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Barwon Solar Farm,
Mt. Rothwell:
Cultural Heritage
Management Plan 18474

CHMP Standard
Assessment Results

CHMP

18474

Sponsor

Elgin Energy Pty Ltd
(ABN: 95 629 627 416)

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Registered Aboriginal Party

The appointed RAP for lands including the activity area is the Wadawurrung Traditional Owner Aboriginal Corporation (WTOAC)

Activity Area

The activity area is located within the township of Little River within the City of Greater Geelong and comprises 10 land parcels spanning between the Little River waterway in the north, Travellers Way Road in the south, Mount Rothwell Road in the east and private property boundaries in the west. The activity area covers a total area of 765 ha (7,651,771 m²).

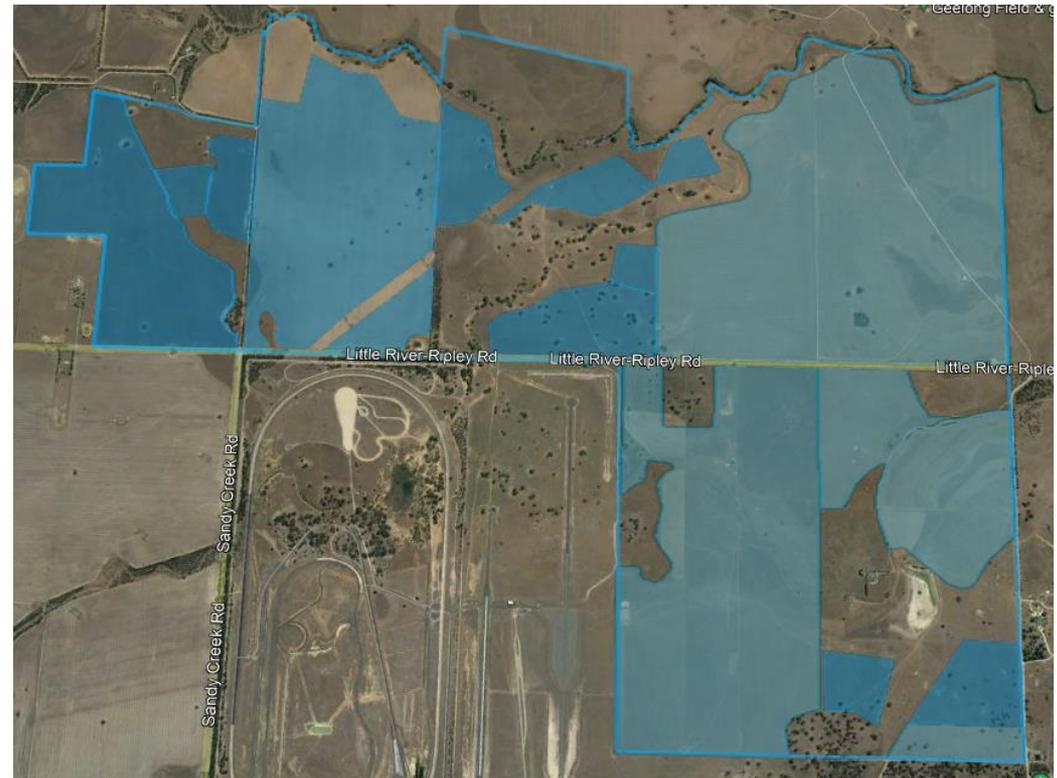
THE CHMP activity area is classified as large.

Proposed Activity

- Installation of solar panels
 - Driven support poles
 - Trenching for electrical conduit
 - Soils to remain on-site
- Substations
- Access-ways
- Ancillary structures



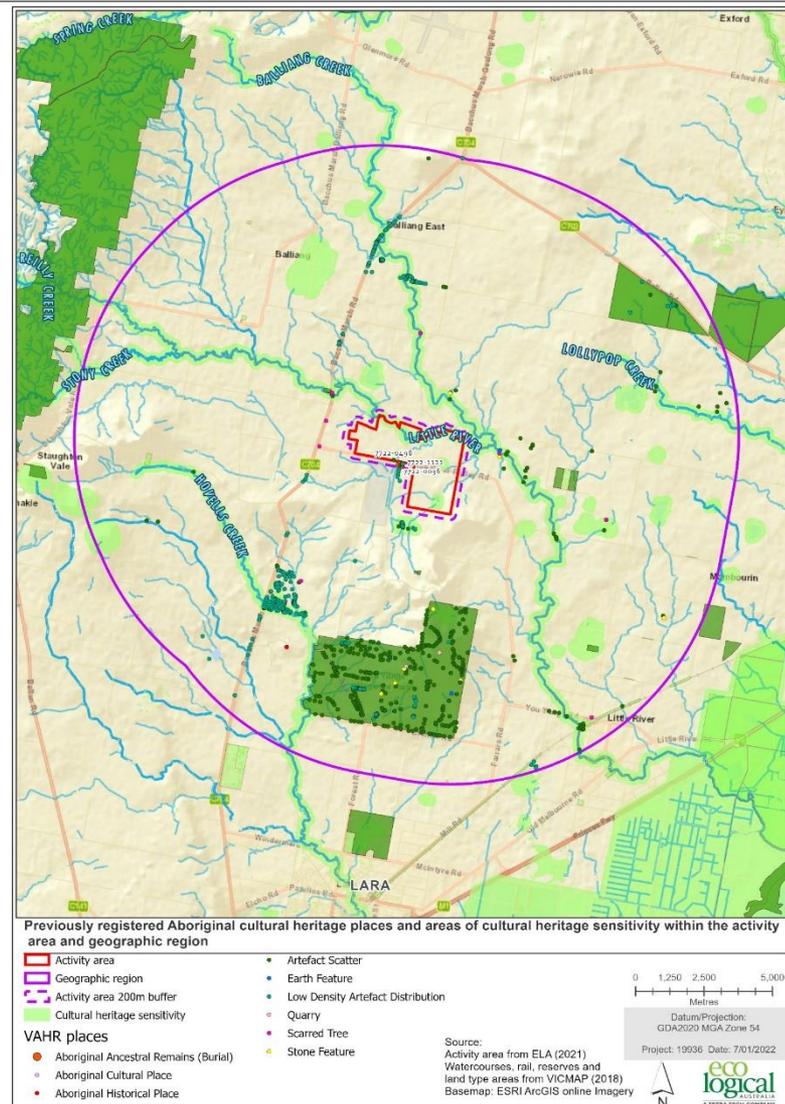
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Outcomes of Desktop Assessment

- The activity area is situated within the Western Plains geomorphological unit and located within a volcanic plain landform, intersected by Sandy Creek and Little River.
- Geological substrates: Newer Volcanic Group-Basalt Flows, Granite-derived Colluvium (Qc4), You Yangs Granite and Alluviums
- A total of 405 registered Aboriginal cultural heritage places are located within the geographic region, which was defined as a 10 km buffer around the activity area.
- The activity area has been farmed for crops and grazed by stock for the past 170 years.
- Localised impacts have included the construction of dams, access roads, sheds and residences. Two overhead transmission line easements also run through the activity area.
- One previously registered Aboriginal cultural heritage place is located within the activity area: VAHR 7722-0498 (FORD 1): a surface stone artefact scatter.

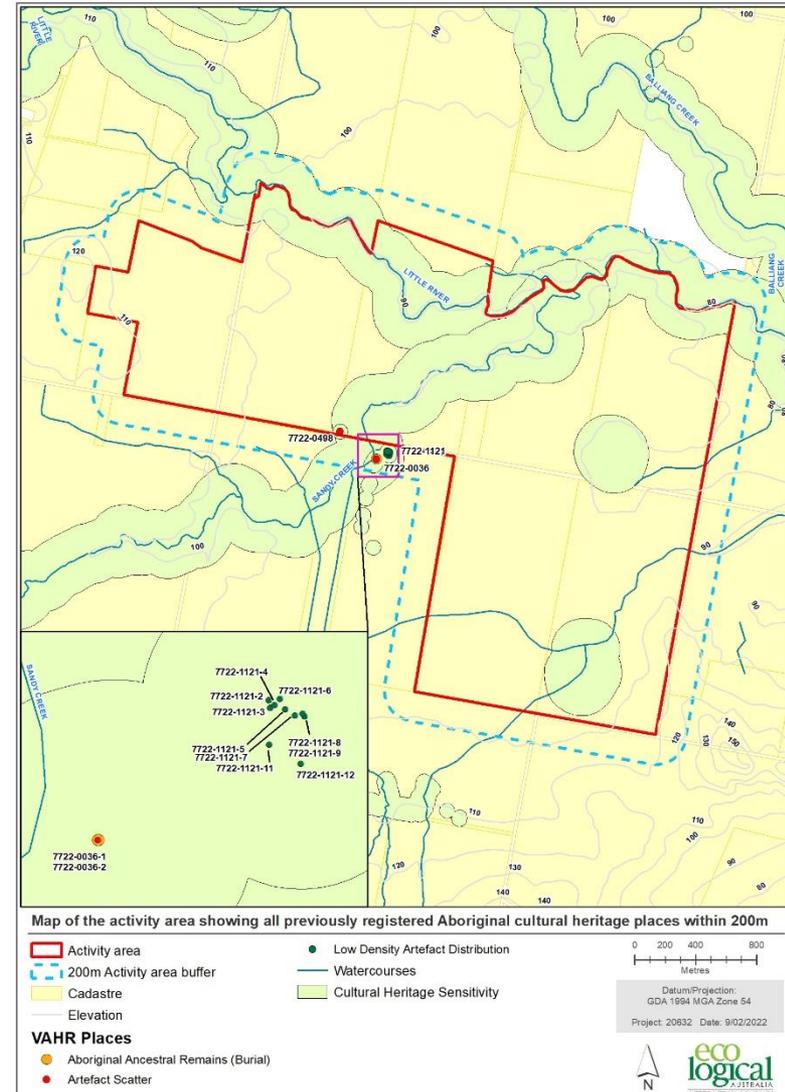
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Outcomes of Desktop Assessment

- A further six Aboriginal cultural heritage places are also located within 200 m of the activity area boundary, including a multicomponent place, VAHR 7722-0036 (Aboriginal Ancestral Remains (Burial))
- Artefact scatters and LDADs make up 93% of these places. Scarred trees, stone features, earth features, Aboriginal Ancestral Remains are also represented within the geographic region.
- Registered places cluster along major, small and ephemeral water ways in the region, including Little River. A significant proportion of registered places are also located in the granite outcrops of the You Yangs.
- Artefact scatters range in density from isolated to low on the volcanic plain, and generally increase in density in relation to their proximity to waterways and water sources.

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Aims of Standard Assessment

A standard assessment must include a ground survey of all or part of the activity area to detect the presence of Aboriginal cultural heritage in or associated with the activity area (Regulation 63 of the Regulations

Aims of the standard assessment were to:

- Inspect areas with ground surface visibility for Aboriginal archaeological sites within the activity area.
- Undertake a general assessment of the overall archaeological potential of the activity area.
- Inspect all previously registered Aboriginal cultural heritage places within the activity area.
 - VAHR 7722-0498 (FORD1): Artefact Scatter.
- Auger program to understand the soil profile of land surfaces approaching Sandy Creek.

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9-day survey (15-16, 18 and 21-25 March 2022)

- Team of six (three archaeologists and three WTOAC representatives).

The assessment included a foot-survey using a combination of

- Survey of areas of archaeological potential identified in desktop assessment:
 - Surfaces along watercourses
 - Exposures and outcrops on Granite hill landforms
- Pedestrian transects undertaken across broad landforms:
 - Flood plain
 - Volcanic plain
 - Stony outcrops
- Systematic inspection of all identified exposures
- Examination of all mature indigenous trees.
- Checked for the presence of caves and rock shelters.
- Excavation of 26 manual auger probes

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Results of Standard Assessment

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The activity area was separated into nine Investigation Areas (IAs) based on the identification of landforms during the standard assessment as follows:

IA-1 – Volcanic Plains, 490 ha (64%)

IA-2 – Drainage Lines, 20 ha (2.6%)

IA-3 – Granite Hills, 34 ha (4.4%)

IA-4 – Flood Plains, 89 ha (11.6%)

IA-5 – Stony Outcrops, 100 ha (13%)

IA-6 - Terraces

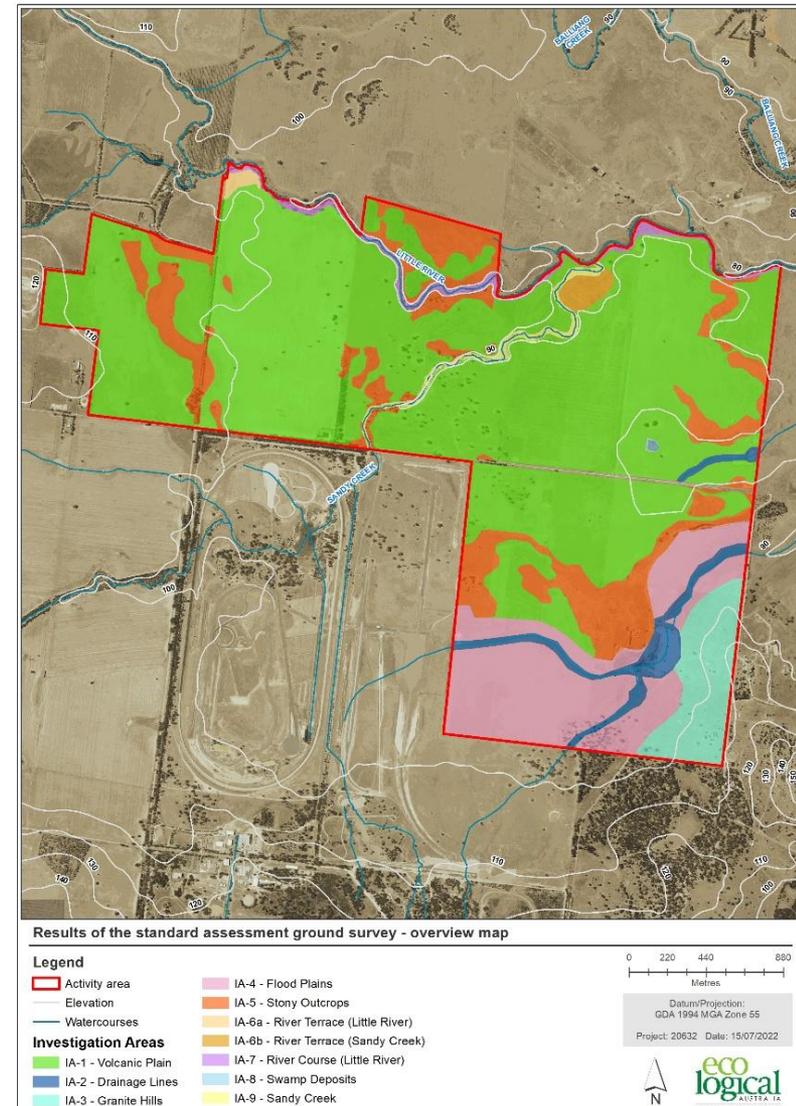
IA-6a – Little River Terrace, 3 ha (0.4%)

IA-6b – Sandy Creek Terrace, 4 ha (0.5%)

IA-7 – Little River, 12 ha (1.6%)

IA-8 – Swamp Deposits, 0.4 ha (0.05%)

IA-9 – Sandy Creek, 8 ha (1%)



Results of Standard Assessment

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839 stone artefacts

3 scarred trees

No caves, cave entrances or rock shelters were identified.

IA-1 – Volcanic Plains, 227 stone artefacts

IA-2 – Drainage Lines, 9 stone artefacts

IA-3 – Granite Hills, 105 stone artefacts, 1 scarred tree

IA-4 – Flood Plains, 6 stone artefacts, 2 scarred trees

IA-5 – Stony Outcrops, 22 stone artefacts

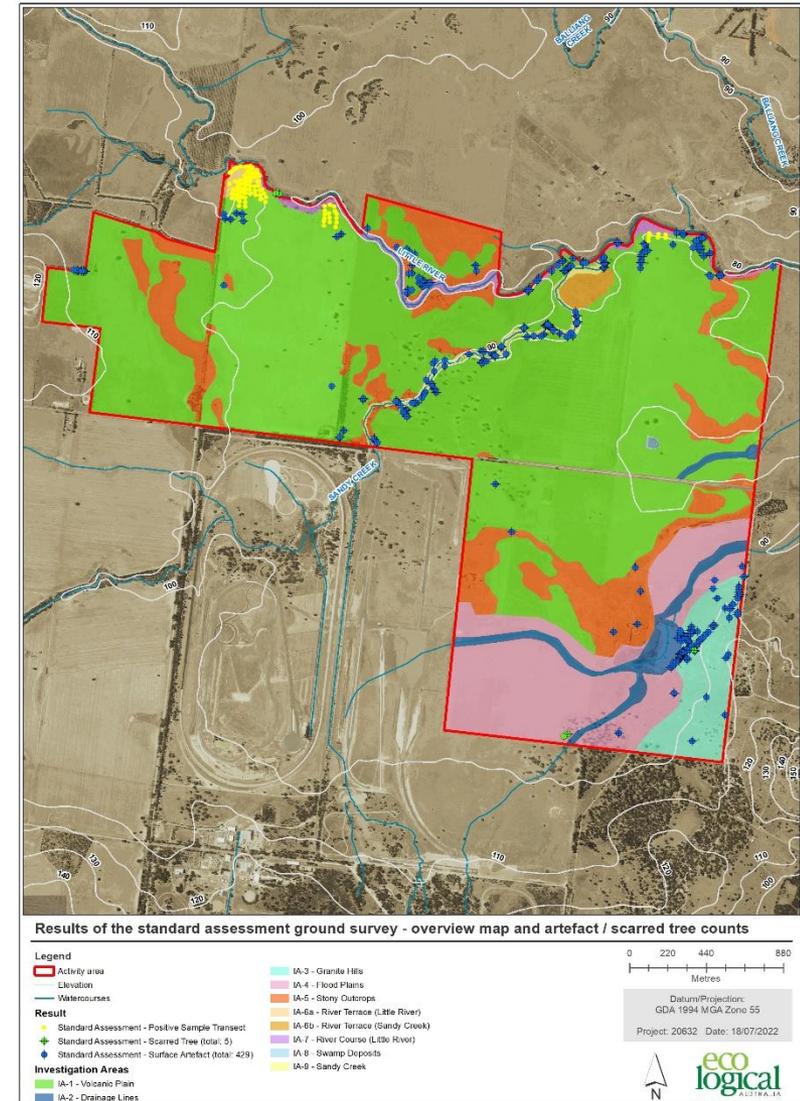
IA-6a – Little River Terrace, 340 stone artefacts

IA-6b – Sandy Creek Terrace, 0 stone artefacts

IA-7 – Little River, 46 stone artefacts

IA-8 – Swamp Deposits, 0 stone artefacts

IA-9 – Sandy Creek, 84 stone artefacts

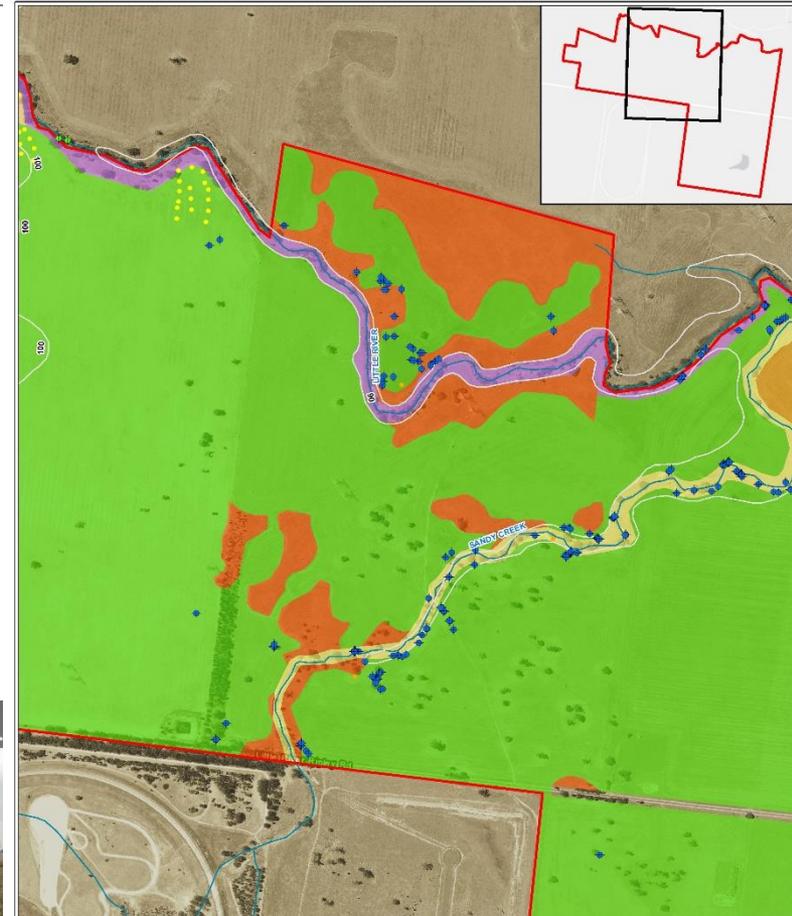


IA-1 Volcanic Plains

- 490 ha (64%).
- Moderate ground surface visibility.
- Exposures limited to areas of stock trampling, surrounding trees, proximity to watercourses.
- Disturbance: Ploughing, stock trampling, construction of dams, vehicle tracks, farming structures.

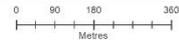
Artefacts:
Total 227 artefacts.

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Results of the standard assessment ground survey

Legend	
 Activity area	 IA-2 - Drainage Lines
 Elevation	 IA-3 - Granite Hills
 Watercourses	 IA-4 - Flood Plains
 Standard Assessment - Sample Square	 IA-5 - Stony Outcrops
 Standard Assessment - Postive Sample Transect	 IA-6a - River Terrace (Little River)
 Standard Assessment - Surface Artefact	 IA-6b - River Terrace (Sandy Creek)
 Standard Assessment - Soared Tree	 IA-7 - River Course (Little River)
 Investigation Areas	 IA-8 - Swamp Deposits
 IA-1 - Volcanic Plain	 IA-9 - Sandy Creek



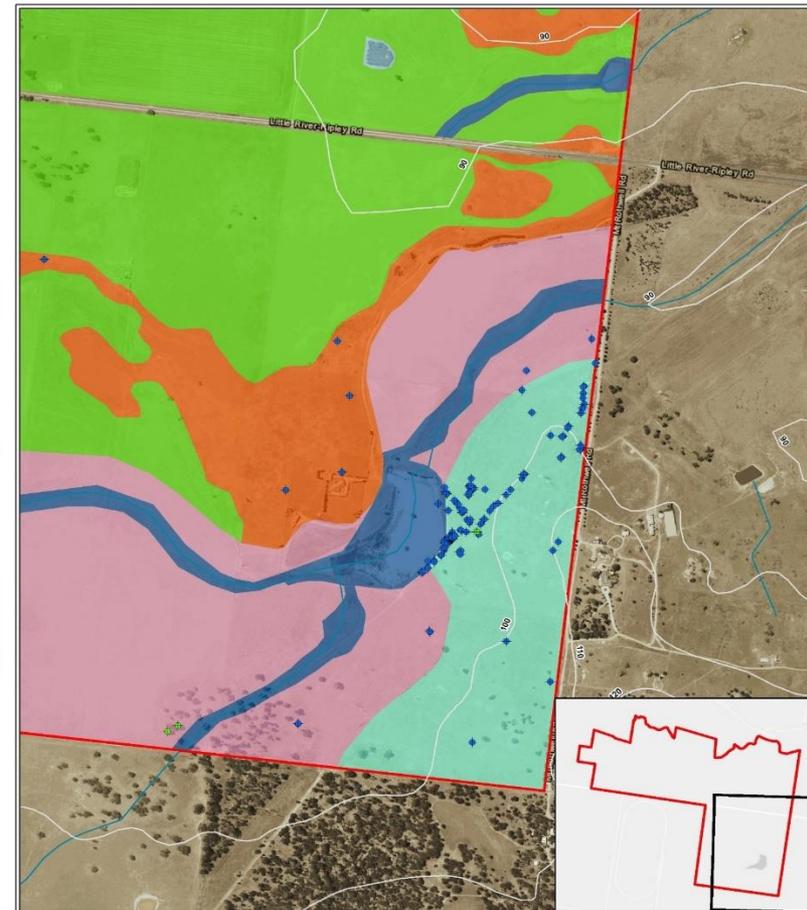
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GDA 1994 MGA Zone 55
Project: 20632 Date: 15/07/2022



IA-2 Drainage Lines

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- 20 ha (2.6%)
- Disturbance- ploughing, stock trampling, construction of dams
- Poor ground surface visibility with exception of areas of disturbance (dam walls, vehicle track)
- Artefacts: 9 stone artefacts identified near dam



Results of the standard assessment ground survey

Legend	
 Activity area	 IA-2 - Drainage Lines
 Elevation	 IA-3 - Granite Hills
 Watercourses	 IA-4 - Flood Plains
 Standard Assessment - Sample Square	 IA-5 - Stony Outcrops
 Standard Assessment - Positive Sample Transect	 IA-6a - River Terrace (Little River)
 Standard Assessment - Surface Artefact	 IA-6b - River Terrace (Sandy Creek)
 Standard Assessment - Scarred Tree	 IA-7 - River Course (Little River)
 Investigation Areas	 IA-8 - Swamp Deposits
 IA-1 - Volcanic Plain	 IA-9 - Sandy Creek

0 95 190 380
Metres

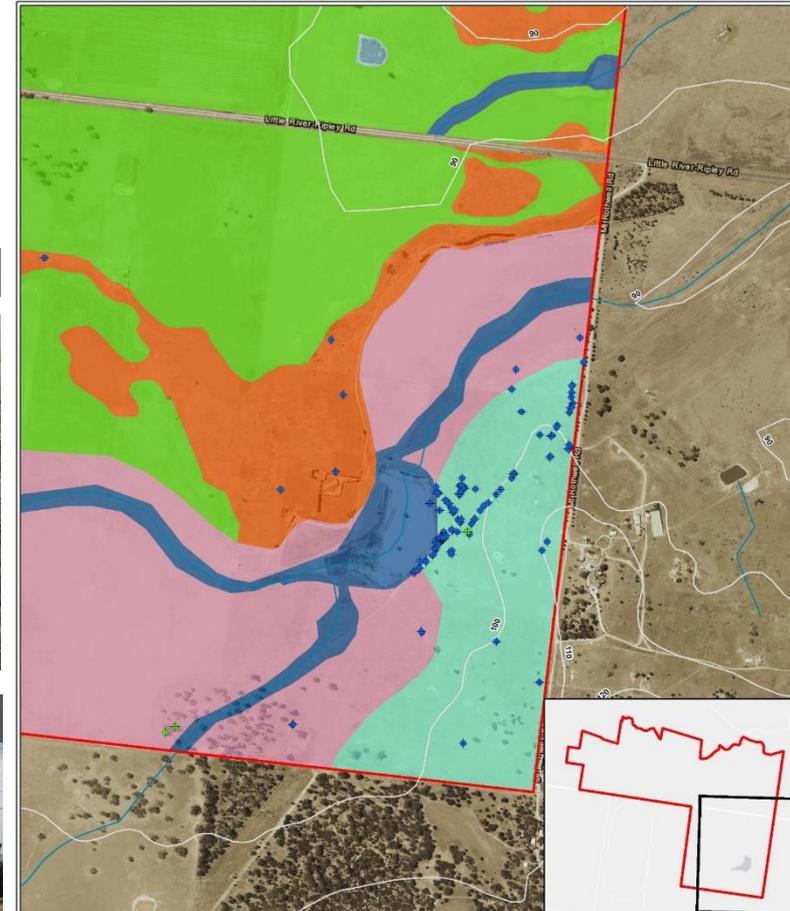
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GDA 1984 MGA Zone 55
Project: 20632 Date: 8/07/2022



IA-3 Granite Hills

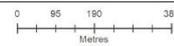
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- 34 ha (4.4%)
- Poor ground surface visibility: 1%
- One Scarred Tree identified
- 105 stone artefacts identified on exposures surrounding outcrops



Results of the standard assessment ground survey

Legend	
	Activity area
	Watercourses
◆	Standard Assessment - Sample Square
◆	Standard Assessment - Positive Sample Transect
◆	Standard Assessment - Surface Artefact
◆	Standard Assessment - Scarred Tree
◆	IA-2 - Drainage Lines
◆	IA-3 - Granite Hills
◆	IA-4 - Flood Plains
◆	IA-5 - Story Outcrops
◆	IA-6a - River Terrace (Little River)
◆	IA-6b - River Terrace (Sandy Creek)
◆	IA-7 - River Course (Little River)
◆	IA-8 - Swamp Deposits
◆	IA-9 - Sandy Creek
◆	IA-1 - Volcanic Plain

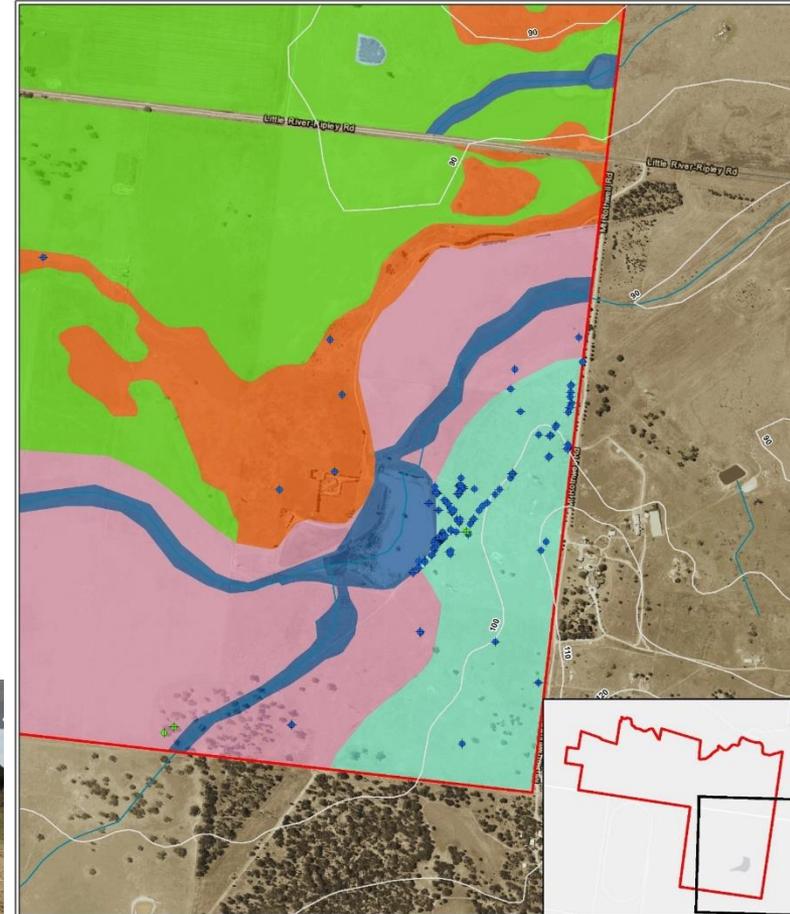


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IA-4 Flood Plains

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- 89 ha (11.6%)
- Poor ground surface visibility (0.9%)
- Disturbance minimal – ploughing, stock trampling, informal vehicle tracks
- 6 stone artefacts identified
- 2 Scarred Trees



Results of the standard assessment ground survey

Legend	
 Activity area	 IA-2 - Drainage Lines
 Elevation	 IA-3 - Granite Hills
 Watercourses	 IA-4 - Flood Plains
 Standard Assessment - Sample Square	 IA-5 - Stony Outcrops
 Standard Assessment - Positive Sample Transect	 IA-6a - River Terrace (Little River)
 Standard Assessment - Surface Artefact	 IA-6b - River Terrace (Sandy Creek)
 Standard Assessment - Scarred Tree	 IA-7 - River Course (Little River)
 Investigation Areas	 IA-8 - Swamp Deposits
 IA-1 - Volcanic Plain	 IA-9 - Sandy Creek

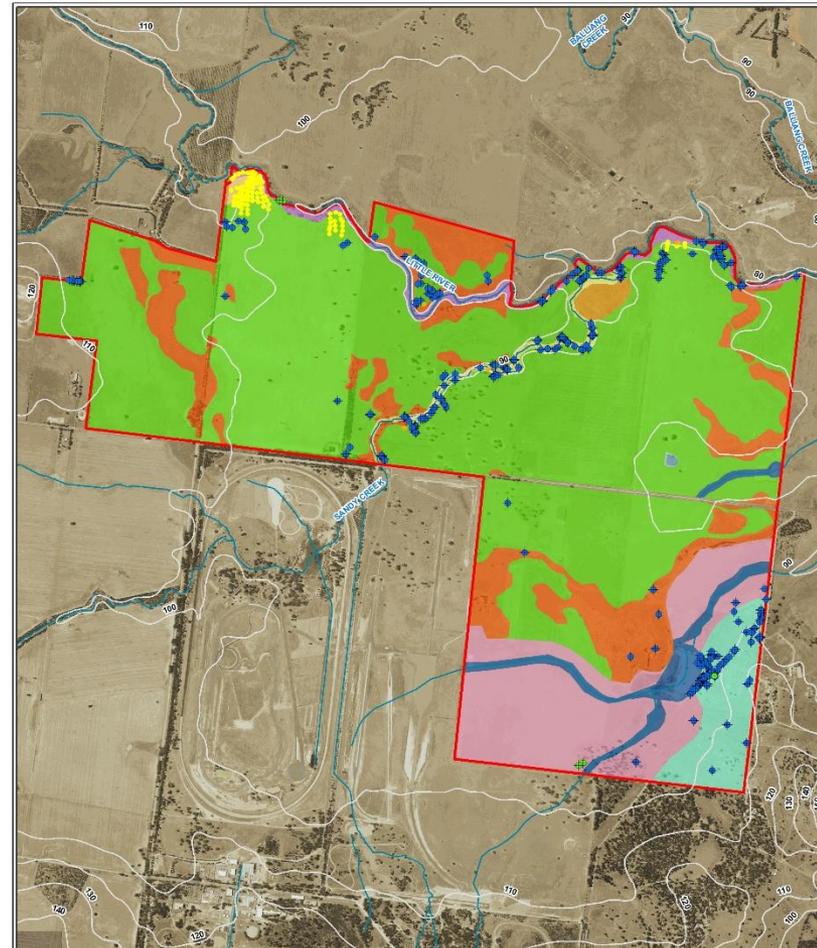
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Metres

Datum/Projection:
GDA 1994 MGA Zone 55
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IA-5 Stony Outcrops

- 100 ha (13. %)
- Poor/ no ground surface visibility
- Little ground disturbance/ development
- 22 stone artefacts identified, primarily in the vicinity of Sandy Creek or Little River

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Results of the standard assessment ground survey - overview map

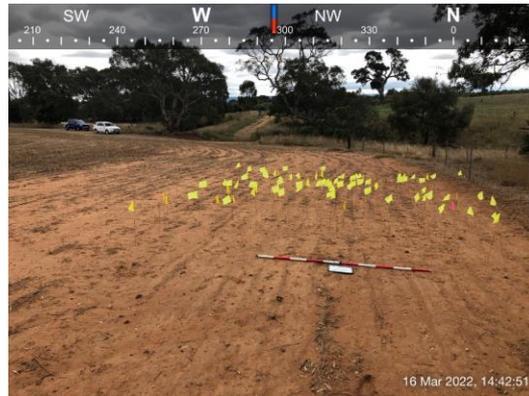
<p>Legend</p> <p> Activity area</p> <p> Elevation</p> <p> Watercourses</p> <p>Result</p> <p>● Standard Assessment - Positive Sample Transect</p> <p>● Standard Assessment - Sample Square</p> <p>+ Standard Assessment - Scarred Tree</p> <p>◆ Standard Assessment - Surface Artefact</p>	<p>Investigation Areas</p> <p>■ IA-1 - Volcanic Plain</p> <p>■ IA-2 - Drainage Lines</p> <p>■ IA-3 - Granite Hills</p> <p>■ IA-4 - Flood Plains</p> <p>■ IA-5 - Stony Outcrops</p> <p>■ IA-6a - River Terrace (Little River)</p> <p>■ IA-6b - River Terrace (Sandy Creek)</p> <p>■ IA-7 - River Course (Little River)</p> <p>■ IA-8 - Swamp Deposits</p>	<p>■ IA-9 - Sandy Creek</p> <p>0 220 440 880 Metres</p> <p>Datum/Projection: GDA 1994 MGA Zone 55</p> <p>Project: 20632 Date: 15/07/2022</p> <p></p>
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IA-6a Little River Terrace

- 3.0 ha (0.4%)
- Moderate surface visibility (48%)
- Ploughing/ cropping, informal vehicle track surface erosion
- Artefacts: 340

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IA-6b Sandy Creek Terrace

- 4.0 ha (0.5%)
- Poor surface visibility (1%)
- Ploughing/ cropping, excavated open pit used as rubbish dump
- No stone artefacts identified

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Results of the standard assessment ground survey - Sandy Creek terrace landform

Legend

- Activity area
- Elevation
- Watercourses
- Standard Assessment - Surface Artefact

Investigation Areas

- IA-1 - Volcanic Plain
- IA-6b - River Terrace (Sandy Creek)
- IA-7 - River Course (Little River)
- IA-9 - Sandy Creek

0 15 30 60
Metres

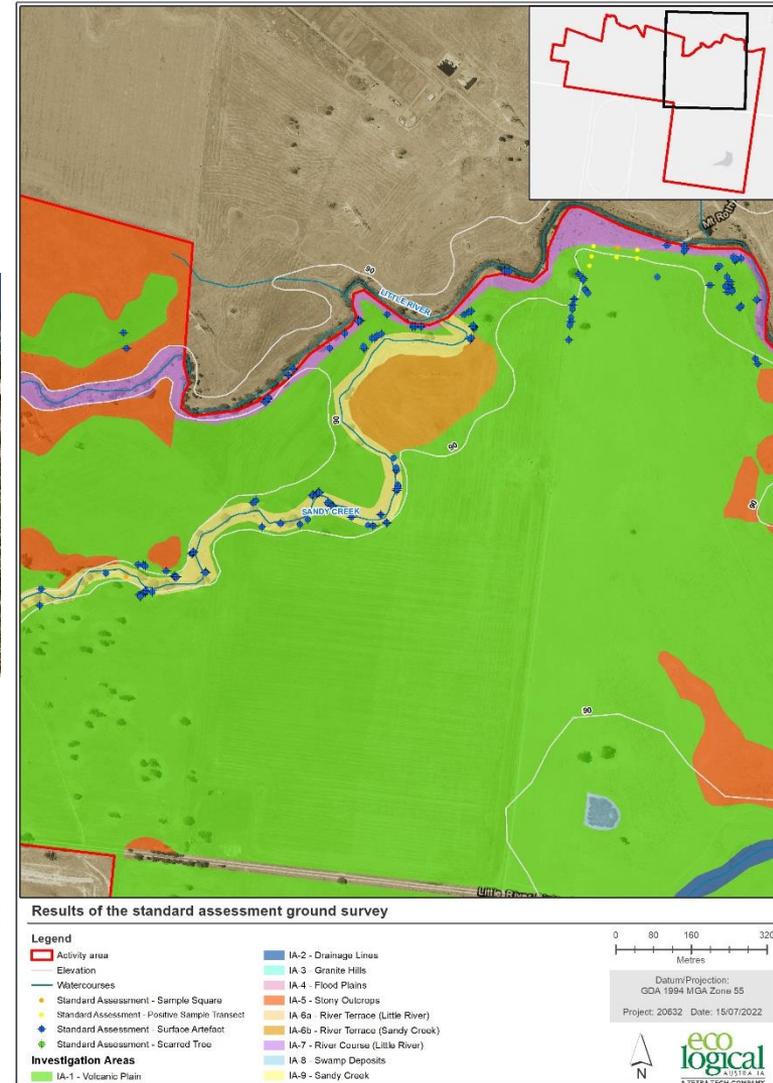
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Project: 20632 Date: 15/07/2022



IA-7 Little River

- 12 ha (1.6%)
- Poor surface visibility (2%)
- Construction of two informal river crossings
- 46 stone artefacts identified along river corridor

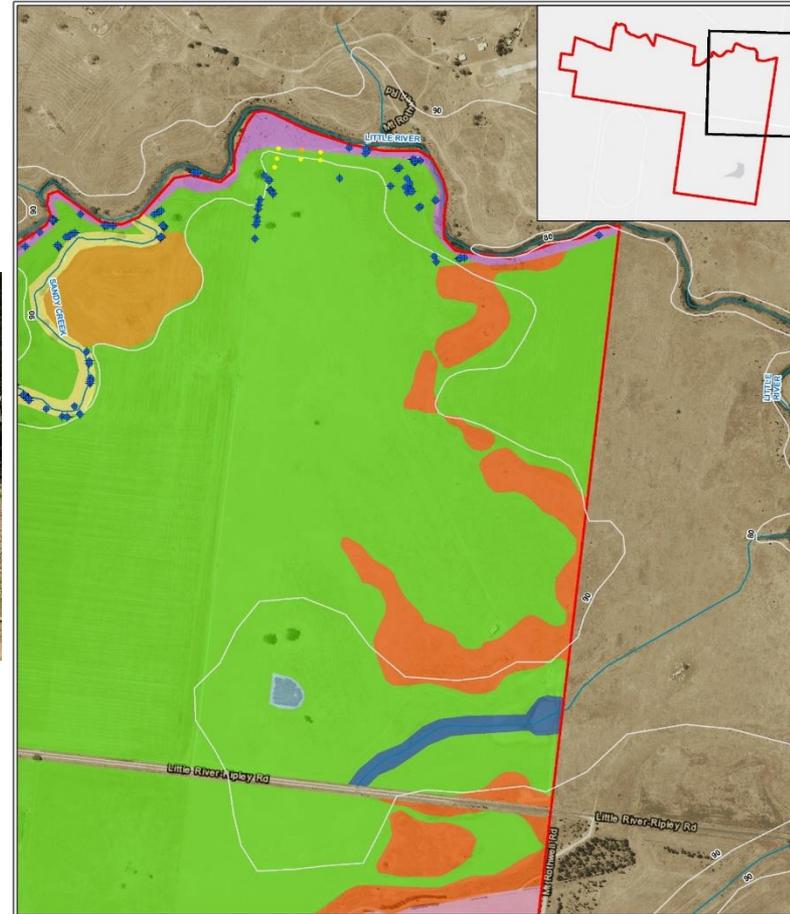
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IA-8 Swamp deposits

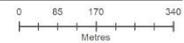
- 0.4 ha (0.05%)
- Moderate surface visibility (9%)
- Stock trampling
- No stone artefacts identified

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Results of the standard assessment ground survey

Legend	
 Activity area	 IA-2 - Drainage Lines
 Elevation	 IA-3 - Granite Hills
 Watercourses	 IA-4 - Flood Plains
 Standard Assessment - Sample Square	 IA-5 - Stony Outcrops
 Standard Assessment - Positive Sample Transect	 IA-6a - River Terrace (Little River)
 Standard Assessment - Surface Artefact	 IA-6b - River Terrace (Sandy Creek)
 Standard Assessment - Scarred Tree	 IA-7 - River Course (Little River)
 Investigation Areas	 IA-8 - Swamp Deposits
 IA-1 - Volcanic Plain	 IA-9 - Sandy Creek

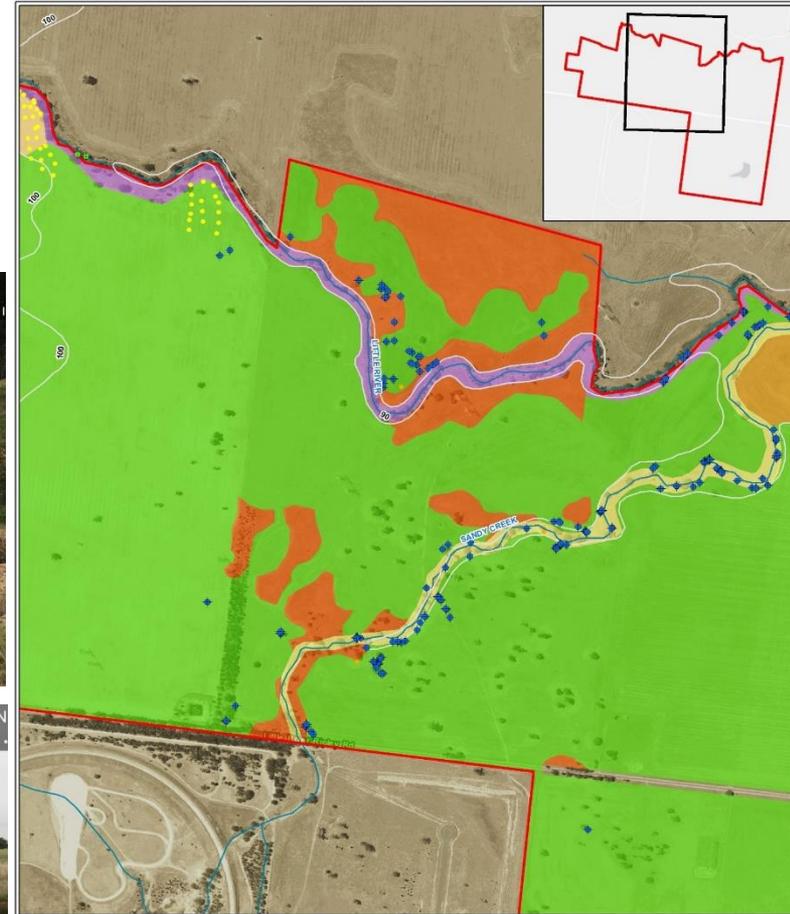


Datum/Projection:
GDA 1994 MGA Zone 55
Project: 20632 Date: 8/07/2022

IA-9 Sandy Creek

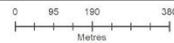
- 8 ha (1%)
- Moderate surface visibility (9%)
- Stock trampling, erosion, informal vehicle crossing
- 84 stone artefacts identified

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Results of the standard assessment ground survey

Legend	
 Activity area	— IA-2 - Drainage Lines
 Elevation	 IA-3 - Granite Hills
 Watercourses	 IA-4 - Flood Plains
● Standard Assessment - Sample Square	 IA-5 - Stony Outcrops
◆ Standard Assessment - Positive Sample Transect	 IA-6a - River Terrace (Little River)
◆ Standard Assessment - Surface Artefact	 IA-6b - River Terrace (Sandy Creek)
◆ Standard Assessment - Scattered Tree	 IA-7 - River Course (Little River)
 Investigation Areas	 IA-8 - Swamp Deposits
 IA-1 - Volcanic Plain	 IA-9 - Sandy Creek

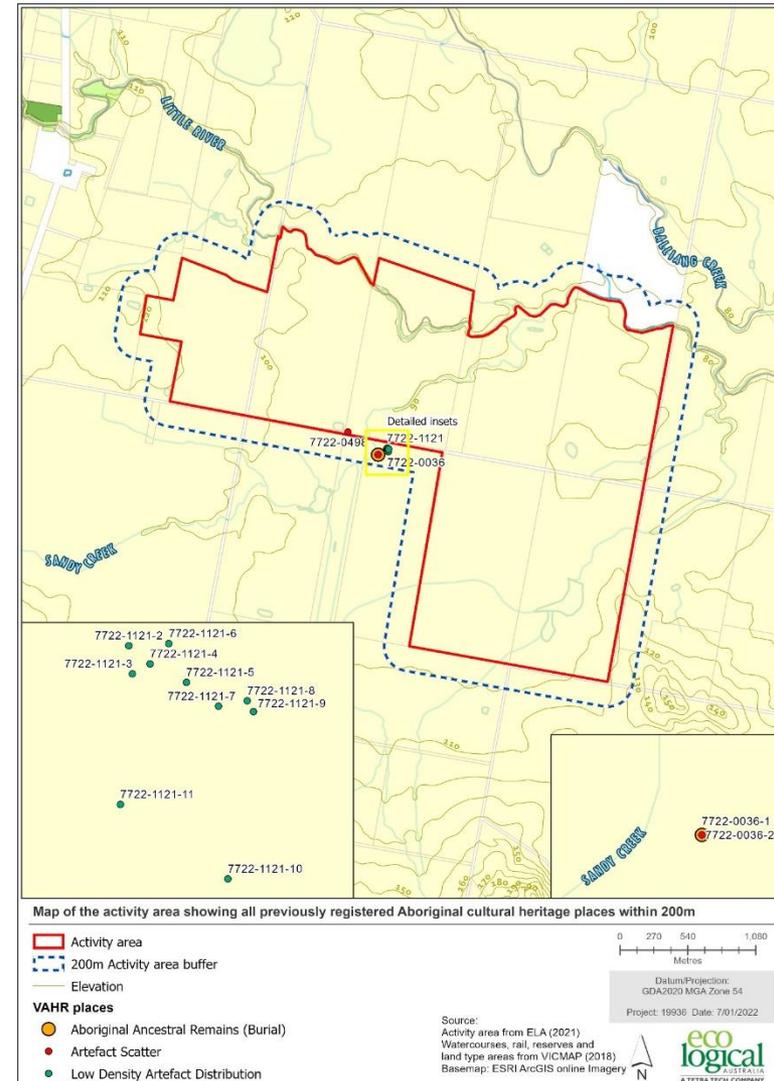


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Site Inspection VAHR place 7722-0498

- The location of registered place 7722-0498 (FORD1) was inspected as part of the Standard Assessment.
- Four flaked quartz artefacts were identified in proximity to the primary coordinate for this registered place.

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Auger Program

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The stratigraphy observed across this transect is typical of a volcanic plain, with a soil profile of 250-400mm depth comprising brown silts transitioning to shallow clays. Sand content was noted in both the silt and clay stratigraphic layers in 3 of the 4 augers.

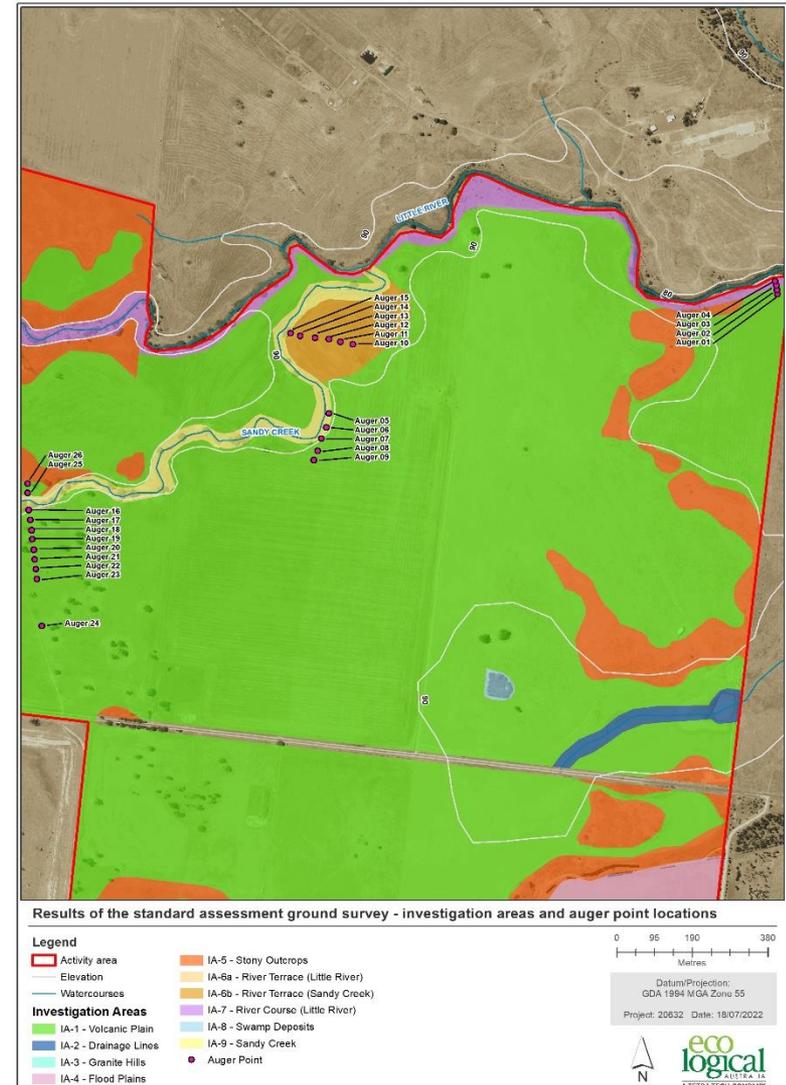
Augers 5, 6, and 7 were excavated in close proximity to the watercourse and had a relatively shallow depth (250-400mm). The stratigraphy transitioned to a very shallow volcanic soil profile in augers 8 and 9. These probes contained clayey silt over clay at 100-150mm depth, although some sand content was present in Auger 9.

Augers 10-15 revealed a shallow volcanic soil profile within the eastern portion of the landform (Augers 10, 11) that transitioned to a deeper profile of sandy silts and sands within the centre and western portion of the terrace landform (Augers 12-15).

The sandier profile was evident between 400 and 800mm depth and was predominately of a weak consistency, with relatively alkaline pH levels and overlay a mottled sandy clay.

The soil augers suggest that these sandy deposits extend approximately 130m off the bank of Sandy Creek and into the terrace before transitioning to a profile representative of the volcanics plains.

Augers 16 – 26 were excavated along a N-S transect extending from the volcanic plains and across Sandy Creek. Augers 21-24 comprised a silt profile overlaying shallow clays at 200-300mm depth. Auger 20, approximately 150m off the watercourse revealed a soil profile of 600mm depth with sand content amongst silts and clays. The profile was generally deeper from this location to the watercourse, with sand content consistent within silt and clay deposits. Augers 25 and 26 contained a considerably deep and sandy soil profiles reaching 1,500mm in depth.



Artefact Summary

IA	Landform	Artefacts present	Scarred Trees	Number of stone artefacts identified	% of stone artefact assemblage
1	Volcanic plain	Y		227	27
2	Drainage Lines	Y		9	1
3	Granite hills	Y	1	105	13
4	Flood Plains	Y	2	6	1
5	Stony Outcrops	Y		22	3
6a	Little River Terrace	Y		340	40
6b	Sandy Creek Terrace	N		0	0
7	Little River	Y		46	5
8	Swamp deposits	N		0	0
9	Sandy Creek	Y		84	10
Total			3	839	100

427 artefacts identified between 0-50m from watercourses (51%)

153 artefacts identified between 50-100m from watercourses (18%)

63 artefacts identified between 100-150m from watercourses (8%)

196 artefacts identified more than 150m from watercourses (23%)

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Artefact Summary

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More than 150m from watercourses
23% of assemblage or 196 artefacts

IA-1 Vol. Plains	71 artefacts
IA-2 Drainage Lines	9 artefacts
IA-3 Granite Hills	105 artefacts
IA-4 Flood Plains	6 artefacts
IA-5 Stony Outcrops	5 artefacts

Within 150m of watercourses
77% of assemblage or 643 artefacts
18% of activity area

Within 100m from watercourses
68% of assemblage or 580 artefacts
Accounts for 9% activity area

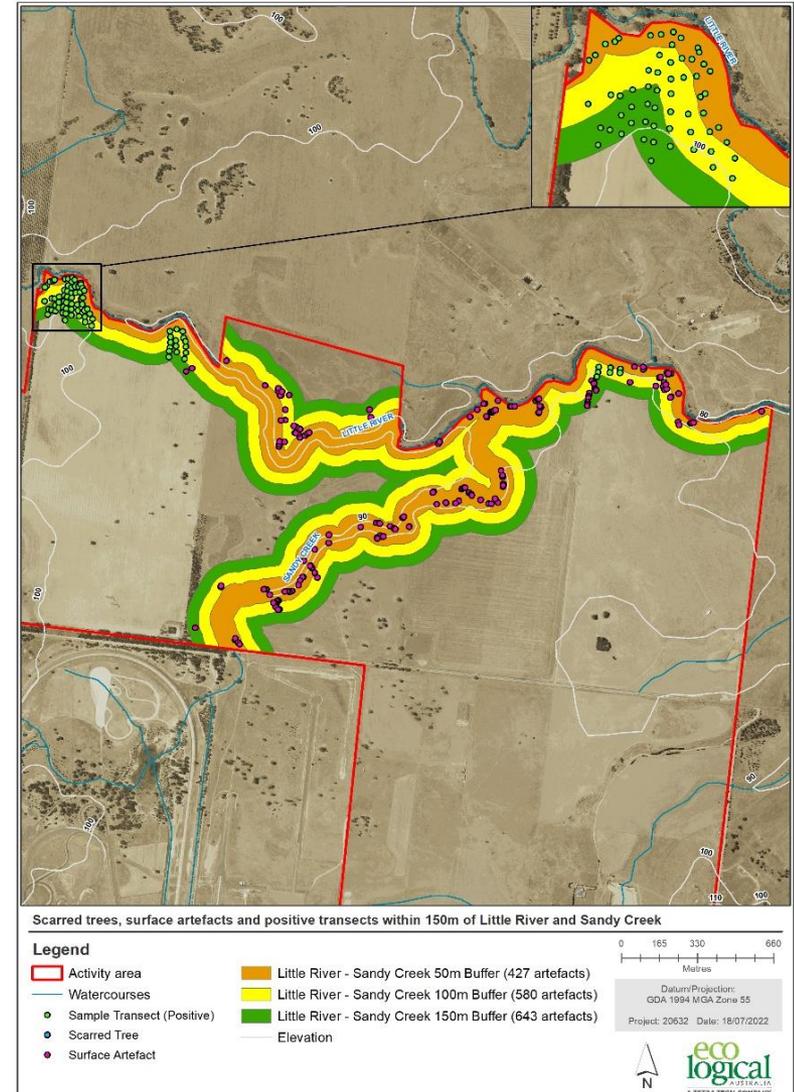
Within 50m from watercourses
51% of assemblage or 427 artefacts
Accounts for 4.5% activity area

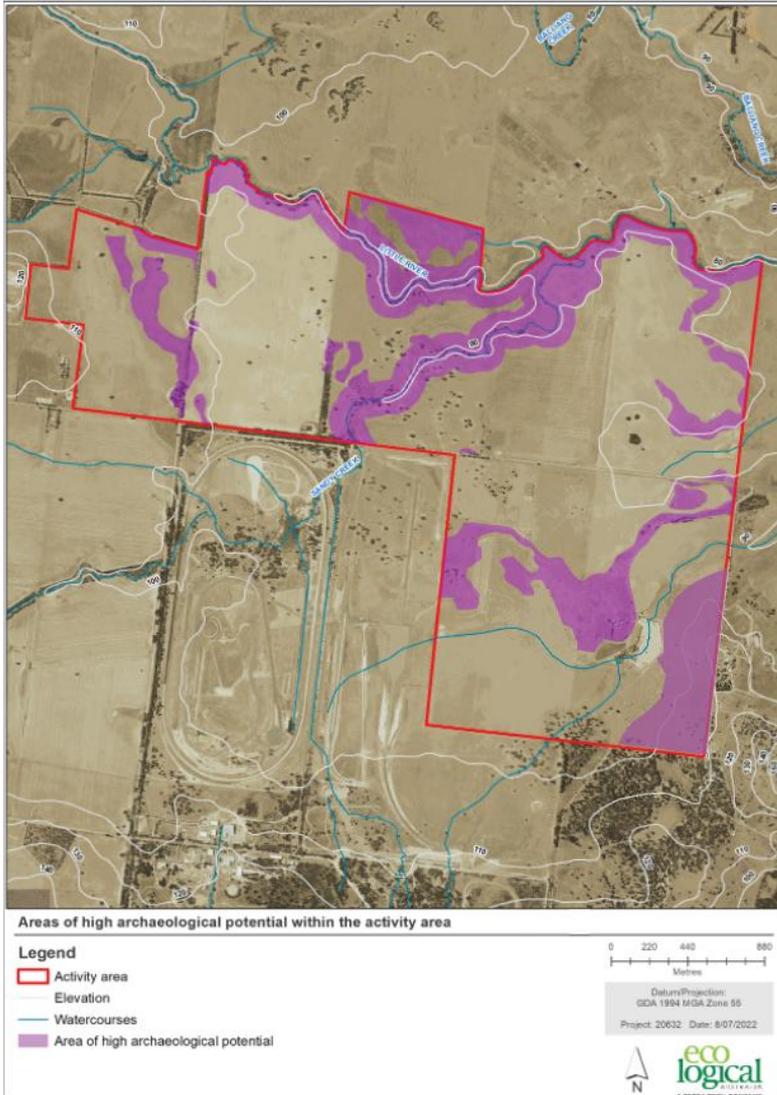
Volcanic Plain: 227 artefacts

156 within 150m

48 between 150-200m

23 greater than 200m





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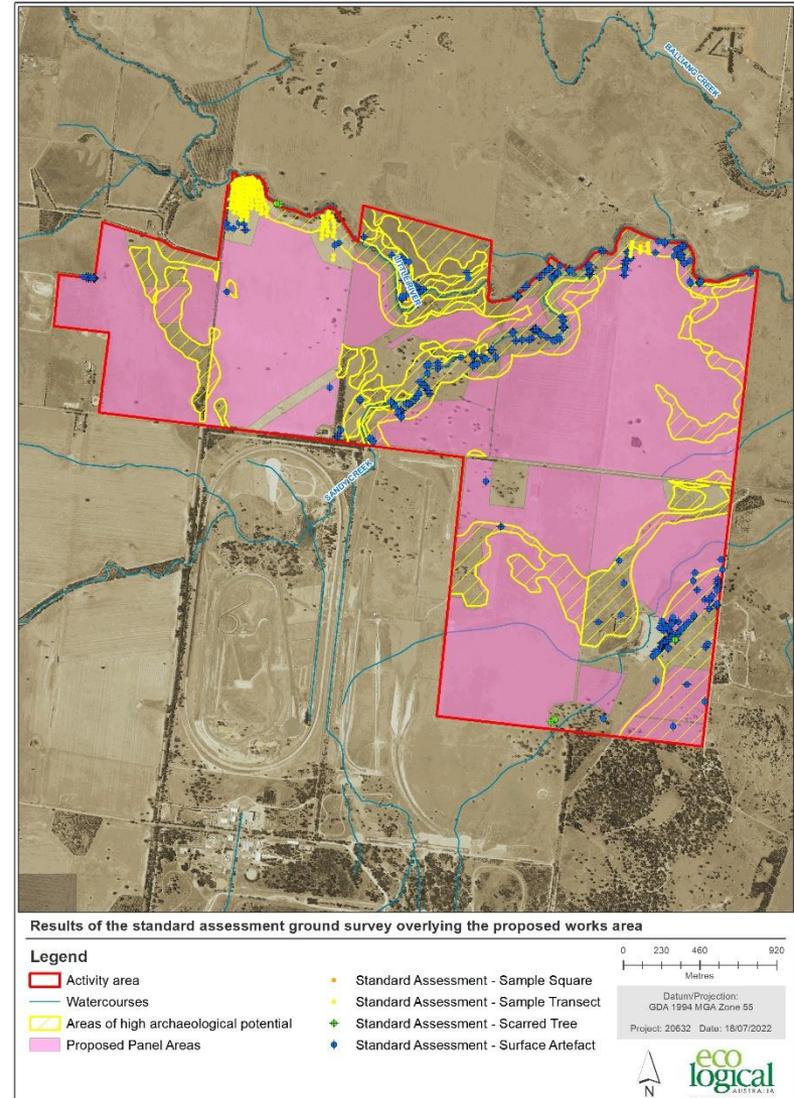
Investigation Area	Archaeological Sensitivity Rating	Disturbance Rating	APR
IA-1 Volcanic Plain <100m from watercourse	3	3	9
IA-1 Volcanic Plain >100m from watercourse	1	3	3
IA-2 Drainage Lines	2	2	4
IA-3 Granite Hills	3	3	9
IA-4 Flood Plains	1	3	3
IA-5 Stony Rise	3	3	9
IA-6a Little River terrace	3	3	9
IA-6b Sandy Creek terrace	3	3	9
IA-7 Little River	3	3	9
IA-8 Swamp Deposits	2	2	4
IA-9 Sandy Creek	3	3	9

Proposed Impacts

Harm avoidance to

- IA-6b Little River Terrace
- IA-7 Little River Corridor
- IA-8 Sandy Creek
- Variable offset from watercourses
- ~ 80% of artefacts identified during the standard assessment to be avoided

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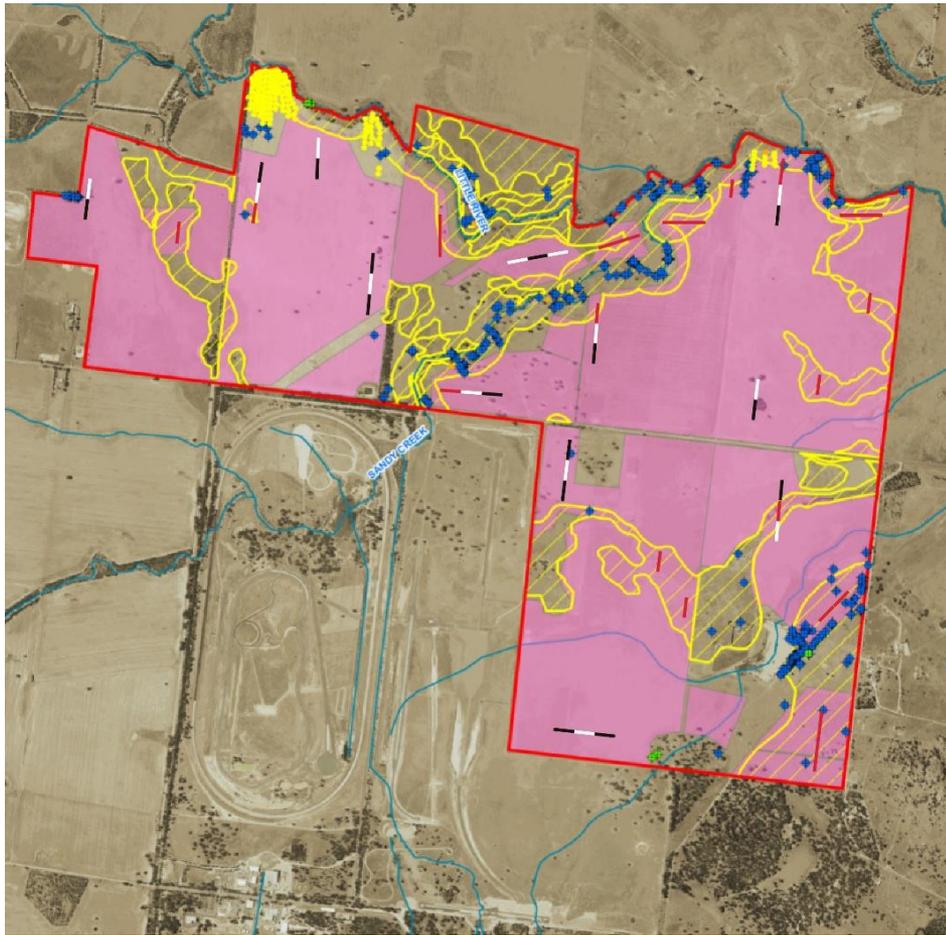
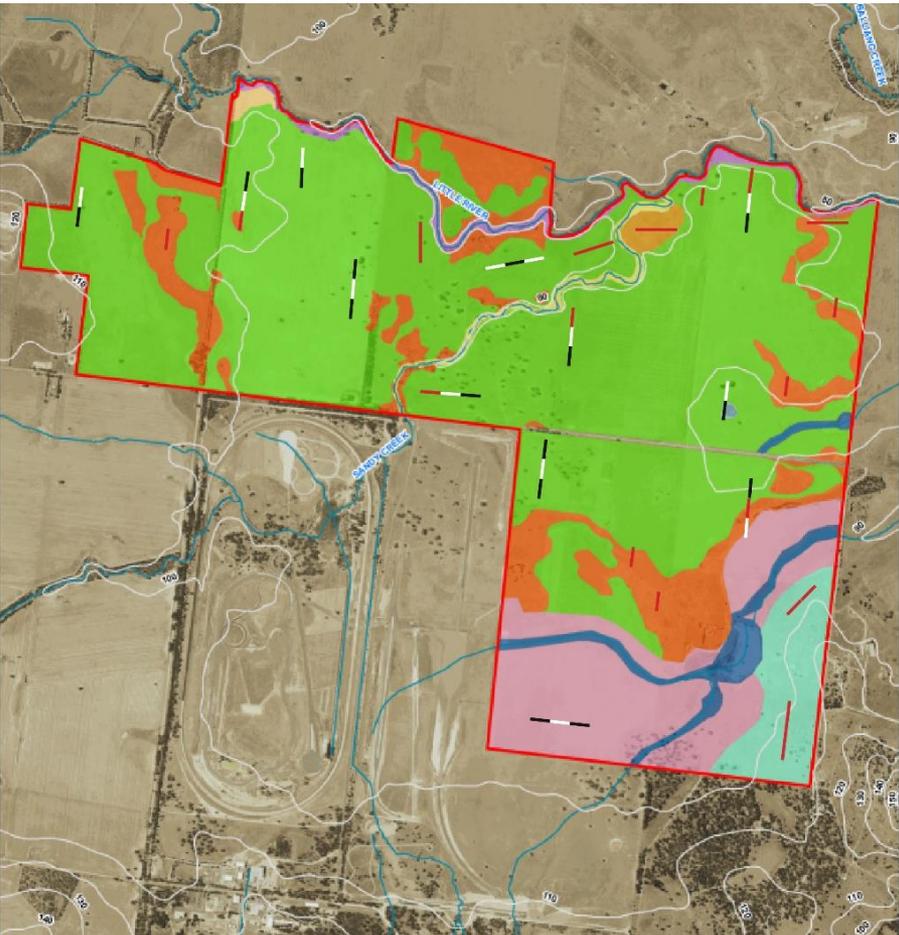


Complex Assessment Program

Landform	Proposed testing program	Outcome
<ul style="list-style-type: none"> • Volcanic Plains within proximity to Sandy Creek and Little River • Sandy Creek Terrace • Granite Hills • Stony Outcrops 	<p>Testing strategy of</p> <ul style="list-style-type: none"> • 50 x 50cm STPs Excavated at 10m intervals along 24 100m along transects • 1x1m test pits included across these 24 100m transects (one 1x1 each 100m) 	<p>A total of</p> <ul style="list-style-type: none"> • 216 STPs • 24 1x1m test pits <p>Equating to 78m²</p>
<ul style="list-style-type: none"> • Volcanic Plains – away from watercourses • Floodplain • Drainage Lines • Swamp 	<p>Testing strategy of</p> <ul style="list-style-type: none"> • 1x1 manual test pits • 2x1 mechanical test trenches. <p>Excavated at 100m intervals transects spaced across these landforms.</p> <p>Two 2x1m : One 1x1m ratio</p>	<p>A total of</p> <p>12 1x1m test pits</p> <p>24 2x1m mechanical trenches</p> <p>Equating to 60 m²</p>
		<p>TOTAL 138m²</p>

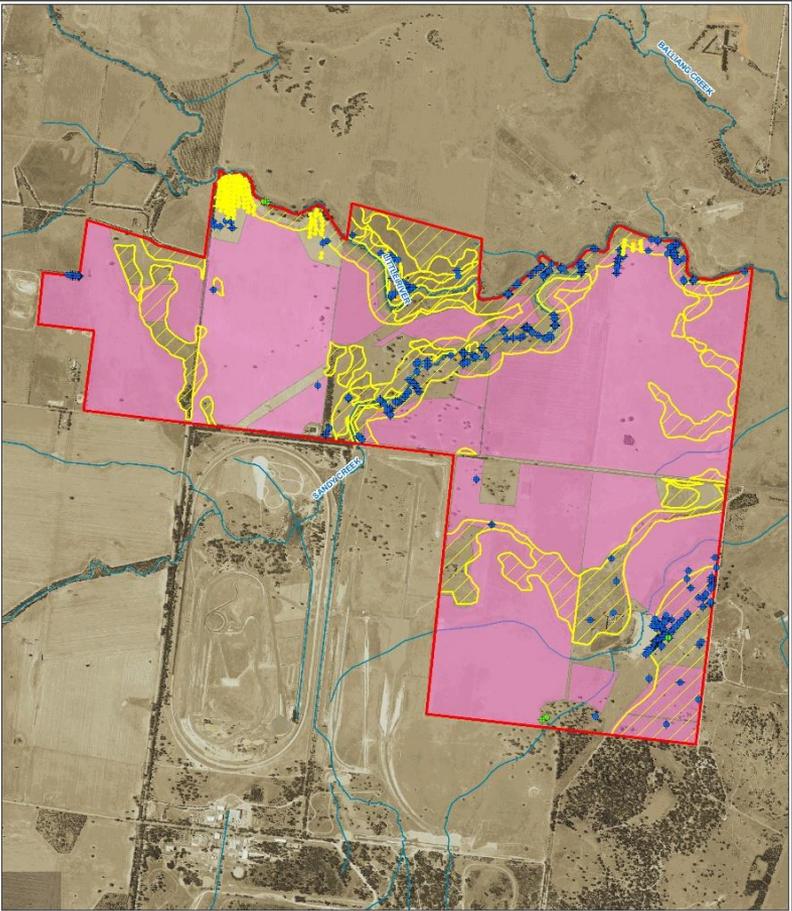
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Complex Assessment Program



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Complex Assessment Program



Results of the standard assessment ground survey overlying the proposed works area

Legend

- Activity area
- Watercourses
- Areas of high archaeological potential
- Proposed Panel Areas
- Standard Assessment - Sample Square
- Standard Assessment - Sample Transect
- + Standard Assessment - Scarred Tree
- ◆ Standard Assessment - Surface Artefact

0 230 460 920
Metres

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