

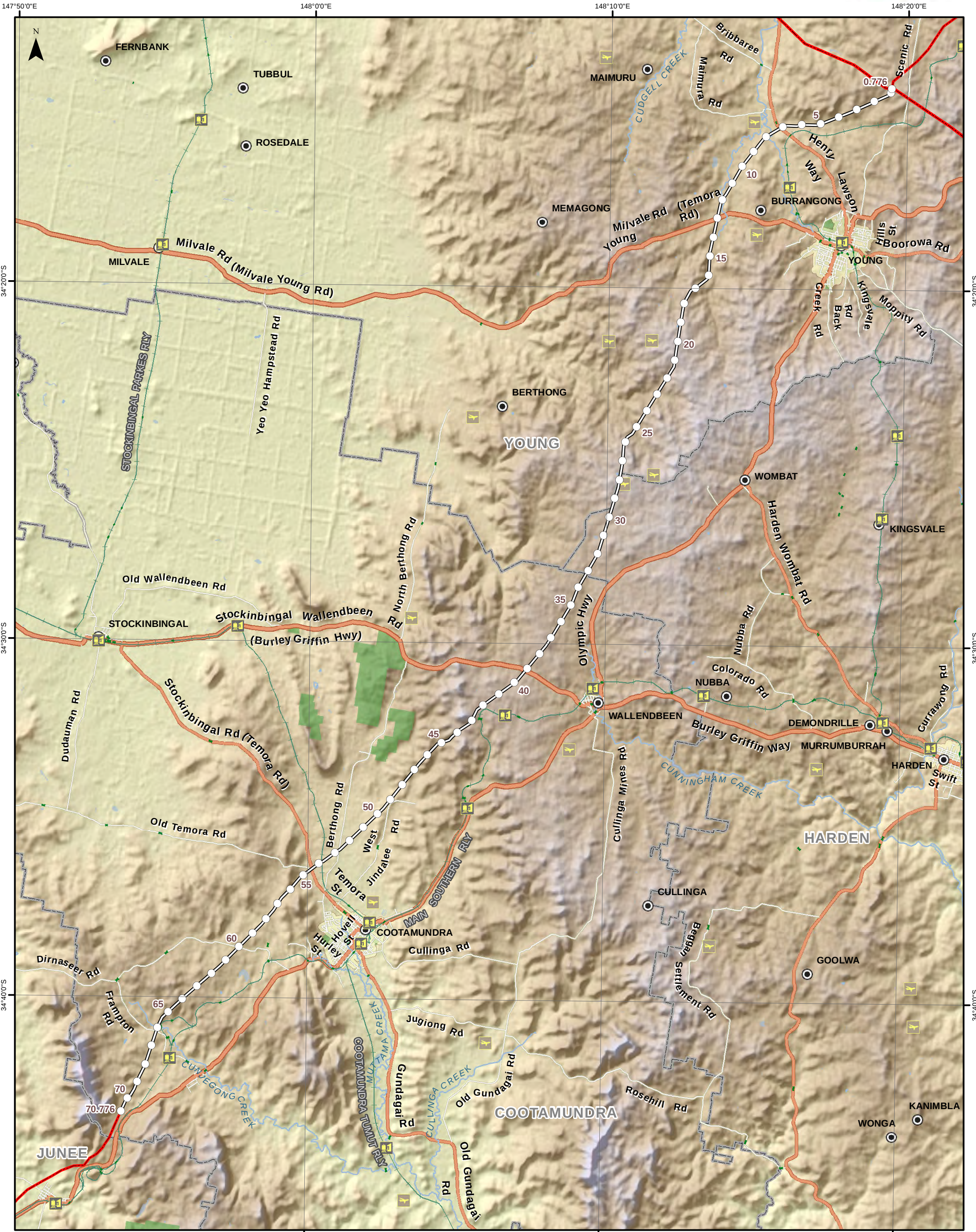
1.6 Limitations

Predictions have been made about the probability of subsurface archaeological materials occurring within the study area. It is possible that materials may occur in any landscape context, and the assessment of subsurface materials refers to the likelihood of occurrence based on surface indications and environmental context.

AECOM has undertaken a search of the Aboriginal Heritage Information Management System (AHIMS) held by DECCW. The search results are provided in Section 6.2. Register searches are constrained by the amount of data in the register and the quality of that data (for example grid references can be inaccurate). Large areas of NSW may not have been systematically searched and may contain Aboriginal objects and other heritage values not recorded on AHIMS.

Additionally, the AHIMS reports database can only be searched by the title of the report, which may not indicate the geographical location of the area covered. This means that it is possible that some known sites and some reports may have been omitted from this study. Sites and reports are regularly added and removed from AHIMS and therefore the accuracy of information provided from AHIMS is only valid on the day the register is searched.

A summary of the statutory requirements regarding Aboriginal and historic heritage is provided in Section 2.0. This is provided based on experience with the heritage system in NSW and does not purport to be legal advice. It should be noted that legislation, regulations and guidelines change over time, and users of the report should satisfy themselves that the statutory requirements have not changed since the report was written.



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|------------------------|---------------|----------------------|----------------|
| Kilometre Points | Localities | Built-up | Highway |
| Gas Pipeline Section 2 | Bridge | Drainage | Main Road |
| Airport/Landing Ground | Railway | Park/ Nature Reserve | Connector Road |
| Railway Station | Airport Areas | LGA | Local Road |

2.0 Applicable Policy and Legislation

2.1 Commonwealth Legislation

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act; the Act) took effect on 16 July 2000. Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a matter of National Environmental Significance (known as a controlled action under the Act), may only progress with approval of the Commonwealth Minister for the Environment, Water, Heritage and the Arts. An action is defined as a project, development, undertaking, activity (or series of activities), or alteration. An action would also require approval if:

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

The EPBC Act defines 'environment' as both natural and cultural environments and therefore includes Aboriginal and historic cultural heritage items. Under the Act, protected heritage items are listed on the National Heritage List (items of significance to the nation) or the Commonwealth Heritage List (items belonging to the Commonwealth or its agencies).

These two lists replaced the Register of the National Estate (RNE). While the RNE has been suspended and is no longer a statutory list, Section 391A of the Act requires the Minister to consider RNE listing if a referral is made. This requirement expires in 2012, by which time all RNE listings are to be transferred to a relevant heritage register. Items on the RNE can have a variety of statuses, including Registered (it is inscribed on the Register) and Indicative (it is in the database, but no formal nomination has been received or an assessment has not been completed).

The heritage registers mandated by the EPBC Act have been consulted and there are no Aboriginal heritage items within the project area on these registers.

2.2 State Legislation

2.2.1 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act), administered by DECCW, is the primary legislation for the protection of Aboriginal cultural heritage in NSW. The NPW Act gives the Director General of DECCW responsibility for the proper care, preservation and protection of 'Aboriginal objects' and 'Aboriginal places', defined under the Act as follows:

- An *Aboriginal object* is any deposit, object or material evidence (that is not a handicraft made for sale) relating to Aboriginal habitation of NSW, before or during the occupation of that area by persons of non-Aboriginal extraction (and includes Aboriginal remains).
- An *Aboriginal place* is a place declared so by the Minister administering the NPW Act because the place is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects.

Part 6 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to harm them. An Aboriginal Heritage Impact Permit (AHIP) is required if impacts to Aboriginal objects and/or places cannot be avoided. An AHIP is a defence to a prosecution for harming Aboriginal objects and places if the harm was authorised by the AHIP and the conditions of that AHIP were not contravened.

Following amendments introduced in October 2010, AHIPs are issued under s.90 of the Act. The Act includes a 'strict liability' offence for harm to Aboriginal objects and places. A strict liability offence does not require someone to know that it is an Aboriginal object or place they are causing harm to in order to be prosecuted. Defences from prosecution include a low impact activity or demonstration of due diligence conducted in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW 2010*. However, if an Aboriginal object is encountered in the course of an activity work must cease and an application should be made for an AHIP.

Applications for an AHIP must be accompanied by an assessment report conducted in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 2010*. Applications must also provide evidence of consultation with the Aboriginal communities. Consultation is required under Part 8A of the NPW Regulation 2009 and is to be conducted in accordance with the *Aboriginal Heritage Consultation Requirements for Proponents 2010*. AHIPs may be issued in relation to a specified Aboriginal object, Aboriginal place, land, activity or person or specified types or classes of Aboriginal objects, Aboriginal places, land, activities or persons. S89A of the NPW Act requires notification of the location of sites of Aboriginal objects within a reasonable time, with penalties for non-notification, including daily penalties.

2.2.2 Heritage Act (1977)

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

2.3 Local Government

Under the provisions of the EP&A Act, Local Environmental Plans (LEPs) and Regional Environmental Plans (REPs) are prepared by a Local Government Council. An LEP defines some of the rules relating to the development of an area or a particular site. It contains information on the zoning of land and any special provisions relating to the development of the land. An LEP is enforceable after it is published in the Government Gazette (i.e. "gazetted") by the NSW Minister for Planning. Typically, LEPs and REPs have provisions that protect items of environmental heritage.

There are four LEPs relevant for consideration for this stage of the project:

- a) Young Draft Local Environment Plan 2009
- b) Harden Local Environment Plan 2011
- c) Cootamundra Local Environment Plan 2005
- d) Junee Local Environment Plan 1992 (Amended 2007)

For each of the four LEPs, the main objectives with respect to heritage are:

- To conserve the environmental and Aboriginal heritage of the LGA, and
- To conserve the heritage significance of existing significant fabric, relics, settings and views associated with the heritage significance of heritage items and heritage conservation areas: and
- To ensure that archaeological sites and places of Aboriginal heritage significance are conserved.

In order to achieve these objectives, the LEPs specifically identify heritage items and heritage conservation areas that area managed by their respective councils. Consent must be granted by the relevant governing authority before any impacts are allowed towards heritage items or heritage conservation areas. A review of each LEP's heritage listings did not identify any heritage items or heritage conservation areas that would be impacted by the proposed project.

3.0 Aboriginal Stakeholder Consultation

3.1 Introduction

Aboriginal consultation acknowledges the right of Aboriginal people to be involved, through direct participation, on matters that affect their heritage. Involving Aboriginal stakeholders in all facets of the assessment process ensures that they given adequate opportunity to share information about cultural value, and to actively participate in the development of appropriate land use and management options. The successful identification, assessment and management of Aboriginal cultural heritage values are dependent on an inclusive and transparent consultation process.

Aboriginal cultural heritage consultation for the Project was conducted by AECOM in accordance with OEHS's Aboriginal Consultation Guidelines 2010.

3.2 Notification and Registration

In accordance with Section 4.1.2 of the *Aboriginal Consultation Guidelines 2010*, the following organisations were notified to assist in the identification, notification and registration of Aboriginal people who may hold cultural knowledge relevant to determining the cultural significance of the Project:

- DECCW - Queanbeyan (now OEHS);
- NSW Department of Aboriginal Affairs – Office of the Registrar;
- National Native Title Tribunal;
- NSW Native Title Services;
- Wagga Local Aboriginal Land Council (WLALC);
- Young Local Aboriginal Land Council (YLALC);
- Murrumbidgee Catchment Management Authority;
- Lachlan Catchment Management Authority;
- Young Shire Council;
- Harden Shire Council;
- Cootamundra Shire Council; and
- Junee Shire Council.

Each of the above organisations was notified in writing informing them of the Project on 25 January 2011 and requesting information regarding the contact details of known Aboriginal stakeholder groups in the locality who may wish to be included in the consultation program for the Project.

DECCW provided a list of the contact details for two known Aboriginal stakeholder groups (YLALC and Gunjeewong Cultural Heritage Aboriginal Corporation) who may have an interest in the Project on 28 January 2011.

The NSW Department of Aboriginal Affairs did not provide a list, noting however on the 2 February 2011 that the YLALC may provide further information.

The National Native Title Tribunal responded on the 1 February 2011 noting that there were no claims or land use agreements in place for the study area.

Both Cootamundra Shire Council and Young Shire Council responded recommending that the Young Aboriginal Land Council be contacted. A similar response was received from the Murrumbidgee Catchment Management Authority. YLALC responded confirming their interest in participating in consultation for the project. Responses were not received from NSW Native Title Services, Wagga Local Aboriginal Land Council, Lachlan Catchment Management Authority, Harden Shire Council and Junee Shire Council.

3.2.1 Newspaper Advertisement

Notification of the Project was published in the Cootamundra Herald and the Young Witness on 7 January 2011 in order to identify Aboriginal stakeholders who wished to be consulted in regard to the Aboriginal Archaeological and Cultural Heritage Assessment.

3.2.2 Registration

The YLALC, registered their expression of interest in the Project in response to the newspaper advertisement on 2 February 2011. In addition to their registration, the Young LALC also identified an additional five individual stakeholders who wished to register (Enid Clarke, Krystal Ingram, Norma Freeman, Keith Freeman and Jirrah Freeman). No response was received from either the Wagga Local Aboriginal Land Council or the Gunjeewong Cultural Heritage Aboriginal Corporation.

3.3 Methodology

All Aboriginal stakeholder groups that had initially provided an expression of interest in the Project were sent a hard copy of the proposed survey methodology developed by AECOM on 3 March 2011. A covering letter was also attached and described the proposed survey methodology, consultation and assessment process for the Project. Aboriginal stakeholder group representatives were also encouraged to provide comments and raise any concerns they may have had in relation to the Project regarding cultural heritage or the proposed survey methodology. A request for a formal expression of interest in the Project fieldwork and the nomination of a proposed representative was also requested in the letter. Feedback was received from Enid Clarke on 1 April 2011 confirming that the methodology was acceptable.

3.4 Project Fieldwork

Each group was contacted in advance of the fieldwork to further outline the process for the fieldwork, seek relevant documentation and confirm dates when representatives would be available to take part.

In accordance with the proposed survey methodology prepared by AECOM, the fieldwork was completed over 5 working days during the period 6-10 June 2011.

During and at the completion of the fieldwork, comments or suggestions were sought in relation to Cultural Heritage significance and management measures relevant to the areas surveyed. Stakeholder feedback in the field agreed with the proposed management recommendations of salvage excavation, surface collection and monitoring of sensitive areas. No further cultural heritage issues were identified as part of this process.

A summary of the groups who took part in the fieldwork component of the Assessment and the representatives who participated in the archaeological survey is presented in Table 1.

Table 1 – Registered aboriginal stakeholder groups represented during fieldwork

Stakeholder Group	Fieldwork Representative(s)
Individual/Young LALC	Enid Clarke
Individual/Young LALC	Krystal Ingram
Individual/Young LALC	Keith Freeman
Individual/Young LALC	Jirrah Freeman

3.5 Draft Aboriginal Archaeological Assessment Review

The draft Aboriginal Archaeology and Cultural Heritage Impact Assessment was circulated to all registered stakeholder groups on the 25 August 2011. All stakeholders were encouraged to provide a response on the content of the draft report. Stakeholders were requested to provide comment - verbal and/or written - by 9 September 2011. No comments were received during this period.

A follow-up request for comment was circulated to all registered stakeholder groups on the 9 September 2011. Stakeholders were once again encouraged to comment on the content of the draft report, with no closing date for comment stipulated. Follow-up phone calls to Norma Freeman, Chief Executive Officer for Young LALC, were

made on 14 September, 19 September & 10 October 2011. However, AECOM was unable to get in contact with Ms Freeman.

As at 11 October 2011, no comment has been received from registered Aboriginal stakeholders on the draft report.

4.0 Existing Environment

4.1 Introduction

The nature and distribution of Aboriginal archaeological sites is invariably intimately connected to the environment in which they occur. Environmental variables such as topography, geology, hydrology, flora and fauna would have played a critical - though by no means determinative - role in influencing how Aboriginal groups moved within, and utilised, a given parcel of land. It follows, therefore, that any attempt to predict the character and distribution of Aboriginal sites in a given landscape must take such factors into account. At the same time, an assessment of historic land use allows predictions to be made concerning the likely presence/absence of sites and, where appropriate, their archaeological integrity.

4.2 Landform & Topography

The study area is generally gently undulating with an elevation ranging between about 210 m and 310 m. Characterised by a series of low ridges and hilltops, generally oriented NW-SE intercepted with numerous drainage lines ranging from first-order drainage depressions to entrenched fourth-order ephemeral creeks. The study crosses many drainage lines and some more substantial creeks, but many of these waterways do not hold permanent water.

4.3 Climate

There are four distinct seasons in the South West Slopes and Plains with cool to cold winters and warm summers. Maximum average temperatures in summer average in the high twenties and the relative humidity is low with an average of approximately 30%. The average overnight minimum temperature in winter averages 1.4°C with the daily maximum in winter ranging from between 12°C and 14°C. Frost and fog are common in winter and on rare occasions, snow has been recorded. Winter is generally the wettest period of the year with rainfall plentiful until the end of summer (Bureau of Meteorology, 2009).

4.4 Hydrology

Major creeks in the study area include: McHenry's Creek, Stony Creek, Burrangong Creek, Tumbleton Creek, Cunningham Creek, Muttama Creek, Cootamundra Creek, Cunjegong Creek. Higher order streams (third-order or higher, and occasional second-order) tend to have a defined channel dictated by bedrock. Generally the higher the stream order, the larger and/or more deeply incised the channel is. Most first-order drainage lines lie on gently undulating terrain with no defined channel or banks, and often form part of a continuous agricultural landscape (i.e. crops or pasture cover the drainage line). Often the presence of dams is the only indication that there is any water flow at all. In general, existing AHIMS-registered Aboriginal sites are located near or adjacent to named watercourses.

4.5 Geology

Because of the nature of the project, the study area covers a dramatic variety of mostly igneous geological units each with unique raw materials that would have been utilized by Aboriginal people. In the north around Young, the geology is characterized by the Young Granodiorite unit, a Silurian era plutonic formation that dominates the area with slowly eroding bedrock and boulders present across the landscape. The unit is also known to contain rhyolitic dykes, a resource that would have been used for the creation of heavy use material culture such as hand axes.

The geology changes around Wallendbeen to become the Jindalee Group, a late Ordovician era metamorphic and ultramafic group of volcanic rocks. Raw materials that would have been used by Aboriginal people from this unit would have included chert, quartzite and quartz. Immediately adjacent to this unit and east of Cootamundra is the Jackalass Slate Formation, a Late Silurian deposit of mostly sedimentary rocks (sandstone, siltstone) with some metamorphic features such as mudstone, chert. Immediately west of Cootamundra, the Cowcumbala Rhyolite, a Devonian unit, lies sandwiched in a thin band between the mostly Silurian sedimentary rocks typical of the Cootamundra area and the Frampton Volcanics which characterize the Bethungra landscape. These old lava fields are typically composed of flow banded pink to purple rhyolites that have intruded in a sedimentary matrix of sandstone, shale and conglomerates.

The last major geological unit, the Frampton Volcanics, dominates the southern portion of the study area. This Silurian unit is characterized by rich rhyolitic deposits and siliciclastic sedimentary rock. Both these types of units would have been extensively exploited by Aboriginal people in the creation of flakes, hammerstones and hand axes.

4.6 Flora & Fauna

The study area is encompassed by the South Western Slopes Bioregion. This bioregion is divided into two subregions, and the study area lies within the Upper Slopes subregion, to the east of the subregion boarder. Within the Upper Slopes the vegetation is dominated by open forests and woodlands. The tree species characteristic of the subregion, are Black cypress pine (*Callitris endlicheri*), Kurrajong (*Brachychiton populneum*), red ironbark (*Eucalyptus sideroxylon*), White gum (*Eucalyptus rossi*), Yellow box (*Eucalyptus melliodora*) and Blakely's red gum (*Eucalyptus blakelyi*) occupying the lower slopes. This merges west to Yellow box, Grey box (*Eucalyptus microcarpa*) and White cypress pine (*Callitris glaucophylla*). Valley flats are dominated by Rough-barked apple (*Angophora floribunda*), with River oak (*Casuarina cunninghamia*) found along eastern streams and River red gum (*Eucalyptus camaldulensis*) lining the larger central and western streams.

This bioregion has been subject to extensive clearing for agricultural activity which has left very little of the original woodland vegetation intact. Over 80 % of the native vegetation in the region has been cleared making it the most cleared and fragmented bioregion in NSW (Benson, 2008). The proposed pipeline route has undergone almost complete clearance of native vegetation for agricultural and/or pastoral purposes. Native and introduced grasses and weeds dominate. Remnant vegetation is for the most part restricted and comprised largely of modified stands of river red gum, yellow box and grey box. The river red gums along the study area occur primarily along creeks and within floodplains and also occur in some roadside and fence line vegetation. The yellow box and grey box occur primarily along fence lines, road reserves and isolated in pastures.

The characteristic landforms of the area are characterised by undulating hills, open plains, alluvial flats and incised ephemeral waterways. Few rocky outcrops exist along the study area. The study area intersects a number of minor drainage lines and watercourses and also traverses near to a number of irrigation dams used for agriculture. There is one apparent floodplain to the north west of Cootamundra which is intersected by the study area. The study area traverses through the Lachlan and Murrumbidgee Catchment Management Authority (CMA) regions. These CMAs are divided into smaller sub regions, of which the northern section of the study area lies within the Upper Slopes sub region of the Lachlan CMA and the southern section of the study area lies within the Upper Slopes sub region of the Murrumbidgee CMA.

4.7 Historic Land Use & Disturbance

The general area in which the study area lays has been subject to minor disturbance resulting from agricultural/pastoral use of the landscape. Native vegetation has been largely cleared throughout the entire length of the easement, although some remnant stands of mature canopy growth still remains within the easement, particularly at the north eastern end of the study area towards Bethungra. Pastoral and/or cropping often leaves archaeological deposits intact.

The removal of the vegetation and modification of the soils through agricultural activities also reduces the potential for any archaeological remains to survive. The undulating slopes of the study area further permit erosion and removal of the soil profile where farming has not completely intermixed it with the subsoils below. Based on aerial photographs, the potential for scarred/carved trees is also low due to the historic removal of most of the trees in this area.

However, it is the construction of the existing 12-inch gas pipeline in 1980 that has created the greatest disturbance to the study area. Construction of pipelines often involves completely stripping topsoils in the alignment of the pipeline to a width of 20 m or more. This would have affected any surface archaeological materials and/or shallow subsurface deposits. Excavation of the trench in which the pipeline is laid would also have disturbed and largely removed any archaeological deposits. In addition, construction of ancillary infrastructure (e.g. line valves and meter stations) would have disturbed subsurface deposits to a much greater width than the pipeline trench. Construction lay down areas would also disturbed surface and shallow archaeological deposits. The exception to this is where directional-drilling is used to pass under either roads or substantial water courses. Depending on the depth of the creek channel, entry and exit points for the under-bored pipeline may be far enough removed from the creek banks to minimise disturbance to archaeological deposits, which are associated with those water courses.

5.0 Ethno-Historical and Historical Context

5.1 Introduction

This section provides background on the lifestyles of both Aboriginal people and European settlers in the region to provide context for identifying archaeological and heritage sites within the present-day material record. Much of the following discussion of Aboriginal lifeways and post-European settlement history was extracted from HO and DUAP (1996, cited in DECCW 2009), except where otherwise stated.

5.1.1 Aboriginal Occupation

Predicting the nature and distribution of archaeological materials in any given landscape requires a detailed understanding of past human land use practices. Information regarding the way in which land and resources were likely used by Aboriginal people in pre-contact landscapes is available to archaeologists through two primary sources: archaeological (i.e. survey and excavation) data and ethno-historic records, and it is the latter that is of concern here. Europeans began to document Aboriginal culture from the time of the first explorers, with missionaries, settlers and the like recording their encounters with, and observations of, Aboriginal people and their material culture in letters, journals and official reports. Most of these accounts are overtly Eurocentric in tone and content and the veracity of some is questionable at best. Nonetheless, taken together, they form a valuable source of information on Aboriginal lifeways at the time of European contact and can, in conjunction with available archaeological data, be used to generate working predictive models of prehistoric Aboriginal settlement and subsistence patterns.

The study area is located within the South West Slopes region of NSW, which was traditionally occupied by people of the Wiradjuri language group¹ prior to European Settlement. This language group covered a large proportion of central NSW, covering an area of some 97 100 km². According to Tindale (1974: map supplements), the area occupied by the Wiradjuri extended from north of Dubbo an Mudgee in the north east, via Parkes and Condoblin, west to near Hay, south to Albury on the Murray River and east to about Gundagai, Bathurst and Tumbarumba.

Tindale (1974: 201) lists the Wiradjuri as one of the largest language groupings in Australia, with many hordes. Howitt (1884) identifies the Kutamundra hoard (named for the kutamun turtle). Although the Wiradjuri were of one language group, there were differences in dialect, notably at Bathurst and Albury. Tribal coherence was assisted by a cycle of ceremonies that moved in a ring around the whole tribal area.

Wiradjuri country straddled three of NSW inland rivers, the Macquarie, Lachlan and Murrumbidgee Rivers; the name Wiradjuri means “people of the three rivers”. For the Wiradjuri people, the three rivers provided their livelihood and supplied a variety of consistent and abundant food provisions including shellfish and fish such as Murray cod. In dry seasons the food from the rivers was supplemented with kangaroos and emus hunted for their meat, as well as fresh food gathered from the land between the rivers, including fruit, nuts, yam daisies, wattle seeds and orchid tubers.

Evidence of the presence of the Wiradjuri people is common along the Macquarie and Lachlan Rivers, but less so along the Murrumbidgee in the south, even though the Wiradjuri people lived on both sides of the Murrumbidgee. Surviving carved trees are numerous in the northern part of the traditional Wiradjuri range, whereas there are only three of these surviving near the Murrumbidgee. The reason for this is not clear, although the original presence of such carved trees is not necessarily indicated by their present-day distribution (HO and DUAP, cited in DECCW 2009).

The Wiradjuri people generally moved around in small groups, using the river flats, open land and waterways with some regularity through the seasons as indicated by debris that has accumulated in these areas. The Wiradjuri people travelled to the alpine regions of the South Eastern Highlands and Australian Alps regions for the annual summer feasts of bogong moths.

Between 4000 – 1500 BP, an estimated 2000-3000 Aboriginal people were living in the semi-permanent camps throughout the Wagga Wagga LGA. The impacts of European settlement were first apparent amongst the Wiradjuri in the 1790s when small pox was inadvertently introduced by Eora traders, devastating the population. Contact gradually increased as European settlers arrived in the area.

¹ Wiradjuri is also known in the various literature as Wiradyuri, Wiradhuri, Wiraduri, Wiradjeri, Wirrajerie, Wiradhari, Wirra-dhari, Wirradhurri, Wirraijuri, Wirrathuri, Wiradthuri, Wiradtheri, Wirathere, Wira-durei, Wira-shurri, Wirradgerry, Woradjeri, Wooradjeri, Woorajuri, Woradjerg, Wirotheree, Wiratheri, Wi-ra jer-ree, Wirrai Durhai or Wagga tribe (a group) (AusAnthrop 2009).

Conflict and the negative attitudes of some settlers resulted in a great reduction of the Wiradjuri population to less than 20 by 1900 (Go Green Services, 2002).



Plate 1: Wiradjuri ceremonial gathering at Wellington c. 1847, by William Curtis

State Library of NSW, ML1374

Following European settlement in the region, the Wiradjuri were hard-hit by Australia's second smallpox epidemic in 1830. Approximately one in three Wiradjuri died from the disease, although vaccination halted total decimation (Flood 2006: 102).

Clashes between the settlers and the local Aboriginal people were common around the Murrumbidgee, particularly between 1839 and 1841. These violent incidents have been termed the "Wiradjuri wars". Wiradjuri people responded to the killing of their people, and the loss of their fishing grounds and significant sites, by stealing cattle and spearing stockmen.

The settlers' concerns about the dangers of the Aboriginal people subsided during the 1840s as did the independence of the Wiradjuri people. By the 1850s, although corroborees were still being held on the hills surrounding Mudgee, the culture of the local Aborigines had been vitiated by disease, alcohol and mass European influx during gold rush periods.

Today, the Wiradjuri people maintain a strong cultural identity, with a high degree of marriage within the Wiradjuri community contributing to this strength of identity (DECCW 2009). The major Wiradjuri groups currently live in Condobolin, Peak Hill, Narrandera and Griffith, with significant populations at Wagga Wagga and Leeton and smaller groups at West Wyalong, Parkes, Forbes, Cootamundra and Young.

5.1.2 European Settlement

Explorers Charles Sturt and George Macleay were among the first Europeans to travel through the South West Slopes. Sturt's second expedition, taking place in 1829-30, traced the Murrumbidgee River to its junction with the Murray River and on to the mouth of the Murray at Lake Alexandrina. The area was reported to have good pasture, particularly along the floodplains of the Murrumbidgee River. Reports also suggested that Aboriginal occupation was sparse (Navin Officer 2002).

Within 15 years pastoralists occupied most of the river frontages on the Murrumbidgee River. John Oxley had explored the region to the north in 1817 and soon after pastoralists began to bring their cattle to the region. By the 1820s, pastoralists were already making their mark on the landscape. On the southern bank of the Murrumbidgee, Peter Stuckey had introduced willows that grew along the river in competition with the native casuarinas and eucalypts.

Stock were already grazing in the southeast of the region in 1826 and settlement extended west along the Murrumbidgee, with emancipists such as Charles Tompson and George Best settling near what is now Wagga Wagga. As Murrumbidgee frontages were occupied, settlement began to spread to the river tributaries, expanding north and south from the Murrumbidgee.

The traditional lands and lifestyles of the Wiradjuri people were steadily overtaken by Europeans. To the north around Mudgee and Rylstone, large pastoral properties developed, eventually becoming towns in 1837 and 1842 respectively. Cattle runs were established in Narrandera in 1832 and these were followed from 1840 by sheep stations (NPWS 1991) such as Buckingbong Station which was well watered by nearby swamps and creeks even in the drought years. Wheat was grown in the area for use on the stations. Albury began as a sheep station in 1835 on both sides of the Murray River and merged soon after with the nearby Wodonga Run on what is now the Victorian side of the river (NPWS 1991).

Township Development

Townships in the general vicinity of the pipeline route were largely founded as the result of settlement of early pastoral runs, or to service the railway between Albury and Goulburn, or as the result of gold rushes that occurred in the mid- to late-1800s.

The village of Wagga Wagga was established in 1847. Although the early settlements were illegal as they were outside the limits of settlement, settlers took up the lands surrounding Wagga Wagga for pastoral activities (Navin Officer 2002). The so-called 'Wiradjuri wars' led to the temporary departure of pastoralists from some runs in the area around 1839-40, so fearful were they of resistance by the local Aborigines determined to keep their land. However, most station owners returned later in the 1840s and sheep and cattle numbers grew.

A severe drought hit the Murrumbidgee area in 1850-51 just as the gold rushes began. As the drought yielded and the population of the area increased with the gold rush, meat prices soared and cattle and sheep farmers benefited. Production of beef, which had been increased to cope with demand during the gold rush, slumped in the decades following, while sheep numbers increased five-fold around the Murrumbidgee and Lachlan Rivers up to the 1870s. Increased stock numbers led to further occupation of land. To accommodate this ongoing development, pastoralists cleared what was left of the uncleared land in the area, sinking wells, building dams and fencing the land as they went.

Gundagai was among the first towns to be settled in the area, developing in the early 1840s around the Gundagai Run that was established in 1826. By the 1850s Gundagai was the principal town in the south of the region but was eventually overshadowed by Wagga Wagga after the main road south from Dubbo to Albury by-passed Gundagai, passing through Wagga instead which had grown considerably, almost doubling in population in the late 1850s. Wagga's importance was also increased by a brief steamboat venture, increasing river traffic through the town in the 1870s.

Cootamundra was first settled in the 1830s, originally a stock station called "Cootamondra" owned by pioneer John Hurley. By the 1860s settlement around the station had increased to such an extent that a certain amount of town planning was necessary. The town was surveyed as the "village of Cootamundry" and the plan was approved in 1861. The railway came through in 1877 encouraging the further growth of pastoral and related industries including beef, lamb, wool and grain crops (CSC 2009).

Junee was first settled in the 1840s when Leopold de Salis, pastoralist and later politician, established the 'Jewnee' pastoral run. After a post office opened there in 1862, the village of 'Jewnee' was gazetted in 1863 on the wool road to Sydney. Jewnee became established as a major link in the Goulburn to Albury railway, after the construction of railway repair facilities. The railway had passed 8 km east of the town but, in 1881, the town was relocated to the railway line and re-named Junee in 1893. The original site of Jewnee became Old Junee.

Following the gold rush, the advent of rail transport provided the impetus for a second economic boom that provided local agricultural producers with very affordable direct access to both markets. In 1952 the largest wheat terminal in the Southern Hemisphere was built at Junee.

The Gold Rush

New towns were established and existing small villages experienced major population increases with the discovery of gold during the mid 1800s. Gold rushes occurred in Adelong (1852, expanding from 1857), Young (1860), Junee (1860s), Temora (1869) and Albury (1880s).

The Young area had been settled prior to 1842 when James White and his family founded Burrangong Station at Lambing Flat. White was apparently notable for his settlement of the area in harmony with the local Aboriginal people. The early years of settlement saw agricultural pursuits carried out but these quickly gave way in the mid-1800s to the mining of gold and Lambing Flat soon became renowned for its rich goldfields. With a huge influx of miners a shanty type town soon sprung up (YSC 2009).



Plate 2: Mine workings at Temora, date unknown

State Library of NSW, Image No. bcp_02936

The lure of gold attracted diggers from far and wide, including many Chinese miners. The area was rich in gold and the mining population mushroomed from 1,500 to 10 000 within six months. The Chinese miners were confined to a small area to mine and were the target of brutal rioting later in 1860 (Plate 3). As a result, the NSW *Chinese Immigration Restriction Act* was passed later that year. The miners who had caused the riots against the Chinese then moved further north to mine at Forbes to the north.



Plate 3: Chinese Workers in Lambing Flat Riots, December 1860

National Archives of Australia, Image No. A12111, 2/1918/20A/2

In 1866 Junee's population was recorded as 12 but the discovery of reef and alluvial gold during the 1860s triggered a gold rush. The main sites - Old Junee (to the west), Junee Reefs (to the north) and Illabo (to the north-east) - were mined until the 1880s (SMH 2009).

Before the advent of the Murrumbidgee Irrigation Area at the turn of the century, fruit growing, especially cherries, was a successful enterprise around Young. Although cherries were planted in the region as early as 1847, the first commercial orchards were not a reality until they were planted by Nicole Jasprizza in 1878. Over time, more than 70 cherry orchards were established, and the market was more accessible when the railway reached Young in 1885. By 1933, Jasprizza was believed to have the largest cherry orchard in the world. Apples, grapes, pears, prunes, quinces, oranges and strawberries were also grown in the area, with Young apples rivaling cherries as the most lucrative crop.

Agriculture in the south of the region made great improvements following the success of an experimental farm established near Wagga Wagga Wagga in 1892 by the state government. The farm tested strains of wheat and gave advice to farmers while encouraging the planting of new crops including maize, potatoes, grapes and other fruit. A series of dams and other water conservation innovations led to the inception of the Murrumbidgee Irrigation Area in the early 1900s.

6.0 Archaeological Context

The archaeological context section outlines the known Aboriginal & Historical archaeological surveys in the region and provides a review of previous studies undertaken in the area. This section would provide a synthesis, which was used in subsequent site prediction methods.

6.1 Review of Previous Archaeological Studies

A review of previous archaeological studies conducted in the region provides a basis for determining the types and extent of archaeological resources that may be impacted by the proposal. While the number of surveys have been relatively limited, and constrained to areas that have been the subject of development, the information is useful in identifying a regional pattern of site location that guides predictive modelling of site types and likely location in the area of this development.

Of most relevance to this development are the archaeological surveys carried out on the route of the existing 12-inch natural gas pipeline (Williams Brothers-CMPS Engineers 1975; Pipeline Authority n.d.; Witter 1980). Neither the Environmental Impact statement (EIS) for the Western Lateral natural gas pipeline (Williams Brothers-CMPS Engineers 1975: 24) or for the Cootamundra to Wagga Wagga section of the pipeline (Pipeline Authority n.d.: 13), which briefly described searches on creek and river crossings along the route, identified any known historic or Aboriginal sites. However the latter EIS advised that further searches would be carried out by National Parks and Wildlife Service (NPWS).

A subsequent survey of the gas pipeline route (Witter 1980) identified a total of 14 open camp sites (stone artefacts scatters), 21 isolated finds (single stone artefacts), a scarred tree and a possible Aboriginal rock well. Sites identified by Witter almost always occurred in association with creeks or small ephemeral water courses, but in a range of landform contexts including alluvial flats, low ridges and gentle slopes.

Witter (1980) recommended excavation of some of these sites if they could not be avoided. One site (AHIMS #50-5-0009) was subsequently excavated and partially salvaged (Kelly 1980). This site, was originally described by Witter (1980) as an artefact scatter measuring some 850 m along the southern bank of Bucks Creek, and was typical of the sites recorded along the pipeline route. Kelly (1980) collected all surface artefacts in Zone A irrespective of whether they were in the pipeline easement or not. A total of 310 stone artefacts were collected from Zone A, most of which (90%) were quartz and less than 30 mm in length. Formal artefact types were uncommon, with debitage or waste material forming the highest percentage of the assemblage.

In addition to Witter's (1980) pipeline survey, several surveys have been conducted in the Junee area including Packard and Hughes (1983), Bonhomme (1986, 1987), Stone (1986) and Nicholson (1990). Nicholson (1990) conducted an assessment of the route of a natural gas pipeline feeding to Junee from the existing Young to Wagga Wagga gas pipeline. The six kilometre route followed similar terrain to the terrain in parts of the current study area. Nicholson (1990: 5) did not identify any new Aboriginal sites and concluded that:

The type of landscape through which the pipeline runs is not likely to contain archaeological sites. Sites in this area have been found to be located on rises adjacent to water courses rather than on undulating country away from water sources such as that through which the proposed pipeline will pass. The absence of archaeological sites along the pipeline route is therefore not unexpected.

This premise may be generally correct, but Witter (1980), and subsequently Kelton (2006) adding information to the same site, found evidence of Aboriginal occupation in an ephemeral drainage line 1 km south of Nicholson's study area. This site consisted of possible water holes and a quartz fragment scatter. The nearest reliable water source is Wantiool Creek some 2 km north (and north of Nicholson's study area). This shows that evidence of occupation may not necessarily be restricted to the vicinity of major watercourses. On the contrary, Witter's land-use model (see Section 6.3) predicts that in times of good rainfall, the headwaters of drainage lines become a more viable area of occupation. However, it is also likely that any evidence of occupation in these landforms are likely to be of a minor nature such as very low density stone artefact scatters or isolated finds.

Bonhomme (1987) conducted a similar natural gas pipeline survey to the north of Junee and recorded a total of 18 sites including seven artefact scatters, eight isolated finds and three scarred trees. Six of the seven artefact scatters were located on hill slopes within 100 m of a permanent or semi-permanent watercourse, with the majority within 50 m. Only one site was recorded away from a water course.

Witter and Hughes (1983) conducted a survey of the routes of proposed transmission lines in the Murrumburrah area. They identified two major 'land systems' in this area:

- 1) Plateau; and
- 2) Major stream valleys.

During the survey they recorded a total of 18 Aboriginal sites, including four open camp sites (artefact scatters), 13 isolated finds and one scarred tree. They concluded that the low number of open camp sites found was probably due to the poor ground surface visibility and that there was likely to be more sites that were undetected. However, they maintain that the ratio of sites found in the stream valleys to those found on the plateau were likely to remain consistent, that is 2:1. In other words, Aboriginal site patterning in the region is dominated by site clustering in the valleys of water courses with the open, undulating plateau containing a much lower density of sites. They also concluded that their study area falls within a quartz belt where a specialised quartz technology for stone tools is to be expected, although there was insufficient material to be able to clearly identify different aspects of the quartz industry. They suggest that the presence of unusual quartz cores may indicate the presence of a culturally distinctive zone.

Near Bethungra, an archaeological survey by Paton and Hughes (1985) of the Ullandra Nature Reserve, 6 km south east of the pipeline, identified seven open camp sites and 15 isolated finds, as well as another two isolated finds that had previously been removed by NPWS officers. The stone artefact scatters ranged in artefact numbers from as few as nine artefacts to as many as 67. All sites occurred on low rises associated with creeklines. Two sites were located 100 m from a creek, one was located 70 m from a creek and the remaining four sites were all around 30 m from a creek. Paton and Hughes classed sites with two artefacts as isolated finds. The reserve was divided into four environmental zones and the results of the survey showed that terrain with wide valleys and low relief (Zone 3) held the highest level of archaeological significance. Raw material used included quartz (the majority), silcrete and single occurrences of basalt and quartzite. The environmental zones identified in this study are relevant to parts of the pipeline corridor in the Bethungra area.

Ullandra nature reserve has also been the subject of other archaeological surveys, notably in association with the development and/or upgrade of transmission line infrastructure. Dearling and Grinbergs (2002) conducted a preliminary survey along the TransGrid access tracks and identified 28 Aboriginal sites, as well as another outside their study area on neighbouring private property. A subsequent survey (Dearling 2004) identified a total of 146 stone artefacts within seven artefact scatters and three isolated finds. All 10 sites were located on low gradient spurs or locally elevated locations and most were associated with water courses. One site contained 105 artefacts, 72% of the entire assemblage recorded during the survey.

Kelton (1995a) conducted a survey of the optic fibre cable route between Cootamundra and Bethungra and found one open camp site on the eastern bank of Ironbong Creek (an extension of Billabong Creek). The site covered some 70 m x 40 m and consisted of an estimated 50 stone artefacts including quartz debitage (the majority), flaked pieces and small numbers of cores, scrapers, backed blades and manuport material. A survey of the optic fibre cable route between Bethungra and Illabo (Kelton 1995b) failed to identify any Aboriginal sites despite passing through two areas of Aboriginal 'sensitivity'.

A survey of several proposed optic fibre cable routes in the area north west of Young (Hamm 1994) identified a total of three Aboriginal sites including an artefact scatter, an isolated find and a scarred tree. In comparison to the stone artefacts in Witter's (1980) survey, the stone artefacts Hamm found were formed almost exclusively from mudstone and silcrete, with only minor occurrences of quartz in the assemblage. Both the artefact scatter and scarred tree for located on flat alluvial creek floodplains.

Silcox (1987) conducted test excavations at two sites on Cunningham Creek near Murrumburrah, to the south of Young and the current study area. A total of 95 artefacts were recorded from limited excavations undertaken at site JK2. The artefacts occurred at low density averaging 7 artefacts/m². The artefacts at JK2 consisted predominantly of small (1-3 cm) quartz pieces, with a high incidence of bipolar artefacts on quartz, and a lack of backed pieces. On the basis of previous studies Silcox (1987: 21) has dated these to the late Holocene period.

A similar assemblage and time period was recorded at site JK1 where 60 artefacts were recorded from two surface sites. The generally high proportion of quartz artefacts compared to other raw materials, was found to be consistent with other surveys and excavations in the general region of the study area (except for Hamm's (1994) findings to the north east of the study area). Further east, between Goulburn and Yass, silcrete raw material was found to become more predominant and quartz less so. Silcox (1987: 21-22) speculated that this may be the result of either variations in available raw material sources or the result of the use of different technologies.

6.2 Aboriginal Heritage Information Management System

A search for previously recorded Aboriginal sites within the DECCW's AHIMS database, was originally conducted on 2 September 2009 with an updated search of the current study area conducted on the 10 February 2011. The AHIMS search was originally conducted for the *entire* pipeline route from Young to Wagga Wagga and identified 27 registered Aboriginal sites within the 331 km² search area of the pipeline corridor. The search area included a 1 km wide buffer zone of 500 m either side of the pipeline route). The updated search used the same parameters except focussed on the Young to Bethungra portion of the study area.

Within the current study area (Stage 2), 7 sites are located either within the 1 km wide buffer zone (Table 2 and Figures 2.1 to 2.18). All of these sites (artefact scatters) were identified during Witter's original 1980 survey of the original gas pipeline easement (Table 3). It should be noted that the small number of sites identified reflect the single archaeological field survey conducted within the study area combined with limited ground surface visibility rather than a true representation of archaeological sites present.

Table 2 – Registered AHIMS sites

AHIMS ID #	Site Name	Easting	Northing	Site Type
50-3-0002	Young (BY/12)	613827	6205854	Artefact Scatter
50-3-0003	Stony Creek (BY/13)	612816	6202563	Artefact Scatter
50-3-0004	Wombat (BY/14)/Tumbleton Creek	608713	6192472	Artefact Scatter
50-5-0007	Frampton (BY/9)	582819	6159135	Artefact Scatter
50-6-0002	Cootamundra (BY/10)	591308	6169180	Artefact Scatter
50-6-0003	Muttama Creek (BY/11)	593571	6171305	Artefact Scatter
50-6-0004	Connaughtmans Creek/Wallendbeen (BY/16)	605415	6184032	Scarred Tree

Table 3 – Summary of Registered AHIMS sites

Site Type	Count	%
Artefact scatter	6	85%
Scarred tree	1	15%
Total	7	100%

6.3 Archaeological Predictions

Consideration of the archaeological and environmental context of the precinct allows a series of predictions to be made concerning the character and distribution of archaeological sites within it.

A land-use model was developed by Witter (1980a, b, cited in Witter and Hughes 1983) which proposed a number of stages of land use for the western slopes of the Dividing Range depending on the timing, intensity and duration of rainfall.

The drainage pattern is essentially dendritic, with water courses crossing the slopes of the Dividing Range joining to form larger water courses flowing across the plains to the west. Most of the headwater streams are ephemeral and only the larger trunk water courses contain permanent or semi-permanent water.

Witter's model suggests that occupation was economically oriented toward the major stream valleys with perhaps occasional forays into the drier uplands. Movement over the area was triggered by rainfall events. Consequently during dry periods, occupation was confined to the major water course valleys, whilst in wetter periods Aboriginal people were able to move along the temporarily watered headwaters of minor water courses and onto the plateau areas. When conditions became dry again, people retreated back to the wetter valleys. Witter suggests that in times of extreme drought, people may have retreated downstream as far as the Murrumbidgee and Lachlan Rivers.

The archaeological work conducted in the region to date indicates that occupation sites were certainly more frequent in higher-order water course valleys. As Witter and Hughes (1983: 12) suggest, the archaeological results do not necessarily confirm Witter's land-use model, but they do not contradict it either.

Witter and Hughes (1983: 12-13) also propose another factor in site location – that of cold air drainage. According to this hypothesis, on the plains Aboriginal sites are found adjacent to drainage channels partly because of proximity to fuel, and partly because the denser vegetation is where bodies of warm air still develop in the morning. In hilly country, sites would more often occur on low ridges or benches overlooking water courses that are away from the cold night air flowing into the valleys. As topography increases, sites tend to be above the cold air drainage but below the cloudy inversion layer. Consequently a north east aspect becomes important. Witter and Hughes' (1983) survey results supported this concept.

Stone Artefact Scatters

Stone artefact scatters are scatters of chipped stone artefacts consisting of more than one stone artefact. These types of sites are normally associated with stone tool production, camping sites and resource gathering sites. The types of artefacts found within these sites may include flakes of stone, cores (flakes are removed from the stone cores) or tools. However surface evidence (or the lack of surface evidence) does not necessarily indicate the potential, nature or density of sub-surface material. Extensive excavations have shown that areas with no surface evidence often contain sub-surface deposits buried beneath current ground surfaces.

Artefact scatters are the dominant archaeological site type identified within the study area. Therefore it can be expected that there is a high potential for the detection of unidentified stone artefact scatters within the pipeline easement.

Isolated Artefacts

Isolated artefacts refer to a single stone artefact. These artefacts are found in many environmental contexts and are generally thought to be the result of accidental loss or discard after use. It should be noted that this site type may also represent surface expression of a larger sub-surface archaeological deposits.

There is the potential for isolated artefacts to be identified within the Pipeline easement.

Scarred Trees

Scarred trees are trees that have scars present on their trunk that are associated with the production of cultural items/implements such as coolamons, shields and canoes. It is the removal of bark that causes the scar to develop on the trunk over time. Generally these scars are of particular shapes and dimensions to enable easy recognition, however over time accurate identification can become difficult to discern from natural scarring events such as fire or a branch fall.

One scarred tree (50-6-0004) has been recorded within the pipeline easement. Although the majority of the easement has been cleared, there remains the potential for scarred trees to be identified along the vegetated banks of established creeks.

Aboriginal Quarries

Stone quarries were used to procure the raw material for making stone tools. Quarries are rocky outcrops that usually have evidence of scars from flaking, crushing and battering the rock. There may be identifiable artefacts such as unfinished tools, hammer stones, anvils and grinding stones.

No Aboriginal quarry sites are known to exist within or adjacent to the pipeline easement. It is unlikely that quarry sites would exist within the easement given Witter's previous comprehensive field survey in 1980.

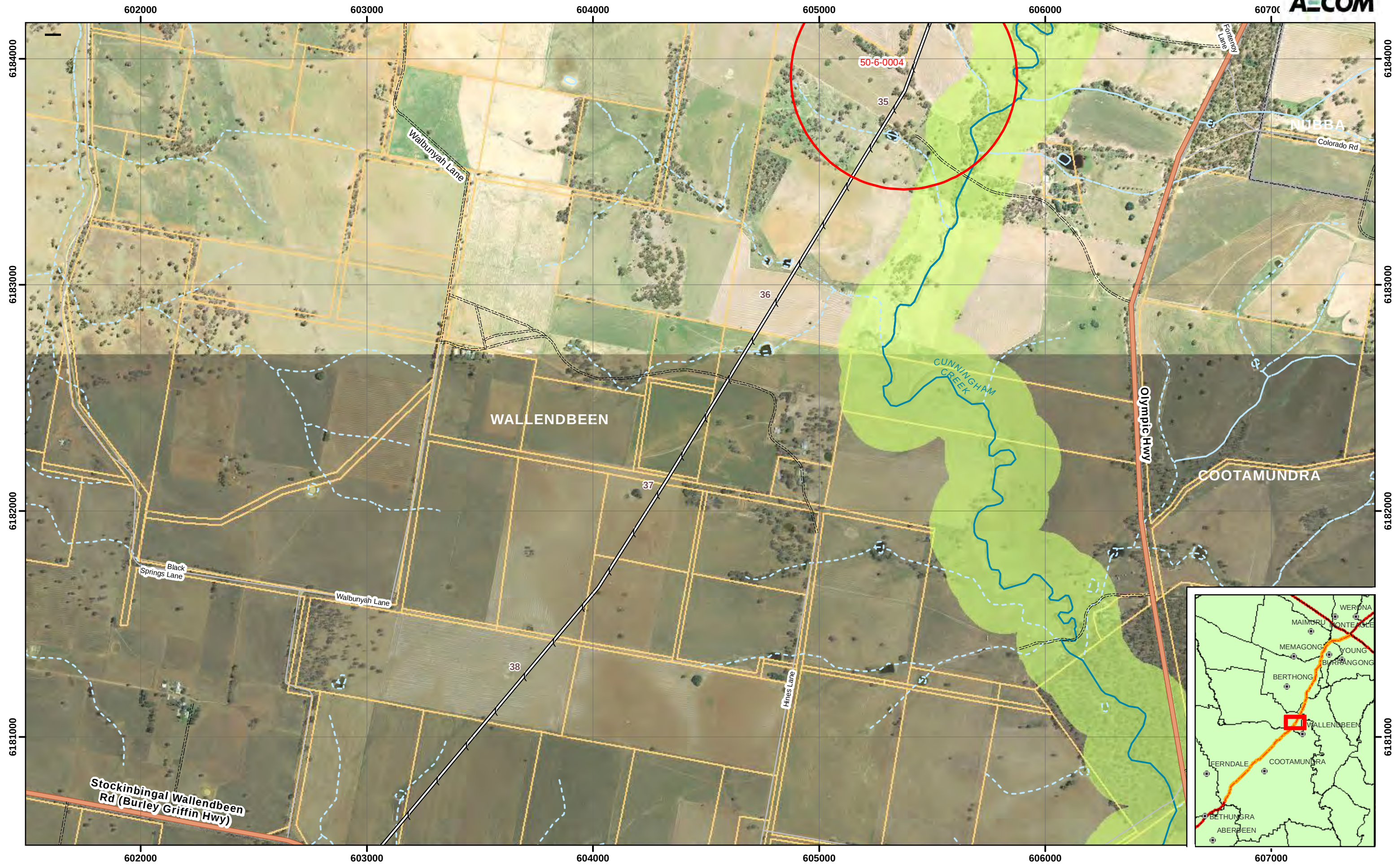
Aboriginal Burials

Aboriginal communities strongly associate burial sites with a connection to country and are opposed to disturbance of burials or their associated sites. General considerations for the presence of burial sites are the suitability of sub-surface deposits for digging purposes; with soft soil and sand being the most likely. They are more likely near watercourses or in dunes near old lake beds.

Although no burial sites have been recorded within the pipeline easement, there remains the potential for burial sites to occur along major watercourses.

Summary

- Open chipped stone artefact scatters and isolates would be the dominant site types;
- The dominant raw material for chipped stone artefact production would be quartz & tuff;
- Chipped stone artefact assemblages would be dominated by knapping by-products, with retouched implements or tools comparatively rare.
- The majority of surface scatters would contain less than 20 artefacts. Larger surface scatters would be rare;
- Scarred trees are only likely to occur near established watercourses and then only in areas with limited land clearance;
- Most sites would occur within 200 m of creek lines;
- Higher order streams would have higher subsurface artefact densities and more continuous distributions than lower order streams; and
- Subsurface artefact densities on creek flats prone to flooding would be fairly low.



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|-------------------------------|------------------------|----------------|----------------------|----------------|-----------------|
| Registered AHIMS Sites | Gas Pipeline Section 2 | Major Drainage | Built-up | Highway | Path |
| Cultural Heritage Sensitivity | Property Boundary | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| | Railway | | Suburb | Connector Road | Unsealed Road |
| | | | | Local Road | Vehicular Track |

YOUNG - WAGGA WAGGA PIPELINE SECTION 2
AHIMS Registered Sites & Cultural Heritage Sensitivity

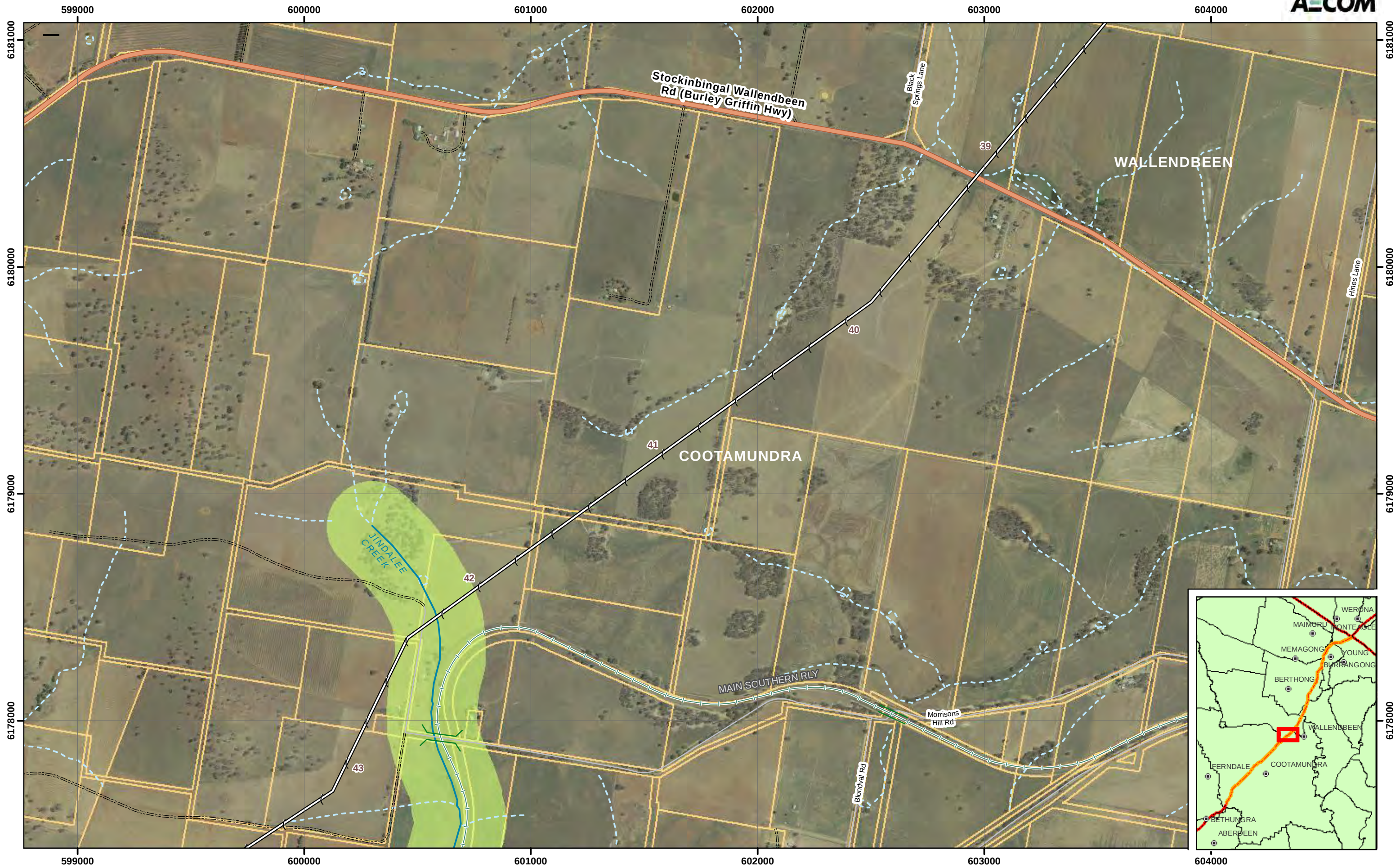
Source: LPMA (2010), StreetPro (2009)



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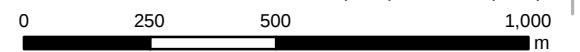
Fig. **2.10**



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| Registered AHIMS Sites | 200m Interval Point | Major Drainage | Built-up | Highway | Path |
| Cultural Heritage Sensitivity | Gas Pipeline Section 2 | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| | Property Boundary | | Suburb | Connector Road | Unsealed Road |
| | Railway | | | Local Road | Vehicular Track |

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AHIMS Registered Sites & Cultural Heritage Sensitivity

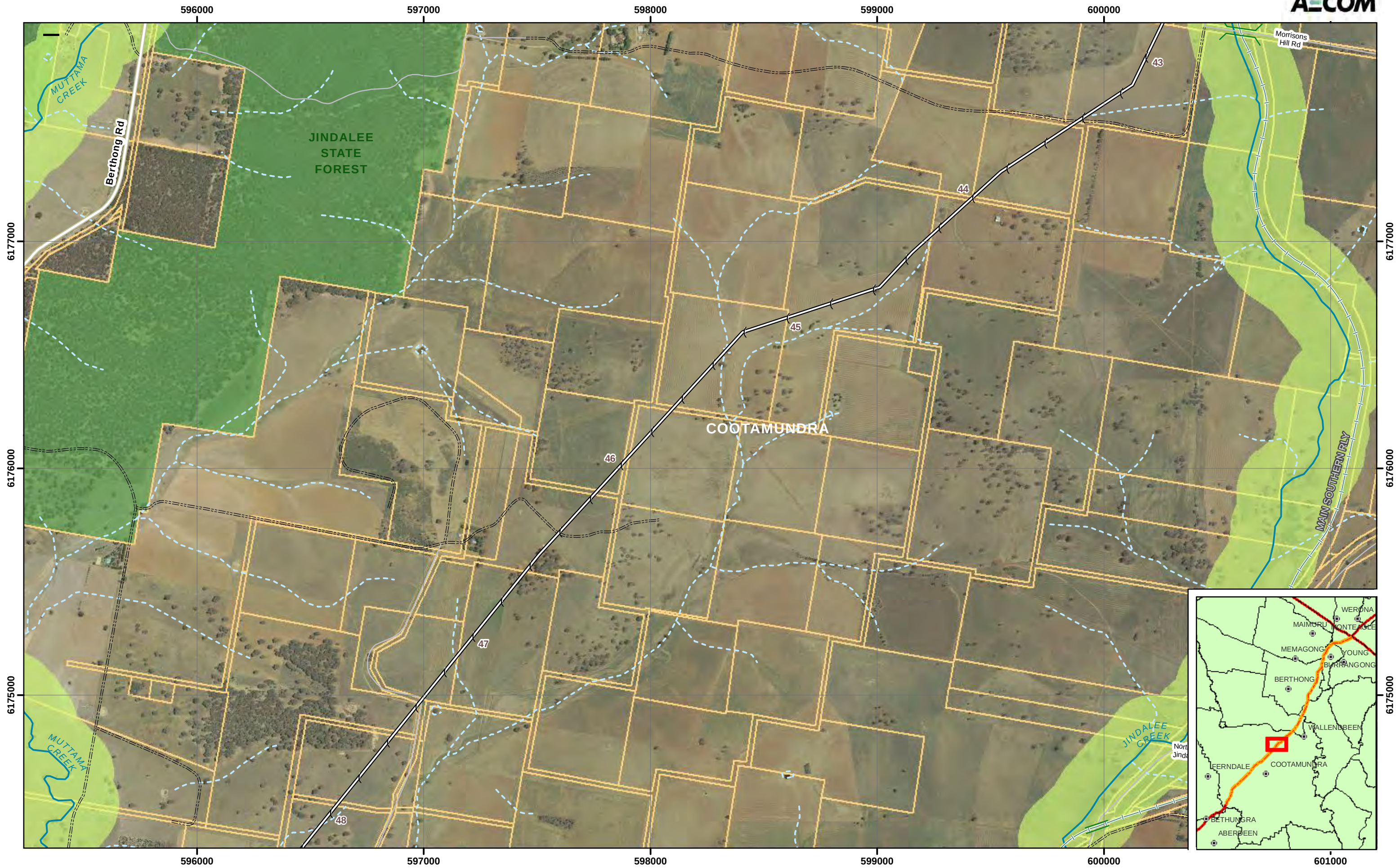
Source: LPMA (2010), StreetPro (2009)



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Fig. **2.11**



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| Cultural Heritage Sensitivity | Gas Pipeline Section 2 | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| | Property Boundary | | Suburb | Connector Road | Unsealed Road |
| | Railway | | | Local Road | Vehicular Track |

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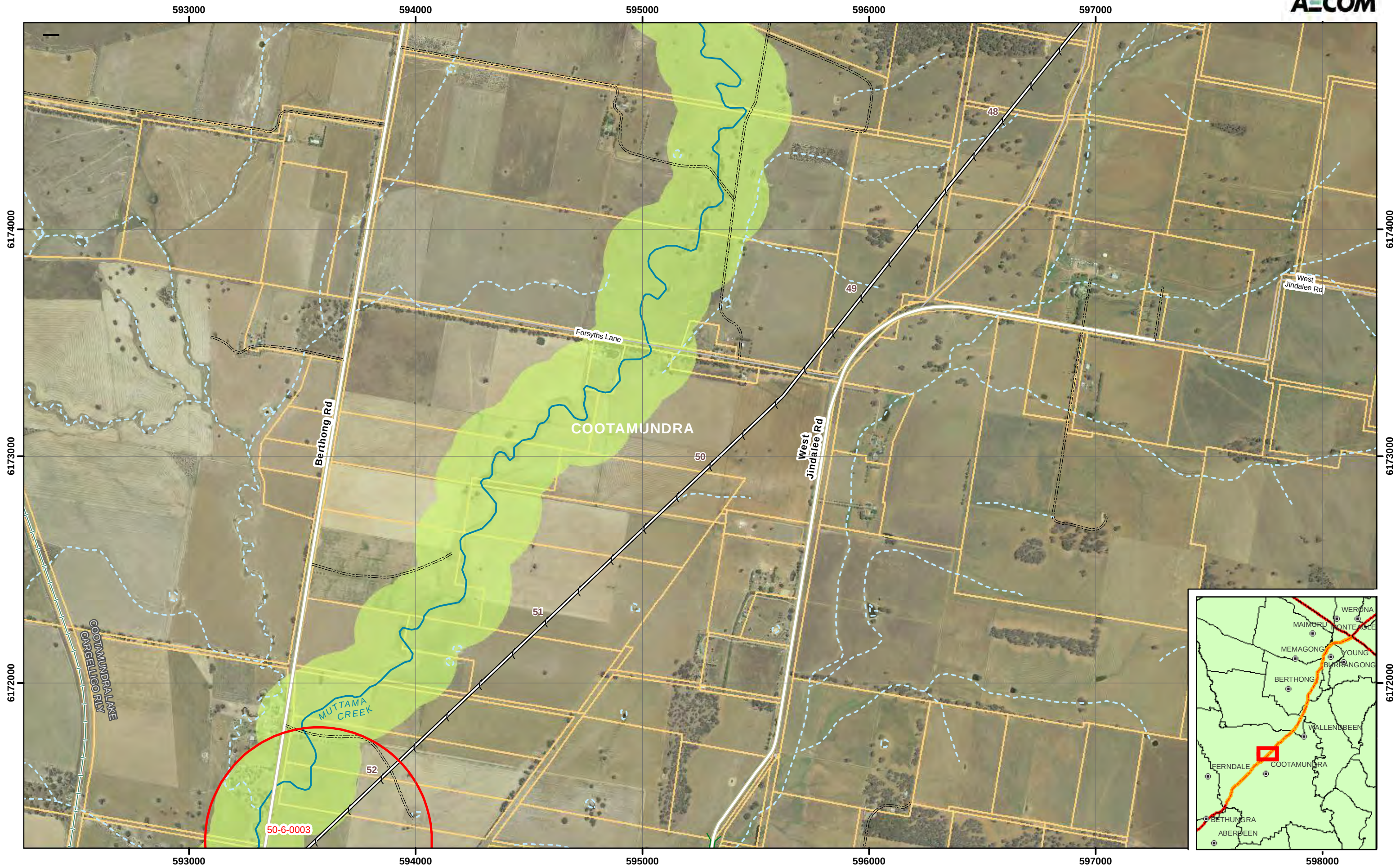
Source: LPMA (2010), StreetPro (2009)



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Fig. **2.12**



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| Registered AHIMS Sites | 200m Interval Point | Major Drainage | Built-up | Highway | Path |
| Cultural Heritage Sensitivity | Gas Pipeline Section 2 | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| | Property Boundary | | Suburb | Connector Road | Unsealed Road |
| | Railway | | | Local Road | Vehicular Track |

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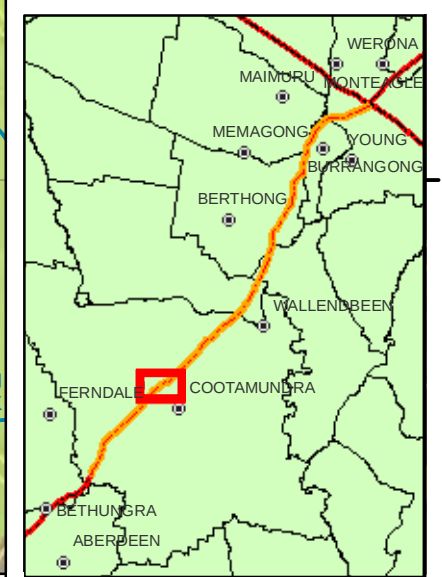
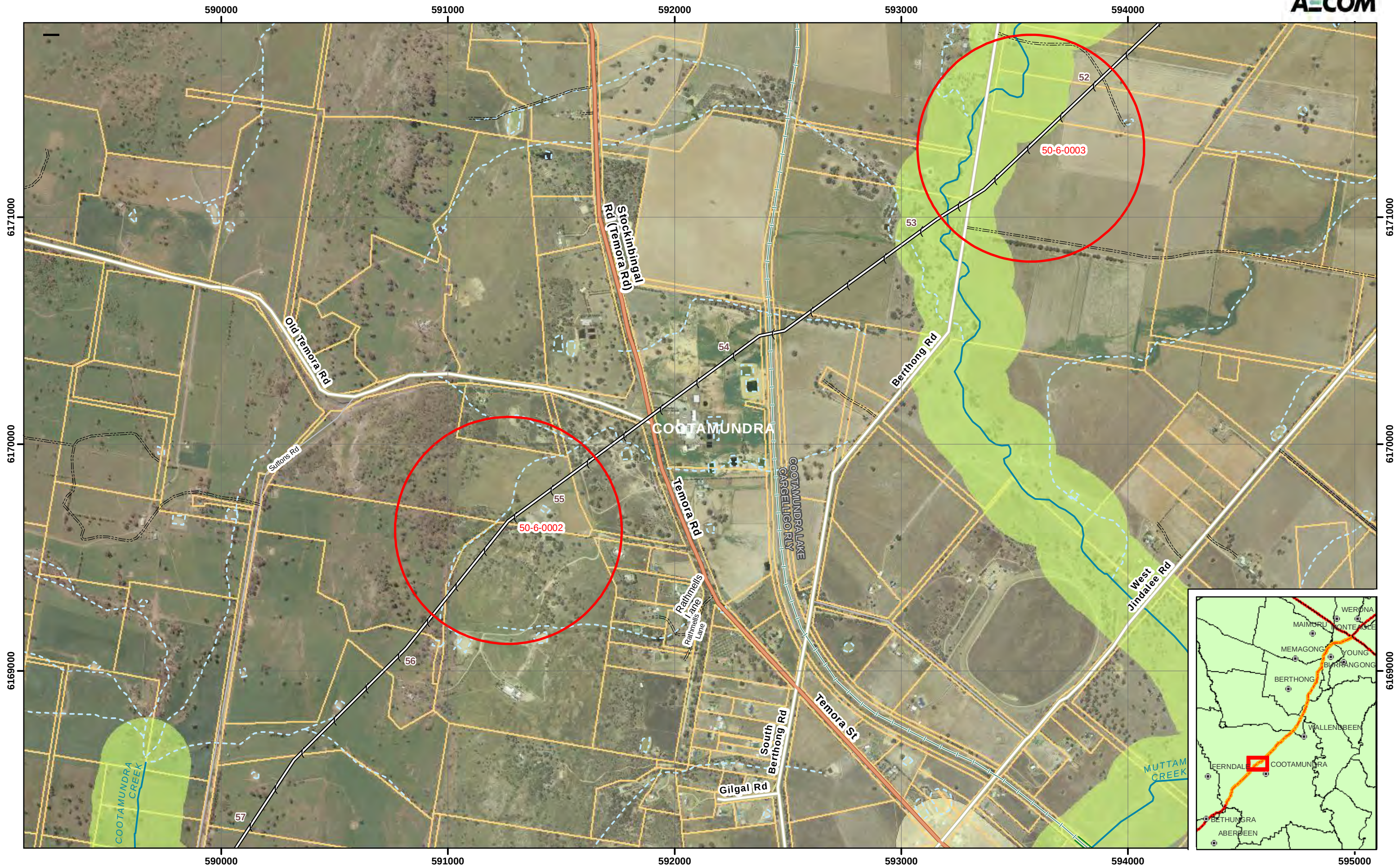
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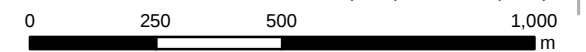
Fig. **2.13**



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| ■ Cultural Heritage Sensitivity | — Gas Pipeline Section 2 | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| □ Property Boundary | — Railway | | Suburb | Connector Road | Unsealed Road |
| | | | | Local Road | Vehicular Track |

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AHIMS Registered Sites & Cultural Heritage Sensitivity

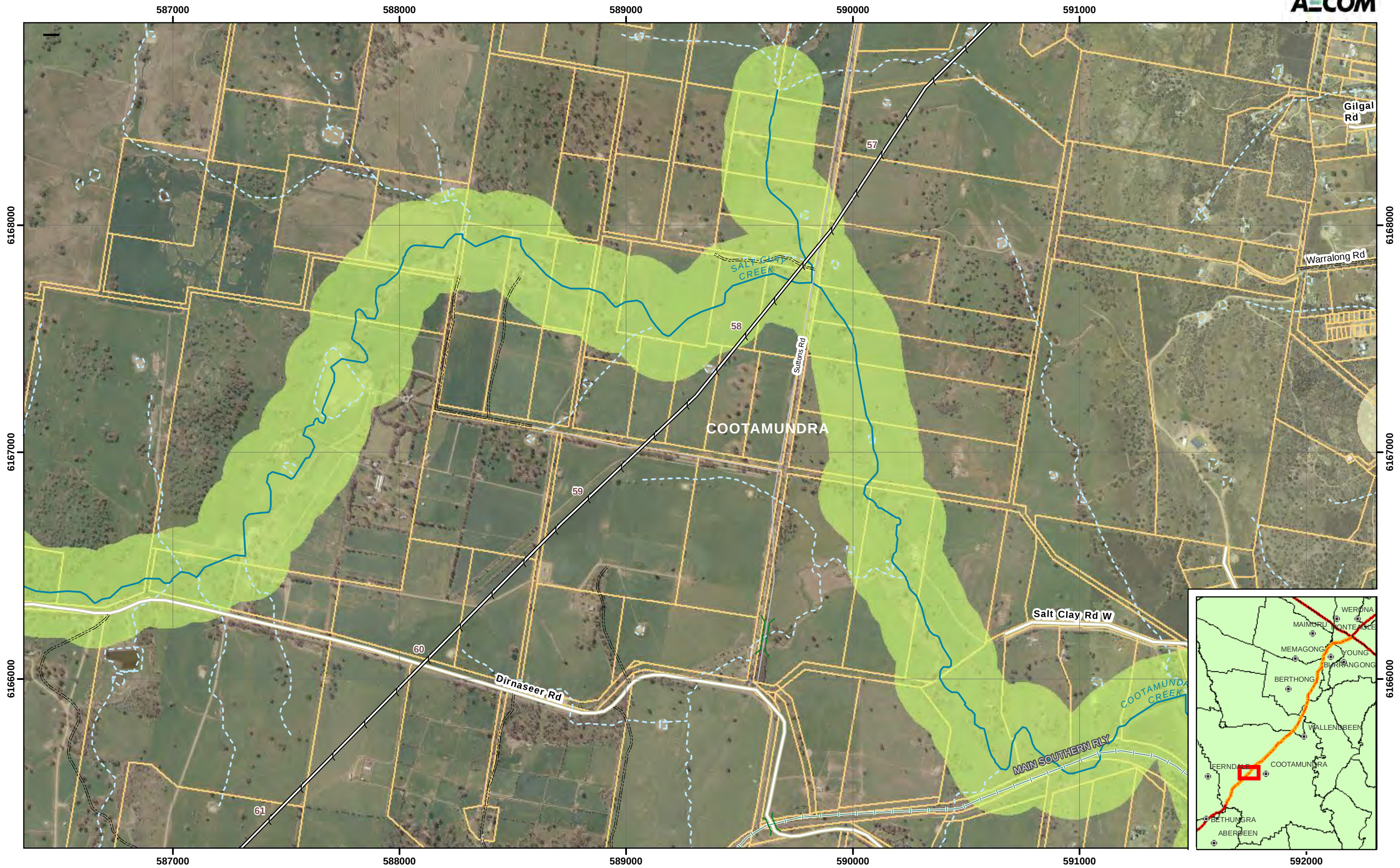
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Fig. 2.14



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| (Registered AHIMS Sites | 200m Interval Point | ~~~~~ Major Drainage | Built-up | ——— Highway | ——— Path |
| Cultural Heritage Sensitivity | Gas Pipeline Section 2 | - - - - - Minor Drainage | Park/ Nature Reserve | ——— Main Road | ——— Private Road |
| | Property Boundary | | Suburb | ——— Connector Road | ——— Unsealed Road |
| | ——— Railway | | | ——— Local Road | - - - - - Vehicular Track |

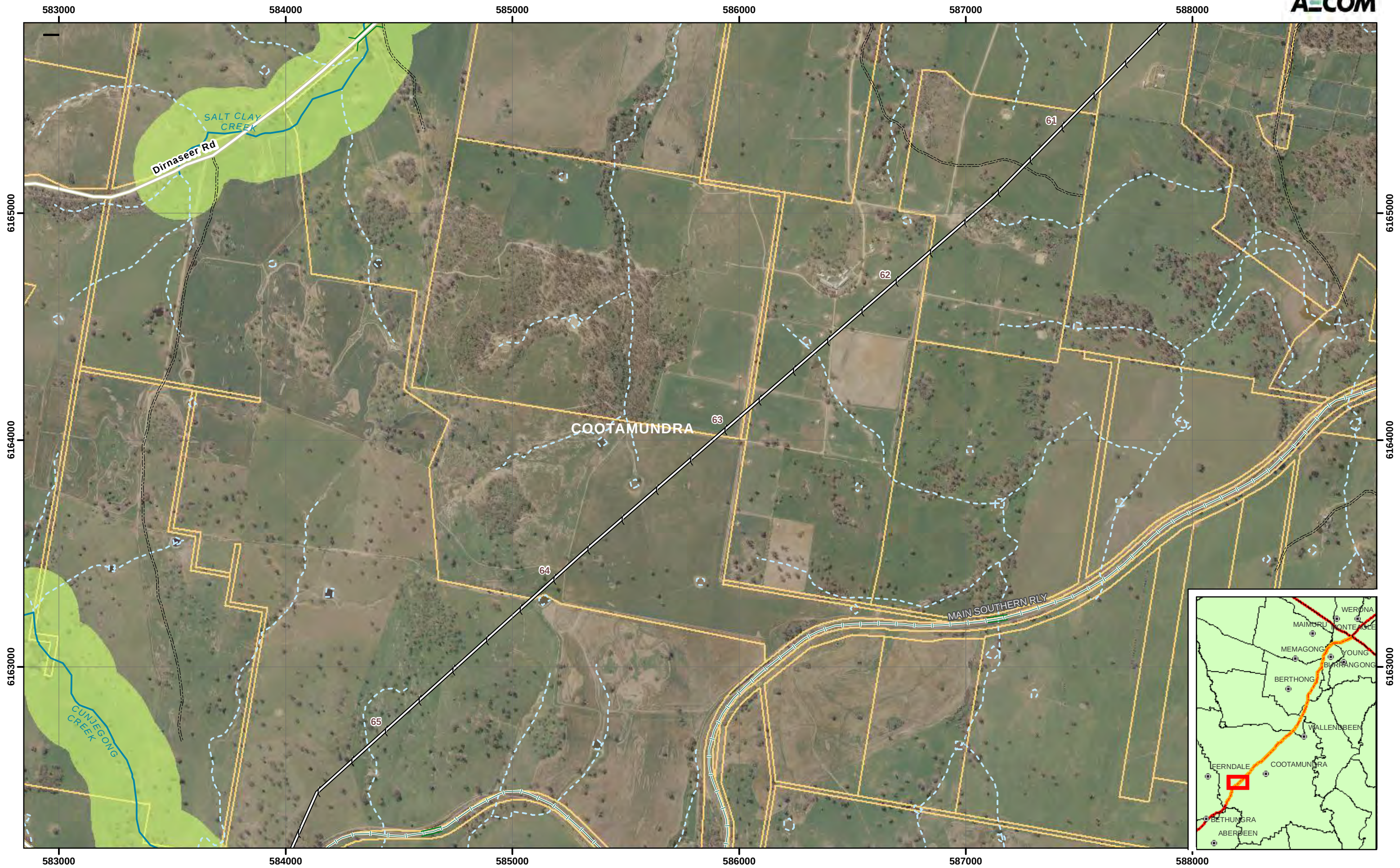
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Source: LPMA (2010), StreetPro (2009)



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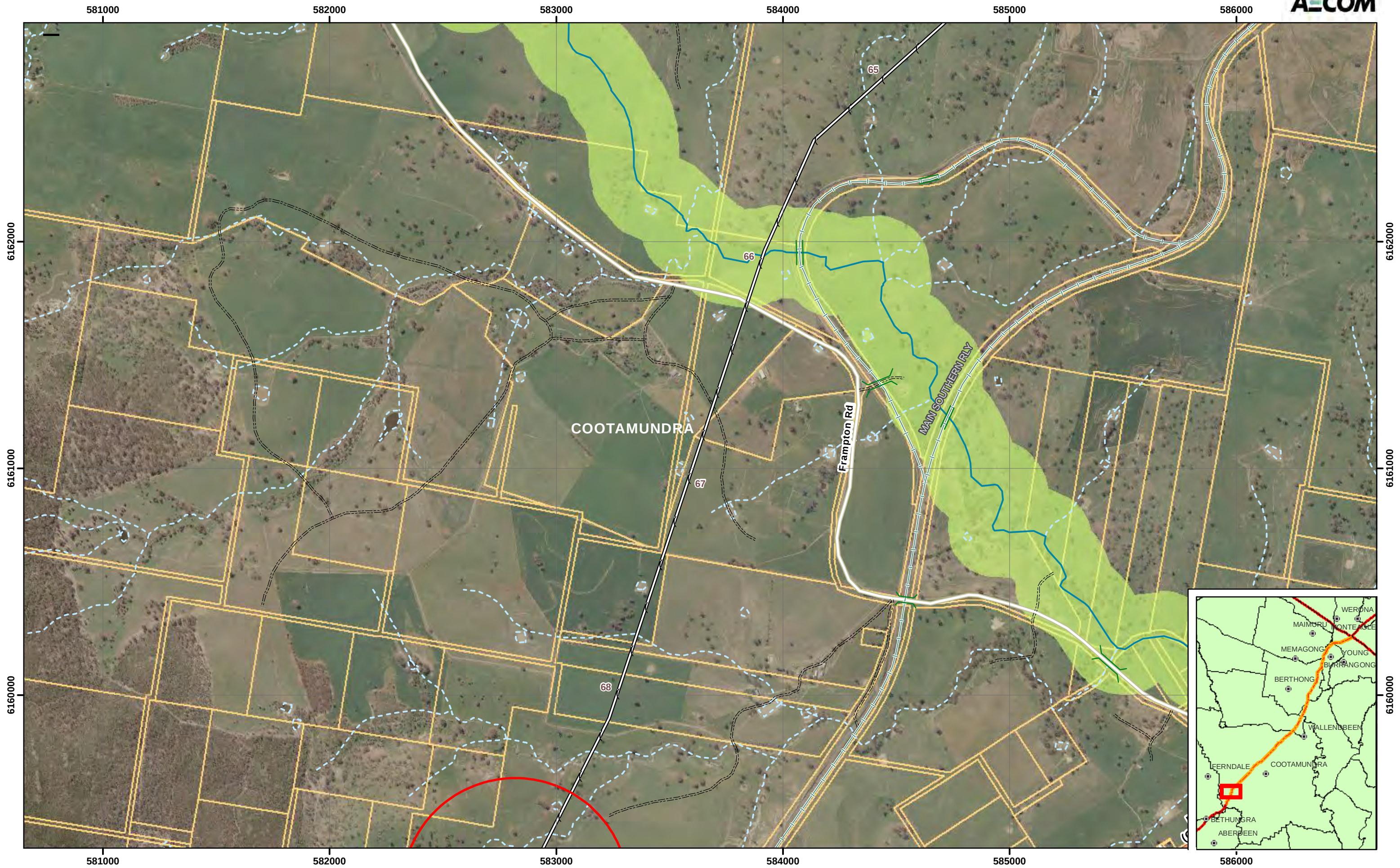
Fig. **2.15**



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| Cultural Heritage Sensitivity | Gas Pipeline Section 2 | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| | Property Boundary | | Suburb | Connector Road | Unsealed Road |
| | Railway | | | Local Road | Vehicular Track |

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AHIMS Registered Sites & Cultural Heritage Sensitivity

Source: LPMA (2010), StreetPro (2009)
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| (Registered AHIMS Sites | (200m Interval Point | ~ Major Drainage | □ Built-up | — Highway | — Path |
| ■ Cultural Heritage Sensitivity | — Gas Pipeline Section 2 | - - - Minor Drainage | ■ Park/ Nature Reserve | — Main Road | — Private Road |
| □ Property Boundary | — Railway | | □ Suburb | — Connector Road | — Unsealed Road |
| | | | | — Local Road | - - - Vehicular Track |

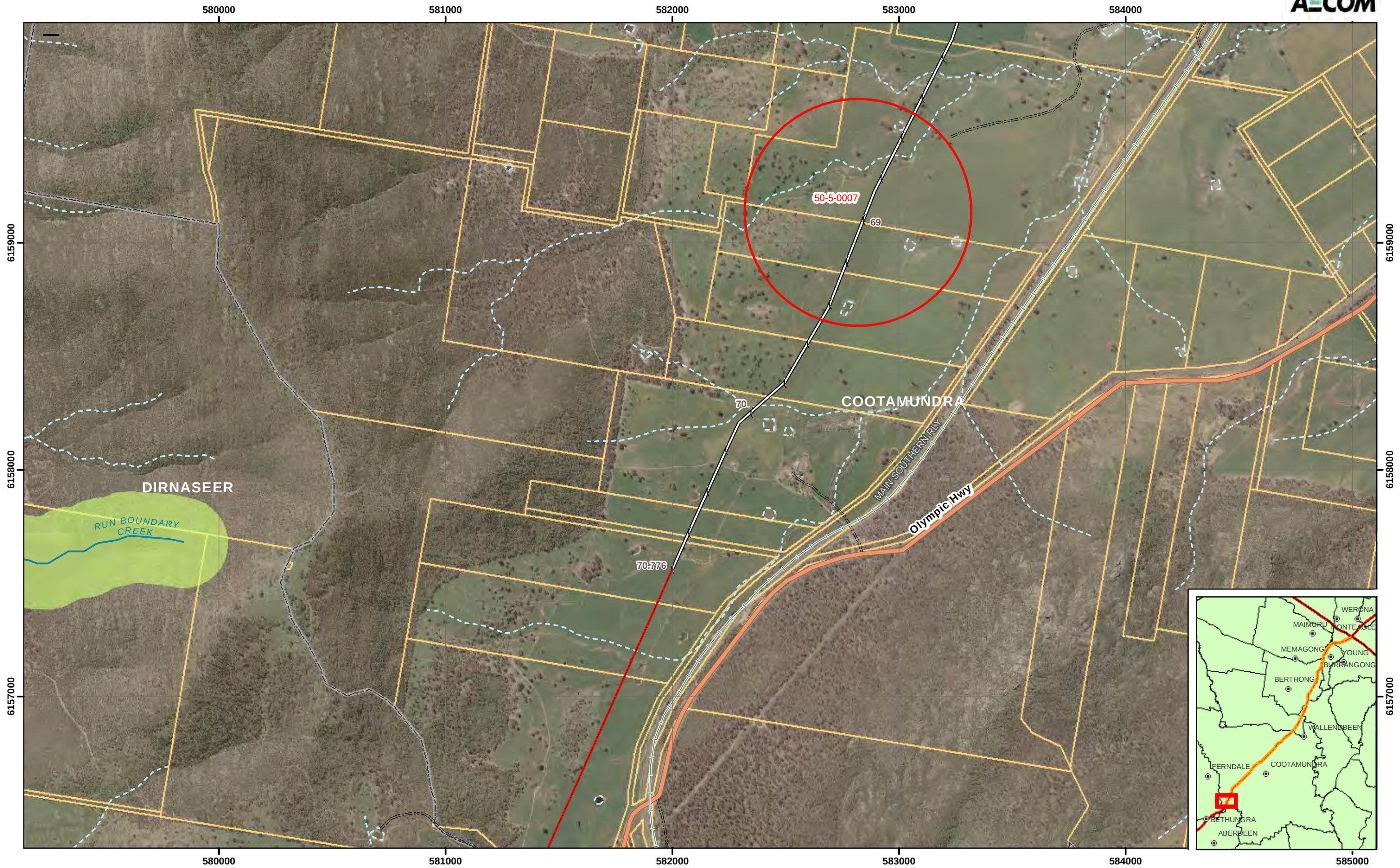
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AHIMS Registered Sites & Cultural Heritage Sensitivity

Source: LPMA (2010), StreetPro (2009)



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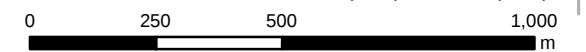
Fig. **2.17**



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| () Registered AHIMS Sites | () 200m Interval Point | Major Drainage | Built-up | Highway | Path |
| ■ Cultural Heritage Sensitivity | Gas Pipeline Section 2 | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| | Property Boundary | | Suburb | Connector Road | Unsealed Road |
| | Railway | | | Local Road | Vehicular Track |

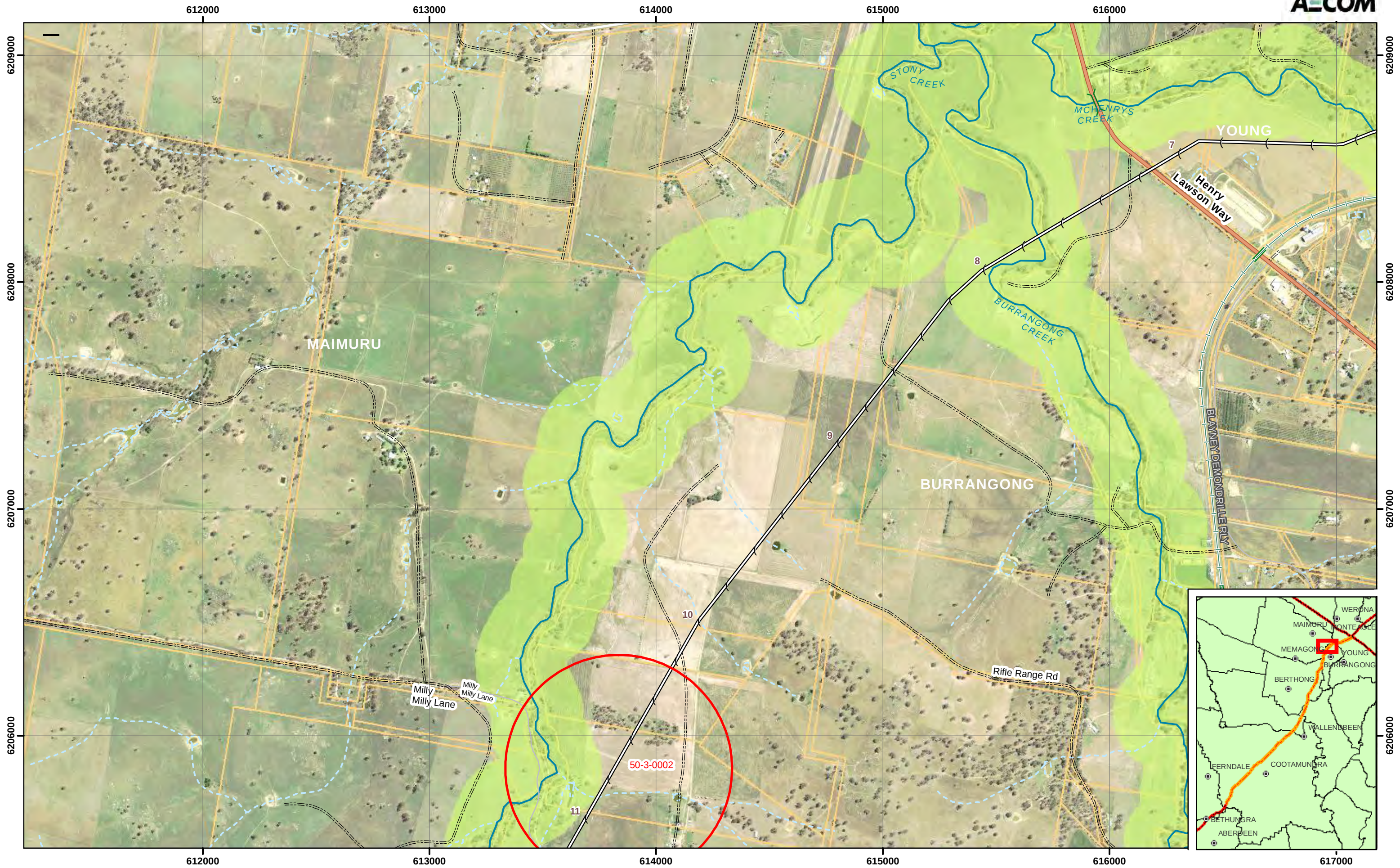
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AHIMS Registered Sites & Cultural Heritage Sensitivity

Source: LPMA (2010), StreetPro (2009)



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Fig. **2.18**



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| Registered AHIMS Sites | Gas Pipeline Section 2 | Major Drainage | Property Boundary | Highway | Path |
| Cultural Heritage Sensitivity | 200m Interval Point | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| | Railway | | Suburb | Connector Road | Unsealed Road |
| | | | | Local Road | Vehicular Track |

YOUNG - WAGGA WAGGA PIPELINE SECTION 2
AHIMS Registered Sites & Cultural Heritage Sensitivity

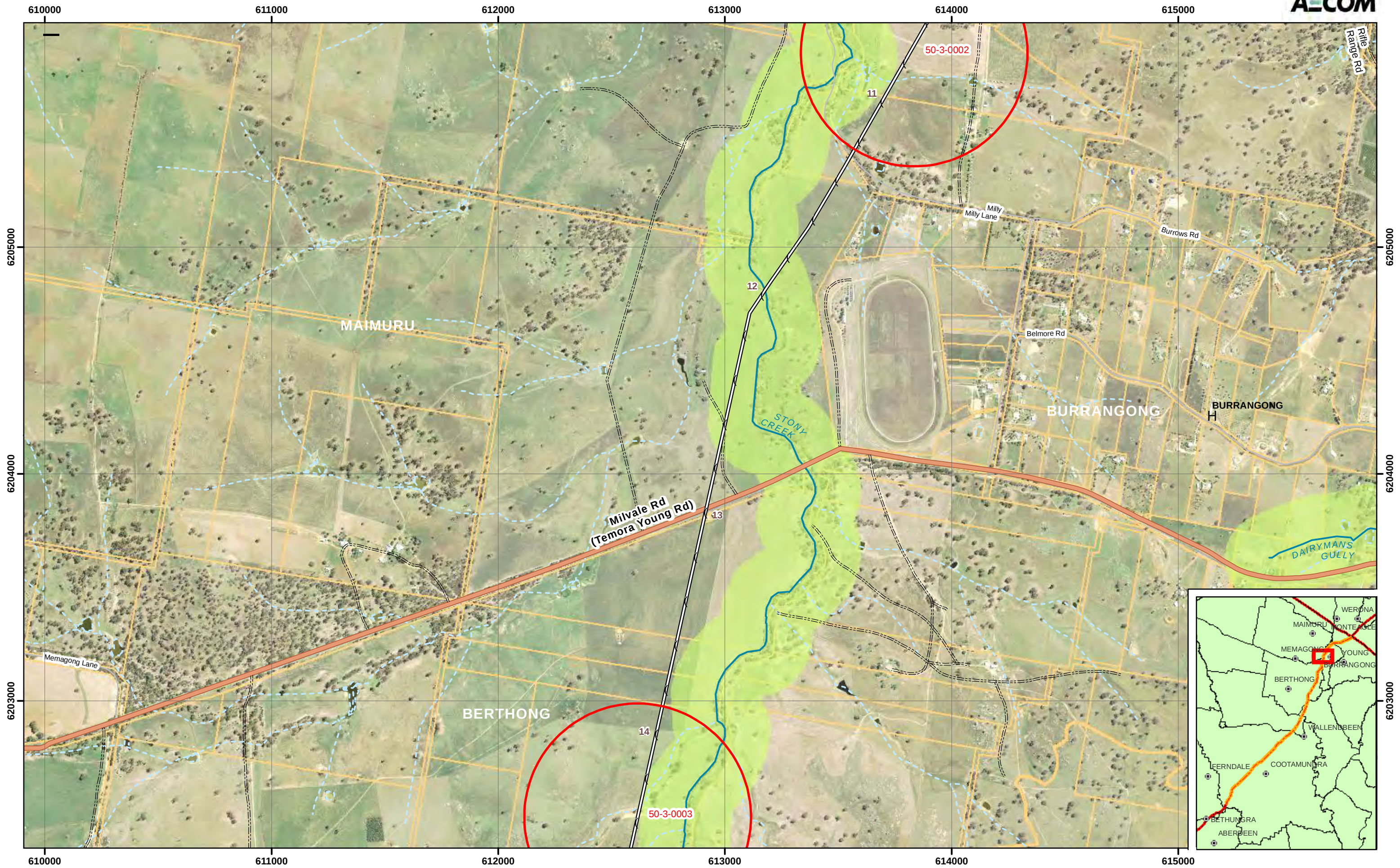
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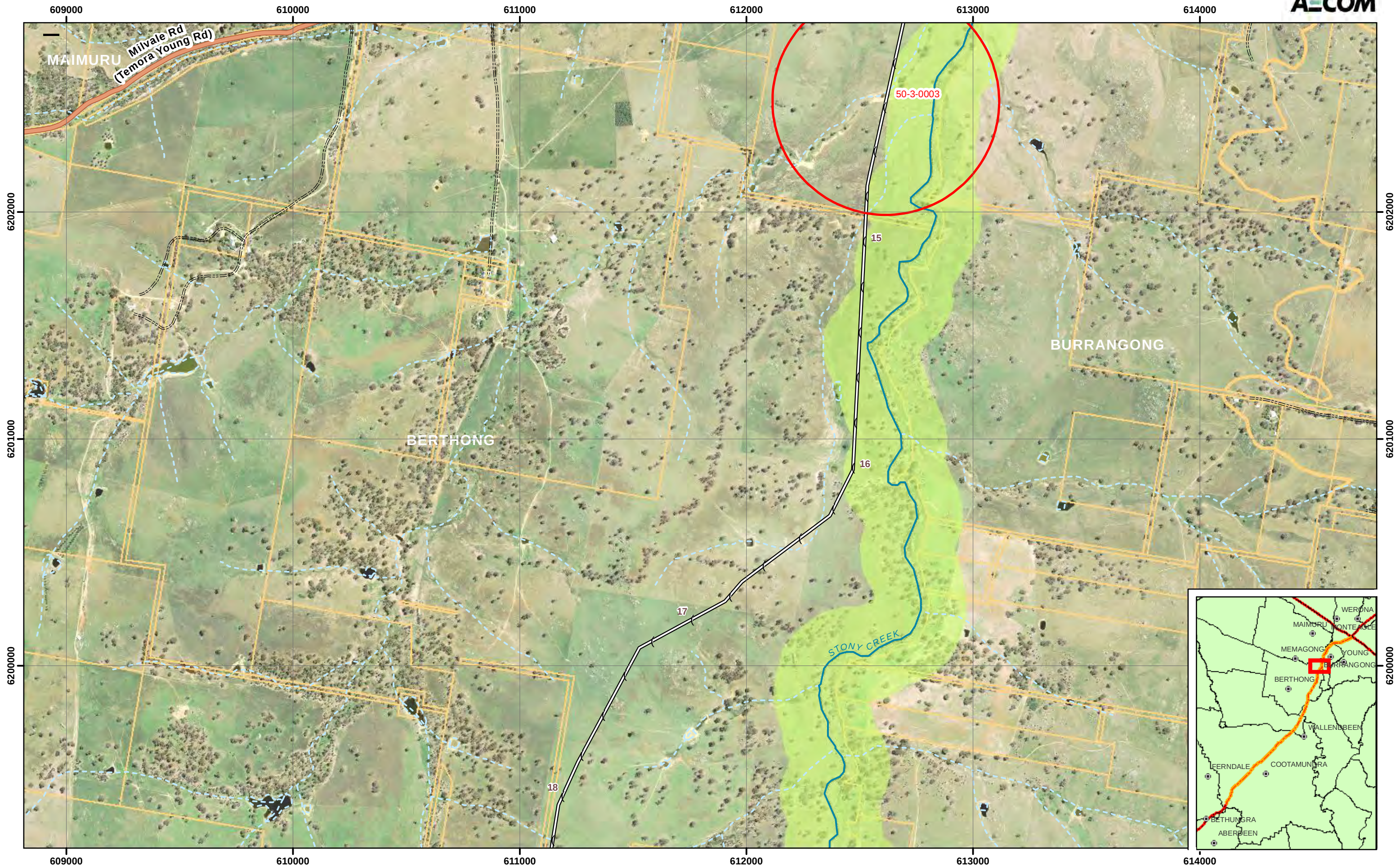
Fig. **2.2**



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| () Registered AHIMS Sites | () 200m Interval Point | Major Drainage | Built-up | Highway | Path |
| ■ Cultural Heritage Sensitivity | Gas Pipeline Section 2 | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| Property Boundary | | | Suburb | Connector Road | Unsealed Road |
| Railway | | | | Local Road | Vehicular Track |

YOUNG - WAGGA WAGGA PIPELINE SECTION 2
AHIMS Registered Sites & Cultural Heritage Sensitivity

Source: LPMA (2010), StreetPro (2009)
0 250 500 1,000 m
GDA94 - MGA Zone 55



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|-------------------------------|------------------------|----------------|----------------------|----------------|-----------------|
| Registered AHIMS Sites | 200m Interval Point | Major Drainage | Built-up | Highway | Path |
| Cultural Heritage Sensitivity | Gas Pipeline Section 2 | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| | Property Boundary | | Suburb | Connector Road | Unsealed Road |
| | Railway | | | Local Road | Vehicular Track |

YOUNG - WAGGA WAGGA PIPELINE SECTION 2
AHIMS Registered Sites & Cultural Heritage Sensitivity

Source: LPMA (2010), StreetPro (2009)

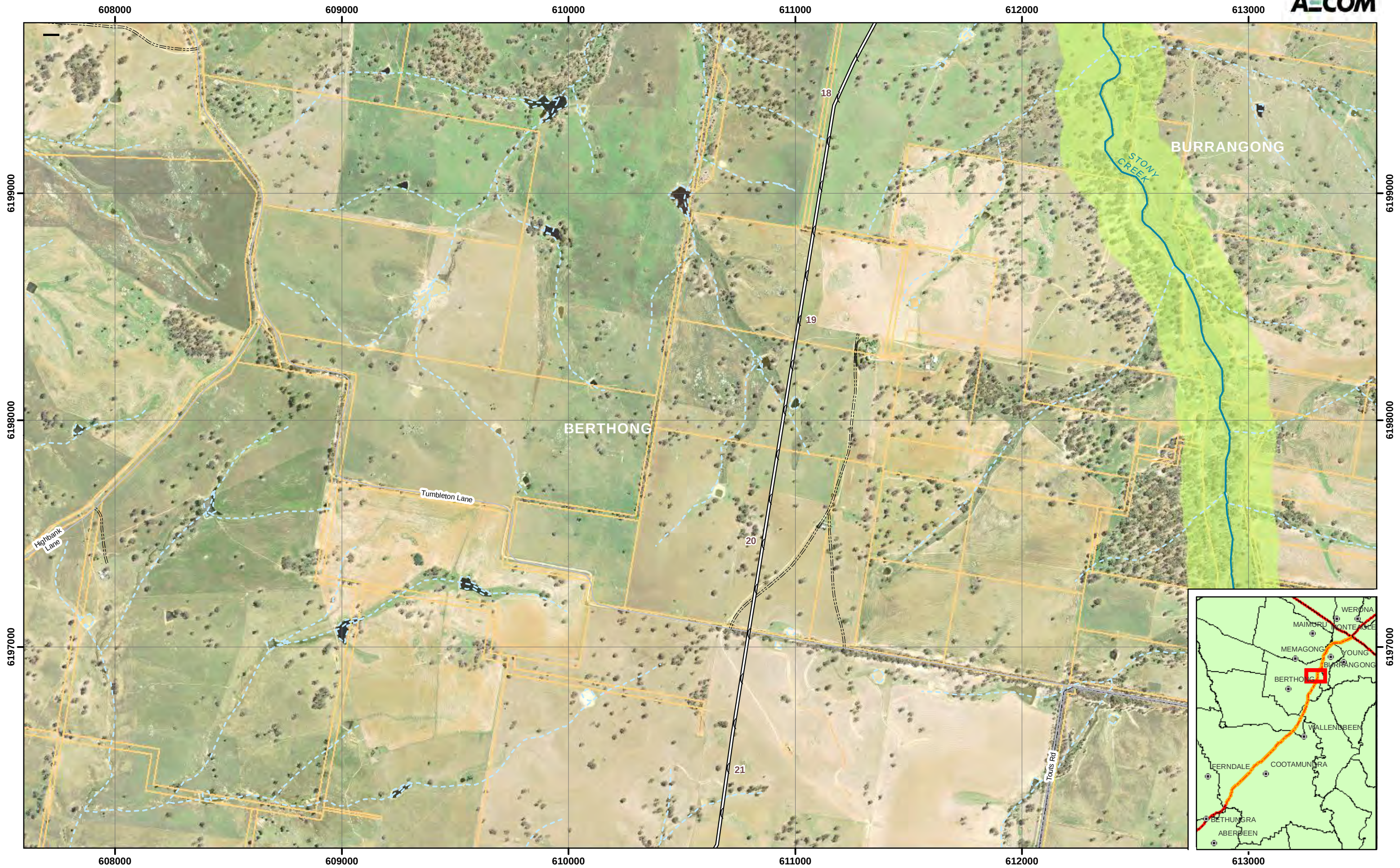


GDA94 - MGA Zone 55

APRIL 2012

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Fig. **2.4**



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|-------------------------------|------------------------|----------------|----------------------|----------------|-----------------|
| Registered AHIMS Sites | 200m Interval Point | Major Drainage | Built-up | Highway | Path |
| Cultural Heritage Sensitivity | Gas Pipeline Section 2 | Minor Drainage | Park/ Nature Reserve | Main Road | Private Road |
| | Property Boundary | | Suburb | Connector Road | Unsealed Road |
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YOUNG - WAGGA WAGGA PIPELINE SECTION 2
AHIMS Registered Sites & Cultural Heritage Sensitivity

Source: LPMA (2010), StreetPro (2009)



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Fig. **2.5**