
Cultural Heritage Desktop Assessment: APA SPP Pty Ltd, Sturt Plateau Pipeline

Report Prepared for:
SLR Consulting Australia and APA Group

2024

REMOTE
HERITAGE
SERVICES
BMK Co Pty Ltd

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Cultural Heritage Desktop Assessment: APA SPP Pty Ltd, Sturt Plateau Pipeline.

(FINAL REPORT)

Prepared for: SLR Consulting Australia Pty Limited, on behalf of the APA SPP Pty Ltd (APA)

Prepared by: Remote Heritage Services
PO 1006
Maleny, QLD 4552

Cover Image: Aerial Image, Dunmarra NT 1983.



EXECUTIVE SUMMARY

SLR Consulting Australia, acting on behalf of APA SPP Pty Ltd, commissioned Remote Heritage Services (RHS) to conduct a Preliminary Cultural Heritage Assessment (PCHA) for a proposed 37-kilometer gas pipeline project across the Sturt Plateau in the Northern Territory. This assessment aims to map the baseline risk of encountering cultural heritage within the Project Area, identify applicable regulatory requirements, and propose appropriate management approaches at the project's outset.

The proposed Sturt Plateau Pipeline (SPP) will connect Tamboran Resources' gas development in the southern Beetaloo Basin to the existing Amadeus Gas Pipeline. The project will involve:

- The construction of a 30m wide right-of-way (RoW) for installing a buried 300mm diameter steel pipeline
- Construction of the Shenandoah Facility (receipt station) at the start of the pipeline and Sturt Plateau Facility (delivery station) at the end of the pipeline
- A cathodic protection anode bed in the eastern end of the pipeline
- A temporary construction accommodation
- Additional workspaces required to facilitate construction, including water bores and gravel sources.

SUMMARY OF KEY FINDINGS

Land Tenure and Native Title

The project area spans multiple perpetual pastoral leases, the Stuart Highway and intersects two Native Title Determinations: the Shenandoah and Hayfield Pastoral Lease Native Title Determinations.

Heritage Register Searches

Searches of National, Commonwealth and Northern Territory heritage and Sacred Site registers noted:

- No listings on National or Commonwealth Heritage Lists within the Project Area.
- No known Aboriginal archaeological places within the Project Area. The closest previously recorded archaeological place, Dunmara Site 1 (flaked telegraph insulator), is located 2.2 km north of the SPP corridor near the Dunmarra Roadhouse.
- No declared sites on the Northern Territory Heritage Register in close proximity. The nearest Declared heritage site, the 'Frew Ponds Overland Telegraph Line Memorial Reserve', lies 17 km south of the proposed SPP corridor and 10 km south of the temporary construction camp.
- Several registered and recorded sacred sites are located nearby but not within the Project Area.

Archaeological Predictive Model

An archaeological predictive model was developed based on environmental, historical, and archaeological background research. Key predictions include:

- Higher likelihood of archaeological sites near water features, particularly in riparian zones of the large ephemeral lake system, minor watercourses, drainage lines and claypans.
- Varying potential based on geology, with alluvium and colluvium zones having high potential for raw materials suitable for the manufacture of stone artefacts.
- Potential for seed processing evidence in Black Soil Plains

- Low likelihood of rock art sites or large quarry complexes
- Potential for contact period archaeological sites related to early European activities

Summary of Recommendations

Based on the findings of this PCHA, the following recommendations are made:

1. Obtain a Sacred Sites Authority Certificate under the *Northern Territory Aboriginal Sacred Sites Act 1989*.
2. Implement a process to avoid impacts to heritage places protected by the *NT Heritage Act 2011*, including:
 - Conducting archaeological field assessments prior to final pipeline alignment and construction
 - Developing a report with constraints mapping and management recommendations
 - Establishing protocols for inadvertent discoveries of cultural heritage
3. Engage Traditional Owners/Site Custodians in heritage management decision-making.
4. Implement workforce training and inductions on cultural awareness and heritage protection.

This PCHA serves as a critical initial step to ensure compliance with cultural heritage regulations and best practices while mitigating potential risks associated with cultural heritage encounters during the project's execution. The findings and recommendations presented will guide future cultural heritage management strategies and inform the proposed cultural heritage field assessments of the Project Areas.

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1 INTRODUCTION

SLR Consulting Australia, acting on behalf of the APA SPP Pty Ltd (APA), has engaged Remote Heritage Services (RHS) to conduct a Preliminary Cultural Heritage Assessment (PCHA) for a proposed 37-kilometer gas pipeline project across the Sturt Plateau (Sturt Plateau Pipeline) in the Northern Territory.

This PCHA aims to map the baseline risk of encountering cultural heritage within the Project Area, identify applicable regulatory requirements, and propose appropriate management approaches at the Project's outset. The assessment serves as a critical initial step to ensure compliance with cultural heritage regulations and best practices, while mitigating potential risks associated with cultural heritage encounters during the project's execution. The findings in this report will also be used to inform the proposed cultural heritage field assessments of the Project Areas.

In brief, the proposed Sturt Plateau Pipeline (SPP) will connect Tamboran Resources' gas development in the southern Beetaloo Basin, to the southeast of the Project Area, with the existing Amadeus Gas Pipeline, to the west. The pipeline will be made of steel with a diameter of up to 300 mm and be buried underground with a minimum cover of 750 mm. The project will involve:

- The construction of a 30m wide right-of-way (RoW) for installing a buried 300mm diameter steel pipeline
- Construction of the Shenandoah Facility (receipt station) at the start of the pipeline and Sturt Plateau Facility (delivery station) at the end of the pipeline
- A cathodic protection anode bed in the eastern end of the pipeline
- A temporary construction accommodation
- Additional workspaces required to facilitate construction, including water bores and gravel sources.

The construction process will involve several steps: surveying the alignment, vegetation clearing, pipe delivery, bending and welding, trench excavation, pipeline installation, backfilling, hydrostatic testing and site rehabilitation. The project team will use open trench construction methods for most of the pipeline, with directional drilling used to cross the Stuart Highway to minimize traffic disruption. These works will likely involve a range of ground disturbance. It is therefore necessary to consider the cultural heritage constraints that may apply to these works under the terms of the Northern Territory *Heritage Act 2011* and the associated *Heritage Regulations 2012*.

1.1 SCOPE OF THE STUDY

As part of the SPP planning study, Remote Heritage Services has completed a desktop Preliminary Cultural Heritage Assessment to identify potential cultural heritage constraints and risks within the Project Area. The assessment covers the following Project Area elements:

1. The SPP corridor (with an assessable width of 150 m)
2. The Shenandoah Facility and Sturt Plateau Facility
3. The cathodic protection unit
4. Additional workspaces

5. The proposed construction accommodation camp

This assessment has included:

1. A summary of land ownership and native title status of the Project Area.
2. Register searches of various Commonwealth and NT Heritage Registers, including mapping of site locations in the region and within the Project Area.
3. An environmental background review to assess archaeological potential in the Project Area, analysing land systems and units, surface geology, and hydrology.
4. A background of ethnographic and archaeological assessment for the Project Area and environs.
5. The development of an archaeological predictive model and risk assessment to guide future compliance with the *NT Heritage Act 2011*.
6. The development of recommendations to guide future compliance with the *NT Heritage Act 2011*.

1.2 PROJECT LOCATION AND LAND TENURE

1.2.1 Location

As illustrated in Figure 1, the Project Area is situated on the Sturt Plateau, intersecting the Stuart Highway 3 km south of Dunmarra Roadhouse (635 km south of Darwin). The assessable pipeline Project Area spans nearly 37 km in length, which includes the Shenandoah Facility (receipt station), a cathodic protection unit and additional work space at its eastern extent and the Sturt Plateau Facility (delivery station) and an extra workspace to tie into the Amadeus Gas Pipeline to the west. This report will assess a pipeline corridor width of 150 m across the majority of its extent, noting that the constructed corridor will be 30 m wide.

The proposed construction camp will be located on the western side of the Stuart Highway, 12 km south of where the pipeline crosses the highway.

1.2.2 Land Tenure

Table 1 presents the land tenure of the Project Area¹, which is crucial for understanding the applicable heritage legislation detailed in Section 2 of this report. It's important to note that different statutes may apply in Australian jurisdictions based on land tenure. For instance, the Commonwealth List administered under the EPBC Act applies to Commonwealth-owned or leased lands.

Table 1: Land Tenure Project Area and Environs

Parcel Key	Current Occupier	Owner	Land Tenure
NT Portion 1077	Hayfield	Private	Perpetual Pastoral Lease
NT Portion 7026	Shenandoah	Private	Perpetual Pastoral Lease
NT Portion 1366	Crown	Northern Territory Government	Government
NT Portion 7513	Hayfield	Private	Perpetual Pastoral Lease

¹ Data extracted from NT Land Information System, 14 August 2024

1.2.3 Native Title

The Project Area spans two Native Title Determinations, divided by the Stuart Highway. The Native Title Determinations comprise multiple estates held by different Indigenous groups:

1. **East of Stuart Highway:** *Shenandoah Pastoral Lease Native Title Determination*
 - Federal Court Number: NTD21/2010
 - National Native Title Tribunal Number: DCD2012/007
 - Held by members of the Kinbininggu group and the Bamarrngganja group
2. **West of Stuart Highway:** *Hayfield Pastoral Lease Native Title Determination*
 - Federal Court Number: NTD26/2010
 - National Native Title Tribunal Number: DCD2012/011
 - Held by members of the Kinbininggu group, the Warranangku group, and the Marlinja group

3. Registered Native Title Body Corporate

The Top End (Default PBC/CLA) Aboriginal Corporation RNTBC serves as the registered native title body corporate (RNTBC) for both determinations, as per Subsection 203AD(1) of the *Native Title Act 1993*. This corporation holds the statutory obligations for the Project Area under the terms of the Act.

1.3 CONSULTATION

APA has a stakeholder engagement and participation approach to cultural heritage assessments, including the heritage assessments pertaining to this report. However, as this study represents the initial assessment phase, the consultation has been preliminary, encompassing the key stakeholders listed in Table 2 below.

Table 2: Stakeholder engagement summary

Stakeholder	Timing	Discussion / Agenda Summary
Northern Land Council	March 2024 - ongoing	Outline of project activities and location Ongoing discussions regarding Traditional owner involvement in the project.
AAPA	August 2023 - Present	Initial AAPA Abstract of records search Submission of application for Authority Certificate for the project area and immediate surrounds. Ongoing engagement regarding outcomes of the process
Heritage Branch	June 2024	Search of the NT Archaeological Database and Heritage Register.
Elliott Information Session	August 2024	Information session for the community to outline the proposed project. Attendees also included some Traditional Owners representatives.

1.4 THE AUTHORS

Project Archaeologist: Ben Keys

Ben holds a Bachelor of Archaeology with Honours from Flinders University, South Australia. He has extensive experience in cultural heritage management and community consultation, coupled with the management of largescale mining projects in the Northern Territory. Ben also has a professional background in land access management and aspects of environmental management, including mining compliance. He has been an author of several published academic archaeological journal articles and has been invited to speak at several mining industry conferences in the Northern Territory.

Project Archaeologist: Alan Hay

Alan holds a Bachelor of Archaeology with Honours from Flinders University, South Australia, and a Master of Archaeological Science from Australian National University. Alan has more than 10 years' experience in archaeology and cultural heritage management. He has a background in Geographic Information Systems, Archaeological Survey and Excavation, Mitigation, Historical Research, and Environmental Impact Assessment.

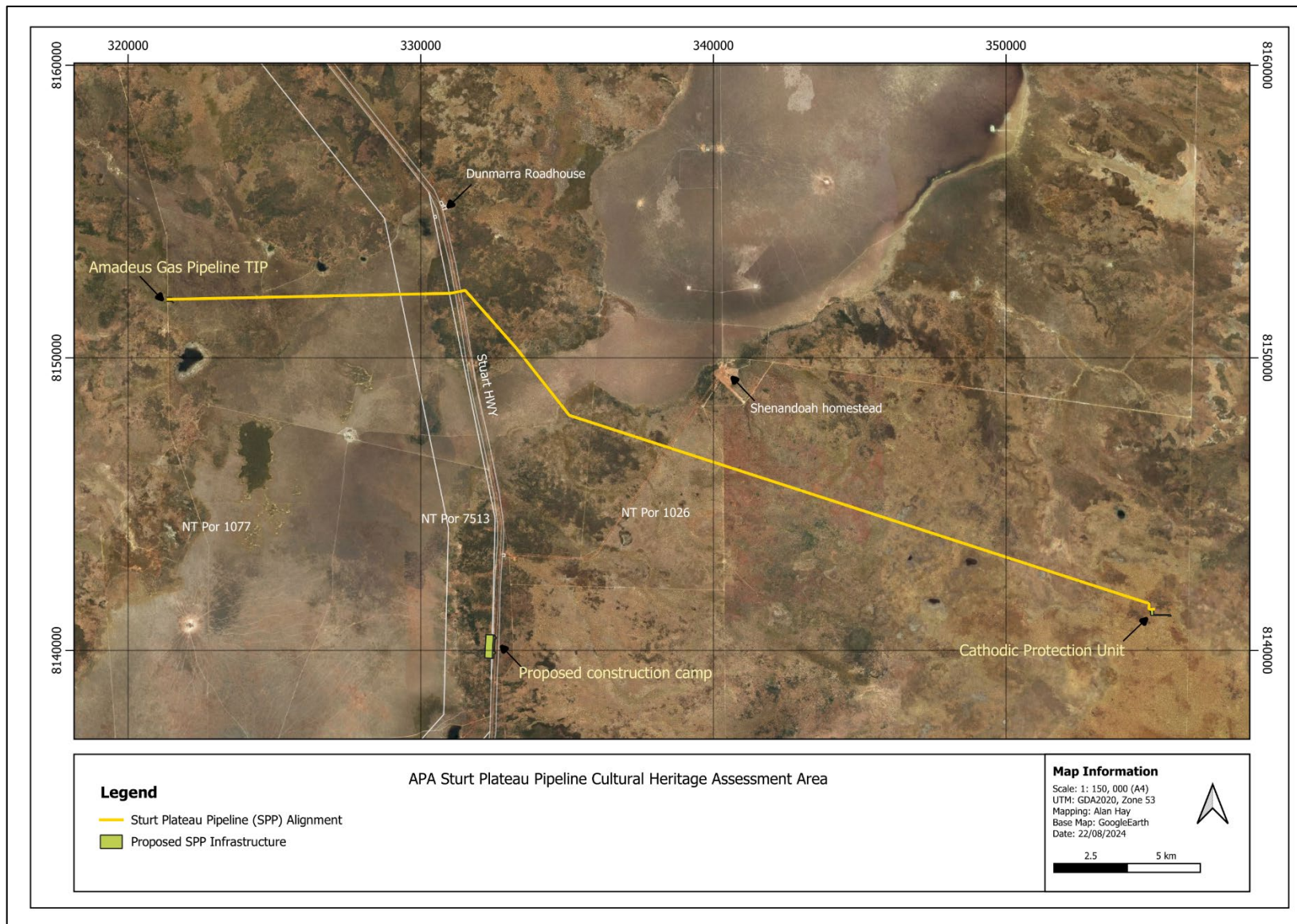


Figure 1: Project Location and Relationship to Key Cadastre

2 LEGISLATIVE CONTEXT

2.1 THE LEGISLATIVE AND SOCIAL BASIS FOR CULTURAL HERITAGE PROTECTION

The significance of places and materials associated with the cultural record varies substantially, depending upon one or a combination of its aesthetic, historic, scientific, social or spiritual values for past, present or future generations (Australia ICOMOS Burra Charter, 2013). Through time, these values can change or be impacted upon by both natural mechanisms and human intervention. To ensure impacts to the potential cultural heritage values of a place or object are understood, protected or managed accordingly, a range of legislation has been enacted since the 1970s.

This legislation has occurred at the state, territory, and national level. This is the result of the evolution of the Australian constitutional framework, particularly the inclusion of new themes, such as Aboriginality, heritage and the environment into an existing regulatory framework. The result of this developmental change is that the Commonwealth retains responsibility for Indigenous issues, while the States and Territories retain control of land use and development approvals. Therefore, both Commonwealth and the Northern Territory Acts may apply in particular circumstances within the Northern Territory.

2.1.1 Commonwealth Acts

Aboriginal Land Rights (Northern Territory) Act 1976 (ALRA). This Act changed Aboriginal reserves within the Northern Territory to freehold title held in trust. The Act mandated the formation of Land Councils to act in the interests of Northern Territory Aboriginal people in the areas of land, access to lands, employment and the development of businesses. The Act also defined Sacred Sites as ‘sites that are sacred, or otherwise significant, in the Aboriginal Tradition’. The Act protected these sites from damage, whether accidental or intentional. The NT *Aboriginal Sacred Sites Act 1989* uses this definition of sacred in its purpose of protecting these sites outside of Land Trust lands. On Pastoral Lease Lands, the general procedure is for the AAPA conduct the Sacred Site surveys with the relevant Site Custodians, then issue an Authority Certificate under the Act (see Section 2.1.2 below).

Native Title Act 1993. Native Title is “the communal, group or individual rights and interests of Aboriginal people and Torres Strait Islander people in relation to land and waters, possessed under traditional law and custom, by which those people have a connection with an area which is recognised under Australian law (s 223 NTA) (NNTT 2016). The NTA establishes the processes to determine where native title exists, how future acts impacting upon native title land may be undertaken, and to provide compensation where future acts extinguish or are inconsistent with the existence or exercise of native title (DCP 2016). The Act gives Indigenous Australians who hold native title rights and interests (including native title claims) the right to access and use traditional lands, be consulted and, in some cases, to participate in decisions about activities proposed to be undertaken on the land.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984. This Act is a site protection Act of ‘last resort’, meaning that the Act is meant to provide emergency protection for Aboriginal and Torres Strait Islander heritage sites when all other avenues have been exhausted. Generally, an Aboriginal person or group of persons, must apply to the Minister to have protective covenants placed over an area or site (DEE 2016). The power to provide such protection resides in Section 51 of the Constitution

giving the Commonwealth powers on Aboriginal issues. Therefore, this Act may override all State and Territory cultural heritage acts.

The Environment Protection and Biodiversity Conservation Act (EPBC Act) commenced on 16 July 2000. The EPBC provides for a National Heritage List of natural, historic and Indigenous places that are of outstanding significance to the nation. The EPBC also provides for a Commonwealth List that includes natural, historic and Indigenous places of significance that are owned or controlled by the Commonwealth. Ownership or control of these places allows the Commonwealth to protect or manage these places according to the significance of the place. The Commonwealth Department of Environment and Energy administers the EPBC, including administration of the heritage lists and providing support to the Australian Heritage Council established under the Australian Heritage Council Act 2003. The Department maintains the Australian Heritage Database which includes places on both Commonwealth lists, all places on state registers and other places included in the former Register of the National Estate established in the 1970s.

2.1.2 Northern Territory Acts

Aboriginal Sacred Sites Act 1989. The NT *Aboriginal Sacred Sites Act 1989* protects sites that are ‘sacred and otherwise of significance in the Aboriginal Tradition’. Sacred Sites are protected whether the location of the site is known or not by any person or company seeking to do work on lands. The Act is administered by the Aboriginal Areas Protection Authority. The Authority can issue a Certificate indemnifying any proponent for an area upon application and payment of a fee. The Certificate will contain conditions limiting or preventing works in and around registered and recorded Sacred Sites. The Authority Certificate will contain maps outlining any restricted work areas within the area of application.

Heritage Act 2011 and Regulations. The NT *Heritage Act 2011* (replacing the *Heritage Conservation Act 1991*) provides for the conservation of the Territory’s natural and cultural heritage, including places and objects within NT waters. The aim is achieved under the Act by:

- (a) *declaring places and objects of heritage significance to be heritage places and objects;*
- (b) *declaring classes of places and objects of heritage significance to be protected classes of heritage places and objects;*
- (c) *establishing the Heritage Council;*
- (d) *providing for heritage agreements to encourage the conservation, use and management of heritage places and objects;*
- (e) *regulating work on heritage places and objects;*
- (f) *establishing enforcement and offence provisions.*

Under Part 2.1 of the *NT Heritage Act 2011*, all Aboriginal and Macassan archaeological places and objects are provided automatic protection under the Act, regardless of whether their existence or location is known. An Aboriginal or Macassan archaeological places is defined under the Act as a place that:

- (a) *relates to the past human occupation of the Territory by Aboriginal or Macassan people;*
and
- (b) *has been modified by the activity of those people.*

An Aboriginal or Macassan archaeological object is defined as a relic that:

- (a) relates to the past human occupation of the Territory by Aboriginal or Macassan people; and*
- (b) is: (i) in an Aboriginal or Macassan archaeological place; or (ii) stored in a place in accordance with Aboriginal tradition*

A relic is defined under the Act as:

- (a) an artefact or thing given shape by a person; or*
- (b) human or animal skeletal remains; or*
- (c) something else prescribed by regulation.*

Under Part 2.2. of the NT Heritage Act 2011, other places and objects – i.e., non-Aboriginal and non-Macassan places and objects – can be declared by the Minister as protected heritage places and objects.

A place is defined as an area of land, and includes:

- (a) a building or, a part of a building, on the place; and*
- (b) an item historically or physically associated with the place if the primary importance of the item derives (completely or partly) from that association; and*
- (c) equipment, furniture, fittings and articles on, or historically or physically associated with, the place.*

The process for declaring heritage places and objects involves a nomination or Heritage Council initiation for assessment of the heritage significance – including aesthetic, historical, scientific, and social significance of a place or object. The Heritage Council then considers whether the place or object is of heritage significance and make a decision whether or not to recommend that the Minister declare the place or object to be a protected heritage place or object.

Under Part 5.5 of the Act, it is an offence to knowingly engage in conduct that results in damage to a heritage place or object, removes a part of the place, or removes a heritage object from the NT, unless the conduct is carried out in accordance with a relevant heritage agreement, work approval, repair order, or exemption. A permit will generally only be issued if consultation with the relevant Traditional Owners or Custodians of the sites or their representatives has occurred. There are penalties for accidental or deliberate damage or destruction of these sites.

2.2 REGULATORY ORGANISATIONS

Northern Land Council (NLC). The NLC is an independent statutory authority of the Commonwealth responsible under the ALRA and *Native Title Act* for assisting Aboriginal peoples in the Top End to acquire and manage their traditional lands and seas. This includes assisting in Land Rights and Native Title Claims, managing traditional lands and protecting sites of significance in the Aboriginal Tradition. The NLC is also responsible for promoting the economic interests of Aboriginal peoples in the Top End. They do this by advocating for Traditional Owners interests in the development of resources on Land Trust and Native Title lands.

Aboriginal Areas Protection Authority (AAPA). The AAPA is an independent statutory authority established under the *Northern Territory Aboriginal Sacred Sites Act 1989*. The Authority is responsible

for the protection of Aboriginal sacred sites on land and sea across the Northern Territory. The AAPA seeks to implement a practical balance between sacred site protection and economic development.

Heritage Branch, NT Department of Families, Housing and Communities. Heritage Branch is the regulatory authority responsible for administering most sections of the NT *Heritage Act 2011*. Heritage Branch is also responsible for administering the NT Heritage Register, the NT Archaeological Database and providing logistical support for the NT Heritage Council.

Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW). DCCEEW is the regulatory authority responsible for the EPBC Act 1999. DCCEEW is also responsible for administering the National Heritage List, the Commonwealth Heritage List, and the Australasian Underwater Cultural Heritage Database (AUCHD).

2.3 HERITAGE GUIDELINES AND CHARTERS

A range of heritage and stakeholder engagement guidelines are published at National, State and Northern Territory Levels which contribute to the development of best practice approaches for assessing and managing cultural heritage values.

The Northern Territory Government' Department of Territory Families, Housing and Communities website² also host current information regarding heritage matters.

The following guidelines and charters have been considered in this desktop study and should be used to guide successive phases of this project:

1. Interim Engaging with First Nations People and Communities on Assessments and Approvals under the Environment Protection and Biodiversity Conservation Act 1999 (DCCEEW 2023)
2. Environmental impact assessment and environmental approval in the Northern Territory, Environmental impact assessment guidance (NT EPA 2020)
3. Stakeholder Engagement and Consultation, Environmental impact assessment guidance for proponents (NT EPA 2021)
4. Environmental factor guidance: Culture and heritage (DRAFT) (NT EPA 2022)
5. Ask First, A guide to respecting Indigenous heritage places and values (Australia ICOMOS 2013a)
6. Practice Notes for the Australian ICOMOS Burra Charter 2013 (Australia ICOMOS 2013)
7. Ask first: a guide to respecting Indigenous heritage places and values (Australian Heritage Commission 2002)
8. Dhawura Ngilan: A vision for Aboriginal and Torres Strait Islander heritage in Australia and the Best Practice Standards in Indigenous cultural heritage management and legislation (DCCEEW 2020)

² <https://nt.gov.au/leisure/arts-culture-heritage/visit-a-cultural-or-heritage-site/aboriginal-heritage-information>

3 RESEARCH METHODOLOGY

The following research and analysis methodology was undertaken to fulfil the requirements of this study's scope.

3.1 COMPREHENSIVE DESKTOP RESEARCH AND REVIEWS

1. Environmental Contextual Research (Including Paleoenvironments).

- **Data Collection:** Climate data (temperature, precipitation patterns) was gathered from the Bureau of Meteorology; environmental information (ecological, hydrology and geological data) from Northern Territory and Commonwealth agencies; geomorphic information (soil types, landforms, paleoenvironmental data) was sourced through peer reviewed publications, coupled with Government research publications.
- **Analysis:** This information was then analysed to assess how these factors might have shaped human settlement and land use, influenced the preservation of archaeological and heritage sites, and affected the visibility cultural heritage sites.

2. Cultural Background Research

- **Ethnographic Research:** Ethnographic research was restricted to the limited reviews of previously published literature.
- **Historical Research:** The Study Areas historical archaeological heritage was investigated through archival research (NT and National Archives, Trove, South Australia Museum, and various University libraries), historical maps, military records and previous cultural heritage studies to understand site distribution patterns, historical land use and significant features and events.

3. Regulatory and Internal Database Searches

- **Northern Territory and Commonwealth Databases:** Searches were completed for heritage listings and previous cultural heritage assessments of Northern Territory and Commonwealth heritage registers and databases (including AAPA)

4. Review of Existing Reports and Literature

- **Previous Cultural Heritage Reports:** Previous regional cultural heritage assessment/survey reports were reviewed for insights into the area's heritage values, noting any identified cultural sites and their distribution patterns.
- **Other Sources:** Reviews were completed of relevant academic literature, books, and external reports to understand the broader published information, to incorporate a range of perspectives on the area's heritage.

5. Stakeholder Engagement:

- **Consultation:** Consultation was limited to community engagement completed by APA and SLR, a summary of which is presented in Section 1.3 above.

6. Site Risk Assessment

- **Risk Identification:** A broad site risk assessment was undertaken to identify potential risks associated with construction activities.

7. Gap and Limitations Analysis

- **Identification of Gaps:** A gap analysis was undertaken to understand where information is lacking, such as previous survey coverage and existing site records.

8. Recommendations

- **Management Strategies:** General management strategies were developed based on the identified risks gap analysis and future stakeholder consultation requirements.

4 PHYSICAL AND ENVIRONMENTAL SETTING

The environmental setting of a region is important in analysing past human settlement behaviour and interpreting archaeological features and site patterns. Geomorphology and geology of the study area are significant factors in understanding prehistoric archaeological patterns in the landscape. Changes in the landscape may have an influence on the types of archaeological material found. The following section outlines the environmental and physical background to the Project Area.

4.1 CLIMATE AND HYDROLOGY

The Project Area is wholly within the Sturt Plateau Bioregion but lies above an area of Mitchell Grass Plains that extends into the Sturt Plateau from the south (see Figure 2). The Sturt Plateau bioregion is characterised by a dry monsoonal climate, with a median annual rainfall of 556 mm (1890 to 2005)³. Precipitation is highly seasonal, with almost all rainfall occurring between November and March, creating distinct wet and dry seasons. The dry season spans from April to October. The nearest Bureau of Meteorology station that records both rainfall and temperature data is at Daly Waters Airport Station, 51km to the north of the SPP (Figure 3 and Figure 4).

Temperature data reveals consistently warm conditions. Maximum temperatures range from 30°C in July to 37-39°C from October through March. Minimum temperatures exhibit greater annual variation, from 12°C in July to 24-25°C in November through February. The diurnal temperature range is significant throughout the year.

The Project Area's hydrology is dominated by an ephemeral lake system, which is transected by the SPP corridor at its narrowest point. A first-order watercourse is mapped towards the western terminus of the corridor; however, aerial imagery suggests this may be a flood-out zone rather than a watercourse where the pipeline intersects. A number of shallow claypans and drainage depressions are transected by or lie adjacent to the SPP within the eastern 12 km of the corridor. Similar depressions are noted 1 km to the north of the western end of the SPP. All hydrological features are likely to offer freshwater during times of high rainfall, and their banks and shores may have been inviting for human occupation.

³ Sturt Plateau bioregion factsheet (dcceew.gov.au)

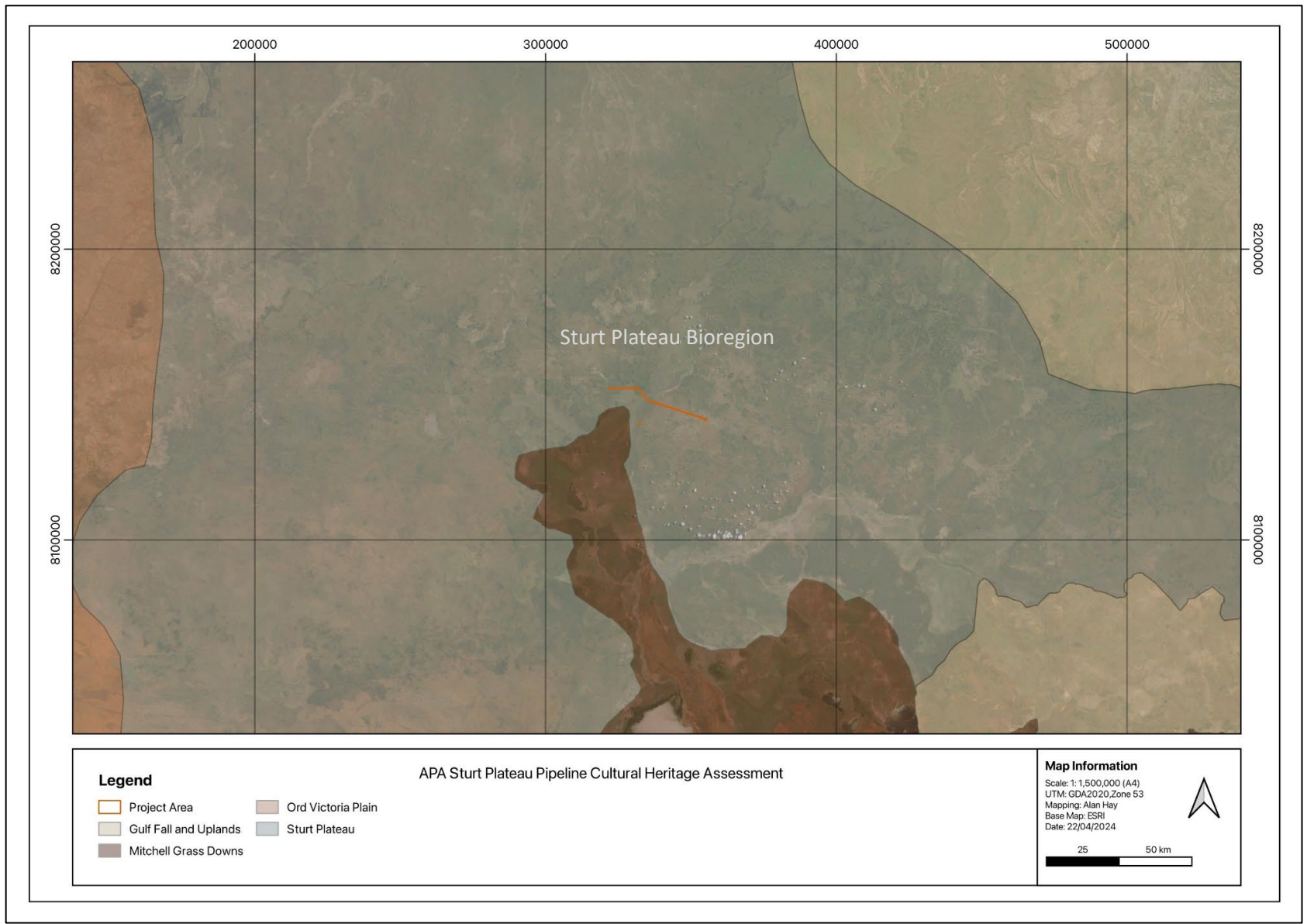


Figure 2: Project Area Bioregions.

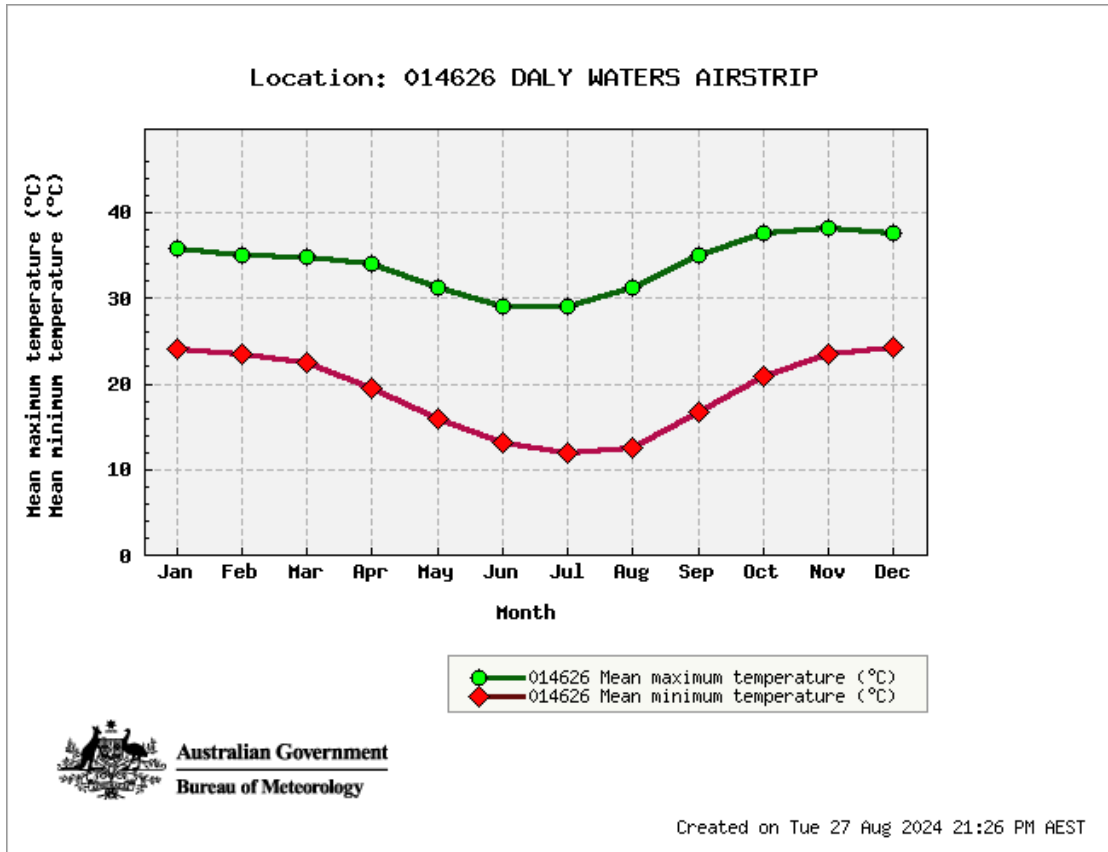


Figure 3: Mean Maximum and minimum temperatures from the Daly Waters Airport Station (BOM).

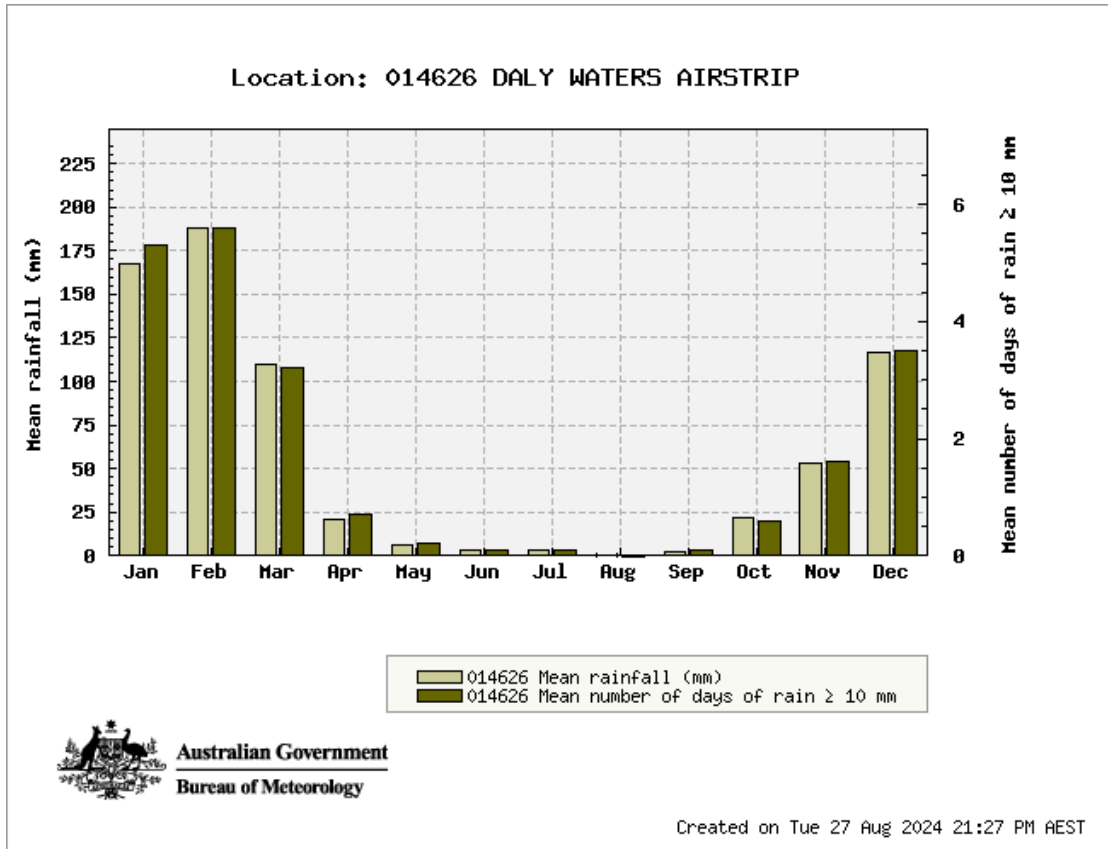


Figure 4: Mean and highest daily rainfall from the Daly Waters Airport Station (BOM).

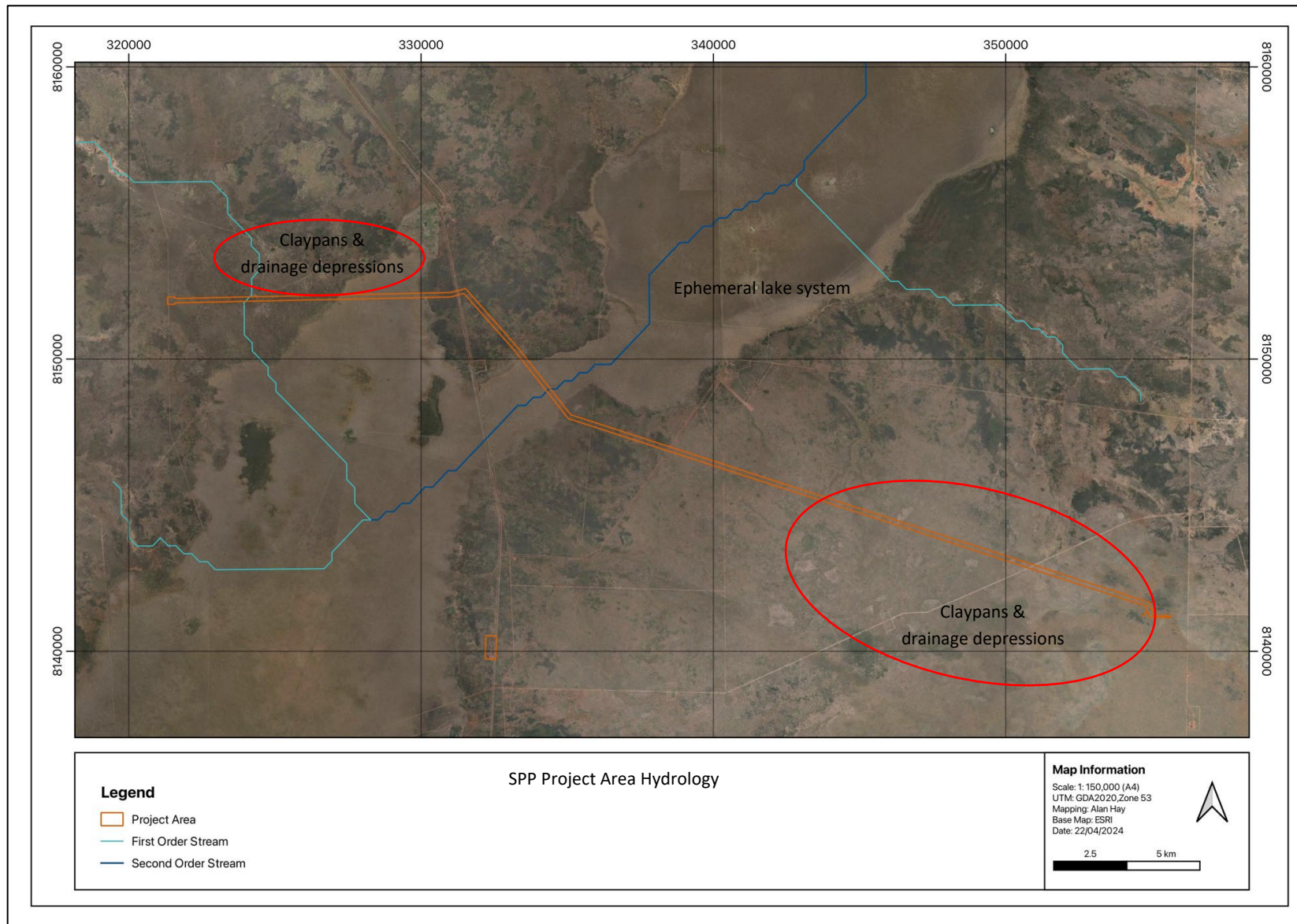


Figure 5: Watercourse in and around the Project Area, showing stream order.

4.2 GEOLOGY AND GEOMORPHOLOGY

The Land system mapping, presented in Figure 6 and Table 3, suggests limited environmental complexity along the SPP; however, there are several key geological and the topographic variations that have been considered for their archaeological potential (see Figure 7 and Table 4).

Five distinct types of surface geology are present within and around the Project Area:

1. **Alluvium:** Channel and flood plain deposits comprising gravel, sand, silt, and clay, with potential local calcrete formations. These zones are archaeologically significant as they may contain raw materials from surrounding geological strata, including lithic materials suitable for tool production.
2. **Black Soil Plain (Atlas_I16 land system):** Characterised by residual black, dark grey, or brown clayey soil. While generally unlikely to yield substantial lithic resources, areas subject to streambank overflow or flooding may accumulate raw materials from nearby geological formations, potentially including lithic materials useful for artefact production.
3. **Colluvium:** Deposits comprising sheetwash, talus, and scree, containing boulders, gravel, and sand. These may incorporate minor alluvial or sand plain deposits, calcrete, and reworked laterite. Like alluvial zones, colluvium areas have archaeological potential due to the presence of raw materials derived from surrounding geological strata.
4. **Ferruginous Duricrust:** Characterised by laterite formations that are pisolitic, nodular, and vuggy. These may include massive to pisolitic ferruginous subsoil, mottled clays, magnesite, and reworked products of ferruginous and siliceous duricrusts. Calcrete, gossan, and residual ferruginous saprolite may also be present. These areas are less likely to contain naturally occurring raw materials suitable for tool production.
5. **Sediments:** Formations consisting of sandstone, pebbly sandstone, conglomerate, mudstone, and siltstone. These Often exhibit crossbedding, ripple marks, and graded bedding, forming distinctive mesa and bench landscapes. They May be ferruginised or silicified in some instances. These zones hold significant archaeological potential, as they may contain mudstone, chert, quartz, and other fine-grained siliceous rocks commonly used in lithic assemblages.

The Beetaloo and Birrimbah land systems, with their lateritic profiles and varied depositional products, likely provided a mix of resources and landscapes that Aboriginal people could have exploited. The sandy and earth soils in these systems might have supported certain types of vegetation, potentially attracting game animals and providing plant resources.

This geological and land system diversity would have presented Aboriginal people with a range of options for resource exploitation and settlement. The varied terrain, from clay plains to lateritic rises, would have offered different habitats and resources, potentially supporting diverse prehistoric activities and settlement patterns. Consequently, some sections of the Project Area represent potentially rich landscapes for archaeological investigation.

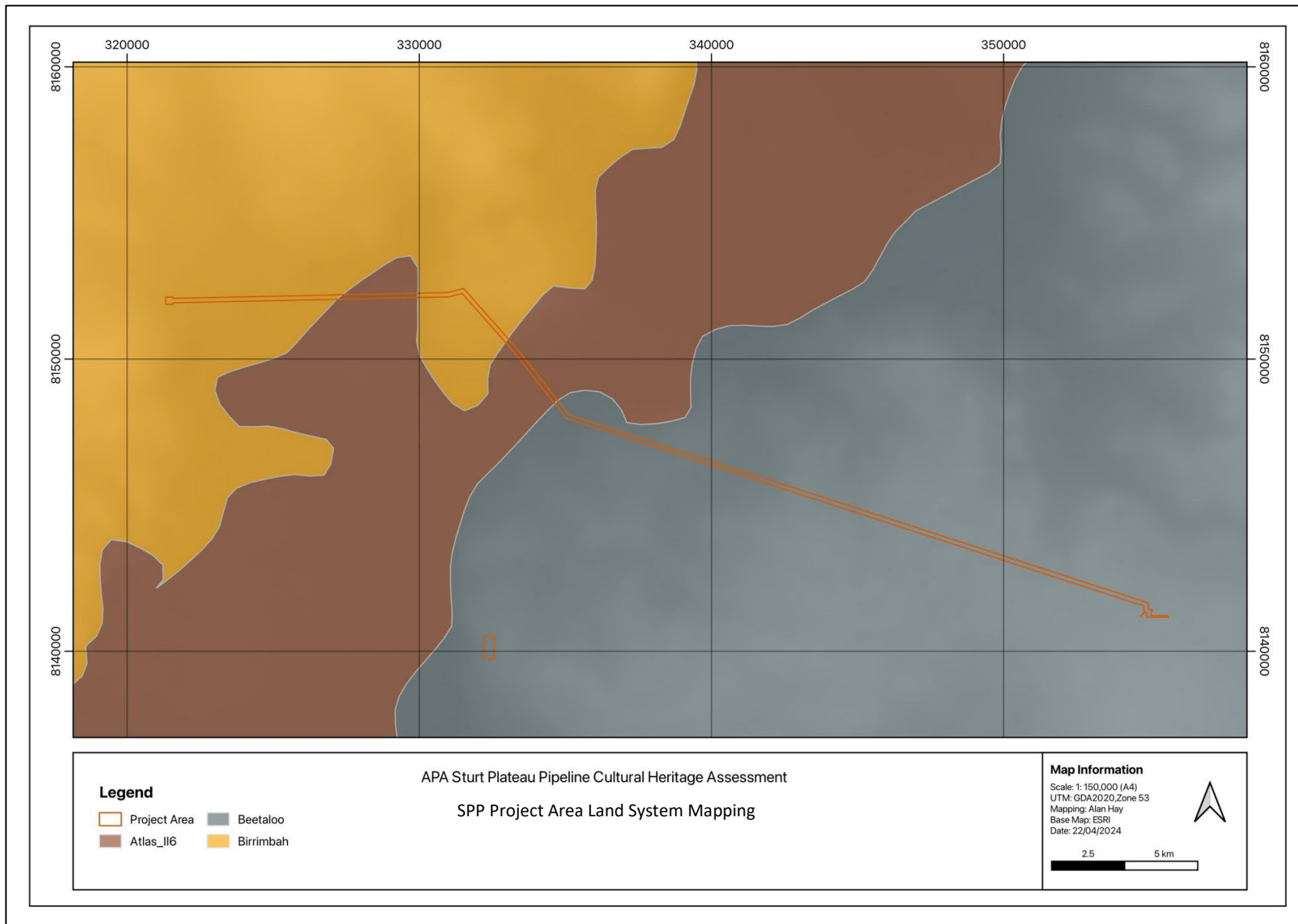


Figure 6: Landscape systems within and around the Project Area.

Table 3: Landscape systems within and around the Project Area

Land System	Landscape Description
Atlas_I16	Level to gently undulating clay plains (black soil plains); cracking clay soils
Beetaloo	Plains and rises associated with deeply weathered profiles (laterite) including sand sheets and other depositional products; sandy and earth soils
Birrimbah	Plains and rises associated with deeply weathered profiles (laterite) including sand sheets and other depositional products; sandy and earth soils

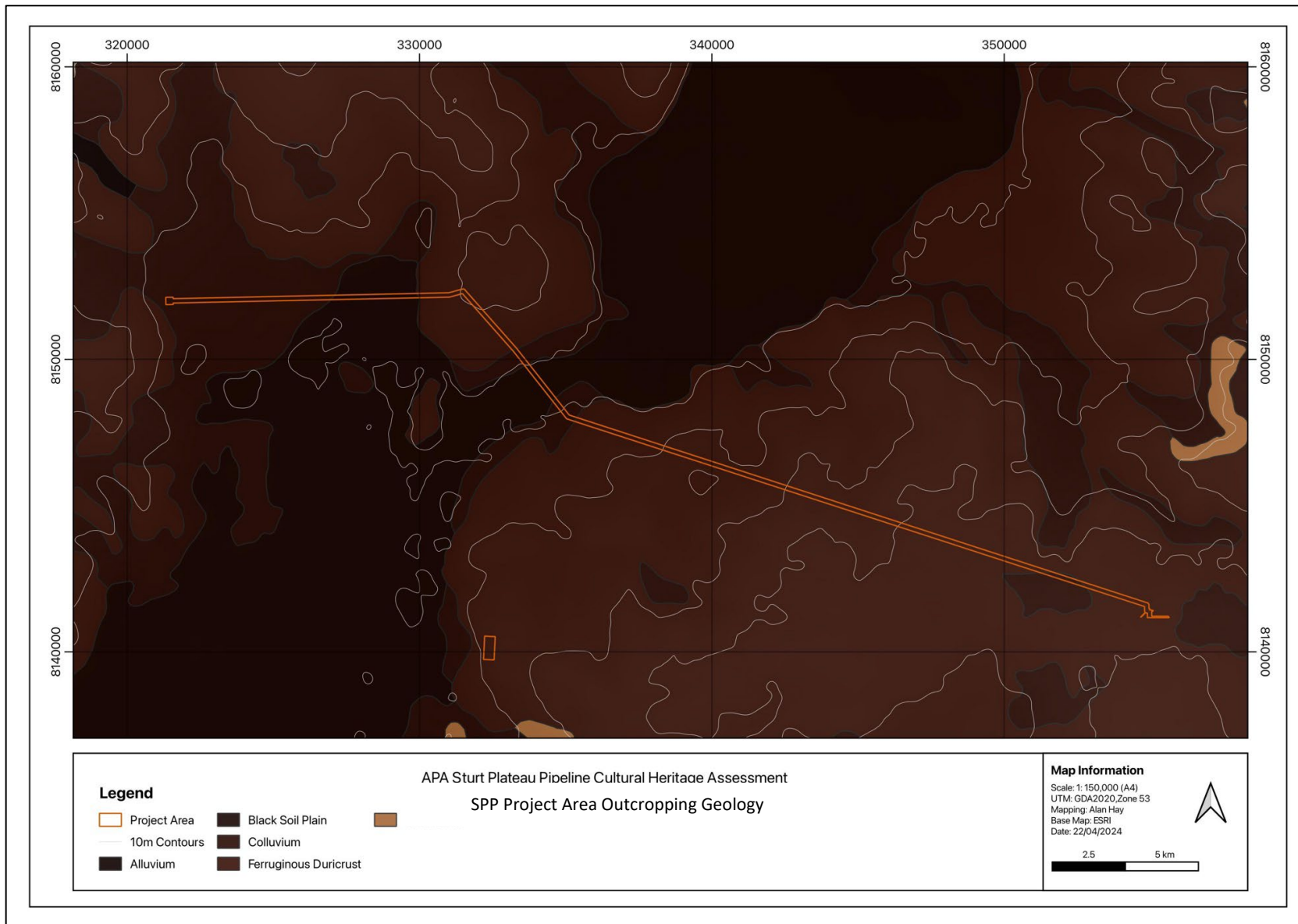


Figure 7: Outcropping Geology of Archaeological Interest within the Project Area.

Table 4: Outcropping geology table and interpretation within the Project Area.

Rock Type	Symbol	Lithic Description	Archaeological Interpretation
Alluvium	Qa	Channel and flood plain alluvium; gravel, sand, silt, clay; may be locally calcreted.	This type of surface geology may contain raw material drown from the surrounding geological strata, including lithic materials useful for the production of raw materials.
Black Soil Plain	Czrb	Residual black, dark grey or brown clayey soil	Black soil plains are unlikely to contain substantial lithic resources except in areas of streambank overflow or flooding, in which case they may contain raw material drown from the surrounding geological strata, including lithic materials useful for the production of raw materials.
Colluvium	Qrc	Colluvium and/or residual deposits, sheetwash, talus, scree; boulder, gravel, sand; may include minor alluvial or sand plain deposits, local calcrete and reworked laterite	This type of surface geology may contain raw material drown from the surrounding geological strata, including lithic materials useful for the production of raw materials.
Ferruginous Duricrust	Czl	Ferruginous duricrust, laterite; pisolithic, nodular, vuggy; may include massive to pisolithic ferruginous subsoil, mottled clays, magnesite, reworked products of ferruginous and siliceous duricrusts, calcrete, gossan; residual ferruginous saprolite	Unlikely to contain naturally occurring raw materials such as may be suitable for tool production.
Sediments	Ks	Sandstone, pebbly sandstone, conglomerate, mudstone, siltstone; crossbedded, rippled, graded; mesa and bench forming; may be ferruginised or silicified	Potential for mudstone, chert, quartz as well as other fine grained silicious rocks that are common raw material types in lithic assemblages.

4.3 ECOLOGY

While it is likely that there is some variation between broader ecological communities across different land systems within the Project Area, National Vegetation Information System mapping indicates that the pre-colonisation ecological communities within the Project Area consisted of broad groupings of forests and woodland (see Figure 8). The pre-colonisation mapping is supported, in this case, by a large amount of extant remnant woodland and forest still present within the Project Area.

Acacia low woodland, a prominent vegetation type in the project area, is characterised by Acacia species forming a low canopy with an understorey of Eragrostis low open tussock grassland. This community is typically found on well-drained soils, including gravelly lithosols and shallow red, yellow, and black earths. It occurs on lateritic sandstone outcrops, plateaux, breakaways to the north, and rises and plains to the south. The adaptation of Acacia species to these soil types and landforms suggests their resilience to the seasonal dry periods and ability to thrive in areas with good drainage.

Eucalyptus low open woodland represents another significant vegetation community, featuring Eucalyptus species forming an open canopy with an understorey of Acacia mid sparse shrubland and *Astrebla* low tussock grassland. This community is associated with light to heavy grey and brown clays, as well as some loamy soils, typically found in low-lying flat plains and areas fringing watercourses and swamps. The presence of this community likely indicates areas with better water retention, possibly benefiting from seasonal inundation during the wet season.

Macropteranthes (mixed) low woodland shares similar soil and landscape characteristics with the Acacia low woodland, occurring on gravelly lithosols and shallow earths in areas of lateritic sandstone outcrops and plateaux. The understorey in this community consists of *Chrysopogon* mid open tussock grassland. The similarity in habitat suggests that these two communities may be adapted to similar environmental conditions, potentially alternating dominance based on subtle variations in soil composition or microclimatic factors.

Melaleuca low woodland, characterised by Melaleuca species forming both the canopy and a mid-sparse shrubland layer, with an understorey of *Eulalia* low open tussock grassland, is typically found on plains and relict drainage fringes. While specific soil types are not mentioned for this community, its association with drainage features suggests an adaptation to periodically moist conditions, likely benefiting from the seasonal rainfall patterns and possibly indicating areas of higher water table or surface water accumulation during wet seasons.

Acacia open forest presents a taller structure compared to the Acacia low woodland, with Acacia species forming a mid-open forest and tall open shrubland, accompanied by *Chrysopogon* low open tussock grassland. This community is found on rises with rocky skeletal soils, extending onto shallow gravelly sands in drier areas. The more substantial vegetation structure in this community might indicate slightly more favourable moisture conditions, possibly due to the position on rises which could capture more rainfall or benefit from subsurface water movement.

Corymbia low woodland, featuring Corymbia species forming a low canopy with Terminalia mid sparse shrubland and *Chrysopogon* low tussock grassland, occurs on gently undulating plains with shallow red to yellow, gravelly, sandy earths or stony sands. This community's adaptation to these soil types suggests an ability to withstand the seasonal dry periods, possibly through deep root systems accessing subsurface moisture.

The distribution of these vegetation communities across the project area also reflects the complex geology, which includes Alluvium, Black Soil Plain, Colluvium, Ferruginous Duricrust, and Sediments. The varied topography, ranging from clay plains to lateritic rises, creates a mosaic of habitats that support this diverse vegetation. Hydrological features, such as the seasonal lake, claypans and drainage lines, likely play a crucial role in shaping the vegetation patterns, particularly influencing communities like the Eucalyptus and Melaleuca woodlands that are associated with watercourses and swampy areas. This ecological diversity would have provided a range of resources for prehistoric inhabitants, with areas near water sources being particularly attractive for human occupation.

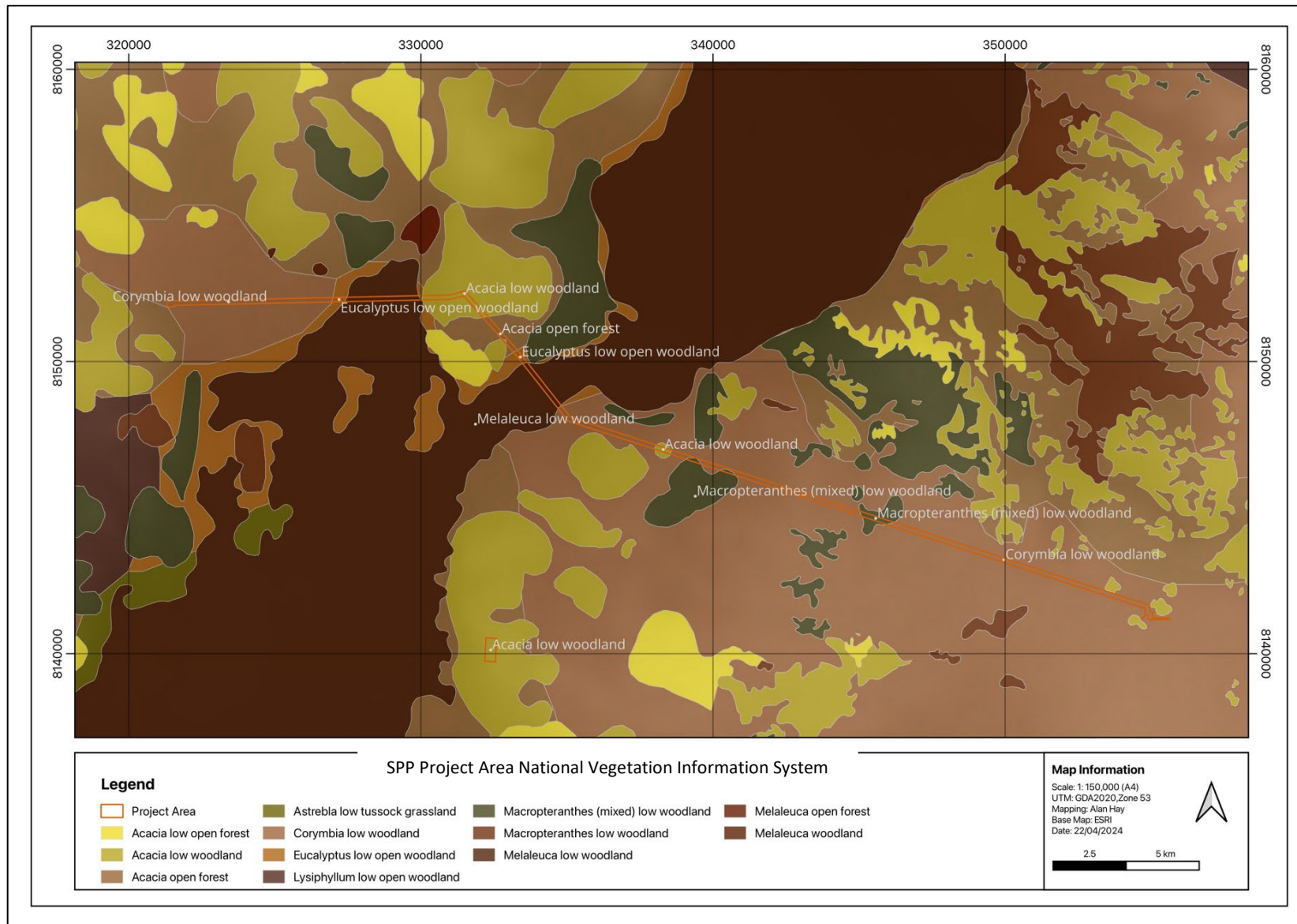


Figure 8: National Vegetation Information System estimation of the distribution of Pre-1750 vegetation with the Project Area.

Table 5: National Vegetation Information System Explanatory Table

Vegetation Community	Vegetation Description	Associated Soils
Acacia low woodland	Acacia low woodland\Eragrostis low open tussock grassland	Lateritic sandstone outcrops, plateaux, breakaways to north/rises and plains to south. This vegetation community is associated with gravelly lithosols, some shallow red, yellow and black earths, well drained.
Eucalyptus low open woodland	Eucalyptus low open woodland\Acacia mid sparse shrubland\Astrebla low tussock grassland	Low lying flat plains, fringing water courses and swamps. Light to heavy grey and brown clays, some loamy soil.
Macropteranthes (mixed) low woodland	Macropteranthes low woodland\Chrysopogon mid open tussock grassland	Lateritic sandstone outcrops, plateaux, breakaways to north/rises and plains to south. This vegetation community is associated with gravelly lithosols, some shallow red, yellow and black earths, well drained.
Acacia low woodland	Acacia low woodland\Eragrostis low open tussock grassland	Lateritic sandstone outcrops, plateaux, breakaways to north/rises and plains to south. This vegetation community is associated with gravelly lithosols, some shallow red, yellow and black earths, well drained.
Melaleuca low woodland	Melaleuca low woodland\Melaleuca mid sparse shrubland\Eulalia low open tussock grassland	Low woodland/open woodland, plains/relict drainage fringe.
Acacia open forest	Acacia mid open forest\Acacia tall open shrubland\Chrysopogon low open tussock grassland	Rises with rocky skeletal soils extending onto shallow gravelly sands in drier areas.
Corymbia low woodland	Corymbia low woodland\Terminalia mid sparse shrubland\Chrysopogon low tussock grassland	Gently undulating plains, shallow red to yellow, gravelly, sandy earths or stoney sands.

4.4 HISTORICAL LAND USE AND DISTURBANCE IN THE PROJECT AREA

Significant non-Aboriginal land use in this region began in the late 19th century, primarily driven by pastoralism following John McDouall Stuart's expedition. Initially, pastoral activities resulted in concentrated but limited disturbance across the landscape. However, this disturbance intensified with the introduction of improved transportation and more intensive grazing practices. The establishment of the Stuart Highway, road and track networks, along with the construction of the Overland Telegraph Line, served as catalysts for more widespread disruption of the area.

The introduction of other non-native animals, such as pigs, camels, horses, and donkeys, in the latter half of the nineteenth century likely had a diffuse impact throughout the Project Area. Although there is no specific evidence of concentrated mining operations within the Project Area itself, the surrounding landscape features numerous mineral and/or petroleum access tracks and associated infrastructure.

The following disturbance factors have likely altered some aspects of the pre-Contact environment in the Project Area. Key factors include:

1. **Road Construction and Maintenance:** The Stuart Highway represents a significant source of concentrated disturbance within the Project Area and is the most visible today (see Figure 10). Construction activities extended beyond the road corridor, likely including set-down areas, temporary work camps, borrow pits, and spoil heaps. Developed during the mid to late 20th century using mechanical construction machinery, the highway's construction not only severely modified the ground surface within its footprint but also affected adjacent areas.

The Stuart Highway has also undergone upgrades and maintenance throughout the mid to late twentieth century. Roads and tracks of this type tend to have been realigned multiple times, resulting in a wider area of disturbance than is immediately evident. This disturbance often destroys or distorts the archaeology of the road corridor (e.g., gravel extraction from quarries for road surfaces may contain artefacts from the extraction point, and crushed gravel can be misidentified as artefacts).

2. **Overland Telegraph Line:** The Overland Telegraph Line, extending from Port Augusta to Darwin, potentially intersects the proposed SPP corridor. However, its specific alignment through this area is not well understood.
3. **Pastoral Impacts:** While the specific pastoral impacts within the Project Area are not fully known beyond visible access tracks, it can be assumed that some land clearing for property infrastructure, intensive grazing, stock watering infrastructure, fencing, and alterations to traditional fire regimes may have occurred to varying degrees.

Early pastoral activities also significantly impacted the traditional lifeways of Aboriginal People throughout Australia, including within the Project Area. Pastoral activities have been present in the Northern Territory for over 150 years, following John McDouall Stuart's crossing of the country from Adelaide to Point Stuart, near Darwin, in 1861–62 (Stuart 1865). The Barkly Stock Route, established in the early 1880s by Nat Buchanan, begins south of the Project Area and connects the Stuart Highway to pastoral properties, other roads, and stock routes in the eastern portion of the NT, eventually extending into Queensland (McLennan, 2020).

4. **Invasive Species:** The introduction of cattle, horses, donkeys, and camels has disturbed watercourses, introduced weed species, and induced erosion in native environments. These factors impact archaeological sites in several ways:
 - a) **Watercourses:** Site and artefact densities are generally higher near water bodies. Erosion of creek margins can impact site integrity. Subsurface sites are often discovered due to erosion caused by cattle and feral animals.
 - b) **Weeds:** These can alter fire regimes and sometimes change the composition of native vegetation.
 - c) **Feral animals,** particularly camels in the Project Area, disturb archaeological sites through 'padding' and overgrazing.

5. **Petroleum, Mining, and Mineral Exploration:** The Project Area has been subject to mineral and petroleum exploration activities. Much of the associated previous ground disturbance is related to the construction of drill pads, seismic lines, and access tracks (as shown in Figure 9). These exploration endeavours have contributed to the modification of parts of the landscape within the Project Area.

Historical exploration endeavours, particularly those conducted before the implementation of stringent environmental controls, have likely had a more substantial impact on the landscape compared to their modern counterparts. Contemporary developments, while still affecting the environment, generally operate under stricter regulations designed to minimise archaeological and environmental disturbance.

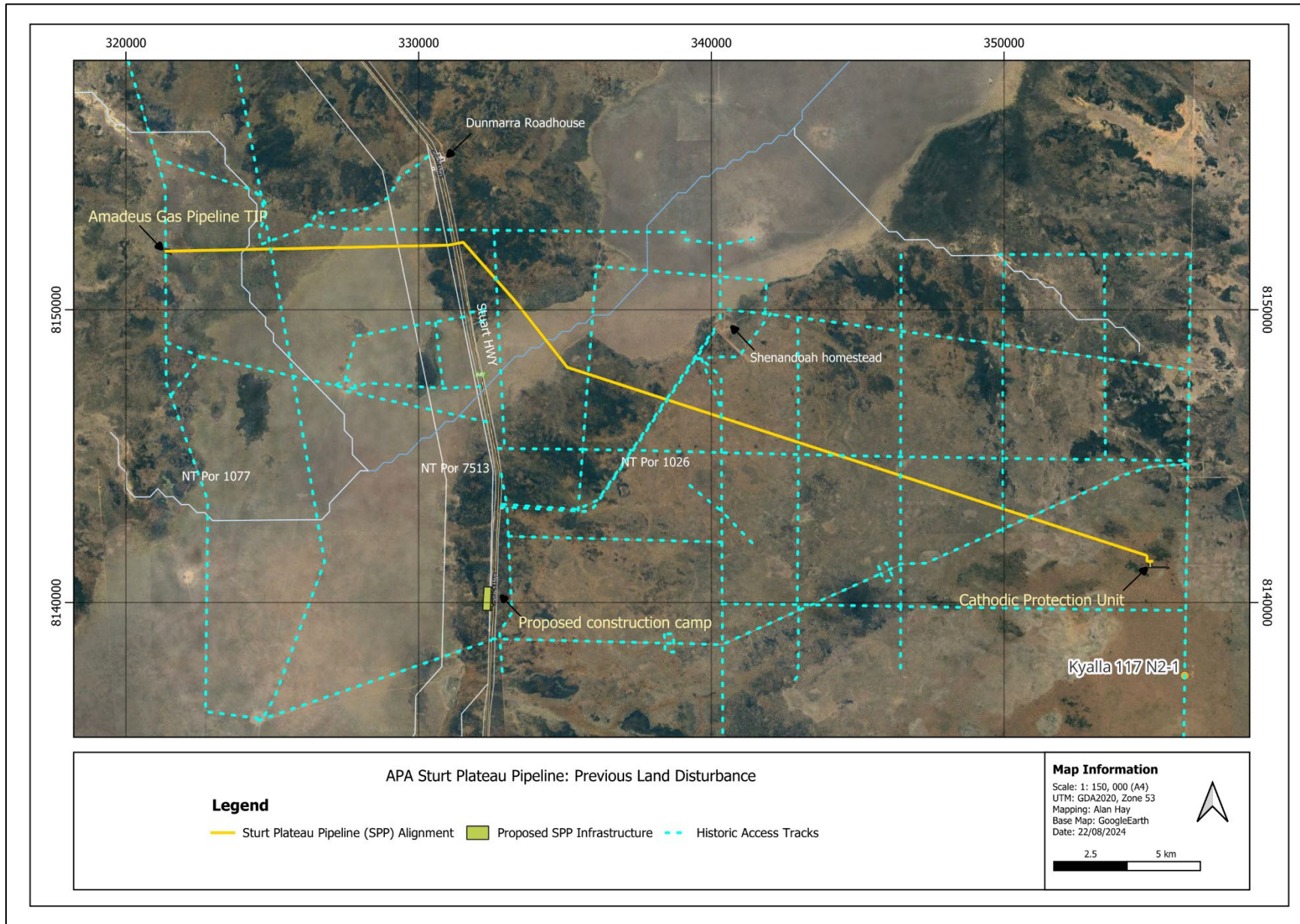


Figure 9: Mapped areas of previous ground disturbance

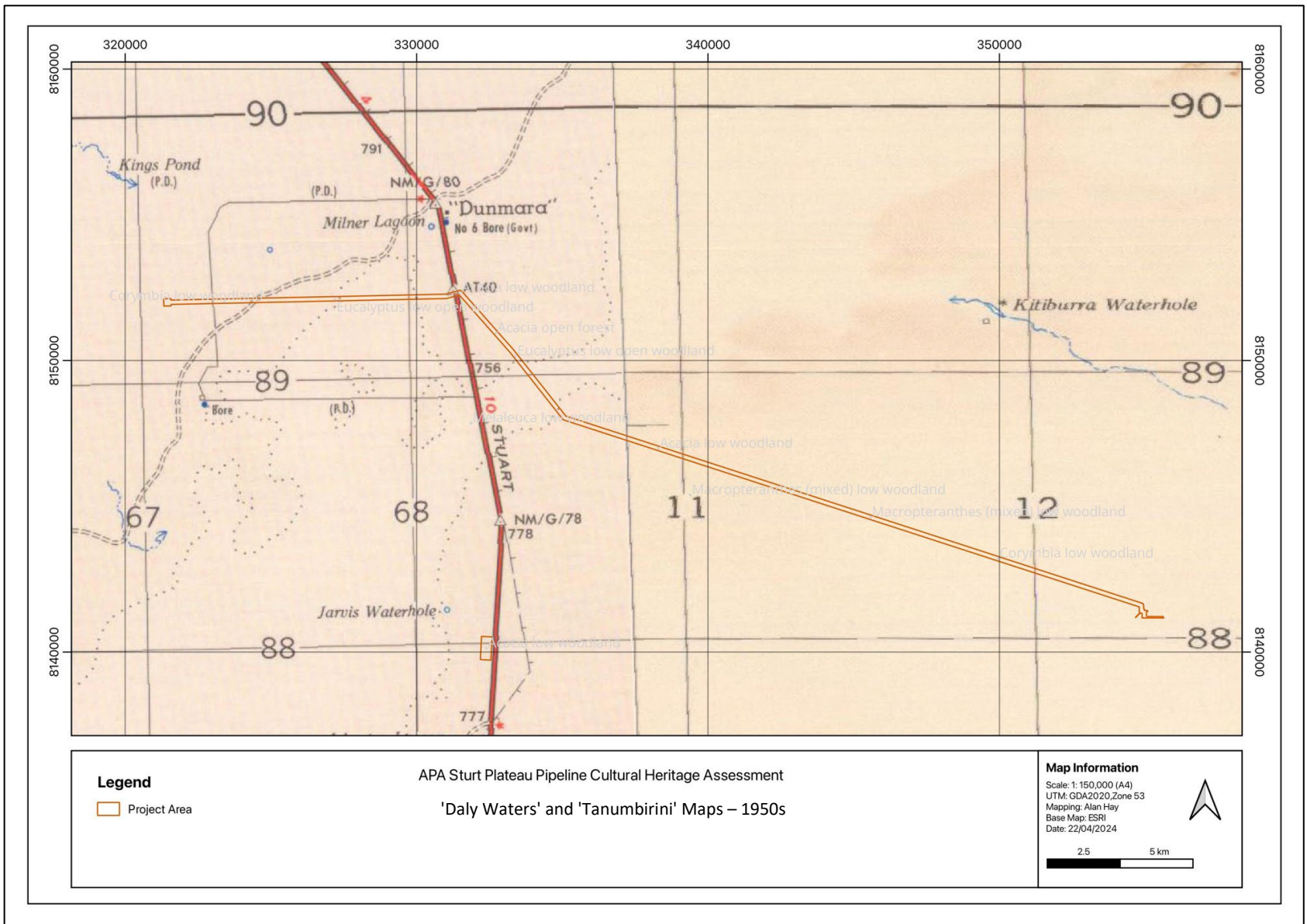


Figure 10: Overlay of the Project Area on the R502 250K Series 'Daly Waters' and 'Tanumbirini' maps produced by the Commonwealth of Australia in the early 1950s.

5 CULTURAL, ARCHAEOLOGICAL AND HERITAGE BACKGROUND

5.1 CULTURAL AND HISTORICAL BACKGROUND

A number of tangible and intangible heritage places, and objects are associated with the Sturt Plateau and the land around the study area. The sections below provide a background of Aboriginal and European history for the region.

5.1.1 Cultural Background - Land of the Kinbininggu, Bamarrngganja, Kinbininggu, Warrananku and Marlinja Peoples

Traditionally, the lands encompassing the Project Area have been inhabited and utilised by a number of Aboriginal peoples.

The lands of the Land of the Kinbininggu, Bamarrngganja, Kinbininggu, Warrananku and Marlinja Peoples span hundreds of square kilometres, occupying much of the land around the Sturt Plateau. While the boundaries between these groups are often perceived as fixed, it's important to acknowledge that they likely held more fluid characteristics in the past, evolving as a result of ongoing negotiations over land interests among Indigenous nations. Consultation has yet to occur with the Native Title holders to understand which specific estate groups, if not all, have a responsibility for the Project Areas.

Early recording of Aboriginal subsistence strategies and material culture within northern Australia was conducted by pioneering researchers such as Basedow (1907), Foelsche (1882), Thomson (1983), Spencer (1914), and Stanner (1933a, 1933b). Early accounts of Indigenous lifeways often relied on generalisations about Aboriginal social and religious structures, reflecting the values and theories of 19th-century European social, economic, and political contexts. Despite this, ethnohistoric and historical records indicate that the Indigenous communities in the greater Sturt Plateau region possessed extensive environmental knowledge. This encompassed understanding animal behaviours, migration patterns, and the utilisation of diverse technologies for hunting, fishing, and gathering. These accounts also highlight the richness of their material culture and ceremonial practices.

Resource acquisition strategies mentioned in early records from the time of European contact noted that areas such as swamps and seasonal water bodies served as vital hubs for subsistence activities. These locations offered an abundance of fish species, waterfowl, turtles, crocodiles, and shellfish. Additionally, macropods, reptiles, and other small game were hunted in areas away from water sources. A diverse range of plant-based resources were also harvested in accordance with seasonal variations. The utilisation of fire for resource procurement strategies was another aspect documented in early accounts.

AECOM (2018) have presented a number of natural resources of importance to Aboriginal people of the area Beetaloo Basin/Sturt Plateau area. These resources were identified by Traditional Owners during inspections of Origin Energy's permit areas.

Table 6: Natural Resources of Importance (AECOM 2018).

Scientific Name	Common Name	Usage
<i>Grewia retusifolia</i>	Emu-berry/Dog's Balls, Turkey Bush and Diddle Diddle	Fruit eaten. Leaves can be boiled, and body bathed in the liquid for treatment of a number of ailments
<i>Marsdenia australis</i>	Bush Banana/Gillibi	Bush 'fruit' eaten when young, as it matures 'fruit' seeds becomes feathery for dispersal in the wind and are not eaten
<i>Pterocaulon</i> sp.	N/A	Used for treating flu
<i>Acacia</i> sp.	Acacia	Leaves boiled and used to treat the flu
<i>Acacia holosericea</i>	Soapbush Wattle or strap wattle	Leaves used for washing
Termite (unknown species)	N/A	Mounds pulverised and mixed with water, used to treat diarrhoea

5.1.2 Contact History

Contact history around pastoral stations in the arid centre of Australia is marked by displacement, dispossession, exploitation. Colonial impacts inflicted trauma upon Aboriginal communities, leading to cultural and land loss that persists across generations. The European presence led to population decline due to new diseases, violence, and erosion of cultural values stemming from displacement and shifting migration patterns. Indigenous individuals were forced off their lands and compelled to work on pastoral stations. changes brought about both challenges and innovative responses, with resilience and adaptation maintaining cultural traditions that persist today.

From the 1890s, European economic activities played a central role in the lives of the Aboriginal people around the Project Area. Despite the influence of European activities, the Kinbininggu, Bamarrngganja, Kinbininggu, Warranangku and Marlinja Peoples have maintained certain aspects of their traditional lifestyle up until the present day. Ceremonial activities persisted, and stone technologies remained relevant, especially for ceremonial stone spearheads and ochre production, though stone's overall relevance decreased in daily life.

The early 1970s marked a period of substantial change for Aboriginal people in the Beetaloo Basin and Sturt Plateau, comparable to the impact of colonisation. The introduction of standard wage structures led to decreased participation in the pastoral industry. The pastoral economy's incursion into the region altered mobility patterns and people's residential areas shifted to towns like Tennant Creek, Katherine, Elliot and Darwin.

Despite these many challenges, the Kinbininggu, Bamarrngganja, Kinbininggu, Warranangku and Marlinja Peoples have remained strongly connected to their land, continuing to manage land and water, safeguarding Dreamings, sacred sites, and archaeological knowledge, and participating in cultural activities.

5.1.3 European Exploration

The Stuart Highway stands as a critical transcontinental transport link within Australia, named in honour of the explorer John McDouall Stuart, whose path it traces. Emerging during World War II as a vital strategic defence road, the highway has since become an integral component of Australia's National Highway system.

In 1862, the Scottish explorer and surveyor John McDouall Stuart became the first European to complete a coast-to-coast south-north crossing through the heart of the continent. This marked Stuart's third endeavour to traverse the mainland from south to north, with his journey commencing from South Australia. His route led him north of the present-day Sturt Plateau and in early July of 1862. Stuart and his expedition eventually reached Chambers Bay, situated to the east of Port Darwin's coast, on the 24th of July, 1862.

Stuart's accomplishment was significantly aided by his navigation along traditional Indigenous trade routes, paths that Aboriginal communities had traversed for countless generations. Throughout his journey, Stuart bestowed names upon distinctive landmarks, initiating a process that would overlay the Aboriginal significance of the landscape with European interpretations.

Beyond evaluating the region's economic potential, one of Stuart's central objectives and outcomes was to chart the course for constructing the Overland Telegraph Line. This telegraph line, serving as a vital communications link between Australia and Britain, not only fulfilled this objective but also established a route for traveling stock and facilitated the expansion of pastoralism, mining, and the influx of various cultural groups into the wider region. This development concurrently laid the groundwork for the establishment of additional communication and transportation layers along the north-south inland corridor.

Sturt passed within several kilometres of the western extent of the Project Area, naming Kings Ponds to the northwest. He described the area to the east as composed of dense forest and it is likely that this included much of the current Project Area (Figure 11).

The path forged by Stuart ultimately evolved into the lifeline of the Northern Territory, serving as a conduit for supplying mining districts and pastoral stations, facilitating the transportation of cattle and goods through road trains, and catalysing the post-war era's tourism boom.

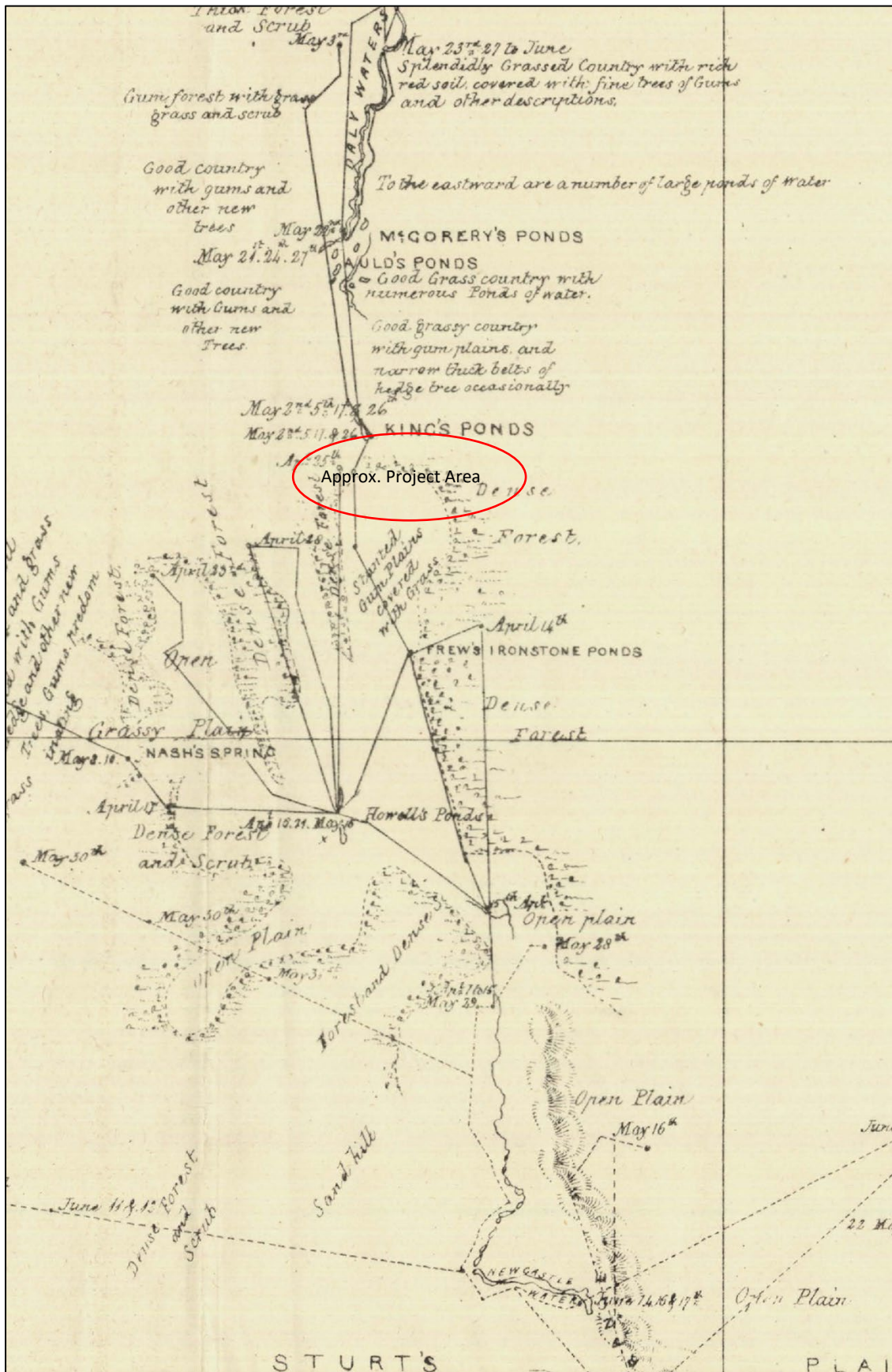


Figure 11: Map exert from Sturts Expedition, 1861 to 1862, the Project Area is in the vicinity of King's Ponds.

5.1.4 The Overland Pastoralism in the Late Nineteenth and Twentieth Century

The entry point of sustained European occupation of the land around the Project Area was the development of the Overland Telegraph Line in the early 1870s. The section of the telegraph line between Daly Waters and Powell Creek was the last to be completed in 1872 with the joining of the line at Frew Ponds (see Figure 12). This line of depots and stations across the centre of Australia served as a key access route for pastoral interest in the area that had been growing ever since McDougall-Stuart's reports or suitable grazing land in the interior.

The Murrniji Stock Route, first opened in 1886 by Nat Buchannan, led to both Daly Waters and Newcastle Waters. This track contributed to the growth of pastoral stations in the area, despite the thick scrub and vegetation making the initial entry of pastoralists challenging (Origin Energy 2019:40). The coming of pastoralism in the land around the Sturt Plateau led to a greater need for roads to serve the pastoral industry alongside the stock routes and railways to nearby settlement centres that had been established during the nineteenth century (Engineers Australia n.d.:3).

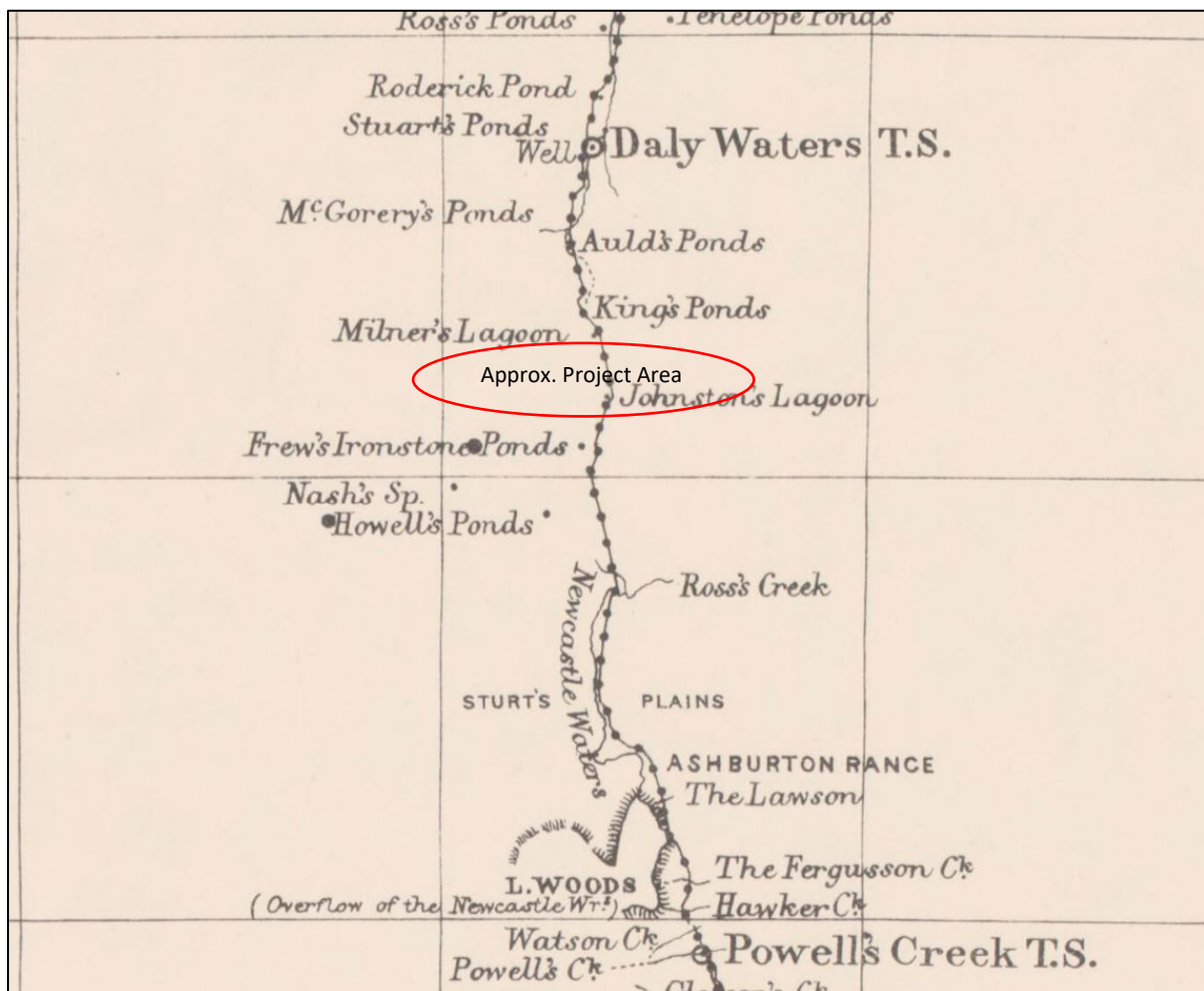


Figure 12: Map excerpt, Overland Telegraph Line 1919 (NLA 2024)

5.1.5 The Stuart Highway and Late Twentieth Century Development

Origin Energy (2019:40) succinctly summarises the late twentieth century development around the Project Area.

It wasn't until the 1930s to 1950s, that the area saw regional economic growth with Daly Waters becoming a significant hub of air and mail services into the Territory. The wartime years saw this role increase with Daly Waters again playing a major role in cross country transport and communication. This role continued until the early 1970s when the airport was closed to commercial traffic. The town and surrounding areas subsequently reverted to a primarily agriculture-based existence following the decline of air travel, but in recent times has seen commercial interest from the exploration for gas in the Beetaloo Sub-basin and the growth of the 'grey nomad' tourism market.

The Stuart Highway constitutes the most substantial historical feature within the Project Area and it requires some further consideration. Although the first north-south crossing of the Australian interior by motorcar took place in 1908, the road that still followed closely the alignment of the Overland Telegraph Line was still little more than a rough track (Kerr 2011). A range of track surfacing, such as gravel, logs, sands and wire netting, constituted this track until the commencement of World War II (Kerr 2011). By 1941 an all-weather road had been constructed along the current alignment of the Stuart Highway and the highway had been improved throughout the latter half of the nineteenth century, being progressively sealed and bituminised, to assume its current disposition (Kerr 2011).

5.2 ARCHAEOLOGICAL BACKGROUND

5.2.1 Aboriginal Occupation of Central Australia

Aboriginal occupation of Central Australia is dated to at least 35,000BP, through age determinations obtained at Puritjarra Rock Shelter in the Cleland Hills, 850km southwest of the SPP Project Area (Smith et al. 2017) and Kulpi Mara Rockshelter (Thorley et al. 2011) located 165 km to the east of Puritjarra. Evidence from other archaeological sites in the wider central Australian region suggest Aboriginal groups in the Pleistocene were generally small and highly mobile, using wider territories than used in the Holocene (O'Connor et al., 1998, p. 21; Smith, 1989, Smith et al., 1998; Thorley, 1998, p. 316).

Hiscock and Wallis (2005, p. 35) suggest this phase of colonisation of Central Australia most likely coincides with a period of higher rainfall, resulting in better surface water and greater abundance of resources. This notion is supported by Bowler (et al. 1998, p. 205) who suggests Lake Woods, 100 km south of the Project Area, was up to 10 times its current size during the same period (see Section 3.2.2 above). Horton (1981) proposed that paleo-drainage systems, comparable to those feeding into Lake Woods, may have acted as critical corridors allowing people to move into drying parts of Australia in the pre-Last Glacial Maximum (LGM) period. To date no Pleistocene occupational areas have been recorded in the surrounding region, however some potential has been noted at Lake Woods (Bowler et al. 1998, Shipton et al. 2021 and Smith 1986).

Increased aridity during the LGM, 20 kyr to 18 kyr BP, appears to have led to significant changes in residential mobility, territory and regional networks (Smith, 1989, Smith et al., 1998; Smith 2006; Veth, 1989, 1993, 2005b). Smith et al. (2017) argue that "over the last 12.0 kyr, there were three discrete phases of site-use at Puntutjarpa, 12.0–9.7 kyr, 8.3–6.2 kyr and ~1.1–0 kyr, each with differences in

the nature and intensity of occupation". General trends across the continent appear show similar occupation patterns, with archaeological evidence also suggesting there was a strong increase in occupation activity between 9 kyr and 6 kyr, including across the arid zone (Williams et al. 2015).

During the mid-to late Holocene period of increased occupational activity (5 kyr to 3 kyr), hafted tools such as tula adzes and backed blades, along with a seed grinding economy appeared to develop in Central Australia (Smith 1986). According to Flood (1990, p. 57), more than 70 of the 140 known plant food species in Central Australia were exploited for seeds. Although a time intensive method of gaining food, the exploitation of seeds in this way is far more reliable than hunting game or gathering other plant foods. Archaeological and anthropological evidence indicates that large ceremonial gatherings were made possible because of the intensification of the exploitation of seed gathering.

Studies at Lake Woods, indicate a significant seed grind economy also existed, with grindstones being very common throughout most sites recorded (Shipton et al. 2021, p. 176). Ethnographic accounts indicate the importance of grass seed procurement and processing also existed at the time of European contact. Accounts by Ashwin (1927, p. 64 see also Shipton et al. 2021, p. 176) during his visits to Newcastle Waters, approximately 60km south of the Project Area, noted the abundance of native grass seed production:

There was a large mia-mia [hut], about seven feet high, in the middle and about 16 feet diameter. It was round and arched off to the ground. There were large bundles of spears stored there, and large wooden dishes four and five feet long filled with grass seed as large as rice with the husk or skin still on the seed. I think it was a species of rice which grows in the flooded country 40 or 50 miles in extent and north of Newcastle Waters. There must have been about a ton of seed stored there in 17 large dishes, full and all covered with paper-bark. The dishes were nearly all five feet long and a foot deep, scooped out of solid wood. There were more weapons and shields.

Fluctuations in potential site use through time have not been clearly defined at Lake Woods, however in other Australian areas there appears to be a pattern of relatively rapid decline in site use around 3 kyr BP. Smith et al. (2008, p. 396) suggests this decline may represent a marked contraction of settlement and a major population crash. Others (Williams et al. 2015) support this notion, arguing the onset of El Niño - Southern Oscillation (ENSO; 4.5-2ka) may have restricted some food production, triggering population fragmentation, abandonment of marginal areas, and reduction in ranging territory. Whilst most regions recovered quickly, some evidence suggests this didn't occur in Central Australia until 1.5 cal. kyr BP. Notwithstanding a drying environment and seasonal inundations, Aboriginal occupation of Central Australia depended upon consistent access to sources of water, with evidence also suggesting readjustments in local foraging societies, in site use, economy and technology occurred through time (Smith et al. 2017, p. 10).

A number of studies (e.g. Smith 1986, 2006; Thorley 1998; Veth, 1993, 2005) suggest the last 1000 years appears to have been a period of significant change in central Australia, perhaps with shifts towards higher regional populations. Smith (2006, p. 372) and others (Smith, 1988, 1996; Thorley, 1998) have presented evidence of more intensive occupation and substantial increases in the level of site use after 1,500–1,000 B.P.; particularly in the lower reaches of catchments, in sites on sand plain and valley floors.

5.2.2 Contact Archaeology on the Stuart Plateau

The contact period refers to European-Aboriginal encounters following the colonisation of Australia by the first settlers. According to Akerman (1980:245), the main agent for contact with Europeans resulted from Aboriginal people congregating at settlements, such as pastoral stations or mining centres, where reliable water and introduced food were available. Stanner (1965:18) posits a similar scenario and suggests that people moved towards settlements and sought to monopolise their attractions.

A single likely contact site (Dunmarra Site 1 - flaked telegraph insulator) has been recorded 3 km to the north of the Project Area, although no systematic studies to understand the potential for contact features in this area has been undertaken. However, as the ethnohistorical background has indicated Aboriginal people continued to be present in this area throughout the nineteenth and twentieth centuries. As such, the potential for contact items throughout the Project Area remains a substantial possibility. Sites associated with Aboriginal people involved in the pastoral industry are likely, as are sites relating to the early period of contact during the construction of the Overland Telegraph. While some of these sites may be clearly associated with contact, such as knapping sites of ceramic or glass insulators from telegraph poles, other sites may be difficult to distinguish from other historical sites, such as stockman's camps. All historical sites may have the potential to be associated with Aboriginal people in this area with AECOM (2018) observing that such sites have the potential to occur in 'concentrations of sites nearby to old homesteads'.

5.2.3 Previous Archaeological Studies

There have been a number of academic and consultancy-based studies in arid zones across the Northern Territory, however the SPP Project Area has been subjected to limited previous known archaeological research to date. Table 7 (see also Figure 13) below, summarises the known archaeological studies which have included some adjoining land units within 25 km of the SPP.

Table 7: Summary of previous archaeological studies within 25 km of the SPP

Study Area	Previous Study Summary	Reference
Beetaloo Basin	Sampled areas across Yaroo, South Martyrs Tree, and Dunmarra to develop a preliminary regional predictive model. Potentially transected some sample areas adjacent to the SPP Project Area but survey coverage appeared to be limited.	de Rochefort and Williams 2008
Stuart Hwy Easement	Surveyed areas along the Tennant Creek to Katherine optical fibre cable route. Surveys transected associated land units within parts of the Stuart Highway easement which intersect the SPP Project area.	Coates 1991
Dunmarra	Unknown extent of previous survey, however a single isolated artefact was recorded at Dunmarra Roadhouse (2.2 km north of the SPP).	Macfarlane pre-1997
Amadeus Basin to Darwin Gas Pipeline	Survey of the Amadeus Basin to Darwin Gas Pipeline focusing on key areas of major cultural sensitivity.	Hermes 1986

	Likely transected areas near the SPP and Amadeus pipeline tie-in point.	
Origin Energy Leases	<p>Focused on surveying proposed exploration lease areas known as Kyalla 117 N2 (3km SE of the SPP), associated access tracks and seven other lease areas more than 25 km from the SPP.</p> <p>The access track running north from Kyalla 117 N2 (approx. 500 m east of the SPP CPU) was also inspected.</p> <p>The surveys included helicopter reconnaissance, vehicle and pedestrian transects. The helicopter reconnaissance inspections flew some routes north/south across the eastern margins of the SPP Project Area.</p>	<p>AECOM 2019</p> <p>(Surveys completed 2017)</p>

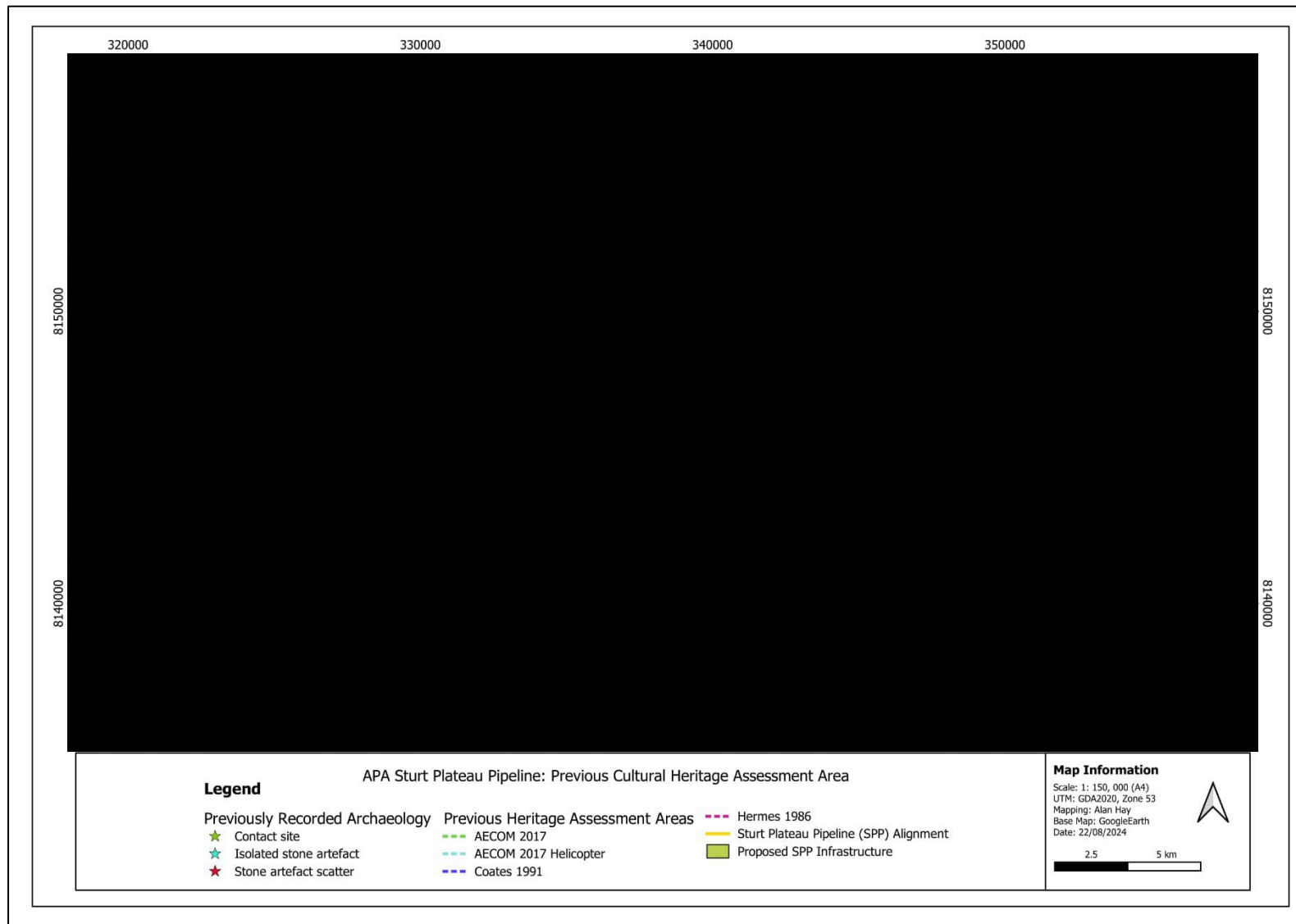


Figure 13: Previous cultural heritage assessment areas

The abovementioned studies identified a total of seven archaeological features within a 25 km radius of the SPP. Given the limited scope of these studies, any conclusions drawn about site variability and past landscape use patterns should be approached with caution, as they are likely to be significantly influenced by the small sample size. Nevertheless, this preliminary assessment of archaeological potential serves an exploratory purpose. It aims to discern initial patterns of site distribution, laying the groundwork for targeted ground surveys and the development of a refined predictive model.

In brief, these previous archaeological studies conducted in the surrounding area suggest that isolated stone artefacts may be the most frequently encountered site type, with stone artefact scatters and contact artefacts appearing less common. This distribution could potentially indicate that the surveyed areas were used for transient activities or brief occupations, rather than long-term settlements, though further investigation would be needed to confirm this hypothesis.

A higher number of sites were recorded in the Birrimbah land system compared to the Beetaloo system. This pattern might suggest more frequent utilisation of the Birrimbah area or potentially better preservation of archaeological sites within this system, although other factors could also account for this distribution, such as survey area locations.

The vegetation communities associated with the recorded sites appear diverse, with Acacia woodland/forest seemingly present at a significant portion of the sites. Regarding surface geology, the sites appear to be fairly evenly distributed between Colluvium and Ferruginous Duricrust, with a small number of sites having unrecorded geology. This distribution might indicate that both these geological contexts played a role in prehistoric activities or site preservation, though more comprehensive surveys would be needed to draw firm conclusions.

Where site context was recorded, proximity to water resources seemed to be associated with a notable number of features. The recording timeline of the sites spans from 1986 to 2017, which could also reflect changes in survey intensities or methodologies over time, rather than necessarily indicating patterns of prehistoric landscape use.

Table 8: Previously recorded archaeological features within 25 km of the SPP

Site Name	Site Type	Year Recorded	Site Context	Land System	Vegetation Community	Surface Geology
Johnson Lagoon Site 1	Isolated stone artefact	1991	Unknown	Beetaloo	Acacia mid open forest	Colluvium
Johnson Lagoon Site 2	Stone artefact scatter	1991	Unknown	Beetaloo	Acacia low woodland	Colluvium
Dunmarra Site 1 - flaked telegraph insulator	Flaked telegraph insulator	Unknown	Unknown	Birrimbah	Acacia mid open forest	Ferruginous Duricrust
Dunmarra 1	Isolated stone artefact	2006	Creek bank	Birrimbah	Lysiphyllum low open woodland	Colluvium
Yaroo 3	Isolated stone artefact	2006	Creek bank	Birrimbah	Acacia low woodland	Ferruginous Duricrust
Yaroo 3a	Isolated stone artefact	2006	Creek bank	Birrimbah	Acacia low woodland	Ferruginous Duricrust
Yaroo 3b	Isolated stone artefact	2006	Creek bank	Birrimbah	Corymbia low woodland	Colluvium



Figure 14: Site distribution within 25km of the SPP Project Area

To assist in developing a more robust predictive model for the SPP, the following studies within the Central Australia region have also drawn upon.

Wolfe and Keys (2021) completed an assessment of the Sun Cable Australia-Asia PowerLink, Solar Precinct near Lake Woods, approximately 160km to the south of the SPP Project Area. This assessment provided a detailed archaeological background of the known archaeological record for some comparable land units to those around the Project Area e.g. watercourses and flood out systems, clay pans and drainage depressions and comparable ecological and geological units.

The survey documented 13 archaeological sites and 26 isolated artefacts. The majority of the sites were of Aboriginal origin, comprising minor lithic scatters (6 sites), minor stone quarries (3 sites), and drainage depressions/soaks (3 sites). In addition to the archaeological sites, 13 landscape features of cultural significance were recorded. These primarily consisted of watercourse and geological features such as boulders.

The artefact assemblages were predominantly composed of flaked stone materials. Raw materials included chalcedony, quartzite, silcrete, chert, and sandstone, with quartzite and chalcedony being the most common. The presence of knapped glass and ceramics at the Powell Creek Telegraph Station site indicates that stone tool manufacture continued into the 20th century in this area.

The distribution pattern of archaeological materials showed a clear correlation with water sources and suitable raw material outcrops such as quartzite and lag deposits of gravels. Water sources containing sites, included ephemeral flood out zone, watercourses/drainage lines and shallow claypans that typically only held water for very short periods of time. Some claypans show signs of potential enhancement by Aboriginal people, through digging the low points deeper to potentially exploit subsurface water and/or trap surface water for longer periods.

These site distribution patterns are consistent with observations from other arid regions of Australia, reflecting adaptations to the challenging environmental conditions. Conversely, areas lacking water sources or suitable stone materials showed a marked absence of archaeological materials.

In the wider region, Stockton (1971) recorded some of the largest site complexes in central Australia at Santa Teresa in the Ooraminna Ranges 800km southeast of the Project Area. The "Kurringke" site (Stockton 1971) consisted of extremely dense scatters stone artefacts, including more than 100 grindstones, near a waterhole. The Kurringke archaeological deposit was 35-70 cm deep, which largely consisted of aeolian sand overlain by sterile rubble. Archaeological materials included, bone, ochre, while the greatest quantities were flaked stone artefacts and millstone fragments. A C¹⁴ age determination suggested occupation of the site started approximately 1000 BP.

Mitchell (1996) surveyed the road reserve from Alice Springs to Hermannsburg in August 1996 for Telstra prior to the installation of an optical fibre cable. This survey located one archaeological site (near Jay Creek) and a number of isolated artefacts. Mitchell (1996, p. 9) commented that the isolated artefact density ranged from 1:1100 m² to 1:16,000 m² along the section of road reserve surveyed in 1996. Thorley's survey of the Watarrka Mereenie Road located 35 isolated artefacts. Of these, only one occurred on a sandplain. Thorley (1993, p. 10) noted that the density of isolated artefacts drops sharply away from creek lines.

Thorley's 1991 survey of a number of Central Australian Roads locating approx. 280 archaeological sites and isolated artefacts (Thorley 1991, p. 46). Based on these surveys, Thorley calculated an

average artefact or site density of 1: 136,000 m² for the region. 72% of these sites and artefacts were within 500 metres of a permanent water source. Of the remaining 28% most were associated with quarry sites; hence the proximity of the raw material source was the main condition for location.

Earthsea Pty Ltd (Richard Woolfe) conducted archaeological surveys for a number of Central Australian road upgrades including the Mereenie Loop, along the Stuart Highway, parts of the Kintore Road and along the Plenty Highway (see discussion on this survey below). On the Palmer River south of Alice Springs, the author recorded a total of 12 stone artefact scatters. Eleven of these sites were located along the western side of a sand dune approx. 200 metres from the eastern bank of the Palmer Riverbed. Woolfe suggests while these sites were identified as individual sites for recording purposes, their location and the existence of a background scatter across the western side of the dune indicated that these sites were related. Artefact types included cores, flakes, hammer stones and manuports. Raw materials included sandstone, chert, silcrete and quartz.

Earthsea Pty Ltd undertook extended lineal surveys for two pipelines. One extending 400km across parts of the Tanami Desert north of Alice Springs and the other extending 670km from Tennant Creek through to Mt Isa. Both study areas incorporated significant expanses of desert/arid land units, with the following consistent patterns for the location and types of sites recorded.

- There was a complete absence of any artefactual material in arid land units without water.
- The density and variability of artefact types increased significantly in areas with permanent availability to water.
- The density of artefacts also increased in areas of raw material availability for the manufacture of stone artefacts.
- Sites recorded in the more arid land units away from more permanent water sources were generally small with limited diversity in raw materials and artefact types.
- Site sizes and artefact types increased significantly in areas with greater resource availability and higher annual rainfalls.

6 HERITAGE REGISTER SEARCHES

This chapter presents a detailed overview of the cultural heritage sites and objects located within and immediately adjacent to Project Area. Identification of these features has resulted from reviewing statutory registers and database listing.

6.1 NATIONAL AND COMMONWEALTH HERITAGE LISTS

According to a search of the Australian Heritage Database, maintained by the Department of Climate Change, Energy, the Environment and Water (DCCEEW), there are no Aboriginal, historical, or natural places listed on the World Heritage List, the National Heritage List, the Commonwealth Heritage List, or the Register of the National Estate within the Project Area.

6.2 NORTHERN TERRITORY ARCHAEOLOGICAL SITE DATABASE AND NORTHERN TERRITORY HERITAGE REGISTER

A request for information from the Northern Territory Heritage Branch relating to the Project Area resulted in a response on the 25 June 2024 (Sarah Hubbard, Senior Heritage Officer, Heritage Branch *pers. comm.*):

The search has found that there are no known Aboriginal or Macassan archaeological places within the subject site. However the likelihood of possible unrecorded Aboriginal or Macassan archaeological places has been assessed as possible or likely. The extent of pre-existing disturbance and the nature of the work itself has also been considered.

Given the presence of water channels within the project footprint and archaeological material located within the immediate area the Heritage Branch recommends that an archaeological survey and cultural heritage management plan are required to identify and mitigate the impact to Aboriginal or Macassan archaeological places. Known archaeological sites within the broader area include stone artefacts found along the same water channels present within the project's footprint.

Additionally, the response to the request for information indicated that there were no declared sites on the Northern Territory Heritage Register within close proximity to the current study area.


The closest previously recorded archaeological place, Dunmara Site 1 (flaked telegraph insulator), is located 2.2 km north of the SPP corridor near the Dunmarra Roadhouse.

The nearest Declared heritage site, the 'Frew Ponds Overland Telegraph Line Memorial Reserve', lies 17 km south of the proposed SPP corridor and 10 km south of the temporary construction camp.

6.3 ABORIGINAL AREAS PROTECTION AUTHORITY (AAPA) RECORDS

APA does not currently hold an Aboriginal Areas Protection Authority (AAPA) Authority Certificate for the proposed SPP Project Area but has advised the author that a certificate is being sought prior to construction commencing.

An AAPA Abstract of Records was provided to APA on 28th August 2023, encompassing Pastoral Leases (including Hayfield and Shenandoah Stations) which are the subject of petroleum interests (See Appendix 1). The Abstract shows a number of registered and recorded sacred sites and sacred site restricted work are located within Hayfield and Shenandoah Stations and the Stuart Highway, however none lie within the proposal SPP Project Area (see Figure 15). The Abstract of Records also shows that a number of Authority Certificates have been held over the Project Area previously.



It should be noted that an Abstract of Records, is not an exhaustive list of sacred sites in the area. There may be other sacred sites in the parcel of land of which the Authority is not yet aware which would be identified through the Authority Certificate process.

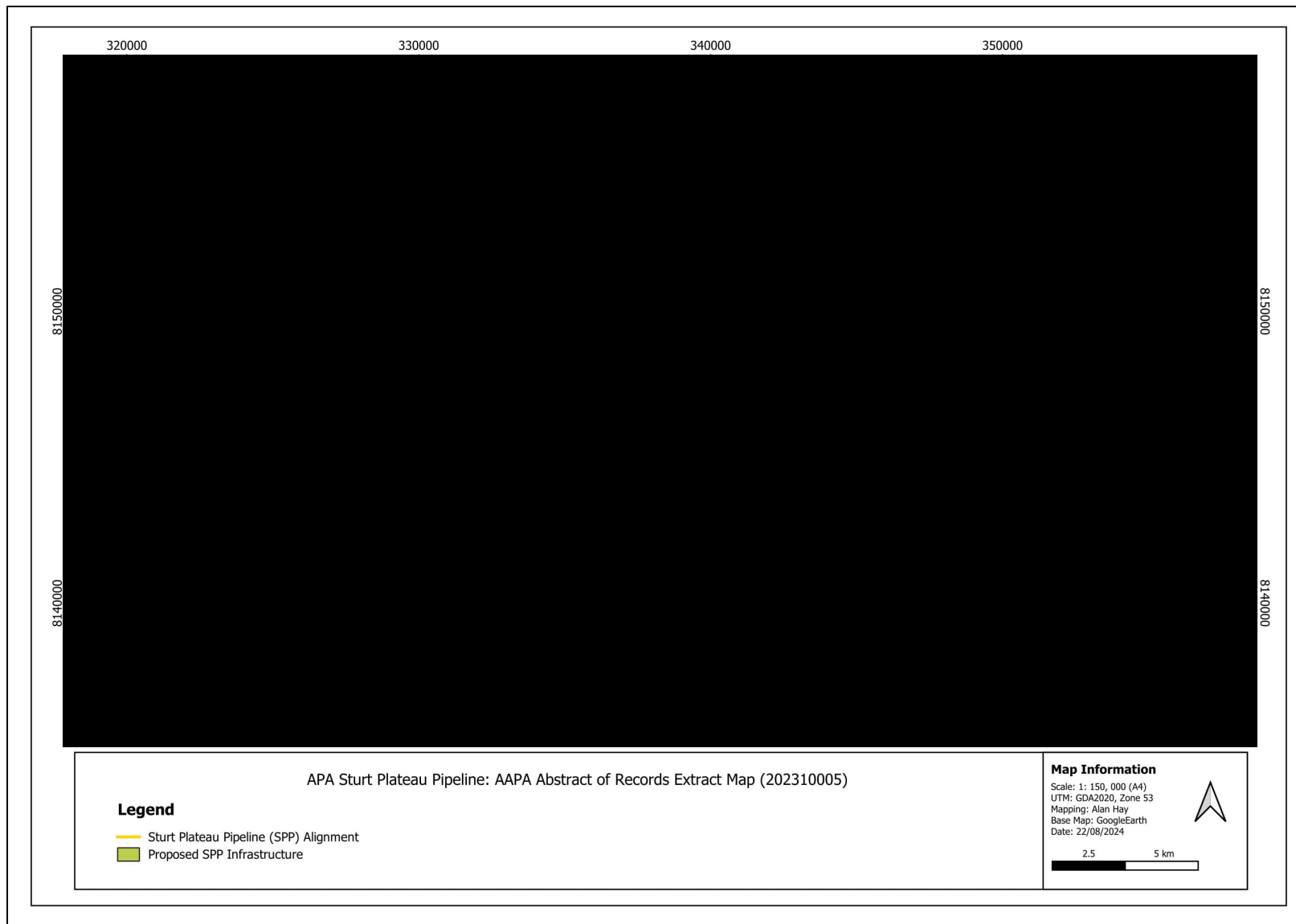


Figure 15: AAPA Abstract of Records Extract Map (202310005)

7 ARCHAEOLOGICAL PREDICTIVE MODEL AND RISK ASSESSMENT

7.1 ARCHAEOLOGICAL PREDICTIVE MODEL

The environmental, historical, and archaeological background research conducted for this report has identified several potential patterns in the distribution of archaeological sites within the surrounding landscape. While biases in archaeological investigation, which typically align with late 20th and early 21st-century development patterns, may influence the results, significant correlations between land systems and site distribution have been observed. Although only seven archaeological sites have been previously recorded in the surrounding landscape, general site distribution patterns from broader archaeological research remain applicable to this study. Consequently, it is possible to formulate preliminary predictive statements about the landscape characteristics underlying the SPP Project Area and the probable disposition of cultural heritage materials within it:

1. The riparian zone of all water features, particularly the large seasonal lake system, the first-order stream, and claypans in the eastern margins of the SPP corridor, would have been important seasonal occupation areas for Aboriginal people.

Therefore, Archaeological sites and artefacts are likely to be concentrated in these zone and adjacent areas up to 200 m away.

2. There may also be complete absence of artefactual material in arid land units without water.
3. The diverse geology of the Project Area offers varying potential for past land use and resource exploitation by Aboriginal People:
 - a) Alluvium and colluvium zones have high potential for containing raw materials suitable for tool production, likely attracting ancient populations for resource procurement.
 - b) Sediment formations, particularly those containing mudstone, chert, quartz, and other fine-grained siliceous rocks, have high potential for lithic assemblages and associated sites.
 - c) Black Soil Plains generally have lower potential for lithic resources, except in areas subject to streambank overflow or flooding, where raw materials may have accumulated.
 - d) Ferruginous duricrust areas have lower potential for containing suitable toolmaking materials but may have been used for other purposes or as transit zones.
4. Given the importance of seed gathering in the wider arid regions of Central Australia, areas suitable for grass growth, particularly in the Black Soil Plains (Atlas_II6 land system), have potential for containing archaeological evidence of seed processing on their margins, such as grindstones.
5. Given the general absence of outcropping rock shelves or land units with rock shelters within the SPP Project Area, it is unlikely that rock art sites or large quarry complexes will be present.
6. There is potential for archaeological deposits in land units subject to sediment accumulation, particularly in flood out zones and if sand dunes persist on the margins of the lake system.

7. Contact period archaeological sites may be present, particularly in areas associated with early European activities such as pastoralism, the Overland Telegraph Line, or along early track networks.
8. Areas of concentrated historical disturbance, such as along the Stuart Highway corridor and other constructed tracks, have lower potential for intact archaeological sites but may contain evidence of early contact period activities.
9. Diffuse disturbance from introduced animals and invasive plant species may have altered erosion patterns across the landscape, potentially affecting site preservation and visibility. This impact is likely to be intensive for riparian zones.
10. The most common site types are likely to be:
 - a) Isolated stone artefacts
 - b) Stone artefact scatters
 - c) Quarry sites (in areas with suitable lithic materials)
 - d) Grinding sites (particularly in areas suitable for seed-bearing grasses)
11. Sites recorded in land units away from more permanent water sources are likely to be small with limited diversity in raw materials and artefact types.
12. The most common raw materials for stone artefacts are likely to be quartz, chert, silcrete, and quartzite, with potential for other materials depending on local geological resources.
13. There is some potential for remnants of the Overland Telegraph Line or other historic artefacts within the SPP corridor and adjoining land units.

7.2 ARCHAEOLOGICAL RISK ASSESSMENT

7.2.1 Risk Assessment Methodology

Construction for the APA SPP will involve varying levels of ground disturbing activities, which include but are not limited to:

- a) **Vegetation Clearing:** Removal of trees, shrubs, and other plant life to prepare the land for construction operations. This clearing will likely encompass a 30 m wide right-of-way (RoW) for the 37 km length of the SPP, coupled with extra workspaces, a cathodic protection unit and a temporary accommodation facility.
- b) **Grading and Levelling:** Earthmoving activities to create a level surface for construction or to prepare the site for further development.
- c) **Establishment of Access tracks:** Creation of temporary or permanent roads and tracks to facilitate movement of vehicles, equipment, and materials.
- d) **Soil Excavation:** The initial digging or removal of topsoil to create development areas, access roads etc.
- e) **Trenching and horizontal directional drilling (HDD):** Trenching activities to a depth of 1.2 m for the laying of the pipeline and horizontal boring of the Stuart Highway. Additional excavation will be required at the Sturt Plateau Facility (delivery station) and cathodic protection anode bed in the eastern end of the pipeli.

The Project therefore has potential to impact upon cultural heritage features protected under the provisions NT *Heritage Act 2011*.

Accordinging, the following risk assessment methodology considers the potential risks that archaeological features or heritage values are located within specific land units of the SPP Project Areas. The risk assessment for the SPP Project Area draws upon the background archaeological studies, surface geology, land system, topography, hydrology and ecology as presented in the predictive model above. The results of this risk assessment are presented in Figure 16 below. Recommendations to manage these risks are presented in Section 8.

Table 9: Risk Assessment Methodology

Likelihood Rating	Descriptors (Probability Level Descriptors)	Potential Archaeological Site types
Certain or Almost Certain	Expected to occur in most circumstances.	<ul style="list-style-type: none"> • Stone artefact scatters • Isolated artefacts • Hearth features • Quarries • Other features associated with occupation sites and/or cultural practices
Likely	Probably occur in most circumstances.	
Possible	Could occur sometime.	<ul style="list-style-type: none"> • Isolated artefacts • Low density artefact scatters
Unlikely	Not expected to occur.	<ul style="list-style-type: none"> • No archaeological feature likely

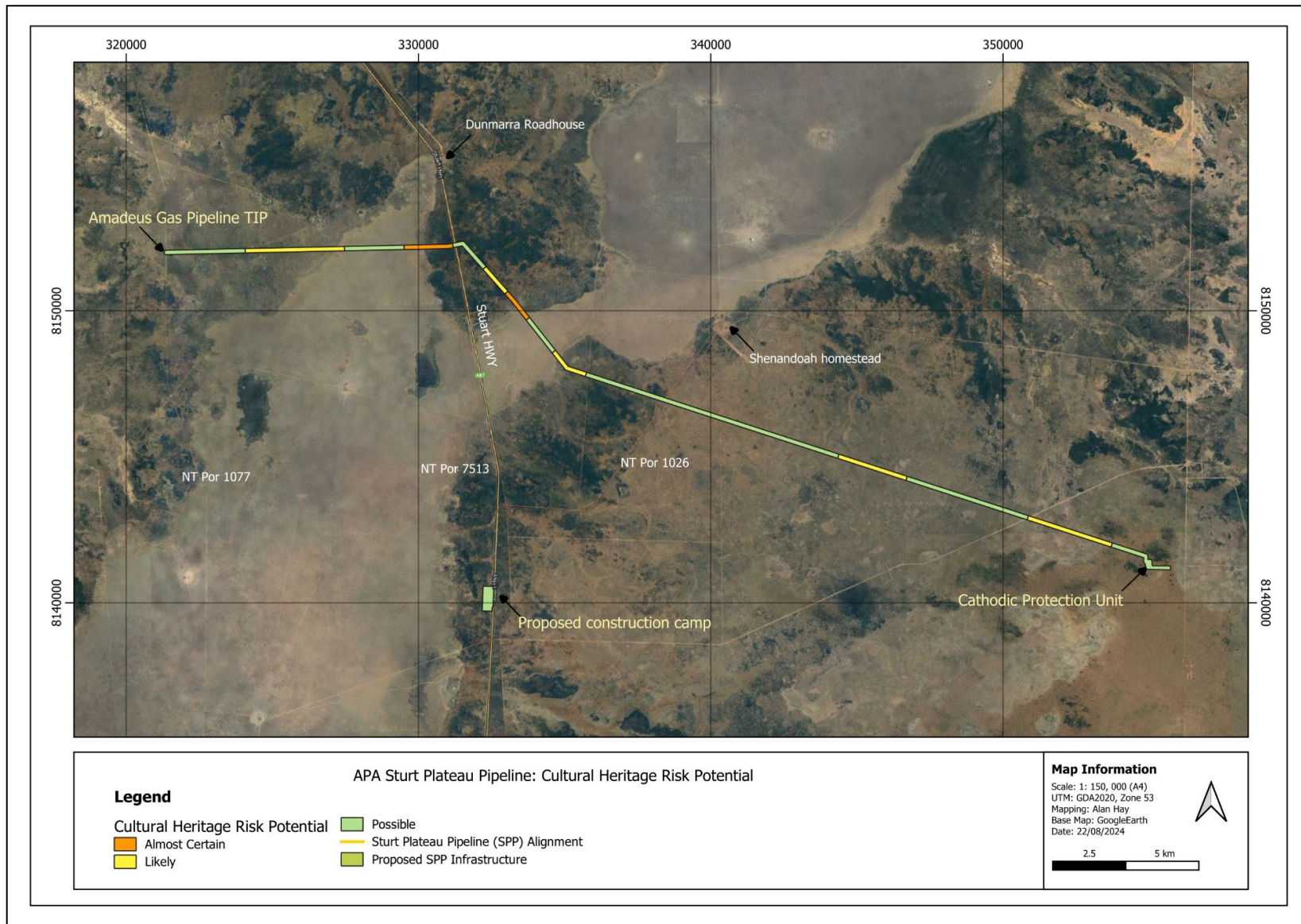


Figure 16: Comparative gradings of risk within the Project Area.

8 PROJECT RECOMMENDATIONS

Based on the above risk assessment and predictive models, the following recommendations are made for the identification and management of sacred sites and archaeological features within the SPP Project Areas:

1. To minimise potential impacts to Sacred Sites, it is recommended that APA obtain a Sacred Sites Authority Certificate under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT) prior to construction activities. It is noted that APA has applied to AAPA for a Sacred Sites Authority Certificate.

The location of sacred site Restricted Works Areas and their conditions should be made available to all authorised personnel to ensure compliance with the Certificate.

- a) In the interim, all recorded and registered sacred site should be avoided, including those that encompass pastoral access tracks.
2. APA should aim to avoid impacts to heritage places, protected by the *NT Heritage Act 2011* where practicable. To ensure compliance with the *Heritage Act* the following process should be implemented:
 - a) Undertake an archaeological field assessment of the SPP Project Areas prior to final SPP alignment and construction activities. It is noted that these assessments have been scheduled by APA, with the outcomes informing the SPP's final alignment. APA have committed to site avoidance as a priority where possible.
 - b) The archaeological field assessment coverage of the SPP Project Areas should be undertaken as per the following risk ratings⁴:
 - i) Areas with "Almost Certain Risk" should be surveyed at 100% coverage.
 - ii) Areas with "Likely Risk" should be surveyed at 100% coverage.
 - iii) Areas of "Possible Risk" should be sampled at least 50% coverage to improve the predictive model for those areas.
 - c) Following the field assessment, a short report and associated constraints mapping should be developed to present the outcomes of the field assessment. This report should also include a series of recommendations for the management of cultural heritage features in accordance with best practice and Traditional Owner consultation.
 - d) APA should develop measures to protect, manage and report inadvertent discoveries of cultural heritage finds, such as:
 - i) Discovery of Aboriginal archaeological sites and objects, and
 - ii) Discovery of human remains.
 3. APA should ensure Traditional Owners/Site Custodians are engaged in heritage management decision making.

⁴ It is noted that in-field observations may conflict with the desktop assessment. The field archaeologist should always adapt their survey coverage to the field conditions.

4. APA should implement workforce training and inductions for all staff and contractors working on the SPP, which include:
 - a. Cultural awareness.
 - b. Cultural heritage protection.
 - c. Protocols for the management of Aboriginal archaeological Sites.
 - d. Identification of Aboriginal archaeological Sites.

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APPENDIX 1: AAPA ABSTRACT OF RECORDS



**Aboriginal Areas
Protection Authority**
protecting sacred sites across the territory

Our File: RI2023/580
In Reply Please Quote: 202310005

APA Group
Lvl 12 80 Ann Street
BRISBANE, QLD, 4000

ATTENTION: Adam Green

RE: Abstract of Records - Pastoral Leases the subject of petroleum interests. - 202310005

On 28th August 2023 the Aboriginal Areas Protection Authority (the **Authority**) received your application for an abstract of records under regulation 7 of the *Northern Territory Aboriginal Sacred Sites Regulations 2004* (NT) (the **Regulations**).

The contents of this letter and the enclosed map comprise the abstract which is hereby provided to you for the purposes of regulation 7(3). I advise, in accordance with regulation 7(3)(a), that for the parcel of land the subject of this abstract:

- i. there are registered sacred sites located on the parcel of land;
- ii. there are recorded sacred sites located on the parcel of land;
- iii. there are restricted work areas in the parcel of land which are provided for in a previously issued Authority Certificate;

The map enclosed provides an overview of any registered or recorded sacred sites and restricted work areas described above. The information provided to you in this abstract is for information purposes only and cannot be relied upon as an exhaustive list of sacred sites in the area. There may be other sacred sites in the parcel of land of which the Authority is not yet aware.

A person is only permitted to enter and remain on a sacred site, carry out works on a sacred site, or make use of a sacred site in accordance with an Authority Certificate granted by the Authority (refer ss22 and 25 of the Act, also see ss34 and 35). Should you desire to do any of these things please make an application for an Authority Certificate. Further information about this process can be found here – <https://www.ntlis.nt.gov.au/aapa-online/auth/login>. Undertaking any of these acts without an Authority Certificate puts you at risk of prosecution under the Act (refer ss33-35). This abstract does not protect you in any way for your acts and is not an Authority Certificate.

The current Act and Regulations can be found online here - <https://legislation.nt.gov.au/>. Please ensure you are familiar with the legislation, particularly the offences in relation to sacred sites and the processes involved for obtaining an Authority Certificate if and when you require one.

Further information concerning abstracts and requests for information from the Authority can be found in the frequently asked questions (FAQs) which can be found online here – <https://www.aapant.org.au/our-services/request-information-0#faq1>.

The cost of providing the information set out in this letter and the attached map is \$279 (GST inclusive if applicable) and an invoice will be issued to you by the Department of Corporate and Digital Development.

If you have any queries, please do not hesitate to contact the Registrar via email through enquiries.aapa@nt.gov.au or (08) 8999 4356.

Yours sincerely,

Wendy Forscutt
ACTING REGISTRAR
28th August 2023






Darwin
P: +61 (08) 8999 4365
F: +61 (08) 8999 4334
www.aapant.org.au
enquiries.aapa@nt.gov.au
4th Floor, R.C.G Centre
47 Mitchell Street DARWIN NT
GPO Box 1890, DARWIN NT 0801


Alice Springs
P: +61 (08) 8951 5023
F: +61 (08) 8951 7398
www.aapant.org.au
enquiries.aapa@nt.gov.au
1st Floor, NT House
44 Bath Street ALICE SPRINGS NT
All mail to Darwin GPO





Frequently Asked Questions

In these FAQs, a reference to:

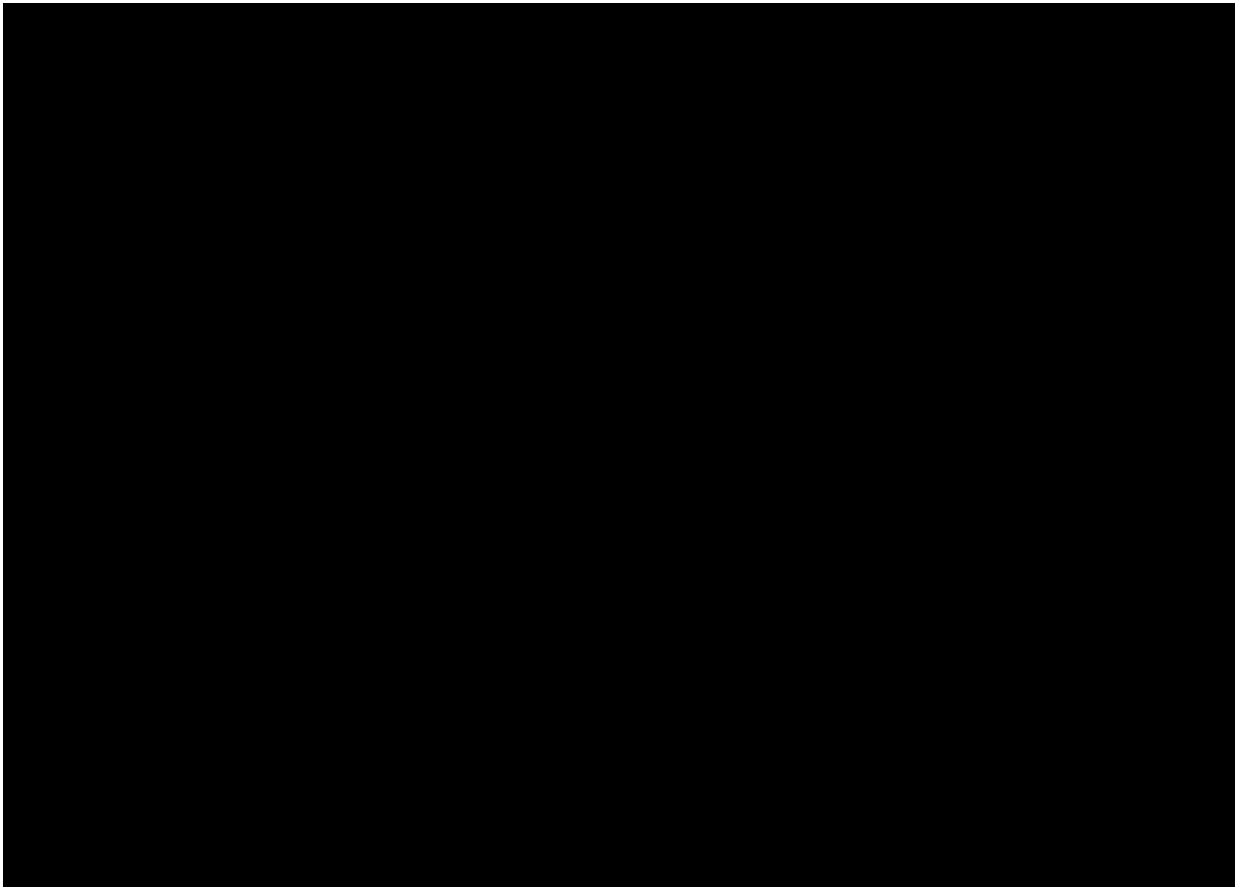
- "the Act" is a reference to the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT); and
 - "the Regulations" is a reference to the *Northern Territory Aboriginal Sacred Sites Regulations 2004* (NT).
- The Act and Regulations can be found here - <https://legislation.nt.gov.au/>.

Question	Answer
What is a sacred site?	The term "sacred site" is defined in s3 of the Act by reference to its meaning in the <i>Aboriginal Land Rights (Northern Territory) Act 1976</i> (Cth) which provides a sacred site is "a site that is sacred to Aboriginals or is otherwise of significance according to Aboriginal tradition, and includes any land that, under a law of the Northern Territory, is declared to be sacred to Aboriginals or of significance according to Aboriginal tradition".
What is a registered sacred site?	<p>A registered sacred site is indicated on the map by this symbol: </p> <p>The site number is indicated on the map by a number in the following format XXXX-XX.</p> <p>A registered sacred site is a site that has been added to the Register of Sacred Sites maintained by the Authority following the process set out in Part III Division 2 of the Act.</p> <p>The effect of registering a sacred site is set out in s45 of the Act. </p> <p>The extent of a registered site is the red hatched area:</p>
What is a recorded sacred site?	<p>A recorded sacred site is a site that is known to the Authority but has not been registered and includes recorded sacred burial sites. The Authority may hold the information required to register the site should this become the wishes of the custodians. Alternatively, a recorded sacred site may still require further research in order to obtain all necessary information. The recorded coordinate point for a sacred site is a reference point only and does not necessarily indicate the location or extent of any specific site feature.</p> <p>A recorded sacred site point is indicated on the map by this symbol: </p> <p>A recorded sacred burial site is indicated on the map by this symbol: </p> <p>Note that recorded sites have not gone through the registration process set out in s28 of the Act. As such, the full extent of the sacred site may change upon registration. The extent of a recorded sacred site is the green hatched area. </p>
The map shows that there are no registered or recorded sites in the area of interest. Does this mean I can proceed with my works?	<p>Whether you proceed with your works is a decision for you however you should carefully consider the area concerned and the provisions of the Act (particularly those that address the protections an Authority Certificate provides and the punishments prescribed for the offences set out in Part IV of the Act).</p> <p>If there is no record of an Authority Certificate being issued over the area concerned, it is possible that there may be sacred sites that are not currently known to the Authority.</p>
How long does it take to get an Authority Certificate?	The Authority takes an average of three months to produce an Authority Certificate. The timeframe will vary depending on various factors including the complexity of the proposed works, availability of custodians, remoteness, and access to land.

Question	Answer
<p>How much does an Authority Certificate cost?</p>	<p>Division 1A and Division 1 of Part III of the Act set out the procedures for applications for Authority Certificates.</p> <p>The cost of an Authority Certificate differs depending on whether it is a “standard application” or a “non-standard application”. The classification of an application is determined by the Authority in accordance with the guidelines prescribed by Regulation 3 and set out at Schedule 1 to the Regulations.</p> <p>Standard applications will incur a fee in accordance with Schedule 4 of the Regulations.</p> <p>Non-standard applications are subject to charges which will depend on the nature of the application and the work required by the Authority. These charges are calculated by the Authority in accordance with Regulation 6 of the Regulations. If you submit an application that is determined to be a non-standard application, the Authority will provide you with an estimate of charges for your consideration and approval.</p>
<p>What information is on the Register of Sacred Sites?</p>	<p>The information on the Register of Sacred Sites differs due to the information available and the information permitted by the custodians of the sacred site to be recorded. Please refer to section 29 of the Act for further information. However, generally the Register of Sacred Sites may include the following types of information in relation to a sacred site:</p> <ul style="list-style-type: none"> • the coordinate point of the site (NB: the coordinate point for a sacred site is a reference point only and does not necessarily indicate the location or extent of any specific site feature); • features of the site; • geographic description; • custodian group details; and • Aboriginal traditions associated with the site.
<p>How do I inspect the Register of Sacred Sites?</p>	<p>Section 48 of the Act allows a person to apply to the Authority to inspect the Register of Sacred Sites. The viewing will take place in the Authority’s offices, which are located in Darwin and Alice Springs. No hard or soft copies of the Register will be provided and photographs of the Register are prohibited.</p> <p>Information that is of a sensitive commercial nature or relates to matters required to be kept secret according to Aboriginal tradition will not be provided.</p> <p>To view the Register of Sacred Sites please apply online. You must specify the sites or certificates that you would like to view (see the map for the relevant numbers). A staff member will then contact you to organise an inspection time in either our Darwin or Alice Springs office.</p> <p>In accordance with regulation 8 and with reference to item 2 of Schedule 4 to the Regulations, the fee payable to inspect the Register of Sacred Sites is 23 revenue units per sacred site.</p>
<p>Authority Certificate Records are available for Public Inspection in the area of interest. What does this mean?</p>	<p>Areas over which the Authority has previously issued an Authority Certificate are indicated on the map by this hatching: </p> <p>In an abstract provided by the Authority pursuant to regulation 7(3) of the Regulations, areas over which the Authority has previously issued an Authority Certificate are indicated on the map.</p> <p>For these areas, the Authority has consulted custodians for the area in the past about prior works. There may be conditions in the Authority Certificate. These conditions will relate to the works covered by that certificate only.</p> <p>You cannot rely on an Authority Certificate that was issued to another person.</p> <p>If there is a record of an Authority Certificate being issued over the area concerned, that certificate only applies to those prior works and will not provide any protection for your works.</p>

Question	Answer
<p>There are restricted work areas in the area of interest. What does this mean?</p>	<p>In an abstract provided by the Authority pursuant to regulation 7(3) of the Regulations, a  restricted work area will be indicated on the map by this hatching:</p> <p>A restricted work area relates to an area identified in an issued Authority Certificate. It is an area that had restrictions on the kind of activities that were permitted (or not permitted) in the area.</p>
<p>Can I see the Authority Certificate records that are available for public inspection over the area of interest?</p>	<p>Yes. The Authority will provide access to information on prior Authority Certificates that have been issued in the area of interest. An application may be made pursuant to section 48.</p> <p>You will be provided with a list of Authority Certificates granted or refused over the area of interest, including the conditions for any works that may have been proposed for that area. The conditions listed in a prior Authority Certificate are for the works stated in that particular Certificate. Restrictions on works can vary. Sometimes an Authority Certificate will prohibit any work in the area or will prevent certain activities, such as ground disturbing work, damage to trees, or the removal of sand or gravel. The conditions in a certificate are specific to each application and depend on the works proposed.</p> <p>The viewing will take place in the Authority's offices, which are located in Darwin and Alice Springs. No hard or soft copies of the Register will be provided and photographs of the Register are prohibited.</p> <p>Information that is of a sensitive commercial nature or relates to matters required to be kept secret according to Aboriginal tradition will not be provided.</p> <p>To view Authority Certificates that have been previously issued or refused in your area of interest, please apply online. You must specify the sites or certificates that you would like to view. The map contained in this letter will contain relevant record reference numbers. A staff member will then contact you to organise an inspection time in either our Darwin or Alice Springs office.</p> <p>In accordance with regulation 8 and with reference to item 3 of Schedule 4 to the Regulations, the fee payable to inspect the Register of Sacred Sites is 23 revenue units per inspection of Authority Certificate application and related Certificate or refusal.</p>
<p>No Authority Certificates have been issued in the area of interest. What does this mean?</p>	<p>Areas where the Authority has not issued an Authority Certificate are indicated on the  map by this shading:</p> <p>In an abstract provided by the Authority pursuant to regulation 7(3) of the Regulations, areas where the Authority has not issued an Authority Certificate are indicated on the map. These are areas where the Authority has not undertaken anthropological research. The Authority may not have records of the sacred sites in this area. It means that there may be sites in the area and work should only proceed with an Authority Certificate, which will be issued after the Authority has spoken with custodians in the area.</p>
<p>There are "other sites" in the area of interest. What does this mean?</p>	<p>Other sites are shown on the map by this symbol: </p> <p>In an abstract provided by the Authority pursuant to regulation 7(3) of the Regulations, other sites (where known) are shown on the map. Other sites include archaeological places or sacred objects. These places and objects are protected under the <i>Heritage Act 2011</i> (NT).</p>
<p>There is a burial site in the area of interest. What does this mean?</p>	<p>Burial sites are shown on the map by this symbol: </p> <p>In an abstract provided by the Authority pursuant to regulation 7(3) of the Regulations, burial sites (where known) are shown on the map.</p> <p>Under the <i>Criminal Code Act 1983</i> (NT) it is an offence to interfere with remains of a deceased person. It is also an offence contrary to the <i>Heritage Act 2011</i> to interfere with the remains of a deceased Aboriginal person without authorisation under that Act. In the event that any skeletal remains are unearthed, it is your responsibility to stop works and immediately report such disturbance to the NT Police and the Director Heritage Branch, Department of Territory Families, Housing and Communities.</p> <p>For further information, please contact the Director Heritage Branch, Department of Territory Families, Housing and Communities on (08) 8999 5051 or email heritage.branch@nt.gov.au.</p>

Question	Answer
I know the custodians of the sites in the area of interest. Do I still need an Authority Certificate?	Yes. An Authority Certificate provides a defence against prosecution under the Act as long as the conditions of the Certificate are adhered to. The Authority can only issue an Authority Certificate if it is satisfied of the matters set out in s22 of the Act.
I own the land that is the area of interest. Do I still need an Authority Certificate?	The rights of land owners are preserved under s44(1) of the Act. Ownership of the land, however, will not defend you against a prosecution under the Act in the event a sacred site is damaged. Only an Authority Certificate can do this. Owners of land that may include sacred sites should ensure they consider the Act and whether they may require an Authority Certificate for their use of the land.
Can I share my abstract of records with other people?	No. It is an offence under s38 of the Act to permit access to, or furnish a document produced for a purpose of the Act without permission of the Authority. The abstract of records has been provided to you by the Authority for the limited purpose of your consideration. Should you wish to share the abstract, you should write to the Authority seeking permission under s38(1) of the Act. You should detail the purpose of sharing the abstract of records.
Can I publish the abstract of records?	No. It is an offence under s38 of the Act to permit access to, or furnish a document produced for a purpose of the Act without permission of the Authority. The abstract of records has been provided to you by the Authority for the limited purpose of your consideration. Should you wish to publish the abstract, you should write to the Authority seeking permission under s38(1) of the Act. You should detail the purpose of publishing the abstract of records.



List of Records available for Inspection

Authority Certificates

Cert No	With RWA	Superseded_by
C2023/049	No	
C2022/036	Yes	
C2022/002	No	
C2021/096	Yes	
C2021/074	Yes	
C2021/042	No	
C2020/073	No	C2021/042
C2020/072	Yes	
C2020/011	No	
C2020/003	Yes	
C2019/093	No	
C2019/075	No	
C2019/043	No	
C2019/039	Yes	C2020/003
C2019/032	Yes	
C2019/014	Yes	C2019/039
C2018/103	Yes	C2019/014
C2016/144	Yes	
C2015/066	No	
C2014/184	No	
C2014/183	Yes	
C2014/053	Yes	C2019/043
C2013/210	No	
C2013/142	Yes	
C2012/088	Yes	
C2012/023	Yes	C2012/088
C2011/266	Yes	
C2011/195	Yes	
C2010/251	Yes	
C2010/249	Yes	
C2010/234	Yes	
C2010/233	Yes	
C2010/232	No	C2012/023
C2007/041	No	C2010/234
C2006/129	Yes	
C2006/096	No	C2010/232
C2006/058	No	
C2006/054	Yes	
C2006/053	Yes	C2010/233
C2005/080	No	
C1999/029	Yes	
C1997/059	No	
C1994/024	No	
C1993/080	Yes	
C1993/063	Yes	
C1993/037	Yes	

C1993/036	No
C1992/184	No
C1992/183	No
C1992/181	Yes
C1991/166	No
C1991/095	No
C1991/076	Yes

Registered Sites

Map_sequence
5663-8
5663-7
5663-6
5663-32
5663-30
5663-29
5663-1
5663-17
5663-13