

SUMMARY OF STATE HERITAGE PLACE - DESIGNATION

REGISTER ENTRY

**Entry in the South Australian Heritage Register in accordance with the
*Heritage Places Act 1993***

NAME:	Tertiary Silcrete Flora, Stuarts Creek	PLACE: 14419
ADDRESS:	Arabana Country 80 kms West of Marree Plan parcels: CL6166/902 D54705 A33	

STATEMENT OF DESIGNATION

Designated Place of Palaeontological Significance

The Tertiary Silcrete Flora, Stuarts Creek fossil site is one of the most significant plant fossil sites in South Australia. Regarded for its complexity and unique fossil assemblage, the site contains an abundance of exceptionally preserved plant remains.

Tertiary Silcrete Flora, Stuarts Creek's proposed Miocene-Pliocene age makes it younger than nearby fossil sites, placing it in a transitional period in Australia's environmental history. The site depicts a unique transition from an earlier rainforest-like climate to arid climates seen today. Tertiary Silcrete Flora, Stuarts Creek provides the best record of this environmental transition within the State and perhaps Australiaⁱ.

The Tertiary Silcrete Flora, Stuarts Creek site contains a distinctive, diverse and uncommon range of fossil flora, with both tropical/monsoonal rainforest and arid-adapted flora found within the same site, notably arid-adapted *Eucalyptus* and *Banksia* species and the rainforest/monsoonal flora, *Gymnostoma* and *Brachychiton* that are abundant, well-preserved and uncommon in similarly aged sitesⁱⁱ. Imprints of *Eucalyptus* fruits found at Tertiary Silcrete Flora, Stuarts Creek have enabled stratigraphic correlation of the site with other Tertiary deposits from around the worldⁱⁱⁱ.

The fossil *Banksia* population provides valuable evidence of the species' evolution, including linking ancient, interconnected *Banksia* populations throughout Central, South-Western and South-Eastern Australia that are currently fragmented^{iv}. Particularly important is the discovery and identification of *Banksiaeaeformis langii* that resembles modern *Banksia* much more than older, Tertiary examples. The majority of the fossil

plant species present in the site are at present unidentified and much research remains to be done on these fossils.

Elements of Significance:

Elements of heritage significance include (but are not necessarily limited to):

- The only known Miocene-Pliocene fossil flora site within South Australia.
- Fossiliferous creek beds and all fossils within the designated area
- Aeolian (Wind-blown) "Silicified Tertiary ridges" and sand dunes and sedimentary river deposits that have been designated as Geological Monuments in the area
- Rare preservation of identifiable fossil leaves as well as fossil fruit rarely found.
- Identifiable and datable Eucalyptus gumnuts and fruit found at only one other fossil site in South Australia.
- A globally important fossil site used for stratigraphic dating^v.
- Presence of rare *Banksieaeformis* specimens that were previously only found within early Tertiary period fossil deposits^{vi}.
- Type locality for *Banksieaeformis langii* (Held at the PIRSA Core Library)^{iv}.
- Evidence of rainforest/monsoonal and arid adapted species.
- Proof of complex palaeoclimates allowing numerous research opportunities.

Elements not considered to contribute to significance of place include (but are not necessarily limited to):

- Non-fossiliferous areas and pre-established housing developments/grazing land

COMMENTARY ON THE LISTING

Description and notes with respect to a place entered in the South Australian Heritage Register in accordance with the *Heritage Places Act 1993*

Physical Description:

The Tertiary Silcrete Flora, Stuarts Creek site is within a dry and remote area just south of Lake Eyre and nearby to the Wabma Kadarbu Mound Springs. As stated in its title, the fossil flora is found within silcrete in the Stuarts Creek riverbed. The solid rock preserves fossil flora in high detail.

Aboriginal Cultural Considerations:

The Heritage Places Act 1993 makes provision for the identification, recording and conservation of places and objects of non-Aboriginal heritage significance. The protection and preservation of Aboriginal heritage is provided for under the Aboriginal Heritage Act 1988. Contact the Aboriginal Heritage Unit for listings.

The area contains notable and often common evidence of First Nations campsites including tools, some stone and quarries created from which sandstone grindstones could be made as well as trade routes that passed nearby to the area^{vii}. It is also nearby to the exceptionally significant Wabma Kadarbu Mound Springs and Kati Thanda-Lake Eyre, both of which have a rich cultural history.

References

Ambrose, G, Callen, R, Flint, R & Lange, R (1979), 'Eucalyptus fruits in stratigraphic context in Australia', *Nature*, Vol. 280, pp.387-389.

Greenwood, D, Callen, R & Alley, N (1990), 'The correlation and depositional environment of tertiary strata based on macrofloras in the southern Lake Eyre Basin, South Australia', (*Department of Mines and Energy, South Australia, Report Book No. 90/15*).

Greenwood, D, Haines P & Steart, D (2001), 'New species of Banksieaeformis and a Banksia 'cone' (Proteaceae) from the Tertiary of central Australia', *Australian Systematic Botany*, Vol. 14, pp. 871-890.

Hill, R (2021), Personal Communication.

Kerwin, D (2010), "Aboriginal Dreaming Paths and Trading Ways", Queensland Historical Atlas, < <https://www.qhatlas.com.au/content/aboriginal-dreaming-paths-and-trading-ways>>, accessed 15/12/2021

Kerwin, D (2006), "Aboriginal Dreaming Tracks or Trading Paths: The Common Ways", PhD Thesis, Griffith University, Queensland.

McBriar, E & Hasenohr, C (1994), 'Geological Monuments in South Australia: Part 8' (On behalf of the *Geological Monuments Subcommittee of the SA Division of the Geological Society of Australia Incorporated*, pp. 136).

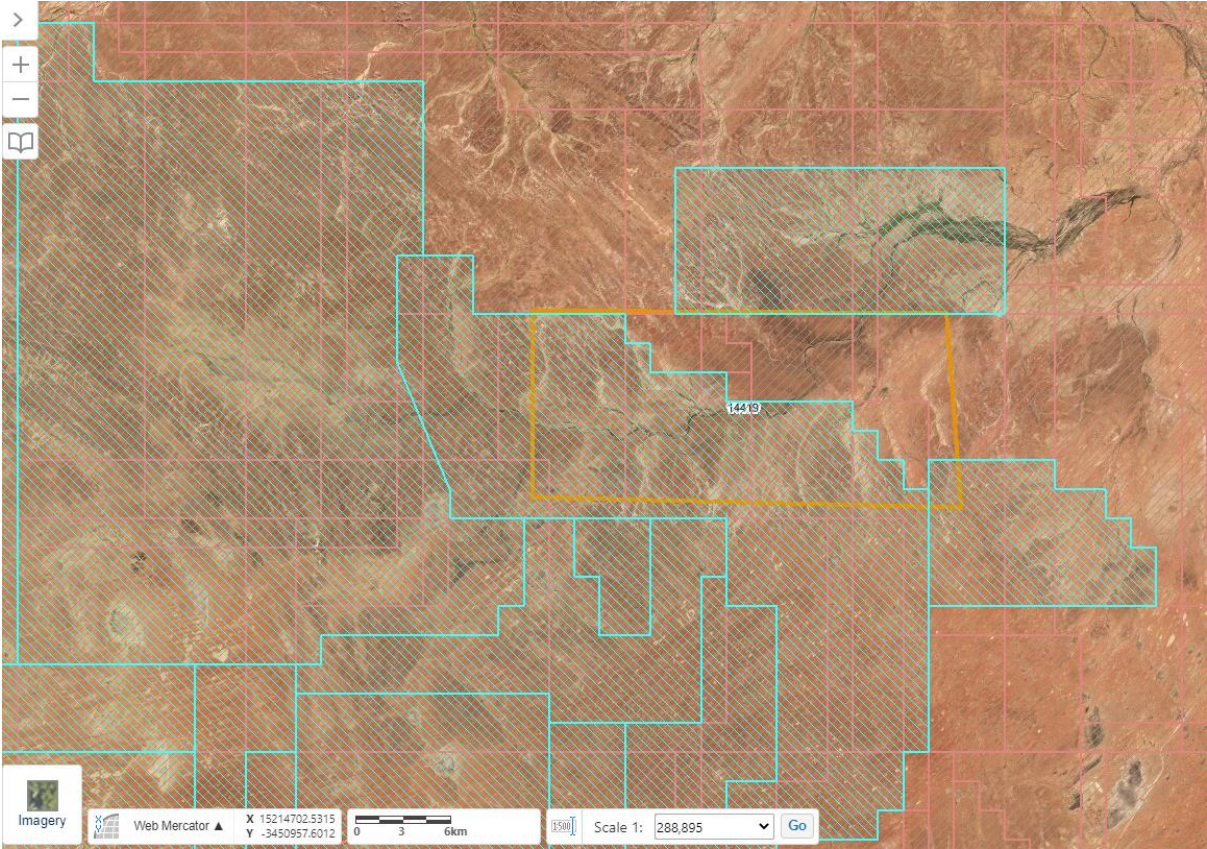
Rowett, A (1997), "Earthwatch '96" (MESA Journal, vol. 5).

Westaway, M et al. 2021, "Hidden in plain sight: the archaeological landscape of Mithaka Country, south-west Queensland", *Antiquity*, Vol. 95, pp. 1043-1060.

SITE PLAN

Tertiary Silcrete Flora, Stuarts Creek




PLACE NO.: 14419



80 kms West of Marree
(CL6166/902 D54705 A33)

N ↑

LEGEND

-  Existing State Heritage Place(s) (Indicates extent of proposed Designation Area)
-  Mineral and Opal Exploration Licences
-  Mineral and Opal Exploration Licences – Non Active

ⁱ Hill, R (2021) Personal Communication.

ⁱⁱ Greenwood, D, Callen, R & Alley, N (1990), "The correlation and depositional environment of tertiary strata based on macrofloras in the southern Lake Eyre Basin, South Australia" (Department of Mines and Energy, South Australia, Report Book No. 90/15).

ⁱⁱⁱ McBriar, E & Hasenohr, C (1994) "Geological Monuments in South Australia: Part 8" (On behalf of the Geological Monuments Subcommittee of the SA Division of the Geological Society of Australia Incorporated, pp. 136).

^{iv} Greenwood, D, Haines P & Steart, D (2001), "New Species of *Banksiaeformis* and a *Banksia* 'Cone' (Proteaceae) from the Tertiary of Central Australia" (Australian Systematic Botany, Vol. 14, pp. 871-890).

^v Ambrose, G, Callen, R, Flint, R & Lange, R (1979) "Eucalyptus fruits in stratigraphic context in Australia" (Nature, Vol. 280, pp. 387-389).

^{vi} Rowett, A (1997), "Earthwatch '96" (MESA Journal, vol. 5).

^{vii} Westaway, M *et al.* 2021, "Hidden in plain sight: the archaeological landscape of Mithaka Country, south-west Queensland", *Antiquity*, Vol. 95, pp. 1043-1060.