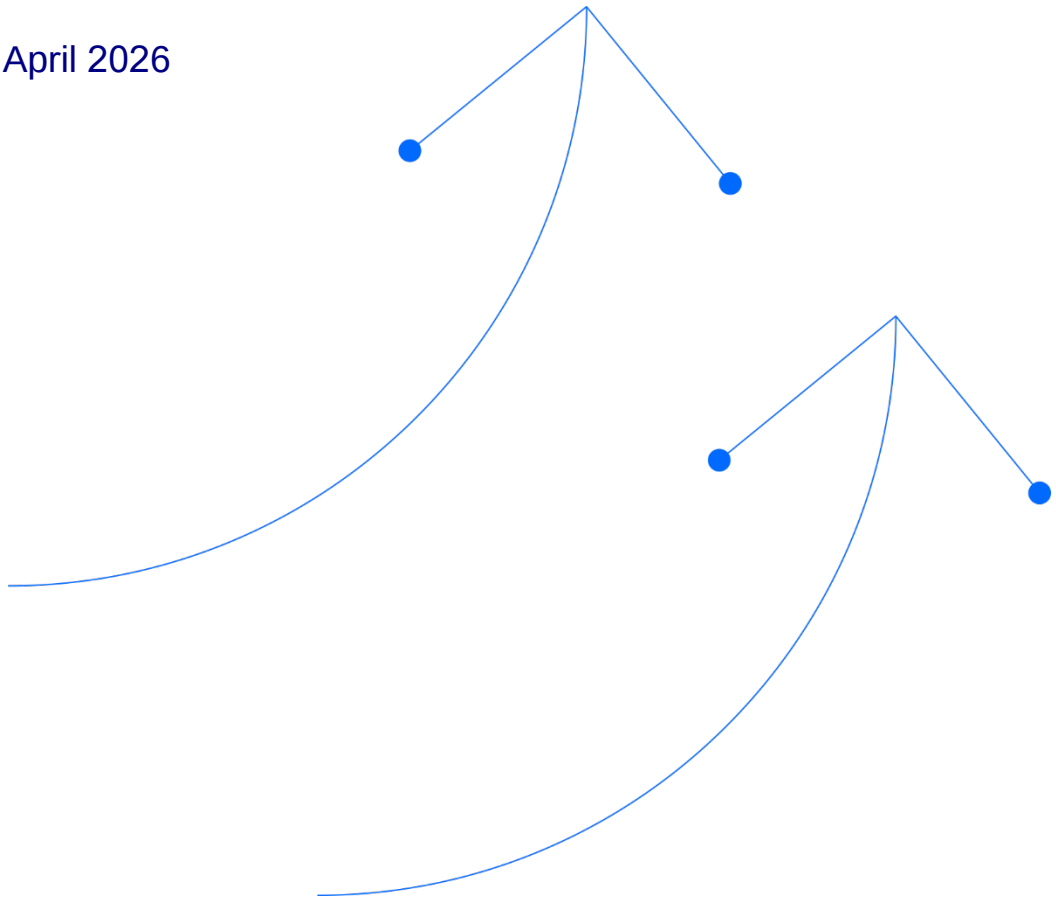
Santos

APPENDIX L: CULTURAL HERITAGE ASSESSMENT

April 2026



Prepared for
Santos Limited
ABN: 80 007 550 923

Cultural Heritage Assessment

EP161 McArthur Appraisals

17-Oct-2025

Cultural Heritage Assessment

EP161 McArthur Appraisals

Client: Santos Limited

ABN: 80 007 550 923

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Executive Summary

AECOM Australia Pty Ltd (AECOM) has been engaged by Santos Ltd (Santos) to conduct a cultural heritage assessment for the Exploration Permit (EP) 161 McArthur Appraisals program. The Project is located in the Tanumbirini pastoral lease, approximately 135 km east-southeast of Daly Waters in the Beetaloo Sub-basin, Northern Territory (NT).

Santos is proposing to undertake a series of activities to expand their gas exploration and appraisal program in EP 161. The key project works are to construct new well pads and any ancillary infrastructure (the Project). Works could include any regulated activity defined under Regulation 5 of the *Petroleum (Environment) Regulations 2016* in the Study Area, and are anticipated to require:

- Clearing and earthworks for two new well pad locations (Jibera South and Newcastle South)
- Drilling and completion of up to 12 appraisal wells
- HFS and well testing of new appraisal wells
- Maintenance and decommissioning of appraisal wells
- Construction, operation, decommissioning, dismantling and removal of infrastructure at each well pad
- Flaring during the well testing phase
- Ancillary infrastructure and activities required to support the regulated activities.

For the purposes of this assessment, the collective area required for the operations at all sites is referred to as the Disturbance Footprint, while the area which may be impacted by the works is the Construction Disturbance Zone (CDZ). The CDZ reflects all ground disturbance and clearing associated with the Project, including an allowance for minor footprint changes through design refinement. The Study Area comprises the Disturbance Footprint and a 100 m buffer.

This assessment has been undertaken to identify Aboriginal archaeological and historical heritage values in the Study Area, assess the potential impacts on these values from the proposed Project works, and provide recommendations to avoid, minimise or mitigate these impacts. It has been completed to fulfil the legislative requirements of the *Heritage Act 2011*, comply with technical guidelines, and to act as a supporting report to the EMP for the Project. This report is based on based on a review of existing heritage information and site inspection, and consultation with the Traditional Owners. AECOM has not made any Aboriginal Areas Protection Authority (AAPA) Authority Certificate applications or AAPA Request for Information applications. However, we have included reference to previously obtained certificates provided by Santos.

The preliminary desktop assessment for the well pad component of the Project considered three large (400 ha) Investigation Areas: Jibera South Investigation Area, Newcastle Creek Investigation Area and October Creek North Investigation Area. On the basis of desktop findings, the October Creek North Investigation Area was removed from consideration.

The results of the desktop assessment of the remaining Investigation Areas were used to formulate a methodology for a targeted survey which would provide a representative sample of different environmental contexts (vegetation groups, surface geology) and archaeological sensitivities. This field assessment was completed with Traditional Owners in late 2024 to validate desktop findings and confirm a suitable location for the proposed well pads which would avoid or minimise any heritage impact. Site survey focussed on three areas of potential well pad development (Request Areas) as well as the existing Jibera South borrow pit:

- Jibera South Investigation Area - Request Area 1
- Newcastle Creek Investigation Area - Request Area 2A, Request Area 2B
- Jibera South borrow pit

On the basis of the site assessment, Santos is proposing to proceed with well pad development in Jibera South (Request Area 1 and Jibera South borrow pit) and Newcastle South (Request Area 2A).

Request Area 2B has been removed from consideration and there will be no development here, or in the October Creek North Investigation Area.

All works have been sited to avoid impacts to any identified heritage values, and to minimise impacts to areas of heritage sensitivity.

The key findings of this cultural heritage assessment are:

- Known Aboriginal archaeological sites are limited to [redacted]
- AAPA certificates provided by Santos show one Restricted Work Area (RWA) is present within the October Creek North Investigation Area. No Project activities are proposed in this area.
- The archaeological potential of the Study Area is low due to a paucity of water, suitable stone for tool manufacture, and other raw materials. Any sites which do exist are likely to be isolated artefacts or low-density artefact scatters reflecting transitory use of the landscape.
- The field surveys for Request Areas 1 and 2A, access tracks and borrow pit expansions within the Jibera South and Newcastle South Investigation Areas identified:
  - No historical heritage sites
  - No Aboriginal archaeological sites
  - Several Aboriginal resource plants which are common to the area.
- Traditional Owner representatives indicated that:
  - Survey effort was satisfactory in all Project works areas
  - The locations selected were suitable for construction
  - No management measures were required for the resource plants.
- There are no impacts to known cultural heritage sites or AAPA sites based on the current Disturbance Footprint and CDZ, provided avoidance and mitigation requirements for CHAS01 are implemented.
- While the field survey did not identify any sites, there is some potential for unrecorded sites to exist in un-surveyed areas.

On the basis of the above findings, the following cultural heritage management recommendations are made for the Project works:

Recommendation 1 – Avoid all heritage impacts

Activities should be designed to avoid impacts to all cultural heritage sites.

Recommendation 2 – Additional permitting and approvals

If impacts to any archaeological site cannot be avoided, including any unexpected finds not identified during this assessment, an Application to Carry Out Work should be prepared in consultation with Traditional Owners and the NT Heritage Branch.

Recommendation 3 – CHAS01 Site Extents

The Project should avoid impact to CHAS01. No works (including vegetation removal, ground disturbance and vehicle or machinery movement), are permitted within the CHAS01 site extent or within a 5 m buffer of the site.

If works must occur in this area, Recommendation 2 should be followed.

Recommendation 4 – CHAS01 Buffer Zone

A 50 m cultural heritage buffer zone should be established around CHAS01. This buffer zone may exclude the disturbance footprint of the existing road and should be:

- Established using high visibility ground markers (e.g. bunting and staking) visible to personnel on foot and operating vehicles and machinery.
- Erected prior to work commencing, and maintained during the proposed activities
- Mapped in the EMP, and management requirements included in the EMP and inductions delivered to all site personnel

No works should occur in the CHAS01 buffer zone. If works in the CHAS01 buffer zone cannot be avoided, Traditional Owners should undertake an archaeological clearance of the area prior to ground disturbance.

Any works within the existing heavily disturbed areas (i.e. existing highway and access track) may proceed without any further assessment or implementation of any further management measures.

Recommendation 5 – Design changes

Siting of the Project has been informed by survey results and predictive modelling, and is considered low risk. Any changes to siting should be informed by the desktop assessment, predictive modelling and survey results.

Recommendation 6 – Provision of report to NT Heritage Branch

A copy of this report should be provided to the NT Heritage Branch.

Recommendation 7 – AAPA Certificates

The Project works should be carried out in accordance with the conditions of all relevant AAPA Certificates, including Authority Certificate C2020/011. Authority Certificates are a requirement for all regulated activities under the *Petroleum (Environment) Regulations Act 2016* (NT) before Ministerial approval of an Environmental Management Plan for that activity.

Santos should consult with AAPA regarding any changes to the Project or any Project works that are not included in any Authority Certificate issued for the Study Area.

Recommendation 8 – Management Process

Santos should ensure its existing cultural heritage management protocols meet legislative and NT Heritage Branch requirements and comply with all the conditions.

Recommendation 9 – Cultural Heritage Management Plan

A Project CHMP is not required under the *Draft Environmental factor guidance: Culture and heritage* (2022) as no significant impacts to cultural heritage have been identified. However, Santos can consider developing such a document as recommended by Heritage Branch and Northern Land Council.

Recommendation 10 – Unexpected finds

The Santos unexpected heritage finds stop work procedure should be implemented for the duration of proposed works, noting the potential for unidentified cultural heritage within the Study Area. Any finds should be documented (described and photographed, and their coordinates captured with GPS), and records sent to the NT Heritage Branch and the NLC. The NLC has emphasised the importance of involving Traditional Owners in decisions about cultural heritage management measures, including new finds.

Recommendation 11 – Site Inductions

Site inductions provided to all site personnel should outline any relevant cultural heritage no-go zones and the unexpected finds procedure.

Recommendation 12 – Ongoing Access

Santos should ensure that required access to land subject to native title determination, including land that Traditional Owners must access to protect sacred sites, will be maintained throughout the Project, as per Section 4 of the *Draft Environmental factor guidance: Culture and heritage* (2022). Santos may reasonably restrict access due to Workplace Health and Safety requirements if appraisal, construction and operations have commenced.

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) has been engaged by Santos Ltd (Santos) to conduct a cultural heritage assessment for the Exploration Permit (EP) 161 McArthur Appraisals program. The Project is located in the Tanumbirini pastoral lease, approximately 135 km east-southeast of Daly Waters in the Beetaloo Sub-basin, Northern Territory (NT).

Santos is proposing to undertake a series of activities to expand their gas exploration and appraisal program in EP 161. The key project works are to construct new well pads and any ancillary infrastructure (the Project). Works could include any regulated activity defined under Regulation 5 of the *Petroleum (Environment) Regulations 2016* in the Study Area, and are anticipated to require:

- **Clearing and earthworks for two new well pad locations (Jibera South and Newcastle South)** – The clearing and construction for the creation of two new well pads and ancillary infrastructure (as listed below). Each new well pad will cover areas of 15 ha.
- **Drilling and completion** – Up to 12 Appraisal wells (both vertical and horizontal) distributed across the Jibera South and Newcastle South well pads (horizontal wells will extend approximately 3,500 m).
- **HFS and well testing** – Each of the 12 new wells will include an average of 60 stages of HFS for horizontal wells and 4 stages for verticals.
- **Maintenance and decommissioning** – of up to 12 installed wells distributed across Jibera South and Newcastle South well pads once activities no longer required.
- **Construction, operation, decommissioning, dismantling and removal of infrastructure** – each well pad will include evaporation tanks, storage tanks, drilling sumps, cutting pits and any transfer infrastructure within the well pad. This also includes transportation onsite and disposal of these wastes both offsite and onsite where authorised in the project EMP (e.g. burial of cuttings).
- **Flaring** – will occur during the well testing phase.
- **Ancillary infrastructure and activities** – Infrastructure and activities required to support the regulated activity includes:
    - Groundwater monitoring bores – impact and control bores
    - Water extraction bores – up to 10 bores installed at each well pad
    - Clean water storage – onsite tanks or dams
    - Access tracks
    - Upgrade to intersection of Newcastle South access track with the Carpentaria Highway
    - Dangerous goods and hazardous materials storage and handling
    - Borrow pits
    - Airstrip operations
    - Office, workshop and laydowns
    - Bulk material transport and storage
    - Installation and operation of camps at each the Jibera South and Newcastle South well pads.

For the purposes of this assessment, the collective area required for the operations at all sites is referred to as the Disturbance Footprint, while the area which may be impacted by the works is the Construction Disturbance Zone (CDZ). The CDZ reflects all ground disturbance and clearing associated with the Project, including an allowance for minor footprint changes through design refinement. The Study Area comprises the Disturbance Footprint and a 100 m buffer.

This assessment has been undertaken to identify Aboriginal archaeological and historical heritage values in the Study Area, assess the potential impacts on these values from the proposed Project works, and provide recommendations to avoid, minimise or mitigate these impacts. It has been

completed to fulfil the legislative requirements of the *Heritage Act 2011*, comply with technical guidelines, and to act as a supporting report to the EMP for the Project. This report is based on based on a review of existing heritage information and site inspection, and consultation with the Traditional Owners. AECOM has not made any Aboriginal Areas Protection Authority (AAPA) Authority Certificate applications or AAPA Request for Information applications. However, we have included reference to previously obtained certificates provided by Santos.

The preliminary desktop assessment for the well pad component of the Project considered three large (400 ha) Investigation Areas: Jibera South Investigation Area, Newcastle Creek Investigation Area and October Creek North Investigation Area. On the basis of desktop findings, the October Creek North Investigation Area was removed from consideration.

The results of the desktop assessment of the remaining Investigation Areas were used to formulate a methodology for a targeted survey which would provide a representative sample of different environmental contexts (vegetation groups, surface geology) and archaeological sensitivities. This field assessment was completed with Traditional Owners in late 2024 to validate desktop findings and confirm a suitable location for the proposed well pads which would avoid or minimise any heritage impact. Site survey focussed on three areas of potential well pad development (Request Areas) as well as the existing Jibera South borrow pit:

- Jibera South Investigation Area - Request Area 1
- Newcastle Creek Investigation Area - Request Area 2A, Request Area 2B
- Jibera South borrow pit

On the basis of the site assessment, Santos is proposing to proceed with well pad development in Jibera South (Request Area 1 and Jibera South borrow pit) and Newcastle South (Request Area 2A). Request Area 2B has been removed from consideration and there will be no development here, or in the October Creek North Investigation Area.

460000
470000
8180000
8170000
Daly Waters
Roper Gulf Region
Barkly Region
Newcastle Waters
Jibera South
Newcastle South
October Creek North
CARPENTARIA

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(when printed at A3)

LEGEND

- Study Area

Investigation Areas

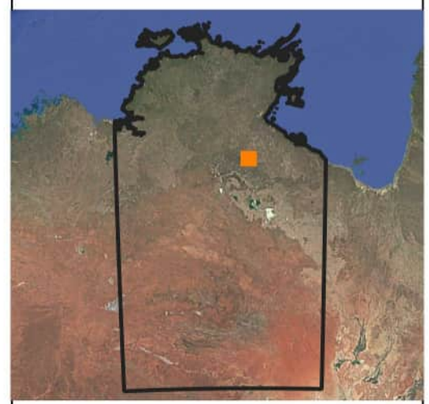
- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Boundaries

- Local Government Area



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Study Area

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 1

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460000
470000
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8170000
Jibera South
EP161
CARPENTARIA
Newcastle South
October Creek North
EP136

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(when printed at A3)

LEGEND

- Study Area

Investigation Areas

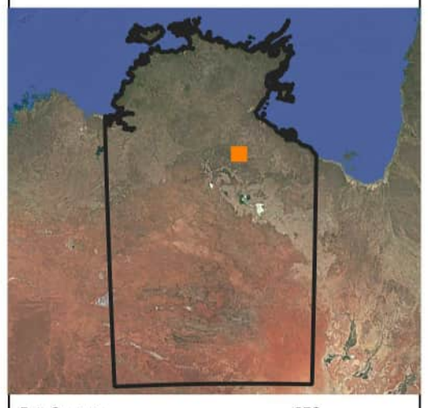
- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Exploration Permit

- EP136
- EP161



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Exploration Permits Relevant to Study Area

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Figure 2

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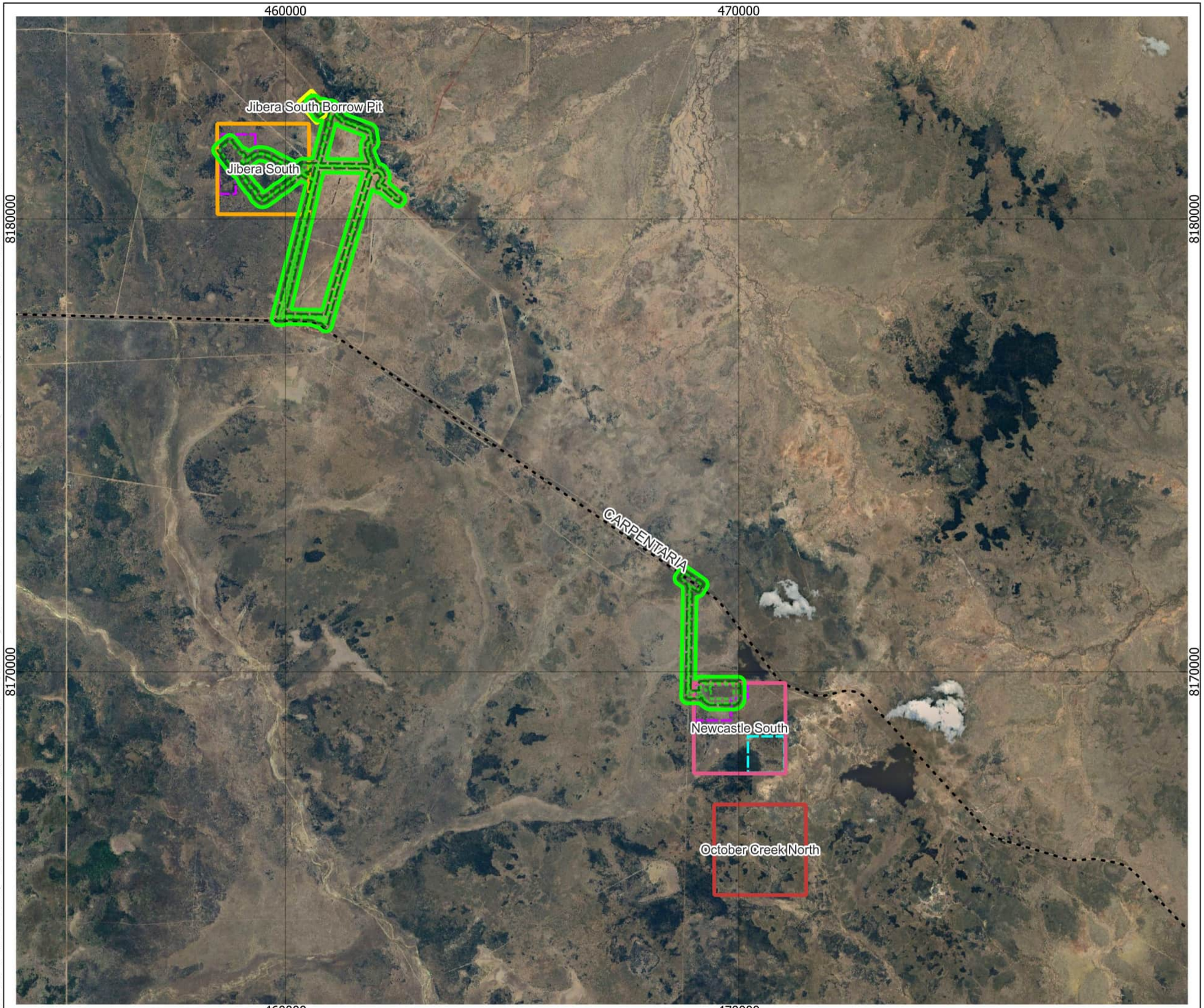

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1:80,000
(when printed at A3)

LEGEND

- Study Area

Investigation Areas

- Jibera South
- Newcastle South
- October Creek North
- Jibera South Borrow Pit

Project Works

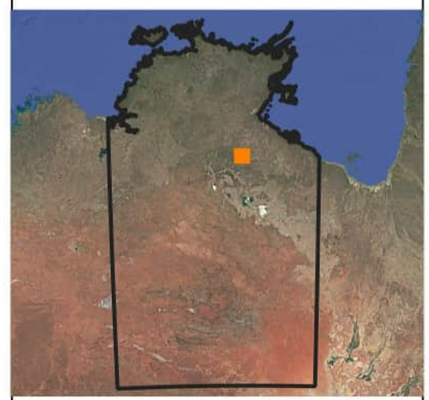
- Construction Disturbance Zone

Request Areas

- Well Pad
- Well Pad - Initial Assessment Only

Transport

- Roads



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals
Scouting
Project Works Areas

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VERSION	1

Figure 3

2.0 Methodology

2.1 Compliance with the Draft Environment Factor Guidance: Culture and Heritage

This cultural heritage assessment has been prepared to meet the Aboriginal archaeological and historical heritage requirements of the *Environmental factor guidance: Culture and heritage* (2022) (Factor Guidance). Information regarding other cultural values, including intangible heritage and sacred sites is provided when available.

The sections of this report addressing each consideration outlined in Section 4 of the Factor Guidance is summarised in Table 1.

Table 1 Compliance Matrix for the Draft Environmental Factor Guidance: Culture and Heritage

Consideration for conducting a cultural impact assessment		Report section addressing consideration
1. Identify and document the cultural values (including Aboriginal cultural values, and the Territory's natural and built heritage values) that are relevant to the proposal.	AAPA be contacted with a view to determine if there are any sites of significance according to Aboriginal tradition (sacred sites) in the vicinity of the proposal, and make an application for the issue of an Authority Certificate to determine any conditions (arising from the existence of such sites) that would apply to the proposal.	Section 3.1.4
	The Northern Territory Heritage Branch (NT Heritage Branch) of Department of Children and Families be contacted to determine whether there are any known or likely heritage places or objects in the area that could be affected by a proposal, and whether archaeological survey is required to identify if there are any heritage places or objects in the area that could be affected by a proposal. The scope of any archaeological surveys must be consistent with advice (and to the satisfaction of) the NT Heritage Branch.	Sections 2.4, 3.1.3 and 4.0
2. Identify cultural values and assess the potential for those values to be significantly impacted by the proposed action.		Sections 3.1, 3.3, 4.0 and 5.0
3. Provide an assessment of the extent of impacts on all cultural values. This should include impacts from the planning, design, construction, operation, rehabilitation and closure of the action and the residual impacts that will persist at the end of life of the action. The assessment should consider indirect and cumulative impacts. The impact assessment must include sufficient detail and analysis to provide a clear understanding of the potential impacts of the action on the identified cultural values. Where impacts will be avoided, detail the reasons for this and the avoidance measures that would be implemented.		Sections 5.0 and 7.0
4. Where relevant, identify any mitigation measures required to meet the Northern Territory Environmental Protection Authority (NT EPA)'s objective of protecting culture and heritage. Measures may include:	The issue of an AAPA Authority Certificate which specifies the conditions under which works, on or in the vicinity of a sacred site, may take place and any protective measures that must be implemented.	Section 3.1.4
	Management controls to prevent the proposal having a significant impact on cultural values in an area that could be affected by the action, either by	Sections 5.0 and 7.0

Consideration for conducting a cultural impact assessment		Report section addressing consideration
	avoiding impact or mitigating impact to an acceptable level.	
	Measures recommended by, or authorisation required from, the Heritage Branch of DTFHC in relation to heritage places or objects.	Sections 3.1.3 and 7.0
	Measures to ensure that required access to land will be maintained (e.g. as agreed through an Indigenous Land Use Agreement).	Not addressed as part of this report. However, recommendation to this effect provided in Section 7.0
5. Where relevant, identify proposed monitoring and reporting activities and adaptive management strategies to demonstrate that important cultural and heritage values are protected.		Section 7.0
6. Where significant cultural impacts are assessed under the (EP Act), the NT EPA may require the measures proposed to manage, monitor and report on cultural impacts to be presented in a cultural heritage management plan.		Sections 5.0 and 7.0

2.2 Desktop Assessment

2.2.1 Aboriginal Heritage

In accordance with legislative and project requirements, the Aboriginal cultural heritage desktop assessment comprised:

- Searches of Commonwealth and Territory heritage registers to identify known heritage places, including a request to the Northern Territory Heritage Branch (NT Heritage Branch) for a search of confidential aspects of Territory heritage registers
- Searches of the National Native Title Tribunal (NNTT), including Native Title Vision, to identify relevant Native Title claims or determinations
- Review of Aboriginal Areas Protection Authority (AAPA) certificates to identify sacred sites or exclusion areas
- Review of physiographic information to identify areas with high potential for Aboriginal heritage sites
- Review of past relevant archaeological survey reports and assessments to understand the heritage context.

2.2.2 Historical Heritage

In accordance with legislative and project requirements, the historical cultural heritage desktop assessment comprised:

- Searches of Commonwealth and Territory heritage registers to identify known heritage places
- Review of past relevant survey reports and assessments to understand the heritage context
- Review of historical mapping and imagery to identify previous structures or other forms of development of potential heritage significance.

2.3 Predictive Model

A predictive model for Aboriginal cultural heritage in the Project area was developed based on:

- A review of previous cultural heritage assessments
- Cultural heritage register search results
- Landscape modelling (including analysis of historical aerial imagery)
- A summary of the physiographic setting, surface geology, soils, vegetation, hydrology, topography, climatic and palaeoclimatic conditions
- An overview of the Aboriginal history of the region, including ethno-historic sources and post-contact Aboriginal history
- An overview of the archaeological context of the region, including consideration of previously developed predictive models
- An overview of the non-Indigenous history of the region.

Archaeological sensitivity was determined by two key factors:

- Subsurface archaeological potential: the type and location of archaeological sites likely to occur in an area, as indicated by landform and available resources (Table 2)
- Integrity: the likelihood that archaeological sites remain intact, as determined by historical land use and ground disturbance (Table 3).

The intersection of subsurface archaeological potential and ground surface integrity is considered in Table 4.

Table 2 Definitions for subsurface archaeological potential

Subsurface Archaeological Potential	Definition
Low	Areas in which subsurface archaeological materials are unlikely to occur. This may be due to unfavourable environmental conditions and/or prior disturbance(s).
Moderate	Areas in which subsurface archaeological materials may occur. Reasonably favourable environmental conditions exist, although high artefact counts or densities are unlikely. Subsurface evidence is likely to be the product of random discard events by Aboriginal people in the past.
High	Areas that are known or highly likely to contain subsurface archaeological material. The presence of archaeological materials typically reflects optimal environmental conditions. High artefact counts or densities and other archaeological features are likely due to repeated or intensive activity by Aboriginal people in the past.

Table 3 Ground Surface Integrity (GSI) ratings and descriptions

GSI rating	Definition
Low	The ground surface has been subjected to significant disturbance (for example, earthworks or excavations). Little to no integrity remains.
Moderate	The ground surface has been subject to moderate disturbance (for example, native vegetation clearance) but retains a reasonable degree of integrity.
High	The ground surface is unmodified or minimally modified.

Table 4 Archaeological sensitivity matrix

	Subsurface archaeological potential		
Integrity	**High**	**Moderate**	**Low**
Intact	High	Moderate	Low
Disturbed	Moderate	Low	Very Low

2.4 Field Assessment

A targeted field survey of the Study Area was designed to focus on areas identified by the predictive model as having High or Moderate archaeological potential within the Project works areas (see Section 3.5). The October Creek North Investigation Area was subject to desktop assessment only and was not included in the field assessment, as it is not currently proposed for construction. In addition, Santos advised during the fieldwork that Request Area 2B in Newcastle South Investigation Area would not be developed at this stage and asked that the survey effort be focussed on other locations. Consequently, only preliminary field observations were made for Request Area 2B within the Newcastle South Investigation Area.

The field survey was conducted by one AECOM heritage specialist and six Traditional Owner representatives. The survey sought to validate the desktop findings and identify archaeological (tangible) heritage places as protected under the *Heritage Act 2011*. AECOM also recorded any intangible heritage values or other cultural values identified by Traditional Owners during the survey, but such values were not the focus of the assessment. Information on any sacred sites recorded by AAPA is provided in Section 3.1.4.

The survey used pedestrian survey methodologies, with full coverage pedestrian surveys completed in areas predicted to have High archaeological potential and focused pedestrian surveys within areas predicted to have Moderate archaeological potential (Section 3.5). Pedestrian transects were also completed in Low potential areas within the Study Areas to ensure a broad appreciation of the landscape. Transects were also selected to intersect with each mapped vegetation type within each Project works area (see Section 3.2) to ensure a broad landscape-level appreciation.

This approach did not achieve full coverage of the Study Area and was designed to target areas with the highest probability of containing Aboriginal cultural heritage sites. As such, unidentified Aboriginal cultural heritage sites could exist in the Study Area, particularly isolated artefacts and low-density artefact scatters. However, both Traditional Owners and AECOM heritage specialists assessed this potential as low ([redacted] personal communication, December 2025).

During the surveys, a photographic record was maintained, and data was captured on the landform type, ground surface visibility (GSV) (see Table 5), and ground surface integrity (GSI) for the areas surveyed. All photographic, descriptive and locational data was recorded in a geospatial database developed specifically for the Project.

Table 5 Ground Surface Visibility (GSV) ratings, ranges and descriptions

GSV rating	Percentage GSV	Description
Nil to poor	0-25%	GSV is not sufficient for the visual detection of cultural material. Instead, the assessment relies on assessing the archaeological potential and integrity of the landforms in the area. Where sufficient risk exists that unidentified cultural material may be present, further assessment or management may be required. The area may need to be resurveyed once GSV conditions improve, or other management measures may be needed.

GSV rating	Percentage GSV	Description
Poor to good	26-50%	GSV is sufficient to visually detect cultural material.
Good to very good	51-75%	GSV is sufficient to visually detect cultural material.
Very good to excellent	76-100%	GSV is sufficient to visually detect cultural material.

2.5 Impact Assessment

Where heritage objects or places were identified, an impact assessment was made based on the location of the heritage relevant to any proposed Project works. The degree of impact an activity will have on a cultural heritage place was assessed in terms of the magnitude of change to the heritage values of that place. The significance of that impact on a cultural heritage place is a function of the cultural heritage significance of the place and the predicted magnitude of change (ICOMOS, 2011).

3.0 Desktop Review

3.1 Register Searches

3.1.1 Native Title

A search of the National Native Title Tribunal Registers and Databases through Native Title Vision online mapping on 10 December 2024 identified that one native title determination had been finalised across the Study Area. The determination found that native title exists (non-exclusive) across the Study Area (Table 6 and Figure 5). No Indigenous Land Use Agreements exist over the Study Area.

Table 6 Native title current for Study Area

Name	Tribunal No	Fed Court Number	Outcome	Native Title Holders
Tanumbirini Pastoral Lease	DCD2013/019	NTD33/2012	Native title exists in parts of the determination area. Native title exists (non-exclusive) within the Study Area.	Guyal Ambulya; Guyal Muynmin; Budal Labanga; Murrungun Baluganda; Mambaliya Ngubayin; Mambaliya Wungurrindjirr

3.1.2 Australian Heritage Database

A search of the Australia Heritage Database on 10 December 2024 identified that there are no World Heritage List (WHL), National Heritage List (NHL), Commonwealth Heritage List (CHL) or Register of the National Estate (RNE) heritage places within the Study Area.

3.1.3 Northern Territory Heritage Register

A search of the public aspects of the Northern Territory Heritage Register (NTHR) on 10 December 2024 did not identify any heritage places or artefacts within the Study Area. The nearest recorded heritage place is the historic heritage place, Daly Waters Aviation Complex, located approximately 130 km west of the Study Area.

A request was lodged with the Northern Territory Heritage Branch (NT Heritage Branch) for a search of confidential aspects of the NTHR on 10 December 2024 for the Jibera South, Newcastle South and October Creek North Investigation Areas. The request also included a brief description of the intended archaeological survey approach, described as:

- Targeted survey of areas identified as having high potential for archaeological sites based on proximity to water sources, previous disturbance levels, and presence of suitable geology for stone tool manufacture
- Stratified sample pedestrian transects to characterise the environment and ground truth the predictive model.

Feedback on the survey methodology was requested as part of the request.

A response was received on 18 December 2024 and identified that there are no nominated, provisionally declared, or declared Aboriginal archaeological or Macassan heritage places or objects within the Jibera South and Newcastle South Investigation Areas. The response indicated that a previously recorded Aboriginal archaeological place (surface scatter and flaked stone tools) is present [redacted](Appendix C).

The NT Heritage Branch also included preliminary advice that:

- An archaeological survey and cultural heritage management plan (CHMP) are required to identify and mitigate impacts to Aboriginal or Macassan archaeological places
- The desktop assessment and survey methodology should be provided for feedback

- The NT Heritage Branch must receive a copy of the final report and spatial data of discovered Aboriginal archaeological places and objects for their records
- If the Project works areas are relocated, an additional search of the register will be required
- Any disturbance to Aboriginal archaeological sites will require the submission of an Application to Carry Out Work, which demonstrates appropriate Traditional Owner consultation.

A request was lodged to the NT Heritage Branch for a search of the confidential aspects of the NTHR on 25 May 2025 for the Project Disturbance Footprint and CDZ, including for areas located outside the Investigation Areas. The request also sought clarification as to whether the previous advice (dated 18 December 2024) recommending a CHMP be developed for the Project is still relevant based on the updated Disturbance Footprint.

A response on 29 May 2025 identified that there are no nominated, provisionally declared, or declared Aboriginal archaeological or Macassan heritage places or objects, and no known Aboriginal or Macassan archaeological places or objects within the Project Disturbance Footprint and the CDZ. The response assessed the likelihood that unrecorded Aboriginal or Macassan archaeological places exist in the area as 'possible or likely'. The response also included advice that:

- The NT Heritage Branch has a record of an artefact scatter [redacted] outside the works footprints provided, and can provide the spatial data and report extracts for this site.
- An archaeological survey and CHMP are required to identify and mitigate impacts to Aboriginal or Macassan archaeological places
- CHMP development is a recommendation due to the effective management of heritage under such documents, which can be a single live document or a separate CHMP for each project
- CHMPs generally lead to better heritage management outcomes than 'an archaeological survey in Appendix G of an EMP'
- The NT Heritage Branch can provide advice on the scope of the survey and must receive a copy of the final report for their records.

A request was lodged on 5 June 2025 to the NT Heritage Branch to provide geospatial data and report extracts for the artefact scatter located immediately adjacent to the Newcastle South entrance road. A response received on 20 June 2025 provided details of the artefact scatter and the associated report. The report (Ellengowan Enterprises, 2025) describes [redacted] (CHAS01) as a low-density artefact scatter comprising [redacted] The site is located [redacted] The Heritage Branch accepts that the site boundary is a 20 m radius from a central point provided as a geospatial data attachment to the email response (Figure 4). The site is [redacted]

A request was lodged on 2 October 2025 to the NT Heritage Branch for a search of the confidential aspects of the NTHR for changes to the Project Disturbance Footprint and CDZ, for an additional access track for the Jibera South pad. A 250 m buffer was included around the Project Disturbance Footprint for the access track, to allow for design changes. A response was received on 16 October 2025, advising that there are no nominated, provisionally declared, or declared Aboriginal archaeological or Macassan heritage places or objects, and no known Aboriginal or Macassan archaeological places or objects within the additional access track or a 250 m buffer around this.

This report has been prepared in accordance with the applicable NT Heritage Branch recommendations. No Aboriginal heritage values were identified during the survey. Through the site selection process, the specific well pad locations have been selected in Jibera South and Newcastle South Investigation Areas, and no works are proposed in the October Creek North Investigation Area. As such, the Project is unlikely to impact any known Aboriginal archaeological sites, and no Application to Carry Out Work is currently warranted to authorise the disturbance of archaeological sites, whether previously recorded or otherwise. Under the Factor Guidance (2022), a CHMP may be required 'where significant cultural impacts are assessed under the EP Act'. Based on the Disturbance Footprint for the

Project, no significant impacts have been identified to cultural heritage (see Section 5.0). As such, and noting the NT Heritage Branch's advice around CHMP development, a CHMP is unlikely to be required for the Project.

3.1.4 Aboriginal Areas Protection Authority

The Aboriginal Areas Protection Authority (AAPA) issues Authority Certificates that identify the extent of sacred sites and establish Restricted Works Areas to protect those sites. Santos has obtained an AAPA Authority Certificate (C2020/011), which applies to exploration activities, including exploration wells, well development and 2D seismic survey within EP161. [redacted]

[redacted]

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Jibera South
DC2012/003 - Tanumbirini Pastoral Lease
CARPENTARIA
Newcastle South
October Creek North

AECOM
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LEGEND

- Study Area

Investigation Areas

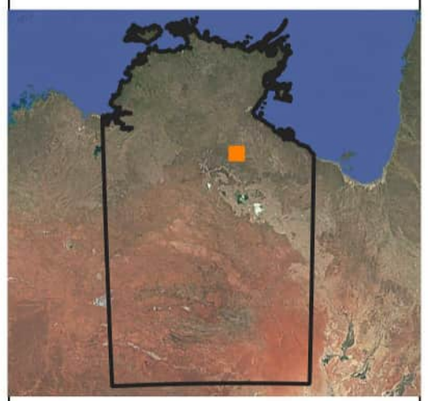
- Jibera South
- Newcastle South
- October Creek North

Native Title Determinations

- Tanumbirini Pastoral Lease

Transport

- Roads



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Native Title Determinations

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VERSION	1

Figure 5

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3.2 Landscape context

Environmental variables such as landform, geology and ecology have a significant influence on how people act in the landscape, while subsequent land use and disturbance determine whether evidence of past activities is preserved. These matters are considered for the Study Area in Table 7. The links between these environmental factors and Aboriginal heritage are further discussed in Section 3.5.

Table 7 Environmental context

Environmental Variable	Key Observations
Topography	Elevations within the Jibera South Investigation Area vary between 270 m and 280 m Australian Height Datum (AHD), decreasing in height towards the southern extent. Elevations within the Newcastle South Investigation Area vary minimally between 275 m and 280 m Australian Height Datum (AHD), increasing in height towards the northeastern corner. Elevations within the October Creek North Investigation Area vary between 265 m and 285 m Australian Height Datum (AHD), with elevation changes associated with drainage lines and floodplains in the centre, south and east.
Significant Landscape Features	Two unnamed Stream Order (SO) 1 drainage lines are present within the Study Area, both in the October Creek North Investigation Area (Figure 6 and Appendix B). SO 1 watercourses are watercourses with no tributaries. A SO 2 watercourse is formed where two SO 1 watercourses join, with SO 3 watercourses formed by two joined SO 2 watercourses, and so on, through to SO 7. Only SO 1 watercourses occur within the Study Area, although SO 2 and SO 3 watercourses are present to the north, east and south. Unmapped flood plains and drainage lines also occur within the Study Area, as do areas of alluvial sediment (Figure 7 and Appendix B). At least one of the unmapped water sources is located near a water bore and may be associated with the construction of the water bore (Figure 7 and Appendix B). Both Aboriginal and early colonial settlement patterns are strongly associated with the availability of water, and there is high potential for both tangible and intangible heritage values around watercourses, particularly higher stream orders. Further discussion on the potential unmapped water sources is presented based on the results of the field assessment in Section 4.0.
Geology	The dominant geology in the Study Area is Cenozoic laterite (Czl), which is described as laterite and lateritic rubble and soil (Figure 8; see also Northern Territory Government (Northern Territory Geological Survey), 2017). Czl is the only surface geology mapped in the Jibera South Investigation Area (Figure 8 and Appendix B). In addition to the Czl geology, the Newcastle South Investigation Area contains a small area of Quaternary Alluvium (Qa) (Figure 8 and Appendix B; see also Northern Territory Government (Northern Territory Geological Survey), 2017). This geology type is primarily associated with watercourses and nearby low-lying areas. The October Creek North Investigation Area contains more variable geologies than the rest of the Study Area, with only a small area of Czl surface geology along the western extent (Figure 8 and Appendix B; see also Northern Territory Government (Northern Territory Geological Survey), 2017). The rest of the October Creek North Investigation Area is dominated by Cretaceous claystone (Kl) surface geology, described as

Environmental Variable	Key Observations
	lateritised claystone, soft grey claystone, impure sandstone, white quartz sandstone and conglomerate (Northern Territory Government (Northern Territory Geological Survey), 2017). The southern portion also contains areas of Czs surface geology, described as residual soil, ferruginous gravel, sand and talus (Northern Territory Government (Northern Territory Geological Survey), 2017). The suitability of these surface geologies for Aboriginal exploitation is explored further in Sections 3.5.3 and 3.5.4.2.
Vegetation Mapping	The mapped vegetation groups vary somewhat between the Investigation Areas (Figure 9 and Appendix B). In the Jibera South Investigation Area, the dominant vegetation types include *Corymbia*/*Eucalyptus* woodlands, bullwaddy shrubland and woodland, lancewood forest, *Eucalyptus chlorophylla* low open woodland, and *Melaleuca* low open woodland, as well as smaller areas of silver box low open woodland, coolabah low open woodland and a single area of tussock grassland. The Newcastle South Investigation Area contains Acacia shrubland and hummock grassland, bullwaddy shrubland and woodland, *Corymbia*/*Eucalyptus* open woodland, *E. chlorophylla* low open woodland, lancewood forest, *Melaleuca* low open woodland, snappy gum low open woodland and a single, isolated patch of tussock grassland. Finally, the October Creek North Investigation Area is dominated by snappy gum low open woodland, which also contains areas of *Acacia* shrubland and hummock grassland, bullwaddy shrubland and woodland, *Corymbia*/*Eucalyptus* woodland and open woodland, *E. chlorophylla* low open woodland, lancewood forest, and silver box low open woodland. The relationship between these vegetation types and the potential for Aboriginal heritage sites is explored further in Sections 3.5.3 and 3.5.4.3.
Past Land Use and Impacts	Known past land use activities of the Study Area include vegetation clearance and the construction of tracks, fence lines, roads, seismic lines, and water bores. These activities will have disturbed the topsoil and vegetation where they have occurred. Prescribed burning is often used in the Northern Territory in pastoral areas for bushfire prevention, pasture improvement and grazing management, and weed control, among other reasons (Australian Fire and Emergency Services Authorities Council, 2015; Bryant, 2008; Northern Territory Government, 2022). Prescribed burns may be undertaken on the Tanumbirini pastoral lease for some or all of these purposes. Historically and before settlement, Aboriginal fire regimes have been used in the region for hunting and land management purposes. In addition, unplanned bushfires and wildfires have occurred in the region. The Study Area has been affected by fire in the past, which would have impacted the vegetation and ground surface. Further discussion of past land use and impacts, as well as the potential for historical structures or deposits, is presented in Section 3.6.

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LEGEND

Study Area

Investigation Areas

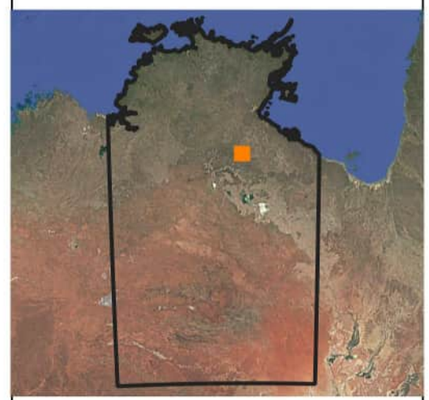
Jibera South
Newcastle South
October Creek North

Transport

Roads

Watercourse Stream Order

1
2
3



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Stream Order Watercourses

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Figure 6

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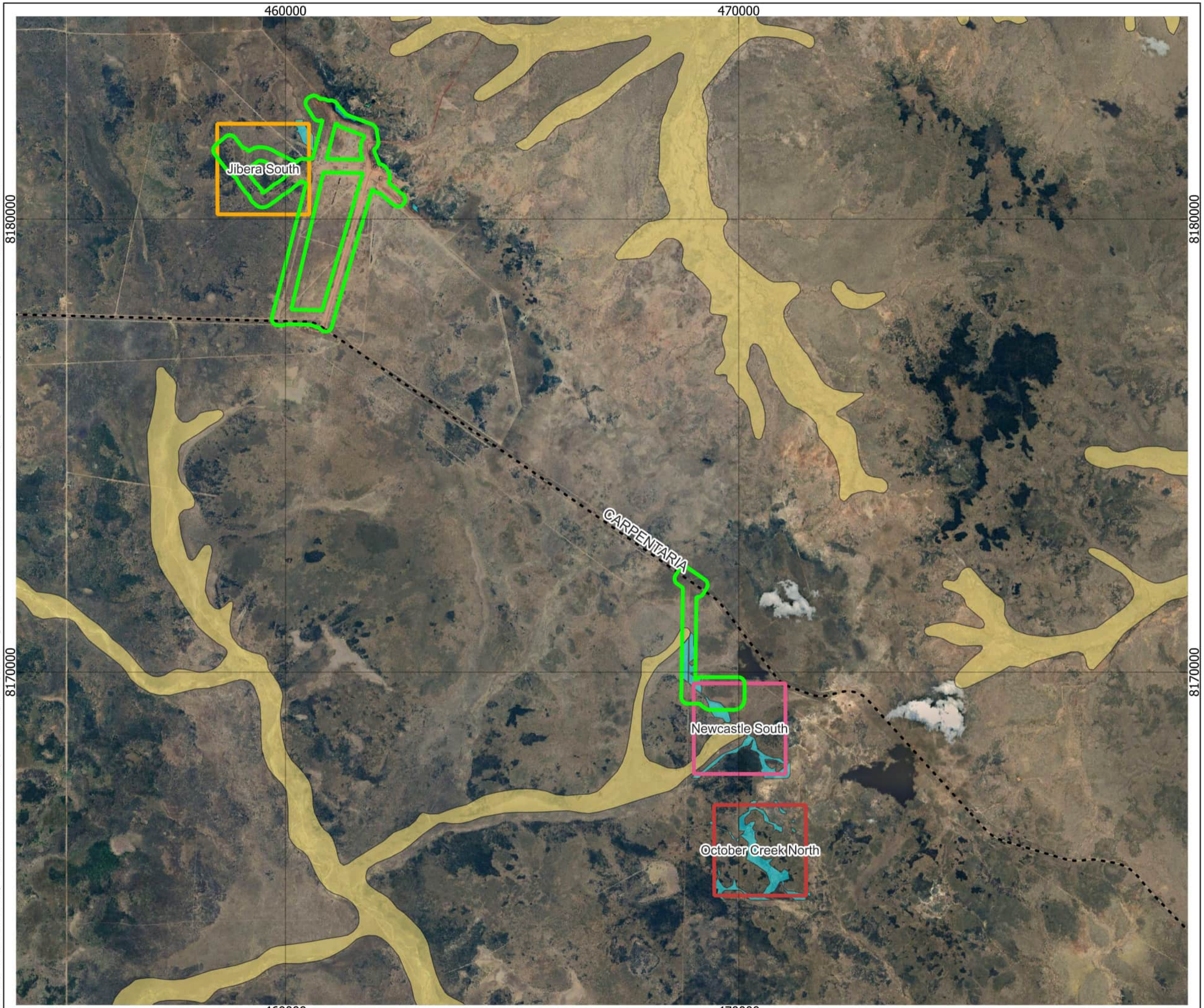

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LEGEND

- Study Area

Investigation Areas

- Jibera South
- Newcastle South
- October Creek North

Transport

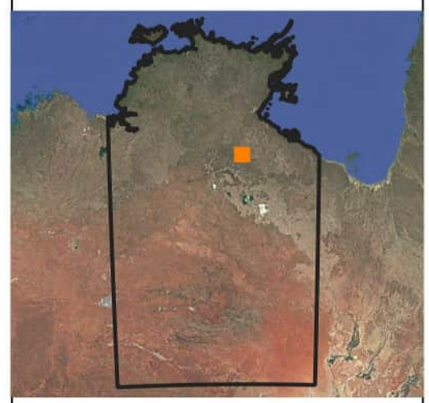
- Roads

Surface Geology

- Quaternary Alluvium

Unmapped Water Source

- Water Source Visible In Aerial Imagery



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Alluvial Sediment and Unmapped Water Sources

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Figure 7

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October Creek North

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LEGEND

- Study Area

Investigation Areas

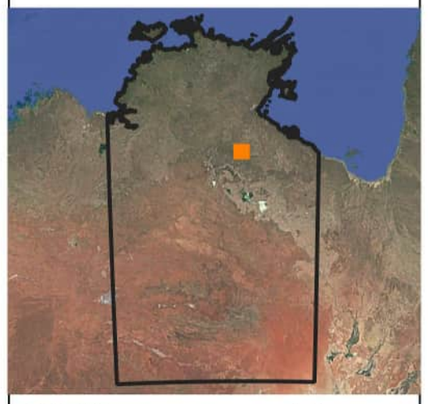
- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Surface Geology

- Czl
- Czs
- Kl
- Qa



Data Sources:
AECOM
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Northern Territory Government
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Santos
EP161 McArthur Appraisals Heritage Scouting
Surface Geology

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Figure 8

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Jibera South
Newcastle South
October Creek North

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LEGEND

Study Area

Investigation Areas

- Jibera South
- Newcastle South
- October Creek North

Vegetation Groups

- Acacia shrubland and hummock grassland on sandplains
- Bauhinia and Corymbia open woodland on sandy clay
- Bullwaddy shrubland and woodland
- Coolabah low open woodland on clay
- Coolabah, Lophostemon and Gutta Percha swamps
- Corymbia bella woodland on alluvial plains
- Corymbia/Eucalyptus open woodland on sandy loam
- Corymbia/Eucalyptus woodland (run-on areas and heavier soils)
- Corymbia/Eucalyptus woodland on sandstone
- Eucalyptus chlorophylla low open woodland
- Eucalyptus miniata open woodland on loamy sand
- Intensive Uses
- Lancewood forest
- Melaleuca forests (springs, river channels)
- Melaleuca low open woodland on floodplains and drainage depressions
- No RFclass data
- Production from Dryland Agriculture and Plantations
- Riparian woodland (ephemeral streams)
- Silver box low open woodland
- Snappy gum low open woodland
- Track
- Tussock grassland

Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Vegetation Groups

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Figure 9

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3.3 Aboriginal History and Ethnography

The Study Area falls within the boundaries of the Alawa language group (Horton, 1994). The Alawa language (also referred to as Galawa or Waliburu) has been subject to limited anthropological and linguistic academic study, and is described as encompassing Hodgson Downs, Nutwood Downs, and Tanumbirini station, including the areas south of the Roper River and east of the Stuart Highway, west of the Binbinga, in the Limmen River district, and along the southern tributaries of Roper River upstream from the mouth of the Hodgson River west to Roper valley, south to Mason Bluff (Mount Mueller) and Hodgson Downs, and east to the headwaters of Mountain Creek (AIATSIS 2025).

Aboriginal people have inhabited what is now the Northern Territory for at least 50,000 years (see Section 3.4 for further discussion). Explorer John McDougall Stuart first traversed what would become known as the Beetaloo Sub-basin in 1860, and exploited water sources known to local Aboriginal groups. The locations of these water sources determined his eventual successful route through the Northern Territory. However, early explorers and the pastoralists who followed recorded very little of the Aboriginal groups they encountered.

It was not until the turn of the 20th century that more detailed accounts of Aboriginal people in Australia's north emerged in the work of ethnographers Spencer and Gillen. Like all early ethnographies, Spencer and Gillen's work is not without its problems, but their detailed written descriptions, photographs and voice recordings provide a unique insight into Aboriginal life at the time.

Spencer and Gillen determined the socio-cultural structures of the Aboriginal groups who occupied the Beetaloo Sub-basin and surrounding regions to be similar to those of central Australian groups to the south (Spencer & Gillen, 1904). This included a similar totemic system and initiation rites as well as patrilineal descent (Spencer & Gillen, 1904). Relations between the various Aboriginal groups are reported as having been amicable, with inter-marriage and ceremonial collaboration (Spencer & Gillen, 1904).

Material culture assemblages in the area reportedly featured traditional tools such as stone knives, axes and spears as well as shields and pitches, but also evidence of colonial era innovation and hybridisation (Spencer & Gillen, 1904). While travelling with a group of Kotanji people near Beetaloo, for example, Gillen noted that a significant number of spears were made from iron (Spencer & Gillen, 1904).

Ethno-archaeological research in the late 20th century further explored the tool making traditions of the region, including the powers ascribed to stone knives based on the quarry from which the raw material was obtained (Murgatroyd 1991 in Mulvaney, 1997; Paton, 1994). These intangible values meant blades could be used only for certain purposes, and could not be left unsheathed. Paton (1994) notes these knives are frequently found broken in the archaeological record, and theorised they were deliberately destroyed before disposal as a way of protecting and controlling their powers.

More generally, recent studies have pointed to how important water holes such as Lake Woods, Eva Downs Swamp and Amungee Mungee waterhole were to Aboriginal occupation of the region, providing living and resource extraction sites (PWCNT 2005). Many of the flora and fauna present in the Study Area have been, and continue to be, used for food, medicine, tool creation and other resources including wood fuel for cooking (Raymond et al., 2018; Wightman et al., 1992).

The region is located in a complex cultural landscape which includes intangible song and story places, many of which attach to key landforms including stone outcrops, waterholes and stands of vegetation, reflecting the long history of Aboriginal people with the area. Intangible sites may be connected with multiple landscape features spread across large distances and across group boundaries (see Mulvaney, 1997).

3.4 Previous Archaeological Investigations

3.4.1 Regional Archaeology

Table 8 provides a summary of previous archaeological investigations undertaken in the local area, including within the Tanumbirini pastoral lease and EP161. The majority of archaeological investigations in and near the Study Area were completed for linear infrastructure projects adjacent to the Stuart Highway or gas exploration activities associated with the Beetaloo Sub-basin. Aboriginal cultural heritage sites near or within the Study Area are predominantly artefact scatters comprising artefacts

manufactured from locally sourced raw materials (for example, quartz, silcrete and quartzite). One stone arrangement and one ochre resource area have also been recorded outside the Study Area. The only historical heritage sites identified in this region are a potential World War Two (WWII) facility and a grave.

Table 8 Previous archaeological assessments relevant to the Study Area

Researchers	Assessment Type	Locality	Approximate Distance to Study Area	Key Findings
Smith (1986)	Excavation	Lake Woods	170 km	*In situ* artefacts dated to 6,000 years.
Hermes (1986)	Survey	Amadeus Basin to Katherine	130 km	Large scale survey for a proposed gas pipeline targeting areas of high cultural sensitivity between Daly Waters and Katherine. Thirty-two sites were recorded, mostly comprising artefact scatters associated with watercourses.
Quaternary Archaeological Surveys (1998)	Survey	Stuart Highway to Mataranka Homestead	190 km	Large scale survey for a fibre optic cable corridor. Three isolated artefacts were recorded, as well as one historic heritage site consisting of seven concrete structures likely dating to WWII.
Heritage Surveys (1999)	Survey	Daly Waters to McArthur River	1 km	Nine archaeological sites were identified in this survey, including rock shelters and artefact scatters.
HLA Envirosciences (HLA) (2006a, 2006b, 2006c, 2006d, 2007)	Survey	Beetaloo Sub-basin	17 km	Several archaeological sites were recorded within several exploration permit areas, including artefact scatters, isolated artefacts and stone cairns. A preliminary predictive model was developed based on site modelling and landform sensitivity.
AECOM (2011, 2012a, 2012b)	Survey	Beetaloo Sub-basin	15 km	Several archaeological sites were identified during surveys of seismic survey lines and exploratory drilling locations, including several large artefact scatters (>1 km in extent), quarry sites and isolated artefacts. A predictive model was developed, refined and used in the field to identify ‘hot spots’ that have Indigenous archaeological potential.
AECOM (2014)	Survey	Beetaloo Sub-basin	15 km	Heritage assessment completed for Origin exploration wells, including areas within EP98. One isolated artefact was identified.
AECOM (2015)	Survey	Beetaloo Sub-basin	5 km	Large scale survey for four exploration drilling locations. One large artefact scatter and three smaller artefact scatters were identified.

Researchers	Assessment Type	Locality	Approximate Distance to Study Area	Key Findings
HCA (2019a)	Survey	Beetaloo Sub-basin	0 km	Heritage assessment completed for seismic survey and drilling areas within EP161 for the Tanumbirini North seismic and drilling program and the Inacumba North drilling program as part of the McArthur Basin Drilling Program, Northern Works Program area. No archaeological sites were identified.
HCA (2019b)	Survey	Beetaloo Sub-basin	0 km	Heritage assessment completed for seismic survey and drilling areas within EP161 for the Tanumbirini 1 well seismic program, and the Tanumbirini 3 pilot well, Inacumba South pilot well and Inacumba SW pilot well as part of the McArthur Basin Drilling Program, Southern Works Program area. 22 Aboriginal archaeological sites were identified, including 16 isolated artefacts and six artefact scatters.
AECOM (2019)	Survey	Beetaloo Sub-basin	110 km	Heritage assessment completed for proposed exploration lease areas, including those on the Shenandoah pastoral lease. No surface archaeological sites were identified within the Shenandoah lease area.
AECOM (2020)	Survey	Beetaloo Sub-basin	0 km	Heritage assessment completed for seismic survey areas within EP161, as well as nearby EP136, EP76, EP(A)354 and EP169. The survey identified 25 Aboriginal archaeological sites, including several large artefact scatters associated with Newcastle Creek. Based on the findings of the assessment, AECOM identified the following landforms as having Aboriginal cultural heritage sensitivity: • Non-flood prone areas adjacent to established watercourses • Areas with distinctive vegetation patterning, such as those associated with *Macropteranthes kekwickii* (bullwaddy) • Areas adjacent to flood plains where a noticeable change in vegetation was identified • Areas on the periphery of lagoons and ‘chain of ponds’ features.

Researchers	Assessment Type	Locality	Approximate Distance to Study Area	Key Findings
AECOM (2021)	Survey	Beetaloo Sub-basin	40 km	Heritage assessment completed for seismic survey areas within the Amungee NW-1 and Velkerri 76 S2 project areas. A targeted survey assessment identified nine Aboriginal archaeological sites surrounding soaks and depressions and in non-flood prone areas adjacent to drainage channels.
AECOM (AECOM), 2024a)	Survey	Beetaloo Sub-basin	105 km	Heritage assessment completed for potential well pads, laydown areas, seismic lines, and access tracks across the Amungee North-West (NW), Shenandoah North, Shenandoah South and Kyalla project areas. Pedestrian surveys were undertaken for the well pads and laydown areas, and targeted pedestrian surveys were undertaken for seismic survey lines in areas containing landforms with cultural heritage sensitivity, including water sources and areas containing bullwaddy vegetation. All impact areas were subject to aerial survey. The survey identified two Aboriginal archaeological sites (both artefact scatters) associated with linear seasonal water sources and large drainage depressions surrounded by sparse vegetation and bullwaddy stands. During the survey, Traditional Owners also identified one area – a waterhole – with potential intangible cultural significance.

Researchers	Assessment Type	Locality	Approximate Distance to Study Area	Key Findings
AECOM (2024b)	Survey	Beetaloo Sub-basin		Heritage assessment completed for an exploration and appraisal program area for seismic lines in a 315 km^2 area within the Shenandoah, Shenandoah East and Hayfield pastoral leases. Targeted aerial (helicopter) and pedestrian surveys were undertaken for areas containing landforms with cultural heritage sensitivity, including areas surrounding soaks and depressions, permanent or ephemeral water sources, as well as non-flooding areas adjacent to established channels and areas containing outcropping stone suitable for stone tool manufacture. The survey identified 15 Aboriginal archaeological sites, including seven artefact scatters, seven isolated artefacts and one ochre source. During the survey, Traditional Owners also identified one area – a large, roughly circular depression in the landscape – as having intangible cultural significance.

3.4.2 Previous Archaeological Surveys within the Study Area

3.4.2.1 Heritage Consulting Australia Pty Ltd 2019a

Heritage Consulting Australia Pty Ltd (HCA) was engaged by Santos to undertake an archaeological cultural heritage assessment of Aboriginal and historical heritage for the Tanumbirini North and Inacumba North areas (the Northern Scope) in the Tanumbirini Pastoral Lease in EP161 (HCA 2019a). The work program entailed proposed a 10km transect for a 2D seismic survey and a drilling program for one horizontal well in the Tanumbirini North area, and a drilling program of one horizontal and one vertical well in the Inacumba North area, in addition to associated ancillary works including upgrading of access tracks (HCA 2019a). An archaeological field assessment of the proposed project work areas was conducted in March 2019, covering all environmental zones within the project area and focusing on areas considered likely to contain archaeological sites or which may experience ground disturbance during the project works (HCA 2019a). No archaeological places or objects were identified during the field assessment (HCA 2019a).

3.4.2.2 Heritage Consulting Australia Pty Ltd 2019b

HCA was engaged by Santos to undertake an archaeological cultural heritage assessment of Aboriginal and historical heritage for the Southern Works Program area in the Tanumbirini Pastoral Lease in EP161 (HCA 2019b). The Southern Works Program included a 2D seismic survey along a 45 km transect, drilling of three exploration wells, and various associated facilities, including a permanent worker's camp and access roads (HCA 2019b). The assessment of the Southern Works Program included an archaeological field survey undertaken in May and September 2019 (HCA 2019b). The archaeological field survey involved a vehicular survey along existing vehicle tracks and a pedestrian survey in areas accessible on foot within several kilometres of vehicular access tracks, fence lines and formed roads (HCA 2019b). The survey effort recorded sixteen isolated artefacts and six artefact scatters and identified no locally available sources of stone suitable for artefact manufacture (HCA 2019b). None of these recorded archaeological objects and sites occur within the current Study Area.

3.4.2.3 AECOM 2020

Surveys were conducted in 2019 for other exploratory projects in EP161 and small portions of the current Study Area, including aerial (helicopter) and pedestrian surveys of parts of Newcastle South and October Creek North Investigation Areas within the Study Area (AECOM 2020; Jung, 2020). No archaeological sites were recorded within the current Study Area. The nearest archaeological site, a low-density artefact scatter (BT-19-AS18) was recorded approximately 6 km west-southwest of the Newcastle South Investigation Area portion of the current Study Area (AECOM 2020; Jung, 2020). The site is located adjacent to a tributary of a major creek, which is visible in the aerial imagery (AECOM 2020; Jung, 2020).

3.5 Aboriginal Archaeological Predictive Modelling

AECOM has developed an Aboriginal cultural heritage predictive model for the Beetaloo Sub-basin to inform field survey methodology, future site investigations, and infrastructure placement. The model synthesises environmental data, historical observations, and archaeological information to map archaeological potential for the Study Area. Archaeological potential is mapped for individual site types and for the Study Area overall.

3.5.1 Site Types

Across Australia and within the Northern Territory specifically, numerous archaeological studies in different environmental zones and contexts have demonstrated Aboriginal archaeological sites correlate strongly with patterns of past land use and resource exploitation. Perhaps the most significant of these correlations is that between the permanence of a water source, the intensity of Aboriginal occupation, and the resultant complexity of archaeological sites (Clarkson, 2006; HCA 2019b; Hermes, 1986:5; HLA-Envirosciences Pty Ltd, 2006a; see also Rowland & Connolly, 2002). Elevation around watercourses may also be correlated to the occurrence, or at least preservation, of archaeological sites. Aboriginal use of the landscape and the location of archaeological sites is also related to the availability or accessibility of other natural resources, including plant and animal foods, stone and ochre resources, and landforms suitable for rock shelters. Consequently, most archaeological sites will be found along permanent and ephemeral water sources, particularly where other resources are available.

Broadly, sites are more likely to occur and be preserved on elevated areas, sometimes also associated with vegetation transitions, along channelised creeks or other well-defined water sources, with sites less likely to occur or otherwise be preserved in proximity to flood plains or poorly defined water sources with only gradual or no elevation changes in the surrounding landscape (Gregory, 1998; HLA-Envirosciences Pty Ltd, 2006a). Common site types include:

- Artefact scatters (particularly in proximity to sources of suitable stone)
- Hearths
- Occupation sites (particularly where good food resources occur nearby)
- Grinding grooves (where granite or sandstone outcroppings occur).

Large trees may also be of suitable age, size and bark or wood type to have been used for shelter construction or the manufacture of material culture items and could, therefore, exhibit evidence of cultural modification.

Archaeological sites also occur away from water sources, particularly where rich or rare resources occur. For example, a quarry is likely to be found at an outcropping of good-quality stone regardless of the availability of water (Clarkson, 2006; HLA-Envirosciences Pty Ltd, 2006a). Other sites away from water sources are generally smaller and less complex, associated with hunting and travelling camps. Typical site types include:

- Small artefact scatters
- Isolated artefacts.

3.5.2 Site Integrity

In formulating a predictive model for Aboriginal archaeological site location, it is also necessary to consider post-depositional influences on Aboriginal material culture. In all but the best preservation

conditions, very little of the organic material culture from past Aboriginal occupation survives to the present. Culturally modified trees can survive for several hundred years, but rarely longer, due to natural senescence and historical vegetation clearing. Fire regimes and bushfire occurrences also damage or destroy scars and trees themselves while creating natural scars on some trees.

Generally, it is the more durable materials such as stone artefacts, stone hearths, shell, and bone that remain preserved in the current landscape. Even these materials may not be found in their original depositional context due to:

- The effects of wind and water erosion/transport over short and long-time scales
- Ground disturbance associated with historical development including:
    - Grazing and cropping and associated ploughing, trampling and erosion
    - Land degradation associated with exotic pests such as goats and rabbits
    - The installation of farming infrastructure, such as dams, utilities, roads, fences, stockyards and residential buildings.

Disturbed areas retain some potential for residual archaeological sites, although sites are unlikely to be intact. Potential may also exist for intact archaeological deposits beneath the ground surface. Areas containing mature, uncleared vegetation have higher potential for intact surface sites and subsurface archaeological deposits due to a lack of ground disturbance.

Knowledge of the environmental contexts of the Study Area (Section 3.2) and a desktop review of the known local and regional archaeological record (Section 3.3, Table 9 and Appendix D) allows for the following predictions to be made concerning the probability of different Aboriginal site types within the Project area.

3.5.3 Archaeological Potential in the Study Area

A key predictor of Aboriginal archaeological sites is the availability of water. Potential water sources within the Study Area include watercourses, soaks, waterholes, flood plains and drainage lines. The presence of water, particularly in the eastern extent and southern edge of the October Creek North Investigation Area, suggests that parts of the Study Area could have supported occupation by Aboriginal people.

Watercourse mapping and recent aerial imagery identify two Stream Order (SO) 1 mapped watercourses and a number of unmapped floodplains or drainage lines. A 100 m buffer has been applied to mapped watercourses and drainage lines (SO 1 and higher) and immediately around unmapped drainage lines, floodplains and waterholes to illustrate an area of elevated potential (Figure 10). The surface geology indicates one area characterised as Quaternary alluvial sediment in the Newcastle South Investigation Area. Quaternary alluvial sediments are often associated with either contemporary or past river systems and flood plains. The mapped Quaternary alluvium is therefore interpreted as a potential unmapped water source. The mapped Quaternary alluvial sediment in the Newcastle South Investigation Area also coincides with an area interpreted as a floodplain or drainage line in the aerial imagery.

Based on previous studies in the region, the most likely archaeological site types in the Study Area are artefact scatters and isolated artefacts. However, the frequency, size and complexity of any such sites will be significantly constrained by the paucity of stone in the local area. The geological mapping indicates no outcroppings of stone suitable for tool manufacture in the Study area (see Table 7, Figure 8 and Appendix B), suggesting a reliance on imported stone or cobbles deposited in the alluvial sediments. In either case, workable stone is likely to have been carefully curated and not easily discarded.

There may also be some potential for grinding grooves where suitable raw material occurs, particularly near water. Surface geology mapping indicates the presence of sandstone only within the October Creek North Investigation Area within the Study Area (Northern Territory Government (Northern Territory Geological Survey), 2017), as shown in Figure 11 (see also Appendix B).

The potential for intact archaeological deposits to remain in parts of the Study Area is limited by historical ground disturbance, which includes vegetation clearance, construction of water bores, dams, tracks and fence lines, creation of seismic lines, and the levelling of some ground surfaces, as well as

surface damage caused by cattle trampling and water movement from flood events. The extent of the ground disturbance is demonstrated by the available satellite imagery (Sections 3.2 and 3.6, Figure 18). As a consequence of this disturbance, any surface archaeological sites present in the areas impacted by these processes are likely to have been disturbed, removed from their original location, damaged or potentially destroyed.

Uncleared areas of vegetation have the potential to retain culturally modified trees (Figure 12 and Appendix B). Certain vegetation groups are more suited to the creation and retention of cultural scars (Figure 13 and Appendix B), with bullwaddy shrubland and woodland vegetation groups not well suited due to the nature of bullwaddy shrub growth, with a thin trunk with many branches, as well as the paucity of trees in tussock grassland vegetation groups generally. However, due to fire and termite activity in the general area (see Section 3.2), culturally scarred trees are considered generally unlikely to occur in the Study Area. A lack of recorded scarred trees in available studies and reports for the local and broader regions supports this.

A paucity of water and stone material resources suggests that the potential for most site types within the Investigation Areas is moderate or low, save for areas in proximity to the SO 1 watercourse in the October Creek North Investigation Area (see Figure 6 to Figure 8, and Appendix B). This potential is further reduced in areas subject to ground disturbance through the construction of tracks, water bores, and borrow pits inside the Investigation Areas.

3.5.4 Mapping the Aboriginal Archaeological Potential

A series of maps have been generated that plot the likelihood of different Aboriginal archaeological site types occurring in the Study Area, based on the parameters presented above and available heritage and physiographic information: artefacts and hearths (Figure 14 and Appendix B), grinding grooves (Figure 15 and Appendix B), and Aboriginal modified trees (Figure 16 and Appendix B). These maps are presented below, with an explanation of the methodology used in their creation and a discussion of any limitations. Finally, a map combining the potential for all Aboriginal archaeological sites is presented (Figure 17 and Appendix B).

3.5.4.1 Artefact Sites and Hearths

Figure 14 shows portions of the Study Area with low, moderate and high potential to contain artefact sites (including artefact scatters and isolated artefacts) and hearth sites (see also Appendix B). The Study Area was classified according to:

- **High potential:** areas within mapped watercourse (SO 1 and higher) buffers
- **Moderate potential:** areas within unmapped minor watercourse, drainage line, water hole and floodplain areas, but outside of mapped watercourse (SO 1 and higher) buffers
- **Low potential:** areas outside the named mapped watercourse (SO 1 and higher) buffers and unmapped minor watercourse, drainage line, water hole and floodplain areas.

3.5.4.2 Grinding Grooves

Figure 15 (and Appendix B) shows portions of the study area with low, moderate and high potential to contain grinding groove sites. The map was created by removing surface geology units except for Kl (lateritised claystone, soft grey claystone, impure sandstone, white quartz sandstone and conglomerate). The remaining area was then classified into low, moderate and high potential areas in accordance with the methodology used for artefact and hearth sites.

3.5.4.3 Culturally Modified Trees

Figure 16 provides a map of uncleared, vegetated areas within the Project area with low, moderate and high potential to contain Aboriginal culturally modified trees (see also Appendix B). The map was created using satellite imagery and publicly available vegetation mapping geospatial data to map the vegetated areas (Figure 12 and Appendix B; see also Section 3.6). These areas were then classified according to:

- **High potential:** areas containing uncleared vegetation with a vegetation group suited to retaining cultural scars (vegetation groups other than tussock grassland, acacia shrubland and bullwaddy shrubland and woodland), within mapped watercourse (SO 1 and higher) buffers

- **Moderate potential:** areas containing uncleared vegetation with a vegetation group suited to retaining cultural scars within unmapped minor watercourse, drainage line, water hole and floodplain areas, but outside of mapped watercourse (SO 1 and higher) buffers
- **Low potential:** areas containing uncleared vegetation outside the named mapped watercourse (SO 1 and higher) buffers and unmapped minor watercourse, drainage line, water hole and floodplain areas.

3.5.4.4 All Site Types Combined

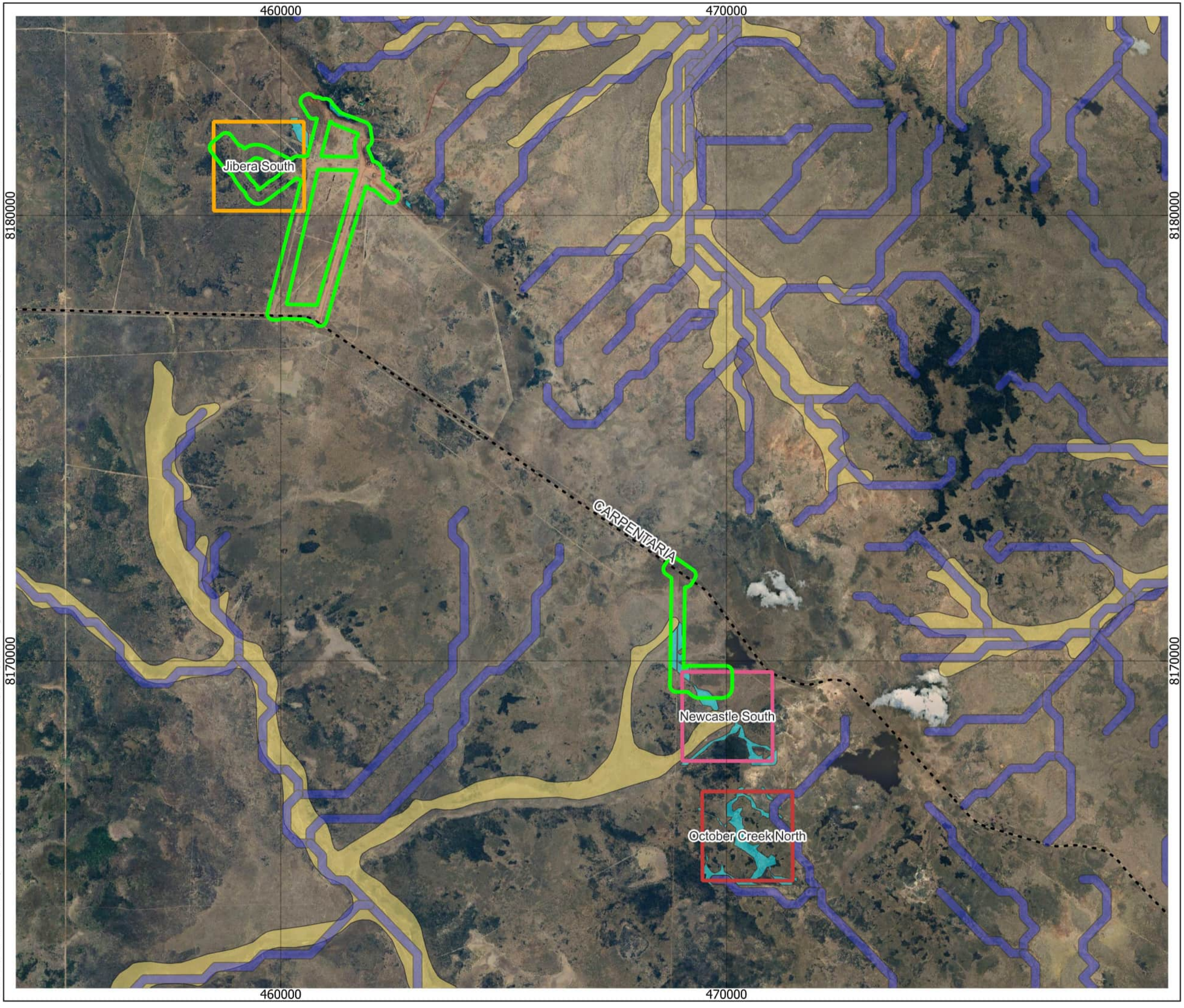
Figure 17 shows portions of the study area with low, moderate and high potential to contain all (mapped) Aboriginal site types combined (i.e. culturally modified trees, artefact and hearth sites, and grinding grooves) (see also Appendix B). The map was created by overlaying low, moderate and high potential areas for each site type. As such, areas with higher intensities of colour and redder hues indicate areas with higher potential to contain Aboriginal archaeological sites. Areas with lower intensities of colour and yellower hues indicate areas with lower potential to contain Aboriginal archaeological sites.

3.5.5 Limitations

The predictive modelling draws on existing data and previous studies and uses general observations to make predictions about the archaeological sensitivity of specific landforms. The predictive modelling has been validated through archaeological surveys to confirm that the underlying assumptions are correct for the particular study area. It is noted that the archaeological survey undertaken as part of this assessment did not achieve full coverage of the Study Area. However, AECOM and Traditional Owners agreed the survey was sufficient to test the model's key assumptions and develop an overall appreciation for heritage risk across the landscape.

Table 9 Matrix summarising the number of archaeological sites identified in previous archaeological studies for the region by vegetation type, proximity to water and presence/absence of stone sources or outcrops

Vegetation type	Stone source/outcrop suitable for artefact manufacture	Water		
		In proximity to water	Not in proximity to water	Proximity to water unknown
Open woodland	Absent	22	3	
	Present	2		
Closed woodland	Absent	1	1	1
	Present			
Grassland	Absent	3		
	Present			
Shrubland	Absent			
	Present			
Ecotone/transition/edge of different vegetation types	Absent	28	1	
	Present			
Riparian	Absent	2		
	Present			
Woodland (unspecified) / forest	Absent	11		
	Present	1		
Other vegetation type	Absent	6		1
	Present	4		
Cleared	Absent	5	4	2
	Present			
Vegetation unknown	Absent	7		
	Present	1		



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LEGEND

- Study Area

Investigation Areas

- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Surface Geology

- Quaternary Alluvium

Unmapped Water Source

- Water Source Visible In Aerial Imagery

Mapped Watercourse (Stream Order 1+)

- 100 m Buffer

Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Watercourses and Drainage Line Buffers

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 10

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Newcastle South
October Creek North

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LEGEND

Study Area

Investigation Areas

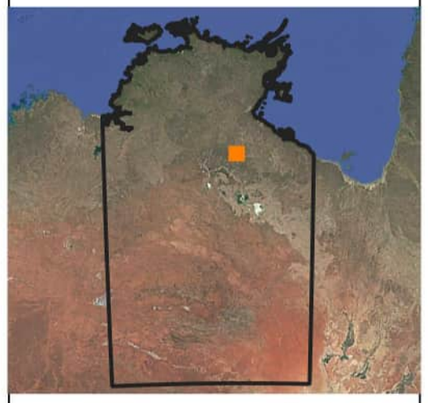
Jibera South
Newcastle South
October Creek North

Transport

Roads

Surface Geology

Kl



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Surface Geologies with Potential for Grinding Grooves

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VERSION	1

Figure 11

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LEGEND

- Study Area

Investigation Areas

- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Vegetated Areas

- Uncleared Vegetation

Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Uncleared Vegetation

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LAST MODIFIED	09-10-2025
VERSION	1

Figure 12

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Newcastle South
October Creek North

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LEGEND

Study Area

Investigation Areas

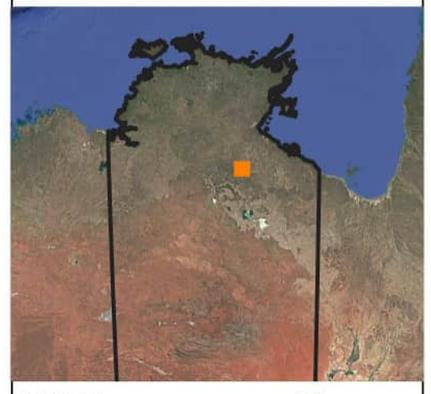
- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Vegetation Groups

- Coolabah low open woodland on clay
- Corymbia/Eucalyptus open woodland on sandy loam
- Corymbia/Eucalyptus woodland (run-on areas and heavier soils)
- Corymbia/Eucalyptus woodland on sandstone
- Eucalyptus chlorophylla low open woodland
- Lancewood forest
- Melaleuca low open woodland on floodplains and drainage depressions
- Silver box low open woodland
- Snappy gum low open woodland



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Uncleared Vegetation Groups with Potential for Aboriginal Modified Trees

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Figure 13

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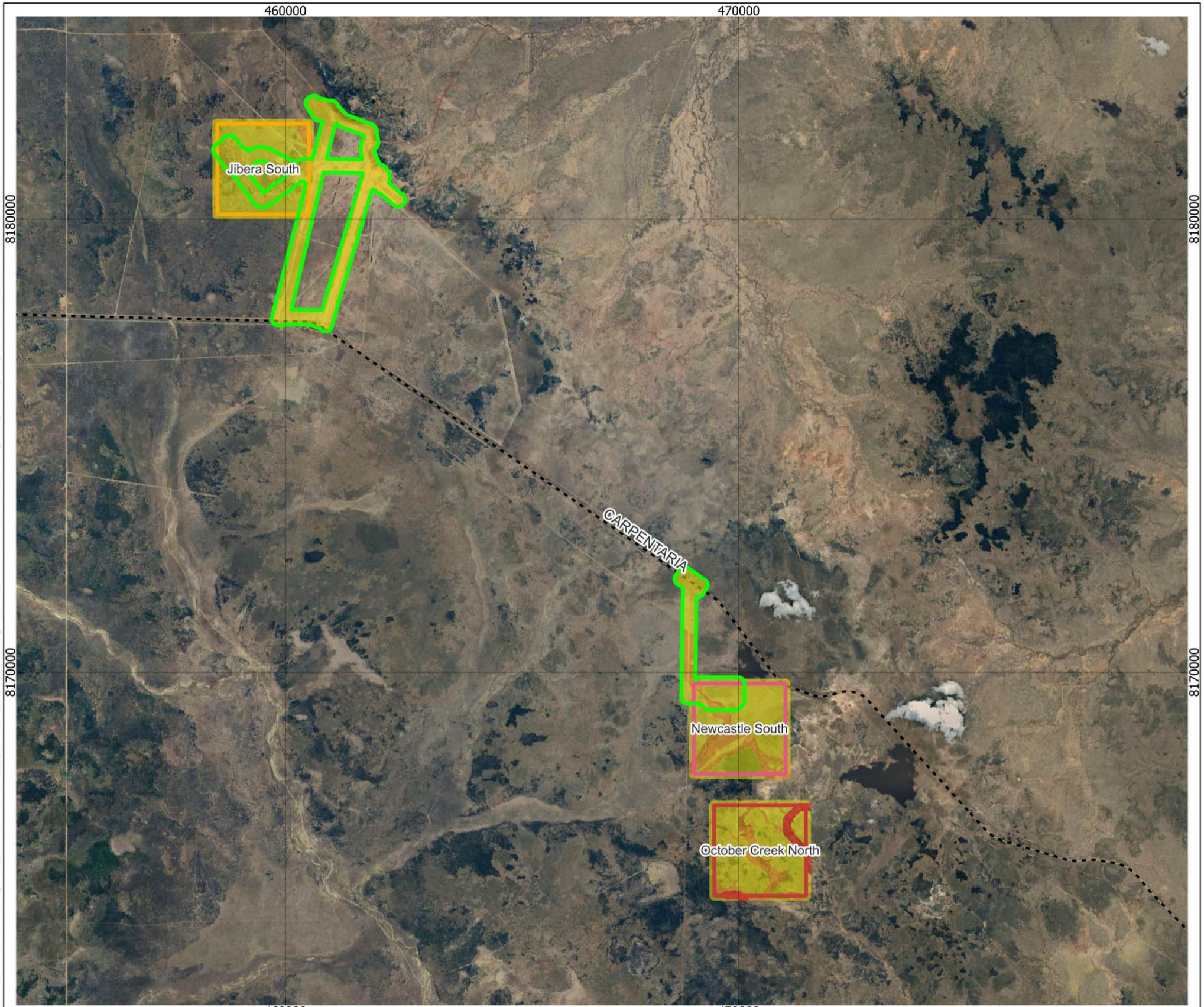

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LEGEND

- Study Area

Investigation Areas

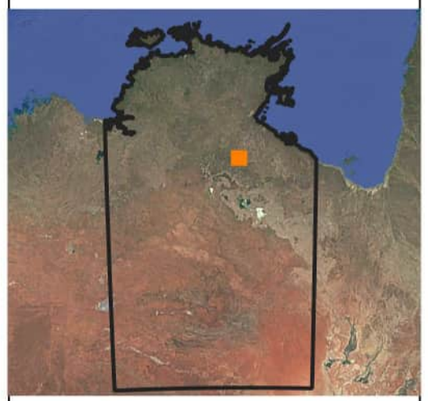
- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Potential for Artefact Scatters/Hearths

- High
- Moderate
- Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Artefact Scatters/Hearths

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Figure 14

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Newcastle South
October Creek North
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LEGEND

Study Area

Investigation Areas

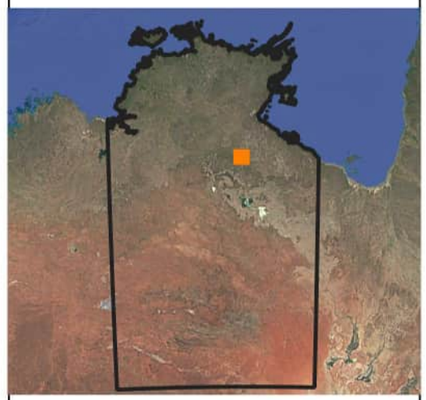
Jibera South
Newcastle South
October Creek North

Transport

Roads

Potential for Grinding Grooves

High
Moderate
Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Grinding Grooves

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VERSION	1

Figure 15

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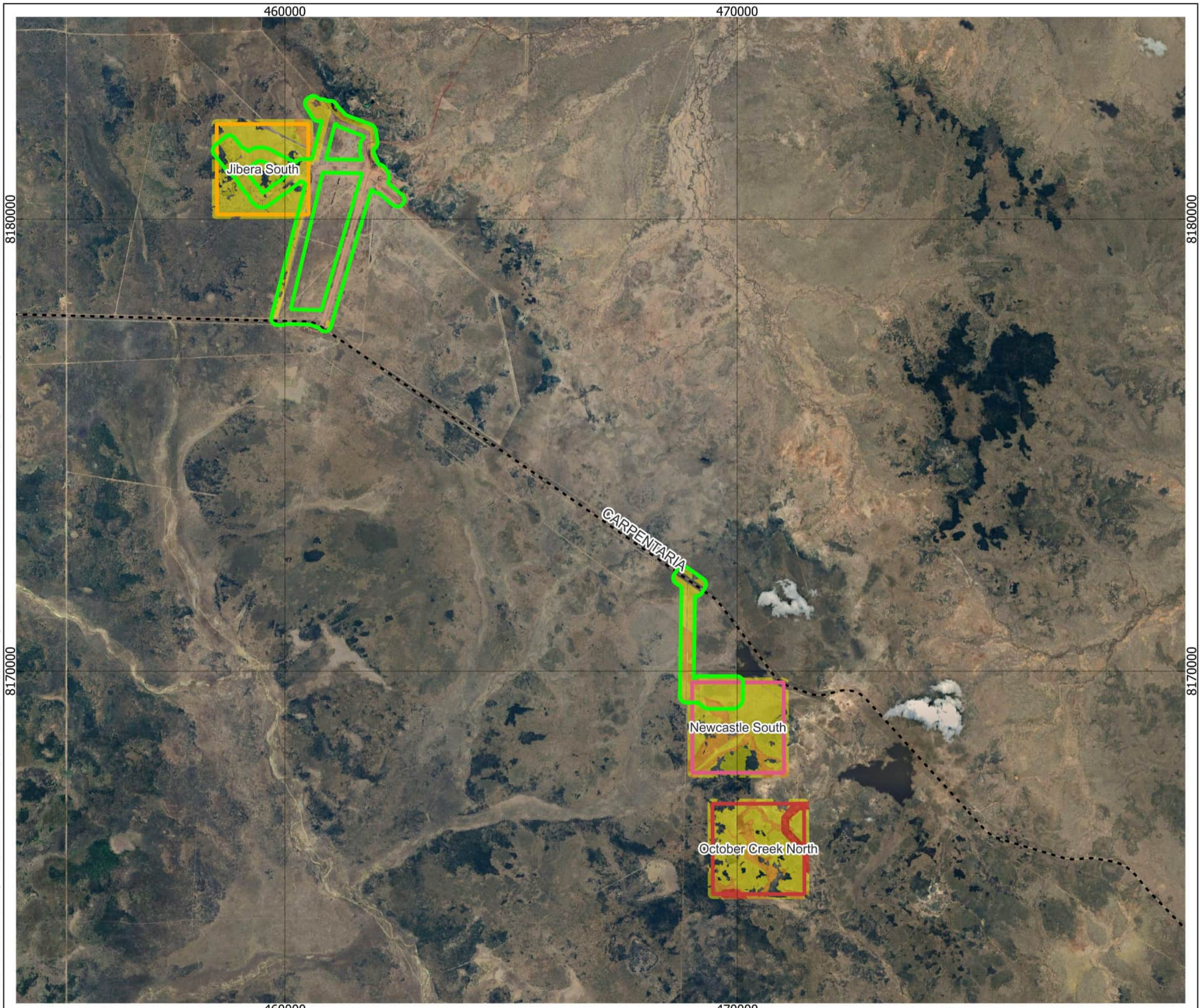

AECOM

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LEGEND

- Study Area

Investigation Areas

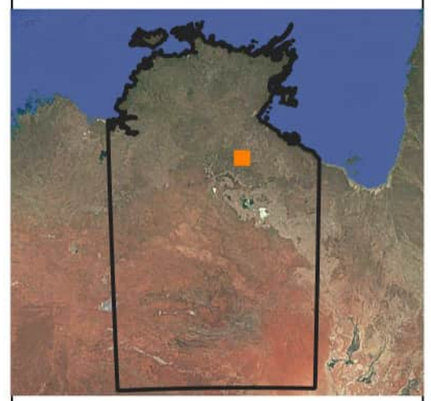
- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Potential for Aboriginal Modified Trees

- High
- Moderate
- Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Aboriginal Modified Trees

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 16

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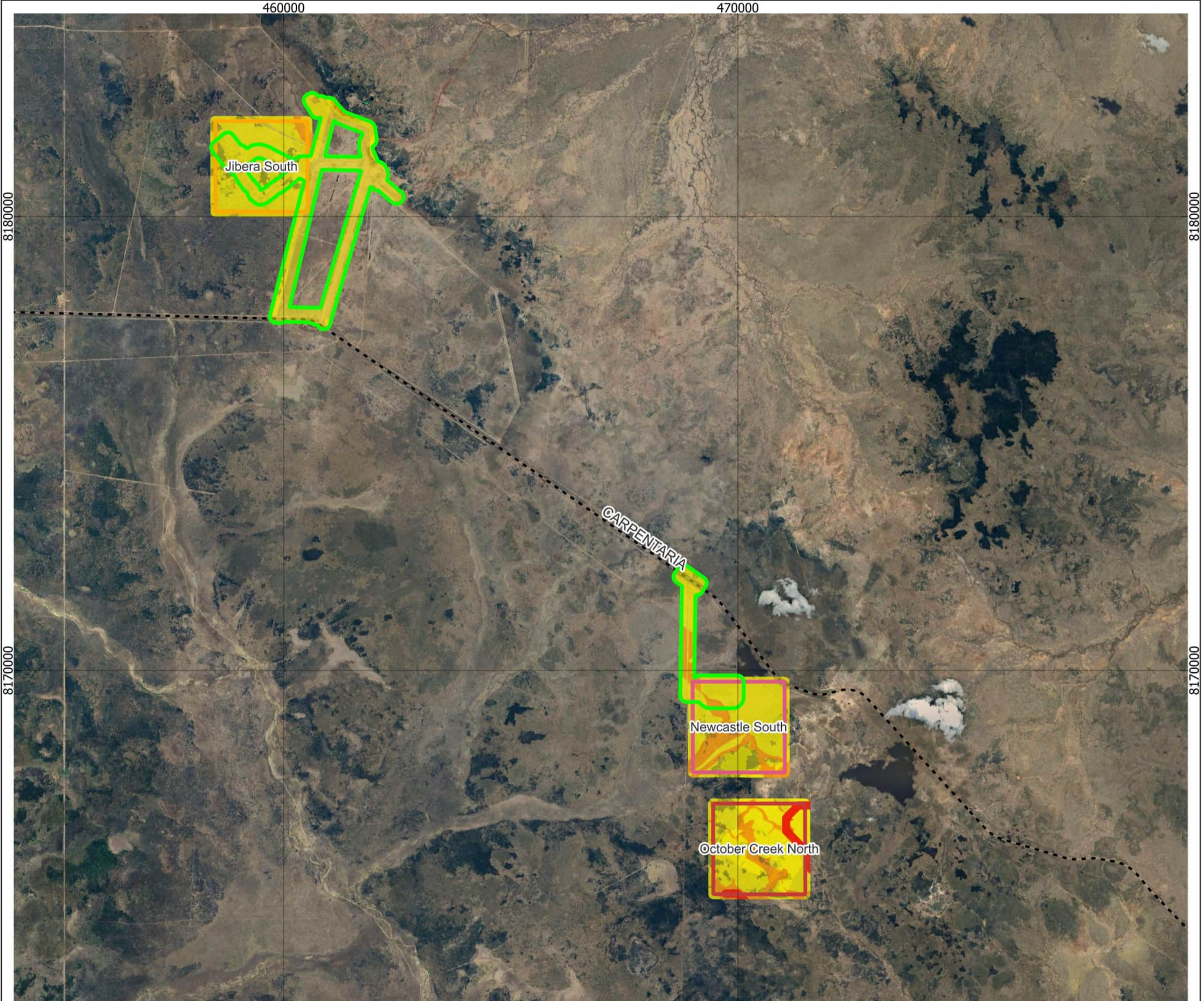

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(when printed at A3)

LEGEND

- Study Area

Investigation Areas

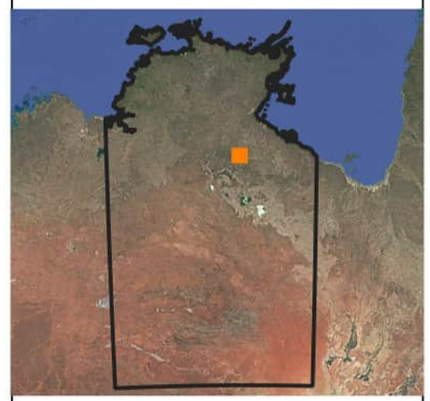
- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Potential for All Tangible Aboriginal Sites

- High
- Moderate
- Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for All Tangible Aboriginal Sites

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Figure 17

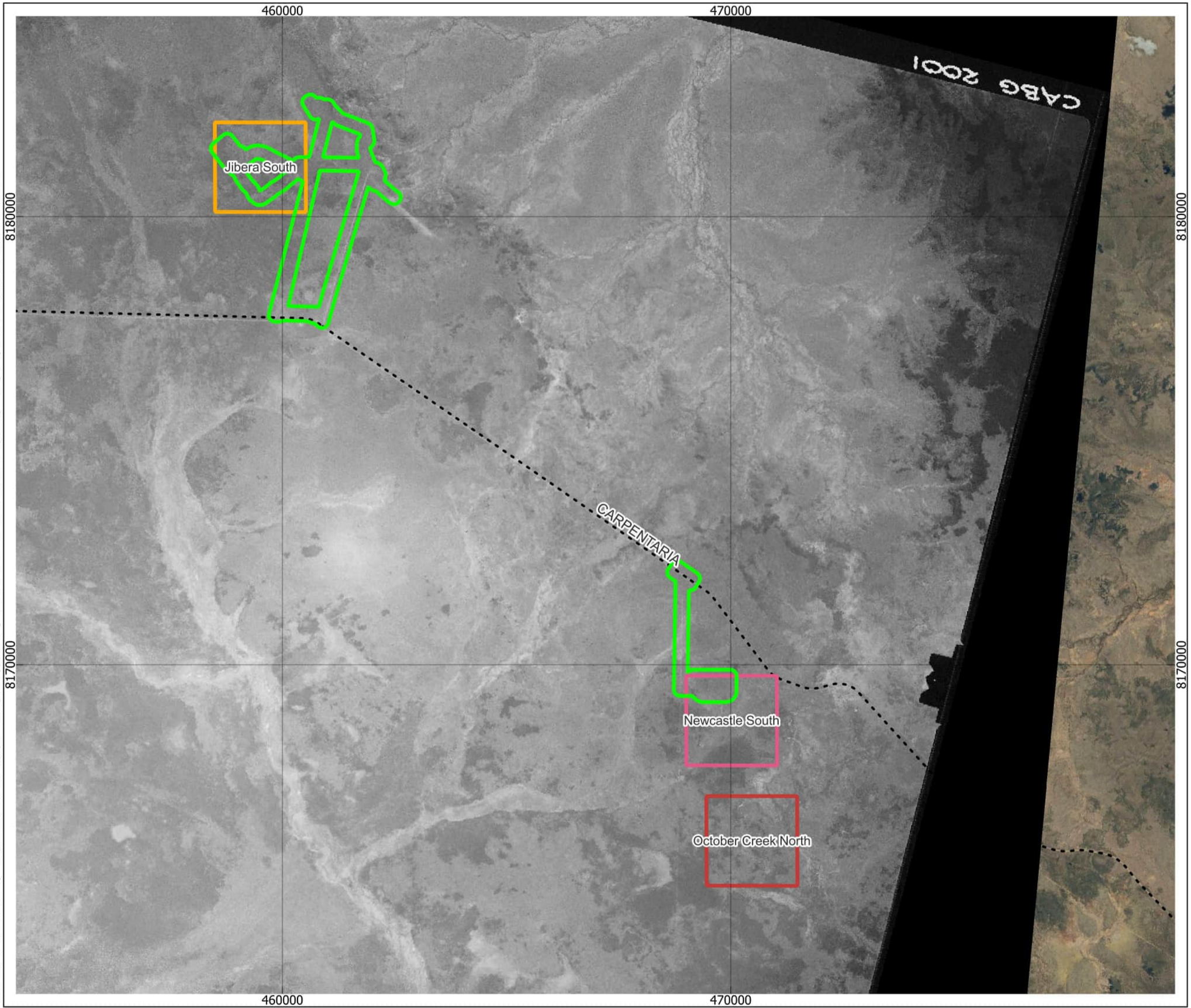
3.6 Historical Heritage

Historical heritage sites in the broader region recorded in registers or available reports include military sites (particularly sites associated with WWII), mines and mining infrastructure, early townships, pastoral homesteads and infrastructure including airfields, railways, roads, bridges and telegraph lines (Quaternary Archaeological Surveys, 1998). Broadly, historical sites in the region are associated with the telegraph, railway, mining, pastoral industry, and WWII development. The Study Area and its surrounds have been mostly used for pastoral activities during the historical period and, more recently, have also been used for oil and gas exploration and extraction.

AECOM undertook a desktop assessment of the Study Area using satellite imagery and historical pastoral and cadastral maps to identify structures or areas of potential heritage significance. No railways or bridges are recorded in the Study Area, or shown in the historical maps or aerial imagery. The Carpentaria Highway intersects the northeastern corner of the Newcastle South Investigation Area. The highway was constructed in 1959 (Heritage Consulting Australia Pty Ltd, 2019a) and does not hold any known heritage significance. No known ore deposits occur within the Study Area and no mines are identified on historical maps.

The Tanumbirini pastoral station was established in 1893 and is labelled on pastoral lease maps as early as 1929, with Henry Cooper’s claim over the area shown on pastoral lease maps from 1895 (Northern Territory Government, 1895, 1929). However, the head station is located 2 km away from the Study Area, and there is no evidence of any development in the Study Area until the 1970s. Access tracks and fence lines were visible in the satellite imagery of the Study Area – based on aerial imagery, these were constructed sometime after 1972 (Figure 18). The Overland Telegraph line is visible on several historical pastoral and cadastral maps located more than 120 km to the west of the Study Area. Santos advised that seismic lines had been cleared in parts of the Study Area, although not all seismic lines were visible in the current satellite imagery.

No built structures with potential historical heritage significance have been identified in publicly available historical maps showing the Study Area and surrounds. As such, no structures or areas inside the Study Area were assessed as having potential historical heritage significance.



AECOM

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LEGEND

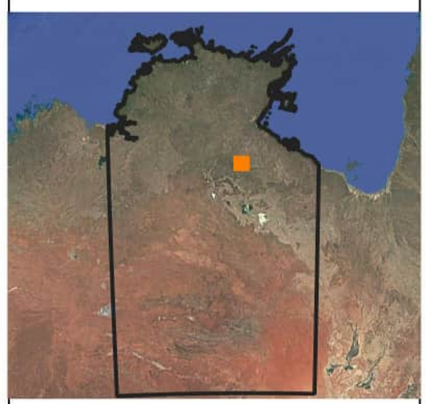
- Study Area

Investigation Areas

- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
1972 Aerial Imagery

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VERSION	1

Figure 18

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4.0 Survey Results

4.1 December 2024 Field Survey

A targeted field survey of the Jibera South Investigation Area, nearby borrow pit expansion, and the Newcastle South Investigation Area was undertaken between 16 December 2024 and 20 December 2024 (inclusive). October Creek North is not currently proposed for development and was not subject to survey. A survey will be required before any ground disturbing works in this area are conducted.

The survey was completed by a field team comprising one AECOM heritage specialist ([redacted] – Bachelor of Arts (Honours) Archaeology, 5 years' experience) and six Traditional Owner representatives ([redacted]). Environmental surveys were also undertaken at this time by three AECOM environmental team members and subcontractors ([redacted]).

Targeted pedestrian surveys were completed in the proposed well pad, new access track and other ancillary work areas, with the survey effort focused primarily on areas identified in the predictive model as having High and Moderate archaeological potential. However, the survey also included Low archaeological potential areas and aimed to intersect each different mapped vegetation type within each Investigation Area (Figure 19 and Appendix B). Observations were taken periodically during the survey effort and wherever changes were noticed in the GSI, GSV, archaeological potential or environmental context.

Table 10 reports the findings of the field survey within the Study Area. A detailed table and photographs illustrating the landscape contexts and GSV conditions encountered at each area surveyed are provided in Appendix E. GSV varied across the surveyed areas, ranging from 0-100%, with visibility impeded in places by substantial plant growth following recent seasonal rainfall events, and areas of excessive leaf litter. GSI was generally moderate, with a lack of previous significant ground disturbance observed in most surveyed areas. Some ground disturbance was observed in areas, including grading of fence lines and access tracks, as well as erosion caused largely by cattle accessing water sources and trampling inundated ground.

No natural surface water sources were identified in the Jibera South Investigation Area. The area mapped as a possible water course on the basis of aerial imagery (Figure 7 and Appendix B) was found to be associated with the construction of a water bore. The area was highly disturbed by the construction and use of the bore, and the classification of Moderate archaeological potential has been downgraded to Low. No natural water sources were identified in the Newcastle South Investigation Area. As such, the potential unmapped water sources intersecting the surveyed areas have been reclassified from Moderate archaeological potential to Low due to the lack of water sources. Surface water was observed in a drainage line formed by eroded claystone bedrock to the south, but this is outside the Investigation Area. However, areas in proximity to this drainage line have retained the initial classification of Moderate archaeological potential. Updated mapping of the archaeological potential for each Investigation Area based on the survey results is presented in Figure 20 (see Appendix B).

No stone material sources suitable for artefact manufacture were identified in any Investigation Areas, and any stone material present was primarily sparse laterite rubble. No new tangible Aboriginal cultural heritage sites were identified during the surveys, and no areas were identified by Traditional Owners as having intangible cultural significance. Several species of vegetation with useful properties were identified during the survey, but the Traditional Owner representatives did not consider any examples to be of particular or inherent cultural or heritage value (see Section 4.2.2 and Appendix F). At the conclusion of the survey in each Investigation Area, Traditional Owner representatives were asked if they were satisfied with the survey effort and if the location was suitable for construction works or had any further requirements. In all instances, Traditional Owner representatives indicated that the survey effort was satisfactory, the locations were suitable for construction, and they had no further recommendations.

In the case of Request Area 2B within the Newcastle South Investigation Area, due to the limited survey effort (see Section 2.4), only an initial assessment of the archaeological potential was made. No archaeological sites were identified during this initial field assessment, and the archaeological potential of the area is considered low due to the lack of surface water sources and raw stone material sources

for lithic manufacture in the surveyed areas. However, further survey would be required in this area ahead of any proposed ground disturbance.

No historical heritage sites were identified during the pedestrian survey. The Study Area is assessed as having low historical heritage potential based on survey observations, past land use, historical aerials and mapping, and the environmental context of the area.

4.2 October 2025 Field Survey

A complete coverage field survey was undertaken on 14 October 2025 for 4.5 km of access track, including 20 m to either side of an existing fence line in the Jibera South Study Area. The survey was completed by a field team comprising two Santos representatives ([redacted]) and two Traditional Owner representatives ([redacted]). Observations were taken periodically during the survey effort to capture changing environmental and landscape context, with photographs taken every 500 m to document the existing track and the surrounding vegetation.

The existing track had been recently graded and cleared of vegetation to approximately 10 m either side of the fence line, with historical vegetation clearing through the remaining survey and only regrowth vegetation present. No raw stone material was observed in the survey area. No new tangible Aboriginal cultural heritage sites were identified during the surveys, and no areas were identified by Traditional Owners as having intangible cultural significance. At the conclusion of the survey, Traditional Owner representatives were asked if they were satisfied with the survey effort and if the location was suitable for construction works or had any further requirements. Traditional Owner representatives indicated that the survey effort was satisfactory, the locations were suitable for construction, and they had no further recommendations.

4.2.1 Tangible Cultural Heritage Sites

No tangible cultural heritage (archaeological) sites were identified in the Study Area during the field survey. The lack of identified archaeological sites was likely due to the lack of permanent water sources and suitable raw stone material outcrops for artefact manufacture. Poor GSV may have been a contributing factor in some parts of the Study Area, but it is noted that no archaeological sites were identified in areas with excellent GSV. The dearth of archaeological sites is not unexpected based on previous archaeological surveys in the EP161 area (AECOM 2020; HCA 2019b, 2019a; Jung, 2020) and the above environmental and geological factors.

4.2.2 Intangible Cultural Heritage Sites

Conversations with Traditional Owner representatives identified that intangible heritage sites, including dreaming sites, are located on the Tanumbirini pastoral lease, although none were identified within the Study Areas other than those already identified under AAPA Certificates, and none will be impacted by currently proposed Project works. However, vegetation used for medicine, food, fuel, and tool manufacture was identified in the Study Area.

4.2.3 Resource Plants

Traditional Owner representatives identified a number of resource plants traditionally used for food, as raw materials and fuel, in tool manufacture, and in cultural practice, including smoking ceremonies (Table 11 and Appendix F). However, Traditional Owner representatives also noted that all native plants and many introduced plants have uses and that those identified during the survey were examples of some of these. In addition, the Traditional Owner representatives noted that while this vegetation could be put to significant use, it was not in itself of heritage value, and construction did not specifically need to avoid any of the identified resources.

460000
470000
8180000
8170000
Jibera South
Newcastle South
October Creek North
CARPENTARIA

AECOM
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(when printed at A3)

LEGEND

- Study Area

Investigation Areas

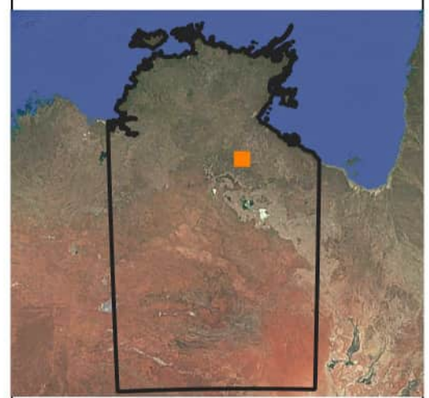
- Jibera South
- Newcastle South
- October Creek North

Transport

- Roads

Survey Effort

- Observation
- Survey Tracks
- October 2025 Survey Area



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Survey Efforts

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Figure 19

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460000
470000
8180000
8170000
Jibera South
Newcastle South
October Creek North
CARPENTARIA

AECOM
www.aecom.com

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1:80,000
(when printed at A3)

LEGEND

Study Area

Investigation Areas

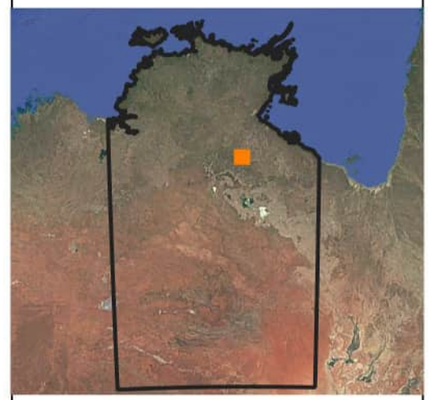
Jibera South
Newcastle South
October Creek North

Transport

Roads

Revised Archaeological Potential

High
Moderate
Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Revised Archaeological Potential

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VERSION	1

Figure 20

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Table 10 Survey results for the Study Area

Investigation Area	Project works area	Length of pedestrian survey	Number of observations made	Average GSV	Average GSI	Number of sites located	Archaeological potential
Jibera South	Request Area 1 and Access Track	9 km	17	25-75	Low-Moderate	0	Low
Jibera South	Borrow Pit Expansion	1.3 km	5	50-100	Moderate	0	Low
Newcastle Creek	Request Area 2A and Access Track	8.9 km	20	0-50	High-Moderate	0	Low
Newcastle Creek	Request Area 2B	1.3 km	4	25-50	High	0	Low

Table 11 Resource plants Identified by Traditional Owners during the survey

Resource Plant	Traditional Use
Coolabah (*Eucalyptus coolabah*)	The bark can be chewed to treat toothache.
Kurrajong (*Brachychiton* sp.)	The wood is used for cooking fires, especially for coals to cook kangaroo.
Bloodwood (*Corymbia* sp.)	The sap is used to help with teeth problems and heart issues.
Ironwood (*Erythrophelum chlorostachys*)	The leaves are burned when green for smoking ceremonies and when people pass away.
Bullwaddy (*Macropteranthes kekwickii*)	The wood is used for tool making, including spears and boomerangs.
Lancewood (*Acacia shirlyei*)	The wood is used for tool making, including spears and boomerangs.
Snappy Gum (*Eucalyptus leucophloia*)	The wood is used for tool making, including spears and boomerangs.
Gulbun (*Melaleuca Citrolens*)	The plant, especially the leaves, is used for making soap and cleaning. The leaves can also be used to make tea.
Conkerberry (*Carissa lanceolata*)	The berries are eaten.
Grewia (*Grewia savannicola*)	The berries are eaten.
Dumbuyumbu / Mircale Plant / Sandalwood (*Santalum lanceolatum*)	The leaves can be used to make tea, or poultice to put on sores. The plant is an antiseptic, and is also used as a traditional treatment for cancer.
Ti-tree (*Melaleuca* sp.)	The leaves are steeped and used to make tea, to treat colds and other illnesses. The leaves can also be stuffed inside meat and fish during cooking to add flavour
Spinifex (*Spinifex* sp.)	The plant is used to make resin for mounting stone tools to spears.
Banana Leaf Vine / Bush Banana (*Marsedenia australis*)	The seed from the plant's pod is eaten. The outer shell of the pod is peeled, and the pith inside is eaten.

5.0 Impact Assessment

No Aboriginal tangible cultural heritage (archaeological) sites were recorded in the Study Area as part of the field assessment. While a previously recorded archaeological site is present within the October Creek North Investigation Area, no Project works or construction activities are currently proposed for this Investigation Area. Another previously recorded archaeological site (CHAS01) is located [redacted] As such, the current design has no impact on known cultural heritage sites and, with the establishment of a cultural heritage no-go zone during construction (Figure 21), the Project should avoid impacts to known cultural heritage sites.

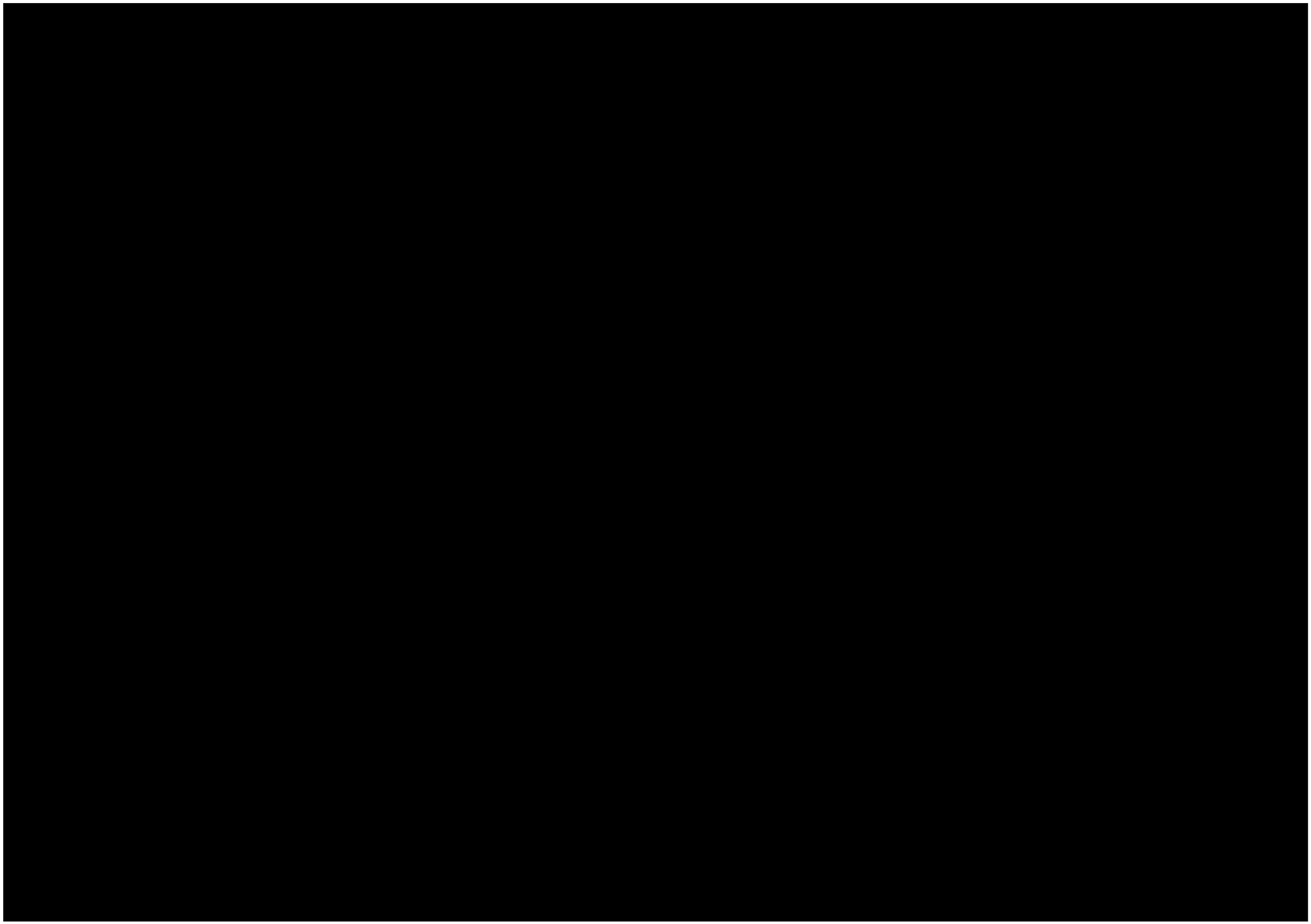
There remains some potential for unidentified archaeological sites, most likely in the form of isolated artefacts. Based on the desktop assessment, including summaries of landscape context, register searches, previous studies in the local area and broader region and the predictive modelling (Section 3.0) and the results of the field survey (Section 4.0), the potential for archaeological objects and places in the Disturbance Footprint and CDZ, and in the Jibera South and Newcastle South Investigation Areas is considered low potential overall, with some areas of moderate potential. The site selection process has targeted the Disturbance Footprint and CDZ within areas of low archaeological potential identified by the predictive modelling. While the potential for unidentified archaeological sites in the Disturbance Footprint and CDZ is considered low, cultural heritage inductions and unexpected finds procedures will assist in mitigating the risk associated with the potential for unidentified archaeological sites (see Section 7.0).

Should further design changes be required, archaeological sites are unlikely to occur if the Disturbance Footprint remains in areas of low archaeological potential identified by the predictive modelling. Any design changes should be preferentially sited in areas previously subject to vegetation clearing, pastoral activities and the construction of existing infrastructure such as access tracks or fence lines wherever possible, as these areas have reduced potential for archaeological sites due to previous disturbance.

6.0 Key Findings

The key findings of this cultural heritage assessment are:

- Known Aboriginal archaeological sites are limited to two artefact scatters, [redacted]
- AAPA certificates provided by Santos show one Restricted Work Area (RWA) is present within the October Creek North Investigation Area. No Project activities are proposed in this area.
- The archaeological potential of the Study Area is low due to a paucity of water, suitable stone for tool manufacture, and other raw materials. Any sites which do exist are likely to be isolated artefacts or low-density artefact scatters reflecting transitory use of the landscape.
- The field surveys for Request Areas 1 and 2A, access tracks and borrow pit expansions within the Jibera South and Newcastle South Investigation Areas identified:
  - No historical heritage sites
  - No Aboriginal archaeological sites
  - Several Aboriginal resource plants which are common to the area.
- Traditional Owner representatives indicated that:
  - Survey effort was satisfactory in all Project works areas
  - The locations selected were suitable for construction
  - No management measures were required for the resource plants.
- There are no impacts to known cultural heritage sites or AAPA sites based on the current Disturbance Footprint and CDZ, provided avoidance and mitigation requirements for CHAS01 are implemented.
- While the field survey did not identify any sites, there is some potential for unrecorded sites to exist in un-surveyed areas.



7.0 Recommendations

On the basis of the above findings, the following cultural heritage management recommendations are made for the Project works.

Recommendation 1 – Avoid all heritage impacts

Activities should be designed to avoid impacts to all cultural heritage sites.

Recommendation 2 – Additional permitting and approvals

If impacts to any archaeological site cannot be avoided, including any unexpected finds not identified during this assessment, an Application to Carry Out Work should be prepared in consultation with Traditional Owners and the NT Heritage Branch.

Recommendation 3 – CHAS01 Site Extents

The Project should avoid impact to CHAS01. No works (including vegetation removal, ground disturbance and vehicle or machinery movement), are permitted within the CHAS01 site extent or within a 5 m buffer of the site.

If works must occur in this area, Recommendation 2 should be followed.

Recommendation 4 – CHAS01 Buffer Zone

A 50 m cultural heritage buffer zone should be established around CHAS01. This buffer zone may exclude the disturbance footprint of the existing road and should be:

- Established using high visibility ground markers (e.g. bunting and staking) visible to personnel on foot and operating vehicles and machinery.
- Erected prior to work commencing, and maintained during the proposed activities
- Mapped in the EMP, and management requirements included in the EMP and inductions delivered to all site personnel

No works should occur in the CHAS01 buffer zone. If works in the CHAS01 buffer zone cannot be avoided, Traditional Owners should undertake an archaeological clearance of the area prior to ground disturbance.

Any works within the existing heavily disturbed areas (i.e. existing highway and access track) may proceed without any further assessment or implementation of any further management measures.

Recommendation 5 – Design changes

Siting of the Project has been informed by survey results and predictive modelling, and is considered low risk. Any changes to siting should be informed by the desktop assessment, predictive modelling and survey results.

Recommendation 6 – Provision of report to NT Heritage Branch

A copy of this report should be provided to the NT Heritage Branch.

Recommendation 7 – AAPA Certificates

The Project works should be carried out in accordance with the conditions of all relevant AAPA Certificates, including Authority Certificate C2020/011. Authority Certificates are a requirement for all regulated activities under the *Petroleum (Environment) Regulations Act 2016* (NT) before Ministerial approval of an Environmental Management Plan for that activity.

Santos should consult with AAPA regarding any changes to the Project or any Project works that are not included in any Authority Certificate issued for the Study Area.

Recommendation 8 – Management Process

Santos should ensure its existing cultural heritage management protocols meet legislative and NT Heritage Branch requirements and comply with all the conditions.

Recommendation 9 – Cultural Heritage Management Plan

A Project CHMP is not required under the *Draft Environmental factor guidance: Culture and heritage* (2022) as no significant impacts to cultural heritage have been identified. However, Santos can consider developing such a document as recommended by Heritage Branch and Northern Land Council.

Recommendation 10 – Unexpected finds

The Santos unexpected heritage finds stop work procedure should be implemented for the duration of proposed works, noting the potential for unidentified cultural heritage within the Study Area. Any finds should be documented (described and photographed, and their coordinates captured with GPS), and records sent to the NT Heritage Branch and the NLC. The NLC has emphasised the importance of involving Traditional Owners in decisions about cultural heritage management measures, including new finds.

Recommendation 11 – Site Inductions

Site inductions provided to all site personnel should outline any relevant cultural heritage no-go zones and the unexpected finds procedure.

Recommendation 12 – Ongoing Access

Santos should ensure that required access to land subject to native title determination, including land that Traditional Owners must access to protect sacred sites, will be maintained throughout the Project, as per Section 4 of the *Draft Environmental factor guidance: Culture and heritage* (2022). Santos may reasonably restrict access due to Workplace Health and Safety requirements if appraisal, construction and operations have commenced.

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Appendix A

Legislation and Guidelines

Appendix A Legislation and Guidelines

Commonwealth Legislation

Environment Protection and Biodiversity Conservation Act

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the key national heritage legislation and is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water. The main aim of the EPBC Act is to provide protection for the environment, specifically Matters of National Environmental Significance (MNES). Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a MNES, may only progress with approval of the Department of Climate Change, Energy, the Environment and Water. An action is defined as a project, development, undertaking, activity (or series of activities), or alteration.

The EPBC Act defines 'environment' as both natural and cultural environments and therefore includes Indigenous and non-Indigenous historical cultural heritage items. Under the Act, protected heritage items are listed on the World Heritage List (WHL) (items of international significance), National Heritage List (NHL) (items of significance to the nation) or the Commonwealth Heritage List (CHL) (items belonging to the Commonwealth or its agencies). These three lists replaced the Register of the National Estate (RNE). The RNE has been suspended and is no longer a statutory list, but it remains as an archive.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (the ATSIHP Act) provides for the preservation and protection of places, areas and objects of particular significance to Indigenous Australians. The stated purpose of the ATSIHP Act is the 'preservation and protection from injury or desecration of areas and objects in Australia and in Australian waters, being areas and objects that are of particular significance to Aboriginals in accordance with Aboriginal tradition' (Section 4).

Under the Act, 'Aboriginal tradition' is defined as "the body of traditions, observances, customs and beliefs of Aboriginals generally or of a particular community or group of Aboriginals, and includes any such traditions, observances, customs or beliefs relating to particular persons, areas, objects or relationships" (Section 3). A 'significant Aboriginal area' is an area of land or water in Australia that is of 'particular significance to Aboriginals in accordance with Aboriginal tradition' (Section 3). A 'significant Aboriginal object', on the other hand, refers to an object (including Aboriginal remains) of like significance.

For the purposes of the Act, an area or object is considered to be injured or desecrated if:

- In the case of an area:
  - it is used or treated in a manner inconsistent with Aboriginal tradition;
  - the use or significance of the area in accordance with Aboriginal tradition is adversely affected;
  - passage through, or over, or entry upon, the area by any person occurs in a manner inconsistent with Aboriginal tradition;
- in the case of an object:
  - it is used or treated in a manner inconsistent with Aboriginal tradition.

The ATSIHP Act can override state and territory laws in situations where a state or territory has approved an activity, but the Commonwealth Minister prevents the activity from occurring by making a declaration to protect an area or object. However, the Minister can only make a decision after receiving a legally valid application under the ATSIHP Act and, in the case of long term protection, after considering a report on the matter. Before making a declaration to protect an area or object in a state or territory, the Commonwealth Minister must consult the appropriate Minister of that state or territory (Section 13).

Native Title Act 1993

The *Native Title Act 1993* (NT Act) provides for the recognition and protection of native title for Indigenous peoples. The NT Act recognises native title for land over which native title has not been

extinguished, and where persons able to establish native title are able to prove continuous use, occupation or other classes of behaviour and actions consistent with a traditional cultural possession of those lands. It also makes provision for Indigenous Land Use Agreements (ILUA) to be formed.

Aboriginal Land Rights (Northern Territory) Act 1976

The *Aboriginal Land Rights Act* (ALRA) 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 to conduct the Sacred Site surveys with the relevant Site Custodians, then issue an Authority Certificate under the Act.

Territory Legislation

Heritage Act 2011

The *Heritage Act 2011* provides for the protection of both natural and cultural heritage (Aboriginal, historical and Macassan heritage) within the Northern Territory. The Act establishes the Heritage Council (consisting of eleven members) and the NT Heritage Register. It sets the process by which places become heritage places and allows for interim protection of places.

It is an offence to remove or damage heritage places or objects or to mislead or obstruct heritage officers regarding the provision of requested information or entry to works, vehicles or premises that are likely to have been involved in an offence against the Heritage Act. Compliance with the requirements of the Act must be adhered to at all times.

Northern Territory Aboriginal Sacred Sites Act 1989

The *Northern Territory Aboriginal Sacred Sites Act* 1989 was established to provide a system that protects sacred sites whilst providing for the development of land.

The Aboriginal Areas Protection Authority (AAPA) is a statutory authority established under the Sacred Sites Act and is responsible for overseeing the protection of sacred sites on land and sea across the whole of Australia's Northern Territory.

The Act establishes the protection of Aboriginal sacred sites through:

- Sacred site avoidance surveys and issuing authority certificates for any development proposals.
- Giving the public information about existing sacred sites through abstracts of Authority records and access to the registers the Authority maintains.
- Establishing and maintaining a Register of Sacred Sites
- Manages the rights of traditional custodians to access Sacred Sites.

The Act also establishes a range of offences and associated penalties that are aimed at protecting sacred sites. It is an offence to desecrate or disturb a site without the approval of the relevant custodians. A register of known sites exists to assist in identifying the likelihood of disturbance and potential need to obtain approval. The Act also establishes a duty-of-care to notify the AAPA of any potential disturbance to Aboriginal sacred sites.

Other Guidelines

2022 EMP Content Guideline: Onshore Petroleum Regulated Activities

The Department of Environment, Parks and Water Security (DEPWS) *2022 EMP Content Guideline: Onshore Petroleum Regulated Activities* outlines information to be included in EMPs for Onshore

petroleum regulated activities, including exploration and construction. Information required specifically for heritage includes:

- Desktop analysis of the likelihood of occurrence of Aboriginal or European items or places of cultural heritage value, using available data and appropriate to the region of the activity
- Where there is the potential for cultural heritage items or places to be present and disturbed, a cultural heritage survey should be conducted by a qualified expert.
- Details of Authority Certificate from AAPA.

***2022 Environmental factor guidance: Culture and heritage* [draft]**

The Northern Territory Environment Protection Authority (NT EPA) has prepared a draft document, the 2022 *Environmental factor guidance: Culture and heritage*, which provides guidance for cultural and environmental considerations for proponents.

Broadly, this guidance recommends proponents identify heritage values by:

- Engaging a suitably qualified professional (as required)
- Contacting AAPA to identify any sacred sites and apply for an Authority Certificate
- Contacting Heritage Branch to identify any known or likely heritage places, and determine whether archaeological survey is required.

It should be noted that the factor guidance does not prescribe a particular approach to heritage surveys, but rather states these must be ‘be consistent with advice (and to the satisfaction of) the Heritage Branch’ (s4.1).

Appendix B

Detailed Figures

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Jibera South

CARPENTARIA

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(when printed at A3)

LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

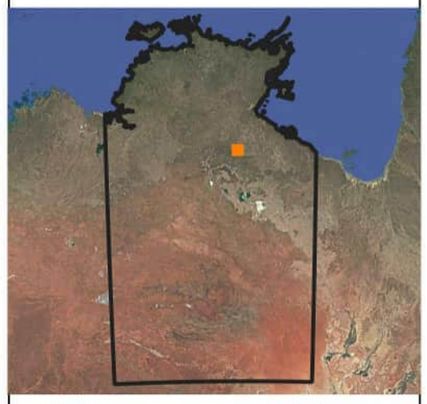
Disturbance Footprint

Request Areas

Well Pad

Transport

Roads



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Project Works Areas
Jibera South

PROJECT ID	60742376
CREATED BY	KC
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VERSION	1

Figure 3a

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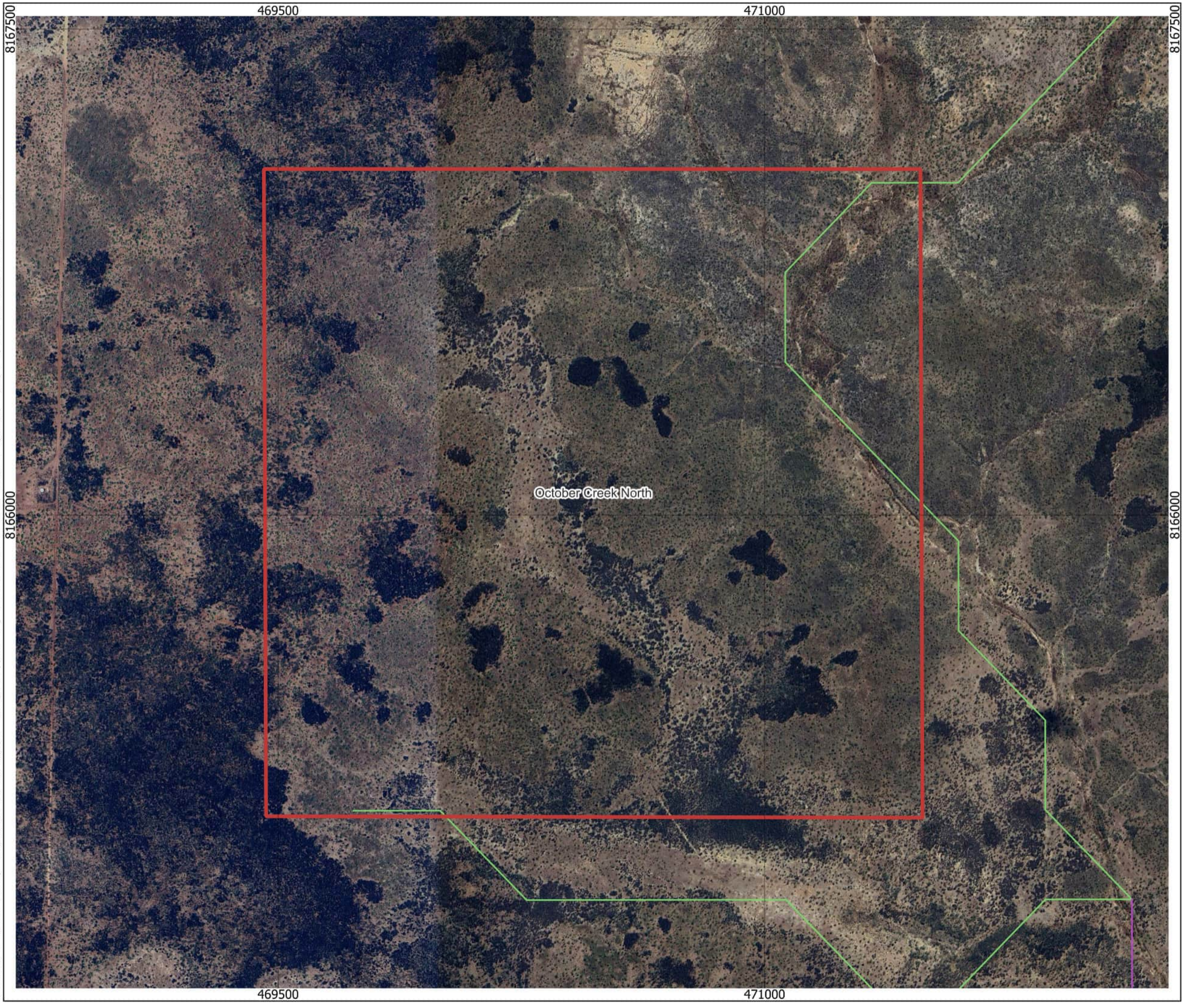

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LEGEND

Investigation Areas

October Creek North

Watercourse Stream Order

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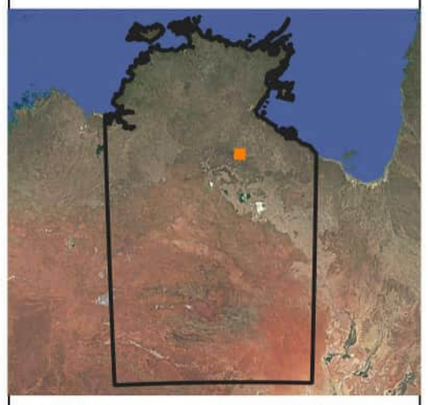

Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Stream Order Watercourses
October Creek North

PROJECT ID	60742376
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VERSION	1

Figure 6a

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Request Area 1
Jibera South
CARPENTARIA

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LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

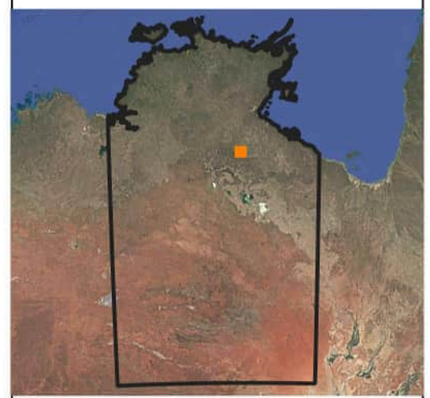
Well Pad

Transport

Roads

Unmapped Water Source

Water Source Visible In Aerial Imagery



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Alluvial Sediment and Unmapped Water Sources
Jibera South

PROJECT ID	60742376
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VERSION	1

Figure 7a

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468000
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8169000
CARPENTARIA
Request Area 2A
Newcastle South
Request Area 2B

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LEGEND

Study Area

Investigation Areas
Newcastle South

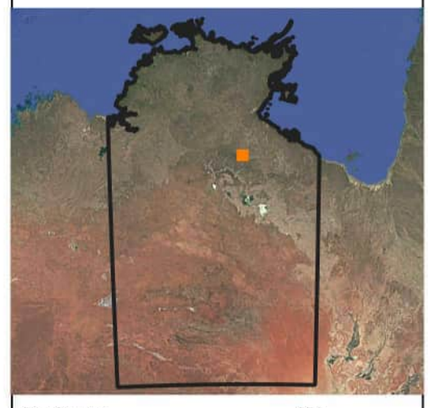
Project Works
Construction Disturbance Zone
Disturbance Footprint

Request Areas
Well Pad
Well Pad - Initial Assessment Only

Transport
Roads

Surface Geology
Quaternary Alluvium

Unmapped Water Source
Water Source Visible In Aerial Imagery



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Alluvial Sediment and Unmapped Water Sources
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 7b

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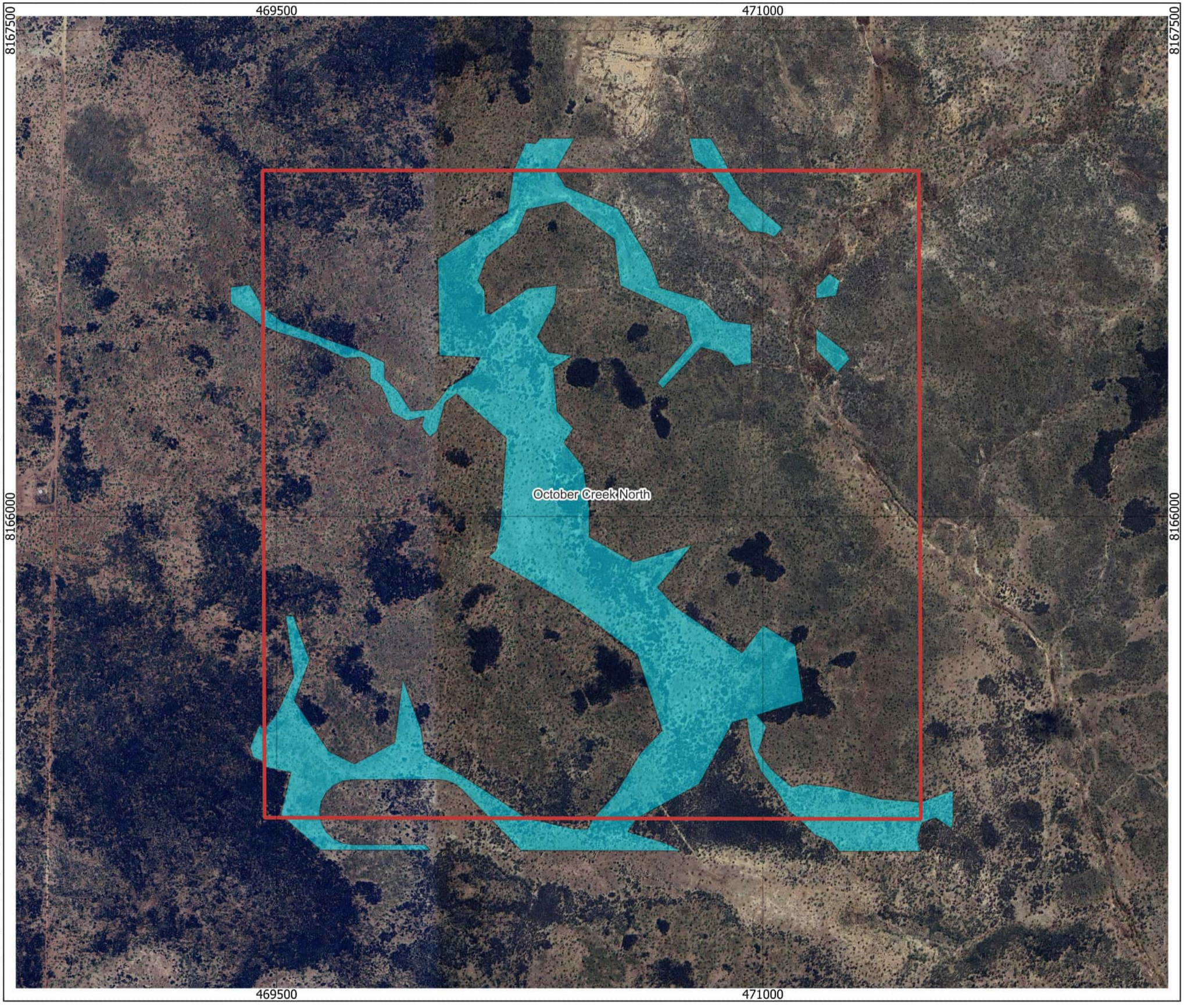

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LEGEND

Investigation Areas

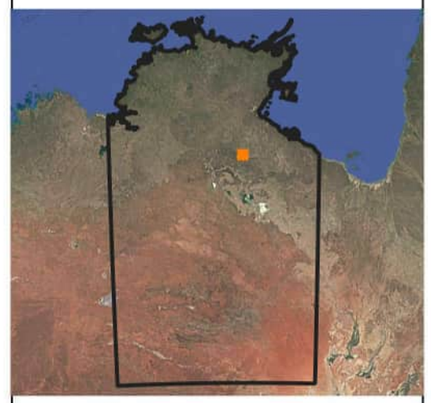
- October Creek North

Surface Geology

- Quaternary Alluvium

Unmapped Water Source

- Water Source Visible In Aerial Imagery



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Alluvial Sediment and Unmapped Water Sources
October Creek North

PROJECT ID	60742376
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VERSION	1

Figure 7c

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Jibera South
CARPENTARIA

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LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

Transport

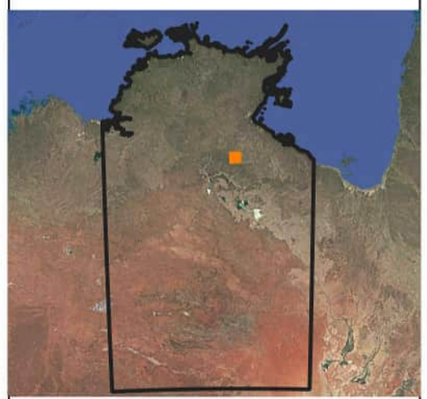
Roads

Surface Geology

Czl

Czs

Kl



Data Sources:
AECOM
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Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Surface Geology
Jibera South

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Figure 8a

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Request Area 2A
Newcastle South
Request Area 2B

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LEGEND

Study Area

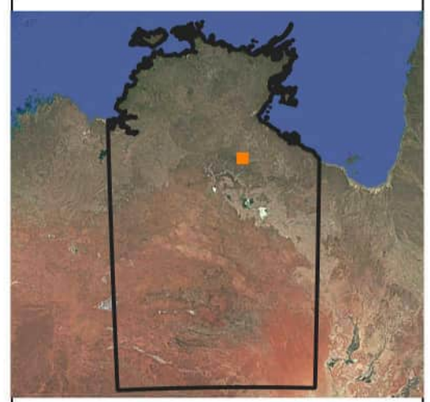
Investigation Areas
Newcastle South

Project Works
Construction Disturbance Zone
Disturbance Footprint

Request Areas
Well Pad
Well Pad - Initial Assessment Only

Transport
Roads

Surface Geology
Czl
Czs
Kl
Qa



Data Sources:
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Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Surface Geology
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 8b

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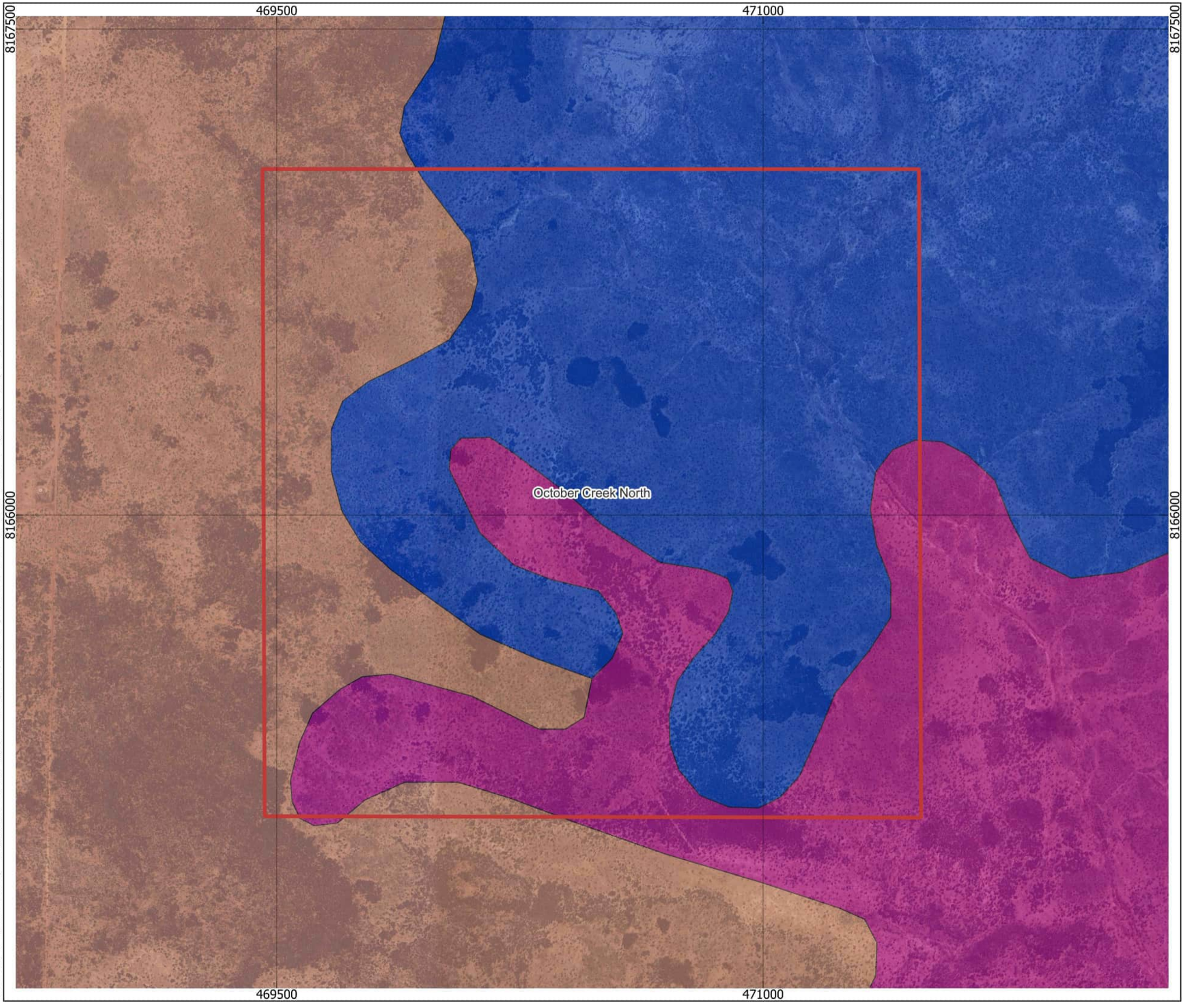

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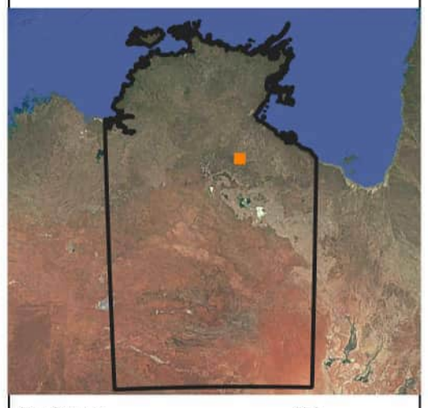
LEGEND

Investigation Areas

- October Creek North

Surface Geology

- Czl
- Czs
- Kl
- Qa



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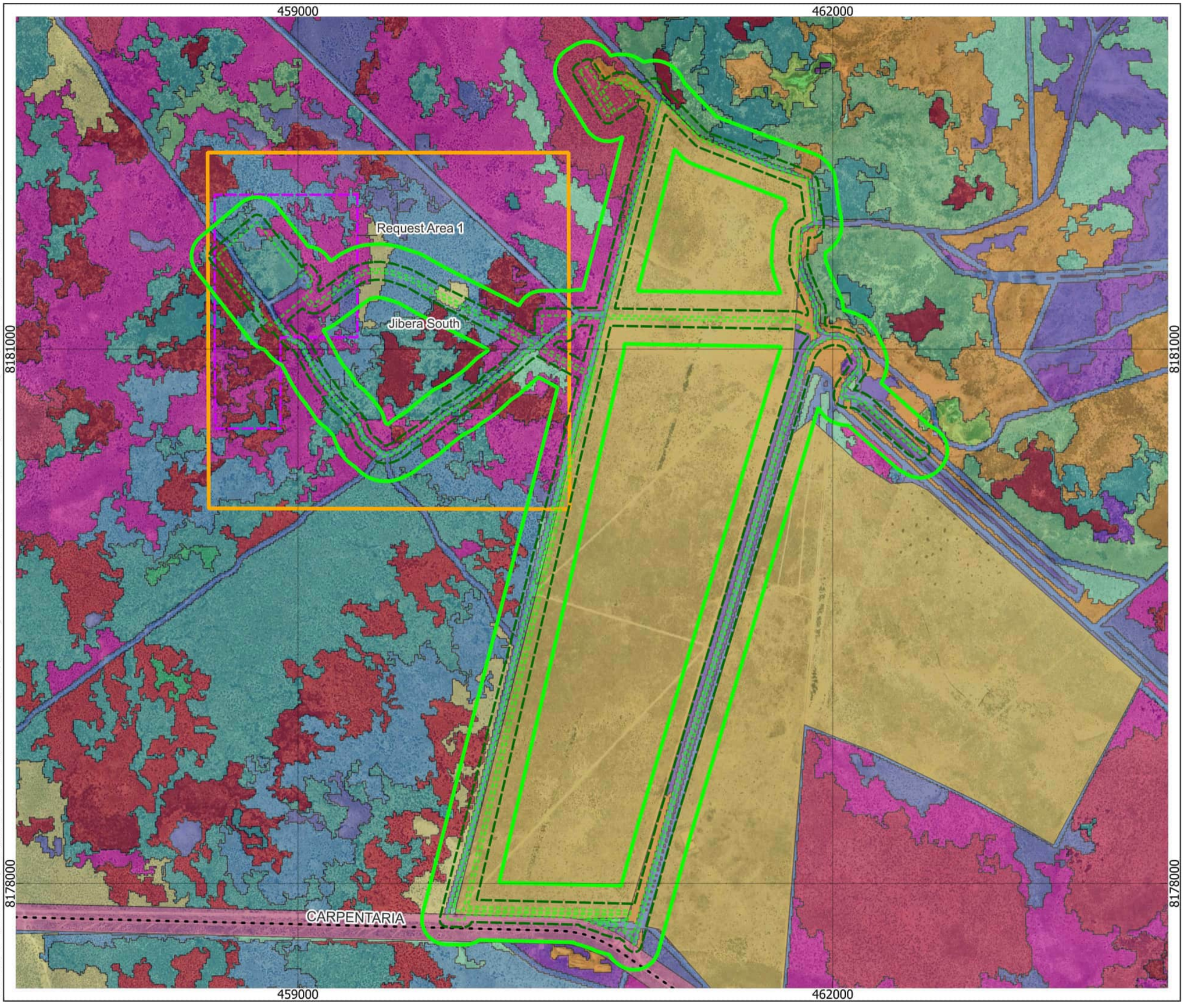
EP161 McArthur Appraisals Heritage Scouting
Surface Geology
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 8c



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LEGEND

Study Area

Investigation Areas
- Jibera South

Project Works
- Construction Disturbance Zone
- Disturbance Footprint

Request Areas
- Well Pad

Transport
- Roads

Vegetation Groups
- Acacia shrubland and hummock grassland on sandplains
- Bullwaddy shrubland and woodland
- Coolabah low open woodland on clay
- Corymbia/Eucalyptus open woodland on sandy loam
- Corymbia/Eucalyptus woodland (run-on areas and heavier soils)
- Corymbia/Eucalyptus woodland on sandstone
- Eucalyptus chlorophylla low open woodland
- Intensive Uses
- Lancewood forest
- Melaleuca forests (springs, river channels)
- Melaleuca low open woodland on floodplains and drainage depressions
- No RFclass data
- Production from Dryland Agriculture and Plantations
- Riparian woodland (ephemeral streams)
- Silver box low open woodland
- Snappy gum low open woodland
- Track
- Tussock grassland

Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Vegetation Groups
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 9a

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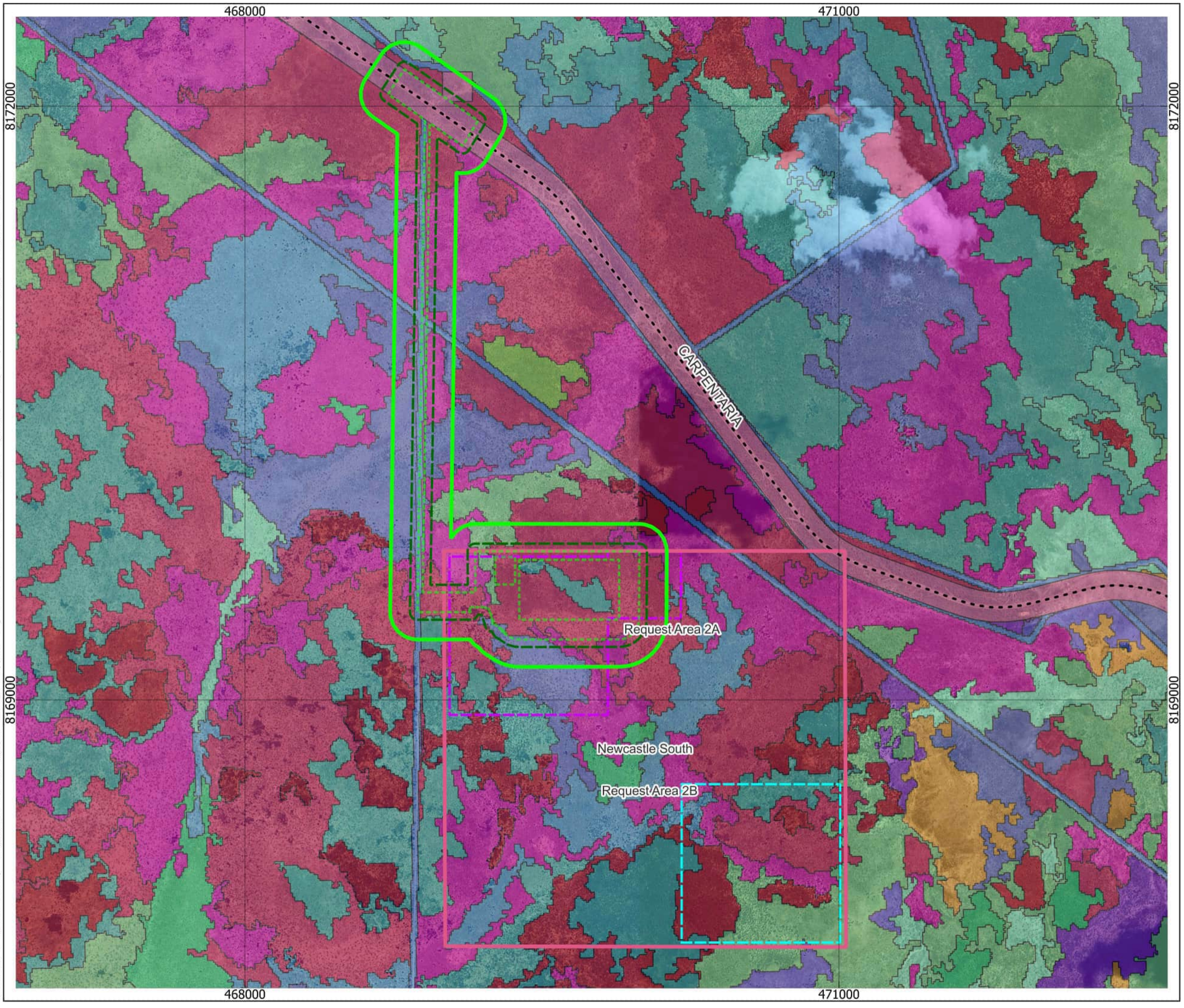

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LEGEND

- Study Area

Investigation Areas
- Newcastle South

Project Works
- Construction Disturbance Zone
- Disturbance Footprint

Request Areas
- Well Pad
- Well Pad - Initial Assessment Only

Transport
- Roads

Vegetation Groups
- Acacia shrubland and hummock grassland on sandplains
- Bullwaddy shrubland and woodland
- Corymbia/Eucalyptus open woodland on sandy loam
- Corymbia/Eucalyptus woodland (run-on areas and heavier soils)
- Corymbia/Eucalyptus woodland on sandstone
- Eucalyptus chlorophylla low open woodland
- Intensive Uses
- Lancewood forest
- Melaleuca forests (springs, river channels)
- Melaleuca low open woodland on floodplains and drainage depressions
- Riparian woodland (ephemeral streams)
- Silver box low open woodland
- Snappy gum low open woodland
- Track
- Tussock grassland

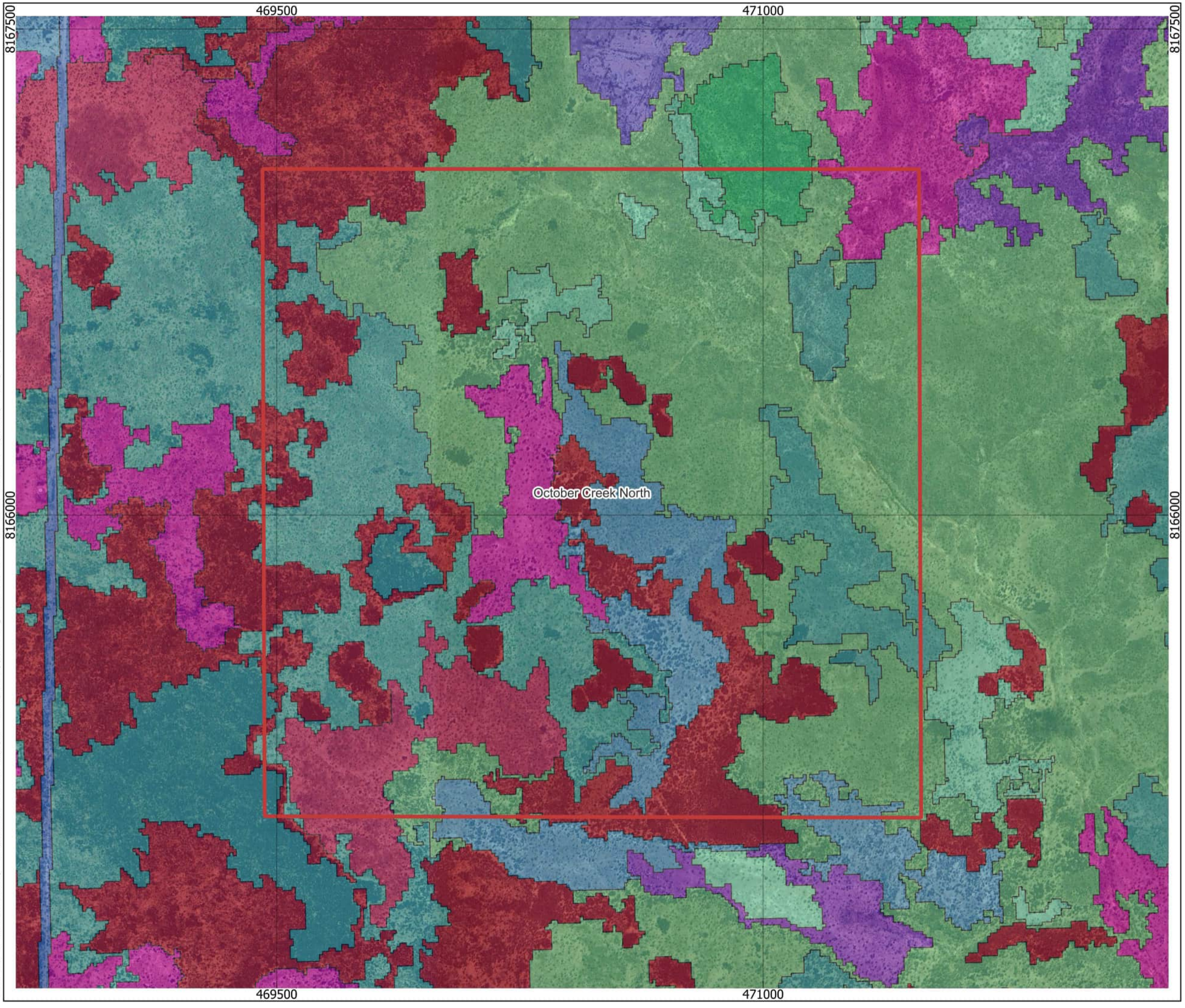
Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Vegetation Groups
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 9b



AECOM

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(when printed at A3)

LEGEND

Investigation Areas

- October Creek North

Vegetation Groups

- Acacia shrubland and hummock grassland on sandplains
- Bullwaddy shrubland and woodland
- Corymbia/Eucalyptus open woodland on sandy loam
- Corymbia/Eucalyptus woodland (run-on areas and heavier soils)
- Eucalyptus chlorophylla low open woodland
- Lancewood forest
- Riparian woodland (ephemeral streams)
- Silver box low open woodland
- Snappy gum low open woodland
- Track
- Tussock grassland

Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Vegetation Groups
October Creek North

PROJECT ID	60742376
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LAST MODIFIED	09-10-2025
VERSION	1

Figure 9c

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Request Area 1
Jibera South
CARPENTARIA

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(when printed at A3)

LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

Transport

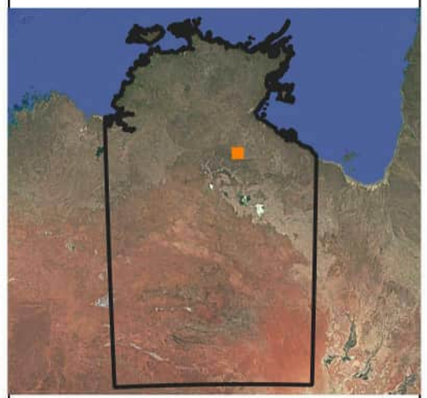
Roads

Unmapped Water Source

Water Source Visible In Aerial Imagery

Mapped Watercourse (Stream Order 1+)

100 m Buffer



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Watercourses and Drainage Line Buffers
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 10a

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468000
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CARPENTARIA
Request Area 2A
Newcastle South
Request Area 2B

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LEGEND

- Study Area

Investigation Areas
- Newcastle South

Project Works
- Construction Disturbance Zone
- Disturbance Footprint

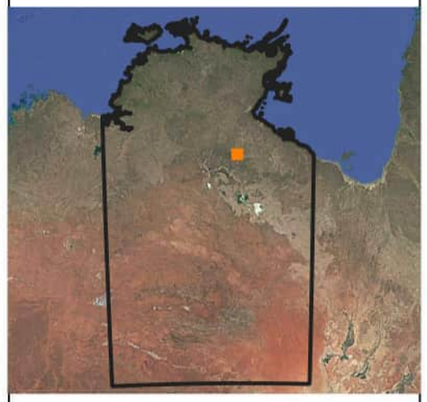
Request Areas
- Well Pad
- Well Pad - Initial Assessment Only

Transport
- Roads

Surface Geology
- Quaternary Alluvium

Unmapped Water Source
- Water Source Visible In Aerial Imagery

Mapped Watercourse (Stream Order 1+)
- 100 m Buffer



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Watercourses and Drainage Line Buffers
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 10b

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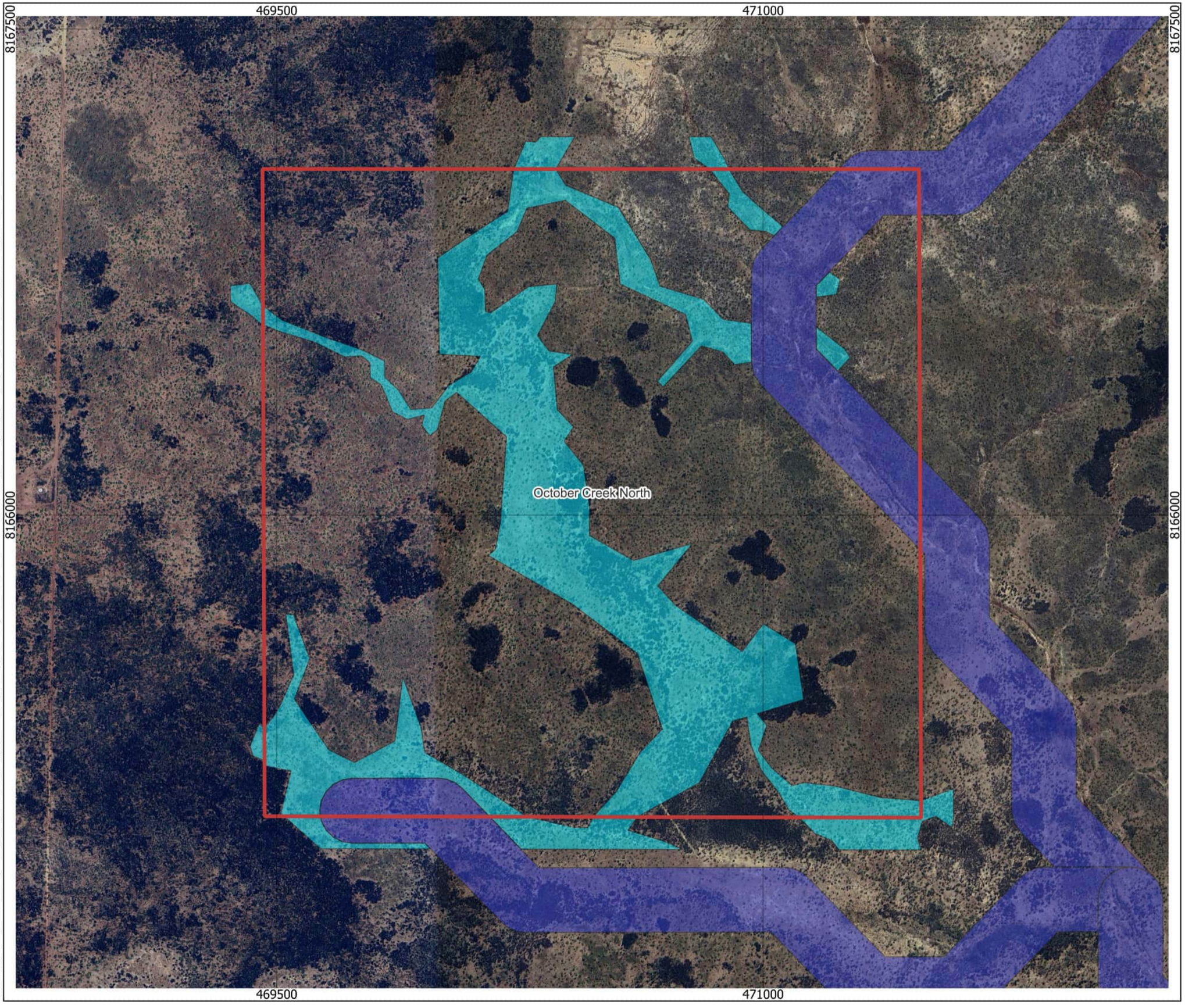

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AECOM
www.aecom.com

0 250 500 m

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(when printed at A3)

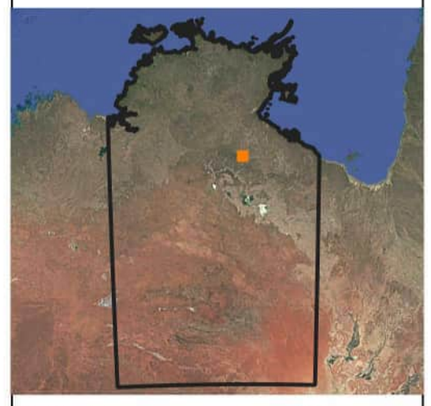
LEGEND

Investigation Areas
- October Creek North

Surface Geology
- Quaternary Alluvium

Unmapped Water Source
- Water Source Visible In Aerial Imagery

Mapped Watercourse (Stream Order 1+)
- 100 m Buffer



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Watercourses and Drainage Line Buffers
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 10c

459000
462000
8181000
8178000
Request Area 1
Jibera South
CARPENTARIA

AECOM
www.aecom.com

0 400 800 m
1:20,000
(when printed at A3)

LEGEND

Study Area

Investigation Areas

Jibera South

Request Areas

Well Pad

Transport

Roads

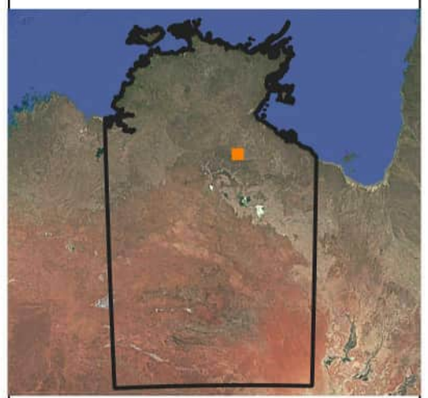
Surface Geology

Kl

Project Works

Construction Disturbance Zone

Disturbance Footprint



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Surface Geologies with Potential for Grinding Grooves
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 11a

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468000

471000

8172000

8169000

CARPENTARIA

Request Area 2A

Newcastle South

Request Area 2B

AECOM

www.aecom.com

0 350 700 m

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(when printed at A3)

LEGEND

Study Area

Investigation Areas

Newcastle South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

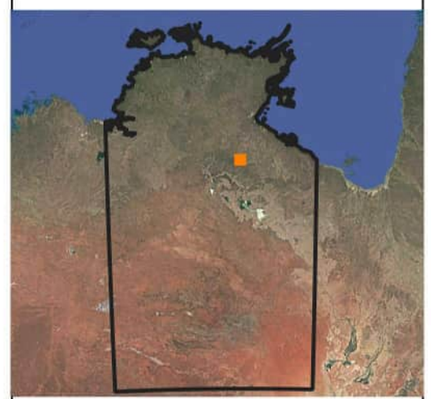
Well Pad - Initial Assessment Only

Transport

Roads

Surface Geology

KI



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Surface Geologies with Potential for Grinding Grooves
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 11b

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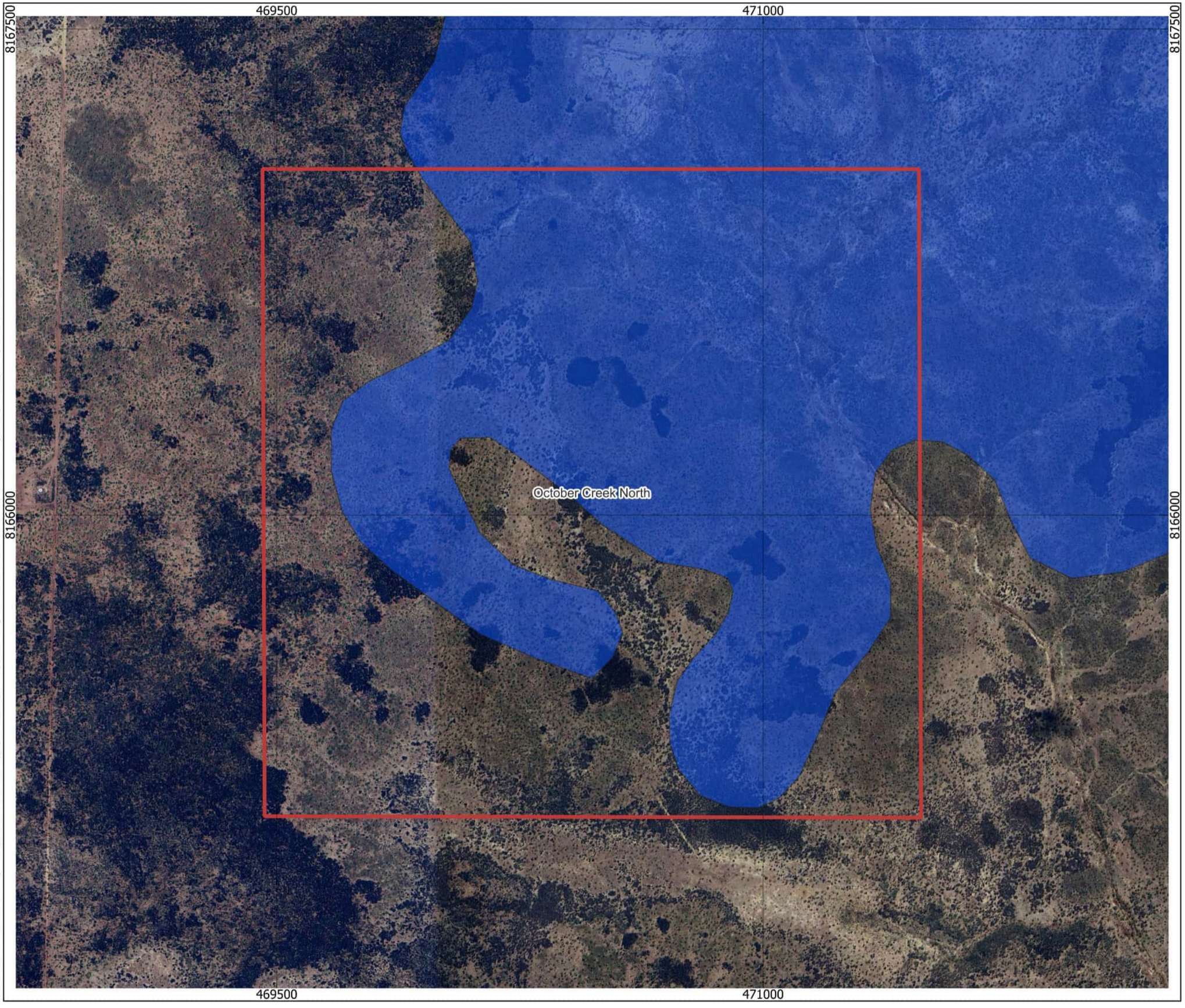

AECOM

www.aecom.com

0 250 500 m

1:11,000
(when printed at A3)

LEGEND

Investigation Areas

October Creek North

Surface Geology

Kl

Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Surface Geologies with Potential for Grinding Grooves
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 11c

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459000

462000

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Request Area 1

Jibera South

CARPENTARIA

AECOM

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0 400 800 m

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(when printed at A3)

LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

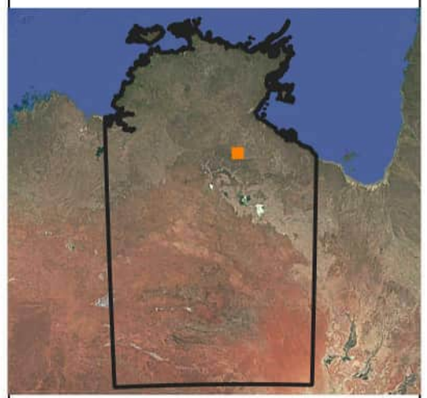
Well Pad

Transport

Roads

Vegetated Areas

Uncleared Vegetation



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Uncleared Vegetation
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 12a

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468000
471000
8172000
8169000
CARPENTARIA
Request Area 2A
Newcastle South
Request Area 2B

AECOM
www.aecom.com

0 350 700 m
1:18,000
(when printed at A3)

LEGEND

Study Area

Investigation Areas

Newcastle South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

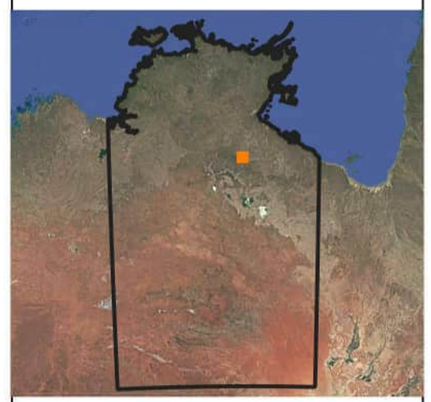
Well Pad - Initial Assessment Only

Transport

Roads

Vegetated Areas

Uncleared Vegetation



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Uncleared Vegetation
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 12b

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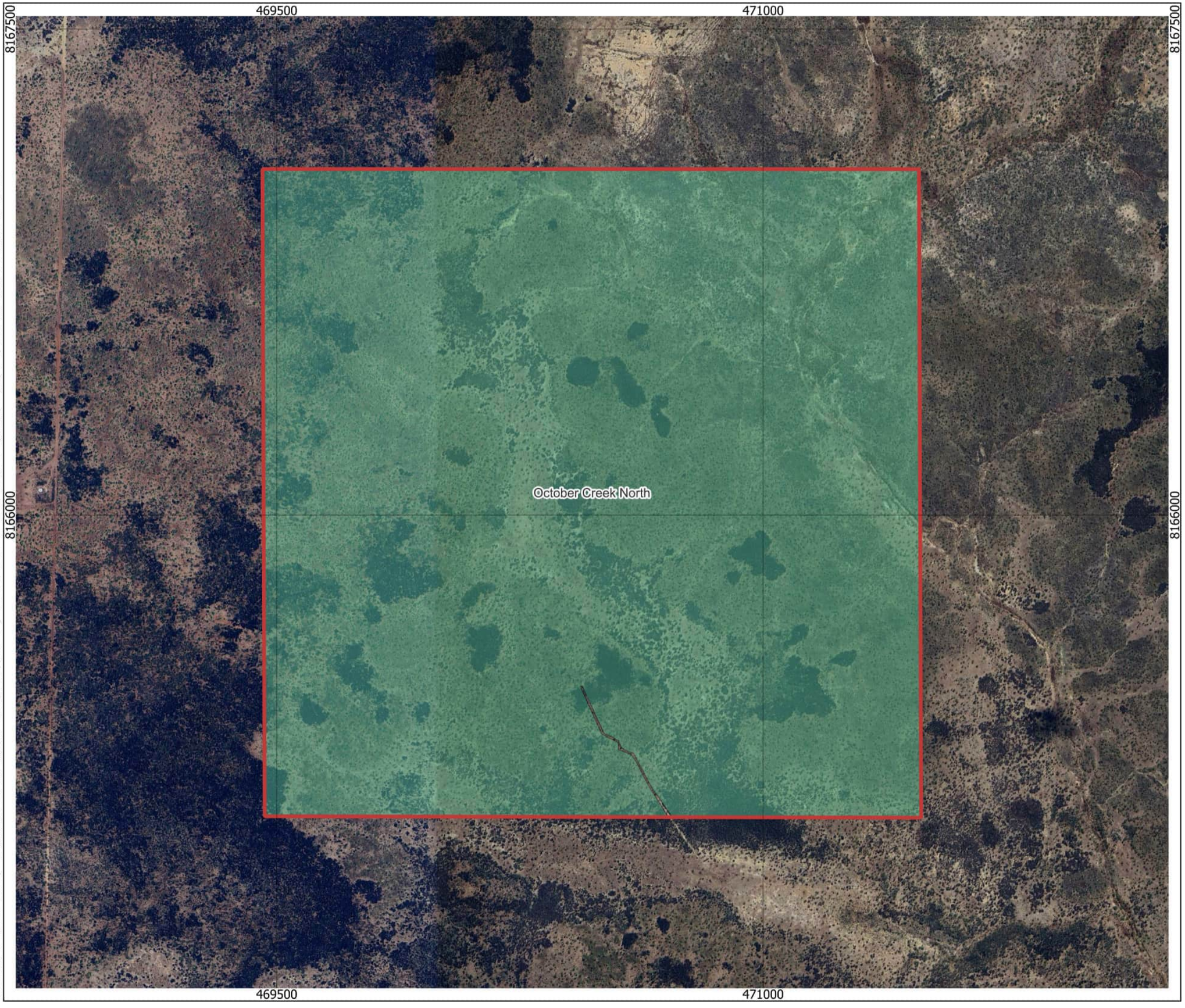

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(when printed at A3)

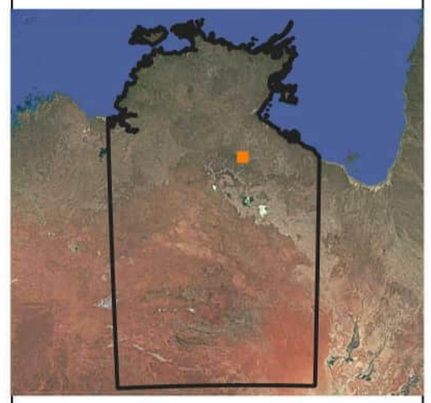
LEGEND

Investigation Areas

- October Creek North

Vegetated Areas

- Uncleared Vegetation



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Uncleared Vegetation
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 12c

459000
462000
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Request Area 1
Jibera South
CARPENTARIA

AECOM
www.aecom.com

0 400 800 m
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(when printed at A3)

LEGEND

Study Area

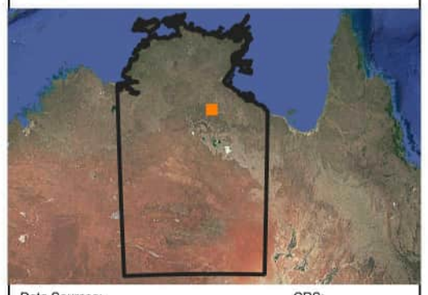
Investigation Areas
Jibera South

Project Works
Construction Disturbance Zone
Disturbance Footprint

Request Areas
Well Pad

Transport
Roads

Vegetation Groups
Coolabah low open woodland on clay
Corymbia/Eucalyptus open woodland on sandy loam
Corymbia/Eucalyptus woodland (run-on areas and heavier soils)
Corymbia/Eucalyptus woodland on sandstone
Eucalyptus chlorophylla low open woodland
Lancewood forest
Melaleuca low open woodland on floodplains and drainage depressions
Silver box low open woodland
Snappy gum low open woodland



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Uncleared Vegetation Groups with Potential for Aboriginal Modified Trees
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 13a

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468000
471000
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CARPENTARIA
Request Area 2A
Newcastle South
Request Area 2B

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(when printed at A3)

LEGEND

Study Area

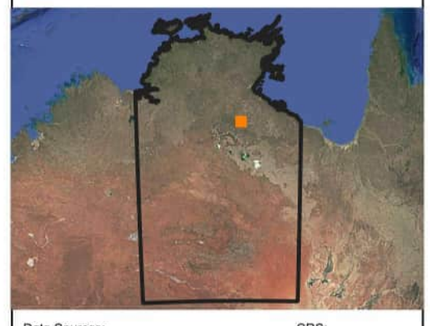
Investigation Areas
- Newcastle South

Project Works
- Construction Disturbance Zone
- Disturbance Footprint

Request Areas
- Well Pad
- Well Pad - Initial Assessment Only

Transport
- Roads

Vegetation Groups
- Corymbia/Eucalyptus open woodland on sandy loam
- Corymbia/Eucalyptus woodland (run-on areas and heavier soils)
- Eucalyptus chlorophylla low open woodland
- Lancewood forest
- Melaleuca low open woodland on floodplains and drainage depressions
- Silver box low open woodland
- Snappy gum low open woodland



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Uncleared Vegetation Groups with Potential for Aboriginal Modified Trees
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 13b

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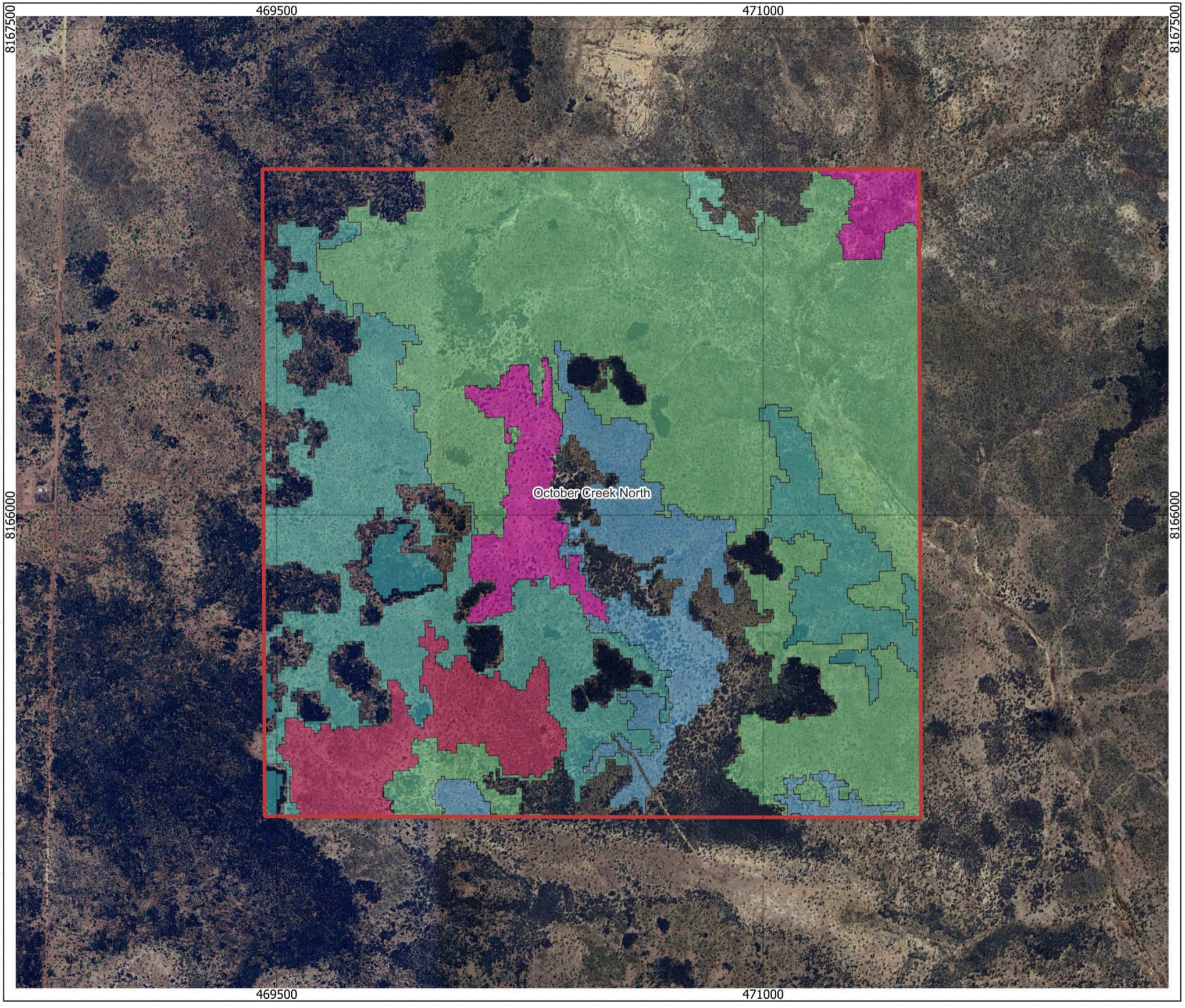

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(when printed at A3)

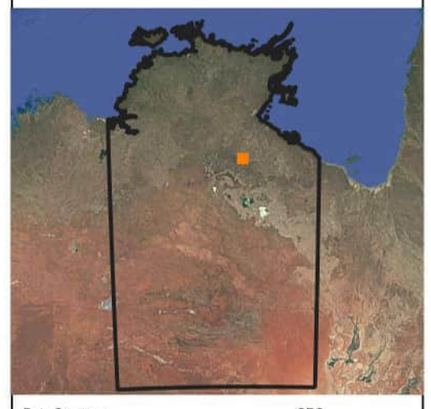
LEGEND

Investigation Areas

- October Creek North

Vegetation Groups

- Corymbia/Eucalyptus open woodland on sandy loam
- Corymbia/Eucalyptus woodland (run-on areas and heavier soils)
- Eucalyptus chlorophylla low open woodland
- Lancewood forest
- Silver box low open woodland
- Snappy gum low open woodland



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Uncleared Vegetation Groups with Potential for Aboriginal Modified Trees
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 13c

459000
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8178000
Request Area 1
Jibera South
CARPENTARIA

AECOM
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(when printed at A3)

LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

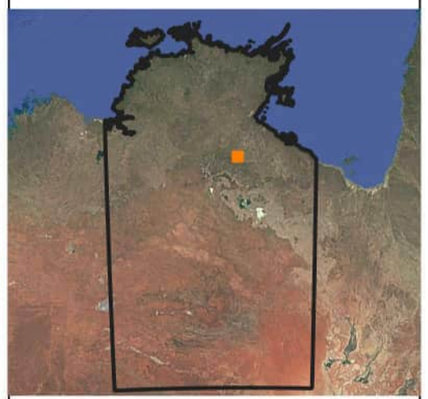
Transport

Roads

Potential for Artefact Scatters/Hearths

Moderate

Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Artefact Scatters/Hearths
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 14a

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468000

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CARPENTARIA

Request Area 2A

Newcastle South

Request Area 2B

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0 350 700 m

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(when printed at A3)

LEGEND

- Study Area

Investigation Areas

- Newcastle South

Project Works

- Construction Disturbance Zone
- Disturbance Footprint

Request Areas

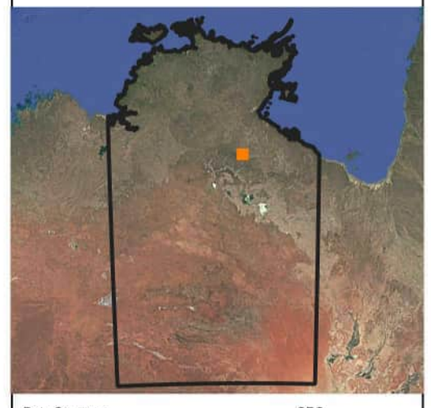
- Well Pad
- Well Pad - Initial Assessment Only

Transport

- Roads

Potential for Artefact Scatters/Hearths

- Moderate
- Low



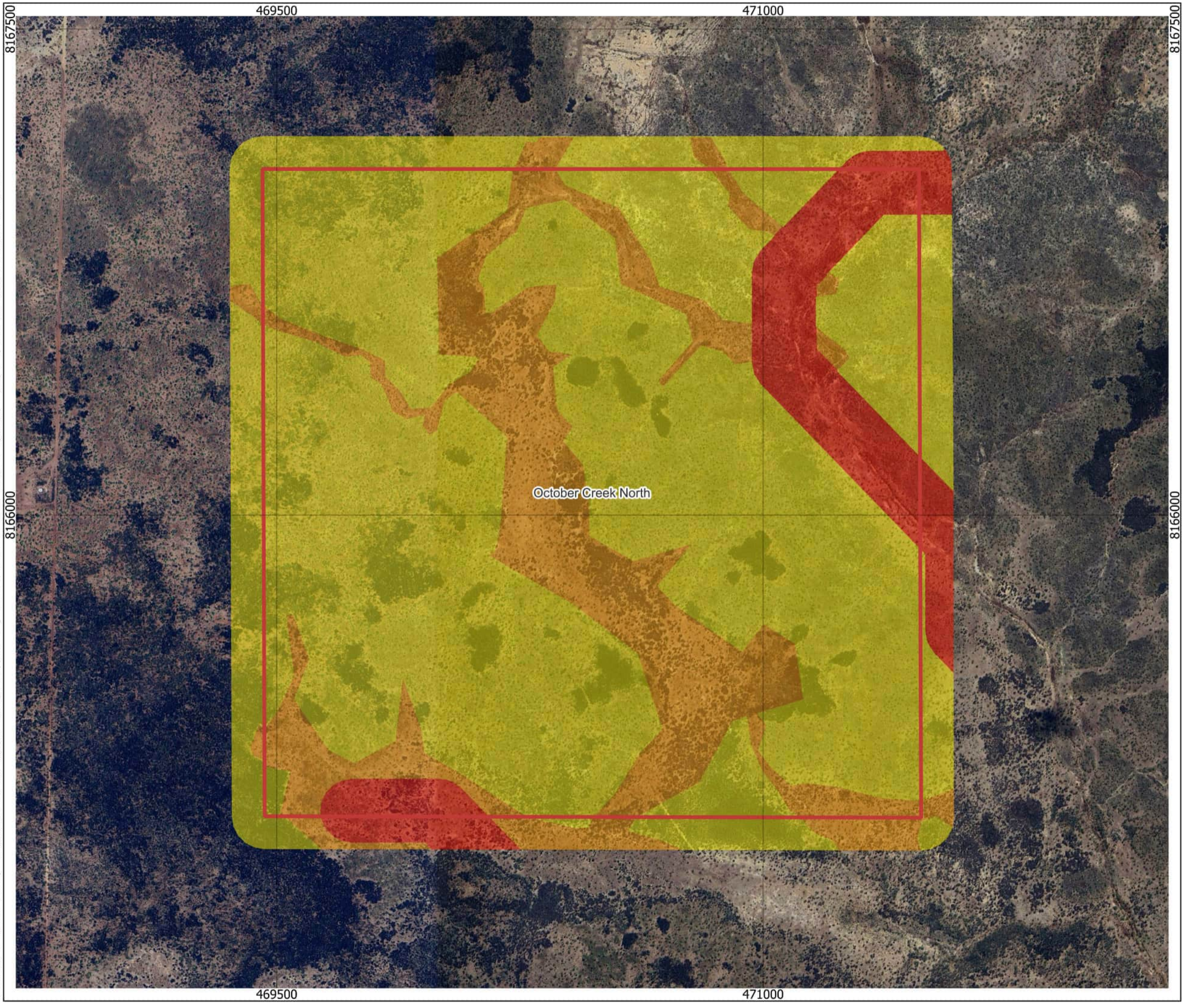
Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Artefact Scatters/Hearths
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 14b



AECOM

www.aecom.com

0 250 500 m

1:11,000
(when printed at A3)

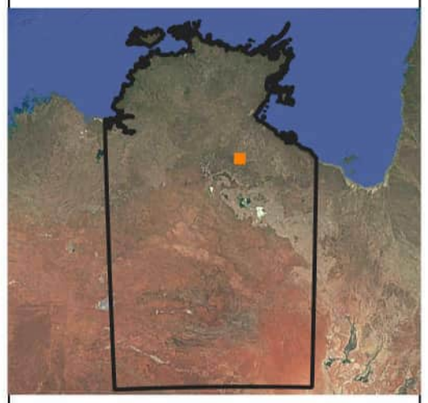
LEGEND

Investigation Areas

- October Creek North

Potential for Artefact Scatters/Hearths

- High
- Moderate
- Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Artefact Scatters/Hearths
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 14c

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459000
462000
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8178000
Request Area 1
Jibera South
CARPENTARIA

AECOM
www.aecom.com

0 400 800 m
1:20,000
(when printed at A3)

LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

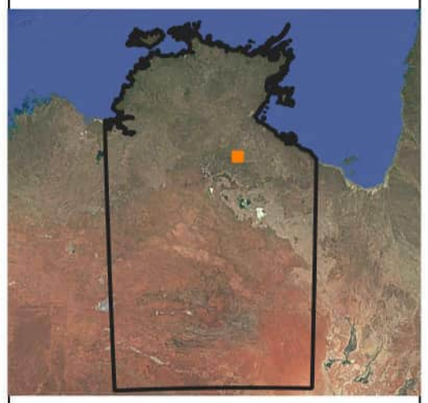
Transport

Roads

Potential for Grinding Grooves

Moderate

Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Grinding Grooves
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 15a

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468000
471000
8172000
8169000
CARPENTARIA
Request Area 2A
Newcastle South
Request Area 2B

AECOM
www.aecom.com

0 350 700 m
1:18,000
(when printed at A3)

LEGEND

- Study Area

Investigation Areas

- Newcastle South

Project Works

- Construction Disturbance Zone
- Disturbance Footprint

Request Areas

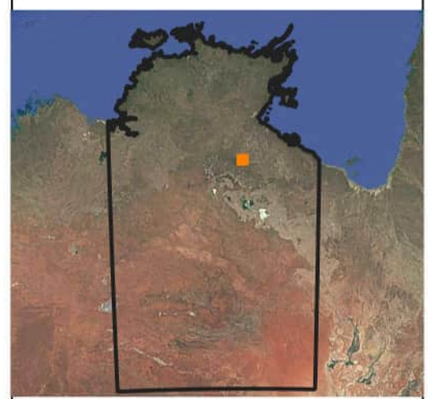
- Well Pad
- Well Pad - Initial Assessment Only

Transport

- Roads

Potential for Grinding Grooves

- Moderate
- Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Grinding Grooves
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 15b

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469500

471000

8167500

8166000

October Creek North

AECOM

www.aecom.com

0 250 500 m

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(when printed at A3)

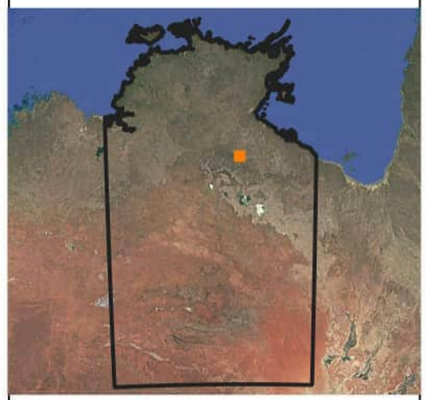
LEGEND

Investigation Areas

- October Creek North

Potential for Grinding Grooves

- High
- Moderate
- Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Grinding Grooves
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 15c

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459000
462000
8181000
8178000
Request Area 1
Jibera South
CARPENTARIA

AECOM
www.aecom.com

0 400 800 m
1:20,000
(when printed at A3)

LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

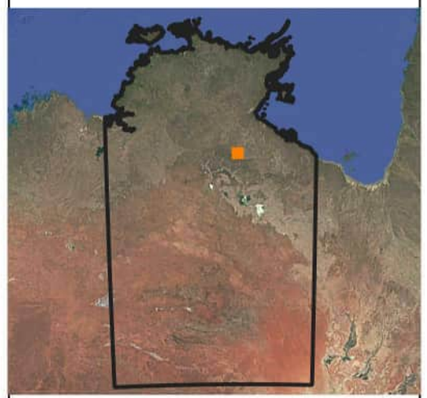
Transport

Roads

Potential for Aboriginal Modified Trees

Moderate

Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Aboriginal Modified Trees
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 16a

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468000

471000

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CARPENTARIA

Request Area 2A

Newcastle South

Request Area 2B

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AECOM
www.aecom.com

0 350 700 m

1:18,000
(when printed at A3)

LEGEND

- Study Area

Investigation Areas

- Newcastle South

Request Areas

- Well Pad
- Well Pad - Initial Assessment Only

Transport

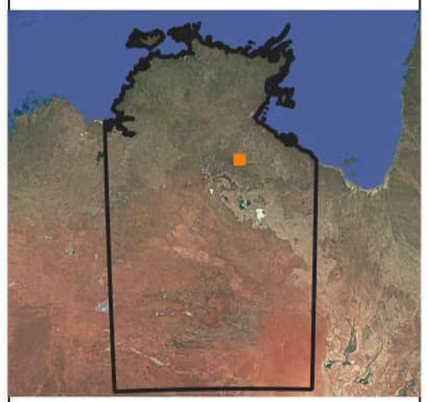
- Roads

Potential for Aboriginal Modified Trees

- Moderate
- Low

Project Works

- Construction Disturbance Zone
- Disturbance Footprint



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Aboriginal Modified Trees
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 16b

469500
471000
8167500
8166000
October Creek North

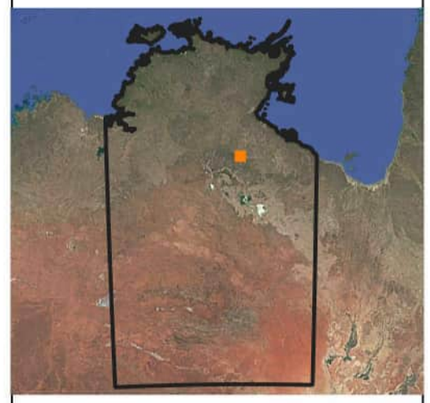
AECOM
www.aecom.com

0 250 500 m
1:11,000
(when printed at A3)

LEGEND

Investigation Areas
- October Creek North

Potential for Aboriginal Modified Trees
- High
- Moderate
- Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for Aboriginal Modified Trees
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 16c

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459000
462000
8181000
8178000
Request Area 1
Jibera South
CARPENTARIA

AECOM
www.aecom.com

0 400 800 m
1:20,000
(when printed at A3)

LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

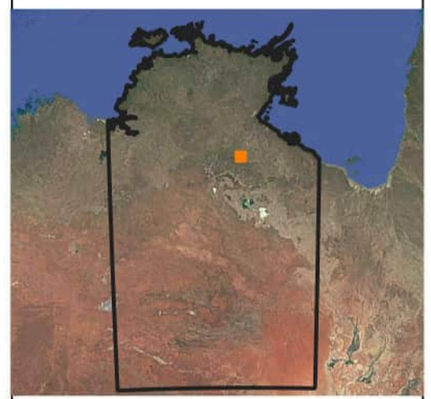
Transport

Roads

Potential for All Tangible Aboriginal Sites

Moderate

Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for All Tangible Aboriginal Sites
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 17a

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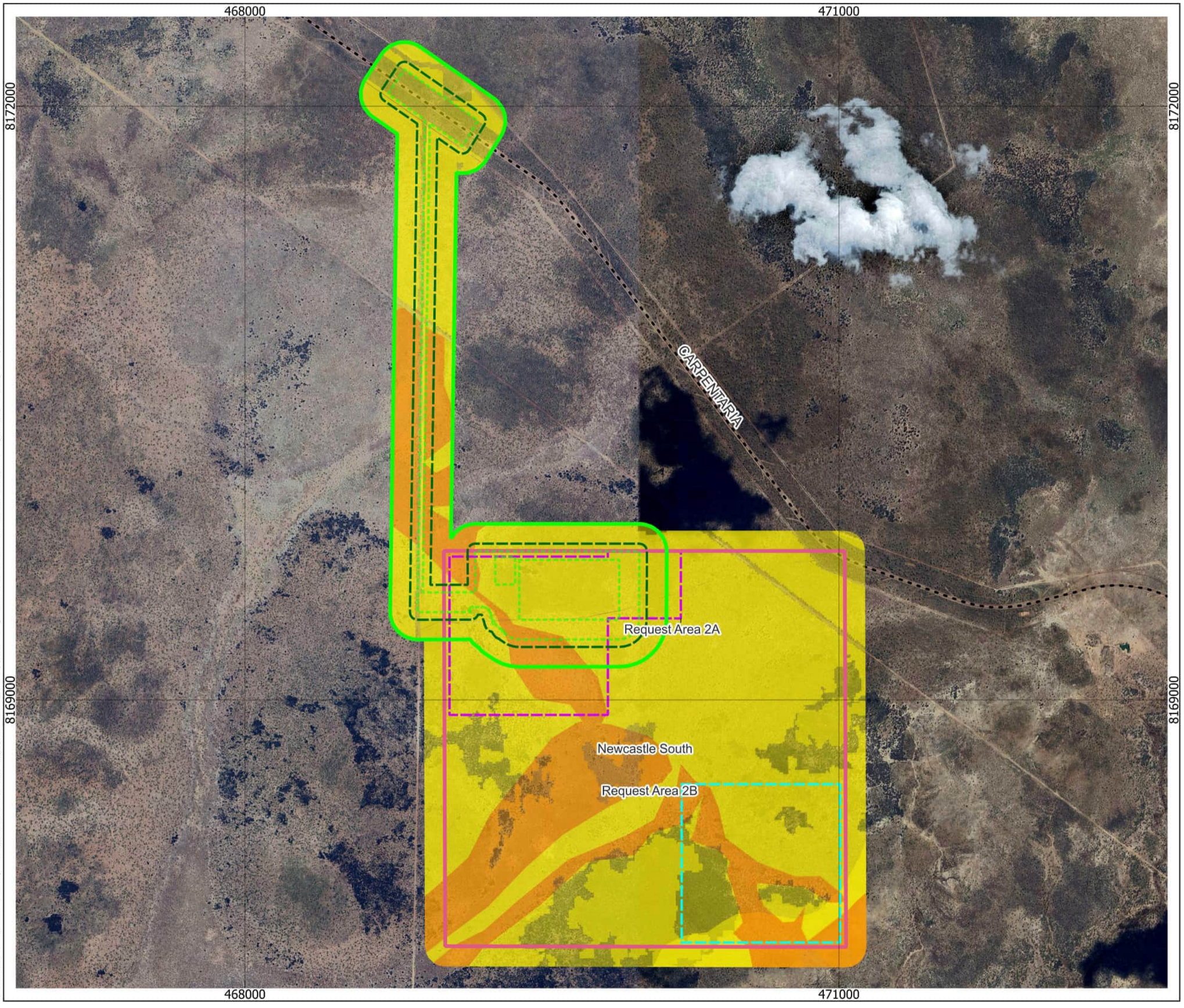


AECOM

www.aecom.com

0 350 700 m

1:18,000
(when printed at A3)

LEGEND

- Study Area

Investigation Areas

- Newcastle South

Project Works

- Construction Disturbance Zone
- Disturbance Footprint

Request Areas

- Well Pad
- Well Pad - Initial Assessment Only

Transport

- Roads

Potential for All Tangible Aboriginal Sites

- Moderate
- Low

Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

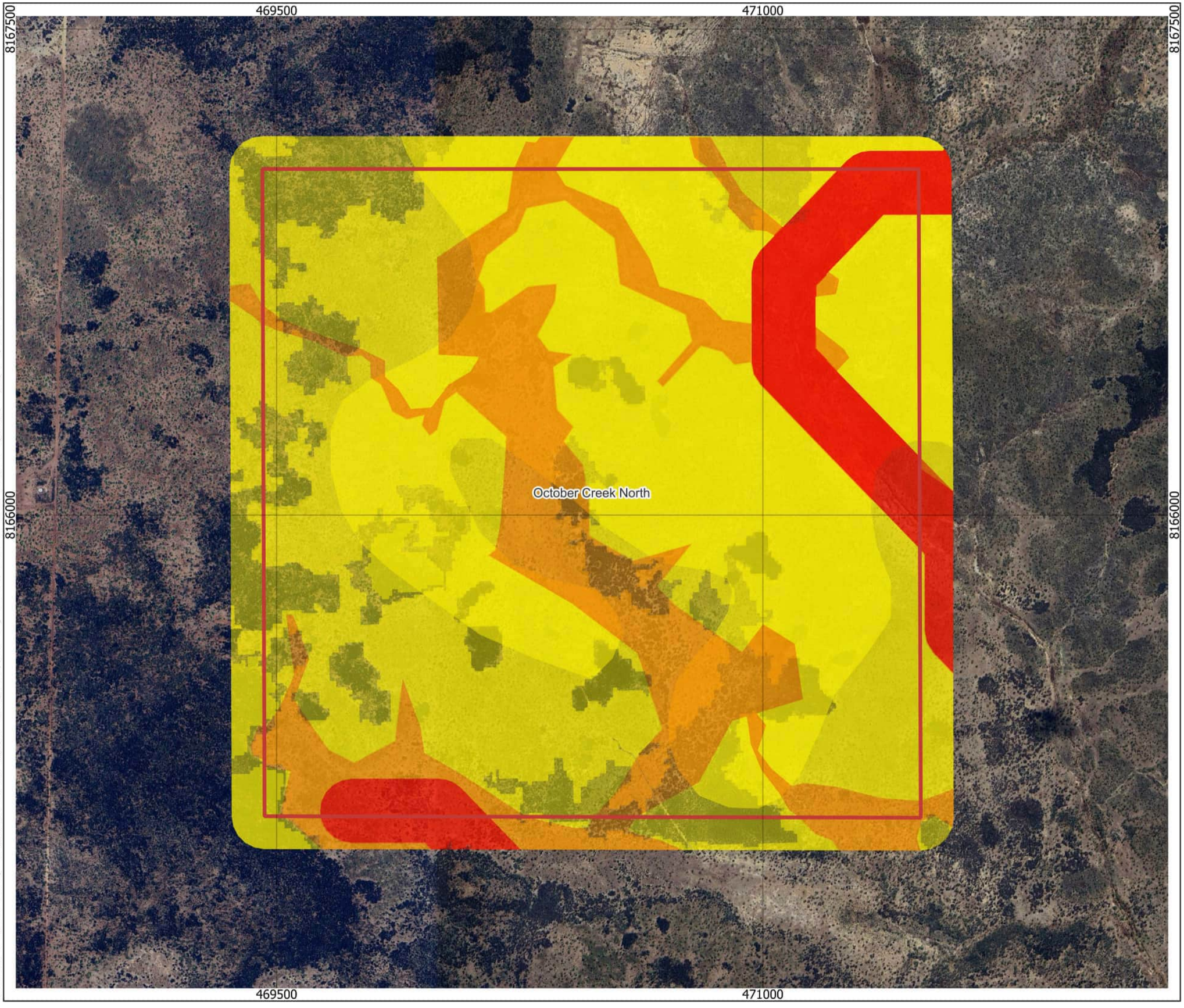
CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for All Tangible Aboriginal Sites
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 17b

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM

www.aecom.com

0 250 500 m

1:11,000
(when printed at A3)

LEGEND

Investigation Areas

- October Creek North

Potential for All Tangible Aboriginal Sites

- High
- Moderate
- Low

Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Potential for All Tangible Aboriginal Sites
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 17c

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.

459000
462000
8181000
8178000
Request Area 1
Jibera South
CARPENTARIA

AECOM
www.aecom.com

0 400 800 m
1:20,000
(when printed at A3)

LEGEND

- Study Area

Investigation Areas

- Jibera South

Project Works

- Construction Disturbance Zone
- Disturbance Footprint

Request Areas

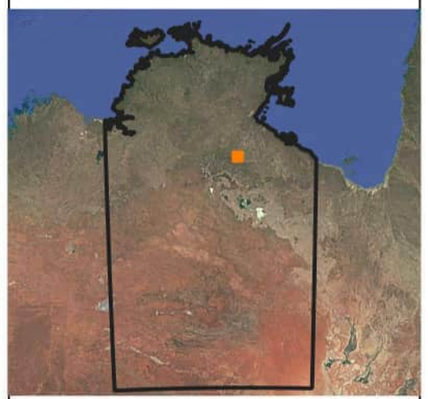
- Well Pad

Transport

- Roads

Survey Effort

- Observation
- Survey Tracks
- October 2025 Survey Area



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Survey Efforts
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	16-10-2025
VERSION	1

Figure 19a

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468000
471000
8172000
8169000
CARPENTARIA
Request Area 2A
Newcastle South
Request Area 2B

AECOM
www.aecom.com

0 350 700 m
1:18,000
(when printed at A3)

LEGEND

Study Area

Investigation Areas

Newcastle South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

Well Pad - Initial Assessment Only

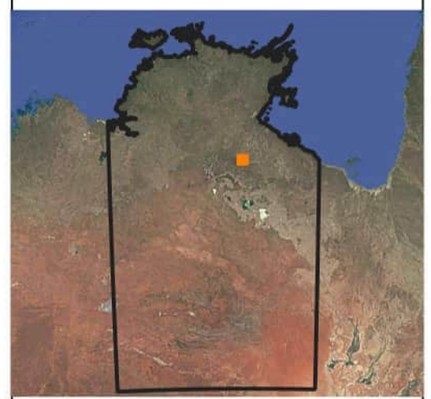
Transport

Roads

Survey Effort

Observation

Survey Tracks



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Survey Efforts
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 19b

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AECOM

www.aecom.com

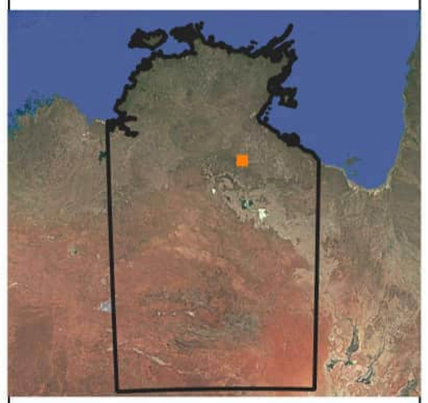
0 250 500 m

1:11,000
(when printed at A3)

LEGEND

Investigation Areas

October Creek North



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Survey Efforts
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 19c

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.

459000
462000
8181000
8178000
Request Area 1
Jibera South
CARPENTARIA

AECOM
www.aecom.com

0 400 800 m
1:20,000
(when printed at A3)

LEGEND

Study Area

Investigation Areas

Jibera South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

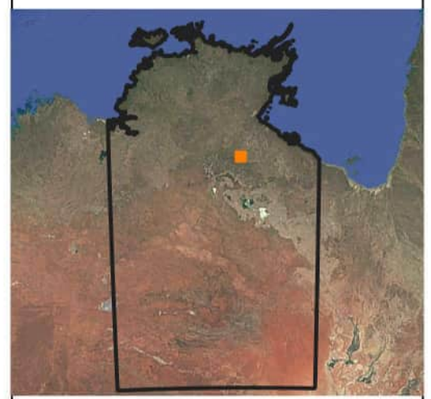
Transport

Roads

Revised Archaeological Potential

Moderate

Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Revised Archaeological Potential
Jibera South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 20a

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.

468000
471000
8172000
8169000
CARPENTARIA
Request Area 2A
Newcastle South
Request Area 2B

AECOM
www.aecom.com

0 350 700 m
1:18,000
(when printed at A3)

LEGEND

Study Area

Investigation Areas

Newcastle South

Project Works

Construction Disturbance Zone

Disturbance Footprint

Request Areas

Well Pad

Well Pad - Initial Assessment Only

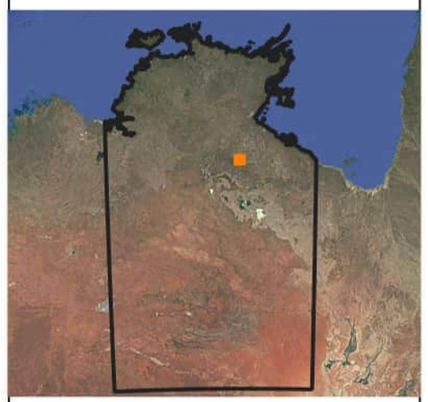
Transport

Roads

Revised Archaeological Potential

Moderate

Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

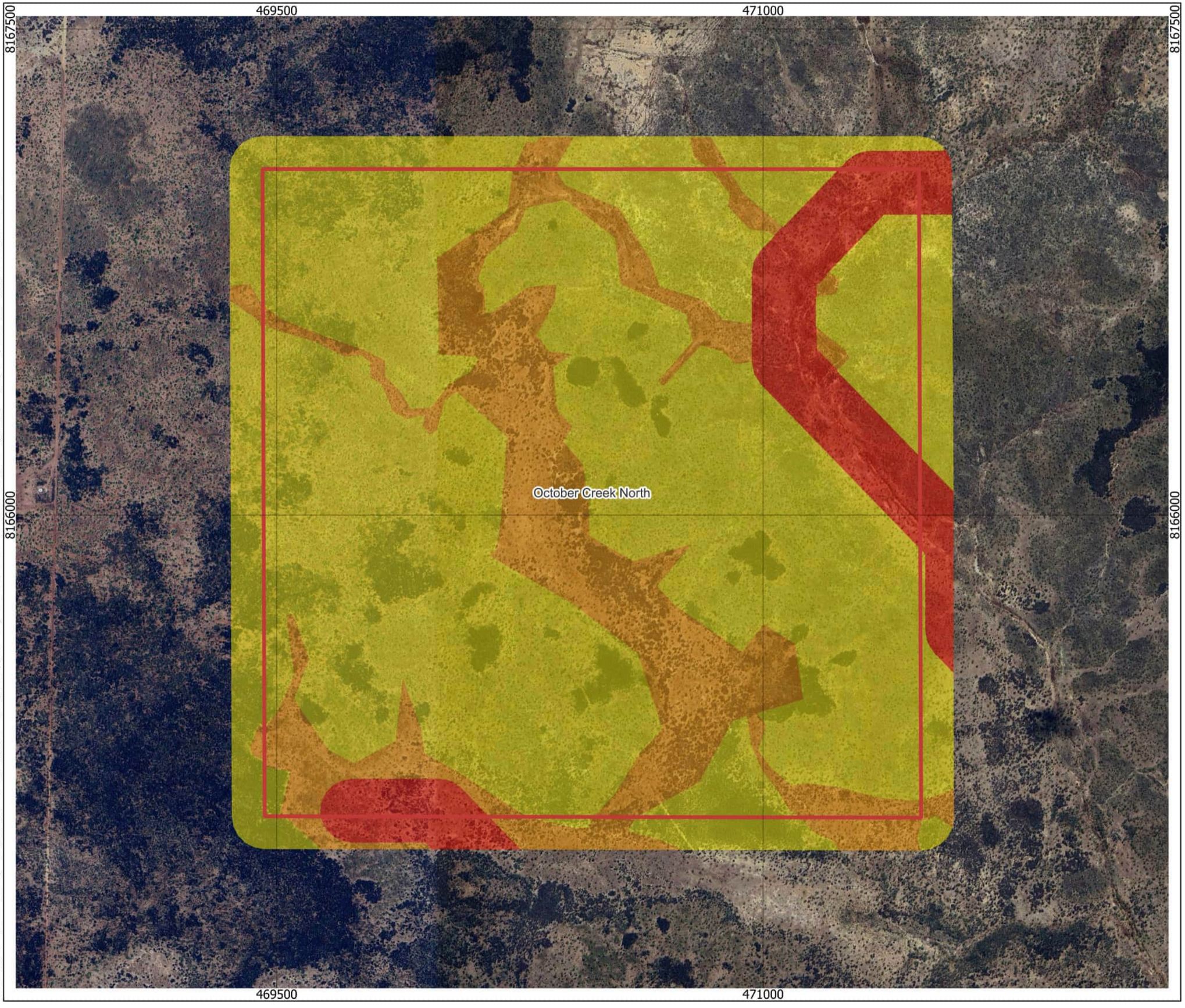
CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Revised Archaeological Potential
Newcastle South

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 20b

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.

AECOM
www.aecom.com

0 250 500 m

1:11,000
(when printed at A3)

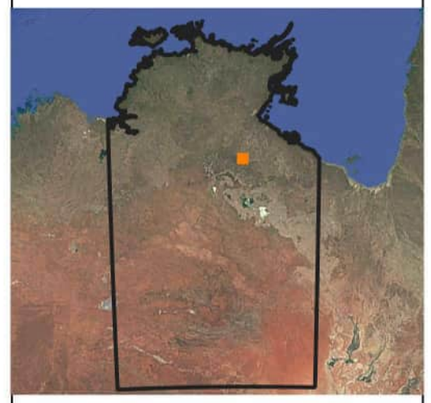
LEGEND

Investigation Areas

- October Creek North

Revised Archaeological Potential

- High
- Moderate
- Low



Data Sources:
AECOM
Google Satellite
Northern Territory Government
Santos

CRS:
GDA94 Zone 53

Santos
EP161 McArthur Appraisals Heritage Scouting
Revised Archaeological Potential
October Creek North

PROJECT ID	60742376
CREATED BY	KC
LAST MODIFIED	09-10-2025
VERSION	1

Figure 20c

Appendix C

Heritage Register Searches

Search Results

No results found.

Enter at least one search criterion.

Search Hints

Search Reset form

Place name

Street name

Town or suburb: Birdum

State: Northern Territory

Country

Advanced search options

List: All Lists

Different lists will provide different status and class options

Local Government Area

Place ID number

Legal status: --All--

Class: --All--

Keyword Search

☑ Description ☑ Statement of Significance ☑ Place history

Latitude/Longitude

N

Latitude 1

Longitude 1 W E S Longitude 2 E

Latitude 2 S

S

○ Wholly within region

◉ Wholly or partially within region

Longitude coordinates should be entered as ddd.mm.ss
Latitude coordinates should be entered as dd.mm.ss

Map Ref No

1:100,000 eg 2357
1:250,000 eg SF-50-01

Search Hints

- Not all fields need to be filled in. The fewer you fill in the more results you will get.
- If you cannot find a place, check spelling and try alternative names. Reduce the number of words that you include and use fewer fields.

- The Local Government field used on its own will provide a comprehensive list of places in an area.

Report Produced: Tue Dec 10 17:50:42 2024

Accessibility | Disclaimer | Privacy | © Commonwealth of Australia (cc) BY

Search Results

No results found.

Enter at least one search criterion.

Search Hints

Search Reset form

Place name

Street name

Town or suburb

State --All--

Country

Advanced search options

List

All Lists

Different lists will provide different status and class options

Local Government Area

Roper Gulf Region

Place ID number

Legal status --All--

Class --All--

Keyword Search

☑ Description ☑ Statement of Significance ☑ Place history

Latitude/Longitude

N

Latitude 1

Longitude 1 S Longitude 2

W E Latitude 2 E **E**

S

○ Wholly within region

◉ Wholly or partially within region

Longitude coordinates should be entered as ddd.mm.ss
Latitude coordinates should be entered as dd.mm.ss

Map Ref No

1:100,000 eg 2357
1:250,000 eg SF-50-01

Search Hints

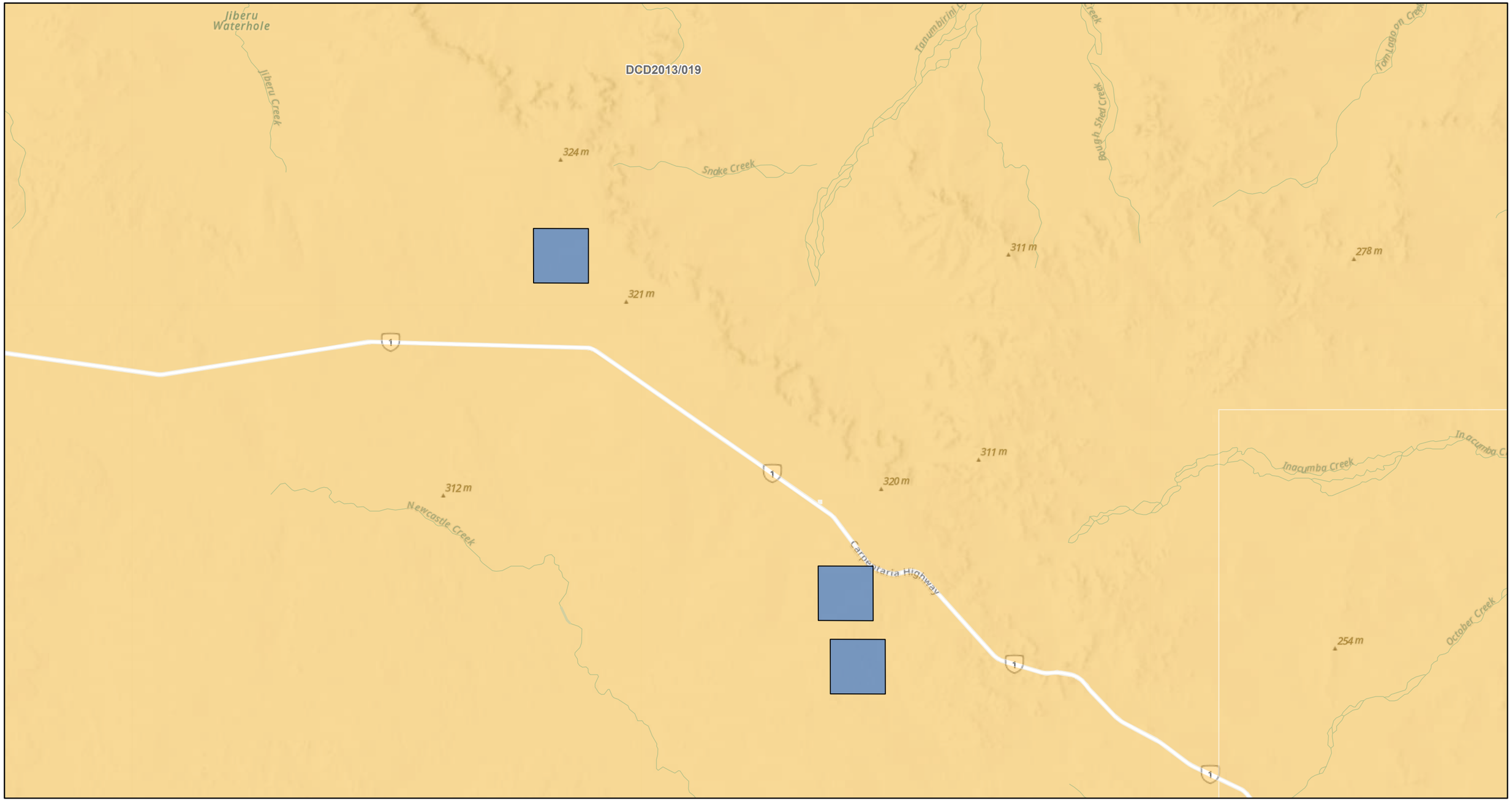
- Not all fields need to be filled in. The fewer you fill in the more results you will get.
- If you cannot find a place, check spelling and try alternative names. Reduce the number of words that you include and use fewer fields.

- The Local Government field used on its own will provide a comprehensive list of places in an area.

Report Produced: Tue Dec 10 17:50:23 2024

Accessibility | Disclaimer | Privacy | © Commonwealth of Australia (cc) BY

Native TitleVision Web Map



12/10/2024, 4:48:20 PM

Investigation Areas

Determinations

In effect - Finalised

1:144,448

0 1.75 3.5 7 mi

0 2.75 5.5 11 km

Northern Territory Government, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, Esri, Geoscience Australia, NASA, NGA, USGS

Native TitleVision

Esri, Geoscience Australia, NASA, NGA, USGS | Northern Territory Government, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS | © Northern Territory Government | National Native Title Tribunal, © Commonwealth of Australia |

National Native Title Tribunal

National Native Title Register Details

Back to search results

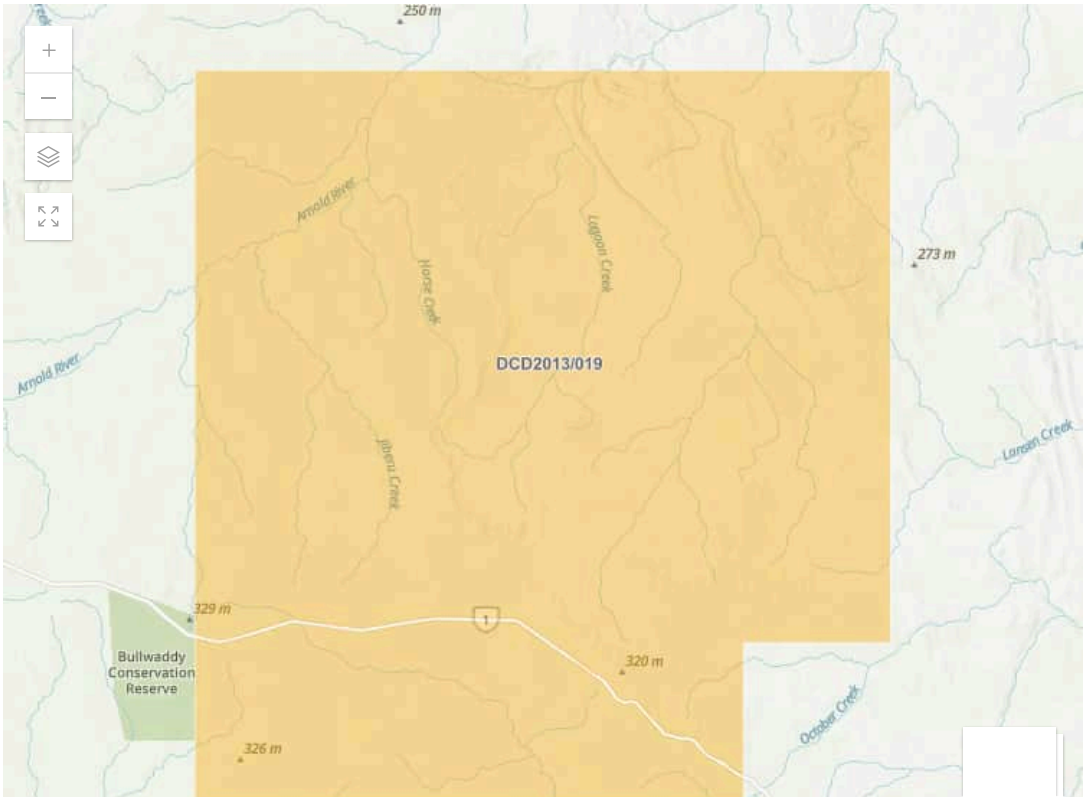
DCD2013/019 - Tanumbirini Pastoral Lease

Tribunal file no.	DCD2013/019
Federal Court file no(s)	NTD33/2012
Short name	Tanumbirini Pastoral Lease
Case name	Fulton v Northern Territory of Australia
Determination type	Claimant
State or Territory	Northern Territory
Legal process	Consent
Determination outcome	Native title exists in parts of the determination area
Representative A/TSI body area(s)	Northern Northern Territory
Local government area(s)	Barkly Region,Roper Gulf Region
Determination date	31/10/2013
Date/s of effect	31/10/2013
Registered on National Native Title Register	Registered
Registered Native Title Body Corporate	Top End (Default PBC/CLA) Aboriginal Corporation RNTBC *Note: current contact details for the Registered Native Title Body Corporate are available from the Office of the Registrar of Indigenous Corporations www.oric.gov.au*

Register extract and attachments

Register extract	**NNTRExtract_DCD2013_019.pdf**
Register extract attachment/s	**DCD2013_019 - Schedule B - Map of the Determination Area.pdf** **DCD2013_019 - Sch E - Map of interests granted under Minerals Act (NT), Petroleum Act (NT) and Energy Pipelines Act (NT).pdf**

Native Title Determination



View this map in NTV: **DCD2013/019**

Heritage Council
Northern Territory

Back to search

Filtered by: Roper Gulf Region

Search Results

Download

Displaying row(s) 1 - 1 of 1 places

[redacted]

Displaying row(s) 1 - 1 of 1 places

If you have any questions or want more information about sites with restricted or limited access call Heritage NT (08) 8999 5039 or email Heritage.Branch@nt.gov.au

Heritage Council
Northern Territory

Back to search

Filtered by: Carpentaria Roper Gulf Region

Search Results

No results found

If you have any questions or want more information about sites with restricted or limited access call Heritage NT (08) 8999 5039 or email Heritage.Branch@nt.gov.au

Outlook

RE: Request regarding information about Aboriginal and Macassan archaeological places - EP 161 Tanumbirini Beetaloo Basin

From [redacted]
on behalf of
Heritage Branch <Heritage.Branch@nt.gov.au>
Date Thu 10/16/2025 3:42 PM
To [redacted]

This Message Is From an External Sender
This message came from outside your organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Report Suspicious

Good afternoon, [redacted]

Thank you for your email. Please find the following response to your enquiry.

This advice is provided following a request for information from the Heritage Branch.

This advice is for proponents carrying out legal due diligence inquiries or requests for information. It **cannot** be used for advice relating to work as defined in the *Heritage Act 2011*.

The Heritage Branch administers the *Heritage Act 2011* which protects all Aboriginal and Macassan archaeological sites and declared and provisionally declared heritage places. For requests related to sacred sites, contact the Aboriginal Areas Protection Authority https://www.aapant.org.au.

Request details

Name of proponent (company or department)	AECOM
Contact person (name and title)	Dr [redacted] – Principal Heritage Specialist
Email address	[redacted]
Date enquiry received	02 October 2025
Location	Exploration License EP161
Brief description of request	Due diligence
Date of Heritage Branch response	16 October 2025
Our reference	42-F25-858

The context of Heritage Branch advice
The Northern Territory Government's Heritage Branch administers the *Heritage Act 2011* and provides authoritative advice about the presence of nominated, provisionally declared or declared heritage places or objects in a subject area.

The Heritage Branch also provides advice about the presence of Aboriginal or Macassan archaeological sites in the subject area or the likelihood of the presence of Aboriginal Macassan archaeological sites in the subject area.

Relevant parts of the Northern Territory's *Heritage Act* 2011

Under the Northern Territory's *Heritage Act 2011* (the Act):

1. All provisionally declared and declared heritage places and objects are protected under the Act.
2. All Aboriginal or Macassan archaeological places and objects are automatically protected - this includes places and objects not previously recorded.

Conditions of advice

1. This advice is based on the description provided to the Heritage Branch. **This advice is not to be used for mitigation of impact of any proposed works or activities.**
2. In preparing this advice, the Heritage Branch has referred to the Northern Territory Heritage Register and the Heritage Branch archaeological database which includes known information about Aboriginal and Macassan archaeological places and objects in the Northern Territory. The fact that there are no known Aboriginal or Macassan archaeological places recorded may be because no archaeological surveys have been conducted in that particular area and is not necessarily an indication they do not exist.

Actions

The following actions have been taken in relation to your enquiry.

- A search of the Northern Territory Heritage Register
- A search for known Aboriginal or Macassan archaeological places located within the subject site on the Heritage Branch archaeological database.
- A search for known Aboriginal or Macassan archaeological places located within the proximity of the subject site on the Heritage Branch archaeological database.
- A preliminary assessment of the likelihood of unrecorded Aboriginal or Macassan archaeological places existing within the subject site **pending any work proposal or activities**

Advice for Declared or provisionally declared heritage places and objects

The search has found that there are no nominated, provisionally declared or declared heritage places or objects within the subject area.

Advice for Aboriginal or Macassan archaeological places and objects

The search has found that there are no known Aboriginal or Macassan archaeological places within the subject site. In a preliminary assessment the likelihood of unrecorded Aboriginal or Macassan archaeological places existing is considered possible. Future works or activities may be required to identify and mitigate impact on potential Aboriginal or Macassan archaeological sites.

Further comments

Further information can also be found on our website:
https://nt.gov.au/property/building/heritage-properties/heritage-properties-building-works-and-development
Aboriginal heritage information | NT.GOV.AU

Cheers kindly,

[redacted]
[redacted]
Heritage Branch
Department of Lands, Planning and Environment
Northern Territory Government

Ground Floor, Arnhemica House, 16 Parap Road, Parap
PO Box 3675, Darwin NT 0801

[redacted]
[redacted]

Use or transmittal of the information in this email other than for authorised NT Government business purposes may constitute misconduct under the NT Public Sector Code of Conduct and could potentially be an offence under the NT Criminal Code. The information in this e-mail is intended solely for the addressee named. It may contain legally privileged or confidential information that is subject to copyright. If you

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Please consider the environment before printing this email

From: [redacted]
Sent: Thursday, 2 October 2025 16:49
To: Heritage Branch <Heritage.Branch@nt.gov.au>
Cc: [redacted]
Subject: RE: Request regarding information about Aboriginal and Macassan archaeological places - EP 161 Tanumbirini Beetaloo Basin

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi [redacted]

Santos has added to the project footprint for the EP 161 Tanumbirini Beetaloo Basin project works. Please find attached the GIS data for the additional area (a proposed access track). The Shapefile includes a 250m buffer around the proposed access track corridor to ensure sufficient coverage. Could I please request a search of this area?

Appreciate your assistance.

Kind regards,
[redacted]

[redacted]
He/Him

Principal Heritage Specialist, Environment, QNT
[redacted]

Click here to connect with me on LinkedIn

AECOM
Level 8
540 Wickham St
Fortitude Valley QLD 4006, Australia
T 1800 868 654
aecom.com
Delivering a better world
LinkedIn | Twitter | Facebook | Instagram

[redacted]

Tanumbirini Beetaloo Basin

[redacted]

From: [redacted] on behalf of Heritage Branch <Heritage.Branch@nt.gov.au>
Sent: Friday, 20 June 2025 3:55 PM
To: [redacted]
Cc: [redacted]
Subject: RE: Request regarding information about Aboriginal and Macassan archaeological places - EP 161 Tanumbirini Beetaloo Basin
Attachments: CHAS01.kml

This Message Is From an External Sender

This message came from outside your organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Report Suspicious

Hi [redacted]

Apologies for the delay. Please find attached the spatial data for the 'CHAS01' archaeological site. The site description from Jung (2025:28) is as follows:

[redacted]

Unfortunately, I can't surrender the rest of the report at this stage. The Heritage Branch currently accepts the site boundary as being a 20m radius from the central point of the above shapefile. Please let us know if we can provide any further information.

Cheers kindly,

[redacted]
Heritage Branch
Department of Lands, Planning and Environment
Northern Territory Government

Ground Floor, Arnhemica House, 16 Parap Road, Parap
PO Box 3675, Darwin NT 0801

[redacted]

NORTHERN TERRITORY GOVERNMENT

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From: [redacted]
Sent: Thursday, 5 June 2025 13:51
To: [redacted]
Subject: RE: Request regarding information about Aboriginal and Macassan archaeological places - EP 161 Tanumbirini Beetaloo Basin

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Hi [redacted]

Thank you for the advice below.

Are you able to provide geospatial data and report extracts for the artefact scatter you refer to – i.e. [redacted]

We would like to ensure that this site is mapped and included in our report.

Kind regards,
[redacted]

[redacted], BA (Hons), BSc
He/Him

Principal Heritage Specialist, Environment, QNT
[redacted]

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AECOM
Level 8
540 Wickham St
Fortitude Valley QLD 4006, Australia
T 1800 868 654
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[redacted]

From: [redacted] On Behalf Of Heritage Branch
Sent: Thursday, 29 May 2025 5:14 PM
To: [redacted]
Subject: RE: Request regarding information about Aboriginal and Macassan archaeological places - EP 161 Tanumbirini Beetaloo Basin

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Report Suspicious

Good afternoon, [redacted]

Thanks for your email. Please find the following advice for your project. There are some additional notes at the end.

Regarding my colleague's CHMP recommendation, the Heritage Branch regards these as the most effective management document for large and complex projects, or for any projects which have previously undertaken multiple archaeological surveys. It is at the proponent's discretion whether a single live document works best for them, or whether each project area requires a separate CHMP. Irrespective of the approach, we generally see better heritage management outcomes from a project CHMP than we do from an archaeological survey in Appendix G of an EMP.

This initial advice is provided following a request for information from the Heritage Branch.

The Heritage Branch administers the *Heritage Act 2011* which protects all Aboriginal and Macassan archaeological sites and all declared and provisionally declared heritage places. For requests related to sacred sites, contact the Aboriginal Areas Protection Authority https://www.aapant.org.au.

Work details

Name of proponent (company or department)	AECOM
Contact person (name and title)	[redacted] – Heritage Specialist
Date enquiry received	22 May 2025
Location of work	EP161
Brief description of work as provided	Desktop assessment
Date of Heritage Branch response	29 May 2025
Our reference	42-F25-98

The context of Heritage Branch advice

The Northern Territory Government's Heritage Branch administers the *Heritage Act 2011* and provides authoritative advice about obligations under the *Heritage Act 2011,* including steps to take to manage the impact of proposed work on Aboriginal and Macassan archaeological places and objects
It is important that advice given by the Heritage Branch is followed. A failure to follow advice received from the Heritage Branch may be considered as evidence in an investigation if damage occurs to an Aboriginal or Macassan archaeological place or object.

Relevant parts of the Northern Territory's *Heritage Act* 2011

Under the Northern Territory's *Heritage Act 2011* (the Act):

1. All provisionally declared and declared heritage places and objects are protected under the Act;
2. All Aboriginal or Macassan archaeological places and objects are automatically protected - this includes places and objects not previously recorded;
3. Places and objects include an artefact or thing given shape by a person - examples include stone tools, stone arrangements, fish traps, rock art, modified trees, and shell middens;
4. Ancestral remains are also protected;
5. Underwater Cultural Heritage is protected, up to three nautical miles from the coast;
6. There is an obligation to notify of the discovery of Aboriginal or Macassan archaeological places or objects;
7. Work carried out to a heritage place or object must follow the Heritage Act 2011.

Conditions of advice

1. This advice is based on the description of the work provided to the Heritage Branch. If the work expands or changes significantly seek further advice.
2. In preparing this advice, the Heritage Branch has referred to an archaeological database which includes information about Aboriginal and Macassan archaeological places and objects in the Northern Territory. However, the database only includes information about known archaeological places. The fact that there are no known archaeological places recorded may be because no

archaeological surveys have been conducted in that particular area, and is not necessarily an indication they do not exist.

Actions
The following actions have been taken in relation to the enquiry.

- A search of the Northern Territory Heritage Register;
- A search for known archaeological places located within the subject site on the Heritage Branch archaeological database;
- A search for known archaeological places located within the proximity of the subject site on the Heritage Branch archaeological database;
- The extent of pre-existing ground disturbance;
- The scale and nature of the work proposed (major, moderate or minor);
- Areas identified as being excluded from the work footprint e.g. riparian buffers; and
- An assessment of the likelihood of unrecorded archaeological places existing within the subject site, based on landscape features, known archaeological places in the vicinity, and other predictive tools.

Advice for Aboriginal or Macassan archaeological places and objects
The search has found that there are no known Aboriginal or Macassan archaeological places and objects 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.

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 and objects.

1. The Heritage Branch can provide a list of qualified archaeologists on request.
2. The Heritage Branch can provide advice in regard to the scope of the survey and plan on request.
3. The Heritage Branch must receive a copy of the final report for our records.

Advice for declared or Provisionally Declared heritage places and objects
The search has found that there are no nominated, provisionally declared or declared heritage places or objects within the subject area.

Further comments
Further information can also be found on our website:
https://nt.gov.au/property/building/heritage-properties/heritage-properties-building-works-and-development
Aboriginal heritage information | NT.GOV.AU

Additional information
While no known sites exist within the 'Jibera South' and 'Newcastle South' expanded footprints, previous archaeological sites have been identified across EP161 by Santos and its contractors. The proponent will be able to provide AECOM with a copy of these directly. The Heritage Branch has record of one additional artefact scatter [redacted] but external to the works footprint. Could you please advise if AECOM are to be engaged for additional archaeological surveys and/or development of a management plan, and we will provide the necessary spatial data and report extracts for this site.

Best regards,

[redacted]
[redacted]
Heritage Branch
Department of Lands, Planning and Environment
Northern Territory Government

Ground Floor, Arnhemica House, 16 Parap Road, Parap
PO Box 3675, Darwin NT 0801

P: [redacted]

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From: [redacted]
Sent: Thursday, 22 May 2025 11:49
To: Heritage Branch <Heritage.Branch@nt.gov.au>
Cc: [redacted]
Subject: RE: Request regarding information about Aboriginal and Macassan archaeological places - EP 161 Tanumbirini Beetaloo Basin

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Hi [redacted]

Santos has refined their project footprint for these works. Please find attached updated GIS data. There is a file for the Infrastructure Footprint, and another for the construction Disturbance Zone. Could I please request a search of the updated areas.

Please note, works are no longer proposed in the ‘October Creek North’ area, and the refined footprints extend outside the previous search areas labelled as ‘Jibera South’ and ‘Newcastle South’, primarily along existing access tracks.

I would also like to clarify the recommendation for a cultural heritage management plan. Is this recommendation made for works in the October Creek North area and the previously recorded site, or is it intended for the project as a whole?

Appreciate your assistance.

Kind Regards,

[redacted] BA (Hons) Archaeology
She/Her

Heritage Specialist, Environment, ANZ NWA
[redacted]

AECOM
Level 8, 540 Wickham Street
Meanjin / Fortitude Valley, QLD 4006

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Report Suspicious

From: [redacted] on behalf of Heritage Branch
Sent on: Wednesday, 18 December 2024 5:12:51 PM
To: [redacted]
CC: [redacted]
Subject: RE: Request regarding information about Aboriginal and Macassan archaeological places - EP 161 Tanumbirini Beetaloo Basin

Hi [redacted]

This initial advice is provided following a request for information from the Heritage Branch. Please note the Heritage Branch has an interest in ensuring field methodologies address the requirements of a fit for purpose archaeological survey and report. A fit for purpose archaeological survey and report will ensure certainty for proponents. Please consider the following response in detail and note there are specific replies under the 'Advice for Aboriginal or Macassan archaeological places and objects' heading.
The Heritage Branch administers the *Heritage Act 2011* which protects all Aboriginal and Macassan archaeological sites and all declared and provisionally declared heritage places.
For requests related to sacred sites, contact the Aboriginal Areas Protection Authority https://www.aapant.org.au.

Work details

Name of proponent (company or department)	AECOM
Contact person (name and title)	[redacted], Heritage Specialist
Date enquiry received	10 December 2024
Location of work	EP 161 (3 proposed well pad locations)
Brief description of work as provided	Desktop assessment and field survey of the investigation areas
Date of Heritage Branch response	18 December 2024
Our reference	HCD2024/00123

The context of Heritage Branch advice

The Northern Territory Government's Heritage Branch administers the *Heritage Act 2011* and provides authoritative advice about obligations under the *Heritage Act 2011,* including steps to take to manage the impact of proposed work on Aboriginal and Macassan archaeological places and objects
It is important that advice given by the Heritage Branch is followed. A failure to follow advice received from the Heritage Branch may be considered as evidence in an investigation if damage occurs to an Aboriginal or Macassan archaeological place or object.

Relevant parts of the Northern Territory's *Heritage Act* 2011

Under the Northern Territory's *Heritage Act 2011* (the Act):

1. All provisionally declared and declared heritage places and objects are protected under the Act;
2. All Aboriginal or Macassan archaeological places and objects are automatically protected - this includes places and objects not previously recorded;
3. Places and objects include an artefact or thing given shape by a person - examples include stone tools, stone arrangements, fish traps, rock art, modified trees, and shell middens;
4. Ancestral remains are also protected;
5. Underwater Cultural Heritage is protected, up to three nautical miles from the coast;
6. There is an obligation to notify of the discovery of Aboriginal or Macassan archaeological places or objects;
7. Work carried out to a heritage place or object must follow the Heritage Act 2011.

Conditions of advice

1. This advice is based on the description of the work provided to the Heritage Branch. If the work expands or changes significantly seek further advice.
2. In preparing this advice, the Heritage Branch has referred to an archaeological database which includes information about Aboriginal and Macassan archaeological places and objects in the Northern Territory. However, the database only includes information about known archaeological places. The fact that there are no known archaeological places recorded may be because no archaeological surveys have been conducted in that particular area, and is not necessarily an indication they do not exist.

Actions

The following actions have been taken in relation to the enquiry.

- A search of the Northern Territory Heritage Register;
- A search for known archaeological places located within the subject site on the Heritage Branch archaeological database;
- A search for known archaeological places located within the proximity of the subject site on the Heritage Branch archaeological database;
- The extent of pre-existing ground disturbance;
- The scale and nature of the work proposed (major, moderate or minor);
- Areas identified as being excluded from the work footprint e.g. riparian buffers; and
- An assessment of the likelihood of unrecorded archaeological places existing within the subject site, based on landscape features, known archaeological places in the vicinity, and other predictive tools.

Advice for Aboriginal or Macassan archaeological places and objects

The search has found that there are Aboriginal or Macassan archaeological places and objects within the subject site. The likelihood of further 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.

There is a known Aboriginal archaeological place (surface scatter and flaked stone tools) within your proposed works area '[redacted] If impact cannot be mitigated to this site, an Application to Carry Out Work will be required. This application will be reviewed by the Northern Territory Heritage Council.

There are additional known Aboriginal archaeological places within EP161. Please note that if the well drill pad locations are relocated an additional search of our register will be required.

The Heritage Branch recommends that an archaeological survey and cultural heritage mitigation plan are required to identify and mitigate the impact to Aboriginal or Macassan archaeological places and objects.

1. The Heritage Branch looks forward to providing advice in regard to the scope and methodology of the future survey. As stated in your email (10 December 2024) the methodology will be guided by the result of your desktop assessment. Please provide a copy of the desktop assessment to the Heritage Branch so that we may provide relevant feedback which may inform your field methodology and scope.
2. The Heritage Branch can provide advice regarding suitable consultation with stakeholders. This consultation is an essential component of any potential Application to Carry Out Work.
3. The Heritage Branch must receive a copy of the final report and spatial data of discovered Aboriginal archaeological places and objects for our records (*Heritage Act* 2011, section 114).

Advice for declared or Provisionally Declared heritage places and objects

The search has found that there are no nominated, provisionally declared or declared heritage places or objects within the subject area.

Further comments

Further information can also be found on our website:
https://nt.gov.au/property/building/heritage-properties/heritage-properties-building-works-and-development
Aboriginal heritage information | NT.GOV.AU

Thanks,

Heritage Officer
Heritage Branch
Department of Lands, Planning and Environment
Northern Territory Government

Ground Floor, Arnhemica House
16 Parap Road, Parap

PO Box 3675, Darwin, NT 0801

P: [redacted]

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From: [redacted]
Sent: Tuesday, December 10, 2024 12:00 PM
To: Heritage Branch <Heritage.Branch@nt.gov.au>
Cc: [redacted]
Subject: Request regarding information about Aboriginal and Macassan archaeological places - EP 161 Tanumbirini Beetaloo Basin

Hello,

AECOM has been engaged by Santos to complete a heritage assessment for the proposed development of two gas well pads near Daly Waters in the Beetaloo Basin. The Project is located in the Tanumbirini pastoral lease within EP161, as shown in the attached GIS data (ESRI shapefile) and map.

Please note the mapping shows three 410 ha investigation areas rather than the two 64 ha well pad locations. The final location of the well pads is flexible within the larger investigation areas, and will be determined by the recommendations of the upcoming environmental and heritage assessments.

AECOM will be completing a desktop assessment and archaeological survey of the investigation areas. Santos has notified Traditional Owners and the Northern Land Council of the intention to undertake an archaeological survey, and has invited their participation. The final survey methodology will be informed by the desktop assessment and consultation with the Traditional Owners, but is anticipated to include:

- Targeted survey of areas identified as having high potential for archaeological sites based on proximity to water sources, previous disturbance levels, and presence of suitable geology for stone tool manufacture
- Stratified sample pedestrian transects to characterise the environment and ground truth the predictive model.

To assist us in the assessment process, AECOM requests:

- A search of the NT Heritage Register for Aboriginal and Macassan archaeological places within the investigation areas
- Advice on any other areas of particular concern to Heritage Branch
- Feedback on the preliminary survey methodology.

If you require additional information, please let me know.

Thanks, much appreciated.

Kind Regards,

[redacted], BA (Hons) Archaeology
She/Her

Heritage Specialist, Environment, ANZ NWA
[redacted]
[redacted]

AECOM

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Meanjin / Fortitude Valley, QLD 4006

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I acknowledge and respect the traditional custodians of the lands and waters that I live and work on.

Appendix D

Previously Recorded Archaeological Sites

Appendix E

Survey Results – GSI and GSV

Appendix E Study Area GSI and GSV

Table 1 Survey results for the Study Area

Investigation Area	Predictive Model Archaeological Potential	Mapped Vegetation Group	Observation Centroid (GDA94 Zone 53)		GSV%	GSI	Cultural Heritage Sites	Observed Archaeological Potential
			Easting	Northing				
Jibera South	Moderate	Track	459060	8181380	75-100	Low	No cultural heritage sites identified	Low
Jibera South	Low	*Eucalyptus chlorophylla* low open woodland	458753	8181808	0-25	Low	No cultural heritage sites identified	Low
Jibera South	Low	Track	458563	8181621	75-100	Low	No cultural heritage sites identified	Low
Jibera South	Low	*Eucalyptus chlorophylla* low open woodland	458732	8181610	75-100	Moderate	No cultural heritage sites identified	Low
Jibera South	Low	Bullwaddy shrubland and woodland	458574	8181368	50-75	Low	No cultural heritage sites identified	Low
Jibera South	Low	Lancewood forest	458587	8181102	25-50	Low-Moderate	No cultural heritage sites identified	Low
Jibera South	Low	*Eucalyptus chlorophylla* low open woodland	458965	8181721	0-25	Low	No cultural heritage sites identified	Low
Jibera South	Low	*Eucalyptus chlorophylla* low open woodland	459232	8181743	25-50	Low-Moderate	No cultural heritage sites identified	Low

Investigation Area	Predictive Model Archaeological Potential	Mapped Vegetation Group	Observation Centroid (GDA94 Zone 53)		GSV%	GSI	Cultural Heritage Sites	Observed Archaeological Potential
			Easting	Northing				
Jibera South	Low	Lancewood forest	458956	8181376	0-25	High	No cultural heritage sites identified	Low
Jibera South	Low	Lancewood forest	458831	8181287	0-25	Moderate	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	458953	8181112	75-100	Moderate	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	459095	8181377	75-100	Low-Moderate	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	459169	8181383	0-25	Low	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	459220	8181247	25-50	Low	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	458771	8180741	0-25	Low	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	458574	8180648	75-100	Low	No cultural heritage sites identified	Low
Jibera South	Low	Lancewood forest	458785	8180570	25-50	Moderate	No cultural heritage sites identified	Low
Jibera South	Low	Coolabah low open woodland on clay	459485	8181395	0-25	Low	No cultural heritage sites identified	Low

Investigation Area	Predictive Model Archaeological Potential	Mapped Vegetation Group	Observation Centroid (GDA94 Zone 53)		GSV%	GSI	Cultural Heritage Sites	Observed Archaeological Potential
			Easting	Northing				
Jibera South	Low	Coolabah low open woodland on clay	459869	8181259	75-100	Low	No cultural heritage sites identified	Low
Jibera South	Low	*Eucalyptus chlorophylla* low open woodland	460013	8181140	75-100	Moderate	No cultural heritage sites identified	Low
Jibera South	Low	*Melaleuca* low open woodland on floodplains and drainage depressions	460193	8180966	75-100	Moderate	No cultural heritage sites identified	Low
Jibera South	Low	*Melaleuca* low open woodland on floodplains and drainage depressions	460295	8181063	50-75	Moderate-Low	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	460359	8180980	75-100	Low	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	460530	8180908	25-50	Moderate	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	460525	8182697	0-25	Moderate	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	460567	8182499	25-50	Moderate	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* woodland on sandstone	460706	8182511	75-100	Low	No cultural heritage sites identified	Low
Jibera South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	460679	8182424	75-100	High	No cultural heritage sites identified	Low

Investigation Area	Predictive Model Archaeological Potential	Mapped Vegetation Group	Observation Centroid (GDA94 Zone 53)		GSV%	GSI	Cultural Heritage Sites	Observed Archaeological Potential
			Easting	Northing				
Jibera South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	460657	8182274	75-100	High	No cultural heritage sites identified	Low
Newcastle South	Low	Track	468887	8170510	75-100	Low	No cultural heritage sites identified	Low
Newcastle South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	468963	8169432	0-25	Moderate	No cultural heritage sites identified	Low
Newcastle South	Moderate	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	469168	8169656	50-75	Moderate	No cultural heritage sites identified	Low
Newcastle South	Low	Snappy gum low open woodland	469256	8169669	0-25	High	No cultural heritage sites identified	Low
Newcastle South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	469188	8169353	0-25	Moderate	No cultural heritage sites identified	Low
Newcastle South	Moderate	*Melaleuca* low open woodland on floodplains and drainage depressions	469334	8169281	50-75	Moderate	No cultural heritage sites identified	Low
Newcastle South	Low	Lancewood forest	469191	8169138	0-25	High	No cultural heritage sites identified	Low
Newcastle South	Low	Lancewood forest	469151	8169057	50-75	High	No cultural heritage sites identified	Low
Newcastle South	Low	Lancewood forest	469072	8168938	25-50	High	No cultural heritage sites identified	Low

Investigation Area	Predictive Model Archaeological Potential	Mapped Vegetation Group	Observation Centroid (GDA94 Zone 53)		GSV%	GSI	Cultural Heritage Sites	Observed Archaeological Potential
			Easting	Northing				
Newcastle South	Low	Lancewood forest	469498	8169702	25-50	High	No cultural heritage sites identified	Low
Newcastle South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	469662	8169703	50-75	Low	No cultural heritage sites identified	Low
Newcastle South	Low	Corymbia/Eucalyptus open woodland on sandy loam	469508	8169575	0-25	High	No cultural heritage sites identified	Low
Newcastle South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	469705	8169403	25-50	High	No cultural heritage sites identified	Low
Newcastle South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	469731	8169319	75-100	Low-Moderate	No cultural heritage sites identified	Low
Newcastle South	Moderate	*Melaleuca* low open woodland on floodplains and drainage depressions	469504	8169216	0-25	Low	No cultural heritage sites identified	Low
Newcastle South	Moderate	*Melaleuca* low open woodland on floodplains and drainage depressions	469654	8169110	75-100	Low	No cultural heritage sites identified	Low
Newcastle South	Moderate	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	469661	8168951	25-50	Moderate	No cultural heritage sites identified	Low
Newcastle South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	469820	8168973	75-100	High	No cultural heritage sites identified	Low
Newcastle South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	469850	8169633	25-50	High	No cultural heritage sites identified	Low

Investigation Area	Predictive Model Archaeological Potential	Mapped Vegetation Group	Observation Centroid (GDA94 Zone 53)		GSV%	GSI	Cultural Heritage Sites	Observed Archaeological Potential
			Easting	Northing				
Newcastle South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	470012	8169737	25-50	High	No cultural heritage sites identified	Low
Newcastle South	Low	*Corymbia*/*Eucalyptus* woodland (run-on areas and heavier soils)	470175	8169543	75-100	Low	No cultural heritage sites identified	Low
Newcastle South	Low	Lancewood forest	470712	8168550	0-25	High	No cultural heritage sites identified	Low
Newcastle South	Low	*Corymbia*/*Eucalyptus* open woodland on sandy loam	470748	8168230	0-25	Moderate	No cultural heritage sites identified	Low
Newcastle South	Low	Bullwaddy shrubland and woodland	470803	8168014	25-50	High	No cultural heritage sites identified	Low
Newcastle South	Moderate	Tussock grassland	470876	8167687	75-100	Moderate	No cultural heritage sites identified	Low

Plate 1 **Jibera South (459060, 8181380, 53) general context looking north**

Plate 2 **Jibera South (459060, 8181380, 53) general context looking east**

Plate 3 **Jibera South (459060, 8181380, 53) general context looking south, showing water bore**

Plate 4 **Jibera South (459060, 8181380, 53) general context looking west**

Plate 5 **Jibera South (458753, 8181808, 53) general context looking north**

Plate 6 **Jibera South (458753, 8181808, 53) general context looking east**

Plate 7 Jibera South (458753, 8181808, 53) general context looking south

Plate 8 Jibera South (458753, 8181808, 53) general context looking west

Plate 9 Jibera South (458753, 8181808, 53) GSV

Plate 10 Cattle pad at Jibera South (458753, 8181808, 53)

Plate 11 Jibera South (458563, 8181621, 53) general context looking east

Plate 12 Jibera South (458563, 8181621, 53) general context looking west

Plate 13 Jibera South (458563, 8181621, 53) GSV

Plate 14 Jibera South (458732, 8181610, 53) general context looking north

Plate 15 Jibera South (458732, 8181610, 53) general context looking east

Plate 16 Jibera South (458732, 8181610, 53) general context looking south

Plate 17 Jibera South (458732, 8181610, 53) general context looking west

Plate 18 Jibera South (458732, 8181610, 53) GSV

Plate 19 Jibera South (458574, 8181368, 53) general context looking north

Plate 20 Jibera South (458574, 8181368, 53) general context looking east

Plate 21 Jibera South (458574, 8181368, 53) general context looking south

Plate 22 Jibera South (458574, 8181368, 53) general context looking west

Plate 23 Jibera South (458574, 8181368, 53) GSV

Plate 24 Jibera South (458587, 8181102, 53) general context looking north

Plate 25 **Jibera South (458587, 8181102, 53) general context looking east**

Plate 26 **Jibera South (458587, 8181102, 53) general context looking south**

Plate 27 **Jibera South (458587, 8181102, 53) general context looking west**

Plate 28 **Jibera South (458587, 8181102, 53) GSV**

Plate 29 **Jibera South (458965, 8181721, 53) general context looking north**

Plate 30 **Jibera South (458965, 8181721, 53) general context looking east**

Plate 31 **Jibera South (458965, 8181721, 53) general context looking south**

Plate 32 **Jibera South (458965, 8181721, 53) general context looking west**

Plate 33 **Jibera South (458965, 8181721, 53) GSV**

Plate 34 **Jibera South (459232, 8181743, 53) general context looking north**

Plate 35 **Jibera South (459232, 8181743, 53) general context looking east**

Plate 36 **Jibera South (459232, 8181743, 53) general context looking south**

Plate 37 Jibera South (459232, 8181743, 53) general context looking west

Plate 38 Jibera South (459232, 8181743, 53) GSV

Plate 39 Jibera South (458956, 8181376, 53) general context looking north

Plate 40 Jibera South (458956, 8181376, 53) general context looking east

Plate 41 Jibera South (458956, 8181376, 53) general context looking south

Plate 42 Jibera South (458956, 8181376, 53) general context looking west

Plate 43 Jibera South (458956, 8181376, 53) GSV

Plate 44 Jibera South (458831, 8181287, 53) general context looking north

Plate 45 Jibera South (458831, 8181287, 53) general context looking east

Plate 46 Jibera South (458831, 8181287, 53) general context looking south

Plate 47 Jibera South (458831, 8181287, 53) general context looking west

Plate 48 Jibera South (458831, 8181287, 53) GSV

Plate 49 Jibera South (458953, 8181112, 53) general context looking north

Plate 50 Jibera South (458953, 8181112, 53) general context looking east

Plate 51 Jibera South (458953, 8181112, 53) general context looking south

Plate 52 Jibera South (458953, 8181112, 53) general context looking west

Plate 53 Jibera South (458953, 8181112, 53) GSV

Plate 54 Jibera South (459095, 8181377, 53) general context looking north

Plate 55 Jibera South (459095, 8181377, 53) general context looking east

Plate 56 Jibera South (459095, 8181377, 53) general context looking south

Plate 57 Jibera South (459095, 8181377, 53) general context looking west

Plate 58 Jibera South (459095, 8181377, 53) GSV

Plate 59 Jibera South (459169, 8181383, 53) general context looking north

Plate 60 Jibera South (459169, 8181383, 53) general context looking east

Plate 61 Jibera South (459169, 8181383, 53) general context looking south

Plate 62 Jibera South (459169, 8181383, 53) general context looking west

Plate 63 Jibera South (459169, 8181383, 53) GSV

Plate 64 Jibera South (459220, 8181247, 53) general context looking north

Plate 65 Jibera South (459220, 8181247, 53) general context looking east

Plate 66 Jibera South (459220, 8181247, 53) general context looking south

Plate 67 Jibera South (459220, 8181247, 53) general context looking west

Plate 68 Jibera South (459220, 8181247, 53) GSV

Plate 69 Jibera South (458771, 8180741, 53) general context looking north

Plate 70 Jibera South (458771, 8180741, 53) general context looking east

Plate 71 Jibera South (458771, 8180741, 53) general context looking south

Plate 72 Jibera South (458771, 8180741, 53) general context looking west

Plate 73 Jibera South (458771, 8180741, 53) GSV

Plate 74 Jibera South (458574, 8180648, 53) general context looking north

Plate 75 Jibera South (458574, 8180648, 53) general context looking east

Plate 76 Jibera South (458574, 8180648, 53) general context looking south

Plate 77 Jibera South (458574, 8180648, 53) general context looking west

Plate 78 Jibera South (458574, 8180648, 53) GSV

Plate 79 Jibera South (458785, 8180570, 53) general context looking north

Plate 80 Jibera South (458785, 8180570, 53) general context looking east

Plate 81 Jibera South (458785, 8180570, 53) general context looking south

Plate 82 Jibera South (458785, 8180570, 53) general context looking west

Plate 83 Jibera South (458785, 8180570, 53) GSV

Plate 84 Jibera South (459485, 8181395, 53) general context looking north

Plate 85 Jibera South (459485, 8181395, 53) general context looking east

Plate 86 Jibera South (459485, 8181395, 53) general context looking south

Plate 87 Jibera South (459485, 8181395, 53) general context looking west

Plate 88 Jibera South (459485, 8181395, 53) GSV

Plate 89 Jibera South (459869, 8181259, 53) general context looking north

Plate 90 Jibera South (459869, 8181259, 53) general context looking east

Plate 91 Jibera South (459869, 8181259, 53) general context looking south

Plate 92 Jibera South (459869, 8181259, 53) general context looking west

Plate 93 Jibera South (459869, 8181259, 53) GSV

Plate 94 Jibera South (460013, 8181140, 53) general context looking north

Plate 95 Jibera South (460013, 8181140, 53) general context looking east

Plate 96 Jibera South (460013, 8181140, 53) general context looking south

Plate 97 Jibera South (460013, 8181140, 53) general context looking west

Plate 98 Jibera South (460013, 8181140, 53) GSV

Plate 99 Jibera South (460193, 8180966, 53) general context looking north

Plate 100 Jibera South (460193, 8180966, 53) general context looking east

Plate 101 Jibera South (460193, 8180966, 53) general context looking south

Plate 102 Jibera South (460193, 8180966, 53) general context looking west

Plate 103 Jibera South (460193, 8180966, 53) GSV

Plate 104 Jibera South (460295, 8181063, 53) general context looking north

Plate 105 Jibera South (460295, 8181063, 53) general context looking east

Plate 106 Jibera South (460295, 8181063, 53) general context looking south

Plate 107 Jibera South (460295, 8181063, 53) general context looking west

Plate 108 Jibera South (460295, 8181063, 53) GSV

Plate 109 Jibera South (460359, 8180980, 53) general context looking north

Plate 110 Jibera South (460359, 8180980, 53) general context looking east

Plate 111 Jibera South (460359, 8180980, 53) general context looking south

Plate 112 Jibera South (460359, 8180980, 53) general context looking west

Plate 113 Jibera South (460359, 8180980, 53) GSV

Plate 114 Jibera South (460530, 8180908, 53) general context looking north

Plate 115 Jibera South (460530, 8180908, 53) general context looking east

Plate 116 Jibera South (460530, 8180908, 53) general context looking south

Plate 117 Jibera South (460530, 8180908, 53) general context looking west

Plate 118 Jibera South (460530, 8180908, 53) GSV

Plate 119 Jibera South Borrow Pit (460525, 8182697, 53) general context looking north

Plate 120 Jibera South Borrow Pit (460525, 8182697, 53) general context looking east

Plate 121 Jibera South Borrow Pit (460525, 8182697, 53) general context looking south

Plate 122 Jibera South Borrow Pit (460525, 8182697, 53) general context looking west

Plate 123 Jibera South Borrow Pit (460525, 8182697, 53) GSV

Plate 124 Jibera South Borrow Pit (460567, 8182499, 53) general context looking north

Plate 125 Jibera South Borrow Pit (460567, 8182499, 53) general context looking east

Plate 126 Jibera South Borrow Pit (460567, 8182499, 53) general context looking south

Plate 127 Jibera South Borrow Pit (460567, 8182499, 53) general context looking west

Plate 128 Jibera South Borrow Pit (460567, 8182499, 53) GSV

Plate 129 Jibera South Borrow Pit (460706, 8182511, 53) general context looking north

Plate 130 Jibera South Borrow Pit (460706, 8182511, 53) general context looking west

Plate 131 Jibera South Borrow Pit (460706, 8182511, 53) GSV

Plate 132 Jibera South Borrow Pit (460679, 8182424, 53) general context looking north

Plate 133 Jibera South Borrow Pit (460679, 8182424, 53) general context looking east

Plate 134 Jibera South Borrow Pit (460679, 8182424, 53) general context looking south

Plate 135 Jibera South Borrow Pit (460679, 8182424, 53) general context looking west

Plate 136 Jibera South Borrow Pit (460679, 8182424, 53) GSV

Plate 137 Jibera South Borrow Pit (460657, 8182274, 53) general context looking north

Plate 138 Jibera South Borrow Pit (460657, 8182274, 53) general context looking east

Plate 139 Jibera South Borrow Pit (460657, 8182274, 53) general context looking south

Plate 140 Jibera South Borrow Pit (460657, 8182274, 53) general context looking west

Plate 141 Jibera South Borrow Pit (460657, 8182274, 53) GSV

Plate 142 Existing Access Track (468887, 8170510, 53) general context looking north

Plate 143 Existing Access Track (468887, 8170510, 53) general context looking east

Plate 144 Existing Access Track (468887, 8170510, 53) general context looking south

Plate 145 Existing Access Track (468887, 8170510, 53) general context looking west

Plate 146 Existing Access Track (468887, 8170510, 53) GSV

Plate 147 Newcastle South (468963, 8169432, 53) general context looking north

Plate 148 Newcastle South (468963, 8169432, 53) general context looking east

Plate 149 Newcastle South (468963, 8169432, 53) general context looking south

Plate 150 Newcastle South (468963, 8169432, 53) general context looking west

Plate 151 Newcastle South (468963, 8169432, 53) GSV

Plate 152 Newcastle South (469168, 8169656, 53) general context looking north

Plate 153 Newcastle South (469168, 8169656, 53) general context looking east

Plate 154 Newcastle South (469168, 8169656, 53) general context looking south

Plate 155 Newcastle South (469168, 8169656, 53) general context looking west

Plate 156 Newcastle South (469168, 8169656, 53) GSV

Plate 157 Newcastle South (469256, 8169669, 53) general context looking north

Plate 158 Newcastle South (469256, 8169669, 53) general context looking east

Plate 159 Newcastle South (469256, 8169669, 53) general context looking south

Plate 160 Newcastle South (469256, 8169669, 53) general context looking west

Plate 161 Newcastle South (469256, 8169669, 53) GSV

Plate 162 Newcastle South (469188, 8169353, 53) general context looking north

Plate 163 Newcastle South (469188, 8169353, 53) general context looking east

Plate 164 Newcastle South (469188, 8169353, 53) general context looking south

Plate 165 Newcastle South (469188, 8169353, 53) general context looking west

Plate 166 Newcastle South (469188, 8169353, 53) GSV

Plate 167 Newcastle South (469334, 8169281, 53) general context looking north

Plate 168 Newcastle South (469334, 8169281, 53) general context looking east

Plate 169 Newcastle South (469334, 8169281, 53) general context looking south

Plate 170 Newcastle South (469334, 8169281, 53) general context looking west

Plate 171 Newcastle South (469191, 8169138, 53) general context looking north

Plate 172 Newcastle South (469191, 8169138, 53) general context looking east

Plate 173 Newcastle South (469191, 8169138, 53) general context looking south

Plate 174 Newcastle South (469191, 8169138, 53) general context looking west

Plate 175 Newcastle South (469191, 8169138, 53) GSV

Plate 176 Newcastle South (469151, 8169057, 53) general context looking north

Plate 177 Newcastle South (469151, 8169057, 53) general context looking east

Plate 178 Newcastle South (469151, 8169057, 53) general context looking south

Plate 179 Newcastle South (469151, 8169057, 53) general context looking west

Plate 180 Newcastle South (469151, 8169057, 53) GSV

Plate 181 Newcastle South (469072, 8168938, 53) general context looking north

Plate 182 Newcastle South (469072, 8168938, 53) general context looking east

Plate 183 Newcastle South (469072, 8168938, 53) general context looking south

Plate 184 Newcastle South (469072, 8168938, 53) general context looking west

Plate 185 Newcastle South (469072, 8168938, 53) GSV

Plate 186 Newcastle South (469498, 8169702, 53) general context looking north

Plate 187 Newcastle South (469498, 8169702, 53) general context looking east

Plate 188 Newcastle South (469498, 8169702, 53) general context looking south

Plate 189 Newcastle South (469498, 8169702, 53) general context looking west

Plate 190 Newcastle South (469498, 8169702, 53) GSV

Plate 191 Newcastle South (469662, 8169703, 53) general context looking north

Plate 192 Newcastle South (469662, 8169703, 53) general context looking east

Plate 193 Newcastle South (469662, 8169703, 53) general context looking south

Plate 194 Newcastle South (469662, 8169703, 53) general context looking west

Plate 195 Newcastle South (469662, 8169703, 53) GSV

Plate 196 Newcastle South (469508, 8169575, 53) general context looking north

Plate 197 Newcastle South (469508, 8169575, 53) general context looking east

Plate 198 Newcastle South (469508, 8169575, 53) general context looking south

Plate 199 Newcastle South (469508, 8169575, 53) general context looking west

Plate 200 Newcastle South (469508, 8169575, 53) GSV

Plate 201 Newcastle South (469705, 8169403, 53) general context looking north

Plate 202 Newcastle South (469705, 8169403, 53) general context looking east

Plate 203 Newcastle South (469705, 8169403, 53) general context looking south

Plate 204 Newcastle South (469705, 8169403, 53) general context looking west

Plate 205 Newcastle South (469705, 8169403, 53) GSV

Plate 206 Newcastle South (469731, 8169319, 53) general context looking north

Plate 207 Newcastle South (469731, 8169319, 53) general context looking east

Plate 208 Newcastle South (469731, 8169319, 53) general context looking south

Plate 209 Newcastle South (469731, 8169319, 53) general context looking west

Plate 210 Newcastle South (469731, 8169319, 53) GSV

Plate 211 Newcastle South (469504, 8169216, 53) general context looking north

Plate 212 Newcastle South (469504, 8169216, 53) general context looking east

Plate 213 Newcastle South (469504, 8169216, 53) general context looking south

Plate 214 Newcastle South (469504, 8169216, 53) general context looking west

Plate 215 Newcastle South (469504, 8169216, 53) GSV

Plate 216 Newcastle South (469654, 8169110, 53) general context looking north

Plate 217 Newcastle South (469654, 8169110, 53) general context looking east

Plate 218 Newcastle South (469654, 8169110, 53) general context looking south

Plate 219 Newcastle South (469654, 8169110, 53) general context looking west

Plate 220 Newcastle South (469654, 8169110, 53) GSV

Plate 221 Newcastle South (469661, 8168951, 53) general context looking north

Plate 222 Newcastle South (469661, 8168951, 53) general context looking east

Plate 223 Newcastle South (469661, 8168951, 53) general context looking south

Plate 224 Newcastle South (469661, 8168951, 53) general context looking west

Plate 225 Newcastle South (469661, 8168951, 53) GSV

Plate 226 Newcastle South (469820, 8168973, 53) general context looking north

Plate 227 Newcastle South (469820, 8168973, 53) general context looking east

Plate 228 Newcastle South (469820, 8168973, 53) general context looking south

Plate 229 Newcastle South (469820, 8168973, 53) general context looking west

Plate 230 Newcastle South (469820, 8168973, 53) GSV

Plate 231 Newcastle South (469850, 8169633, 53) general context looking north

Plate 232 Newcastle South (469850, 8169633, 53) general context looking east

Plate 233 Newcastle South (469850, 8169633, 53) general context looking south

Plate 234 Newcastle South (469850, 8169633, 53) general context looking west

Plate 235 Newcastle South (469850, 8169633, 53) GSV

Plate 236 Newcastle South (470012, 8169737, 53) general context looking north

Plate 237 Newcastle South (470012, 8169737, 53) general context looking east

Plate 238 Newcastle South (470012, 8169737, 53) general context looking south

Plate 239 Newcastle South (470012, 8169737, 53) general context looking west

Plate 240 Newcastle South (470012, 8169737, 53) GSV

Plate 241 Newcastle South (470175, 8169543, 53) general context looking north

Plate 242 Newcastle South (470175, 8169543, 53) general context looking east

Plate 243 Newcastle South (470175, 8169543, 53) general context looking south

Plate 244 Newcastle South (470175, 8169543, 53) general context looking west

Plate 245 Newcastle South (470175, 8169543, 53) GSV

Plate 246 Newcastle South (470712, 8168550, 53) general context looking north

Plate 247 Newcastle South (470712, 8168550, 53) general context looking east

Plate 248 Newcastle South (470712, 8168550, 53) general context looking south

Plate 249 Newcastle South (470712, 8168550, 53) general context looking west

Plate 250 Newcastle South (470712, 8168550, 53) GSV

Plate 251 Newcastle South (470748, 8168230, 53) general context looking north

Plate 252 Newcastle South (470748, 8168230, 53) general context looking east

Plate 253 Newcastle South (470748, 8168230, 53) general context looking south

Plate 254 Newcastle South (470748, 8168230, 53) general context looking west

Plate 255 Newcastle South (470748, 8168230, 53) GSV

Plate 256 Newcastle South (470803, 8168014, 53) general context looking north

Plate 257 Newcastle South (470803, 8168014, 53) general context looking east

Plate 258 Newcastle South (470803, 8168014, 53) general context looking south

Plate 259 Newcastle South (470803, 8168014, 53) general context looking west

Plate 260 Newcastle South (470803, 8168014, 53) GSV

Plate 261 Newcastle South (470876, 8167687, 53) general context looking north

Plate 262 Newcastle South (470876, 8167687, 53) general context looking east

Plate 263 Newcastle South (470876, 8167687, 53) general context looking south

Plate 264 Newcastle South (470876, 8167687, 53) general context looking west

Plate 265 Newcastle South (470876, 8167687, 53) GSV

Appendix F

Resource Plants Identified in the Study Area

Appendix F Resource Plants Identified in the Study Area

Table 13 Resource plants Identified by Traditional Owners during survey

Resource Plant	Traditional Use	Photographs		
Coolabah (*Eucalyptus coolabah*)	The bark can be chewed to treat toothache.	**Plate 1 Coolabah – wide view**	**Plate 2 Coolabah – close view of trunk**	**Plate 3 Coolabah – close view of foliage**

Resource Plant	Traditional Use	Photographs		
Kurrajong (*Brachychiton* sp.)	The wood is used for cooking fires, especially for coals to cook kangaroo.	**Plate 4 Kurrajong – wide view of canopy**	**Plate 5 Kurrajong – wide view of trunk**	**Plate 6 Kurrajong – close view of trunk**

Resource Plant	Traditional Use	Photographs	
Bloodwood (*Corymbia* sp.)	The sap is used to help with teeth problems and heart issues.	**Plate 7 Bloodwood – view of canopy**	**Plate 8 Bloodwood – view of trunk**

Resource Plant	Traditional Use	Photographs		
Ironwood (*Erythrophelum chlorostachys*)	The leaves are burned when green for smoking ceremonies and when people pass away.	**Plate 9 Ironwood – view of branches**	**Plate 10 Ironwood – view of branches and trunk**	**Plate 11 Ironwood – close view of foliage**
Bullwaddy (*Macropteranthes kekwickii*)	The wood is used for tool making including spears and boomerangs.	**Plate 12 Lancewood – wide view**	**Plate 13 Lancewood – medium view of trunk**	**Plate 14 Lancewood – close view of trunk and foliage**

Resource Plant	Traditional Use	Photographs		
Lancewood (*Acacia shirlyei*)	The wood is used for tool making including spears and boomerangs.	**Plate 15 Bullwaddy – wide view**	**Plate 16 Bullwaddy – close view of trunk**	**Plate 17 Bullwaddy – close view of trunk and foliage**
Snappy Gum (*Eucalyptus leucophloia*)	The wood is used for tool making including spears and boomerangs.			

Resource Plant	Traditional Use	Photographs		
Gulbun (*Melaleuca Citrolens*)	The plant, especially the leaves, is used for making soap and cleaning. The leaves can also be used to make tea.	**Plate 18 Gulbun – wide view**	**Plate 19 Gulbun – medium view**	**Plate 20 Gulbun – medium view**
Conkerberry (*Carissa lanceolata*)	The berries are eaten.	**Plate 21 Conkerberry – wide view**	**Plate 22 Conkerberry – close view**	**Plate 23 Conkerberry – close view of foliage and berries**

Resource Plant	Traditional Use	Photographs		
Grewia (*Grewia savannicola*)	The berries are eaten.	**Plate 24 Grewia – wide view**	**Plate 25 Grewia – close view**	**Plate 26 Grewia – close view of foliage and berries**
Dumbuyumbu / Mircale Plant / Sandalwood (*Santalum lanceolatum*)	The leaves can be used to make tea, or poultice to put on sores. The plant is an antiseptic, and is also used as a traditional treatment for cancer.	**Plate 27 Sandalwood – wide view**	**Plate 28 Sandalwood – medium view**	**Plate 29 Sandalwood – close view**

Resource Plant	Traditional Use	Photographs		
Ti-tree (*Melaleuca* sp.)	The leaves are steeped and used to make tea, to treat colds and other illnesses. The leaves can also be stuffed inside meat and fish during cooking to add flavour	**Plate 30 Ti-tree – wide view**	**Plate 31 Ti-tree – close view**	**Plate 32 Ti-tree – close view of foliage**
Spinifex (*Spinifex* sp.)	The plant is used to make resin for mounting stone tools to spears.	**Plate 33 Spinifex – wide view**	**Plate 34 Spinifex – medium view**	**Plate 35 Spinifex – close view**

Resource Plant	Traditional Use	Photographs		
Banana Leaf Vine / Bush Banana (*Marsedenia australis*)	The seed from the plant's pod is eaten. The outer shell of the pod is peeled and the pith inside is eaten.	**Plate 36 Bush banana – wide view**	**Plate 37 Bush banana – close view**	**Plate 38 Bush banana – close view of foliage**

Appendix G

Unexpected Heritage Finds Procedure

Appendix G Unexpected Heritage Finds Procedure

Aboriginal Cultural Heritage

Aboriginal finds can include the following:

- Stone artefacts - sharp edged rocks that have identifiable features demonstrating evidence of human modification
- Scarred Trees - trees with symmetrical scars that might demonstrate evidence of removal of bark for use in coolamons, shields and huts
- Grindstones - large sandstone items (either fixed in bedrock or mobile) that have manmade grooves in them demonstrating use.
- Hearths - clay or stone heat retainers arranged in a pile used for fires and cooking
- Rock Art - ochre, pecked stone or other artistic reliefs, typically made on smooth stone outcrops
- Burials - human remains interred in the ground, on top of rock surfaces or outcrops, or inside landscape features including trees or termite mounds
- Stone Axes - heavy hatchet head like stone items, typically with the leading edge sharpened
- Bone & Shell - potential food waste dumps (also known as Middens).

Historical Cultural Heritage

Historical finds include the following:

- Glass - coloured glass, bottles (complete or fragmentary.)
- Metal - identifiable metallic objects such as cutlery, buckles, framing equipment, woodworking metal equipment etc.
- Ceramic - plates, cups, ink wells, pipes etc.
- Wood - identifiable human manufactured wooden items
- Stone - identifiable human manufactured stone items
- Bone & Shell - potential historical food waste dumps

Unexpected Finds Procedure

The following procedure is to be followed:

1. If an unexpected heritage find is identified during proposed works within the Project Area, work will stop immediately in the immediate area and the Site Project Manager will be notified of the find.
2. A minimum 10 m area radius is to be cordoned off by temporary fencing around the suspected archaeological site.
3. The Site Project Manager should seek advice from a heritage professional to assess the find.
4. If the find is determined to not be of heritage significance, works may proceed based on the advice of the heritage professional
5. If the find is determined to be Aboriginal heritage, the heritage professional must report the find to the NT Heritage Branch on 08 8999 5039 or heritage.branch@nt.gov.au. The heritage professional should also inform the Northern Land Council (NLC) Heritage Officer or Advisor care of the NLC on 08 8920 5100 and at reception@nlc.org.au.

   a. Works are not to resume in the find area until an Application to Carry Out Works on a heritage place has been granted

6. If the find is to be determined to be historical heritage, the heritage professional will assess the find, and development management measures as required in consultation with NT Heritage Branch
   a. Works are not to resume in the find area until clearance is provided by the heritage professional or NT Heritage Branch.

Discovery of Human Remains

In all cases when human remains are located it is important to remember:

- The discovery of any human remains must as soon as possible be reported to the NT Police.
- It is an offence to interfere with human remains, whether buried or not.

The following process should be adhered to:

1. Work is to immediately cease, and a 50 m temporary cordon be established.
2. The Site Project Manager must be immediately notified of the find.
3. If human remains are suspected, the Site Project Manager must contact the NT Police assistance line on 131 444 to advise them of the presence of human remains.
4. Police will then take control of the site and establish the area as a potential crime scene.
5. Police will undertake appropriate scientific or other procedures to assist the Coroner in making an appropriate determination about the remains.
6. Police will contact the Senior Heritage Officer, NT Heritage Branch and the CEO of the Aboriginal Areas Protection Authority if necessary.
7. Resume work only after completion of Police and NT Heritage Branch investigations and appropriate removal of remains according to the NT *Coroners Act 1993.*