State Library, GPO 1 - 28609)

APPENDIX C: KNOWN SITES LOCATED WITHIN THE PIPELINE STUDY AREA AND UP TO A DISTANCE OF APPROXIMATELY 1KM OF THE PIPELINE STUDY AREA: SIGNIFICANCE, IMPACTS AND CONSTRAINTS

LEGEND

SIGNIFICANCE	COLOUR CODE	IMPACT (KM FROM PIPELINE STUDY AREA)	COLOUR CODE	CONSTRAINT	COLOUR CODE
HIGH	RED	0.00	N/A	HARD	DARK GREEN
MEDIUM	ORANGE	0.01-0.10	N/A	MODERATE	MIDDLE GREEN
LOW	YELLOW	0.11-1.00	N/A	LOW	LIGHT GREEN

MOREE PLAINS

Sheet No.	ID #	Item Name	Themes	Significance	IMPACT Proximity to 200m pipeline study area boundary (km)	Constraint	LISTING						UHRHS 2007/MPHS 2008
							SHR	NTA	LEP/ REP	ARTC	S170	RNE & CHL	LHS
1	3	Boonanga Bridge over Barwon River	T	MEDIUM	0.00	HARD					RTA		
1	269	Euraba Mission	A, U	HIGH	0.00	HARD						RNE 17215	
4	268	Tramby Graves	D	HIGH	0.00	HARD		Yes				RNE 100684	
3	307	Road Crossing	T	LOW	0.00	MOD				Yes	ARTC		
3	313	Road crossing	T	LOW	0.00	MOD				Yes	ARTC		
3	316	Road crossing	T	LOW	0.00	MOD				Yes	ARTC		
3	306	culvert	T	LOW	0.06	LOW				Yes	ARTC		
2	317	underbridge	T	LOW	0.24	LOW				Yes	ARTC		
3	308	culvert	T	LOW	0.50	LOW				Yes	ARTC		

3	315	underbridge	T	LOW	0.55	LOW					Yes	ARTC			
3	309	Creek Crossing	T	LOW	0.58	LOW					Yes	ARTC			
3	314	underbridge	T	LOW	0.59	LOW					Yes	ARTC			
3	310	Road crossing	T	LOW	0.63	LOW					Yes	ARTC			
3	311	Road crossing with North Street	T	LOW	0.84	LOW					Yes	ARTC			
3	312	Road crossing	T	LOW	0.93	LOW					Yes	ARTC			

NARRABRI

Sheet No.	ID #	Item Name	Themes	Significance	IMPACT Proximity to 200m pipeline study area boundary (km)	Constraint	LISTING						UHRHS 2007/ MPHS 2008	
							SHR	HTA	LEP/REP	ARTC	S170	RNE & CHL		LHS
8	12	Barber's Pinnacle	L, O, A, Q, K	MEDIUM	0.27	LOW							Yes	

GUNNEDAH

Sheet No.	ID #	Item Name	Themes	Significance	IMPACT Proximity to 200m pipeline study area boundary boundary (km)	Constraint	LISTING						UHRHS 2007/ MPHS 2008	
							SHR	NTA	LEP/ REP	ARTC	S170	RNE & CHL		LHS
10	295	culvert	T	LOW	0.00	MOD				Yes				
10	296	culvert	T	LOW	0.00	MOD				Yes				

10	297	culvert	T	LOW	0.00	MOD					Yes				
10	298	culvert	T	LOW	0.00	MOD					Yes				
10	27	Plains Grass	E, G	MEDIUM	0.55	LOW						Dept Primary Industries			
10	299	culvert	T	LOW	0.67	LOW					Yes				
10	26	Breeza Burials	D	HIGH	0.72	LOW								Yes	

LIVERPOOL PLAINS

Sheet No.	ID #	Item Name	Themes	Significance	IMPACT Proximity to 200m pipeline study area boundary (km)	Constraint	LISTING						UHRHS 2007/ MPHS 2008	
							SHR	NTA	LEP/REP	ARTC	S170	RNE & CHL		LHS
12	57A-B	Ardglen Tunnel	T, W, U	HIGH	0.00	HARD	Yes		LEP 1993		ARTC			
12	305	Ardglen Railway Station	T, U, O	MEDIUM	0.00	HARD				Yes	ARTC			
12	294	Underbridge south of Murrurundi Station	T	MEDIUM	0.80	LOW				Yes				

UPPER HUNTER SHIRE COUNCIL

Sheet No.	ID #	Item Name	Themes	Significance	IMPACT Proximity to 200m pipeline study area boundary (km)	Constraint	LISTING						UHRHS 2007/ MPHS 2008
							SHR	NTA	LEP/REP	ARTC	S170	RNE & CHL	LHS

[illegible]

12	66	Council Chambers	U, O	MEDIUM	1.00	LOW				Murrundi LEP 1993					
12	67	Post Office, Murrurundi	C, U, O	MEDIUM	1.00	LOW		yes		Murrurundi LEP 1993					
12	71	Pink Cottage, Murrurundi	W, O	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	72	Former Telegraph Office	C, U, O	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	73	Former "Haydonton Inn"	B, O	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	74	White Hart Hotel	B, O	MEDIUM	1.00	LOW		Yes		Murrurundi LEP 1993					
12	75	J. Dooley General Store	B, O	MEDIUM	1.00	LOW		Yes		Murrurundi LEP 1993					
12	76	Bridge House, Murrurundi	W, O	MEDIUM	1.00	LOW		Yes		Murrurundi LEP 1993					
12	77	Former Manchester Unity Hall, Murrurundi	O, V	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	78	Methodist Church, Murrurundi	R, O	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	79	Former CBC Bank, Murrurundi	B, O	MEDIUM	1.00	LOW		Yes		Murrurundi LEP 1993					
12	80	Royal Hotel, Murrurundi	O, B	MEDIUM	1.00	LOW		Yes		Murrurundi LEP 1993					
12	81	Royal Hotel Stables, Murrurundi	O, B	MEDIUM	1.00	LOW				Murrurundi LEP 1993					

12	82	Rose Cottage, Murrurundi	W, O	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	83	Bobadil House, Murrurundi	W, O	MEDIUM	1.00	LOW			Yes	Murrurundi LEP 1993					
12	84	St Pauls Church of England, Murrurundi	R, O	MEDIUM	1.00	LOW			Yes	Murrurundi LEP 1993		RNE 1371			
12	85	St Pauls Rectory, Murrurundi	R, O	MEDIUM	1.00	LOW			Yes	Murrurundi LEP 1993		RNE 1370			
12	86	Police Sergeant's Residence, Murrurundi	L, O, U	MEDIUM	1.00	LOW			Yes	Murrurundi LEP 1993					
12	87	Gaol and Police Residence, Murrurundi	L, O, U	HIGH	1.00	LOW			Yes	Murrurundi LEP 1993		RNE 1372			
12	88	Courthouse and Police Station, Murrurundi	L, U, O	HIGH	1.00	LOW			Yes	Murrurundi LEP 1993		RNE 1373			
12	89	Footbridge	T	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	93	Railway Guard's Cottage, Murrurundi	T, U	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	95	Railway Gatekeeper's Cottage	T, U	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	96	Greenhayes, Murrurundi	W, O	MEDIUM	1.00	LOW				Murrurundi LEP 1993					
12	97	Murrurundi Railway Station	T, U, O	MEDIUM	1.00	LOW				Murrurundi LEP 1993			Railcorp		

13	135	Petrified Stump, Score	E, O, X	MEDIUM	1.00	LOW			Score LEP 1986/ Hunter REP			Yes
12	259	Blandford Bridge	T, O	MEDIUM	1.00	LOW				RTA		
12	68A - B	Presbyterian Church, Murrurundi	R, O	MEDIUM	1.00	LOW			Murrurundi LEP 1993			
12	69A - B	Former Literary Institute, Murrurundi	J, O	MEDIUM	1.00	LOW			Murrurundi LEP 1993			
12	70A - B	Public School, Murrurundi	J, U, O	MEDIUM	1.00	LOW			Murrurundi LEP 1993			
12	91A - B	Former Sisters of Mercy Convent, Murrurundi	R, O	MEDIUM	1.00	LOW			Murrurundi LEP 1993			
12	92A - E	St Josephs Church, Murrurundi	R, O	MEDIUM	1.00	LOW			Murrurundi LEP 1993			
12	94A-E	Station Master's Cottage, Murrurundi	T, U	MEDIUM	1.00	LOW			Murrurundi LEP 1993			
12	276	Murrurundi Civic Group	O	MEDIUM	1.00	LOW		Yes			RNE 1369	

MUSWELLBROOK SHIRE COUNCIL

ID	Item Name	IMPACT	LISTING
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[illegible]

SINGLETON SHIRE COUNCIL

Sheet No.	ID #	Item Name	Themes	Significance	IMPACT Proximity to 200m pipeline study area boundary (km)	Constraint	LISTING						UHRHS 2007/ MPHS 2008	
							SHR	NTA	LEP/REP	ARTC	S170	RNE & CHL		LHS
14	173	Graylands & Outbuildings	G, O, W	MEDIUM	0.00	HARD			LEP 1996					
15	177	Bendeich Cottage	G, O, W	MEDIUM	0.97	LOW			LEP 1996					

MAITLAND CITY COUNCIL

[illegible]

16	228	Dunmore Bridge	T, O	HIGH	0.17	LOW	Yes	Yes	LEP 1993		RTA	RNE 15948		
16	196	Bellevue	G, W	MEDIUM	0.19	LOW			LEP 1993 Item 191					
16	195	Mindaribba	G, W	MEDIUM	0.32	LOW			LEP 1993 Item 190					
17	199	Former Morpeth House	W, Q, O	HIGH	0.35	LOW	Yes	Yes	LEP 1993 Item 203					
17	198	Kiora, Morpeth	O, W	MEDIUM	0.40	LOW			LEP 1993 Item 195					
17	197	Grandstand, Morpeth	Sp, O	MEDIUM	0.50	LOW			LEP 1993 Item 193					
16	201	Dunmore House	T, O	MEDIUM	0.50	LOW		Yes	LEP 1993 Item 231			RNE 1269		
17	328	Georgian Cottage, Morpeth	O, W	MEDIUM	0.50	LOW			LEP 1993					
17	329	Former Roman Catholic School & convent Group	R, O, J	MEDIUM	0.50	LOW			LEP 1993					
17	330	Roman Catholic church, Morpeth	R, O	MEDIUM	0.50	LOW		Yes	LEP 1993					
17	331	State School, Morpeth	J, O	MEDIUM	0.50	LOW			LEP 1993					
17	332	Marlborough House, Morpeth	O, W	MEDIUM	0.50	LOW			LEP 1993					

17	333	Villa, Morpeth	O, W	MEDIUM	0.50	LOW									LEP 1993			
17	334	Former Campbell's Store, Morpeth	O, B	MEDIUM	0.50	LOW		Yes							LEP 1993			
17	335	Post Office & Residence, Morpeth	O, B, I	MEDIUM	0.50	LOW									LEP 1993			
17	336	White's Factory, Morpeth	O, B	MEDIUM	0.50	LOW		Yes							LEP 1993			
17	337	Former Cinema, Morpeth	O, B, Yy	MEDIUM	0.50	LOW									LEP 1993			
17	338	Commercial Hotel, Morpeth	O, B,	MEDIUM	0.50	LOW									LEP 1993			
17	339	Former CBC Bank	O, B,	MEDIUM	0.50	LOW									LEP 1993			
17	340	Former Bakery, Morpeth	O, B, I	MEDIUM	0.50	LOW									LEP 1993			
17	341	St James Group	O, R	MEDIUM	0.50	LOW									LEP 1993			
17	342	School of Arts	O, J	MEDIUM	0.50	LOW									LEP 1993			
17	343	Former Couthouse	O, U, L	MEDIUM	0.50	LOW									LEP 1993			
17	344	Timber Cottage, Morpeth	O, W	MEDIUM	0.50	LOW									LEP 1993			
17	345	St James Parish Hall	O, R	MEDIUM	0.50	LOW									LEP 1993			
16	189	Fm Cath Sch & Presbytery	R, O	MEDIUM	0.60	LOW									LEP 1993 Item 90			
16	190	Largs Public School	J, O	MEDIUM	0.60	LOW									LEP 1993 Item 91			

16	188	Anambah House & Gardens	T, G, W	HIGH	0.65	LOW	Yes	Yes	LEP 1993 Item 89		RNE 101391		
16	191	Government Railway	T, U	MEDIUM	0.72	LOW			LEP 1993 Item 112				
17	183	Berry Park	G, O, W	MEDIUM	0.77	LOW			LEP 1993 Item 14				
17	200	Morpeth Bridge	T, O	HIGH	1.00	LOW	Yes	Yes	LEP 1993 Item 206		RNE 15926		
17	261	Bond Stores Group	T, B, O	MEDIUM	1.00	LOW			LEP 1993		RNE 1247		
17	263	Morpeth Museum	T, O	MEDIUM	1.00	LOW					RNE 1249		
17	264	Morpeth Township	O	MEDIUM	1.00	LOW					RNE 1246	Yes	
17	265	Police Station	L, U	MEDIUM	1.00	LOW			LEP 1993		RNE 1265		
17	266	Primitive Methodist Church	R	MEDIUM	1.00	LOW			LEP 1993		RNE 102250		
17	267	Former Railway Station	T, U, O	MEDIUM	1.00	LOW					RNE 1258		

PORT STEPHENS CITY COUNCIL

Sheet No.	ID #	Item Name	Themes	Significance	IMPACT Proximity to 200m pipeline study area boundary (km)	Constraint	LISTING						UHRHS 2007/ MPHS 2008
							SHR	NTA	LEP/REP	ARTC	S170	RNE & CHL	
16	228	Dunmore Bridge	T	HIGH	0.17	LOW	Yes	Yes			RTA	15948	

16	222	Former All Saints Church, Woodville	R, O	MEDIUM	0.75	LOW		Yes	LEP 2000					
16	225	General store and Post Office, Woodville	B, C, U, O	MEDIUM	0.75	LOW			LEP 2000					

NEWCASTLE CITY COUNCIL

Sheet No.	ID #	Item Name	Themes	Significance	IMPACT Proximity to 200m pipeline study area boundary (km)	Constraint	LISTING						UHRHS 2007/ MPHS 2008	
							SHR	NTA	LEP/REP	ARTC	S170	RNE & CHL		LHS
17	246	131 Radar Igloo (Building),	U	MEDIUM	0.05	MODERATE			LEP					
17	247	School Master's House	J	MEDIUM	0.60	LOW			LEP					
17	244	Tongues Tree Fig	E, J	MEDIUM	0.70	LOW			LEP					

**APPENDIX D: KNOWN SITES LOCATED BY THE
STUDY WITHIN 1KM AND UP TO 3KM OF THE
PROPOSED PIPELINE STUDY AREA:
SIGNIFICANCE, IMPACTS AND CONSTRAINTS
NOT IDENTIFIED.**

MOREE PLAINS SHIRE COUNCIL

SHEET NO.	ID #	ITEM NAME	KM FROM ROUTE	LISTING					LHS	UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL		
3	2	Wee Bolla Bolla	1.70		LEP 1995 item 26					
1	351	All Saints Anglican church, Boomi	1.80							MPHS 2008
1	352	Boomi General Cemetery	1.80							MPHS 2008
1	353	Boomi Memorial Hall	1.80							MPHS 2008
1	354	Boomi Police Station	1.80							MPHS 2008
1	355	Boomi Post Office	1.80							MPHS 2008
1	356	Boomi Showgrounds	1.80							MPHS 2008
1	357	Pioneer Hotel, Boomi	1.80							MPHS 2008
1	358	St Patricks Catholic Church	1.80							MPHS 2008
1	359	St Stephens Presbyterian Church	1.80							MPHS 2008
3	1	Midkin Homestead	2.84		LEP 1995 item 6					

NARRABRI SHIRE COUNCIL

SHEET NO.	ID #	ITEM NAME	KM FROM ROUTE	LISTING						LHS	UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL			
5	300	Outcrop of Salt	1.20							Yes	
7	13	Narrabri Gaol and Residence	3.00		LEP No 2	NTA		RNE 441			
7	14	Narrabri Fire Station	3.00		LEP 1992						
7	15	Narrabri Station Group	3.00		LEP 1992	NTA	Railcorp				
7	17	Court House Group - Police Sergeants Residence, Gaol courthouse, Gaol and Residence, Court Office	3.00		LEP No. 2	NTA		RNE 442			
7	18	Public School	3.00	Yes		NTA		RNE 440			
7	19	Club House Hotel	3.00		LEP No 2	NTA					
7	20	Bank of NSW	3.00		LEP No 2	NTA					
7	21	Post Office	3.00		LEP No 2	NTA		RNE 443 / CHL 105495			
7	22	Gallipoli House	3.00		LEP No 2						
7	24	Maitland Street Group - Faulkners Cordial Factory, Ice Works and Cold Store, Lodge Namoi	3.00		LEP No 2	NTA					

GUNNEDAH SHIRE COUNCIL

SHEET NO.	ID #	ITEM NAME	KM FROM ROUTE	LISTING					UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL	
9	28A-D	Gunnible Station	1.80		LEP 1998 item 16	NTA			
9	29A-D	Ruvigne	2.15		LEP 1998 item 22	NTA		RNE 101045	
9	31	Pullaming	2.80		LEP 1998 item 18	NTA			

LIVERPOOL PLAINS SHIRE COUNCIL

SHEET NO.	ID #	ITEM NAME	KM FROM ROUTE	LISTING					UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL	
11	260	Price Cottage	2.00			NTA		RNE 103764	
11	54	Old Rural Bank Building	2.55		Quirindi LEP	NTA			
11	53	Quirindi Railway Station Group	2.66	Yes			RailCorp		

UPPER HUNTER SHIRE COUNCIL

Sheet No.	ID #	ITEM NAME	KM from route	LISTING					UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL	
13	159	Nandowra, Aberdeen	1.10		Scone LEP 1986				
12	156	Murulla, Wingen	1.2		Scone LEP 1986				

13	304	Aberdeen Railway Station	1.25				RailCorp			
12	60	The Ranch, Murrurundi	1.50		Murrurundi LEP 1993					
12	61	Murrurundi Oil Shale Refinery and Temi Shale Mine	1.50		Murrurundi LEP 1993	NTA				
12	99	Old Cemetery, Murrurundi	1.50		Murrurundi LEP 1993	NTA				
12	103	Bloomfield, Murrurundi	1.50		Murrurundi LEP 1993					
12	151	Cliffdale Wyoming Stud, Wingen	1.50		Scone LEP 1986, Hunter REP	NTA				
12	320	Mountain House, Wingen	1.50		Hunter REP	NTA				
12	321	Timber Houses, Wingen	1.50		Hunter REP					
12	322	Timber Houses, Wingen	1.50		Hunter REP					
12	323	Bakers Brickworks, Wingen	1.50		Hunter REP					
12	324	Red Cottage, Wingen	1.50		Hunter REP					
12	155	Abbotsford, Wingen	1.6		Scone LEP 1986					
12	101	Barsham, Blandford	1.80		Murrurundi LEP 1993					
12	104	Bickham Homestead Group, Blandford	2.80		Murrurundi LEP 1993	NTA				
12	105	Bickham Woolshed and Shearer's Quarters Blandford	2.80		Murrurundi LEP 1993	NTA				
13	136	Commercial Hotel, Aberdeen	2.00		Scone LEP 1986					

13	137	Former M. Campbell and Co. Store, Aberdeen	2.00		Scone LEP 1986	NTA		RNE 14359		
13	138	The Grange, Aberdeen	2.00		Scone LEP 1986	NTA				
12	102	Harben Vale Group, Blandford	2.20		Murrurundi LEP 1993	NTA				
13	139	Segenhoe Mill Ruins, Aberdeen	3.00		Scone LEP 1986 Hunter REP	NTA				
13	141	Former Butter Factory and Meatworks Water Supply, Aberdeen	2.00		Scone LEP 1986					
13	142	Commercial Hotel, Aberdeen	2.00		Scone LEP 1986					
13	143	Segenhoe Inn, Aberdeen	2.00		Scone LEP 1986					
13	144	F.J. Walkers Meatworks, Aberdeen	2.00		Scone LEP 1986					
13	170	Satur (rear Sledmere Horse Stud)	2.00		Scone LEP 1986					
13	169	Russley and Garden	2.20		Scone LEP 1986					
13	147	Kelvinside and outbuildings, Aberdeen	2.50		Scone LEP 1986	NTA		RNE 14360		
13	148	Kelvinside Private Cemetery Monument., Aberdeen	2.50		Scone LEP 1986					
13	157	Yarrandi, Scone	2.5		Scone LEP 1986					
12	166	Cressfield Station, Parkville	2.72		Scone LEP 1986					

13	106	Mill Cottage, Scone	3.00		Scone LEP 1986					
13	107	Former Harpers Boot Factory, Scone	3.00		Scone LEP 1986	NTA				
13	108	Former Boorers Mills, Scone	3.00		Scone LEP 1986	NTA				
13	109	Former Catholic Church, Scone	3.00		Scone LEP 1986	NTA				
13	110	St Luke's Church and Rectory, Scone	3.00		Scone LEP 1986	NTA				
13	111	Shops, 95-97, Scone	3.00		Scone LEP 1986					
13	112	Belmore Hotel, Scone	3.00		Scone LEP 1986					
13	113	CBC Bank, Scone	3.00		Scone LEP 1986	NTA				
13	114	St Aubins Arms (former Wool Pack Inn), Scone	3.00		Scone LEP 1986	NTA	RNE 101935			
13	115	Monuments, Rotary Park, Scone	3.00		Scone LEP 1986					
13	116	Former Belmore House, now "Geraldton", Scone	3.00		Scone LEP 1986	NTA				
13	117	Former Convent of Sisters of Mercy, Scone	3.00		Scone LEP 1986	NTA				
13	118	Former Grammar School, Scone	3.00		Scone LEP 1986	NTA	RNE 17133?			
13	119	Former Constable quarters and Lock-up, Scone	3.00		Scone LEP 1986					
13	120	Former School of Arts, Scone	3.00		Scone LEP 1986	NTA				
13	121	Presbyterian Manse, Scone	3.00		Scone LEP 1986	NTA				

13	122	Former Hospital, 1871. Scone	3.00		Scone LEP 1986					
13	123	Scone Railway Station, 1871.	3.00		Scone LEP 1986	NTA	RailCorp	RNE 1416		
13	124	Former Court House 1848-9 and 1882, Scone	3.00		Scone LEP 1986	NTA		RNE 1417		
13	125	Post Office 1879, Scone	3.00		Scone LEP 1986	NTA				
13	126	Former Presbyterian Church 1861, now Masonic Temple, Scone	3.00		Scone LEP 1986	NTA				
13	127	House, c. 1893, Scone	3.00		Scone LEP 1986					
13	128	St Aubins House, Scone	3.00		Scone LEP 1986	NTA		RNE 1409		
13	130	Bank of New South Wales, Scone	3.00		Scone LEP 1986					
13	131	Campbell's Corner, Scone	3.00		Scone LEP 1986					
13	132	St Mary's Roman Catholic Church, Scone	3.00		Scone LEP 1986					
13	133	Former Willow Tree Hotel, Scone	3.00		Scone LEP 1986					
13	134	Railway Gatekeepers Cottage, 1875, Scone	3.00		Scone LEP 1986					

MUSWELLBROOK SHIRE COUNCIL

SHEET NO.	ID #	ITEM NAME	KM FROM ROUTE	LISTING					UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL	
13	270	Gelston	1.20		Hunter REP				

SINGLETON SHIRE COUNCIL

SHEET NO.	ID #	ITEM NAME	KM FROM ROUTE	LISTING					UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL	
15	179	Glen Nevis	1.60		SINGLETON LEP 1996				
15	319	Johnstons Cottage	1.97		SINGLETON LEP 1996				
15	178	Spottiswood	2.44		SINGLETON LEP 1996				
14	175	Roselands (Uniting Church), Goorangoola	2.70		SINGLETON LEP 1996				

MAITLAND CITY COUNCIL

SHEET NO.	ID #	ITEM NAME	KM FROM ROUTE	LISTING					UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL	
16	182	Stone Quarry	1.30		LEP 1993 Item 3				
16	187	Owlpen	1.61		LEP 1993 Item 88				
16	262	Closebourne House, Morpeth	1.65	Yes	LEP 1993 Item	NTA		RNE 1248	
17	184	Berry House	1.68		LEP 1993 Item 15	NTA		RNE 100409	

17	326	General Cemetery (Morpeth)	1.70	LEP1993	NTA		
17	327	General Cemetery (Morpeth)	1.70	LEP1993	NTA		
16	192	Eelah	3.00	LEP 1993 Item 187			
17	185	Duckenfield House Remains	2.79	LEP 1993 Item 16			
16	193	Maitland Vale	3.00	LEP 1993 Item 188			

PORT STEPHENS CITY COUNCIL

SHEET NO.	ID #	ITEM NAME	KM FROM ROUTE	LISTING					UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL	
17	208	Hinton Bridge	1.10		LEP 2000	NTA	RTA	RNE 15950	
17	212	Victoria Hotel	1.15		LEP 2000	NTA		RNE 14611	
17	210	Former Police Station	1.19		LEP 2000	NTA			
17	209	Public school,	1.22		LEP 2000				
17	213	Timber cottage, Hinton	1.20		LEP 2000				
17	215	Timber cottage, Hinton	1.20		LEP 2000				
17	216	Georgian cottage, Hinton	1.20		LEP 2000				
17	217	Former St John the Evangelist Church, Hinton	1.20		LEP 2000	NTA			
17	226	School of Arts, Hinton	1.20		LEP 2000				
17	229	Pomfrett's Cottage- slab cottage, Hinton	1.20		LEP 2000				
17	203 A-B	Baptist Church, Hinton	1.20		LEP 2000				
17	204	School of Arts,	1.31		LEP 2000	NTA			
17	202	Anglican Cemetery	1.37		LEP 2000				
17	205	Hinton Pioneer Cemetery	1.42		LEP 2000	NTA		RNE 1355	

	273	Police Station		1.50						RNE 1333		
17	206 A-F	Rosemount		1.50			LEP 2000	NTA				
17	218	Grandstand, Stuart Park		1.60			LEP 2000	NTA				
17	262	Closebourne House, Morpeth	Yes	1.65		Maitland LEP 1993		NTA		RNE 1248		
17	207	Prospect House,		1.74		LEP 2000						
17	211	Wallalong/Bowthorne War Memorial		2.00		LEP 2000						
17	219	Tomago House Chapel		2.00		LEP 2000				RNE 1325		
17	220	Tomago House and its landscape setting,		2.00		LEP 2000				RNE 1324		
17	221	Wallalong House		2.00		LEP 2000		NTA				
16	227	Tressingfield (formerly Carlton Cottage)		2.25		LEP 2000		NTA				
17	214	Trees-2 specimen of (Moreton Bay Fig)		3.00		LEP 2000						
17	243	Hexham Bridge		3.00		LEP 2000			RTA			
17	224	Former Wallalong Broom Factory		3.00		LEP 2000						

NEWCASTLE CITY COUNCIL

SHEET NO.	ID #	ITEM NAME	KM FROM ROUTE	LISTING						UHRHS 2007/MPHS 2008
				SHR	LEP/REP	NTA/ARTC	S170	RNE & CHL	LHS	
17	245	Palm	1.80		LEP					
17	250	Sandgate Cemetery Office	2.00		LEP	NTA				
17	248	Sandgate Cemetery	2.00		LEP	NTA			Yes	
17	249	Sandgate Cemetery Railway Spur	2.00		LEP					
17	240	Hexham Shipbuilding Yards	3.00		LEP					
17	241	Goninans Administration Building	3.00		LEP					

AHMS

146

17	242	J & A Brown's Hexham Workshops	3.00	LEP						
17	243	Hexham Bridge	2.26	LEP	RTA					
17	239	Former Hexham Public School	3.00	LEP						
17	251 A-D	2HD Studio	2.50	LEP						
17	235	Hannel Family Vault	3.00	LEP	NTA					
17	232	Hexham Railway Station	3.00	LEP						
17	233	Former Travellers Rest Hotel	3.00	LEP				Yes		
17	234	Oak Factory	3.00	LEP						
17	236	Slab Shed	3.00	LEP						
17	237	Former Uniting Church and Hall	3.00	LEP						
17	238	Former Glen Lovett Hall	3.00	LEP						
17	252	Tarro Substation	3.00	LEP	NTA					
17	254	Residence	3.00	LEP						
17	255	Tarro Community Hall	3.00	LEP						
17	256	Pumping Station	3.00	LEP						
17	257	Substation	3.00	LEP						

APPENDIX E: SUMMARY OF POTENTIAL HERITAGE ITEMS LOCATED WITHIN THE PIPELINE STUDY AREA UP TO A DISTANCE OF 1KM OF THE STUDY AREA

LEGEND

SIGNIFICANCE	COLOUR CODE	IMPACT (KM FROM PIPELINE STUDY AREA)	COLOUR CODE	CONSTRAINT	COLOUR CODE
HIGH	RED	0.00	N/A	HARD	DARK GREEN
MEDIUM	ORANGE	0.01-0.10	N/A	MODERATE	MIDDLE GREEN
LOW	YELLOW	0.11-1.00	N/A	LOW	LIGHT GREEN
UNKNOWN	DEFAULT HIGH				

MOREE PLAINS SHIRE COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
5	P205	383-384	E	medium	0.00	hard	29°51'47.72"S	149°50'40.50"E	
5	P213	372-373	E	medium	0.00	hard	29°46'4.53"S	149°51'29.90"E	
3	P235	296-297	E	medium	0.00	hard	29° 9'49.24"S	149°42'46.56"E	
2	P237	291-292	E	medium	0.00	hard	29° 8'13.17"S	149°40'46.72"E	
2	P238	287-288	E	medium	0.00	hard	29° 6'1.89"S	149°40'25.49"E	
2	P239	287-288	P	high	0.00	hard	29° 6'3.49"S	149°40'29.09"E	
4	P220	356-357	E	medium	0.11	moderate	29°37'50.74"S	149°52'22.47"E	
4	P227	339-340	E	medium	0.16	low	29°28'47.50"S	149°54'5.44"E	
3	P232	308-309	E	medium	0.20	low	29°15'27.52"S	149°46'40.47"E	
2	P240	276-275	P	medium	0.28	low	29° 0'20.30"S	149°39'48.54"E	
1	P247	248-249	P	medium	0.28	low	28°46'36.16"S	149°37'19.17"E	
4	P225	348-349	E	medium	0.36	low	29°33'26.94"S	149°53'29.33"E	
1	P248	247-248	united	Default high	0.36	low	28°46'4.81"S	149°36'41.00"E	
4	P221	352-353	E	medium	0.37	low	29°35'45.42"S	149°53'8.56"E	
2	P243	270-271	E	medium	0.40	low	28°57'22.35"S	149°40'0.86"E	
3	P229	331-332	P	medium	0.44	low	29°24'35.52"S	149°55'18.76"E	
3	P231	310-311	E	medium	0.45	low	29°16'50.54"S	149°47'52.87"E	
3	P234	302-303	united	Default high	0.46	low	29°12'28.53"S	149°45'3.44"E	
1	P246	258-259	E	medium	0.46	low	28°51'20.22"S	149°40'32.73"E	
5	P214	370-371	P	medium	0.48	low	29°45'10.90"S	149°51'15.14"E	

4	P218	363-364	E	medium	0.50	low	29°41'37.51"S	149°52'22.25"E	
5	P212	372-373	E	medium	0.51	low	29°46'24.06"S	149°51'51.54"E	
5	P209	377-378	P	medium	0.52	low	29°48'40.81"S	149°51'30.10"E	
2	P241	272-273	P	medium	0.59	low	28°59'10.54"S	149°39'15.39"E	
2	P244	267-268	E	medium	0.62	low	28°55'57.76"S	149°40'34.67"E	
4	P217	364-365	E	medium	0.64	low	29°41'59.57"S	149°52'23.32"E	
4	P222	351-352	E	medium	0.66	low	29°35'6.95"S	149°52'27.11"E	
1	P252	228-229	unided	Default high	0.67	low	28°37'8.22"S	149°35'8.50"E	
5	P208	380-381	unided	Default high	0.68	low	29°50'26.10"S	149°51'20.35"E	
2	P245	265-266	P	medium	0.74	low	28°55'0.03"S	149°39'46.40"E	
2	P242	271-272	E	medium	0.75	low	28°57'59.30"S	149°40'12.60"E	
5	P207	381-382	P	medium	0.84	low	29°51'4.96"S	149°51'22.48"E	
1	P251	239-240	O	medium	0.84	low	28°43'4.03"S	149°35'8.27"E	
4	P228	334-335	P	medium	0.86	low	29°25'41.45"S	149°54'12.59"E	
3	P233	303-304	E	medium	0.87	low	29°13'19.42"S	149°44'37.71"E	
5	P215	369-370	E	medium	0.88	low	29°44'43.86"S	149°52'4.89"E	
4	P226	341-342	E	medium	0.94	low	29°29'35.46"S	149°54'35.33"E	
3	P230	319-320	E	medium	0.96	low	29°21'4.66"S	149°49'42.76"E	
2	P236	293-294	E	medium	0.97	low	29°9'27.58"S	149°41'9.04"E	
1	P250	240-241	E	medium	1.00	low	28°43'19.42"S	149°35'21.36"E	

NARRABRI SHIRE COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
8	P154	494-492	A	medium	0.00	hard	30°41'42.98"S	150°7'33.12"E	nc
7	P176	437-435	T	medium	0.00	hard	30°19'18.79"S	149°49'32.32"E	
8	P156	488-487	unided	Default high	0.05	moderate	30°39'56.29"S	150°6'27.91"E	nc
8	P162	481-480	unided	Default high	0.06	moderate	30°37'35.59"S	150°3'6.08"E	
7	P169	443-442	A	medium	0.09	moderate	30°22'23.09"S	149°50'35.99"E	
8	P161	483-482	A	medium	0.17	low	30°37'55.96"S	150°4'6.68"E	
8	P152	496-495	unided	Default high	0.18	low	30°43'37.62"S	150°7'30.40"E	
6	P191	418-419	A	medium	0.21	low	30°10'32.28"S	149°49'29.61"E	

7	P173	349-348	A	medium	0.25	low	30°20'39.03"S	149°49'18.68"E	
7	P166	473-472	A	medium	0.28	low	30°35'25.40"S	149°59'0.36"E	
8	P151	497-496	unided	Default high	0.31	low	30°44'17.81"S	150° 6'56.97"E	
8	P155	491-490	A	medium	0.35	low	30°41'4.88"S	150° 7'20.07"E	
6	P196	404-405	A	medium	0.37	low	30° 3'12.20"S	149°49'6.89"E	
6	P195	404-405	A	medium	0.38	low	30° 3'16.33"S	149°49'41.07"E	
6	P189	424-423	A	medium	0.39	low	30°12'45.68"S	149°49'41.11"E	
6	P187	426-425	A	medium	0.50	low	30°14'11.15"S	149°48'50.68"E	
7	P174	349-348	A	medium	0.52	low	30°20'34.42"S	149°49'57.41"E	
5	P204	385	E	medium	0.52	low	29°52'49.28"S	149°50'5.04"E	structures
8	P150	498-497	unided	Default high	0.54	low	30°44'31.06"S	150° 6'47.34"E	
6	P182	430-429	unided	Default high	0.55	low	30°16'8.66"S	149°48'48.40"E	
7	P171	440-439	A	medium	0.56	low	30°21'9.02"S	149°49'6.02"E	
5	P199	395-396	E	medium	0.56	low	29°58'38.88"S	149°50'1.56"E	
5	P202	388-389	P	medium	0.57	low	29°54'38.85"S	149°50'50.86"E	
6	P180	430-429	A	medium	0.60	low	30°16'17.73"S	149°49'43.26"E	
6	P186	427-426	A	medium	0.65	low	30°14'24.87"S	149°48'42.93"E	
8	P153	494-493	A	medium	0.72	low	30°42'40.93"S	150° 7'59.60"E	
8	P160	485-484	unided	Default high	0.75	low	30°38'43.58"S	150° 4'34.81"E	
8	P164	475-474	A	medium	0.78	low	30°36'16.51"S	149°59'36.02"E	
7	P170	442-441	A	medium	0.81	low	30°21'40.41"S	149°50'31.37"E	
6	P183	427-428	A	medium	0.82	low	30°15'7.15"S	149°48'27.35"E	
8	P163	480-479	unided	Default high	0.84	low	30°37'55.35"S	150° 2'6.30"E	
5	P200	390-391	P	medium	0.84	low	29°55'39.65"S	149°50'41.30"E	
5	P201	388-389	P	medium	0.92	low	29°54'43.11"S	149°51'4.13"E	
5	P203	387-388	E	medium	0.94	low	29°54'21.66"S	149°51'3.04"E	
8	P159	485-484	unided	Default high	1.00	low	30°39'0.51"S	150° 4'35.58"E	

GUNNDAH SHIRE COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
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9	P133	527-526	A	medium	0.00	hard	30°56'47.54"S	150°16'50.16"E	nc
9	P137	520-519	unided	Default high	0.00	hard	30°53'51.38"S	150°14'50.71"E	unided feature
8	P145	503-502	unided	Default high	0.00	hard	30°46'55.62"S	150°9'14.66"E	
8	P149	501-500	unided	Default high	0.02	moderate	30°45'39.09"S	150°8'38.60"E	unided structure
9	P136	521-519	unided	Default high	0.05	moderate	30°53'54.56"S	150°15'23.39"E	nc
9	P131	529-528	unided	Default high	0.15	low	30°57'41.29"S	150°18'5.21"E	
9	P124	549-548	A	medium	0.17	low	31°76.04"S	150°22'47.37"E	
9	P130	531-530	A	medium	0.17	low	30°58'20.28"S	150°18'29.23"E	
8	P146	503-502	A	medium	0.18	low	30°46'32.00"S	150°9'11.96"E	
8	P148	501-500	unided	Default high	0.20	low	30°45'42.17"S	150°8'52.70"E	
10	P118	578-577	unided	Default high	0.21	low	31°19'2.04"S	150°32'53.43"E	site of former complex
8	P143	506-505	A	medium	0.21	low	30°47'47.77"S	150°10'19.79"E	
9	P129	531-530	A	medium	0.22	low	30°58'30.79"S	150°18'29.71"E	
10	P117	579-578	unided	Default high	0.23	low	31°19'17.89"S	150°33'13.42"E	
10	P121	557-556	unided	Default high	0.28	low	31°10'7.03"S	150°26'0.81"E	
8	P147	501-500	A	medium	0.29	low	30°45'54.97"S	150°8'29.95"E	
9	P138	517-516	A	medium	0.47	low	30°52'21.82"S	150°13'23.14"E	
9	P132	528-527	A	medium	0.52	low	30°57'11.36"S	150°17'7.71"E	
9	P125	545-544	unided	Default high	0.69	low	31°5'24.52"S	150°20'15.89"E	
9	P139	514-513	A	medium	0.69	low	30°51'5.96"S	150°12'29.93"E	
10	P122	556-555	A	medium	0.70	low	31°9'48.76"S	150°26'3.64"E	
10	P123	556-555	A	medium	0.70	low	31°9'31.66"S	150°25'44.41"E	
9	P134	521-520	A	medium	0.70	low	30°54'34.00"S	150°15'42.86"E	
9	P135	521-520	A	medium	0.70	low	30°54'8.94"S	150°14'36.06"E	
9	P127	539-538	A	medium	0.87	low	31°2'42.71"S	150°18'12.67"E	
10	P120	564-563	A	medium	0.88	low	31°13'55.47"S	150°27'8.94"E	
10	P119	569-568	unided	Default high	0.92	low	31°15'24.20"S	150°28'12.39"E	

LIVERPOOL PLAINS SHIRE COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
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11	P100	604-601	A	medium	0.00	hard	31°30'23.56"S	150°38'38.49"E	
11	P111	591-590	A	low	0.00	moderate	31°25'27.96"S	150°34'42.34"E	
11	P112	590-589	united	Default high	0.00	hard	31°25'7.14"S	150°34'33.82"E	
10	P114	586-584	A	medium	0.00	hard	31°22'43.56"S	150°34'9.06"E	Series of Ag allotments
12	P84	635-635	T	high	0.00	hard	31°44'28.31"S	150°47'45.65"E	ardglen tunnel
12	P85	635-633	M	medium	0.00	hard	31°44'13.84"S	150°46'57.78"E	nc
11	P87	628-627	A	medium	0.00	hard	31°41'50.71"S	150°44'28.55"E	two ag allotments
11	P88	627-625	A	medium	0.00	hard	31°41'10.88"S	150°44'16.38"E	ag allotments
11	P89	625-622	A	medium	0.00	hard	31°40'15.58"S	150°43'56.44"E	nc
11	P92	621-620	A	medium	0.00	hard	31°38'41.52"S	150°42'51.69"E	
11	P93	621-620	united	Default high	0.00	hard	31°38'27.02"S	150°42'51.52"E	
11	P95	619-618	united	Default high	0.00	hard	31°37'17.69"S	150°42'39.23"E	site of former united structures
12	P86	632-630	A	medium	0.09	moderate	31°43'3.91"S	150°44'56.46"E	nc
11	P109	592-591	A	medium	0.13	low	31°26'2.01"S	150°34'32.49"E	
10	P116	582-581	A	medium	0.13	low	31°20'42.39"S	150°33'23.47"E	
11	P98	605-606	A	medium	0.13	low	31°31'19.42"S	150°38'49.98"E	
11	P91	622-621	A	medium	0.15	low	31°38'56.75"S	150°43'4.68"E	
11	P94	620-619	united	Default high	0.15	low	31°37'53.15"S	150°42'47.60"E	site of former united structures
11	P97	618-617	A	medium	0.15	low	31°36'51.73"S	150°42'42.44"E	
11	P104	598-597	A	medium	0.16	low	31°28'11.69"S	150°36'37.59"E	
11	P107	595-594	A	medium	0.20	low	31°27'34.10"S	150°34'46.66"E	
11	P102	601-600	united	Default high	0.22	low	31°29'20.97"S	150°37'56.31"E	
11	P105	596-595	A	medium	0.22	low	31°27'53.76"S	150°35'43.26"E	
11	P108	595-594	A	medium	0.22	low	31°27'22.60"S	150°35'6.18"E	
10	P117	579-578	united	Default high	0.23	low	31°19'17.89"S	150°33'13.42"E	
11	P106	595-594	A	low	0.25	low	31°27'36.25"S	150°35'19.49"E	
11	P103	599-597	E	low	0.26	low	31°28'41.67"S	150°37'26.15"E	
11	P99	605-604	united	Default high	0.26	low	31°30'59.62"S	150°39'17.47"E	
10	P115	583-582	A	medium	0.32	low	31°21'33.81"S	150°33'28.13"E	
11	P110	592-591	A	medium	0.33	low	31°25'55.08"S	150°34'26.19"E	
11	P90	624-622	M	low	0.34	low	31°39'44.63"S	150°42'41.77"E	nc
11	P101	602-601	A	medium	0.36	low	31°29'57.72"S	150°37'56.69"E	

10	P113	586-585	A	medium	0.44	low	31°23'5.53"S	150°33'43.37"E	
11	P96	618-617	A	medium	0.63	low	31°37'0.78"S	150°43'1.62"E	ag complex

UPPER HUNTER SHIRE COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
13	P45	694-691	A	medium	0.00	hard	32° 8'32.58"S	150°53'10.92"E	nc
13	P46	694-691	A	medium	0.00	hard	32° 8'44.13"S	150°52'50.71"E	nc
13	P47	692-691	A	medium	0.00	hard	32° 8'20.05"S	150°52'50.84"E	
13	P48	691-690	T	medium	0.00	hard	32° 8'5.97"S	150°52'35.32"E	
13	P50	690-681	A	medium	0.00	hard	32° 7'11.40"S	150°51'24.40"E	nc
13	P54	681-680	A	medium	0.00	hard	32° 3'27.33"S	150°49'54.87"E	
13	P62	677-675	A	medium	0.00	hard	32° 1'4.39"S	150°49'21.05"E	nc
12	P64	671-670	A	medium	0.00	hard	31°58'22.18"S	150°49'13.93"E	nc
12	P69	659-658	A	medium	0.00	hard	31°52'53.04"S	150°51'44.03"E	site of former structure
12	P77	642-640	O	medium	0.00	hard	31°46'9.98"S	150°49'55.84"E	town allotments murrurundi
12	P81	639-637	A	medium	0.04	moderate	31°45'45.65"S	150°48'37.00"E	residence
12	P73	654-652	A	medium	0.05	moderate	31°50'29.75"S	150°52'55.84"E	nc
13	P55	681-680	A	medium	0.07	moderate	32° 3'18.29"S	150°49'40.81"E	
12	P83	637-636	T	medium	0.08	moderate	31°45'5.62"S	150°48'1.04"E	
13	P59	678-677	A	medium	0.09	moderate	32° 2'10.12"S	150°49'19.13"E	
13	P57	679-678	A	medium	0.10	moderate	32° 2'51.68"S	150°49'16.04"E	
13	P53	681-680	A	medium	0.17	low	32° 3'31.42"S	150°49'46.64"E	
12	P74	648-646	O	medium	0.21	low	31°47'32.48"S	150°53'39.52"E	various town allotments
12	P80	639-638	A	low	0.22	low	31°46'2.56"S	150°48'22.38"E	single structure
12	P70	657-656	united	Default high	0.25	low	31°51'51.20"S	150°52'21.89"E	
12	P65	666-665	A	medium	0.27	low	31°55'58.85"S	150°50'11.79"E	
13	P56	680-679	A	medium	0.28	low	32° 3'3.64"S	150°48'57.25"E	
13	P60	677-676	A	medium	0.28	low	32° 1'39.11"S	150°48'59.32"E	ag complex

12		P78	641-640	united	Default high	0.28	low	31°46'35.75"S	150°49'47.15"E	
12		P71	657-656	A	medium	0.32	low	31°52'1.04"S	150°52'46.41"E	nc
13		P44	697-696	M	low	0.35	low	32°10'17.73"S	150°54'42.61"E	
13		P49	691-690	A	medium	0.46	low	32° 7'58.86"S	150°52'56.10"E	
12		P63	672-671	A	medium	0.51	low	31°59'12.38"S	150°48'39.54"E	
12		P79	641-640	united	Default high	0.52	low	31°46'41.08"S	150°49'29.25"E	site of former rail structures
12		P82	637-636	T	low	0.54	low	31°45'29.76"S	150°47'37.44"E	
13		P61	677-676	A	medium	0.61	low	32° 1'26.91"S	150°48'45.07"E	
13		P51	689-688	united	Default high	0.66	low	32° 6'45.58"S	150°52'12.46"E	
12		P75	645-643	A	medium	0.79	low	31°46'30.21"S	150°52'26.30"E	nc
13		P58	679-678	A	medium	0.85	low	32° 2'47.28"S	150°48'32.16"E	
12		P67	660-659	A	medium	0.89	low	31°53'45.28"S	150°52'7.36"E	
12		P76	644-643	A	medium	0.99	low	31°46'12.74"S	150°51'38.65"E	
12		P66	662-661	A	medium	1.00	low	31°54'30.80"S	150°52'7.33"E	

MUSWELLBROOK SHIRE COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
14	P36	714-713	A	medium	0.00	hard	32°17'6.18"S	151° 0'35.10"E	
13	P41	703-701	A	medium	0.00	hard	32°12'38.70"S	150°56'27.54"E	nc
13	P43	700-699	A	medium	0.08	moderate	32°11'36.68"S	150°55'38.39"E	
13	P37	712-711	A	medium	0.39	low	32°16'40.78"S	150°59'27.88"E	
13	P39	707-706	E	low	0.76	low	32°14'49.97"S	150°57'0.68"E	

SINGLETON SHIRE COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
15	P27	758-757	A	medium	0.04	moderate	32°31'0.43"S	151°19'41.04"E	

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155

14	P32	741-740	A	medium	0.13	low	32°26'15.98"S	151°11'26.31"E	
15	P25	758-757	A	medium	0.16	low	32°31'14.79"S	151°19'36.24"E	
15	P24	759-758	A	medium	0.19	low	32°31'25.42"S	151°20'11.17"E	
15	P31	753-752	A	medium	0.21	low	32°29'45.96"S	151°17'11.98"E	
14	P35	735-734	A	medium	0.30	low	32°23'25.89"S	151°10'25.47"E	
16	P23	769-768	A	medium	0.35	low	32°35'0.95"S	151°23'38.75"E	
15	P29	757-756	A	medium	0.44	low	32°30'36.35"S	151°19'22.51"E	
14	P34	738-737	A	medium	0.46	low	32°24'38.22"S	151°10'58.25"E	
15	P30	756-755	A	medium	0.58	low	32°30'22.91"S	151°19'18.98"E	
15	P28	758-757	A	medium	0.67	low	32°30'58.87"S	151°20'10.90"E	
14	P33	739-738	unided	Default high	0.72	low	32°25'24.59"S	151°11'14.92"E	

MAITLAND CITY COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
17	P11	809-808	A	medium	0.00	hard	32°46'29.65"S	151°41'6.17"E	
17	P12	808-807	A	medium	0.00	hard	32°46'12.11"S	151°40'45.64"E	
17	P13	808-807	A	medium	0.00	hard	32°46'5.80"S	151°40'36.65"E	
17	P14	800-799	A	medium	0.00	hard	32°42'50.67"S	151°37'52.61"E	Small group of Ag structures
17	P15	799-798	A	medium	0.00	hard	32°42'20.59"S	151°37'43.24"E	ag structure
16	P16	796-795	A	medium	0.00	hard	32°41'1.35"S	151°36'9.72"E	Group opf Ag structures along road
16	P17	795-794	E	low	0.00	moderate	32°40'43.84"S	151°35'52.42"E	canals
16	P18	794-793	A	medium	0.00	hard	32°40'20.84"S	151°35'34.51"E	nc
16	P19	793-792	A	medium	0.00	hard	32°39'46.25"S	151°35'16.45"E	nc
16	P20	785-783	A	medium	0.00	hard	32°39'1.52"S	151°30'37.98"E	small ag complexes
16	P21	784-780	A	medium	0.00	hard	32°38'52.16"S	151°29'27.02"E	ag complexes
16	P22	781-779	A	medium	0.00	hard	32°38'17.74"S	151°28'45.69"E	small ag complexes
17	P9	812-811	E	medium	0.06	moderate	32°48'14.10"S	151°41'56.46"E	

17	P10	810-809	E	low	0.25	low	32°47'2.06"S	151°41'43.79"E	
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PORT STEPHENS COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
17	P7	815-814	I	medium	0.14	low	32°49'31.68"S	151°42'49.62"E	
17	P8	814-813	unided	Default high	0.21	low	32°48'46.64"S	151°42'48.22"E	nc

NEWCASTLE CITY COUNCIL

Sheet No.	ID#	Km Point	Item Type	Significance Value	IMPACT Proximity to 200m pipeline study area (km)	Constraint	Latitude	Longitude	Comment
17	P1	819-818	unided	Default high	0.00	hard	32°51'21.31"S	151°42'39.02"E	
17	P4	817-816	A	medium	0.00	hard	32°50'28.27"S	151°42'30.13"E	nc
17	P5	816-815	A	medium	0.00	hard	32°50'9.48"S	151°42'51.70"E	nc
17	P6	816-815	unided	Default high	0.00	hard	32°50'1.95"S	151°42'31.89"E	nc
17	P2	819-818	A	medium	0.05	moderate	32°51'15.29"S	151°42'38.59"E	
17	P9	812-811	E	medium	0.06	moderate	32°48'14.10"S	151°41'56.46"E	
17	P3	817-816	unided	Default high	0.10	moderate	32°50'30.80"S	151°42'53.71"E	nc

APPENDIX F: MAPS SHOWING ALL KNOWN HERITAGE ITEMS LOCATED FROM THE PIPELINE STUDY AREA UP TO 3KM AWAY FROM THE STUDY AREA

