Targeted Surveys for Threatened Flora Species

Banksia sphaerocarpa var. dolichostyla

Summary Report

Earl Grey Lithium Project

May 2017

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1. INTRODUCTION

The Earl Grey Lithium Project (the Project) is located approximately 105 km south-southeast of Southern Cross, Western Australia (Figure 1). A large, economic pegmatite-hosted lithium deposit was discovered by Kidman Resources Limited (Kidman) in 2016. The deposit and proposed operation is situated at the abandoned Mt Holland Mine Site, which was operated between 1988 and 2001, and comprises a number of open pits, an underground mine, a processing plant, waste rock dumps, tailings storage facilities and other infrastructure that is largely un-rehabilitated and currently a liability of the State of Western Australia.

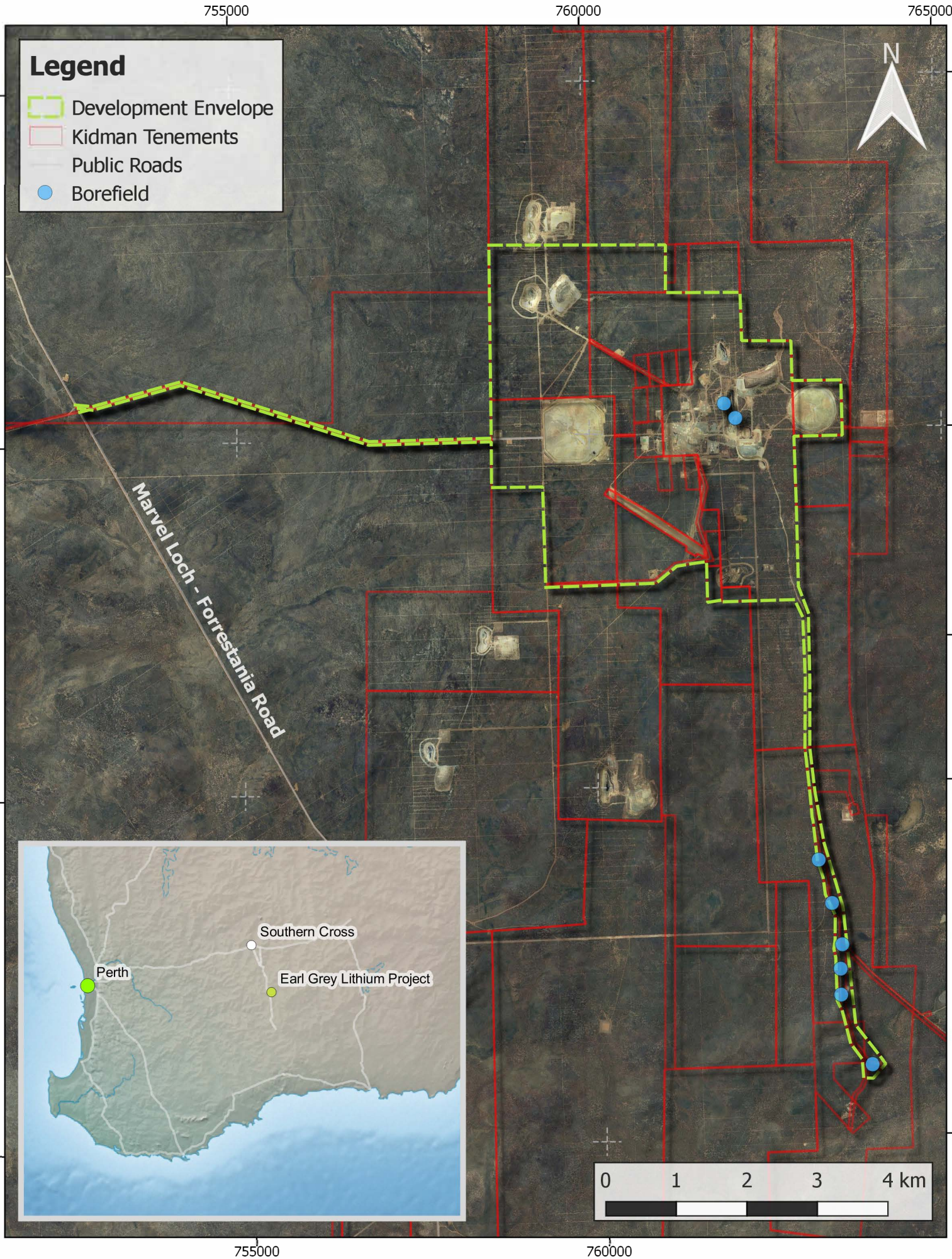
Previous surveys of the area identified the presence of one threatened flora species listed under State and Federal legislation, the *Banksia sphaerocarpa* var. *dolichostyla*.

Three flora surveys targeting *Banksia sphaerocarpa* var. *dolichostyla* and a comprehensive flora and vegetation survey were completed in the development envelope in 2014, 2016 and 2017.

The surveys recorded 521 specimens *of Banksia sphaerocarpa* var. *dolichostyla* from a number of locations including adjacent to the existing landfill, various roads, the accommodation camp and a borrow pit

No specimens of the *Banksia sphaerocarpa* var*. dolichostyla* occur in the proposed Project disturbance footprint.

This report summarises the methodology and results of four flora surveys for *Banksia sphaerocarpa* var. *dolichostyla* completed in the vicinity of the Earl Grey Lithium Project and associated development areas between 2014 and 2017.



Scale: 80,000 Original Size: A4 Aerial Photo Date: 2014 Grid: Australia MGA94 (50)	**Kidman Resources Limited** **Earl Grey Lithium Project**	**Figure 1** **Location Plan**	**Blueprint Environmental Strategies** **info@blueprintstrategies.com.au** **www.blueprintstrategies.com.au**

2. *BANKSIA SPHAEROCARPA* VAR. *DOLICHOSTYLA*

2.1 Conservation Status

Banksia sphaerocarpa var. *dolichostyla* is a species of conservation significance, protected under both State and Federal environmental legislation as follows:

- *Environment Protection and Biodiversity Conservation Act 1999* – Vulnerable.
- *Wildlife Conservation Act 1950* – Schedule 3; Flora that are considered likely to become extinct or rare, as Vulnerable flora.

2.2 Description

Banksia sphaerocarpa var. *dolichostyla* is a lignotuberous shrub or small tree 2 to 4 metres tall, with long and narrow, bluish green, toothless or lobeless leaves. The flowers are golden. The inflorescences are upright and spherical, opening from the apex down. The styles are hooked just below the apex. The fruiting cone is spherical with up to 60 follicles, often crowded and at first with spreading hairs which may wear off on exposed surfaces. It is known to flower between March and May. Derivation of the name is from the Greek dolichos (long), and stylos (pillar and hence style) in reference to the very long pistil. The flowers and foliage of the plant are shown on Plate 1 (WAH, 2017).

Plate 1: *Banksia sphaerocarpa* var. *dolichostyla* (WAH 2017)

2.3 Distribution

Banksia sphaerocarpa var. *dolichostyla* is confined to an area east of the cleared wheatbelt within the Narrogin and Merredin Districts. It occurs on Vacant Crown Land north from Digger Rocks through Forrestania to Mt Holland (DoEE 2017; Durell & Buehrig 2001).

This species prefers iron-capped rises on ironstone profiles. It is found in low woodlands to low shrublands with associates which include Dryandra and Allocasuarina species (DoEE 2017; Durell & Buehrig 2001).

3. FLORA SURVEYS

Three flora surveys targeting *Banksia sphaerocarpa* var. *dolichostyla* and one comprehensive flora and vegetation survey have been completed in the Project area. These are described in Sections 3.1 to 3.4, with a summary provided in Table 1 and the areas shown in Figure 2.

3.1 2014 Targeted Survey

Between 11 and 13 August 2014 Native Vegetation Solutions (NVS) conducted a targeted flora survey for *Banksia sphaerocarpa* var. *dolichostyla* in areas proposed for infrastructure at that time. These areas comprised the existing processing area, TSF1, roads, accommodation village, Razorback pit, a pipeline corridor from Blue Vein pit to Razorback, a powerline corridor and the existing landfill site.

The areas were walked and roads were driven.

The survey did not record any Threatened or Priority flora within the proposed infrastructure areas. *Banksia sphaerocarpa* var. *dolichostyla* was recorded outside of the proposed infrastructure areas; alongside the existing rubbish landfill, airstrip, main haul road, camp access road and processing area.

All locations of surveyed *Banksia sphaerocarpa* var. *dolichostyla* are shown on Figure 3.

A memorandum was provided to Blueprint Environmental Strategies outlining the survey methodology and results (NVS 2014).

3.2 2016 Targeted Survey

A targeted flora survey for *Banksia sphaerocarpa* var. *dolichostyla* was undertaken by NVS on 14 September 2016, after Kidman site personnel had identified a potential Banksia species within the Earl Grey prospect. The targeted survey was conducted within an area proposed for exploration development.

The area was walked and driven by a 4WD vehicle.

No *Banksia sphaerocarpa* var. *dolichostyla* were recorded within the survey area. The potential Banksia species identified by site personnel was positively identified as *Banksia laevigata* subsp. *fuscolutea*, which is not of conservation significance. In addition, NVS reported that the majority of vegetation within the survey area comprised mallee woodland over melaleuca shrubland, which is not considered suitable habitat for *Banksia sphaerocarpa* var. *dolichostyla*.

A memorandum was provided to Blueprint Environmental Strategies outlining the survey methodology and results (NVS 2016).

3.3 2016 Flora and Vegetation Survey

A comprehensive flora and vegetation survey of the Earl Grey prospect (and three additional prospects) was completed between 24 - 26 October and 9 - 10 November 2016. The aim of the survey was to identify and record the distribution of any conservation significant flora species and vegetation communities.

The survey was undertaken by two experienced botanists who established 26 quadrats in the Earl Grey prospect.

The survey recorded one *Banksia sphaerocarpa* subsp. *dolichostyla*. approximately 200 m from the eastern side of the Earl Grey prospect, in a vegetation community which is bisected by an old haul road. The location of the surveyed *Banksia sphaerocarpa* var. *dolichostyla* is shown on Figure 3.

Banksia sphaerocarpa subsp. *dolichostyla* was not recorded in the Earl Grey prospect and the preferred soils and landforms of the species were absent from this area.

3.4 2017 Targeted Survey

A targeted flora survey for *Banksia sphaerocarpa* var. *dolichostyla* was undertaken by Goldfields Landcare Services between 27 and 29 April 2017. The purpose of the survey was to identify *Banksia sphaerocarpa* var. *dolichostyla* in areas where clearing and/or disturbance is proposed within the development envelope for the Earl Grey Lithium Project.

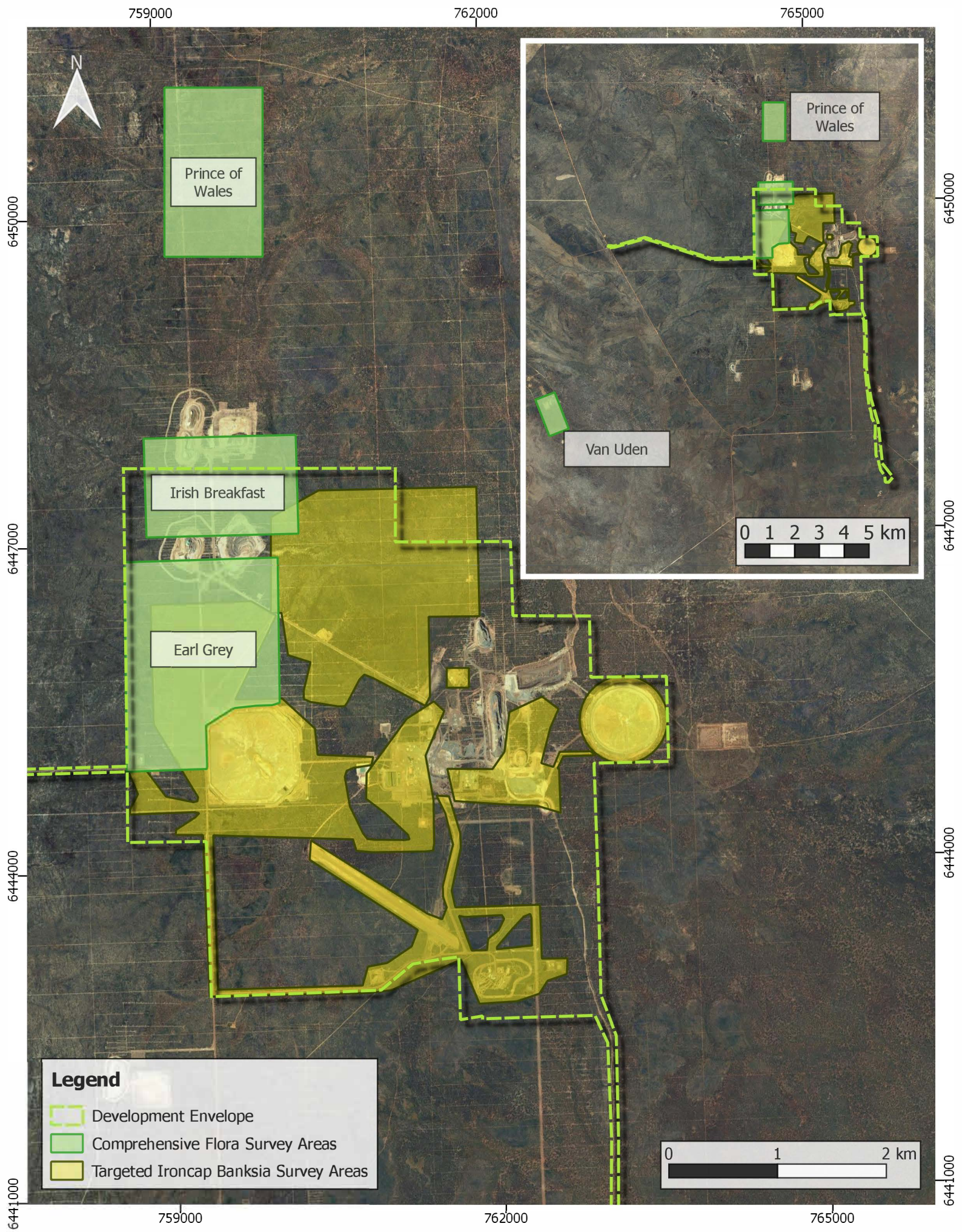
The survey was completed by two Botanists and an assisting Environmental Scientist. The density of the search was based on the surrounding environment and vegetation communities, targeting areas that may support *Banksia sphaerocarpa* var. *dolichostyla.* These areas comprised very sparse scrub of *Allocasuarina acutivalvis* subsp. *acutivalvis* over *Banksia purdieana* and *Hakea scoparia* heath with very sparse *Beaufortia orbifolia* and scattered *Isopogon teretifolius* over mixed open dwarf scrub of *Melaleuca cordata*, *Banksia laevigatum* subsp. *fuscolutea* and *Hemigenia dielsii* on orange silt with a thin mantle of laterite pebbles and minor outcropping laterite. Target areas were covered on foot using a high density search pattern, with the track and Banksia specimens recorded using a handheld GPS.

No new *Banksia sphaerocarpa* var. *dolichostyla* communities were recorded, but a known community located next to the gravel pit, east of the proposed Early Grey pit, was found to contain significantly more specimens than previously identified.

All locations of surveyed *Banksia sphaerocarpa* var. *dolichostyla* are shown on Figure 3.

Table 1: Summary of Targeted Flora Surveys

Date	Extent/Area	Results/Findings
11 – 13 August 2014	Proposed infrastructure areas (processing area, TSF1, roads, accommodation village, Razorback pit, a pipeline corridor from Blue Vein pit to Razorback, a powerline corridor and the existing landfill site) (Figure 2)	• No Threatened or Priority Flora within infrastructure areas. • *Banksia sphaerocarpa* var. *dolichostyla* was recorded outside infrastructure areas alongside the existing rubbish landfill, haul road and access road (Figure 3).
14 September 2016	Proposed Earl Grey pit and surrounds (Figure 2).	• *Banksia sphaerocarpa* var. *dolichostyla* was not recorded. • Vegetation type was not considered suitable habitat for *Banksia sphaerocarpa* var. *dolichostyla*.
24 - 26 October and 9 - 10 November 2016	Earl Grey prospect, Irish Breakfast prospect, Prince of Wales prospect and Van Uden prospect (Figure 2).	• *Banksia sphaerocarpa* subsp. *dolichostyla* was not recorded in an of the survey areas. • *Banksia sphaerocarpa* subsp. *Dolichostyla* was recorded approximately 200 m from the eastern side of the Earl Grey prospect (Figure 3).
27 - 29 April 2017	Proposed infrastructure areas within the Earl Grey Lithium Project development envelope (Figure 2).	• *Banksia sphaerocarpa* var. *dolichostyla* was not recorded from any new locations, however additional specimens were recorded from a known location east of the proposed Earl Grey pit (Figure 3).



Scale: 50,000 Original Size: A4 Aerial Photo Date: 2017 Grid: Australia MGA94 (50)	**Kidman Resources Limited** **Earl Grey Lithium Project**	**Figure 2** **Flora Survey Areas**	**Blueprint Environmental Strategies** **info@blueprintstrategies.com.au** **www.blueprintstrategies.com.au**

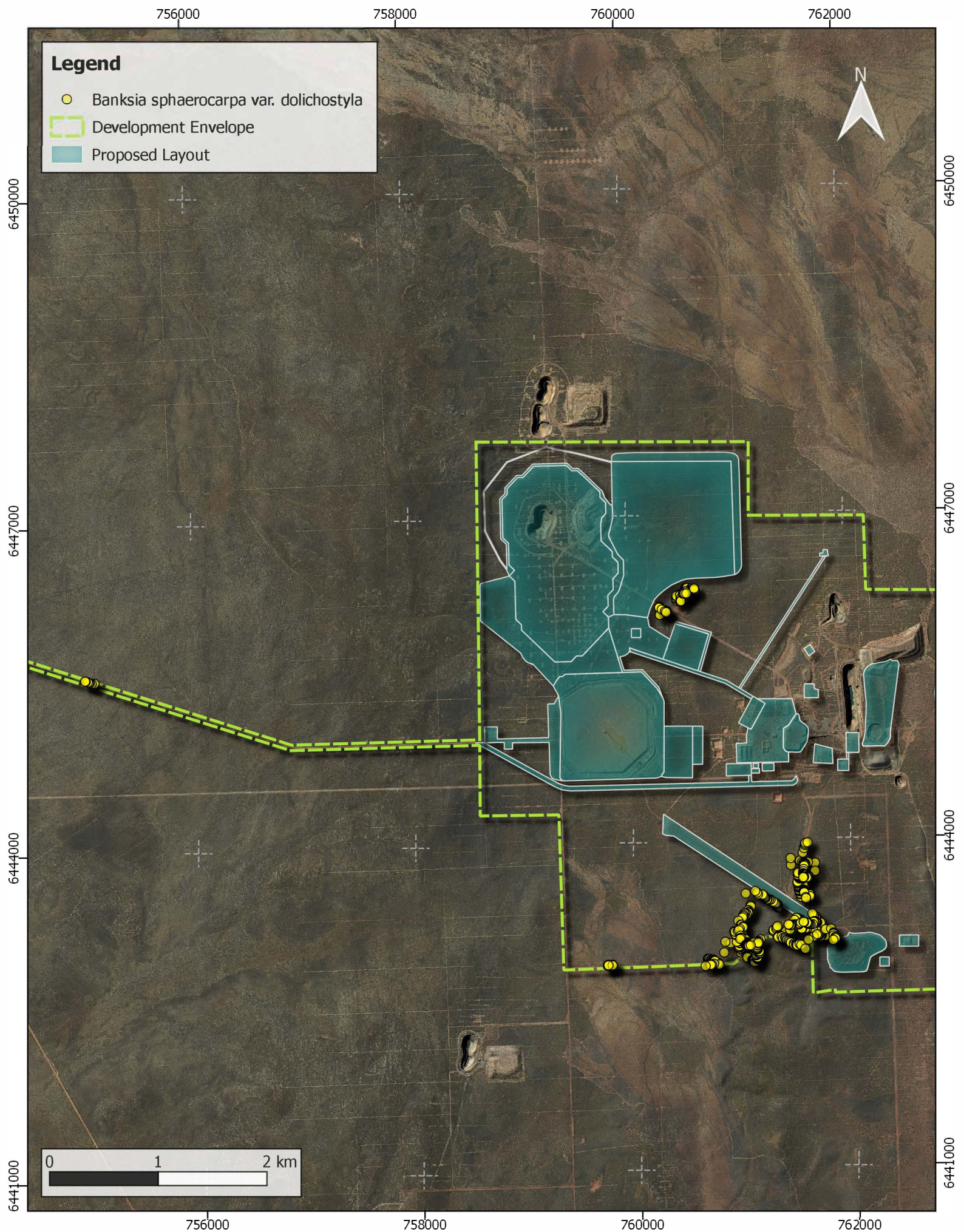
4. SUMMARY OF TARGETED FLORA SURVEY RESULTS

Targeted flora surveys of proposed infrastructure areas recorded 521 *Banksia sphaerocarpa* var. *dolichostyla* individuals from what were considered to be four discrete populations.

The most significant population is situated between the existing accommodation camp, landfill, airstrip and access road and included over 470 individual specimens. The second largest population is located on a slightly elevated area situated east of the proposed Earl Grey pit, surrounding an existing borrow pit. This population comprised over 100 specimens. The third population was relatively minor and comprised seven individual specimens located along the main entry road to the Project and was situated outside of the Earl Grey Lithium Project development envelope.

Kidman has designed the proposed Earl Grey Lithium Project to minimise impacts on *Banksia sphaerocarpa* var. *dolichostyla,* with all proposed infrastructure situated to avoid known specimens.

The locations of all individuals and populations are shown on Figure 3.



Scale: 50,000 Original Size: A4 Aerial Photo Date: 2017 Grid: Australia MGA94 (50)	**Kidman Resources Limited** **Earl Grey Lithium Project**	**Figure 3** **Banksia sphaerocarpa var. dolichostyla Locations**	**Blueprint Environmental Strategies** **info@blueprintstrategies.com.au** **www.blueprintstrategies.com.au**

//Mac/Home/OneDrive/Kidman Resources Limited/Mt Holland/Earl Grey/EPA Referral/GIS/Flora Results.qgs 18/05/2017

5. CONCLUSION

The proposed Earl Grey Lithium Project development envelope is considered to have been adequately surveyed for *Banksia sphaerocarpa* var. *dolichostyla* during the four flora surveys summarised in this report.

Banksia sphaerocarpa var. *dolichostyla* was surveyed in relatively high abundance considering its conservation status.

Banksia sphaerocarpa var. *dolichostyla* was surveyed in areas of iron-capped rises on ironstone profiles which is its preferred habitat.

Further targeted surveys would be required to determine *Banksia sphaerocarpa* var. *dolichostyla* presence outside of the areas surveyed.

6. REFERENCES

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