# Earl Grey Lithium Project Life Of Mine Proposal

## Covalent Lithium

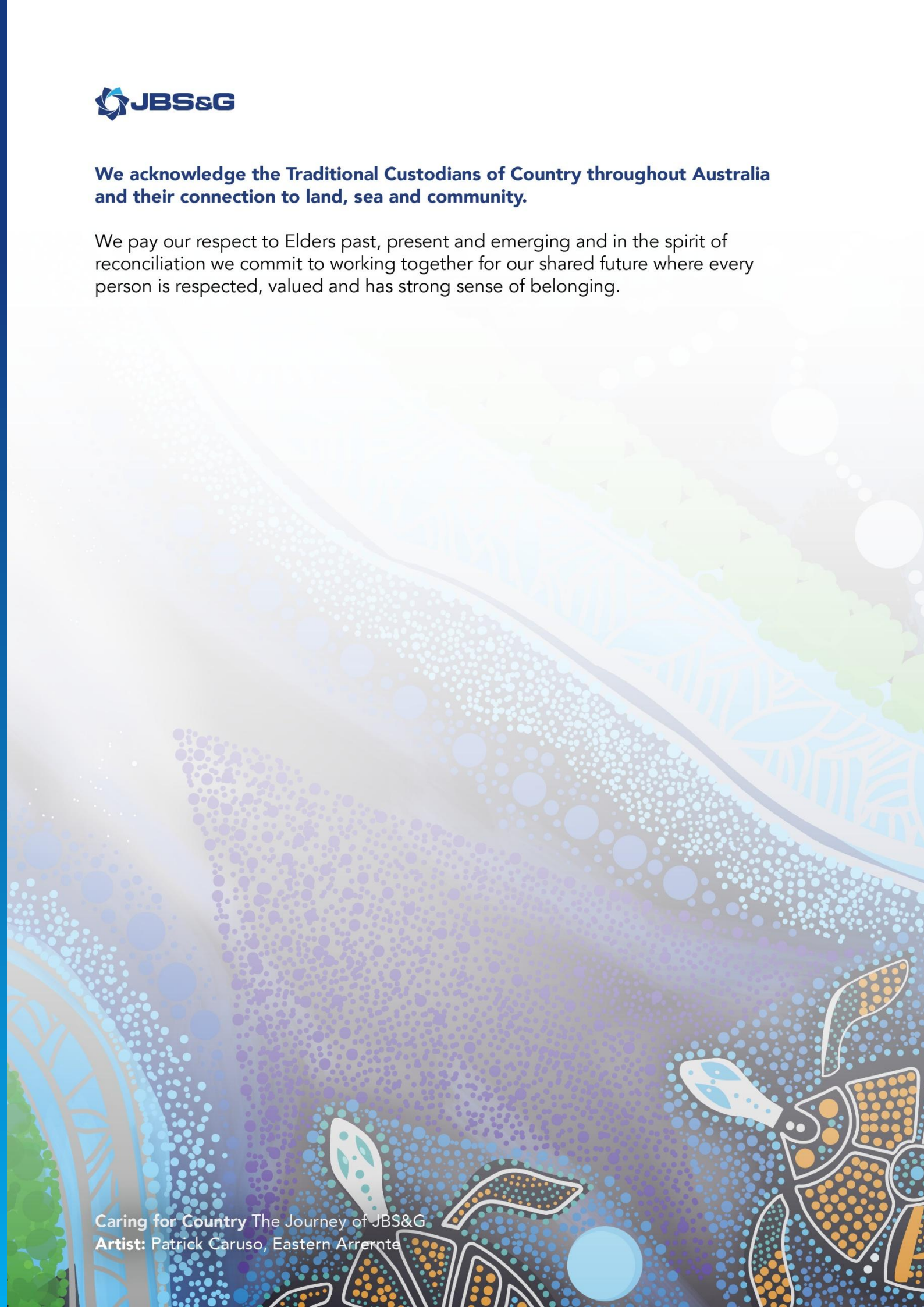
## Revised Impact Assessment – Conservation Significant Flora

**64714 | 171,535**

**21 October 2025**

**We acknowledge the Traditional Custodians of Country throughout Australia and their connection to land, sea and community.**

We pay our respect to Elders past, present and emerging and in the spirit of reconciliation we commit to working together for our shared future where every person is respected, valued and has strong sense of belonging.



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# 1. Introduction

The Early Grey Lithium Project (EGLP) is currently operated by Covalent Lithium Pty Ltd (Covalent Lithium), as the Approved Project in accordance the conditions of the following approvals:

- *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) approval 2017/7950, as Varied 29/03/2022; and
- Ministerial Statement 1199 (MS 1199) issued 23 November 2022.

Previous approvals, including MS 1118 for the original proposal, were superseded by MS 1167, which is now superseded by MS 1199.

The footprint for the Approved Project provided for an initial ten years of operation; however is not sufficient to support the project life of mine (now approximately 30 years). Covalent Lithium are now seeking approval for the Life of Mine Proposal (LoM; the Proposal) which is currently under assessment by the Environmental Protection Authority (Assessment No 2387) and by the Department of Climate Change, Energy, the Environment and Water (DCCEEW), EPBC 2023/09711).

Further to the referral of the Proposal, Covalent have submitted a request to amend the proposal under assessment (under section 43A of the *Environmental Protection Act 1986* (EP Act) which includes an increase in the Development Envelope to incorporate two booster stations along the water pipeline, with no increase in approved clearing of native vegetation as referred (1885 ha, Assessment No 2387).

Clearing of native vegetation for the Approved Project and the Proposal will result in direct and potential indirect impacts to conservation significant flora, although not all impacts will have a significant residual impact.

To understand these impacts, extensive flora (and vegetation) survey effort has been undertaken both within the Approved Project and Proposal Development Envelopes (considered 'local' population data) and within the native vegetation within the vicinity of the mining operations (considered 'regional' population data). Refer to Appendix A for a list of these surveys.

The survey effort has been undertaken over multiple years and seasons by suitably qualified and experienced personnel in the survey and identification of flora taxa and vegetation units. The results of the biological surveys provide a sound basis on which to assess the potential environmental impacts of the LoM Proposal to flora (and vegetation) values and provide increased understanding of the local and regional occurrence of conservation significant flora.

The conservation status of several local flora taxa at State and Commonwealth level reflects the previous level of information for various taxa, at the time of their listing. The Covalent Lithium survey effort at Mt Holland and surrounds has increased the knowledge base for many species, and informed the impact assessments for the EGLP over time.

## 1.1 Purpose of this document

The purpose of this document is to provide a summary of the current knowledge of occurrence of conservation significant flora within the Approved Project and LoM Development Envelopes and to provide a revised impact assessment on key flora species, previously identified as being at risk of significant residual impacts from the EGLP and identifies other Priority flora that may have potentially significant residual impacts.

# 2. Conservation Significant Flora Known Records

Numerous studies have been undertaken on defining the significant flora species associated with the development of the EGLP. Many specialist botanical consultancies have been involved in undertaking surveys within the proposed Development Envelope and Disturbance Footprints associated with the EGLP since 2019.

More recently, Covalent Lithium has engaged Western Botanical to undertake regional surveys for species identified as Significant Flora within the EGLP Development Envelopes, including the Approved Project and this Proposal. Figure 2-1 provides an overview of the survey effort to date.

Table 2-1 provides a list of all conservation significant flora taxa that may be directly impacted by the Proposal, with the records previously known at the time of referral of the Proposal with the current consolidated data estimates (as of October 2025). The taxa for which there is a significant increase in total known records are highlighted in grey.

**Table 2-1: Increase in known number of taxa impacted by the Proposal**

| Taxon | Total Known Records (estimates) at time of referral for LOM | Total known records as at 17/10/2025 |
|---|---|---|
| **T** | | |
| *Banksia dolichostyla* | 26,000 | 28,102 |
| **Priority 1** | | |
| *Acacia lachnocarpa* | 30,000 | 68,468 |
| *Brachyloma stenolobum* | 6,000 | 13,128 |
| *Chamelaucium sp. Mount Holland (G. Cockerton & G. Grigg WB40918)* | n/a | 38,508 |
| *Eutaxia sp. North Ironcap (P. Armstrong PA 06/898)* | 11,500 | 52,777 |
| *Grevillea marriottii* | 21,000 | 21,713 |
| *Labichea rossii* | 9,000 | 10,775 |
| *Microcorys elatoides* | 244,000 | 364,577 |
| *Microcorys sp. Mt Holland broad-leaf (G. Barrett s.n. PERTH 04104927)* | 42,000 | 42,952 |
| *Thryptomene jilbadji* | n/a | 881,944 |
| *Thryptomene salina* | 7,500 | 50,268 |
| **Priority 2** | | |
| *Balaustion grandibracteatum subsp. junctura* | 72,000 | 304,539 |
| *Daviesia sarissa subsp. redacta* | 1,700 | 2,014 |
| *Eutaxia lasiocalyx* | 18,5000 | 186,530 |
| **Priority 3** | | |
| *Acacia undosa* | 164,500 | 164,945 |
| *Boronia ternata var. promiscua* | 49,000 | 63,761 |
| *Chorizema circinale* | 2,500 | 3,487 |
| *Hakea pendens* | 10,000 | 10,801 |
| *Teucrium diabolicum* | 68,000 | 77,603 |
| *Verticordia gracilis* | 33,000 | 35,606 |
| *Verticordia mitodes* | 2,500 | 4,496 |
| *Verticordia stenopetala* | 48,000 | 49,637 |

| Taxon | Total Known Records (estimates) at time of referral for LOM | Total known records as at 17/10/2025 |
|---|---|---|
| **Priority 4** | | |
| *Eremophila inflata* | 1,500 | 1,645 |
| *Grevillea neodissecta* | 11,000 | 11,830 |
| *Gyrostemon ditrigynus* | 54,500 | 88,336 |
| *Microcorys sp. Forrestania (V. English 2004)* | 21,5000 | 387,874 |

Imagery:

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Legend

- WB IBSA Data to be Supplied - October 2025
- Development Envelope
- Study Area
- Survey Tracklog

0 5 10km

Scale: 1:500,000
GDA 1994 MGA Zone 50

Western Botanical

| | | | |
|---|---|---|---|
| CAD Ref: Covalent_IBSA_20250924_02 | | Author: G. Cockerton | Ref: |
| Date: October 2025 | Rev: A | A3 | Drawn: CAD Resources ~ www.cadresources.com.au |

**Earl Grey Lithium Project**
**Flora Data**
**IBSA Submission October 2025**

Figure 2-1 Regional Survey Effort

# 3. Approved Project Significant Residual Impacts

The current approved disturbance at the Approved Project and associated identified significant residual impacts are described in Table 3-1. The focus of prior EPA impact assessments for the Approved Project has been on Listed Threatened Flora (under EPBC Act (Cth) and *Biodiversity Conservation Act 2016* (WA)) and Priority 1 flora taxa, as listed by the Department of Biodiversity, Conservation and Attractions (DBCA).

As described within the DBCA Conservation Category Definitions for Western Australian Fauna and Flora (Appendix B), Priority 1 species are described as:

> *Poorly-known species - known from few locations, none on conservation lands Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, for example, agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation.*
>
> *Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.*

**Table 3-1: Approved disturbance and significant residual impacts**

| Conservation significant flora impacted | EPBC Act Approval 2017/7950 (as varied 29/3/22) | | Original Proposal MS1118 | | S46 Change to Proposal MS1167 (supersedes MS1118) | | Approved Proposal MS 1199 (supersedes MS1167) | | Offsets required? |
|---|---|---|---|---|---|---|---|---|---|
| | Direct | Indirect | Direct | Indirect | Direct | Indirect | Direct | Indirect | |
| **Approved clearing** | 442 ha | | 386 ha | | 386 ha (no change) | | 442 ha | | |
| **Threatened species** | | | | | | | | | |
| *Banksia dolichostyla* (EPBC-V, BC-V) | 2 | 67 | 2 | 67 | 2 (no change) | The s46 changed the conditions of the approval to refer only to the direct impact to individuals as per EPA report 1697. | 2 (no change) | N/A | Yes |
| **DBCA Priority 1 Species** | | | | | | | | | |
| *Microcorys elatoides* | N/A | N/A | 6957 | N/A | N/A | N/A | 9732 | N/A | Yes |
| *Labichea rossii;* | N/A | N/A | N/A | N/A | N/A | N/A | No more than 7% of known population | N/A | No |
| *Microcorys* sp. Mt Holland broadleaf | N/A | N/A | N/A | N/A | N/A | N/A | No more than 7% of known population | N/A | No |
| *Acacia lachnocarpa* | N/A | N/A | N/A | N/A | N/A | N/A | No more than 5% of known population | N/A | No |
| *Any other Priority 1 species* | N/A | N/A | N/A | N/A | N/A | N/A | No more than 2% of known population | N/A | No |

# 4. Direct Impacts of the Proposal

Conservation significant flora that may occur within the Disturbance Footprint for the Proposal are considered to be directly impacted. The distribution of conservation significant flora taxa within and adjacent to the Proposal Development Envelope are shown in Figure 4-1 to Figure 4-7.

The cumulative area of native vegetation to be cleared has increased from the approved 442 ha to 1885 ha. The following mitigation measures have been implemented during project design to reduce impacts to flora and vegetation such that the EPA' objective for flora and vegetation can be met, that is to "to protect flora and vegetation so that biological diversity and ecological integrity are maintained".

## 4.1 Avoidance

As many of the recorded environmental values occur broadly across the area of the Proposal and surrounds, there has been limited opportunity to actively avoid flora and vegetation values. The Disturbance Footprint for the Proposal, however, has been modified to avoid impacts to the following conservation significant flora taxa:

- *Eremophila verticillata* (EPBC E, BC CE);
- *Acacia sp. Forrestania* (DBCA P1);
- *Grevillea lissopleura* (DBCA P1);
- *Thryptomene sp. Hyden* (DBCA P1) (not identified in prior assessments);
- *Hibbertia tuberculata* (DBCA P1) (Previously recorded as *Hibbertia* aff. *oligantha*);
- *Rinzia fimbriolata* (DBCA-P1) ;
- *Acacia asepala* (DBCA-P2) ;
- *Orianthera exilis* (DBCA P2);
- *Acacia crenulata* (DBCA-P3) ;
- *Hibbertia glabriuscula* (DBCA P3)(not identified in prior assessments); and
- *Verticordia mitodes* (DBCA P3).

## 4.2 Mitigation

During the planning process, the Disturbance Footprint for the Proposal has been modified to reduce the spatial area of native vegetation clearing required for the Proposal, principally through the use of existing cleared/disturbed areas where possible. This has resulted in >20% of the footprint being comprised of cleared/disturbed land associated with the previously abandoned Mt Holland Mine Site (523 ha of 2408 ha Disturbance Footprint), substantially reducing the area of additional native vegetation required to be cleared.

Where native vegetation clearing is required, the location of the clearing has sought to target existing disturbed vegetation (e.g., partial clearing by prior mineral exploration drilling) and areas having a lower abundance of notable biological values. Particular emphasis has been on minimising the impact to the listed threatened taxa, *Banksia dolichostyla* (EPBC V, BC V) and multiple DBCA-classified Priority 1 (DBCA P1) flora taxa.

It is proposed that the direct and potential indirect environmental impacts of the Proposal to flora and vegetation values can be appropriately managed in accordance the approved Flora and Vegetation

Environmental Management Plan (EMP) as is current at the time.

The current approved Flora and Vegetation EMP outlines the operational management and monitoring to minimise and control the impacts to flora and vegetation values, including:

- Environmental inductions of site personnel;
- Pre-clearance environmental surveys;
- Environmental monitoring of –
    - Plant condition/health;
    - Dust air emissions;
    - Introduced flora (weeds); and
    - Census of conservation significant flora.
- Adaptive management approach through 'trigger' and 'threshold' criteria;
- Reporting; and
- Ongoing stakeholder consultation.

The EMP is currently under revision following the Skeleton Rock bushfire of January 2025. The revised Flora and Vegetation EMP will be implemented for the Proposal.

To guide general environmental management, Covalent also implements a general EMP for the project and whilst not a condition of approval, the EMP forms part of Covalent Lithium's broader Environmental Management System. Consistent with the Approved Project, the Life of Mine EMP incorporates the following general environmental management actions relating to flora and vegetation values:

- **Protection of Flora Taxa** –
    - Flora Protection Areas (or Flora Protection Zones) (FPA) (Figure 4-8) established to define areas containing *Banksia dolichostyla* (EPBC-V, BC-V) and other conservation significant flora (including *Microcorys elatoides* (DBCA-P1)) which are not to be cleared/disturbed. These areas also provide protection for a range of other DBCA-P1 species which are otherwise known to occur within as few as 2 locations or within small ranges. This includes a new FPA associated with the extension to the Development Envelope for the LoM infrastructure within the north-east boundary of the Development Envelope to provide protection for Eutaxia sp. North Ironcap.
    - Exclusion of access to FPA through on-site warning signage demarcation on plans (Note: Environmental monitoring purposes remains an authorised activity within FPA).
- **Worker Awareness Training –**
    - All workers (construction and operation) to attend environmental awareness training, including awareness of conservation significant flora, introduced flora, and fire management.
- **Land Clearing –**
    - Targeted pre–clearance surveys to accurately delineate the number, location and spatial boundaries of conservation significant flora taxa.
    - Annual field survey and recording of all cleared areas.
- **Dust Management –**
    - Minimise the extent of open exposed areas as far as practicable to minimise the area susceptible to dust generation.

- Use dust covers on machinery and use water suppressants on exposed areas.
- Ensure water sprays and emissions control equipment is properly maintained.
- Minimise saline groundwater overspray through use of dribble bars in roadway dust suppression, and construction of earthen bunds (and/or drains) on roadsides to control surface water drainage.
- Minimise vehicle traffic on unsealed roads and other exposed areas, where practicable.
- Limit traffic speeds on unsealed roads to nominally ≤ 60 km/h to minimise dust generation.

- **Hygiene Management** –
  - Vehicle hygiene procedure to ensure vehicles entering the mining area are free of introduced flora (plant material and seeds) and soil materials (which may contain introduced pathogens).
  - Topsoil/subsoil and vegetation will be stockpiled separately from other excavated materials to minimise the risk of potential contamination.
  - Periodic surveys for introduced flora within the Development Envelope, with any identified infestations to be eradicated (prior to establishment and setting seed).
- Spill Prevention –
  - Spill kits will be located at strategic locations, with mine personnel trained in their use.
  - Hydrocarbon wastes will be segregated from other wastes and collected for offsite disposal by a licensed contractor.
  - All hydrocarbon and chemical storages will be designed and constructed in accordance with relevant Australian Standards.
  - Pipelines transferring saline water or tailings will be located within bunds, fitted with leak detection systems and routinely inspected.
  - Water storage facilities storing saline groundwater (or other water not of potable quality) will be designed to be adequate 'to cater for inflows associated with 1:100-year, 72-hour rainfall event.
  - Landfill and wastewater treatment plants will be operated in accordance with a Licence granted by the Department of Water and Environmental Regulation (DWER) under the EP Act.
- **Fire Management –**
  - Implement standard fire management procedures including maintenance of fire breaks, a 'Hot Work' permit system, training of personnel in the use of fire suppression equipment, and an Emergency Response Plan.
  - Firefighting equipment to be located throughout site locations and in vehicles.
  - Vehicles will be restricted to within access tracks and cleared areas.
  - Coordination with DBCA and Department of Fire and Emergency Services (DFES) to undertake prescribed burns (if appropriate).

## 4.3 Rehabilitation

Rehabilitation measures seek to restore environmental values following an action. All new areas of disturbance by the Approved Project and the Proposal will be actively rehabilitated with native vegetation (with the exception of the Mine Pit open voids). The rehabilitation works will include on-contour ripping of

compacted areas and the re-spreading of rehabilitation materials (vegetation, topsoil and subsoil) that were removed and stockpiled during the initial vegetation clearing.

In addition, all areas of existing cleared / disturbed lands associated with the abandoned Mt Holland mine site that are to be used by the Proposal (excluding the Mine Pit void) will also be rehabilitated with native vegetation. The rehabilitation of these existing cleared / disturbed lands will result in a 'net-benefit' environmental outcome from the Proposal by restoring the flora and vegetation values (which would otherwise be left cleared / disturbed and remain a liability for the State).

## 4.4 Residual impacts

Table 4-1 provides the impacts of the Proposal to the conservation significant flora taxa identified within Table 2-1; with current known impacts (from existing mining operations approved to date and inherited disturbance associated with the abandoned Mt Holland mine) and cumulative impacts. The conservation significant flora taxa with significant impacts identified in the current approval are highlighted grey, with those that have previously required offsets, highlighted purple. A discussion of the significance of the residual impacts is provided in Section 6.

### 4.4.1 Species not previously identified

As a result of the proposed changes to the Proposal and the more recent biological surveys, the Proposal Disturbance Footprint coincides with the following flora taxa that were not considered in the previous environmental assessments for the EGLP, and for which impacts from the Proposal cannot be avoided:

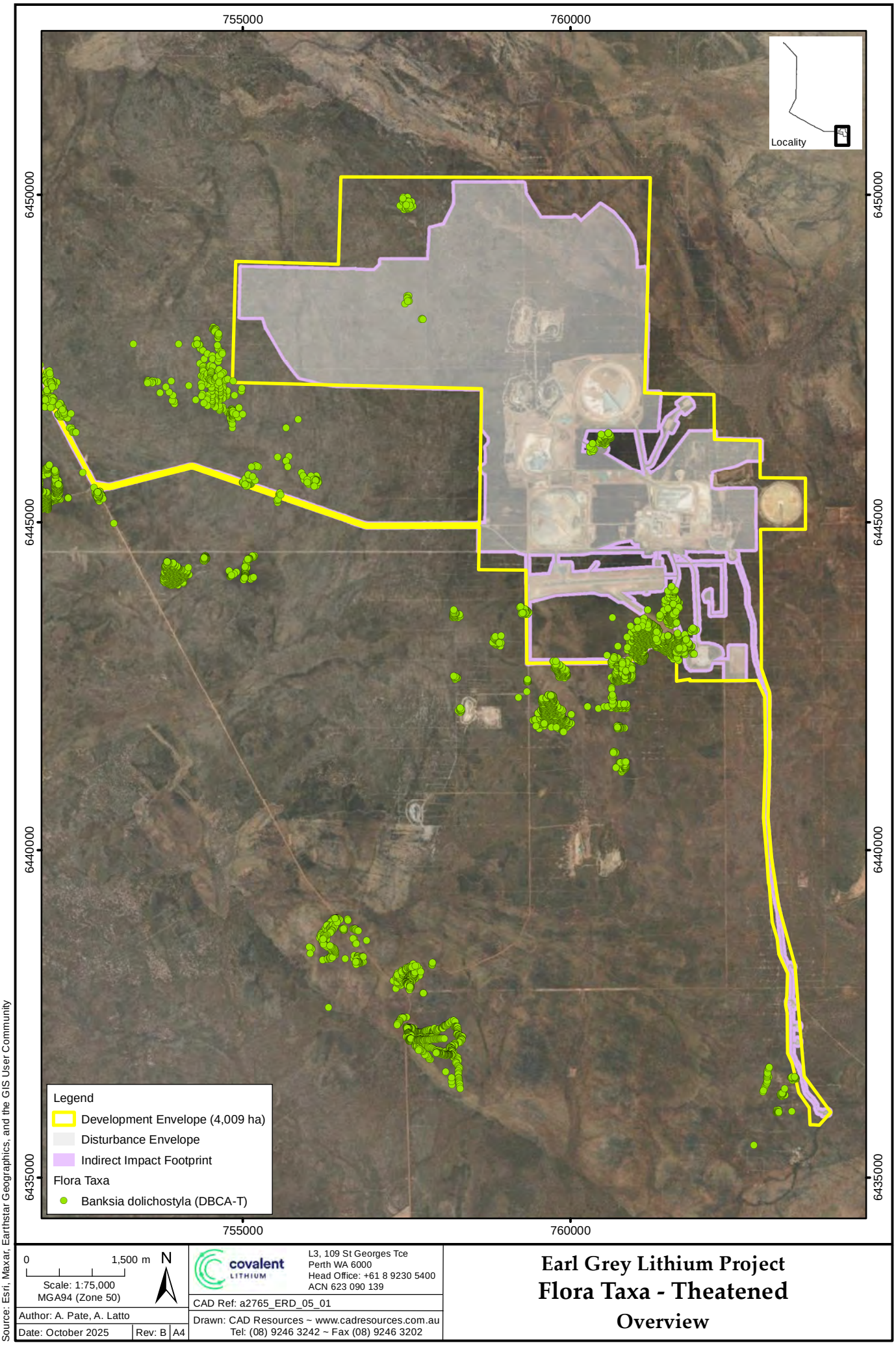
- *Thryptomene salina* (DBCA P1), for which the loss of 1,681 out of 20,268 individuals represents 3.34% of all records and 3.51% of regional records; and
- *Microcorys* sp. *Forrestania* (DBCA P4), for which the loss of 51,595 out of 387,874 individuals represents 13.3% of all records, and 17% of regional records.

In consideration of the significance of residual impacts, as discussed in Section 6, the focus is on DBCA P1 taxa for which the impact is >10% of all known records.

Implementation of the revised Flora and Vegetation EMP and the relevant measures within the site EMP will ensure the environmental impacts of the Proposal will be controlled to within the predicted levels.

**Table 4-1: Direct and cumulative impacts of the Proposal to conservation significant flora**

| Taxon | Total Known Records at time of referral for LOM | Total known records as at 17/10/2025 (Regional and Local) | Total approved and /or actual impacts to date | Predicted Direct Impacts LOM | % LOM Impacts of total known records | % LOM impacts of total known regional records | Cumulative Impact (total impact to date + predicted LOM impacts) | % Cumulative Impact to total known records |
|---|---|---|---|---|---|---|---|---|
| **Threatened** | | | | | | | | |
| *Banksia dolichostyla* (Previously recorded as *Banksia sphaerocarpa* var. *dolichostyla*) | 26000 | 28,102 | 2 | 10 | 0.04% | 0.04% | 12 | 0.04% |
| Priority 1 | | | | | | | | |
| *Acacia lachnocarpa* (Previously recorded as *Acacia* sp. Mt Holland) | 30000 | 68,468 | 502 | 494 | 0.72% | 0.74% | 996 | 1.45% |
| *Brachyloma stenolobum* | 6000 | 13,128 | 12 | 448 | 3.41% | 4.35% | 460 | 3.50% |
| *Chamelaucium sp. Mount Holland (G. Cockerton & G. Grigg WB40918)* | N/A | 38,508 | 659 | 2,037 | 5.29% | 6.50% | 2,696 | 7.00% |
| *Eutaxia sp. North Ironcap (P. Armstrong PA 06/898)* | 11500 | 52,777 | 21 | 2,263 | 4.29% | 4.52% | 2,284 | 4.33% |
| *Grevillea marriottii* | 21000 | 21,713 | 35 | 257 | 1.18% | 1.25% | 292 | 1.34% |
| *Labichea rossii* | 9000 | 10,775 | 463 | 40 | 0.37% | 1.34% | 503 | 4.67% |
| *Microcorys elatoides* (Previously recorded as *Microcorys* sp. *Mt Holland*) | 244000 | 364,577 | 11,040 | 33,256 | 9.12% | 12.29% | 44,296 | 12.15% |
| *Microcorys sp. Mt Holland broad-leaf (G. Barrett s.n. PERTH 04104927)* | 42000 | 42,952 | 642 | 955 | 2.22% | 2.99% | 1,597 | 3.72% |
| *Thryptomene jilbadji* | N/A | 881,944 | 14,072 | 66,556 | 7.55% | 10.24% | 80,628 | 9.14% |
| *Thryptomene salina* | 7500 | 50,268 | 0 | 1,681 | 3.34% | 3.51% | 1,681 | 3.34% |
| Priority 2 | | | | | | | | |
| *Balaustion grandibracteatum subsp. Junctura* (Previously recorded as *Baeckea* sp. *Forrestania*) | 72000 | 304,539 | 5,481 | 18,179 | 5.97% | 6.99% | 23,660 | 7.77% |
| *Daviesia sarissa subsp. redacta* | 1700 | 2,014 | 24 | 129 | 6.41% | 15.97% | 153 | 7.60% |
| *Eutaxia lasiocalyx* | 185000 | 186,530 | 8,861 | 3,633 | 1.95% | 2.34% | 12,494 | 6.70% |
| Priority 3 | | | | | | | | |
| *Acacia undosa* | 164500 | 164,945 | 12,707 | 3,566 | 2.16% | 2.64% | 16,273 | 9.87% |
| *Boronia ternata var. promiscua* | 49000 | 63,761 | 372 | 3,562 | 5.59% | 6.23% | 3,934 | 6.17% |
| *Chorizema circinale* | 2500 | 3,487 | 899 | 14 | 0.40% | 0.60% | 913 | 26.18% |
| *Hakea pendens* | 10000 | 10,801 | 223 | 811 | 7.51% | 9.40% | 1,034 | 9.57% |
| *Teucrium diabolicum* (Previously recorded as *Teucrium* sp. Dwarf | 68000 | 77,603 | 489 | 19 | 0.02% | 0.03% | 508 | 0.65% |
| *Verticordia gracilis* | 33000 | 35,606 | 5,657 | 482 | 1.35% | 1.66% | 6,139 | 17.24% |
| *Verticordia stenopetala* | 48000 | 49,637 | 4,983 | 1,302 | 2.62% | 3.15% | 6,285 | 12.66% |
| Priority 4 | | | | | | | | |
| *Eremophila inflata* | 1500 | 1,645 | 0 | 10 | 0.61% | 0.73% | 10 | 0.61% |
| *Grevillea neodissecta* | 11000 | 11,830 | 166 | 274 | 2.32% | 2.89% | 440 | 3.72% |
| *Gyrostemon ditrigynus* | 54500 | 88,336 | 9 | 10 | 0.01% | 0.01% | 19 | 0.02% |
| *Microcorys sp. Forrestania (V. English 2004)* | 215000 | 387,874 | 5 | 51,595 | 13.30% | 17.00% | 51,600 | 13.30% |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Author: A. Pate, A. Latto
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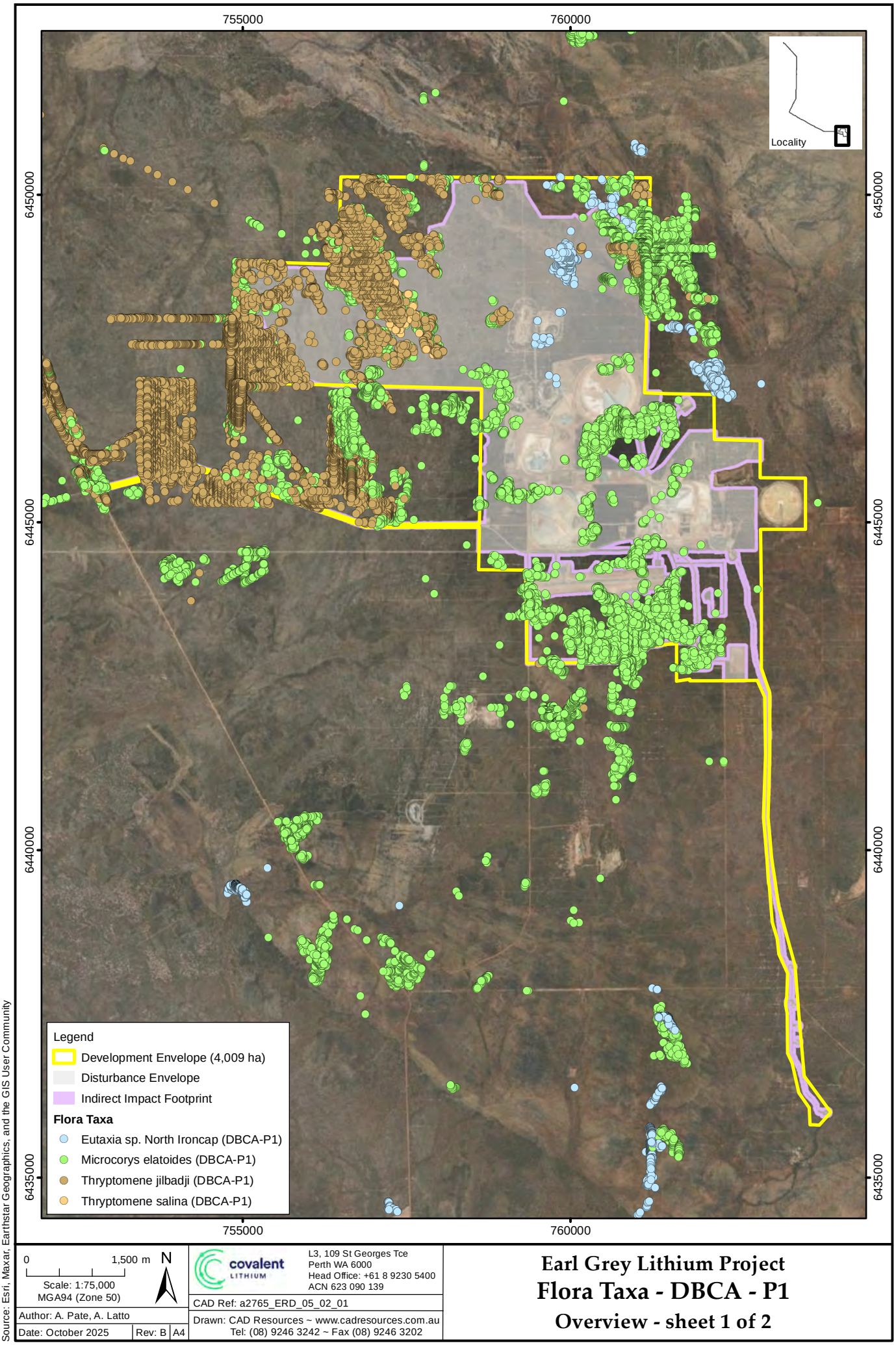
Tel: (08) 9246 3242 ~ Fax (08) 9246 3202
Earl Grey Lithium Project
Flora Taxa - Theatened
Overview
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Figure 4-1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Flora Taxa
Eutaxia sp. North Ironcap (DBCA-P1)
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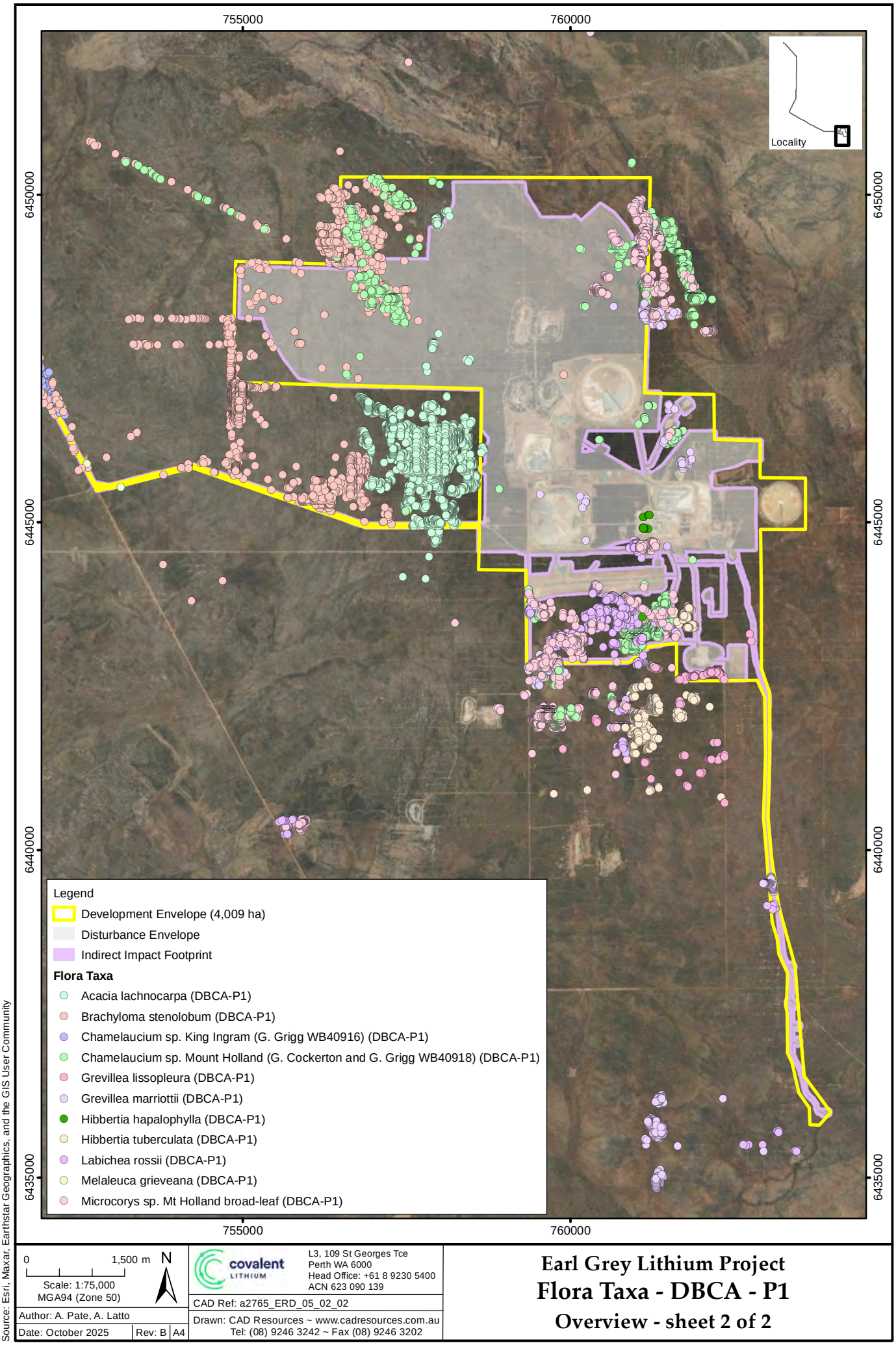
Tel: (08) 9246 3242 ~ Fax (08) 9246 3202
Earl Grey Lithium Project
Flora Taxa - DBCA - P1
Overview - sheet 1 of 2
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Figure 4-2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Acacia lachnocarpa (DBCA-P1)
Brachyloma stenolobum (DBCA-P1)
Chamelaucium sp. King Ingram (G. Grigg WB40916) (DBCA-P1)
Chamelaucium sp. Mount Holland (G. Cockerton and G. Grigg WB40918) (DBCA-P1)
Grevillea lissopleura (DBCA-P1)
Grevillea marriottii (DBCA-P1)
Hibbertia hapalophylla (DBCA-P1)
Hibbertia tuberculata (DBCA-P1)
Labichea rossii (DBCA-P1)
Melaleuca grieveana (DBCA-P1)
Microcorys sp. Mt Holland broad-leaf (DBCA-P1)
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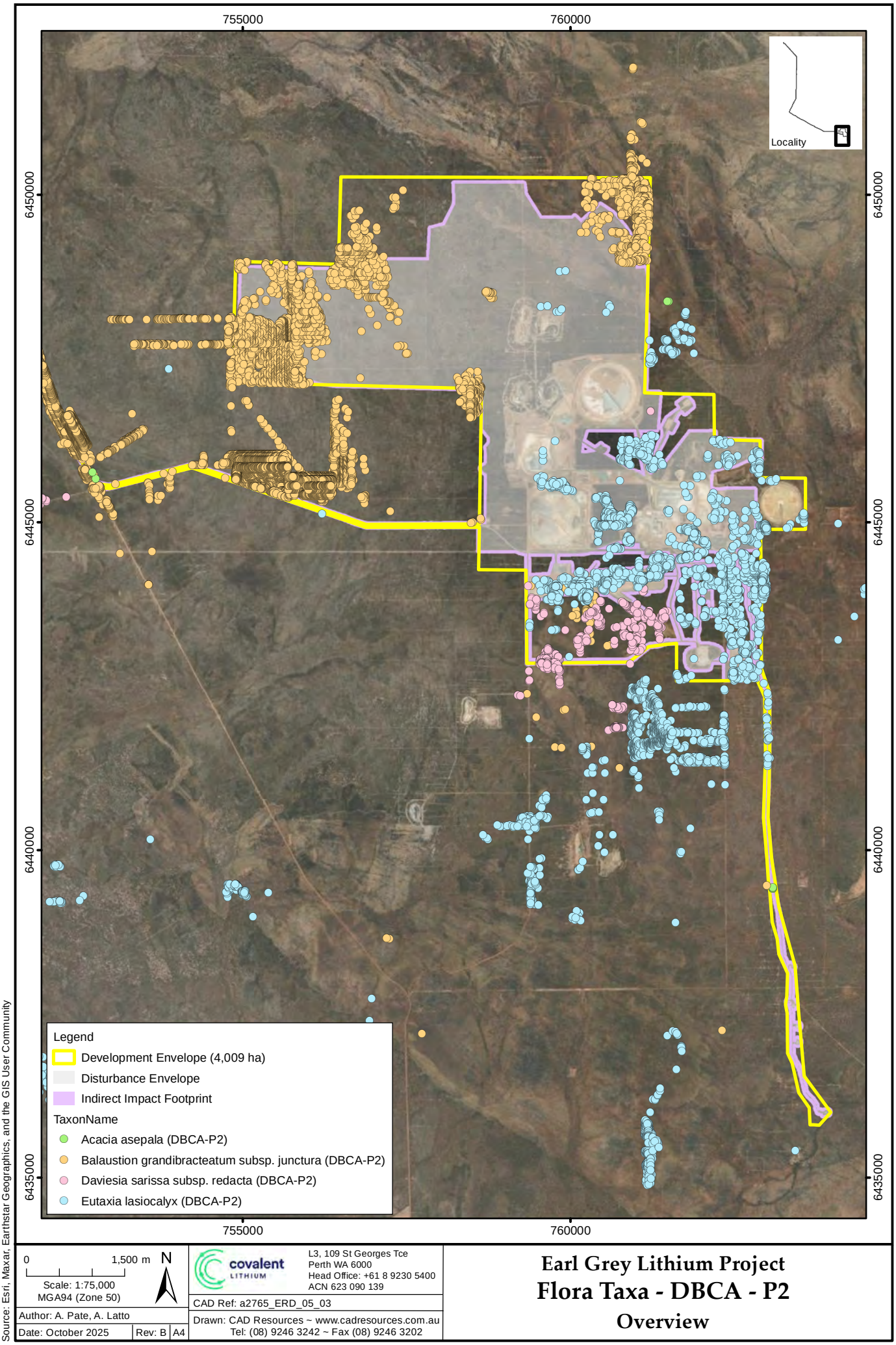
MGA94 (Zone 50)
Author: A. Pate, A. Latto
Date: October 2025
Rev: B
A4
covalent LITHIUM
L3, 109 St Georges Tce
Perth WA 6000
Head Office: +61 8 9230 5400
ACN 623 090 139
CAD Ref: a2765_ERD_05_02_02
Drawn: CAD Resources ~ www.cadresources.com.au
Tel: (08) 9246 3242 ~ Fax (08) 9246 3202
Earl Grey Lithium Project
Flora Taxa - DBCA - P1
Overview - sheet 2 of 2
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Figure 4-3


755000
760000
6450000
6445000
6440000
6435000
Locality
Legend
Development Envelope (4,009 ha)
Disturbance Envelope
Indirect Impact Footprint
TaxonName
Acacia asepala (DBCA-P2)
Balaustion grandibracteatum subsp. junctura (DBCA-P2)
Daviesia sarissa subsp. redacta (DBCA-P2)
Eutaxia lasiocalyx (DBCA-P2)
0
1,500 m
N
Scale: 1:75,000
MGA94 (Zone 50)
Author: A. Pate, A. Latto
Date: October 2025
Rev: B
A4
covalent LITHIUM
L3, 109 St Georges Tce
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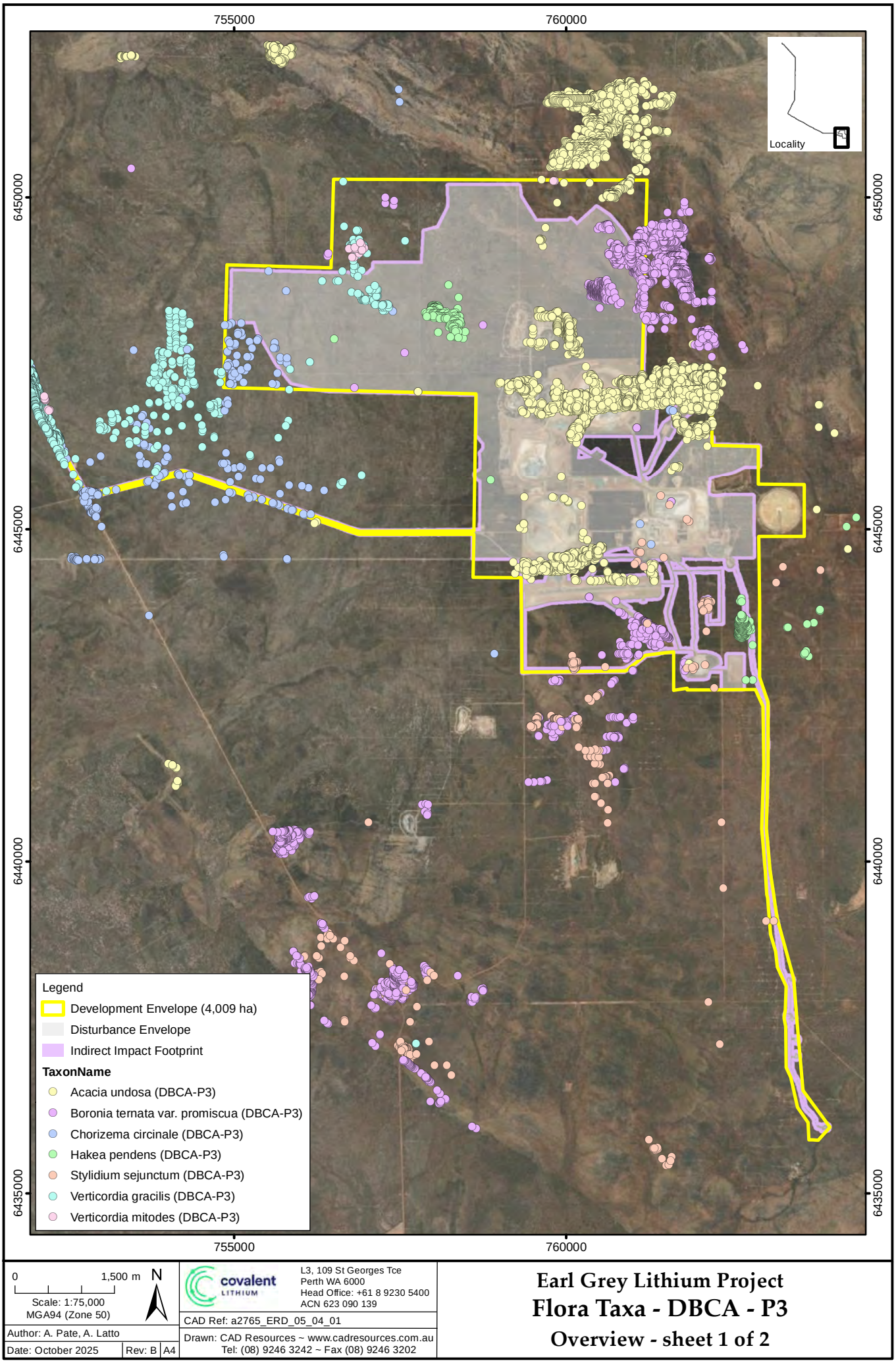
ACN 623 090 139
CAD Ref: a2765_ERD_05_03
Drawn: CAD Resources ~ www.cadresources.com.au
Tel: (08) 9246 3242 ~ Fax (08) 9246 3202
Earl Grey Lithium Project
Flora Taxa - DBCA - P2
Overview
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Figure 4-4


755000
760000
6450000
6445000
6440000
6435000
Locality
Legend
Development Envelope (4,009 ha)
Disturbance Envelope
Indirect Impact Footprint
TaxonName
Acacia undosa (DBCA-P3)
Boronia ternata var. promiscua (DBCA-P3)
Chorizema circinale (DBCA-P3)
Hakea pendens (DBCA-P3)
Stylidium sejunctum (DBCA-P3)
Verticordia gracilis (DBCA-P3)
Verticordia mitodes (DBCA-P3)
0
1,500 m
N
Scale: 1:75,000
MGA94 (Zone 50)
Author: A. Pate, A. Latto
Date: October 2025
Rev: B
A4
covalent LITHIUM
L3, 109 St Georges Tce
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Head Office: +61 8 9230 5400
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CAD Ref: a2765_ERD_05_04_01
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Tel: (08) 9246 3242 ~ Fax (08) 9246 3202
Earl Grey Lithium Project
Flora Taxa - DBCA - P3
Overview - sheet 1 of 2
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Figure 4-5

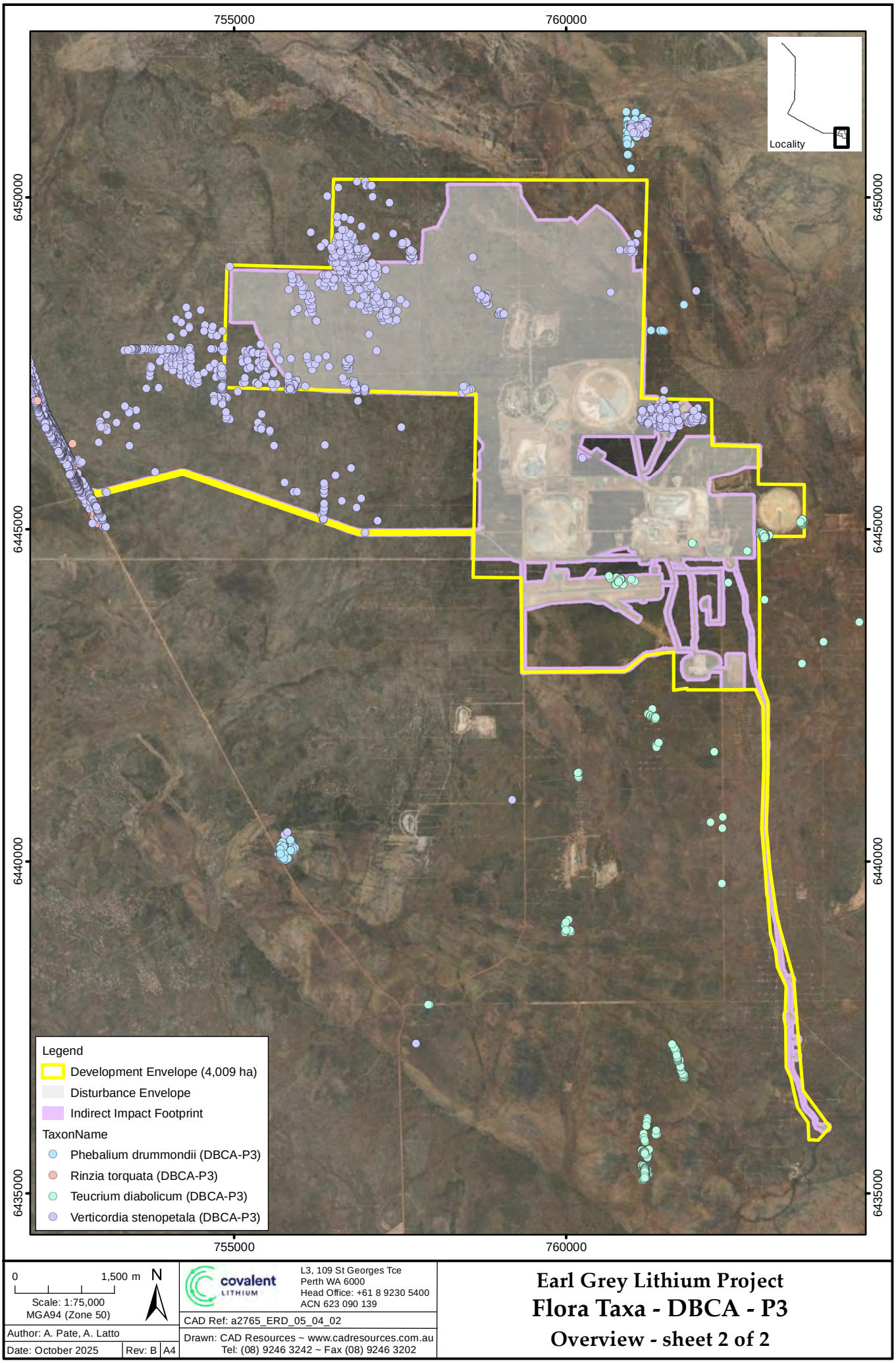
755000
760000
6450000
6445000
6440000
6435000
Locality
Legend
Development Envelope (4,009 ha)
Disturbance Envelope
Indirect Impact Footprint
TaxonName
Phebalium drummondii (DBCA-P3)
Rinzia torquata (DBCA-P3)
Teucrium diabolicum (DBCA-P3)
Verticordia stenopetala (DBCA-P3)
0
1,500 m
N
Scale: 1:75,000
MGA94 (Zone 50)
Author: A. Pate, A. Latto
Date: October 2025
Rev: B
A4
covalent LITHIUM
L3, 109 St Georges Tce
Perth WA 6000
Head Office: +61 8 9230 5400
ACN 623 090 139
CAD Ref: a2765_ERD_05_04_02
Drawn: CAD Resources ~ www.cadresources.com.au
Tel: (08) 9246 3242 ~ Fax (08) 9246 3202
Earl Grey Lithium Project
Flora Taxa - DBCA - P3
Overview - sheet 2 of 2
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Figure 4-6

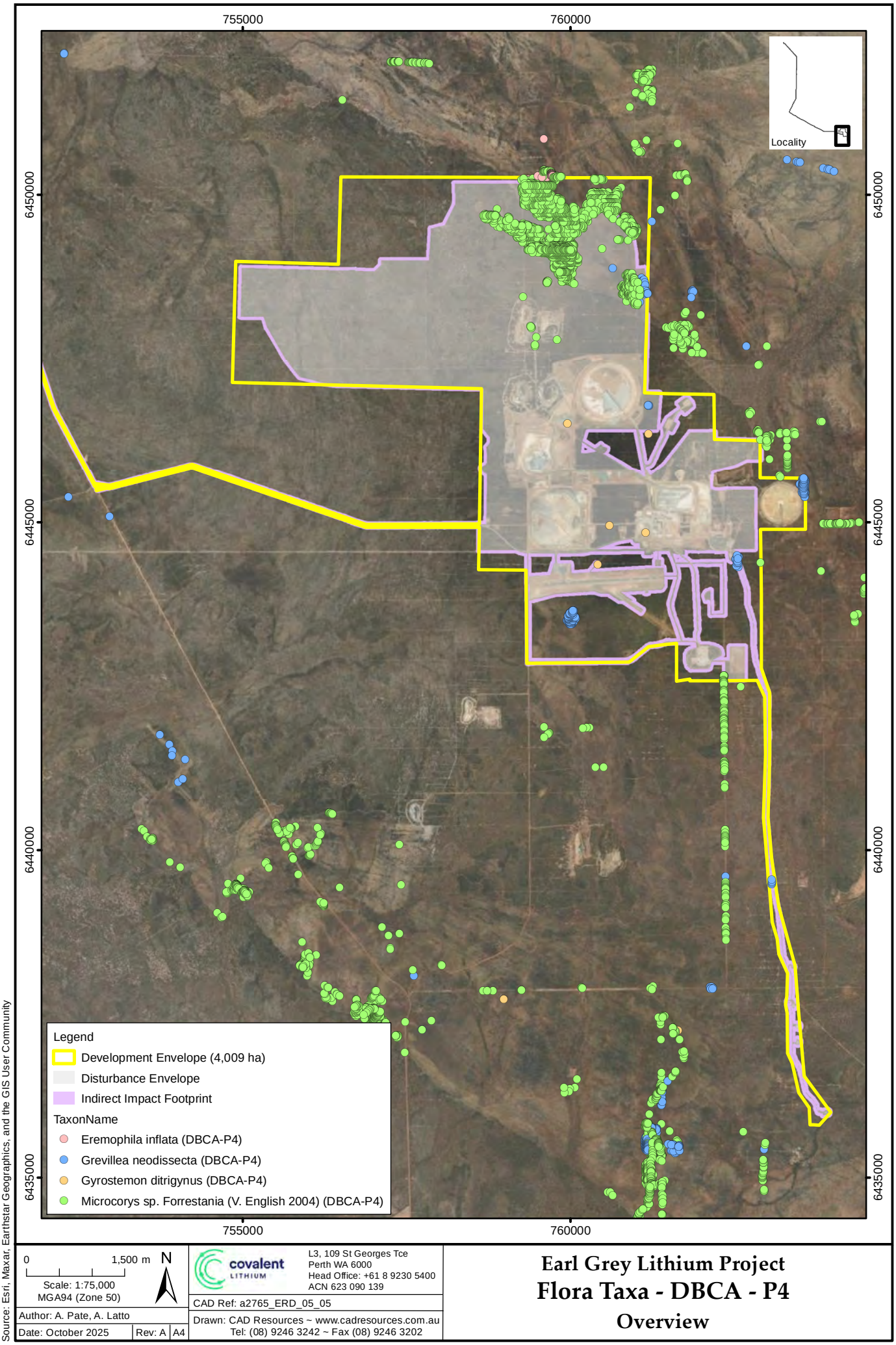
755000
760000
6450000
6445000
6440000
6435000
Locality
Legend
Development Envelope (4,009 ha)
Disturbance Envelope
Indirect Impact Footprint
TaxonName
Eremophila inflata (DBCA-P4)
Grevillea neodissecta (DBCA-P4)
Gyrostemon ditrigynus (DBCA-P4)
Microcorys sp. Forrestania (V. English 2004) (DBCA-P4)
0
1,500 m
N
Scale: 1:75,000
MGA94 (Zone 50)
Author: A. Pate, A. Latto
Date: October 2025
Rev: A
A4
covalent LITHIUM
L3, 109 St Georges Tce
Perth WA 6000
Head Office: +61 8 9230 5400
ACN 623 090 139
CAD Ref: a2765_ERD_05_05
Drawn: CAD Resources ~ www.cadresources.com.au
Tel: (08) 9246 3242 ~ Fax (08) 9246 3202
Earl Grey Lithium Project
Flora Taxa - DBCA - P4
Overview
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Figure 4-7

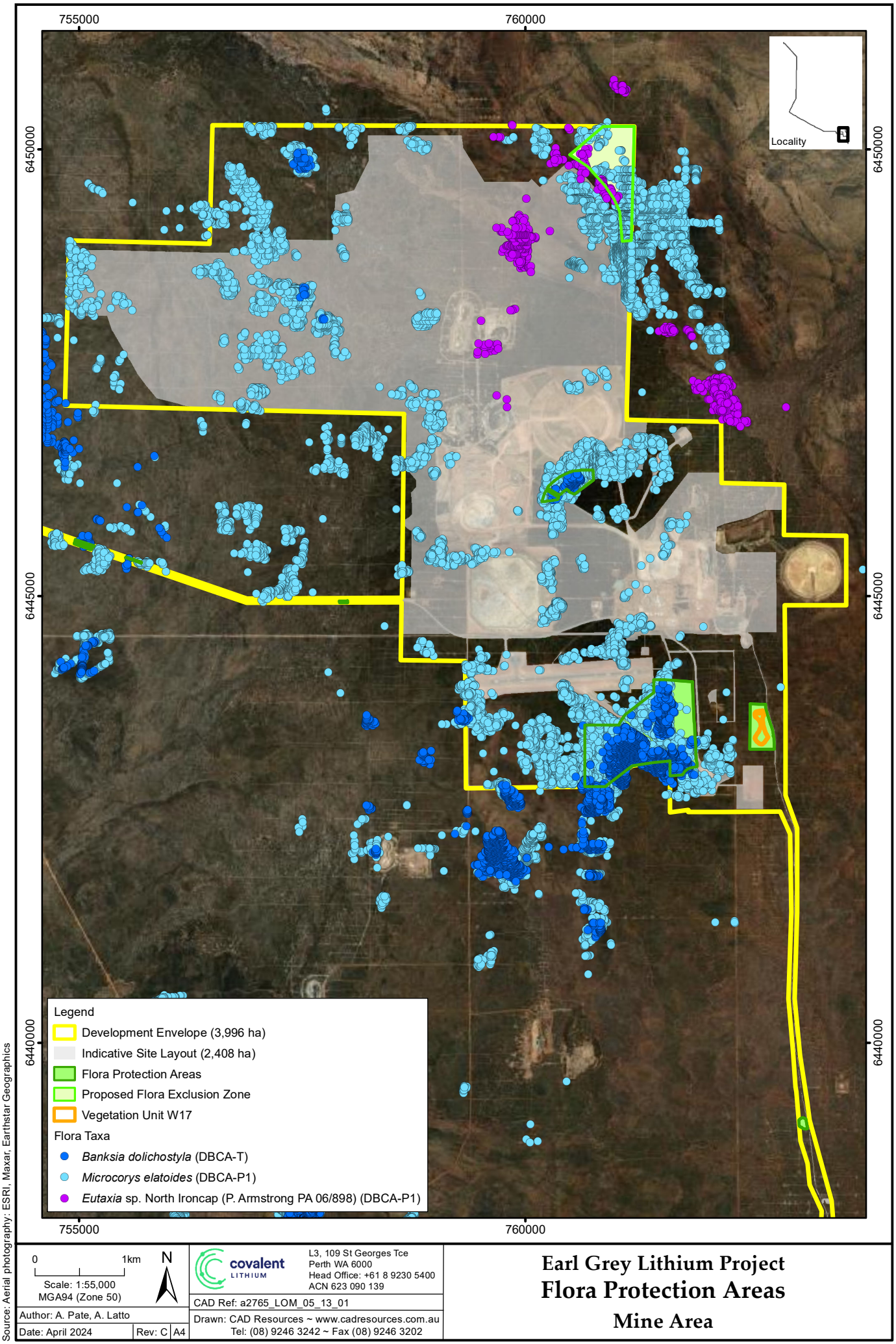
755000
760000
6450000
6445000
6440000
Locality
Legend
Development Envelope (3,996 ha)
Indicative Site Layout (2,408 ha)
Flora Protection Areas
Proposed Flora Exclusion Zone
Vegetation Unit W17
Flora Taxa
Banksia dolichostyla (DBCA-T)
Microcorys elatoides (DBCA-P1)
Eutaxia sp. North Ironcap (P. Armstrong PA 06/898) (DBCA-P1)
0
1km
Scale: 1:55,000
MGA94 (Zone 50)
N
covalent LITHIUM
L3, 109 St Georges Tce
Perth WA 6000
Head Office: +61 8 9230 5400
ACN 623 090 139
CAD Ref: a2765_LOM_05_13_01
Drawn: CAD Resources ~ www.cadresources.com.au
Tel: (08) 9246 3242 ~ Fax (08) 9246 3202
Author: A. Pate, A. Latto
Date: April 2024
Rev: C
A4
Source: Aerial photography: ESRI, Maxar, Earthstar Geographics
Earl Grey Lithium Project
Flora Protection Areas
Mine Area

Figure 4-8

# 5. Indirect Impacts of the Proposal

The Proposal may potentially result in an indirect impact to the flora and vegetation values located immediately adjacent to the Disturbance Footprint (i.e. beyond the area of direct vegetation clearing impacts).

Generally, potential indirect impacts to flora and vegetation values from the Proposal may include:

- Dust – air emissions of dust during earthworks (which may result in reduced plant photosynthesis and increased plant transpiration).
- Water – use of hypersaline groundwater in dust suppression which could potentially transit into areas of native vegetation (if site drainage is not designed/controlled).
- Drainage – changes to surface water drainage which can affect water availability to native vegetation.
- Spills – spills of dangerous goods, chemicals or other products which could potentially transit into areas of native vegetation (if not properly controlled).
- Seepage – discharge from Tailings Storage Facilities to groundwater or with surface water expression which could potentially transit to areas of native vegetation (if seepage controls from Tailings Storage Facilities are not designed/controlled).
- Introduced Flora – introduction and/or spread of introduced flora taxa (weeds) during works which may reduce habitat quality or compete for resources (e.g., space, nutrients).
- Introduced Pathogens – introduction and/or spread of introduced pathogens (e.g., Phytophthora sp.) during works which may result in loss of health or mortality of vegetation.
- Fire – potential for fire caused by works (machinery and vehicles), which may alter the natural fire regime (fire frequency and intensity).

As outlined within Covalent (2019), indirect impacts to flora taxa and vegetation units may conservatively occur to a distance of up to 50 m from the area of the Proposal. However, as outlined within Covalent (2022a), indirect impacts to flora taxa and vegetation units should be considered through a risk-based approach (rather than a set distance for all potential impacts), noting that many of the potential impacts will be localised/restricted (i.e., < 10 m distance).

The following are relevant to a risk-based consideration of potential indirect environmental impacts:

- **Spatial Influence** – For most of the potential indirect impacts listed above, it is likely that indirect impacts will be contained to within the first 5 m to 10 m from the edge of the Disturbance Footprint. For example, where site drainage contains hypersaline groundwater or spills, the potential risk will be limited to any vegetation roots that intersect (or go beneath) such drainage.

  The exceptions to the above is dust and fire, which if uncontrolled, and subject to environmental conditions (e.g., wind), have a potential to extend several hundreds of metres.

- **Likelihood of Occurrence** – the likelihood of each potential indirect impact differs, for example, the generation of airborne dust and use of saline water are likely to be constant for any mining operation. By comparison, spills and fire are likely to be infrequent (or not occur at all).

- **Proximity to Infrastructure Type** – Different infrastructure types can be expected to have differing risk profiles for indirect impacts. For example, air emissions of dust are likely to be higher where land disturbance is more frequent (e.g., mine pits), however, substantially lower where land disturbance is less frequent.

Similarly, not all infrastructure types present all risk types, for example mine pits and waste rock landforms (both as large open areas) are less likely to present a risk of fire compared to other infrastructure types.

- **Consequence** – Indirect impacts may be temporary (i.e., decline in vegetation health) or permanent (loss by mortality). For example, dust air emissions are likely to contribute towards a decline in the health of adjacent vegetation, however, may not result in vegetation loss (e.g., refer to research of Matsuki et al. (2016), Turner (2013) and Butler (2009) for variable impacts of dust air emissions). By contrast, discharge of saline groundwater or seepage from tailings (if it was to occur) may result in mortality of adjacent vegetation through saline/chemical toxicity an/or inundation.

Of the list of potential indirect environmental impacts above, changes in surface water drainage can be accurately modelled to determine the potential for indirect impacts, as outlined by Surface Water Solutions (2023) using both a 1 % and 10 % Annual Exceedance Probability (AEP) for rainfall (i.e., 1 in 100 year and 1 in 10-year storm events). Whilst a reduction in surface water flows was modelled to occur beyond the Disturbance Footprint to the north and north-east, native vegetation in these areas is likely to be dependent on water supply from normal rainfall events (where rainfall will infiltrate insitu to supply the vegetation) rather than dependent on water supply from infrequent storm flow. Similarly, whilst increased surface water was modelled to occur beyond the Disturbance Footprint to the south of the Airstrip and to the west of the Mine Pit, additional surface water ponding would be expected to be limited to only several hours before the water infiltrates; with no long-term inundation which could cause a reduction in health or mortality of the vegetation.

To quantify the *potential* risk to flora taxa, Table 5-1 identifies the number of individuals of each flora taxon occurring within 0 m to 10 m and within 10 m to 50 m of the Disturbance Footprint. The intent of this information is to identify the type and the quantum of the flora taxa within proximity to the Disturbance Footprint which may have a potential to be indirectly affected by the Proposal. Subject to appropriate mitigation, management and monitoring measures (as outlined within Section 4.2), the potential for indirect environmental impacts is anticipated to be limited (i.e., within 0 m to 10 m) rather than the indicated maximum values (i.e., 10 m to 50 m).

Of the taxa that may be indirectly impacted (0-10 m) the species with a potentially significant impact, highlighted grey in Table 5-1, is a single individual clumping rhizomatous sedge initially identified as having affinity to *Lepidosperma jacksonense*; identified as *Lepidosperma sp. ?jacksonense* (G. Cockerton 021). Further information provided by G Cockerton (pers.comms. A Latto JBS&G, 20 October 2025) indicates that while it had affinities to *Lepidosperma jacksonense* (P1), the specimen could not be positively identified in the field. It was located within the indirect impact area up to 10 m off the Parker Range Road near Moorine Rock and was recorded as part of surveys undertaken for mine haul road upgrade. Given that all 11 known records of *Lepidosperma jacksonense* occur within the vicinity of Mt Jackson (approximately 259 km north of Mt Holland), upon further consideration the individual observed in the road widening survey is not considered to be either *Lepidosperma jacksonense* or a priority species. The risk of indirect impacts to this individual are low, and are unlikely to be significant.

Flora and vegetation monitoring for the Proposal to date, as outlined within Mattiske (2023a), identifies the vegetation condition (as represented by the mean canopy health score) nearest to the mining operations continues to be within 20 % of the condition of vegetation distant from the mining operations; consistent with the environmental objectives of the approved Flora and Vegetation EMP (Covalent 2022b). The quantum of any indirect environmental impacts to flora and vegetation values can continue to be monitored during mining operations to verify the pre-mining predictions. The results of the environmental monitoring can also be used to quantify any significant environmental impacts (i.e., loss / mortality) which may require an environmental offset (where the combination of direct impacts and indirect impacts may be significant).

**Table 5-1: Indirect impacts of the Proposal to conservation significant flora**

| Taxon | Total Known Records at time of referral for LOM | Total known records as at 17/10/2025 | 0-10m from DF | 10-50m from DF | % Indirect impacts of total known records (0-10m) |
|---|---|---|---|---|---|
| **Threatened** | | | | | |
| *Banksia dolichostyla* | 26000 | 28,102 | 106 | 776 | 0.38% |
| **Priority 1** | | | | | |
| *Acacia lachnocarpa* | 30000 | 68,468 | 119 | 858 | 0.17% |
| *Brachyloma stenolobum* | 6000 | 13,128 | 88 | 208 | 0.67% |
| *Chamelaucium* sp. *King Ingram (G. Grigg WB40916)* | N/A | 220 | 10 | 41 | 4.55% |
| *Chamelaucium* sp. *Mount Holland (G. Cockerton & G. Grigg WB40918)* | N/A | 38,508 | 100 | 853 | 0.26% |
| *Dicrastylis capitellata* | N/A | 34,888 | 0 | 6231 | 0.00% |
| *Eutaxia sp.* North Ironcap (P. Armstrong PA 06/898) | 11500 | 52,777 | 0 | 24 | 0.00% |
| *Grevillea lissopleura* | 5500 | 5,819 | 0 | 22 | 0.00% |
| *Grevillea marriottii* | 21000 | 21,713 | 379 | 1115 | 1.75% |
| *Hibbertia hapalophylla* | 2000 | 9,495 | 104 | 3770 | 1.10% |
| *Hibbertia tuberculata* | 12000 | 13,186 | 0 | 5 | 0.00% |
| *Labichea rossii* | 9000 | 10,775 | 160 | 806 | 1.48% |
| *Lepidosperma* sp. *?jacksonense (G. Cockerton 021)* | N/A | 1 | 1 | 0 | 100.00% |
| *Melaleuca grieveana* | N/A | 2,610 | 0 | 550 | 0.00% |
| *Microcorys elatoides* | 244000 | 364,577 | 1754 | 9227 | 0.48% |
| *Microcorys sp.* Mt Holland broad-leaf (G. Barrett s.n. PERTH 04104927) | 42000 | 42,952 | 189 | 1561 | 0.44% |
| *Rinzia fimbriolata* | N/A | 136 | 1 | 1 | 0.74% |
| *Thryptomene jilbadji* | N/A | 881,944 | 5772 | 37280 | 0.65% |
| *Thryptomene salina* | 7500 | 50,268 | 0 | 80 | 0.00% |
| **Priority 2** | | | | | |

| Taxon | Total Known Records at time of referral for LOM | Total known records as at 17/10/2025 | 0-10m from DF | 10-50m from DF | % Indirect impacts of total known records (0-10m) |
|---|---|---|---|---|---|
| *Acacia asepala* | 25000 | 25,185 | 5 | 0 | 0.02% |
| *Balaustion grandibracteatum* subsp. *junctura* | 72000 | 304,539 | 1321 | 12387 | 0.43% |
| *Daviesia sarissa* subsp. *redacta* | 1700 | 2,014 | 112 | 510 | 5.56% |
| *Eutaxia lasiocalyx* | 185000 | 186,530 | 861 | 2227 | 0.46% |
| **Priority 3** | | | | | |
| *Acacia crenulata* | 3000 | 2917 | 108 | 86 | 3.70% |
| *Acacia undosa* | 164500 | 164,945 | 829 | 3269 | 0.50% |
| *Boronia ternata* var. *promiscua* | 49000 | 63,761 | 152 | 7185 | 0.24% |
| *Chorizema circinale* | 2500 | 3,487 | 98 | 392 | 2.81% |
| *Hakea pendens* | 10000 | 10,801 | 0 | 14 | 0.00% |
| *Phebalium drummondii* | 5000 | 5,736 | 0 | 1 | 0.00% |
| *Rinzia torquata* | 6000 | 6,258 | 450 | 4285 | 7.19% |
| *Rinzia triplex* | 15000 | 8,219 | 188 | 117 | 2.29% |
| *Stylidium sejunctum* | 9500 | 9,920 | 32 | 97 | 0.32% |
| *Teucrium diabolicum* | 68000 | 77,603 | 88 | 34 | 0.11% |
| *Verticordia gracilis* | 33000 | 35,606 | 616 | 9177 | 1.73% |
| *Verticordia mitodes* | 2500 | 4,496 | 2 | 22 | 0.04% |
| *Verticordia stenopetala* | 48000 | 49,637 | 992 | 6652 | 2.00% |
| **Priority 4** | | | | | |
| *Banksia shanklandiorum* | N/A | 1170 | 0 | 26 | 0 |
| *Eremophila inflata* | 1500 | 1,645 | 2 | 6 | 0.12% |
| *Grevillea neodissecta* | 11000 | 11,830 | 29 | 32 | 0.25% |
| *Gyrostemon ditrigynus* | 54500 | 88,336 | 0 | 30399 | 0.00% |

| Taxon | Total Known Records at time of referral for LOM | Total known records as at 17/10/2025 | 0-10m from DF | 10-50m from DF | % Indirect impacts of total known records (0-10m) |
|---|---|---|---|---|---|
| *Microcorys sp. Forrestania (V. English 2004)* | 215000 | 387,874 | 1029 | 5969 | 0.27% |

# 6. Significance of Residual Impacts

As noted in Section 3, the consideration of significance of impact has focused on the direct impacts to Threatened taxa (EPBC Act, BC Act) and DBCA P1 flora taxa.

For most of the flora taxa identified within Table 4-1 and the P1 taxa in particular, the impact of the Proposal is not considered to be environmentally significant. In considering of the number of individuals of each taxon coinciding with the Proposal Disturbance Footprint, and the recorded number of individuals and distribution at both the local and regional scales, the impact of the Proposal will be at ≤ 10 % of the recorded total population and, and therefore is unlikely to detrimentally affect their representation, diversity, viability or ecological function, and is not considered a significant residual impact. This broad conclusion is consistent with the previous environmental assessments of the Approved Project by Covalent (2019, 2022a) and EPA (2019, 2022).

The P1 flora taxa previously identified as having residual impacts which were subject to conditions limiting the impact (Table 3-1) and for which the cumulative impact associated with the Approved Project and the Proposal is <10% are summarised in **Error! Reference source not found.**.

The authorisation limit applied to MS 1199 approval was recommended by EPA (2022) to ensure that the potential environmental impacts of the Project were controlled consistent with that outlined within Covalent (2022a); rather than intended as a taxon-specific ecological limit.

**Table 6-1: Summary of species with cumulative residual impacts below 10% of known regional records**

| Taxon | Previous condition requirement (MS 1199) for impact to be less than % indicated | Cumulative residual impact as % of all known records (Approved Project and this Proposal) |
|---|---|---|
| *Acacia lachnocarpa* | 5% | 1.45% |
| *Brachyloma stenolobum* | 2%[1] | 3.50% |
| *Chamelaucium* sp. Mount Holland (G. Cockerton & G. Grigg WB40918) | 2%[1] | 7.00% |
| *Eutaxia sp.* North Ironcap (P. Armstrong PA 06/898*)* | 2%[1] | 4.33% |
| *Grevillea marriottii* | 2%[1] | 1.34% |
| *Labichea rossii* | 7% | 4.67% |
| *Microcorys* sp. Mt Holland broad-leaf (G. Barrett s.n. PERTH 04104927) | 7% | 3.72% |
| *Thryptomene jilbadji* | 2%[1] | 9.14% |
| *Thryptomene salina* | 2%[1] | 3.34% |

Note: 1 – taxon not individually listed in MS 1199, but addressed by requirement to maintain residual impacts to other Priority 1 species to <2% of known records.

Conservation significant taxa previously identified as having significant residual impacts and for which the impact to number of individuals was limited are:

- *Banksia dolichostyla* (EPBC-V, BC-V) – direct loss of no more than 2 individuals; and
- *Microcorys elatoides* (P1) – loss of no more than 9732 individuals;

A consideration of the significance of impact to these taxa are described in the following sections.

## 6.1 Banksia dolichostyla (EPBC-V, BC-V)

*Banksia dolichostyla* is a dense-canopied shrub or small tree to 4 m and has a recorded linear distribution of approximately 70 km, extending from Mount Holland (north) to South Ironcap (south), within the Coolgardie and Mallee IBRA Regions. *Banksia dolichostyla* grows on iron-capped hills and rises on ironstone (lateritic) soil profiles, within associated vegetation of low woodland and low shrubland.

Additional survey effort has increased the total known records by an additional 2000 + individuals, to 28,102 individuals. As a result of the Proposal, an additional 10 individuals are proposed to be cleared, in addition to the 2 currently approved, representing 0.04% of both total and regional records. The cumulative impact of the Approved Project and the Proposal (12 individuals) results in no change to the percentage impact at either regional or local scale.

The 12 individuals of *Banksia dolichostyla* to be removed are positioned in 2 small groupings in the north-eastern part of the extended Development Envelope. The individuals are positioned approximately 1 km from other recorded locations of *Banksia dolichostyla*. Whilst separation distances of > 1 km between groups of *Banksia dolichostyla* are not uncommon, and no genetic differentiation of these individuals is be inferred (and should not be inferred noting pollination of Banksia *sp.* is typically by both birds and bees which can travel large distances), any theoretical *potential* for unique genetic alleles within these individuals can readily be overcome through the collection of seed material prior to the removal of the individuals, with use of such seed material in progressive and post-mining rehabilitation works.

The 106 individuals of *Banksia dolichostyla* occurring within 0 m to 10 m of the Disturbance Footprint, representing approximately 0.38 % of the total known individuals (> 28,000), may potentially be subject to indirect impacts. This includes 59 individuals previously identified for the Approved Project plus an additional 47 individuals associated with the indirect impact area associated with the LOM footprint component of the overall cumulative footprint (Approved Project plus the Proposal).

As described within the ERD for the Proposal, the Approved Project footprint coincided with records for 59 individuals of *Banksia dolichostyla*, comprising 56 records concurrent with Mine Roads and 3 records concurrent with the Accommodation Village. In relation to the 56 records concurrent with Mine Roads, Covalent believes these records are a result of a geographical positioning error (noting hand-held geographical positioning systems (GPS) have an accuracy of nominally ± 5 m), and these records all occur beyond the Disturbance Footprint for the Proposal. The remaining 3 records are concurrent with the Accommodation Village. Whilst noting the above concurrence with the Disturbance Footprint for the Project, Covalent has advised that nil individuals of *Banksia dolichostyla* have been removed by the mining and processing operations to date (pers. com. A Pate of Covalent, October 2023); such that Covalent remains compliant with the limit of 2 individuals applicable under current MS 1199 and the EPBC Act approval 2017/7950. Covalent has further affirmed that no removal of these 59 individuals is proposed (pers. com. A Pate of Covalent, October 2023). The data presented in Table 4-1 excludes the records for the 59 individuals within as a 'direct' impact, with the 59 records included within the potential indirect impacts category for the spatial range of 0 m to 10 m from the Disturbance Footprint in Table 5-1.

Whilst the impact of the Proposal to *Banksia dolichostyla* is not considered to be environmentally significant, Covalent accepts that a requirement for additional environmental offsets is anticipated to be applied for the Proposal noting the existing framework for environmental offsets under the MS 1199 approval and the EPBC Act approval 2017/7950, and noting this flora taxon is listed as 'Threatened' under both the State *BC Act* and the EPBC Act.

## 6.2 *Microcorys elatoides* (P1)

As a result of the Proposal, an additional 33,256 individuals are proposed to be impacted in addition to other known impacts of 11,040 individuals (comprising 9732 approved to date and remainder being recorded from other local disturbances), representing an additional impact of 9.12% of all records and 12.29 % regionally. The cumulative impact of the Approved Project and the Proposal is 12.15% of all records.

Given an impact of >10% of all records, but with significant increase in the known occurrence of this species, Covalent Lithium engaged Western Botanical to undertake a review of the significance of the impact to *Microcorys elatoides*, and its status as a DBCA listed Priority 1 species. This review is provided in Appendix A and summary of the findings is provided below.

### Review of conservation status of *Microcorys elatoides*

*Microcorys elatoides* is a long lived lignotuberous, geosporous, perennial shrub to 1 m. It occurs on shallow aeolian sand over laterite pizolitic gravely hills on low rolling hill tops and upper slopes and is endemic to the Mt Holland area, some 112 km SSE of Southern Cross. Its distribution is wholly contained within the western fringe of the Southern Cross subregion of the Coolgardie biogeographic region, with proportions of the currently known population within the Jilbadji Nature Reserve as well as in Unallocated Crown Land (Western Botanical 2025a).

Following extensive surveys, the total number of known individuals since referral has increased by >120,000, to a total of 364,577 individuals. Of this number of *Microcorys elatoides* plants known to date:

- 61,409 (16.84%) plants are known within Jilbadji Nature Reserve; and
- 204,258 (56.03%) plants are known within Unallocated Crown Land outside the EGLP tenements.

Western Botanical (2025a) note that 3,078 plants representing 0.84% of the overall known population have been already directly impacted ("taken") to September 2025, including:

- Eight individuals (representing 0.0038% of the overall population) were taken early in site development at the intersection of the mine access road and the Marvel Loch –Forrestania road alignment, their taking approved in MS 1199; and
- 3,070 plants (representing 0.84% of the overall population) were taken in the upgrade of the Marvel Loch - Forrestania road alignment, approved under CPS10049.

Under MS 1199, 7,962 individuals (now representing 2.18% of the overall known population) plants were approved to be taken within the mine footprint (MP121883) and was considered as significant residual impact requiring offset.

Currently 33,256 individuals (representing 9.12% of the overall known population) lie within the Proposal Disturbance Footprint. Cumulatively, the direct impact of the Approved Project and the Proposal is 44,296 which represents 12.15% of all recorded individuals (Table 4-1).

Western Botanical (2025a) analysed the data collected by Covalent Lithium on the abundance and distribution of *Microcorys elatoides*, and using the DBCA criteria for conservation listing of Priority Species, have demonstrated that *Microcorys elatoides* clearly falls within the DBCA's Priority 2 category. Further, given the geographical distribution of *M. elatoides* within a 20 km radius of the EGLP in northerly, western and south-western directions; the distribution of populations and sub-populations within this region and the relatively large Extent of Occurrence and Area of Occupancy; and considering the proposed impacts to the species by either (i) the EGLP LoM Proposal or (ii) the overall cumulative impacts to the species by the EGLP, *Microcorys elatoides* could be considered a Priority 4 species (Rare, adequately surveyed and that are considered not currently threatened).

Based on the data generated by Covalent Lithium over the period 2019-2025, *Microcorys elatoides* does not meet the Criteria for IUCN listing for either IUCN Category Critically Endangered (CR), Endangered (EN) or Vulnerable (VU).

Western Botanical botanists have provided their report to DBCA recommending that DBCA consider a revision of the conservation listing of *Microcorys elatoides*; such that it be classified at a 'Priority 2' listing. In this context, given the additional data on known records of *Microcorys elatoides*, and with a focus on impacts to Threatened and Priority 1 flora taxa, the impacts of the Approved Project and the Proposal individually or cumulatively are no longer considered likely to be a significant residual impact.

# 7. Offsets

In consideration of the EPA's offset framework, and the Residual Impact Significance Model (p11 of the Government of Western Australia (2014) *WA Environmental Offsets Guidelines*), the residual impacts to the increased removal of rare flora, *Banksia dolichostyla* (EPBC-V, BC-V), falls into the category of,

> *Significant residual impacts that may require an offset – Any significant residual impact to potentially threatened species and ecosystems, areas of high environmental value or where the cumulative impact may reach critical levels if not managed.*

This category is a preliminary offset trigger and as discussed in Section 6.1, Covalent Lithium has considered the cumulative loss of 12 individuals of *Banksia dolichostyla* as likely to require an offset, in addition to proposed avoidance, mitigation and rehabilitation measures, to ensure the EPA's objectives for flora and vegetation can be met following implementation of the proposal.

In order to ensure the cumulative residual impacts resulting from the Approved Project and the Proposal are adequately accounted for and counterbalanced and directly contribute to maintaining or improving the ongoing viability of *Banksia dolichostyla,* Covalent Lithium has prepared a Flora Offset Strategy (Appendix B). The scope of the Flora Offset Strategy is to provide details on the significant residual impacts, required offsets, management actions, success criteria, timelines and milestones, monitoring and reporting requirements.

The Flora Offset Strategy is consistent with the current DCCEEW approved plan for EPBC 2017/7950, which requires requires within 10 years from commencement of the action, for Covalent to establish at least 69 Ironcaps Banksia plants within the Development Envelope (Condition 5).

# 8. Environmental Outcomes

The EPA' objective for Flora and Vegetation is to *protect flora and vegetation so that biological diversity and ecological integrity are maintained*.

The Proposal will cumulatively, with the Approved Proposal, result in the following residual impacts to conservation significant flora as a result of the clearing of up to 1885 ha of native vegetation:

- Direct loss of 12 individuals of *Banksia dolichostyla;*
- Direct loss of less than 10 % of identified Priority 1 flora within the Development Envelope (excluding *Microcorys elatoides*); and
- Direct loss of up to 12.5% of *Microcorys elatoides*, likely to be revised to DBCA Priority 2 flora based on increased regional records.

Of these impacts, the loss of 12 individuals of *Banksia dolichostyla* is considered likely to be a significant residual impact and to ensure the EPA's objective for Flora and Vegetation can be met, Covalent Lithium propose that offsets be undertaken in accordance with the Proposed Covalent Lithium Flora Offset Strategy (Rev 5 October 2025) (Appendix B).

Implementation of the Proposal in accordance with the current approved Covalent Lithium Flora EMP as revised from time to time; the current Covalent Lithium EMP; and the Proposed Flora Offset Strategy (Rev 5 October 2025); will ensure the following environmental outcomes with respect to conservation significant flora are achieved:

- Clearing of no more than 1885 ha of native vegetation within a Development Envelope of 4009 ha;
- No direct or indirect disturbance to flora and vegetation in the exclusion zones as shown in Figure 4-8;
- No more than 12 individuals of *Banksia dolichostyla* will be lost to direct disturbance within the Development Envelope;
- No more than 10 % of the known population of any Priority 1 species, other than *Microcorys elatoides*, will be directly impacted within the Development Envelope; and
- No more than 12.5 % of the known population of *Microcorys elatoides* will be directly impacted.

Based on the assessment of the impact of the Proposal to the recorded flora and vegetation values, subject to the implementation of the identified management actions (including environmental offsets), it is considered the EPA objective for the key environmental factor of 'Flora and Vegetation' can be met.

# 9. Survey References


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# *Appendix A* Western Botanical Review of *Microcorys elatoides*

Western Botanical

# Review of *Microcorys elatoides* P1, September 2025

Prepared for: Covalent Lithium Pty Ltd

Report Ref: WB1083

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| Version | Prepared By | Approved for Issue | Issue Date |
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| 1a<br>minor edits | Geoff Cockerton | 10th October 2025 | 10th October 2025 |
| | | | |



*This report has been designed for double-sided printing*

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# Executive Summary

*Microcorys elatoides* is a long lived lignotuberous, geosporous, perennial shrub to 1m in height with terete linear bright green leaves to 25mm in length and white flowers in mid to late Spring. It occurs on shallow aeolian sand over laterite pizolitic gravely hills on low rolling hill tops and upper slopes and is endemic to the Mt Holland area, some 112 km SSE of Southern Cross. Its distribution is wholly contained within the western fringe of the Southern Cross subregion of the Coolgardie biogeographic region, with proportions of the currently known population within the Jilbadji Nature Reserve as well as in Unallocated Crown Land.

Of the total 364,577 number of *Microcorys elatoides* plants known to date:

- 61,409 (16.8439%) plants are known within eh Jilbadji Nature Reserve.
- 204,258 (56.0260%) plants are known within Unallocated Crown Land outside the EGLP tenements.
- 3,078 plants representing 0.8443% of the overall known population have been already taken to September 2025, including:
    - Eight individuals (representing 0.0038% of the overall population) were taken early in site development at the intersection of the mine access road and the Marvel Loch – Forrestania road alignment, their taking approved in MS1199.
    - 3,070 plants (representing 0.8421% of the overall population) were taken in the upgrade of the Marvel Loch - Forrestania road alignment, approved under CPS10049.
    - 7,962 individuals (representing 2.18% of the overall known population) plants approved to be taken within the mine footprint (MP121883) under MS1199.
- 33,256 individuals (representing 9.1218% of the overall known population) lie within the proposed Life of Mine Disturbance Footprint.

Utilising the data collected by Covalent on the abundance and distribution of *Microcorys elatoides*, and using the DBCA criteria for conservation listing of Priority Species, *Microcorys elatoides* clearly falls within the DBCA's Priority 2 category. Further, given the geographical distribution of *M. elatoides* within a 20 km radius of the EGLP in northerly, western and south-western directions; the distribution of populations and sub-populations within this region and the relatively large Extent of Occurrence and Area of Occupancy; and considering the proposed impacts to the species by either (i) the EGLP LOM proposal or (ii) the overall cumulative impacts to the species by the EGLP, *M. elatoides* could be considered a Priority 4 species (Rare, adequately surveyed and that are considered not currently threatened).

Based on the data generated by Covalent Lithium over the period 2019-2025, *Microcorys elatoides* does not meet the Criteria for IUCN listing for either IUCN Category Critically Endangered (CR), Endangered (EN) or Vulnerable (VU).

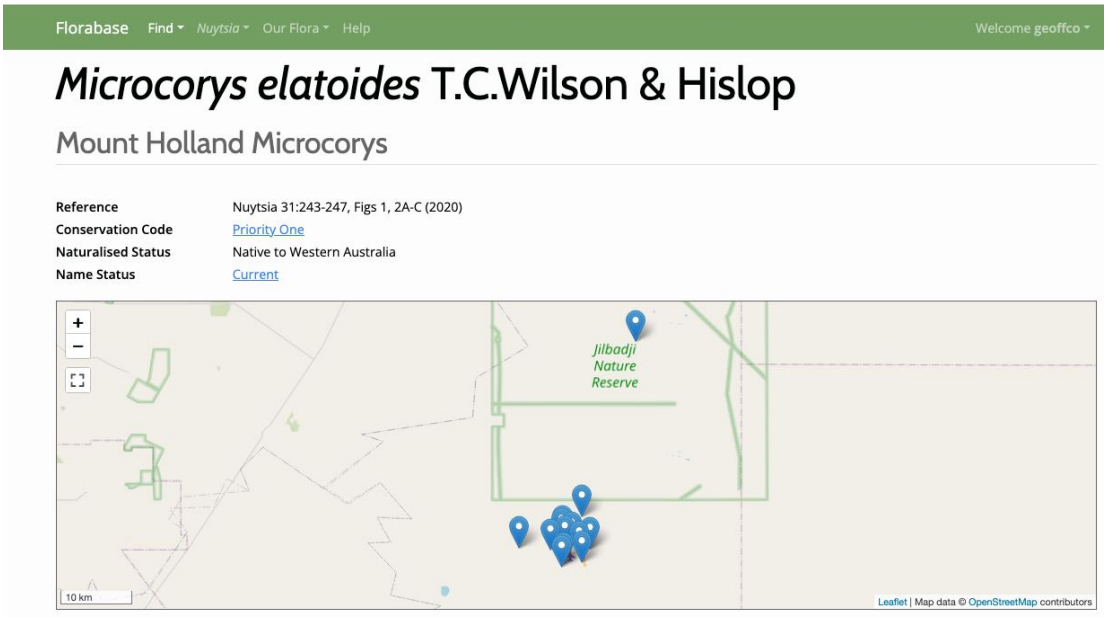
# Background

Covalent Lithium Pty Ltd (Covalent) operate the Earl Grey Lithium Project (EGLP) near Mount Holland, some 120 km south of Southern Cross. The development of the EGLP was approved under Ministerial Statement MS1118 in November 2019 which approved the taking of 6,957 individuals of *Microcorys* sp. Mt Holland (D. Angus DA2397), since described as *Microcorys elatoides* in 2020, which is listed as a Priority 1 taxon by the Department of Biodiversity Conservation and Attractions (DBCA). The Ministerial Statement was revised (i) in May 2021 (MS1167) where the number of *Microcorys elatoides* allowed to be taken was increased to 9,732 individuals and (ii) November 2022 (MS1199) where there was no change to the number of *Microcorys elatoides* permitted to be taken.

### History of vouchered collections

The understanding of numbers and distribution of *Microcorys elatoides* has evolved substantially since the species was first recorded by G. Barrett (22nd Aug 1995, PERTH 05204097) at the former Bounty Gold Mine (now the site of the EGLP). It was subsequently collected again by P. Armstrong (5th Nov 2004, PERTH 08802564, within the Jilbadji Nature Reserve) and Department of conservation and Land Management (CALM) / Department of Environment and Conservation (DEC) staff W. Thompson and J. Allen (24 Sept 2009, PERTH 08455228) near the EGLP. With the advent of surveys conducted for the EGLP by consultants, primarily Mattiske Consulting Pty Ltd, a series of collections were made from the same region (including 25th Oct 2016, PERTH 08864837; 7th Sep 2017, PERTH 09251154; 15th Jun 2018, PERTH09251200; 13th Sep 2019, PERTH 009191844) and by DBCA staff R. Davis and M. Hislop (10th Oct 2020, PERTH 09054146). A total of 13 specimens of *M. elatoides* have been vouchered at the WA Herbarium as shown on the Florabase website, Figure 1.

**Figure 1. Specimens of *Microcorys elatoides* vouchered at the WA Herbarium**



## Surveys within the Earl Grey Lithium Project's Development Envelopes

Surveys for *M. elatoides* within the Earl Grey Lithium Project's mine (MP121883) Development Envelope (DE) and the proposed Life of Mine Development Envelope (LOM), Figure 2, were conducted primarily by Mattiske Consulting Pty Ltd with additional scopes fulfilled by 360 Environmental Pty Ltd, AECOM Australia Pty Ltd, GHD Pty Ltd and Strategen-JBS&G. Specimens collected during these surveys and vouchered at the WA Herbarium appear on the Florabase website, Figure 1.

Three publicly available IBSA submissions relevant to the EGLP have been lodged with the IBSA website:

IBSA-2018-0102, Flora and Vegetation Assessment

IBSA-2018-0101, Targeted Flora Survey

IBSA-2020-0106, Threatened and Priority Flora Assessment

IBSA-2023-0451, Threatened and Priority Flora Assessment

Of these, IBSA-2020-0106 and IBSA-2023-0451 contains records of *M. elatoides.* Other IBSA submissions relevant to the EGLP are not publicly available and have not been reviewed.

Disclaimer:

Western Botanical has not undertaken a review of any populations of significant flora within the mine Development Envelope, the Life of Mine Development Envelope or and other population of significant flora external to these that were surveyed by other consultancies.

## Regional surveys undertaken

Since MS1118 was issued, extensive surveys for conservation-significant flora, including *M. elatoides*, have been undertaken by Western Botanical (2020 – 2024) outside the mine DE and LOM. These were focussed on assessing populations of conservation-significant species that were either previously found within the mine's DE and the LOM or adjacent to the road alignment from Mt Holland to Moorine Rock which was subject to a proposed widening and sealing from December 2021 to April 2024. The Marvel loch – Forrestania road alignment was assessed under three Clearing Permits; CPS10049 (southern section, closest to the EGLP), CPS10197 (northern section near Moorine Rock) and CPS10265 (central section including around the Parker Range).

Targeted surveys for *Microcorys elatoides* extended in increasing radii from the EGLP, focussed on low lateritic gravelly rises where the species was found to be present. *M. elatoides* extends to the north, west and south of the EGLP where favourable landforms and soils exist. The area east of the EGLP rapidly gives way to sandplains on duplex soils and then downstream parts of the Lake Barker paleochannel, which are both unsuitable for *M. elatoides*.

Representative specimens of significant flora had been submitted for verification of identification to the WA Herbarium (Accession 10259, June 2023), and while specimens of *M. elatoides* have been collected from many sites outside the mine DE or LOM, and stored at Western Botanical's office, these have only recently been vouchered at WA Herbarium in September 2025 (ACC pending).

**Figure 2. Approved Earl Grey Lithium Project mine (MP121883), Life of Mine footprint and roads footprint.**

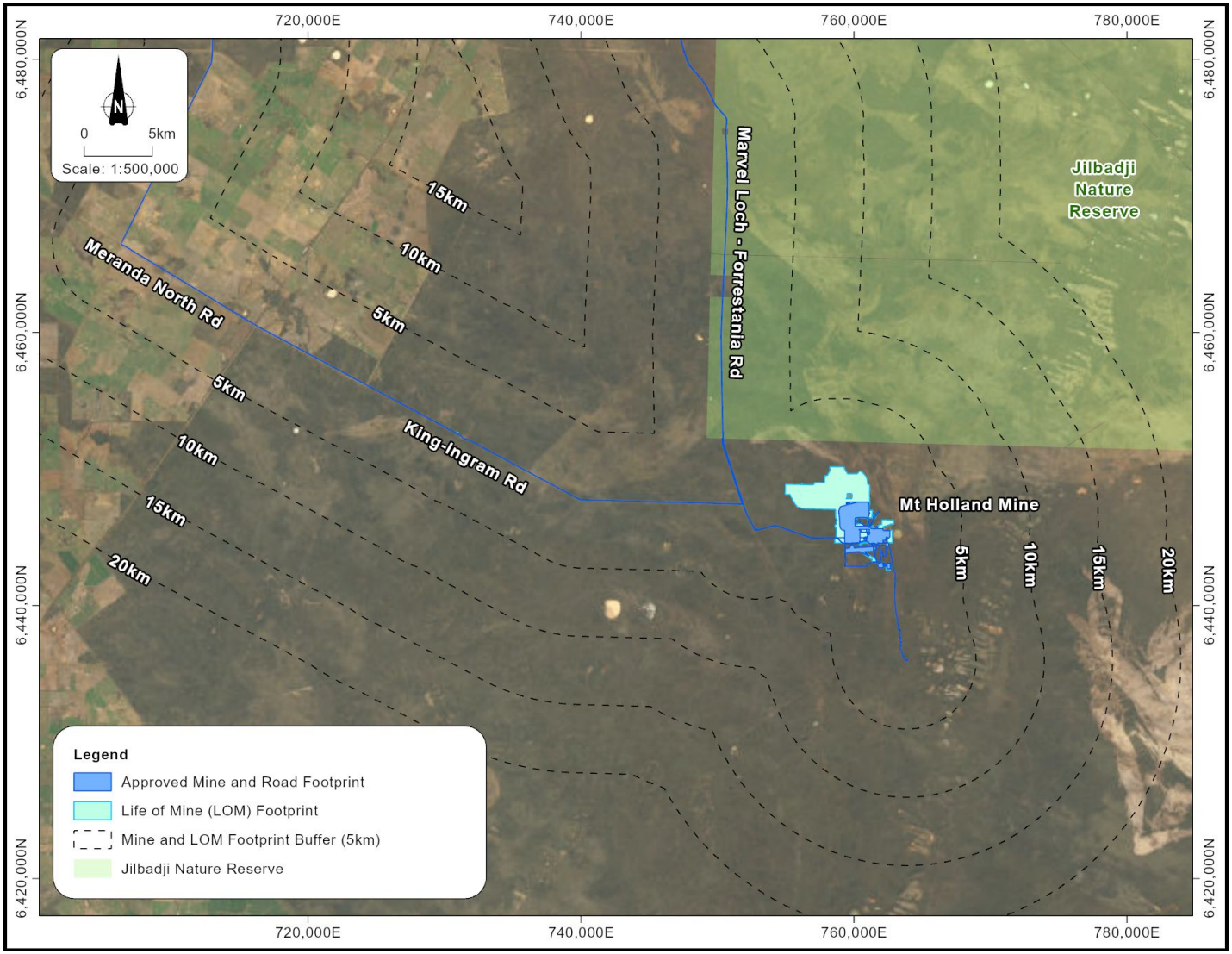
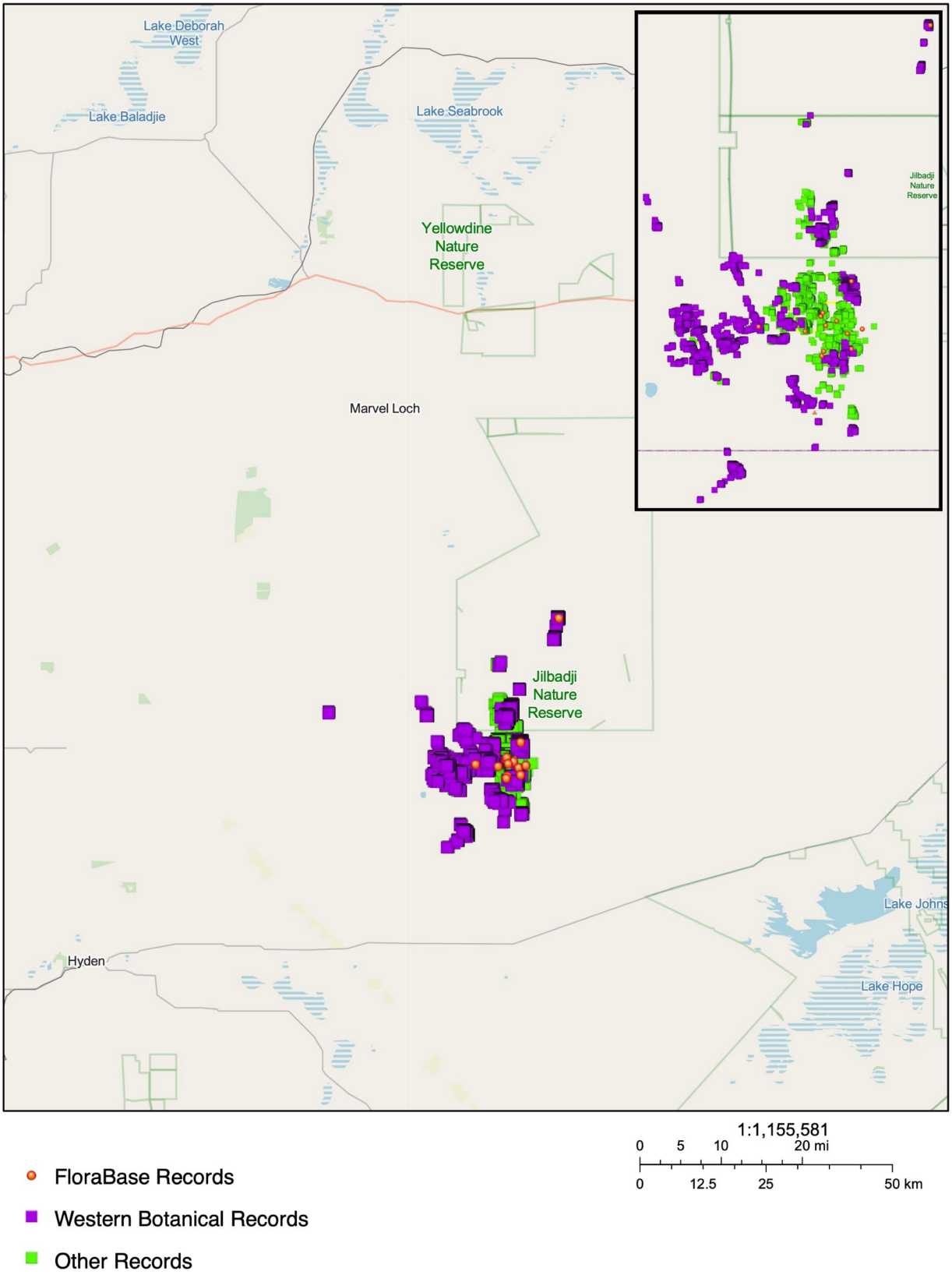


**Figure 3. Known distribution of *Microcorys elatoides* as at 10th July 2025.**



## Field assessment methods

Field surveys for the assessment of Threatened, Priority and otherwise significant flora have been undertaken using a standardised methodology where operators walk transects of pre-determined gridlines at 10m spacing, recording counts of each species recognised into iPads. Data is compiled, checked for quality assurance, and maintained on a centralised ARCGIS database managed by CAD Resources Pty Ltd for Covalent.

This review incorporates data held by CAD Resources at 10th July 2025.

## Finding populations and increasing numbers

A brief overview of the biology and preferred habitat of *Microcorys elatoides,* prepared in May 2022 for Covalent and addressed to DBCA is presented in Appendix 1.

The off-tenement regional surveys 2019-2025 continue to record new populations and increase numbers of *Microcorys elatoides*. These are recorded on low lateritic gravely rises, often on mid to lower slopes where some aeolian sand covers the laterite.

Soil Landscapes of the region centred on the EGLP study area are depicted in Figure 4 (DPIRD, 1987). This shows that *Microcorys elatoides* appears to be primarily correlated with subunits within the AC1 Atlas Land System, Figure 4.

- AC1 Atlas system: Gently sloping to gently undulating plateau areas, or uplands, on granites, gneisses, and allied rocks, with long gentle slopes and, in places, abrupt erosional scarps. [Note, this subunit of the Atlas System would also include lateritised hill tops and slopes, transported gravels and abutting shallow Aeolian sandsheets which have not been described or mapped at the scale at which the soil landscapes have been presented].

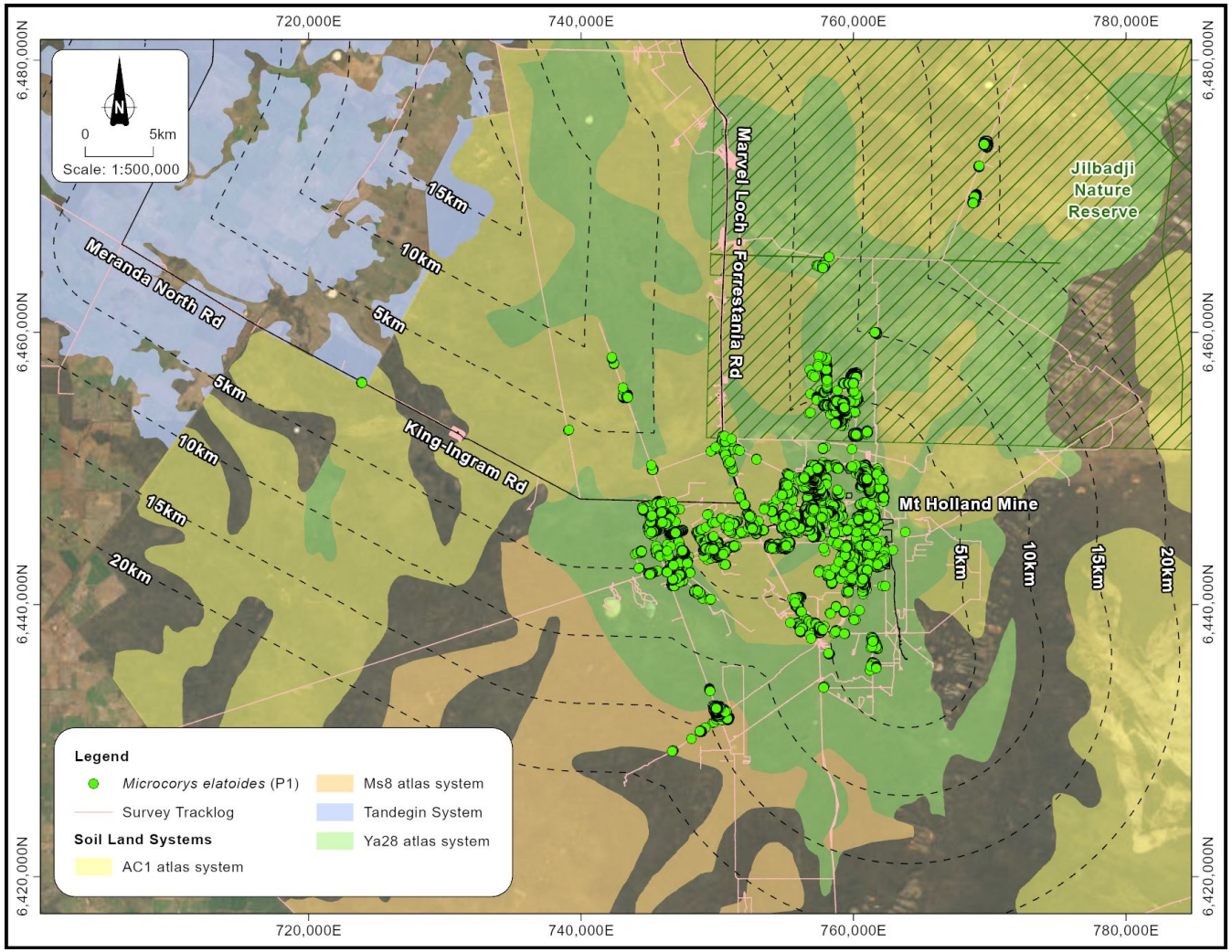
- Ms8 Atlas system: Gently undulating plains with broad shallow drainage depressions.

- Ya28 Atlas system: Sandy plains with some clay pans and small salt lakes, dunes, and lunettes.

- Tandegin System: Sandplain dominated interfluves with weakly indurated lateritised crests and upper slopes and long colluvial yellow sandplain upper to lower slopes. Unlateritised surfaces dominated by sodic and alkaline duplex soils.

Given the 1:250,000 scale of capture of the Soil Landscapes vs the local variability in soils and vegetation, and the recorded presence of *M. elatoides*, the correlation is not perfect, and differences are attributed to assessment at differing scales.

**Figure 4. Soil Landscape Systems near the EGLP and *Microcorys elatoides* distribution**






Western Botanical

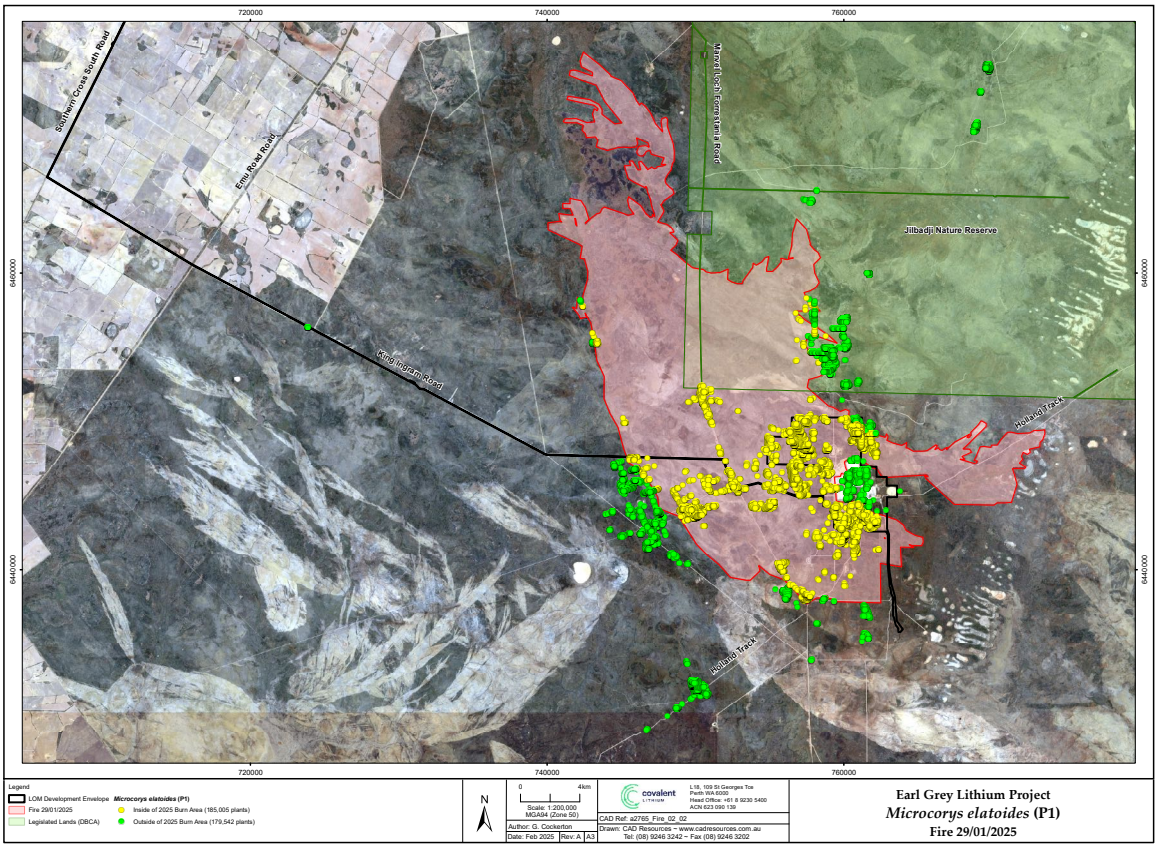
### January 2025 bushfire

Many differing fire-age patches of vegetation were surveyed, specifically targeting this landform and soil association, and frequently *M. elatoides* was recorded. A demographic assessment of *M. elatoides* in relation to fire age has been reported in Western Botanical (2025).

Surveys for the species conducted to date indicate that further numbers and sub-populations are likely to be found, particularly within the central-southern portions of Jilbadji Nature Reserve, where suitable habitat for the species is inferred via association with known populations, but has not yet been surveyed as these lie considerable distance from available access tracks.

The recent (January 2025) lightning-strike bushfire which burnt much of the area north-west of the EGLP and Mt Holland will trigger the regeneration of *M. elatoides* from both lignotuber and from soil stored seeds, so the numbers of plants assessed 2019-2025 in areas recently burnt can't be re-verified, Figure 5. Significant recruitment of seedlings from soil stored seeds has been observed on many occasions and these recruitment events are followed by a gradual reduction in plant numbers over a 5 to 15 year timeframe, commensurate with increasing maturation of vegetation, as would be expected in such a natural response (Western Botanical, 2025).

**Figure 5. *Microcorys elatoides* distribution and the January 2025 bush fire**




*Microcorys elatoides* also resprouts from lignotuber and numbers of these plants reduces over longer timeframes, in the order of 20 to 30 years (Western Botanical, 2025).

# Current understanding of the numbers and distribution of *Microcorys elatoides*

At approval of the EGLP on 7th Oct 2019, EPA Report 1651, the numbers of *Microcorys elatoides* (Priority 1) plants known consisted of 5,692 within the mine Development Envelope and 10,856 regionally, a total 16,584 plants. Subsequent extensive surveys were conducted by Western Botanical between December 2019 and February 2025, leading to the numbers and distribution of *M. elatoides* being considerably extended. As at 10th July 2025, the overall population of *Microcorys elatoides* recorded stands at 364,577 individuals.

*Microcorys elatoides* is known from many populations and sub-populations. Populations are defined by DBCA as either (i) being physically separated by 600m (a value that likely restricts gene flow between populations); or (ii) being present on lands of differing tenure (reflecting differing ownership or management potentials). *Microcorys elatoides* has populations within the Jilbadji Nature Reserve as well as Unallocated Crown Land (UCL) and within Mining Tenements, Figure 3

Of the overall total 364,577 plants of *Microcorys elatoides* recorded to date, the numbers of plants on varying tenure are presented in Table 1 and

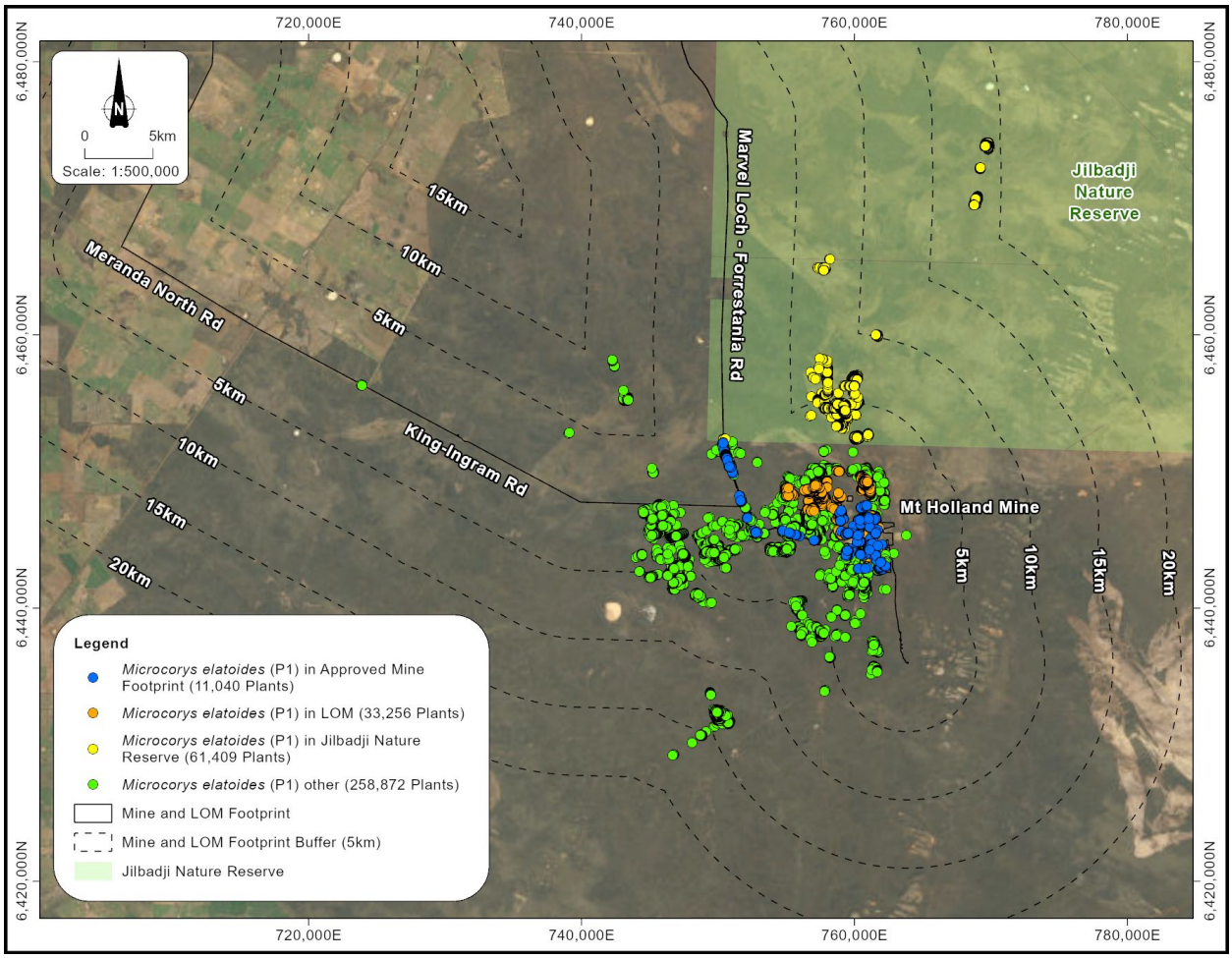
Figure 6.

**Table 1. *Microcorys elatoides* recorded and land tenure**

| | Count | % of Overall population recorded |
|---|---|---|
| Plants in the approved mine footprint (MP121883) | 11,040[1] | 3.03% |
| Plants in the LOM Development Envelope | 33,256 | 9.1218% |
| Plants in the Jilbadji Nature Reserve | 61,409 | 16.8439% |
| Plants within UCL outside the above | 258,872 | 71.01% |
| Total recorded plants | 364,577 | 100.00% |

[1] Only 7,962 plants within the Mine footprint (MP121883) are proposed to be taken.

## Figure 6. Map of *Microcorys elatoides* and Land Tenure



### *Microcorys elatoides* population numbers and proposed impacts from the LOM

Of the total 364,577 number of *Microcorys elatoides* plants known to date:

- 3,078 plants representing 0.8443% of the overall known population have been already taken to September 2025, including:
    - Eight individuals (representing 0.0038% of the overall population) were taken early in site development at the intersection of the mine access road and the Marvel Loch – Forrestania road alignment, their taking approved in MS1199.
    - 3,070 plants (representing 0.8421% of the overall population) were taken in the upgrade of the Marvel Loch - Forrestania road alignment, approved under CPS10049.
- Approved to be taken in MP121883, MS1199:
    - 7,962 individuals (representing 2.18% of the overall known population) is the group of plants approved to be taken within the mine footprint (MP121883) under MS1199.
- LOM proposal:
    - 33,256 individuals (representing 9.1218% of the overall known population) lie within the proposed Life of Mine Development Footprint.

**Table 2. Numbers and tenure of *Microcorys elatoides* populations**

| | Region | Taken | Not taken | Proportion of Population | Data Source |
|---|---|---|---|---|---|
| Regional, outside Mine and LOM | Regional, outside LOM and mine DE | - | 14 | 0.0038% | DBCA |
| | Regional, outside LOM and mine DE | - | 46,216 | 12.6766% | Other Consultants |
| | Regional, outside LOM and mine DE, excluding Jilbadji NR | - | 158,028 | 43.3456% | Western Botanical |
| | Regional, within Jilbadji Nature Reserve | | 61,409 | 16.8439% | Western Botanical |
| | Regional, within CPS10049 footprint | 3,070 | - | 0.8421% | Western Botanical |
| | Regional, outside LOM and mine DE, adjacent to CPS10049 | - | 4,989 | 1.3684% | Western Botanical |
| | Regional, within CPS10265 footprint | - | - | 0.0000% | Western Botanical |
| | Regional, within CPS10197 footprint | - | - | 0.0000% | Western Botanical |
| | Regional, outside LOM and DE, adjacent to CPS10197 | - | - | 0.0000% | Western Botanical |
| | Regional, outside LOM and DE, adjacent to CPS10265 | - | - | 0.0000% | Western Botanical |
| Mine and LOM | Local, within LOM Development Envelope | - | 19,631 | 5.3846% | Mattiske Consulting et. al. |
| | Local, within LOM Footprint | - | 399 | 0.1094% | Mattiske Consulting et. al. |
| | Local, within MP121883 mine footprint | - | 29,595 | 8.1176% | Mattiske Consulting et. al. |
| | Local, proposed to be taken within LOM footprint | 33,256 | - | 9.1218% | Mattiske Consulting et. al. |
| | Local, taken within MLF MS1199 footprint | 8 | - | 0.0022% | Mattiske Consulting et. al. |
| | Local, approved to be taken within MP121883 | 7,962 | - | 2.1839% | Mattiske Consulting et. al. |
| | Total already taken (CPS10049 and MS1199) | 3,078 | | 0.8443% | |
| | **Total, proposed to be taken within MP121883 and LOM** | **41,218** | | 11.3057% | |
| | **Total not taken at 10/7/25** | | **320,281** | 87.8500% | |
| | **Overall population known at 10/7/2025** | | **364,577** | 100.0000% | |
| | **Proportion of Overall Population** | **11.31%** | **87.85%** | | |

## Extent of Occurrence and Area of Occurrence

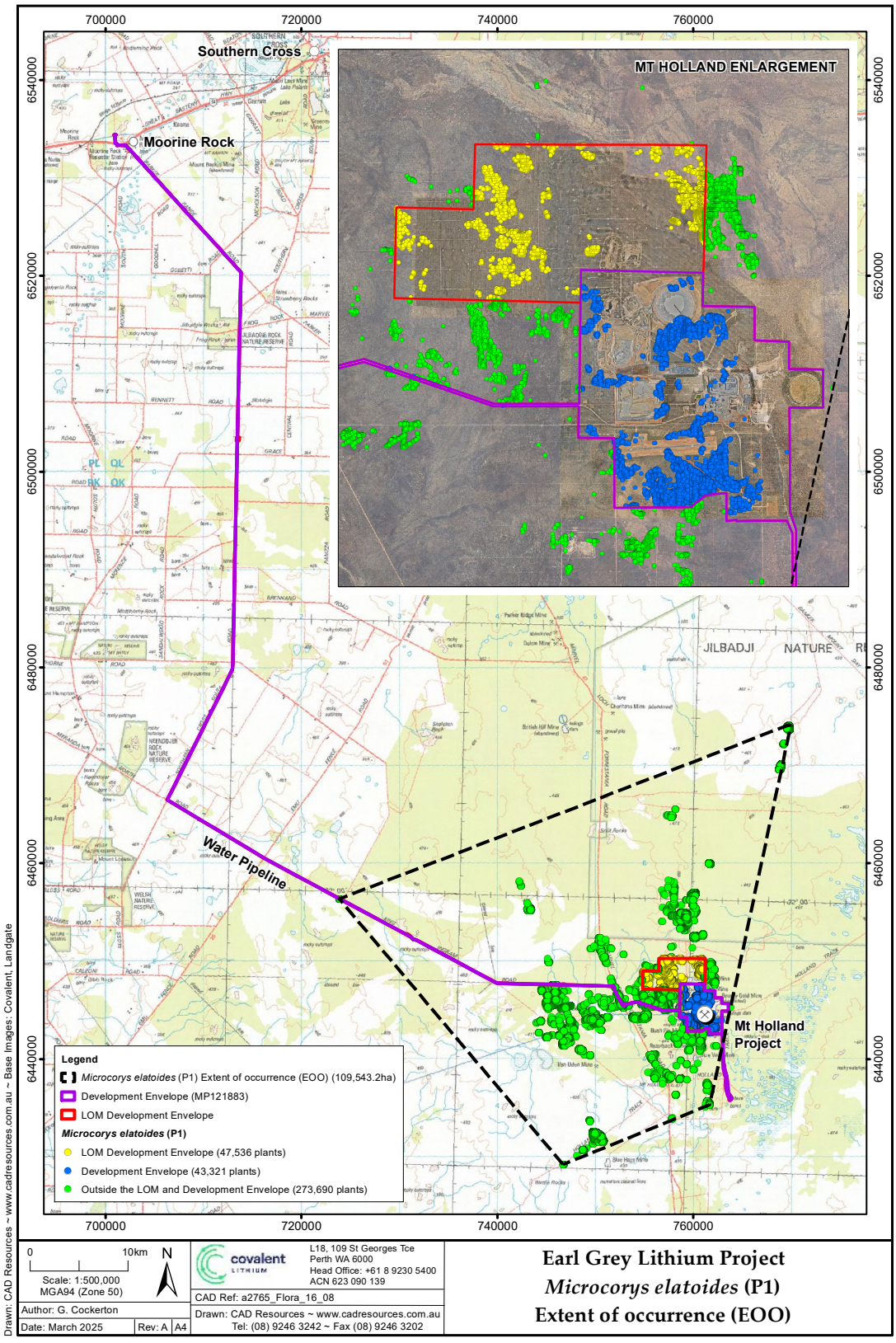
The extent of Occurrence (EOO), a polygon encompassing all known populations of *M. elatoides*; and the Area of Occupancy (AOO) calculated as a 5m radius around each data point (reflecting the field sampling technique) are presented in Western Botanical (2025, in prep). This states:

> "The Extent of Occurrence (EOO)) of *Microcorys elatoides*, inclusive of all known populations of the species, is calculated as 109,543 ha extending from south and east of the EGLP minesite, northwards to the Jilbadji Nature Reserve and westwards to a population on King Ingram Road."
>
> Within the EOO polygon, the Area of Occupancy (AOO), is calculated as 331.17 ha, representing 0.30% of the EOO. The AOO assumed a 5m radius around any given data point recorded in surveys for *Microcorys elatoides*.
>
> Of the 331.17 ha AOO occupied by *Microcorys elatoides* known as at March 2025, 13.60 ha lies within the proposed MP121883 mine footprint and 30.50 ha lies within the proposed LOM footprint. These represent 4.11% and 9.07% respectively (13.18% total) of the overall known AOO of the population to date. Outside the proposed mine areas, 43.62 ha (13.17%) of the AOO lies within the Jilbadji Nature Reserve and 243.90 ha (73.65%) of the AOO remains outside this, within Unallocated Crown Land (UCL).
>
> This data is presented in Table 3, Figure 7 and Figure 8.

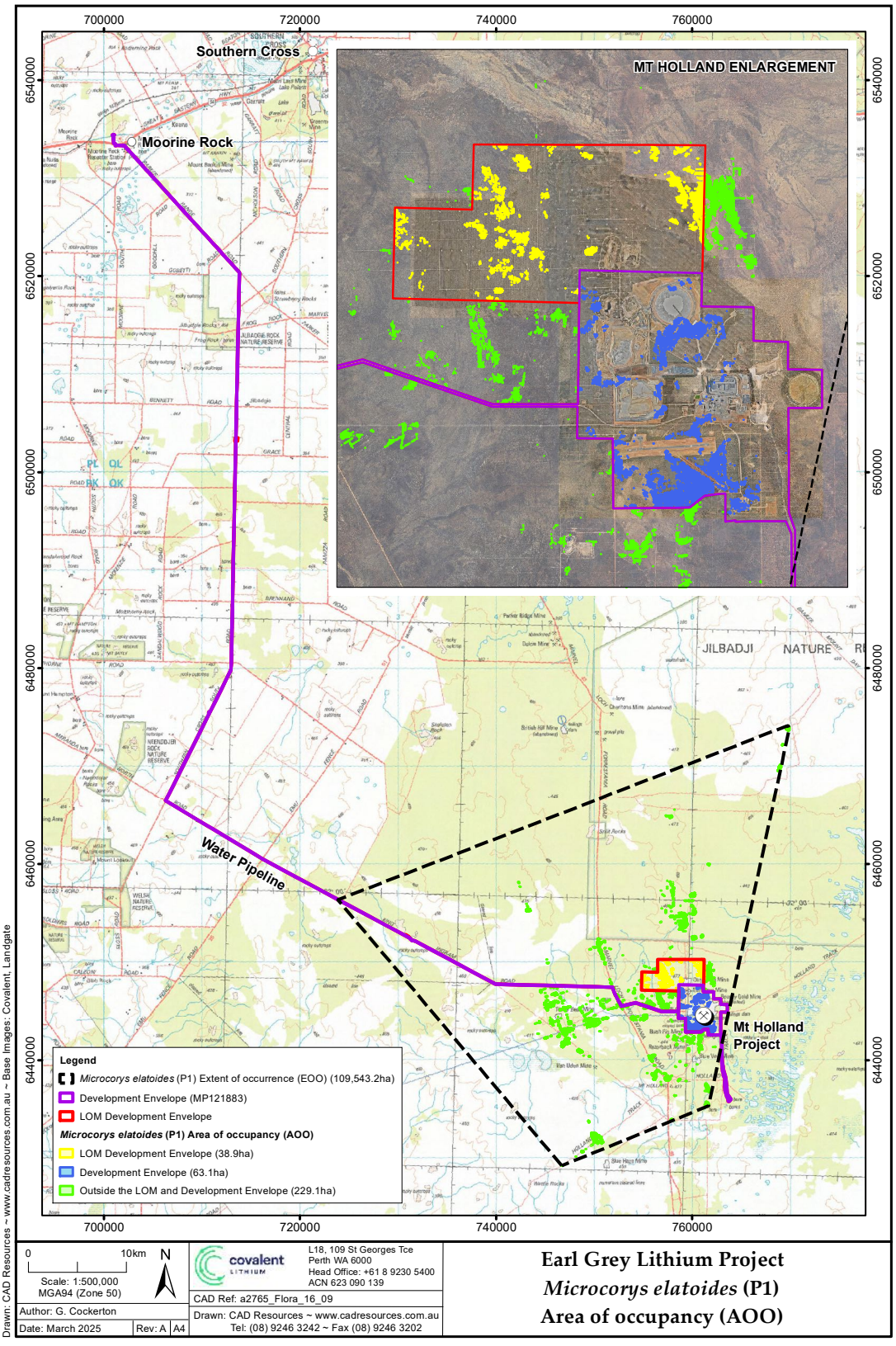
**Table 3. Area of Occupancy (AOO) of *Microcorys elatoides***

| **Area of Occupancy of *Microcorys elatoides* proposed to be taken in MP121883 and LOM footprints** | **Conserved** | | **To Be Taken** | |
|---|---|---|---|---|
| | **Area (ha)** | **%** | **Area (ha)** | **%** |
| *Microcorys elatoides* in the MP121883 mine footprint | | | 13.60 | 4.11% |
| *Microcorys elatoides* in the LOM footprint | | | 30.05 | 9.07% |
| Total of *Microcorys elatoides* within mine footprint and LOM | | | 43.65 | 13.18% |
| *Microcorys elatoides* within Jilbadji NR | 43.62 | 13.17% | | |
| *Microcorys elatoides* outside the LOM footprint (and not in the Jilbadji NR), within UCL | 243.90 | 73.65% | | |
| Total of *Microcorys elatoides* remaining outside mine footprint and LOM | 287.52 | 86.82% | | |

**Figure 7. Extent of Occurrence of *Microcorys elatoides* as at July 2025.**

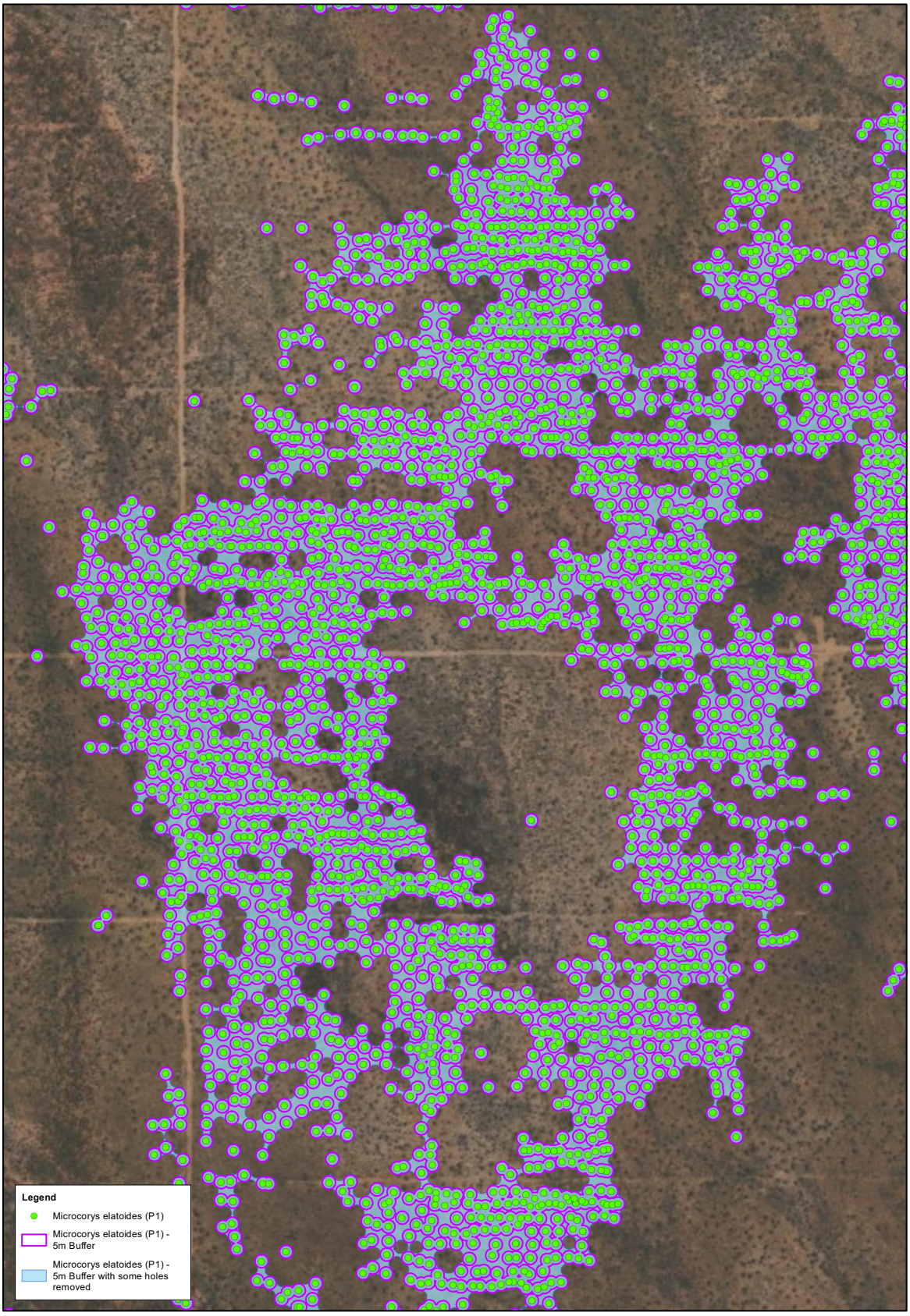


## Figure 8. Area of Occupancy of *Microcorys elatoides* at at July 2025




A closer inspection of the method used to determine the AOO is presented in Figure 9.

**Figure 9. Sample of detailed view of *Microcorys elatoides* AOO assessment.**



*Microcorys elatoides* is known from many populations and sub-populations. Populations are defined by DBCA as either (i) being physically separated by 600m (a value that likely restricts gene flow between populations); or (ii) being present on lands of differing tenure (reflecting differing ownership or management potentials). *Microcorys elatoides* has populations within the Jilbadji Nature Reserve as well as Unallocated Crown Land (UCL) and within Mining Tenements, Figure 3.

**Table 4. *Microcorys elatoides* numbers and Land Tenure**

| Land Tenure | Count | % of Overall population recorded |
|---|---|---|
| Plants in the approved mine footprint (MP121883) | 11,040 | 3.03% |
| Plants in the LOM Development Envelope | 33,256 | 9.12% |
| Plants in the Jilbadji Nature Reserve | 61,409 | 16.84% |
| Plants within UCL outside the above | 258,872 | 71.01% |
| **Total** | **364,577** | **100.00%** |

**Reviewing the Conservation Listing of *Microcorys elatoides***

It is understood the Priority 1 status currently applied to *Microcorys elatoides* was based upon this being a newly discovered taxon with a restricted distribution and < 11,000 individuals recorded regionally in 2019.

Following extensive regional surveys 2019 – 2025, the overall population known as at July 2025 is 364,577, with an acknowledgement that further numbers are yet to be potentially recorded both within and outside the Jilbadji Nature Reserve.

A substantial number of plants, 61,409 representing 16.84% of the overall known population occurs within the Jilbadji Nature Reserve.

A review of Department of Biodiversity, Conservation and Attractions Criteria for defining Priority Flora (Western Botanical, 2022) finds that *M. elatoides* fulfils the criteria for listing as a Priority 2 species:

> "Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, for example, national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation."

On review of the AOO and overall distribution of the species known to date, it may be argued that the species, while restricted to a 20km radius north, west and south of Mt Holland, is comprised

of numerous populations and sub-populations. It may therefore be argued that a Priority 3 (poorly known but with more than five populations known); or Priority 4 (restricted distribution but not threatened) listing may also be appropriate for the species. With the level of survey undertaken specifically for this species to date, it should no longer be regarded as "poorly known". It is however, geographically restricted.

The greatly expanded AOO, is calculated as 331.17 ha, representing 0.30% of the EOO. Surveys funded by covalent have increased numbers by a factor of 33 times over those known at the time of its assessment and listing as a Priority 1 flora species (2018: fewer than 11,00 plants (3.0171%) known vs 2025: 364,577 (96.9829%) total plants recorded to date). The extant population is 320,281 plants calculated as at July 2025.

Data generated in surveys for Covalent indicate that M. elatoides has a range of 20 km radius of Mt Holland (in northerly, westerly and southerly directions). Much of the northern extents of the EOO and AOO were burnt in January 2025, triggering natural regeneration processes.

**Assessment of *Microcorys elatoides* against the IUCN Red Book Categories**

The International Union for Nature Conservation (IUCN) produces the Red Book, a comprehensive method for assessing conservation status of species. This takes into account the biology of the species, overall numbers, areas of occupancy and threatening processes. The IUCN Red Book Categories and Criteria are presented in .

*Microcorys elatoides* is known from one large population, originally 364,577 plants, less 11,048 plants taken to date, with a residual extant population of 320,281 individuals as at July 2025. Several disjunct populations and sub-populations, ranging in size from a few hundred individuals to tens of thousands of plants, are known within a 20 km radius of Mt Holland, following favourable landscape and soil type occurrences. These lie in the western edge of the Southern Cross (COO 2) Interim Biogeographic Regionalisation of Australia (IBRA) subregion. A minimum of 61,409 individuals are known occur within the Jilbadji Nature Reserve and a minimum of 204,268 plants are known to occur within Unallocated Crown Land outside areas of proposed disturbance.

*Microcorys elatoides* has an Extent of occurrence of 109,543 ha and an Area of occurrence of 331.17 ha.

The current threat to *Microcorys elatoides* is from proposed mining with 33,256 plants (9.1218% of the overall population) proposed to be taken in the Earl Grey Lithium Project (EGLP) Life of Mine (LOM) footprint. The cumulative impact to date from all sources, is 11,408 plants (3.0304% of the overall known population). The combined impact, following implementation of the LOM is 44,304 plants (12.1522% of the overall known population).

A review of *Microcorys elatoides* against the IUCN Red Book Criteria is presented in Table 5.

**Table 5. Review of *Microcorys elatoides* against the IUCN Red Book Criteria**

| Criterion | Discussion |
|---|---|
| **IUCN Category A (reduction in population size)** | The overall number of plants recorded of *Microcorys elatoides* stands at 364,577 plants to July 2025, excluding the effects of the January 2025 bush fire.<br>Some of these have already been taken (CPS10049 footprint (3,070 plants, 0.08421%), MS1199 footprint (8 plants, 0.0022%), within MP121883 (7,962 plants, 2.1839%), leaving an extant population of 320,281 plants (87.8500% of the overall population). The cumulative reduction in population size from development of the EGLP to July 2025 stands at 3.0304%.<br>The LOM proposal will take 33,256 plants, 9.1218% of the overall population.<br>The total reduction in population size of *Microcorys elatoides* from all processes associated with the EGLP, both historical and proposed (CPS10049 footprint (3,070 plants), MLF MS1199 footprint (8 plants), within MP121883 (7,962 plants), and the LOM proposal is 44,304 plants, 12.1500%.<br>Neither the level of impact from the LOM proposal alone nor the Cumulative impact to date do not trigger the IUCN Category A (reduction in population size) or for *Microcorys elatoides.* |
| **IUCN Category B1 (Extent of Occupancy, EOO)** | The Extent of Occurrence is 109,543 ha, based on the populations and sub-populations known to date.<br>It is route to continue finding additional individuals of *Microcorys elatoides* when visiting areas of suitable soil type and landscape position which have not been assessed to date.<br>The western-most point recorded consists of 85 plants recorded adjacent to the Vermin Proof Fence on King Ingram Rd. This point is significantly disjunct from other points recorded.<br>*Microcorys elatoides* does not meet the Criteria for IUCN listing based on Extent of Occupancy. |
| **IUCN Category B1 and B2 (Area of Occupancy, AOO)** | *Microcorys elatoides* has a total Area of Occupancy of 331.17 ha, based on a 5 m radius around each plant.<br>Of this, 13.6 ha (4.11%) lies within the approved MS121883 footprint.<br>A further 30.5 ha (9.07 ha) lies within eh proposed Life of Mine footprint.<br>43.62 ha (13.17%) lies within the Jilbadji Nature Reserve.<br>243.9 ha (73.62%) lies within Unallocated Crown Land within the EOO. |

The results of this assessment against the three highest applicable IUCN Categories is presented in Table 6. Based on the data generated by Covalent Lithium over the period 2019-2025, *Microcorys elatoides* does not meet the Criteria for IUCN listing for either IUCN Category Critically Endangered (CR), Endangered (EN) or Vulnerable (VU).

## Table 6. Assessment of *Microcorys elatoides* against the three highest applicable IUCN Categories

| IUCN Category | Criterion | Proportional Impact Area | Reduction in Population Size | Extent of Occurrence | Area of Occurrence | Resulting IUCN Listing |
|---|---|---|---|---|---|---|
| **Extinct (EX)** | | | No | No | No | |
| **Extinct in the Wild (EW)** | | | No | No | No | |
| **Critically Endangered (CR)** | Reduction in Pop's size >90%; EOO <100 sq. km; AOO<10 sq. km | LOM impact Alone | No | No | No | Nil |
| | | Cumulative Impact | No | No | No | Nil |
| **Endangered (EN)** | Reduction in Pop's size >70%; EOO <100 sq. km; AOO<10 sq. km | LOM impact Alone | No | No | No | Nil |
| | | Cumulative Impact | No | No | No | Nil |
| **Vulnerable (VU)** | Reduction in Pop's size >50%; EOO <20,000 sq. km; AOO<2,000 sq. km | LOM impact Alone | No | No | No | Nil |
| | | Cumulative Impact | No | No | No | Nil |

# References


- *Atlas of Living Australia occurrence download at https://biocache.ala.org.au/occurrences/search?&q=taxa%3A%22microcorys+elatodies%22&disableAllQualityFilters=true&qc=data_hub_uid%3Adh9 accessed on 19 September 2025.*

- Department of Biodiversity, Conservation and Attractions (2025) Conservation Categories Definitions for Western Australian Fauna and Flora. Department of Biodiversity, Conservation and Attractions, Perth, Western Australia.

- Department of Primary Industries and Regional Development (1987) *Soil-landscape systems Western Australia.* Department of Primary Industries and Regional Development, Perth, Western Australia.

- IUCN. (2012). IUCN Red List Categories and Criteria: Version 3.1. Second edition. Gland, Switzerland and Cambridge, UK: IUCN. iv + 32pp.

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- Western Botanical (2022) *Review of Microcorys elatoides (P1) Conservation Listing.* Consultant's report prepared for Covalent Lithium Pty Ltd. Report Ref: WB979.

- Western Botanical (2025) *Microcorys elatoides Pilot Demographic Study.* Consultant's report prepared for Covalent Lithium Pty Ltd. Report Ref: WB1055 (in preparation).

# 1. List of Participants

| Staff Member | Field Surveys | Specimen Identification | Data Analysis | Report Preparation |
|---|---|---|---|---|
| Geoff Cockerton B.Sc. (Biology) Flora Taking (Biological Assessment) License No. – FB62000046 | **1** | **1** | **1** | **1** |

**Appendix 1. Western Botanical (2022) Review of *Microcorys elatoides* (P1) Conservation Listing.**

Our Ref: WB979

Tuesday, 17 May 2022

Ms Catherine Bourke
Species and Communities Branch
Department of Biodiversity, Conservation and Attractions
By email: catherine.bourke@dbca.wa.gov.au

Dear Catherine

**Review of *Microcorys elatoides* (P1) Conservation Listing.**

Western Botanical is undertaking botanical surveys for Covalent Lithium Pty Ltd (Covalent Lithium) on related to the Earl Grey Lithium Project, located approximately 100 kilometres south-south-east of the townsite of Southern Cross, Western Australia.

The area of the Earl Grey Lithium Project and surrounds contain numerous flora taxa classified by the State Department of Biodiversity, Conservation and Attractions (DBCA) as 'Priority'.

Of the recorded flora taxa, the flora taxon *Microcorys elatoides* (Priority 1) has come to my attention as potentially requiring reclassification as a result of more recent biological survey information on its broader distribution and abundance. From review of its distribution and abundance, and of the DBCA's listing criteria, it would seem appropriate for DBCA to consider a revision of the conservation listing of *Microcorys elatoides* would be more appropriately classified at a 'Priority 2' listing.

I have prepared a brief consolidated review of *Microcorys elatoides*, which follows.

Your consideration of this matter would be greatly appreciated.

Yours Sincerely

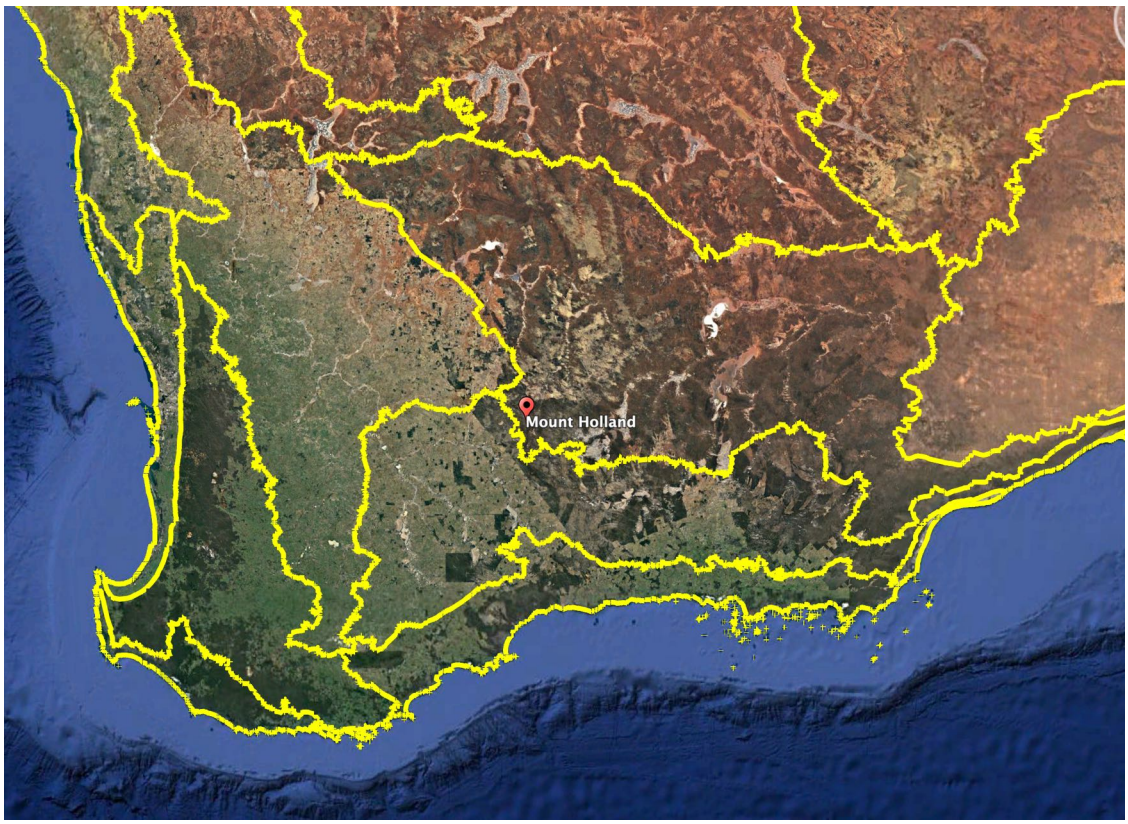
Geoff Cockerton

## Background

*Microcorys elatoides* is a long lived lignotuberous, geosporous, perennial shrub to 1m in height with terete linear bright green leaves to 25mm in length and white flowers in mid to late Spring, Appendix 1.

*Microcorys elatoides* occurs on shallow aeolian sand over laterite pizolitic gravely hills and is endemic to the Mt Holland area, some 112 km SSE of Southern Cross. Its distribution is wholly contained within the western fringe of the Southern Cross subregion of the Coolgardie biogeographic region, **Error! Reference source not found.**, with proportions of the currently known population within the Jilbadgi Nature Reserve as well as in Unallocated Crown Land.

**Figure 1. Mt Holland and Biogeographic Regions**




## Description and Listing of *Microcorys elatoides*

*Microcorys elatoides* was described in October 2020 by Wilson & Hislop from specimens initially collected by D. Angus (Oct 2016) and subsequently re-collected by Davis & Hislop in October 2018.

It is currently listed as a Priority 1 species by the Department of Biodiversity, Conservation and Attractions (DBCA). It is understood the Priority 1 this was based upon *Microcorys elatoides* being a newly discovered flora taxon with a restricted distribution and < 11,000 individuals recorded regionally (with a projected estimate of < 45,000 individuals).

### Known Populations - DBCA Data

WA Herbarium Data available through the Florabase website shows 13 specimens are vouchered from the Mt Holland area. Of these, one lies within the Jilbadji Nature Reserve and the remainder are located closer to Mt Holland. Where population sizes are mentioned, these are annotated variously as 'large population', 'locally common', '2 to 5 plants', '6 to 10 plants', '10 in 10m diameter'. It the authors experience, this is typical of the distribution of the species where it can occur in small numbers or in very large populations of many hundreds of mature individuals.

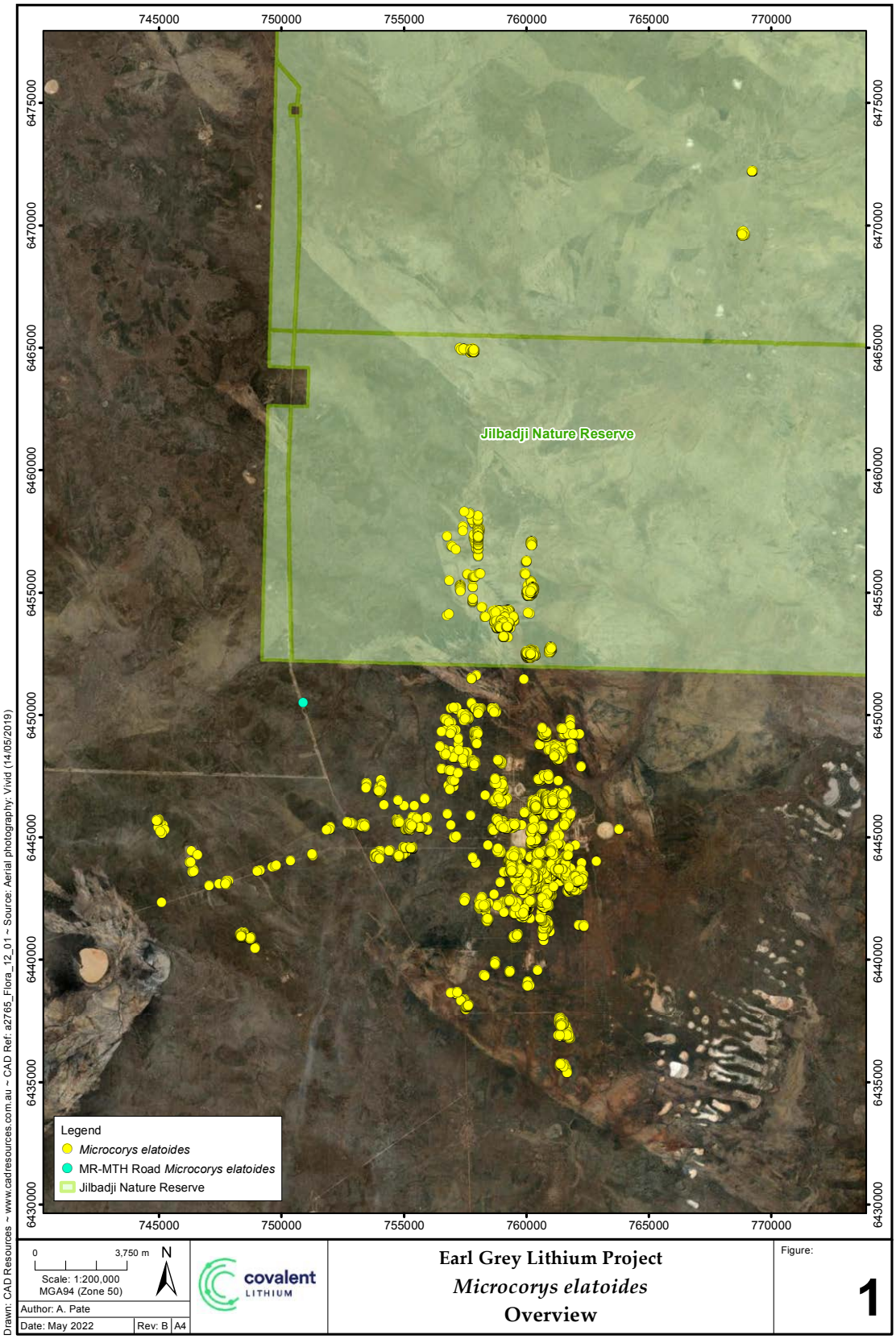
### Known Populations – Mattiske Consulting and Western Botanical Flora Surveys

Relatively recent studies conducted by Mattiske Consulting and Western Botanical (for Covalent Lithium) in support of their development proposals at the former Bounty Gold Mine at Mt Holland have recorded significant numbers of *M. elatoides* both within UCL in and around the current mining operations and also within the Jilbadji Nature Reserve, **Error! Reference source not found.**. A minimum of 87,559 individuals are now known (near double the original estimated abundance), of which approximately 27 % (23,708 individuals) occur within the Jilbadji Nature Reserve, **Error! Reference source not found.**.

**Table 1. Numbers of *Microcorys elatoides* recorded by Mattiske Consulting and Western Botanical:**

| Taxon & Cons_Code | Within Jilbadji Nature Reserve | Outside Jilbadji Nature Reserve (UCL/VCL) | Total Numbers Known |
|---|---|---|---|
| *Microcorys elatoides* P1 | 23,708 | 63,851 | 87,559 |
| Proportion of Known Population | 27 % | 73 % | 100% |

**Figure 2. *Microcorys elatoides* known distribution and Conservation Reserves**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Legend
Microcorys elatoides
MR-MTH Road Microcorys elatoides
Jilbadji Nature Reserve
0
3,750 m
N
Scale: 1:200,000
MGA94 (Zone 50)
Author: A. Pate
Date: May 2022
Rev: B
A4
covalent LITHIUM
Earl Grey Lithium Project
Microcorys elatoides
Overview
Figure:
1
Drawn: CAD Resources ~ www.cadresources.com.au ~ CAD Ref: a2765_Flora_12_01 ~ Source: Aerial photography: Vivid (14/05/2019)

### Potential Further Numbers

While extensive and detailed Targeted Surveys for *Microcorys elatoides* have been undertaken in recent years by Covalent, not all populations recorded have been well quantified. In particular, those on the Forrestania – Marvel Loch Road and those west of the Forrestania – Marvel Loch Road have not been fully enumerated and the range of the species in these areas may increase numbers and known distribution within suitable habitat.

During targeted flora surveys at Mt Holland in October 2021, *Microcorys elatoides* was observed to regenerate (i) from the lignotuber with dozens of aerial stems as well as (ii) abundantly from soil stored seeds, **Error! Reference source not found.**.

### Criteria for Conservation Listing

The DBCA's criteria for listing of poorly known species as Priority Species in Western Australia in presented in **Error! Reference source not found.**.

In summary, these are can be briefly described as:

Priority 1. Poorly known species which are known from one to five populations, *all occurring outside conservation reserves*, usually small in area or low numbers, some or all of which may be at risk.

Priority 2. Poorly known species which are known from one to five populations, *some of which occur within conservation reserves*, usually small in area or low numbers, some or all of which may be at risk.

Priority 3. Poorly known species which are known from one to five populations, some of which are on lands managed for nature conservation with secure tenure for conservation.

Priority 4. Poorly known species which are known from several locations and the species does not appear to be under threat. These may have few but widespread populations with either large population size or significant areas of suitable habitat much of which is not under imminent threat.

## Summary

Utilising the data collected by Covalent on the abundance and distribution of *Microcorys elatoides*, and using the DBCA criteria for conservation listing of Priority Species, *Microcorys elatoides* clearly falls within the DBCA's Priority 2 category. The number of individuals of *Microcorys elatoides* within the Jilbadji Nature Reserve is substantial (> 27,000 individuals), such that the conservation of this taxon is considered to be secure. It is suggested therefore that the listing of *Microcorys elatoides* be reviewed by DBCA to the appropriate Priority 2 status at a minimum. Further, given the geographical distribution of *M. elatoides* within a 20 km radius of the EGLP in northerly, western and south-western directions; the distribution of populations and sub-populations within this region and the relatively large Extent of Occurrence and Area of Occupancy; and considering the proposed impacts to the species by the EGLP LOM proposal and the overall cumulative impacts to the species by the EGLP, *M. elatoides* could be considered a Priority 4 species (Rare, adequately surveyed and that are considered not currently threatened…).

## References

Covalent Lithium Pty Ltd (May 2022) COV_*s38_20210826_Composite_Flora*. Data provided by Covalent Lithium Pty Ltd via Cad Resources Pty Ltd.

Department of Biodiversity, Conservation and Attractions. *Conservation Codes For Western Australian Flora and Fauna. 3rd January 2019.* Available from https://www.google.com/search?client=firefox-b-d&q=dbca+conservation+codes.

Western Australian Herbarium (1998–). Florabase—the Western Australian Flora. Department of Biodiversity, Conservation and Attractions https://florabase.dpaw.wa.gov.au/browse/profile/50147 (Accessed 17 May 2022).

# Appendix 1. Images of *Microcorys elatoides*

Plate 1. Mature plant of *Microcorys elatoides*, regrowing approximately 3 years after fire, north of Mt Holland, Sept 2020.

Plate 2. Base of same mature plant of *Microcorys elatoides*, showing multiple stems arising from lignotuber.

Plate 3. Young plant of *Microcorys elatoides*, assumed growing from seed, approximately 25 cm tall.

Plate 4. Flowers of *Microcorys elatoides*

# Appendix 2. DBCA's Criteria for Conservation Listing, Priority Species (DBCA, 2019)

## Priority Species

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

### Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

### Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

**Priority 3: Poorly-known species**

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

**Priority 4: Rare, Near Threatened and other species in need of monitoring**

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

## Appendix 2. IUCN Red Book Categories and Criteria

# IUCN RED LIST CATEGORIES AND CRITERIA

Version 3.1 Second edition

The IUCN Red List of Threatened Species™

SSC
Species Survival Commission

# IUCN RED LIST CATEGORIES AND CRITERIA

## Version 3.1

**Second edition**

Prepared by the IUCN Species Survival Commission

As approved by the
51st meeting of the IUCN Council
Gland, Switzerland

9 February 2000

IUCN (International Union for Conservation of Nature)
2012

Published by: IUCN, Gland, Switzerland
Red List logo: © 2008

First published 2001
Second edition 2012



Citation: IUCN. (2012). *IUCN Red List Categories and Criteria: Version 3.1.* Second edition. Gland, Switzerland and Cambridge, UK: IUCN. iv + 32pp.

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# Preface

The first edition of the *IUCN Red List Categories and Criteria: Version 3.1* was published in 2001, after its formal adoption by the IUCN Council in February 2000. Since then it has been used as the standard for global Red List assessments published on the *IUCN Red List of Threatened Species*™. It is also used alongside the *Guidelines for Application of IUCN Red List Criteria at Regional and National Levels* (IUCN 2003, 2012), by many countries around the world as a standard system for national Red List assessments.

Over the last decade, the IUCN Red List Categories and Criteria have been used to assess an increasingly diverse range of taxa occurring in a wide variety of habitats. In addition, ongoing technological advances continue to provide more scope for improving data analysis. Therefore it is necessary for the IUCN Red List to adapt to maintain and further develop its usefulness as a conservation tool. However, it is also essential that the central rules for assessing extinction risk for the IUCN Red List remain stable to be able to compare changes in Red List status over time.

This second edition of the *IUCN Red List Categories and Criteria: Version 3.1* retains the same assessment system presented in the 2001 publication. To allow for occasional changes in documentation requirements for assessments, information that was previously outlined in Annex 3 has been moved to a separate reference document: *Documentation Standards and Consistency Checks for IUCN Red List Assessments and Species Accounts*.

To ensure full understanding of IUCN Red List assessments, it is very important to refer to all of the following documents:

(1) *IUCN Red List Categories and Criteria: Version 3.1* (IUCN 2001 and later editions)

(2) The latest version of the *Guidelines for Using the IUCN Red List Categories and Criteria* (available from www.iucnredlist.org/documents/RedListGuidelines.pdf; check the IUCN Red List website for regular updates of this document)

(3) The latest version of the *Documentation Standards and Consistency Checks for IUCN Red List Assessments and Species Accounts* (available from www.iucnredlist.org/documents/RL_Standards_Consistency.pdf; check the IUCN Red List website for regular updates of this document)

For national and regional level assessments using the IUCN Red List Categories and Criteria, the *Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0* (IUCN 2012 and later versions) must also be used.

All of the above documents are freely available to download from the IUCN Red List website (www.iucnredlist.org). Note that documents (2) and (3) above are regularly updated, therefore it is important to check the website for the current versions.

# Acknowledgements

IUCN gratefully acknowledges the dedication and efforts of the Red List Criteria Review Working Group (CRWG) in attending numerous workshops to discuss and debate the merits and demerits of the Red List Criteria. The members of the CRWG were: Resit Akçakaya, Jonathan Baillie, William Bond, Nigel Collar, Ulf Gärdenfors, Kevin Gaston, Craig Hilton-Taylor, Elodie Hudson, Bob Irvin, David Keith, Russell Lande, Charlotte Lusty, Nigel Leader-Williams, Georgina Mace, Michael Maunder, Larry Master, E.J. Milner-Gulland, Sanjay Molur, Howard Powles, André Punt, Jon Paul Rodríguez, Mary Seddon, Alison Stattersfield, Simon Stuart, John Wang, and Tetsukazu Yahara. Particular thanks must go to Dr Georgina Mace, who chaired the CRWG and who ably steered an extremely complex process through to a successful conclusion. The review process culminated in the adoption of this revised set of Red List Categories and Criteria by the IUCN Council.

The work of the CRWG and the hosting of the review workshops were made possible through generous financial support from the Canadian Wildlife Service; Federal Ministry for Economic Co-operation and Development, Germany (BMZ); Global Guardian Trust; New South Wales National Parks and Wildlife Service, Australia; New South Wales Scientific Committee, Australia; Ministry of the Environment, Finland; Ministry of the Environment, Sweden; Swedish Species Information Centre; and WWF Sweden. The review process was co-ordinated by the IUCN Red List Programme Officer funded by the UK Department for the Environment, Food and Rural Affairs (DEFRA); the Centre for Applied Biodiversity Science at Conservation International; and WWF UK.

IUCN is indebted to the hundreds of scientists who participated in the criteria review workshops or who submitted comments and suggestions during the review process. This combined input has resulted in a far more robust, user friendly and widely applicable system.

As a result of the review process, several new topics have become the focus of active research and publication in the academic community. As a greater clarity emerges on tricky and unresolved issues, these will be addressed in a comprehensive set of user guidelines. The intention is to keep this revised system stable to enable genuine changes in the status of species to be detected rather than to have such changes obscured by the constant medication of the criteria.

The ***IUCN Red List Categories and Criteria: Version 3.1*** are available in booklet form in the following language versions: English, French and Spanish from the IUCN Publications Services (www.iucn.org/knowledge/publications_doc/publications/).

They are also available to download from the IUCN Red List website in English, French and Spanish, at: http://www.iucnredlist.org/technical-documents/categories-and-criteria.

# I. INTRODUCTION

1. The IUCN Red List Categories and Criteria are intended to be an easily and widely understood system for classifying species at high risk of global extinction. The general aim of the system is to provide an explicit, objective framework for the classification of the broadest range of species according to their extinction risk. However, while the Red List may focus attention on those taxa at the highest risk, it is not the sole means of setting priorities for conservation measures for their protection.

   Extensive consultation and testing in the development of the system strongly suggest that it is robust across most organisms. However, it should be noted that although the system places species into the threatened categories with a high degree of consistency, the criteria do not take into account the life histories of every species. Hence, in certain individual cases, the risk of extinction may be under- or over-estimated.

2. Before 1994 the more subjective threatened species categories used in IUCN Red Data Books and Red Lists had been in place, with some modification, for almost 30 years. Although the need to revise the categories had long been recognized (Fitter and Fitter 1987), the current phase of development only began in 1989 following a request from the IUCN Species Survival Commission (SSC) Steering Committee to develop a more objective approach. The IUCN Council adopted the new Red List system in 1994.

   The IUCN Red List Categories and Criteria have several specific aims:

   - to provide a system that can be applied consistently by different people;
   - to improve objectivity by providing users with clear guidance on how to evaluate different factors which affect the risk of extinction;
   - to provide a system which will facilitate comparisons across widely different taxa;
   - to give people using threatened species lists a better understanding of how individual species were classified.

3. Since their adoption by IUCN Council in 1994, the IUCN Red List Categories have become widely recognized internationally, and they are now used in a range of publications and listings produced by IUCN, as well as by numerous governmental and non-governmental organizations. Such broad and extensive use revealed the need for a number of improvements, and SSC was mandated by the 1996 World Conservation Congress (WCC Res. 1.4) to conduct a review of the system (IUCN 1996). This document presents the revisions accepted by the IUCN Council.

   The proposals presented in this document result from a continuing process of drafting, consultation and validation. The production of a large number of draft proposals has led to some confusion, especially as each draft has been used for classifying some

set of species for conservation purposes. To clarify matters, and to open the way for modifications as and when they become necessary, a system for version numbering has been adopted as follows:

**Version 1.0: Mace and Lande (1991)**
The first paper discussing a new basis for the categories, and presenting numerical criteria especially relevant for large vertebrates.

**Version 2.0: Mace *et al.* (1992)**
A major revision of Version 1.0, including numerical criteria appropriate to all organisms and introducing the non-threatened categories.

**Version 2.1: IUCN (1993)**
Following an extensive consultation process within SSC, a number of changes were made to the details of the criteria, and fuller explanation of basic principles was included. A more explicit structure clarified the significance of the non-threatened categories

**Version 2.2: Mace and Stuart (1994)**
Following further comments received and additional validation exercises, some minor changes to the criteria were made. In addition, the Susceptible category present in Versions 2.0 and 2.1 was subsumed into the Vulnerable category. A precautionary application of the system was emphasised.

**Version 2.3: IUCN (1994)**
IUCN Council adopted this version, which incorporated changes as a result of comments from IUCN members, in December 1994. The initial version of this document was published without the necessary bibliographic details, such as date of publication and ISBN number, but these were included in the subsequent reprints in 1998 and 1999. This version was used for the *1996 IUCN Red List of Threatened Animals* (Baillie and Groombridge 1996), *The World List of Threatened Trees* (Oldfield *et al.* 1998) and the *2000 IUCN Red List of Threatened Species* (Hilton-Taylor 2000).

**Version 3.0: IUCN/SSC Criteria Review Working Group (1999)**
Following comments received, a series of workshops were convened to look at the IUCN Red List Criteria following which, changes were proposed affecting the criteria, the definitions of some key terms and the handling of uncertainty.

**Version 3.1: IUCN (2001)**
The IUCN Council adopted this latest version, which incorporated changes as a result of comments from the IUCN and SSC memberships and from a final meeting of the Criteria Review Working Group, in February 2000.

All new assessments from January 2001 should use the latest adopted version and cite the year of publication and version number.

4. In the rest of this document, the proposed system is outlined in several sections. Section II, the Preamble, presents basic information about the context and structure of the system, and the procedures that are to be followed in applying the criteria to species. Section III provides definitions of key terms used. Section IV presents the categories, while Section V details the quantitative criteria used for classification within the threatened categories. Annex 1 provides guidance on how to deal with uncertainty when applying the criteria; Annex 2 suggests a standard format for citing the Red List Categories and Criteria; and Annex 3 refers to the required and recommended supporting information for taxa to be included on IUCN's global Red List and where to find further guidance on these. It is important for the effective functioning of the system that all sections are read and understood to ensure that the definitions and rules are followed.

# II. PREAMBLE

The information in this section is intended to direct and facilitate the use and interpretation of the categories (Critically Endangered, Endangered, etc.), criteria (A to E), and subcriteria (1, 2, etc.; a, b, etc.; i, ii, etc.).

### 1. Taxonomic level and scope of the categorization process

The criteria can be applied to any taxonomic unit at or below the species level. In the following information, definitions and criteria the term 'taxon' is used for convenience, and may represent species or lower taxonomic levels, including forms that are not yet formally described. There is sufficient range among the different criteria to enable the appropriate listing of taxa from the complete taxonomic spectrum, with the exception of micro-organisms. The criteria may also be applied within any specified geographical or political area, although in such cases special notice should be taken of point 14. In presenting the results of applying the criteria, the taxonomic unit and area under consideration should be specified in accordance with the documentation guidelines (see Annex 3). The categorization process should only be applied to wild populations inside their natural range, and to populations resulting from benign introductions. The latter are defined in the IUCN *Guidelines for Re-introductions* (IUCN 1998) as '...an attempt to establish a species, for the purpose of conservation, outside its recorded distribution, but within an appropriate habitat and eco-geographical area. This is a feasible conservation tool only when there is no remaining area left within a species' historic range'.

### 2. Nature of the categories

Extinction is a chance process. Thus, a listing in a higher extinction risk category implies a higher expectation of extinction, and over the time-frames specified more taxa listed in a higher category are expected to go extinct than those in a lower one (without effective conservation action). However, the persistence of some taxa in high-risk categories does not necessarily mean their initial assessment was inaccurate.

All taxa listed as Critically Endangered qualify for Vulnerable and Endangered, and all listed as Endangered qualify for Vulnerable. Together these categories are described as 'threatened'. The threatened categories form a part of the overall scheme. It will be possible to place all taxa into one of the categories (see Figure 1).

### 3. Role of the different criteria

For listing as Critically Endangered, Endangered or Vulnerable there is a range of quantitative criteria; meeting any one of these criteria qualifies a taxon for listing at that

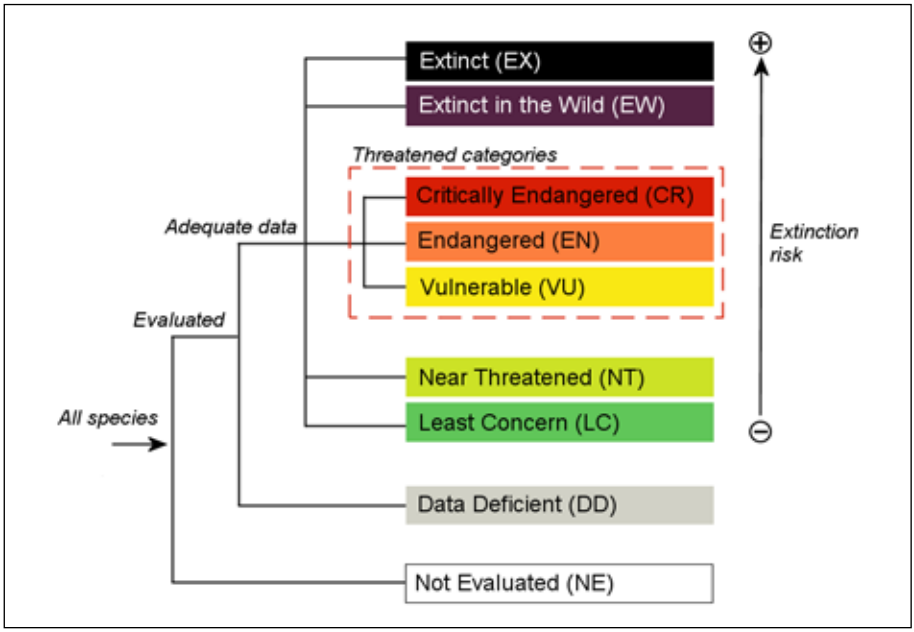


**Figure 1.** Structure of the categories

level of threat. Each taxon should be evaluated against all the criteria. Even though some criteria will be inappropriate for certain taxa (some taxa will never qualify under these however close to extinction they come), there should be criteria appropriate for assessing threat levels for any taxon. The relevant factor is whether *any one* criterion is met, not whether all are appropriate or all are met. Because it will never be clear in advance which criteria are appropriate for a particular taxon, each taxon should be evaluated against all the criteria, and *all* criteria met at the highest threat category must be listed.

## 4. Derivation of quantitative criteria

The different criteria (A-E) are derived from a wide review aimed at detecting risk factors across the broad range of organisms and the diverse life histories they exhibit. The quantitative values presented in the various criteria associated with threatened categories were developed through wide consultation, and they are set at what are generally judged to be appropriate levels, even if no formal justification for these values exists. The levels for different criteria within categories were set independently but against a common standard. Broad consistency between them was sought.

## 5. Conservation actions in the listing process

The criteria for the threatened categories are to be applied to a taxon whatever the level of conservation action affecting it. It is important to emphasise here that a taxon may require conservation action even if it is not listed as threatened. Conservation actions which may benefit the taxon are included as part of the documentation requirements (see Annex 3).

## 6. Data quality and the importance of inference and projection

The criteria are clearly quantitative in nature. However, the absence of high-quality data should not deter attempts at applying the criteria, as methods involving estimation, inference and projection are emphasised as being acceptable throughout. Inference and projection may be based on extrapolation of current or potential threats into the future (including their rate of change), or of factors related to population abundance or distribution (including dependence on other taxa), so long as these can reasonably be supported. Suspected or inferred patterns in the recent past, present or near future can be based on any of a series of related factors, and these factors should be specified as part of the documentation.

Taxa at risk from threats posed by future events of low probability but with severe consequences (catastrophes) should be identified by the criteria (e.g. small distributions, few locations). Some threats need to be identified particularly early, and appropriate actions taken, because their effects are irreversible or nearly so (e.g. pathogens, invasive organisms, hybridization).

## 7. Problems of scale

Classification based on the sizes of geographic ranges or the patterns of habitat occupancy is complicated by problems of spatial scale. The finer the scale at which the distributions or habitats of taxa are mapped, the smaller the area will be that they are found to occupy, and the less likely it will be that range estimates (at least for 'area of occupancy': see Definitions, point 10) exceed the thresholds specified in the criteria. Mapping at finer scales reveals more areas in which the taxon is unrecorded. Conversely, coarse-scale mapping reveals fewer unoccupied areas, resulting in range estimates that are more likely to exceed the thresholds for the threatened categories. The choice of scale at which range is estimated may thus, itself, influence the outcome of Red List assessments and could be a source of inconsistency and bias. It is impossible to provide any strict but general rules for mapping taxa or habitats; the most appropriate scale will depend on the taxon in question, and the origin and comprehensiveness of the distribution data.

## 8. Uncertainty

The data used to evaluate taxa against the criteria are often estimated with considerable uncertainty. Such uncertainty can arise from any one or all of the following three factors: natural variation, vagueness in the terms and definitions used, and measurement error. The way in which this uncertainty is handled can have a strong influence on the results of an evaluation. Details of methods recommended for handling uncertainty are included in Annex 1, and assessors are encouraged to read and follow these principles.

In general, when uncertainty leads to wide variation in the results of assessments, the range of possible outcomes should be specified. A single category must be chosen and the basis for the decision should be documented; it should be both precautionary and credible.

When data are very uncertain, the category of 'Data Deficient' may be assigned. However, in this case the assessor must provide documentation showing that this category has been assigned because data are inadequate to determine a threat category. It is important to recognize that taxa that are poorly known can often be assigned a threat category on the basis of background information concerning the deterioration of their habitat and/or other causal factors; therefore the liberal use of 'Data Deficient' is discouraged.

## 9. Implications of listing

Listing in the categories of Not Evaluated and Data Deficient indicates that no assessment of extinction risk has been made, though for different reasons. Until such time as an assessment is made, taxa listed in these categories should not be treated as if they were non-threatened. It may be appropriate (especially for Data Deficient forms) to give them the same degree of attention as threatened taxa, at least until their status can be assessed.

## 10. Documentation

All assessments should be documented. Threatened classifications should state the criteria and subcriteria that were met. No assessment can be accepted for the IUCN Red List as valid unless at least one criterion is given. If more than one criterion or subcriterion is met, then each should be listed. If a re-evaluation indicates that the documented criterion is no longer met, this should not result in automatic reassignment to a lower category of threat (downlisting). Instead, the taxon should be re-evaluated against all the criteria to clarify its status. The factors responsible for qualifying the taxon against the criteria, especially where inference and projection are used, should be documented (see Annexes 2 and 3). The documentation requirements for other categories are also specified in Annex 3.

## 11. Threats and priorities

The category of threat is not necessarily sufficient to determine priorities for conservation action. The category of threat simply provides an assessment of the extinction risk under current circumstances, whereas a system for assessing priorities for action will include numerous other factors concerning conservation action such as costs, logistics, chances of success, and other biological characteristics of the subject.

## 12. Re-evaluation

Re-evaluation of taxa against the criteria should be carried out at appropriate intervals. This is especially important for taxa listed under Near Threatened, Data Deficient and for threatened taxa whose status is known or suspected to be deteriorating.

## 13. Transfer between categories

The following rules govern the movement of taxa between categories:

A. A taxon may be moved from a category of higher threat to a category of lower threat if none of the criteria of the higher category has been met for five years or more.

B. If the original classification is found to have been erroneous, the taxon may be transferred to the appropriate category or removed from the threatened categories altogether, without delay (but see Point 10 above).

C. Transfer from categories of lower to higher risk should be made without delay.

## 14. Use at regional level

The IUCN Red List Categories and Criteria were designed for global taxon assessments. However, many people are interested in applying them to subsets of global data, especially at regional, national or local levels. To do this it is important to refer to guidelines prepared by the IUCN/SSC Regional Applications Working Group and the National Red List Working Group of the IUCN SSC Red List Committee (e.g. Gärdenfors *et al.* 2001; IUCN 2003, 2012). When applied at national or regional levels it must be recognized that a global category may not be the same as a national or regional category for a particular taxon. For example, taxa classified as Least Concern globally might be Critically Endangered within a particular region where numbers are very small or declining, perhaps only because they are at the margins of their global range. Conversely, taxa classified as Vulnerable on the basis of their global declines in numbers or range might be Least Concern within a particular region where their populations are stable. It is also important to note that taxa endemic to regions or nations will be assessed globally in any regional or national applications of the criteria, and in these cases great care must be taken to check that an assessment has not

already been undertaken by a Red List Authority (RLA), and that the categorization is agreed with the relevant RLA (e.g. an SSC Specialist Group known to cover the taxon).

# III. DEFINITIONS

### 1. Population and Population Size (Criteria A, C and D)

The term 'population' is used in a specific sense in the Red List Criteria that is different to its common biological usage. Population is here defined as the total number of individuals of the taxon. For functional reasons, primarily owing to differences between life forms, population size is measured as numbers of mature individuals only. In the case of taxa obligately dependent on other taxa for all or part of their life cycles, biologically appropriate values for the host taxon should be used.

### 2. Subpopulations (Criteria B and C)

Subpopulations are defined as geographically or otherwise distinct groups in the population between which there is little demographic or genetic exchange (typically one successful migrant individual or gamete per year or less).

### 3. Mature individuals (Criteria A, B, C and D)

The number of mature individuals is the number of individuals known, estimated or inferred to be capable of reproduction. When estimating this quantity, the following points should be borne in mind:

- Mature individuals that will never produce new recruits should not be counted (e.g. densities are too low for fertilization).
- In the case of populations with biased adult or breeding sex ratios, it is appropriate to use lower estimates for the number of mature individuals, which take this into account.
- Where the population size fluctuates, use a lower estimate. In most cases this will be much less than the mean.
- Reproducing units within a clone should be counted as individuals, except where such units are unable to survive alone (e.g. corals).
- In the case of taxa that naturally lose all or a subset of mature individuals at some point in their life cycle, the estimate should be made at the appropriate time, when mature individuals are available for breeding.
- Re-introduced individuals must have produced viable offspring before they are counted as mature individuals.

**4. Generation (Criteria A, C and E)**

Generation length is the average age of parents of the current cohort (i.e. newborn individuals in the population). Generation length therefore reflects the turnover rate of breeding individuals in a population. Generation length is greater than the age at first breeding and less than the age of the oldest breeding individual, except in taxa that breed only once. Where generation length varies under threat, the more natural, i.e. pre-disturbance, generation length should be used.

**5. Reduction (Criterion A)**

A reduction is a decline in the number of mature individuals of at least the amount (%) stated under the criterion over the time period (years) specified, although the decline need not be continuing. A reduction should not be interpreted as part of a fluctuation unless there is good evidence for this. The downward phase of a fluctuation will not normally count as a reduction.

**6. Continuing decline (Criteria B and C)**

A continuing decline is a recent, current or projected future decline (which may be smooth, irregular or sporadic) which is liable to continue unless remedial measures are taken. Fluctuations will not normally count as continuing declines, but an observed decline should not be considered as a fluctuation unless there is evidence for this.

**7. Extreme fluctuations (Criteria B and C)**

Extreme fluctuations can be said to occur in a number of taxa when population size or distribution area varies widely, rapidly and frequently, typically with a variation greater than one order of magnitude (i.e. a tenfold increase or decrease).

**8. Severely fragmented (Criterion B)**

The phrase 'severely fragmented' refers to the situation in which increased extinction risk to the taxon results from the fact that most of its individuals are found in small and relatively isolated subpopulations (in certain circumstances this may be inferred from habitat information). These small subpopulations may go extinct, with a reduced probability of recolonization.

**9. Extent of occurrence (Criteria A and B)**

Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy (see Figure 2). This

measure may exclude discontinuities or disjunctions within the overall distributions of taxa (e.g. large areas of obviously unsuitable habitat) (but see 'area of occupancy', point 10 below). Extent of occurrence can often be measured by a minimum convex polygon (the smallest polygon in which no internal angle exceeds 180 degrees and which contains all the sites of occurrence).

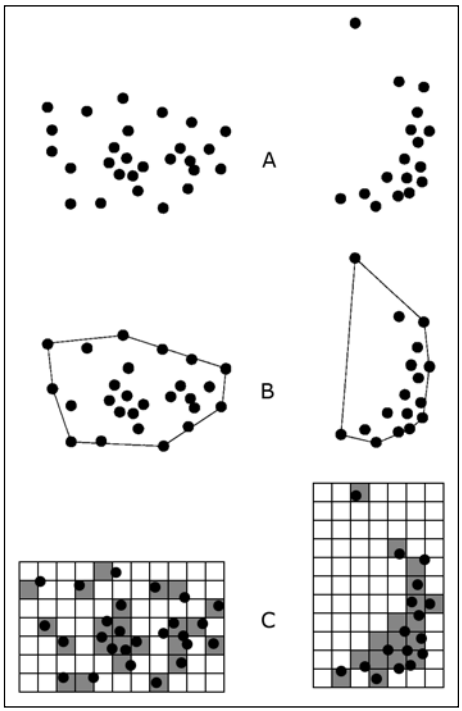


**Figure 2.** Two examples of the distinction between extent of occurrence and area of occupancy. (A) is the spatial distribution of known, inferred or projected sites of present occurrence. (B) shows one possible boundary to the extent of occurrence, which is the measured area within this boundary. (C) shows one measure of area of occupancy which can be achieved by the sum of the occupied grid squares.

**10. Area of occupancy (Criteria A, B and D)**

Area of occupancy is defined as the area within its 'extent of occurrence' (see point 9 above) which is occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may contain unsuitable or unoccupied habitats. In some cases (e.g. irreplaceable colonial nesting sites, crucial feeding sites for migratory taxa) the area of occupancy is the smallest area essential at any stage to the survival of existing populations of a taxon. The size of the area of occupancy will be a function of the scale at which it is measured, and should be at a scale appropriate to relevant biological aspects of the taxon, the nature of threats and the available data (see point 7 in the Preamble). To avoid inconsistencies and

bias in assessments caused by estimating area of occupancy at different scales, it may be necessary to standardize estimates by applying a scale-correction factor. It is difficult to give strict guidance on how standardization should be done because different types of taxa have different scale-area relationships.

### 11. Location (Criteria B and D)

The term 'location' defines a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a taxon is affected by more than one threatening event, location should be defined by considering the most serious plausible threat.

### 12. Quantitative analysis (Criterion E)

A quantitative analysis is defined here as any form of analysis which estimates the extinction probability of a taxon based on known life history, habitat requirements, threats and any specified management options. Population viability analysis (PVA) is one such technique. Quantitative analyses should make full use of all relevant available data. In a situation in which there is limited information, such data as are available can be used to provide an estimate of extinction risk (for instance, estimating the impact of stochastic events on habitat). In presenting the results of quantitative analyses, the assumptions (which must be appropriate and defensible), the data used and the uncertainty in the data or quantitative model must be documented.

# IV. THE CATEGORIES[1]

A representation of the relationships between the categories is shown in Figure 1.

### EXTINCT (EX)

A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

### EXTINCT IN THE WILD (EW)

A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

### CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered (see Section V), and it is therefore considered to be facing an extremely high risk of extinction in the wild.

### ENDANGERED (EN)

A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered (see Section V), and it is therefore considered to be facing a very high risk of extinction in the wild.

[1] *Note: As in previous IUCN categories, the abbreviation of each category (in parenthesis) follows the English denominations when translated into other languages (see Annex 2).*

**VULNERABLE (VU)**

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable (see Section V), and it is therefore considered to be facing a high risk of extinction in the wild.

**NEAR THREATENED (NT)**

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

**LEAST CONCERN (LC)**

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

**DATA DEFICIENT (DD)**

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

**NOT EVALUATED (NE)**

A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

# V. THE CRITERIA FOR CRITICALLY ENDANGERED, ENDANGERED AND VULNERABLE

**CRITICALLY ENDANGERED (CR)**

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing an extremely high risk of extinction in the wild:

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of ≥90% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:

    (a) direct observation
    (b) an index of abundance appropriate to the taxon
    (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
    (d) actual or potential levels of exploitation
    (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

2. An observed, estimated, inferred or suspected population size reduction of ≥80% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

3. A population size reduction of ≥80%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.

4. An observed, estimated, inferred, projected or suspected population size reduction of ≥80% over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

1. Extent of occurrence estimated to be less than 100 $km^2$, and estimates indicating at least two of a-c:

    a. Severely fragmented or known to exist at only a single location.

    b. Continuing decline, observed, inferred or projected, in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) area, extent and/or quality of habitat
        (iv) number of locations or subpopulations
        (v) number of mature individuals.

    c. Extreme fluctuations in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) number of locations or subpopulations
        (iv) number of mature individuals.

2. Area of occupancy estimated to be less than 10 $km^2$, and estimate indicating at least two of a-c:

    a. Severely fragmented or known to exist at only a single location.

    b. Continuing decline, observed, inferred or projected, in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) area, extent and/or quality of habitat
        (iv) number of locations or subpopulations
        (v) number of mature individuals.

    c. Extreme fluctuations in any of the following:
        (i) extent of occurrence
        (ii) area of occupancy
        (iii) number of locations or subpopulations
        (iv) number of mature individuals.

C. Population size estimated to number fewer than 250 mature individuals and either:

1. An estimated continuing decline of at least 25% within three years or one generation, whichever is longer, (up to a maximum of 100 years in the future) OR

2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):

a. Population structure in the form of one of the following:
   (i) no subpopulation estimated to contain more than 50 mature individuals, OR
   (ii) at least 90% of mature individuals in one subpopulation.

b. Extreme fluctuations in number of mature individuals.

D. Population size estimated to number fewer than 50 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer (up to a maximum of 100 years).

**ENDANGERED (EN)**

A taxon is Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a very high risk of extinction in the wild:

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of ≥70% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:

   (a) direct observation
   (b) an index of abundance appropriate to the taxon
   (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
   (d) actual or potential levels of exploitation
   (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

2. An observed, estimated, inferred or suspected population size reduction of ≥50% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

3. A population size reduction of ≥50%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.

4. An observed, estimated, inferred, projected or suspected population size reduction of ≥50% over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, AND where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

1. Extent of occurrence estimated to be less than 5,000 $km^2$, and estimates indicating at least two of a-c:

   a. Severely fragmented or known to exist at no more than five locations.

   b. Continuing decline, observed, inferred or projected, in any of the following:
      (i) extent of occurrence
      (ii) area of occupancy
      (iii) area, extent and/or quality of habitat
      (iv) number of locations or subpopulations
      (v) number of mature individuals.

   c. Extreme fluctuations in any of the following:
      (i) extent of occurrence
      (ii) area of occupancy
      (iii) number of locations or subpopulations
      (iv) number of mature individuals.

2. Area of occupancy estimated to be less than 500 $km^2$, and estimates indicating at least two of a-c:

   a. Severely fragmented or known to exist at no more than five locations.

   b. Continuing decline, observed, inferred or projected, in any of the following:
      (i) extent of occurrence
      (ii) area of occupancy
      (iii) area, extent and/or quality of habitat
      (iv) number of locations or subpopulations
      (v) number of mature individuals.

   c. Extreme fluctuations in any of the following:
      (i) extent of occurrence
      (ii) area of occupancy

(iii) number of locations or subpopulations
(iv) number of mature individuals.

C. Population size estimated to number fewer than 2,500 mature individuals and either:

1. An estimated continuing decline of at least 20% within five years or two generations, whichever is longer, (up to a maximum of 100 years in the future) OR

2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):

a. Population structure in the form of one of the following:
(i) no subpopulation estimated to contain more than 250 mature individuals, OR
(ii) at least 95% of mature individuals in one subpopulation.

b. Extreme fluctuations in number of mature individuals.

D. Population size estimated to number fewer than 250 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is the longer (up to a maximum of 100 years).

**VULNERABLE (VU)**

A taxon is Vulnerable when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a high risk of extinction in the wild:

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of ≥50% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:

(a) direct observation
(b) an index of abundance appropriate to the taxon
(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation
(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

2. An observed, estimated, inferred or suspected population size reduction of ≥30% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

3. A population size reduction of ≥30% projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.

4. An observed, estimated, inferred, projected or suspected population size reduction of ≥30% over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, AND where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

1. Extent of occurrence estimated to be less than 20,000 $km^2$, and estimates indicating at least two of a-c:

a. Severely fragmented or known to exist at no more than 10 locations.

b. Continuing decline, observed, inferred or projected, in any of the following:
(i) extent of occurrence
(ii) area of occupancy
(iii) area, extent and/or quality of habitat
(iv) number of locations or subpopulations
(v) number of mature individuals.

c. Extreme fluctuations in any of the following:
(i) extent of occurrence
(ii) area of occupancy
(iii) number of locations or subpopulations
(iv) number of mature individuals.

2. Area of occupancy estimated to be less than 2,000 $km^2$, and estimates indicating at least two of a-c:

a. Severely fragmented or known to exist at no more than 10 locations.

b. Continuing decline, observed, inferred or projected, in any of the following:
   (i) extent of occurrence
   (ii) area of occupancy
   (iii) area, extent and/or quality of habitat
   (iv) number of locations or subpopulations
   (v) number of mature individuals.

c. Extreme fluctuations in any of the following:
   (i) extent of occurrence
   (ii) area of occupancy
   (iii) number of locations or subpopulations
   (iv) number of mature individuals.

C. Population size estimated to number fewer than 10,000 mature individuals and either:

1. An estimated continuing decline of at least 10% within 10 years or three generations, whichever is longer, (up to a maximum of 100 years in the future) OR

2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):

   a. Population structure in the form of one of the following:
      (i) no subpopulation estimated to contain more than 1,000 mature individuals, OR
      (ii) all mature individuals in one subpopulation.

   b. Extreme fluctuations in number of mature individuals.

D. Population very small or restricted in the form of either of the following:

1. Population size estimated to number fewer than 1,000 mature individuals.

2. Population with a very restricted area of occupancy (typically less than 20 $km^2$) or number of locations (typically five or fewer) such that it is prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and is thus capable of becoming Critically Endangered or even Extinct in a very short time period.

E. Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.

# Annex 1: Uncertainty

The Red List Criteria should be applied to a taxon based on the available evidence concerning its numbers, trend and distribution. In cases where there are evident threats to a taxon through, for example, deterioration of its only known habitat, a threatened listing may be justified, even though there may be little direct information on the biological status of the taxon itself. In all these instances there are uncertainties associated with the available information and how it was obtained. These uncertainties may be categorized as natural variability, semantic uncertainty and measurement error (Akçakaya *et al.* 2000). This section provides guidance on how to recognize and deal with these uncertainties when using the criteria. More information is available in the *Guidelines for Using the IUCN Red List Categories and Criteria* (downloadable from www.iucnredlist.org/documents/RedListGuidelines.pdf; check the IUCN Red List website for regular updates of this document).

Natural variability results from the fact that species' life histories and the environments in which they live change over time and space. The effect of this variation on the criteria is limited, because each parameter refers to a specific time or spatial scale. Semantic uncertainty arises from vagueness in the definition of terms or lack of consistency in different assessors' usage of them. Despite attempts to make the definitions of the terms used in the criteria exact, in some cases this is not possible without the loss of generality. Measurement error is often the largest source of uncertainty; it arises from the lack of precise information about the parameters used in the criteria. This may be due to inaccuracies in estimating the values or a lack of knowledge. Measurement error may be reduced or eliminated by acquiring additional data. For further details, see Akçakaya *et al.* (2000) and Burgman *et al.* (1999).

One of the simplest ways to represent uncertainty is to specify a best estimate and a range of plausible values. The best estimate itself might be a range, but in any case the best estimate should always be included in the range of plausible values. When data are very uncertain, the range for the best estimate might be the range of plausible values. There are various methods that can be used to establish the plausible range. It may be based on confidence intervals, the opinion of a single expert, or the consensus opinion of a group of experts. Whichever method is used should be stated and justified in the documentation.

When interpreting and using uncertain data, attitudes toward risk and uncertainty may play an important role. Attitudes have two components. First, assessors need to consider whether they will include the full range of plausible values in assessments, or whether they will exclude extreme values from consideration (known as dispute tolerance). An assessor with a low dispute tolerance would include all values, thereby increasing the uncertainty, whereas an assessor with a high dispute tolerance would exclude extremes, reducing the uncertainty. Second, assessors need to consider whether they have a precautionary or evidentiary attitude to risk (known as risk tolerance). A precautionary attitude will classify

a taxon as threatened unless it is certain that it is not threatened, whereas an evidentiary attitude will classify a taxon as threatened only when there is strong evidence to support a threatened classification. Assessors should resist an evidentiary attitude and adopt a precautionary but realistic attitude to uncertainty when applying the criteria, for example, by using plausible lower bounds, rather than best estimates, in determining population size, especially if it is fluctuating. All attitudes should be explicitly documented.

An assessment using a point estimate (i.e. single numerical value) will lead to a single Red List Category. However, when a plausible range for each parameter is used to evaluate the criteria, a range of categories may be obtained, reflecting the uncertainties in the data. A single category, based on a specific attitude to uncertainty, should always be listed along with the criteria met, while the range of plausible categories should be indicated in the documentation (see Annex 3).

Where data are so uncertain that any category is plausible, the category of 'Data Deficient' should be assigned. However, it is important to recognize that this category indicates that the data are inadequate to determine the degree of threat faced by a taxon, not necessarily that the taxon is poorly known or indeed not threatened. Although Data Deficient is not a threatened category, it indicates a need to obtain more information on a taxon to determine the appropriate listing; moreover, it requires documentation with whatever available information exists.

# Annex 2: Citation of the IUCN Red List Categories and Criteria

In order to promote the use of a standard format for citing the Red List Categories and Criteria the following forms of citation are recommended:

1. The Red List Category may be written out in full or abbreviated as follows (when translated into other languages, the abbreviations should follow the English denominations):

| | |
|---|---|
| Extinct, EX | Near Threatened, NT |
| Extinct in the Wild, EW | Least Concern, LC |
| Critically Endangered, CR | Data Deficient, DD |
| Endangered, EN | Not Evaluated, NE |
| Vulnerable, VU | |

2. Under Section V (the criteria for Critically Endangered, Endangered and Vulnerable) there is a hierarchical alphanumeric numbering system of criteria and subcriteria. These criteria and subcriteria (all three levels) form an integral part of the Red List assessment and all those that result in the assignment of a threatened category must be specified after the category. Under the criteria A to C, and D under Vulnerable, the first level of the hierarchy is indicated by the use of numbers (1-4) and if more than one is met, they are separated by means of the '+' symbol. The second level is indicated by the use of the lower-case alphabet characters (a-e). These are listed without any punctuation. A third level of the hierarchy under criteria B and C involves the use of lower case roman numerals (i-v). These are placed in parentheses (with no space between the preceding alphabet character and start of the parenthesis) and separated by the use of commas if more than one is listed. Where more than one criterion is met, they should be separated by semicolons. The following are examples of such usage:

| | |
|---|---|
| EX | CR D |
| EN B1ac(i,ii,iii) | VU C2a(ii) |
| CR A2c+3c; B1ab(iii) | EN B2b(iii)c(ii) |
| EN B2ab(i,ii,iii) | VU B1ab(iii)+2ab(iii) |
| EN A1c; B1ab(iii); C2a(i) | VU A2c+3c |
| EN B1ab(i)c(ii,v)+2ab(i)c(ii,v) | CR C1+2a(ii) |
| CR A1cd | VU D1+2 |
| EN A2c; D | VU D2 |

EN A2abc+3bc+4abc; B1b(iii,iv,v)c(ii,iii,iv)+2b(iii,iv,v)c(ii,iii,iv)

# Annex 3: Required and Recommended Supporting Information for IUCN Red List Assessments

All assessments published on the IUCN Red List are freely available for public use. To ensure assessments are fully justified and to allow Red List assessment data to be analysed, thus making the IUCN Red List a powerful tool for conservation and policy decisions, a set of supporting information is required to accompany every assessment submitted for publication on the *IUCN Red List of Threatened Species*™.

The reference document *Documentation Standards and Consistency Checks for IUCN Red List Assessments and Species Accounts* is available to download from the Red List website (www.iucnredlist.org) and provides guidance on the following:

- Required supporting information for all IUCN Red List assessments.
- Required supporting information under specific conditions (e.g. taxa assessed under specific Red List Categories or Criteria, plant assessments, reassessed taxa, etc.).
- Recommended supporting information, if sufficient time and data are available.
- Tools available for preparing and submitting assessments for the IUCN Red List, including the IUCN Species Information Service (SIS) and RAMAS® Red List (Akçakaya and Ferson 2001).
- General formatting and style guidelines for documenting IUCN Red List assessments.

Note that the *Documentation Standards and Consistency Checks for IUCN Red List Assessments and Species Accounts* will be updated on a regular basis. Users should check the IUCN Red List website for the most current version of this reference document.

# Annex 4: Summary of the IUCN Red List Criteria

See pages 28-29 for a summary of the five criteria (A-E) used to evaluate if a taxon belongs in an IUCN Red List threatened category (Critically Endangered, Endangered or Vulnerable).

SUMMARY OF THE FIVE CRITERIA (A-E) USED TO EVALUATE IF A TAXON BELONGS IN AN IUCN RED LIST THREATENED CATEGORY (CRITICALLY ENDANGERED, ENDANGERED OR VULNERABLE).[1]

**A. Population size reduction.** Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

| | Critically Endangered | Endangered | Vulnerable |
|---|---|---|---|
| **A1** | ≥ 90% | ≥ 70% | ≥ 50% |
| **A2, A3 & A4** | ≥ 80% | ≥ 50% | ≥ 30% |

**A1** Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.

**A2** Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

**A3** Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) *[(a) cannot be used for A3]*.

**A4** An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

*based on any of the following:*

**(a)** direct observation *[except A3]*

**(b)** an index of abundance appropriate to the taxon

**(c)** a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality

**(d)** actual or potential levels of exploitation

**(e)** effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

**B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)**

| | Critically Endangered | Endangered | Vulnerable |
|---|---|---|---|
| **B1.** Extent of occurrence (EOO) | < 100 km² | < 5,000 km² | < 20,000 km² |
| **B2.** Area of occupancy (AOO) | < 10 km² | < 500 km² | < 2,000 km² |
| **AND at least 2 of the following 3 conditions:** | | | |
| **(a)** Severely fragmented **OR** Number of locations | = 1 | ≤ 5 | ≤ 10 |
| **(b)** Continuing decline observed, estimated, inferred or projected in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** area, extent and/or quality of habitat; **(iv)** number of locations or subpopulations; **(v)** number of mature individuals | | | |
| **(c)** Extreme fluctuations in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** number of locations or subpopulations; **(iv)** number of mature individuals | | | |

| C. Small population size and decline | | Critically Endangered | Endangered | Vulnerable |
|---|---|---|---|---|
| **Number of mature individuals** | | < 250 | < 2,500 | < 10,000 |
| **AND at least one of C1 or C2** | | | | |
| **C1.** An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future): | | 25% in 3 years or 1 generation (whichever is longer) | 20% in 5 years or 2 generations (whichever is longer) | 10% in 10 years or 3 generations (whichever is longer) |
| **C2.** An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions: | | | | |
| **(a)** | **(i)** Number of mature individuals in each subpopulation | ≤ 50 | ≤ 250 | ≤ 1,000 |
| | **(ii)** % of mature individuals in one subpopulation = | 90–100% | 95–100% | 100% |
| **(b)** Extreme fluctuations in the number of mature individuals | | | | |

| D. Very small or restricted population | Critically Endangered | Endangered | Vulnerable |
|---|---|---|---|
| **D.** Number of mature individuals | < 50 | < 250 | **D1.** < 1,000 |
| **D2.** *Only applies to the VU category* Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time. | - | - | **D2.** typically: AOO < 20 km$^2$ or number of locations ≤ 5 |

| E. Quantitative Analysis | Critically Endangered | Endangered | Vulnerable |
|---|---|---|---|
| **Indicating the probability of extinction in the wild to be:** | ≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.) | ≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.) | ≥ 10% in 100 years |

1 Use of this summary sheet requires full understanding of the *IUCN Red List Categories and Criteria* and *Guidelines for Using the IUCN Red List Categories and Criteria*. Please refer to both documents for explanations of terms and concepts used here.

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The *IUCN Red List of Threatened Species*™ (or the IUCN Red List) is the world's most comprehensive information source on the global conservation status of plant, animal and fungi species. It is based on an objective system for assessing the risk of extinction of a species should no conservation action be taken.

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# *Appendix B* Flora Offset Strategy, Rev 5

**Covalent Lithium**

**Earl Grey Lithium Project**

# Flora Offset Strategy

*Environment Protection and Biodiversity Conservation Act 1999* (Cth)

*Environmental Protection Act 1986* (WA)

| Covalent Lithium Project | | | | | |
|---|---|---|---|---|---|
| **Document Control** | | | | | |
| **Rev** | **Originator** | **Reviewer** | **Date** | **Covalent Approval** | **Date** |
| 1 | L Whitley,<br>Associate,<br>JBS&G Australia | K Moyle,<br>Senior Principal<br>JBS&G Australia | 12/05/20 | A Pate,<br>Manager Environment, Approvals and Safety,<br>Covalent Lithium | 12/05/20 |
| 2 | L Whitley,<br>Associate,<br>JBS&G Australia<br>S Hawkins,<br>Environment Manager,<br>Globe Environments for JBS&G Australia | T Bowra,<br>Regional Manager WA<br>JBS&G Australia<br>A Pate,<br>Manager Environment, Approvals and Safety,<br>Covalent Lithium | 17/01/22 | A Pate,<br>Manager Environment, Approvals and Safety,<br>Covalent Lithium | 17/01/22 |
| 3 | S Hawkins,<br>Environment Manager,<br>Globe Environments for JBS&G Australia | A Pate,<br>Manager Environment, Approvals and Safety,<br>Covalent Lithium | 25/07/22 | A Pate,<br>Manager Environment, Approvals and Safety,<br>Covalent Lithium | 25/07/22 |
| 4 | S Hawkins,<br>Environment Manager,<br>Globe Environments for JBS&G Australia | A Latto<br>Principal Environment<br>JBS&G Australia<br>A Pate Covalent Lithium | 09/08/24 | A Pate<br>Manager Environment and Approvals<br>Covalent Lithium | 09/08/24 |
| 5 | A Wills<br>JBS&G Australia | A Latto<br>Principal Environment<br>JBS&G Australia<br>A Pate Covalent Lithium | 21/10/25 | A Pate<br>Manager Environment and Approvals<br>Covalent Lithium | 21/10/25 |

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# Abbreviations

| Term | Definition |
|---|---|
| BC Act | *Biodiversity Conservation Act 2016* |
| CAR | Compliance Assessment Report |
| CEO | Chief Executive Officer |
| Covalent | Covalent Lithium Pty Ltd |
| DCCEEW | Department of Climate Change, Energy, the Environment and Water (formerly (Department of Agriculture, Water and the Environment (DAWE)) |
| DBCA | Department of Biodiversity, Conservation and Attractions |
| DFES | Department of Fire and Emergency Services |
| DMPE | Department of Mines, Petroleum and Exploration |
| DWER | Department of Water and Environmental Regulation |
| EPA | Environmental Protection Authority |
| EP Act | *Environmental Protection Act 1986* |
| EPBC Act | *Environment Protection and Biodiversity Conservation Act 1999* |
| ERD | Environmental Review Document |
| FEZ | Flora Exclusion Zone |
| FOS | Flora Offset Strategy |
| FPA | Flora Protection Area |
| GPS | Global Positioning System |
| LiOH | Lithium Hydroxide |
| LOM | Life of Mine |
| MS1118 | Ministerial Statement 1118 |
| MS1167 | Ministerial Statement 1167 |
| MS1199 | Ministerial Statement 1199 |
| SRI | Significant Residual Impact |

# 1 Introduction

## 1.1 Approved Project

Covalent Lithium Pty Ltd (Covalent) is the proponent and manager appointed by a joint venture between subsidiaries of Sociedad Quimca y Minera S.A. (SQM) and Wesfarmers Ltd to develop and operate the Earl Grey Lithium Project (the Project) at the historical Bounty Gold mine site near Mount Holland. The site is located approximately 105 km south-southeast of the Southern Cross town in the Shire of Yilgarn. (Figure 1-1).

The Earl Grey Lithium Project comprises the mining and processing spodumene ore to enable the production of approximately 50,000 tonnes per annum (tpa) of battery quality Lithium Hydroxide (LiOH) at the Covalent Lithium Hydroxide refinery, (the Refinery) at Kwinana or for transport to an existing Western Australian port, for export to overseas markets.

The initial Project was assessed under Part IV of the *Environmental Protection Act 1986* (EP Act 1986) and received state approval from the Western Australian government to commence operations in 2019 via Ministerial Statement MS1118.

The Project was also assessed under the Commonwealth *Environment Protection and Biodiversity Protection Act 1999* (EPBC Act), and approval received via EPBC 2017/7950.

The clearing of *Banksia dolichostyla* (Ironcap banksia) individuals listed as threatened under both the Commonwealth and State legislation triggered the requirement for Flora offsets under both pieces of legislation.

In 2022, a Revised Proposal incorporating another 56 ha of clearing did not require offsets under the State or Commonwealth legislation as no Banksia individuals were impacted. As a result, there were no additional conditions associated with Flora Offsets included in Ministerial Statement MS1167.

The EPA and EPBC assessments now referred to as the 'Approved Project', provide for a restricted footprint which only makes provision for the first 10 years of operation. Covalent is now seeking approval for mining of the remaining orebody, a proposal referred to as the Life of Mine (LOM) (the Proposal) under assessment by the Environmental Protection Authority (EPA) (Assessment 2387) and by the Department of Climate Change, Energy, the Environment and Water (DCCEEW; 2023/09711).

Covalent has identified the significant residual impact (SRI) to *Banksia dolichostyla* involves clearing of a further 10 individuals, with the requirement for further offsets for this species.

## 1.2 Purpose of this Document

This document, Flora Offset Strategy (FOS), has been developed to meet the requirements of the Approved Project in accordance with :

- MS1199;
- EPBC2017/7950; and

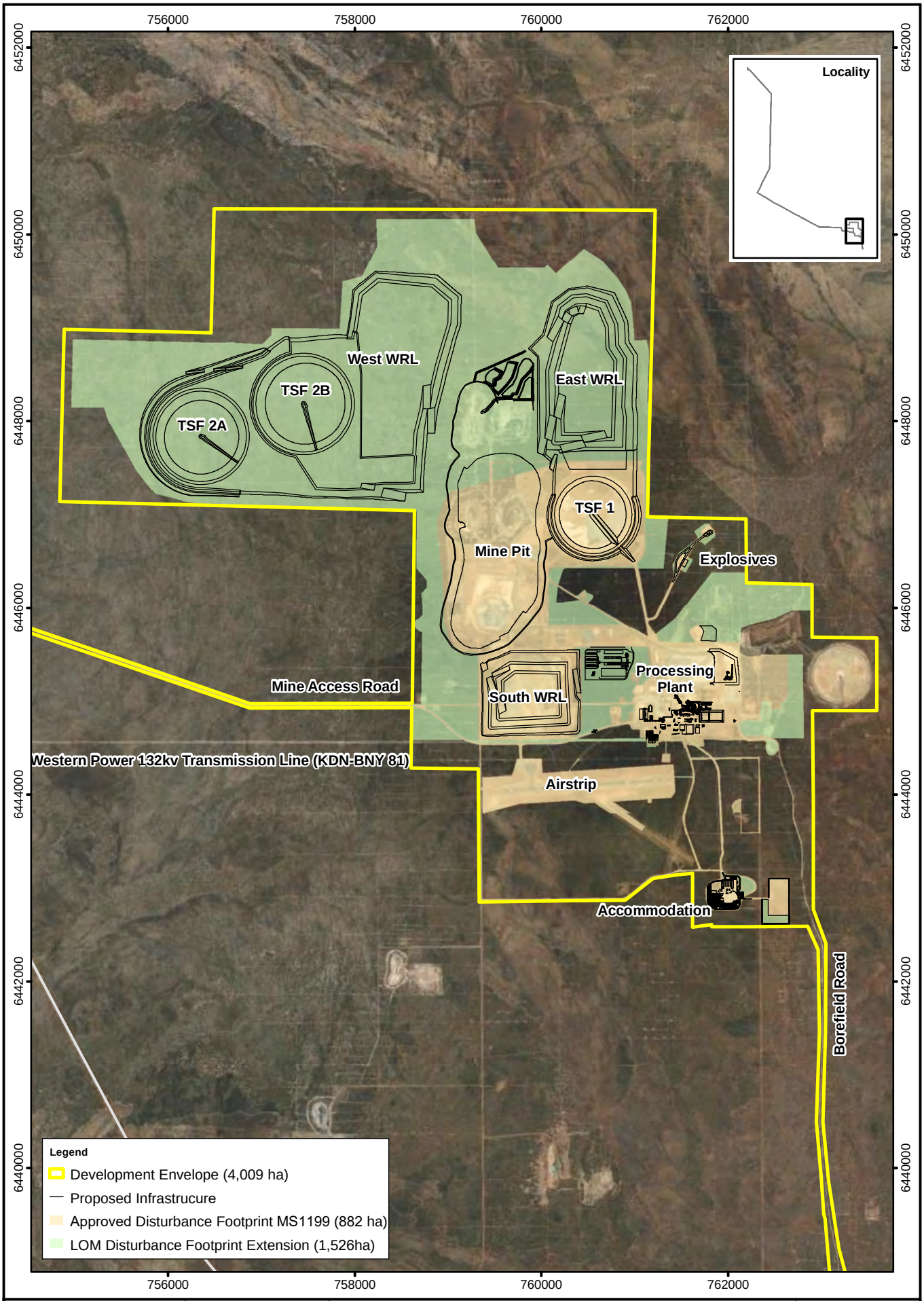
the SRIs associated with additional clearing required for the LOM proposal.

Assessment of the Approved Project has identified a SRI to the flora taxa of conservation significance, with environmental offsets required to mitigate the impacts to *Banksia dolichostyla* (Ironcaps Banksia) (EPBC-V, BC-V). The Proposal is currently being assessed by DWER (Assessment No 2387.) and DCCEEW (2017/7950) and it is anticipated will require further offsets based on additional impacts to *Banksia dolichostyla*.

The purpose of the FOS is to provide an offset package which demonstrates the cumulative residual impacts resulting from the Approved Project and the Proposal are adequately accounted for and

counterbalanced and directly contribute to maintaining or improving the ongoing viability of *Banksia dolichostyla.*

The **scope** of this plan is to provide details on the SRIs, required offsets, management actions, success criteria, timelines and milestones, monitoring and reporting requirements.

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Author: A. Pate

Date: July 2025 | Rev: B | A4

covalent LITHIUM

# Earl Grey Lithium Project
## Life of Mine and Approved Area Disturbance Areas

Figure:
**1-1**

## 1.3 Conditions of Approval

MS 1199 conditioned the number of individual *Banksia dolichostyla* authorised to be disturbed by the Project. It is anticipated that EP Act approval for the LOM Proposal will adopt a similar approach so that a future Ministerial Statement for the LOM will provide limits via conditions on the SRI to *Banksia dolichostyla* , which is the number of individuals which may be cumulatively and directly impacted by the LOM Proposal (up to 12 individuals of *Banksia dolichostyla)*.

Table 1-1 reflects the MS 1199 conditions and its requirement for a FOS and rehabilitation for *Banksia dolichostyla.* It provides demonstration of how the residual impacts are addressed by this FOS. On issuing a Ministerial Statement for the LOM, this table will be updated to reflect the relevant conditions.

Appendix A contains the WA Environmental Offsets Calculator for impact on *Banksia dolichostyla* individuals for the LOM.

The EPBC Act approval for the Approved Project (EPBC 2017/7950) limits the clearing impact to no more than 2 individuals of *Banksia dolichostyla* (Condition 2) and requires within 10 years from commencement of the action, for Covalent to establish at least 69 Ironcaps Banksia plants within the development envelope (Condition 5). This conditions required an approved Ironcaps Banksia Conservation Plan to specify how Covalent will achieve these requirements. The "Conservation Plan for Ironcaps Banskia *Banksia sphaerocarpa* var. *dolichostyla"* (Rev 2, February 2021) has been submitted and approved by the Department of Agriculture, Water and the Environment (now DCCEEW) on 12 February 2021 (Appendix C). This FOS is consistent with the DCCEEW approved plan for EPBC 2017/7950.

It is anticipated that the EPBC Act assessment of the Proposal, will consider the additional 10 individuals to be lost to clearing to be an SRI, requiring offset. Accordingly, the Offsets Assessment Guide (EPBC) has been completed (Appendix B) and a summary of the quantum of offsets likely to be required, provided in Section 4.2.

**Table 1-1: Current MS Conditions for *Banksia dolichostyla* and outcomes and offsets for Life of Mine**

| MS 1199 Condition | Current MS1199 Requirement | Flora Environmental Outcomes and Offset Strategy |
|---|---|---|
| ***4*** | ***Offsets*** | **Residual Impact and Outcome**<br>No more than 12 individuals of *Banksia dolichostyla will be directly impacted by the Project.* |
| 4-1 | *The proponent must implement offsets to counterbalance the significant residual impacts of the proposal on the following environmental values:*<br>*…*<br>*(3) 2 individuals of Ironcap Banksia (Banksia dolichostyla); and*<br>*(4) 9,732 individuals of Microcorys elatoides,*<br>*as a result of the implementation of the proposal and the significant amendment to the approved proposal described in section 1 of the proponent's section 38 Referral Supporting Document.* | The cumulative impact to 12 individuals of *Banksia dolichostyla* has been determined an SRI that requires the implementation environmental offsets to counterbalance the specified impact.<br>Offsets<br>The proponent will implement offsets to counterbalance the cumulative SRI of the Approved Project and the Proposal on 12 individuals of Ironcap Banksia (*Banksia dolichostyla* )<br>The SRI to *Banksia dolichostyla* will be offset through the on-ground translocation of an equivalent number of individuals within Restoration Site(s), as outlined within this FOS.<br>Preparation and submission of this FOS is the first milestone towards being able to implement environmental offsets for *Banksia dolichostyla* .<br>Implementation of environmental offsets for *Banksia dolichostyla* will be able to commence following receipt of approval of this FOS by the Department of Water and Environmental Regulation (DWER) Chief Executive Officer (CEO). |

| MS 1199 Condition | Current MS1199 Requirement | Flora Environmental Outcomes and Offset Strategy |
|---|---|---|
| 4-6 | ***Flora Offset Strategy***<br>*The proponent must, in consultation with Department of Biodiversity, Conservation and Attractions, prepare a Flora and Vegetation Offset Strategy that demonstrates how the following environmental outcome will be achieved, and how this achievement will be substantiated, and submit it to the CEO:*<br>*(1) counterbalance the significant residual impacts listed in conditions 4-1(3) and 4-1(4).* | Covalent has prepared several versions of FOS in consultation with Department of Biodiversity, Conservation and Attractions (DBCA), and submitted the FOS to DWER CEO at the following times:<br>Revision 1 - May 2020<br>Revision 2 - January 2022<br>Revision 3 - July 2022<br>Revision 4 - July 2024<br>Revision 5 (this document) submitted October 2025 to support the assessment of the Proposal.<br>The DWER CEO is requested to grant approval of this FOS to support the approval for the LOM, for which the current MS1199 will be superseded by a new Ministerial Statement.<br>Implementation of environmental offsets for *Banksia dolichostyla* will be able to commence following receipt of approval of this FOS by DWER CEO.<br>Consultation with DBCA and DWER is summarised in Section 2 Stakeholder Consultation. |
| 4-7 | *The Flora and Vegetation Offset Management Plan must:*<br>*(1) identify an area, or areas, to be protected, managed and/or rehabilitated for conservation that contains the flora values identified in conditions 4-1(3) and 4-1(4) on advice of the Department of Biodiversity, Conservation and Attractions;*<br>*(2) identify an area, or areas for on-ground management;* | "Flora and Vegetation Offset Management Plan" has been used interchangeably with "Flora Offset Strategy", they are not separate documents.<br>The land areas to be subject to on-ground management and rehabilitated for conservation via translocation of *Banksia dolichostyla* individuals are described within section 4.3.<br>Consultation with DBCA is described within Section 2.<br>The land areas to be subject to on-ground management and rehabilitated for conservation via translocation of *Banksia dolichostyla* individuals are described within Section 4.3 and Figure |

| MS 1199 Condition | Current MS1199 Requirement | Flora Environmental Outcomes and Offset Strategy |
|---|---|---|
| | *(3) demonstrate how the environmental values within the Proposed Offset Conservation Areas will be maintained and improved in order to counterbalance the significant residual impact to the environmental values in condition 4-1 and achieve the environmental outcomes in condition 4-6(1);* | This FOS has been prepared to describe how the significant cumulative residual impact of the Project to 12 individuals of *Banksia dolichostyla* will be offset.<br>This offset strategy outlines the approach to translocate ≥ 12 individuals of *Banksia dolichostyla* within the proposed Restoration Site to achieve the environmental outcome of counterbalancing the SRI of the Project. The proposed restoration methodology is described in Section 4.4 and the Translocation Proposal in Appendix D. |
| | *(4) demonstrate application of the principles of the WA Environmental Offsets Policy, the WA Environmental Offsets Metric and the WA Offsets Template, as described in the WA Environmental Offsets Guidelines, and the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy Assessment Guide, or any subsequent revisions of these documents;* | Section 3.2 describes the application of relevant policy and guidelines to the environmental offsets for *Banksia dolichostyla*. |
| | *(5) identify how the ongoing performance of the offset measures, and whether they are achieving the outcomes in condition 4-6, will periodically be made publicly available;* | Section 4.4 describes the restoration methodology including completion criteria and monitoring. Section 5 describes how the FOS will be made publicly available. |
| | *(6) identify how the Proposed Offset Conservation Areas will be protected, being either the sites are ceded to the Crown for the purpose of management for conservation, or the sites are managed under other suitable mechanism for the purpose of conservation as agreed by the CEO by notice in writing; and* | Section 4.9 describes how the Restoration Site for *Banksia dolichostyla* within the Development Envelope for the Project may be managed for the purpose of conservation through a Section 19 exemption under the *Mining Act 1978* (WA). |

| MS 1199 Condition | Current MS1199 Requirement | Flora Environmental Outcomes and Offset Strategy |
|---|---|---|
| | *(7) for offsets acquired specify:*<br>*(a) a timeframe and works associated with establishing the Proposed Offset Conservation Areas, including a contribution for maintaining the offset for at least twenty (20) years after completion of purchase;*<br>*(b) identify the relevant management body for the ongoing management of the Proposed Offset Conservation Areas, including its role, and the role of the proponent, and confirmation in writing that the relevant management body accepts responsibility for its role.* | Not applicable - Environmental offsets for *Banksia dolichostyla* are not being acquired through a land acquisition purchase.<br>Refer to Section 4.9 regarding long term conservation management. |
| ***5***<br>5-1 | ***Rehabilitation***<br>*The proponent must implement the proposal to ensure the following environmental outcomes are achieved:*<br>*(1) rehabilitated areas are capable of sustaining the long-term viability of Banksia sphaerocarpa var. dolichostyla and Microcorys elatoides impacted from the proposal;* | Figure 4.1 identifies the locations of the rehabilitation area for *Banksia dolichostyla* .<br>Completion criteria are provided in Section 4.4.8 to ensure the environmental outcome of long-term viability for *Banksia dolichostyla* can be demonstrated by individuals having reproductive capability observed (i.e. flowering, fruiting, seeding) such that individuals are mature and self-sustaining (i.e. potentially produce second generation individuals). |
| 5-2 | *In order demonstrate the outcomes of condition 5-1 can be met, the proponent shall commence rehabilitation trials within twelve (12) months of the date of this Statement, or as otherwise agreed in writing by the CEO.* | An experimental treatment approach is not proposed for *Banksia dolichostyla* due to the low number of individuals required to be established (minimum 69 individuals as per EPBC Act approval 2017/7950); rather, multiple well-established techniques for successful restoration are being adopted from inception (i.e. seeds plus seedlings, site fencing/barriers and irrigated). Refer to Section 4.4.5. |

| MS 1199 Condition | Current MS1199 Requirement | Flora Environmental Outcomes and Offset Strategy |
|---|---|---|
| 5-3 | *The proponent shall submit annually to the CEO, with the annual compliance assessment report required by condition 8-6, a rehabilitation trial progress report, which identifies:*<br>*(1) results of rehabilitation trials; and*<br>*(2) contingency measures and actions in the event trials indicate the rehabilitation objective may not be achieved.* | Reporting on the implementation of this FOS (including results of rehabilitation and any implementation of contingency actions) as part of the annual Compliance Assessment Report required by the conditions, as described in section 4.6. |
| 5-4 | *The proponent shall continue to implement the rehabilitation trials required by condition 5-2 until the proponent has demonstrated that the outcomes of condition 5-1 will be met, or as otherwise agreed by the CEO.* | Refer to the comment for condition 5-2 above. Rehabilitation trials are not proposed. |

# 2 Stakeholder Consultation

Condition 4-6 of MS 1199 requires the FOS to be prepared in consultation with DBCA and submitted to DWER CEO for assessment and approval. The following revisions have been submitted to date, incorporating updates to various approval and feedback from DWER:

- Revision 1 - May 2020 (MS1118)
- Revision 2 - January 2022 (MS1118)
- Revision 3 - July 2022 (MS1118)
- Revision 4 - July 2024 (MS1199)

In June 2020, DWER provided comment to Covalent on the FOS (Revision 1, May 2020), together with comments received by DWER from DBCA. The DWER and DBCA comments were subsequently addressed within the revised FOS (Revision 2, January 2022) submitted to DWER for assessment and approval in January 2022.

In March 2022, DBCA provided further comment on the FOS (Revision 2, January 2022), via DWER (received by Covalent from DWER in April 2022). The further DBCA comments were subsequently addressed within the revised FOS (Revision 3, July 2022) submitted to DWER for assessment and approval in July 2022. Notwithstanding the further comments provided by DWER and addressed by Covalent, the agency subsequently advised the FOS could not be approved while Covalent was currently under assessment (Revised Proposal). It was agreed DWER would provide feedback on the draft and Covalent would resubmit a revised Offset Strategy based on those comments and the incorporation of the requirements of the approved Revised Proposal (MS1199).

In November 2023, DWER provided further comment on the FOS (Revision 3, July 2022). Revision 4 was submitted to DWER for review in August 2024.

In August 2025, DWER provided further comment on the FOS (Revision 4, July 2022). This revision (5) incorporates feedback provided by DWER in August 2025.

Consultation on this revision is currently in progress with DWER and where relevant DBCA. Consultation with DCCEEW will also be undertaken with respect to managing SRIs of the proposal under assessment (EPBC 2023/09711) noting that this approach is currently approved (as per Appendix C).

# 3 Objectives and Context of the Project

Covalent is required to implement measures to avoid, minimise and rehabilitate potential impacts to flora, specifically *Banksia dolichostyla* including but not limited to, applying a 50m buffer around known populations of Banksia and restoration of Banksia individuals.

*Banksia dolichostyla* (previously referred to as *Banksia sphaerocarpa* var. *dolichostyla*) is listed and protected under EPBC Act as 'Threatened Flora' at the conservation threat level of 'Vulnerable' (EPBC-V). *Banksia dolichostyla* is also listed and protected under the *Biodiversity Conservation Act 2016* (WA) (BC Act) as 'Threatened Flora' at the conservation threat level of 'Vulnerable' (BC-V).

MS 1199 authorised the removal up to 2 individuals of *Banksia dolichostyla*. The assessment of the approved Project determined that the removal of up to 2 individuals of *Banksia dolichostyla* represented an SRI that required an offset.

Covalent has identified that additional environmental offsets for *Banksia dolichostyla* will be necessary to counterbalance the additional environmental impact to these flora taxa by the LOM Proposal. The existing framework of the approved FOS (Revision 4) is considered to provide an appropriate approach through which the additional environmental offsets can be applied for the Proposal, and therefore this document follows the same methodology and format. The approach to restoration of *Banksia dolichostyla* is also consistent with Covalent's (2021) *Earl Grey Lithium Project Conservation Plan for Ironcaps Banksia* Banksia sphaerocarpa var. dolichostyla, approved by DCCEEW (2021) in accordance with Condition 5 of the EPBC 2017/7950 Decision approval under the EPBC Act.

In summary, the intent of this *Banksia dolichostyla* Offset Plan is to counterbalance the number of individuals of Ironcaps Banksia to be removed by the Proposal through establishing (in rehabilitation works) at a minimum an equivalent number of individuals within the Development Envelope.

## 3.1 Project Values

### 3.1.1 Distribution and Habitat

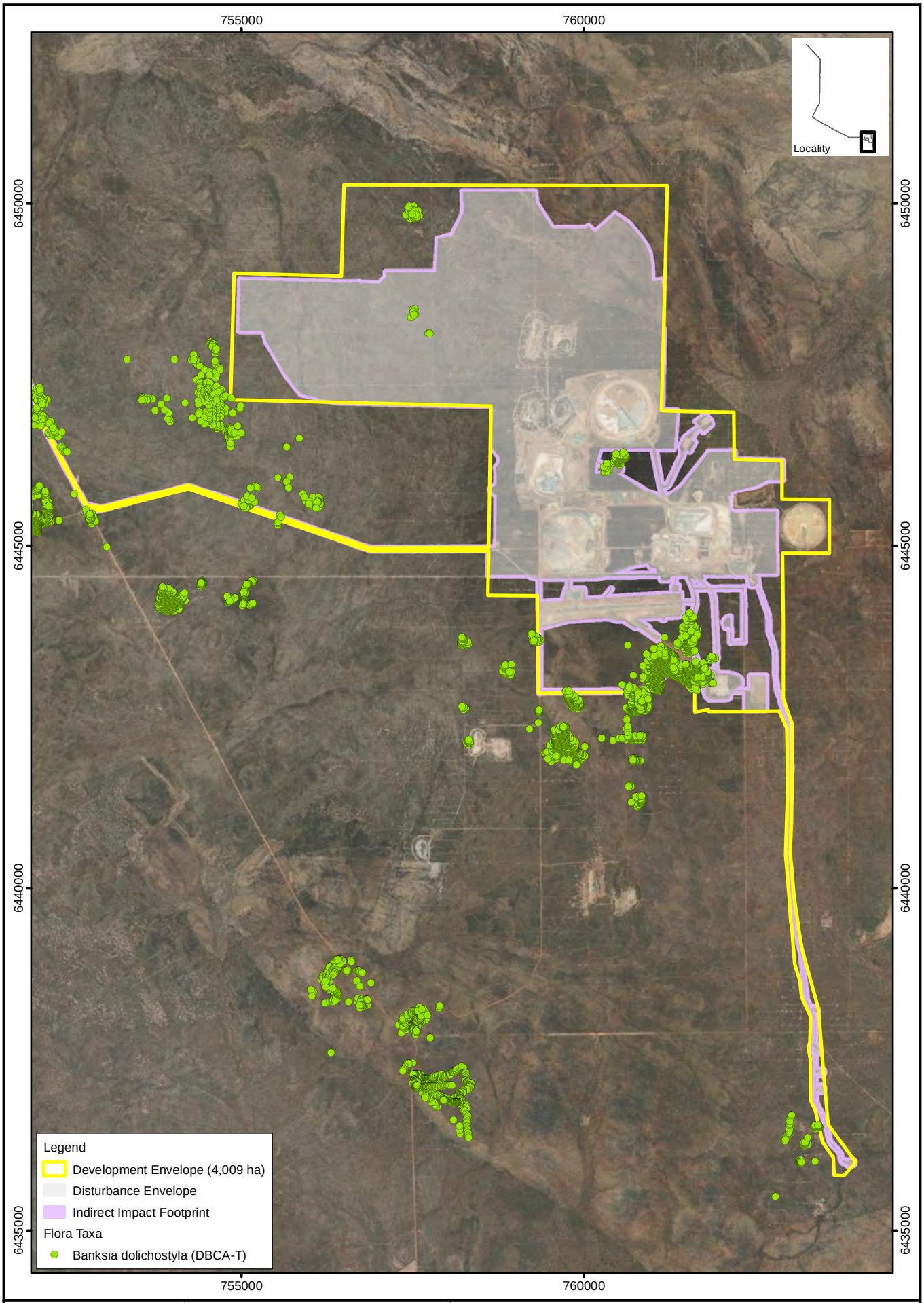
*Banksia dolichostyla* is a dense-canopied shrub or small tree to 4 metres (m) height with bluish-green and narrowly linear leaves. Flower heads are golden and spherical, and fruiting cones are spherical with often crowded follicles (DBCA 2023a).

*Banksia dolichostyla* has a recorded linear distribution of approximately 70 km, extending from Mount Holland (north) to South Ironcap (south), within the Coolgardie and Mallee IBRA Regions. Recorded locations of *Banksia dolichostyla* include the Jilbadji Nature Reserve (DBCA 2023a). The *Banksia dolichostyla* population comprises > 27,000 individuals (Covalent 2024).

The regional distribution of *Banksia dolichostyla* is identified by Figure 3-1.

*Banksia dolichostyla* grows on iron-capped hills and rises on ironstone (lateritic) soil profiles, within associated vegetation of low woodland and low shrubland. Associated vegetation species include *Banksia* sp. and *Allocasuarina* sp. (George 1981, Patrick & Hopper 1982, Taylor & Hopper 1988, Hopper *et al.* 1990, Mollemans *et al.* 1993 and George 1999 all cited in DCCEEW 2008).

*Banksia dolichostyla* is one of several variants from the *Banksia sphaerocarpa* group (comprising 6 taxa), which have a broad distribution of approximately 700 km from Geraldton in the north to Albany in the south, and eastwards into the Goldfields region. The *Banksia sphaerocarpa* group occurs across a variety of landforms, vegetation types and soil types.

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Author: A. Pate, A. Latto

Date: October 2025 | Rev: A | A4

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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

# Figure 3-1 - Earl Grey Lithium Project
## Flora Offest Strategy
## *Banksia dolichostyla* Regional Distribution

### 3.1.2 Ecology

Individuals of *Banksia dolichostyla* recorded during field surveys were assessed as generally in a good health condition. Individuals ranged from recruiting juveniles though to large mature adult plants and included recruitment within previously burnt and disturbed areas. Based on these field observations it is considered *Banksia dolichostyla* may be a good candidate for restoration in areas with suitable soils.

Whilst no previously documented attempts for restoration of *Banksia dolichostyla* are known, multiple examples of restoration of other taxa in the *Banksia* genus have been well documented in a variety of habitats (for example, refer to DBCA 2016; Murdoch University 2008, Brundrett *et al.* 2020).

The main threats to *Banksia dolichostyla* include direct removal through mining/exploration, cutting of survey lines, inappropriate fire regimes, weed invasion, changed hydrology, salinisation and fragmentation of locations (Mollemans *et al.* 1993 and NLWRA 2002 cited in DCCEEW 2008).

Observations by botanists from Western Botanical (2020 unpublished) and Mattiske (2019) indicate that retained individuals bordering the previous mine operations are in good health; indicating that individuals of *Banksia dolichostyla* may perhaps be tolerant to indirect impacts from adjacent land disturbance (e.g. dust from the abandoned Mt Holland Gold Mine operations) and/or that individuals may have a capacity to recover from indirect impacts over time. *Banksia dolichostyla* has been observed to re-sprout after fire.

### 3.1.3 Regional and Site Surveys

Regional and site (Development Envelope) surveys to determine the presence and distribution of *Banksia dolichostyla* have been completed including areas of 'Freehold' land, Nature Reserves and Unallocated Crown Land.

The aim of the regional surveys was to provide an improved understanding of the regional occurrence of *Banksia dolichostyla* in terms of its regional distribution, and habitat associations including soil types and vegetation communities.

A summary of surveys within the Development Envelope and regional studies that are relevant to *Banksia dolichostyla* are listed in Table 3-1. All data collected has been made available to the DBCA to assist in building regional datasets, and to increase the knowledge base for this taxon.

**Table 3-1: Flora Surveys for *Banksia dolichostyla***

| Reference | Scope |
|---|---|
| Western Botanical (2025c) | Regional Surveys for Threatened, Priority Flora and Species of Interest for the Earl Grey Lithium Project 2023-2024 |
| Mattiske Consulting (2023a) | Threatened flora survey of revised LOM Development Envelope, with the results including additional records of *Banksia dolichostyla*. |
| Mattiske Consulting (2023b) | Flora and vegetation assessment of LOM expansion area. |
| Mattiske Consulting (2023c) | Vegetation assessment of LOM expansion area |
| Mattiske Consulting (2021a) | Vegetation health monitoring transects within the Development Envelope, with locations of *Banksia dolichostyla* identified within 6 monitoring transects. |
| Mattiske Consulting (2021b) | Field survey at various locations within the Development Envelope and adjacent areas, with 1 location containing *Banksia dolichostyla* individuals identified. |

| Reference | Scope |
|---|---|
| Mattiske Consulting (2021c) | Summary of pre-clearance field surveys within the Development Envelope, with 18,358 individuals of *Banksia dolichostyla* recorded by the pre-clearance surveys, and noting the total regional population at > 24,000 individuals. |
| Mattiske Consulting (2020a) | Field survey of the water pipeline corridor route from the mining area to Moorine Rock. *Banksia dolichostyla* did not occur within the field survey area, however, nearby records of this species were noted. |
| Mattiske Consulting (2020b) | Establishment of vegetation health monitoring transects within the Development Envelope, with locations of *Banksia dolichostyla* identified within 4 monitoring transects. |
| GHD (2020) | Field surveys in the near vicinity of the Development Envelope, with the field survey including records of 172 individuals of *Banksia dolichostyla*. |
| Western Botanical (2020a) | Review of the Distribution of *Banksia dolichostyla* with a resulting reduction in regional extent as a result of taxonomic review of specimens held at WA Herbarium. |
| Western Botanical (2020b) | Field surveys of freehold land parcels for potential acquisition for use as an environmental offset for *Banksia dolichostyla*, with the following outcomes:<br>• Field surveys determined the land parcels to contain *Banksia sphaerocarpa var. caesia* (not *Banksia dolichostyla* as previously reported). Accordingly, the land parcels would not be suitable for acquisition as an environmental offset.<br>• Taxonomic review of voucher specimens within the Western Australian Herbarium resulted in a contraction in the known regional distribution of *Banksia dolichostyla* (as a result of a number of voucher specimens being reassigned to *Banksia sphaerocarpa* var. *caesia*). |
| Mattiske Consulting (2019a) | Mattiske conducted the following:<br>• Assessments of roadside vegetation.<br>• Preliminary assessments of viability of freehold land areas as offset sites<br>• Regional surveys for *Banksia dolichostyla*. Target area further searched to identify potential direct offset sites. |
| JBS&G Australia (2019a) | JBS&G conducted the following:<br>• Regional surveys for *Banksia dolichostyla* at 24 locations<br>• Assessments of roadside vegetation<br>• Preliminary assessments of viability of freehold land areas as offset sites |
| JBS&G Australia (2019b) | JBS&G conducted regional surveys for *Banksia dolichostyla* (2 sites). |
| Mattiske Consulting (2019c, 2019d, 2019e, 2019f, 2019g, 2019h) | Mattiske Consulting conducted targeted flora surveys for conservation significant flora species on Kidman Resources tenements for exploration activities. Additional populations of conservations significant flora species were identified. |
| Mattiske Consulting (2019a) | Mattiske Consulting and JBS&G conducted targeted floristic surveys focused on November 2018 on Priority 1 flora, range extensions and new species with potential to be impacted within the Development Envelope.<br>Targeted surveys were conducted both within and outside the Development Envelope to characterise local context in addition to understanding the direct impacts of the Project. |

| Reference | Scope |
|---|---|
| Mattiske Consulting (2019b) | Mattiske Consulting Pty Ltd was commissioned between April and June of 2018 by Western Australian Lithium Pty Ltd to undertake a survey of the threatened *Banksia dolichostyla* both within the Earl Grey Lithium Development Envelope and within the broader region surrounding the Project.<br>18 individual populations of *Banksia dolichostyla* were recorded during the surveys. A total of 16,*503 Banksia dolichostyla* individuals were recorded across all the areas surveyed. When the estimated numbers outside the Development Envelope are included (6,083), the local population is potentially 22,586 plants. |
| Mattiske Consulting (2018) | Flora and vegetation surveys have been conducted within the Earl Grey Lithium Project Development Envelope, a 1 km area around the Development Envelope and 200 m either side of the centre line of the access routes. The total area surveyed was 4,418 ha, of which 1,994 ha was within the Earl Grey Lithium Project Development Envelope. A total of 214 vegetation survey quadrats were established and surveyed across the survey area. |
| Blueprint Environmental (2017) | In April 2017, Goldfields Landcare Services conducted surveys for *Banksia dolichostyla* within proposed landform and infrastructure areas of the Development Envelope. |
| Mattiske Consulting (2017) | The assessment of the flora and vegetation of the Earl Grey, Irish Breakfast and Prince of Wales prospects at Mt Holland was undertaken by Mattiske, from 24 to 26 October 2016 and 9 to 10 November 2016.<br>A total of 43 vegetation survey quadrats were established. |
| Native Vegetation Solutions (2016) | In September 2016, Native Vegetation Solutions conducted surveys for *Banksia dolichostyla* within proposed exploration areas of the Earl Grey deposit. |
| Native Vegetation Solutions (2014). | Native Vegetation Solutions (NVS) conducted surveys for *Banksia dolichostyla* around existing infrastructure areas (including roads, the historic camp, landfill and airstrip) of the site. |

### 3.1.4 Justification for restoration approach

Covalent's initial investigations considered that the protection and management of freehold land containing *Banksia dolichostyla* would be a net environmental benefit for the protection of the species, and align with the recovery priorities outlined within the *Approved Conservation Advice for Banksia sphaerocarpa var. dolichostyla (Ironcaps Banksia)* (DCCEEW 2008). Therefore, initially Covalent focused on the opportunities for land acquisition as a direct offset for the loss of *Banksia dolichostyla.* Areas of freehold land were targeted for survey work with the intent of both extending the known distribution, and to potentially facilitate land acquisition and transfer to DBCA conservation reserve system to offset the impacts of the Project.

The initial surveys identified freehold land containing *Banksia dolichostyla* which could potentially be acquired. However, subsequent reviews of multiple specimens held by the Western Australian Herbarium (DBCA) reassigned several *Banksia dolichostyla* to the related *Banksia sphaerocarpa* var. *caesia*. This reclassification led to the contraction of the known regional distribution of *Banksia dolichostyla*. Several reassigned specimens were individuals recorded within the freehold land surveyed for potential land acquisition. Accordingly, these land parcels no longer contained the required flora species and therefore no longer represented suitable acquisition opportunities for offset sites for the Project. In the absence of suitable freehold land available for acquisition, Covalent reconsidered its approach, and thus, the previously approved FOS focussed on opportunities for

in-situ restoration of *Banksia dolichostyla* as a direct offset for the approved Project and LOM Proposal.

Noting that the approach above has been approved for implementation, this Offset Plan adopts the same method of directly offsetting the impacts to *Banksia dolichostyla* resulting from the LOM Proposal.

## 3.2 Alignment with Policy and Guidelines

Recovery of *Banksia dolichostyla* is guided by the *Approved Conservation Advice for Banksia sphaerocarpa var. dolichostyla (Ironcaps Banksia)* (DEWHA 2008). The recovery priorities for *Banksia dolichostyla* and how this LOM FOS aligns to the recovery priorities are outlined by Table 3-2.

This *Banksia dolichostyla* Offset Plan has been considered in the context of counterbalancing the SRI of the Proposal, and demonstrates consideration of the offset principles defined in the following guidance documents:

- WA Environmental Offset Policy (Government of WA 2011);
- WA Environmental Offset Guidelines (Government of WA 2014); and
- *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy (Australian Government 2012).

Alignment of this document with this guidance material is provided in Section 3.2.

### 3.2.1 Conservation Advice

The alignment of this FOS to the Approved Conservation Advice for *Banksia dolichostyla* is detailed in Table 3-2.

**Table 3-2: Alignment with *Approved Conservation Advice for Banksia dolichostyla* (DEWHA 2008)**

| Recovery Priority (DCCEEW 2008) | *Banksia dolichostyla* Offset Plan |
|---|---|
| Research Priorities | |
| 1. *Design and implement a monitoring program, or, if appropriate, support and enhance existing programs.* | Section 4.4.7 identifies the monitoring of the translocated *Banksia dolichostyla* individuals. |
| 2. *More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes.* | Section 3.1.3 identifies that regional surveys have been completed to determine *Banksia dolichostyla* regional distribution, which has guided this FOS towards offsets being progressed through translocation (in the absence of land containing *Banksia dolichostyla* being available for acquisition and management).<br>The translocation of *Banksia dolichostyla* , including subsequent environmental monitoring, may assist in the understanding of the ecological requirements and threatening processes. |
| 3. *Investigate appropriate fire regimes for Ironcaps Banksia to allow maturation of individuals and promote seed germination* | A recent fire through sections of the Development Envelope will allow potential opportunities for research into fire's impact on the species, and particular post-fire recovery. |

| Recovery Priority (DCCEEW 2008) | *Banksia dolichostyla* Offset Plan |
|---|---|
| Habitat Loss, Disturbance and Modification | |
| 4. *Monitor known populations to identify key threats.* | Not applicable to this FOS. |
| 5. *Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.* | Section 4.4.7 identifies the monitoring of the translocated *Banksia dolichostyla* individuals. |
| 6. *Minimise adverse impacts from land use at known sites.* | Not applicable to this FOS. |
| 7. *Identify populations of high conservation priority.* | Section 3.1.3 identifies that regional surveys have been completed to determine *Banksia dolichostyla* regional distribution. All known locations of *Banksia dolichostyla* may be considered of high conservation priority. |
| 8. *Ensure mining exploration, mining, road widening and maintenance activities involving substrate or vegetation disturbance in areas where Ironcaps Banksia occurs do not adversely impact on populations.* | Section 4 identifies that naturally occurring individuals of *Banksia dolichostyla* located adjacent to the Restoration Site will be visually demarcated to ensure that site preparation activities do not impact the adjacent individuals. |
| 9. *Investigate formal conservation arrangements such as the use of covenants, conservation agreements or inclusion in reserve tenure.* | The Restoration Site is located within a Flora Protection Area (FPA) (also referred to as the Flora Exclusion Zone (FEZ)) (non-mining) as defined under MS 1199.<br>Section 4.9 considers the proposed conservation mechanisms for the translocated individuals. |
| 10. *Manage any changes to hydrology that may result in changes to the water table levels, increased run-off or salinity.* | Not applicable to this FOS. |
| Fire | |
| 11. *Provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plans, risk register and/or operation maps.* | Not applicable to this FOS. |
| Invasive weeds | |
| 12. *Identify and remove weeds in the local area, which could become a threat to the species, using appropriate methods.* | Section 4.4 identifies the approach to the prevention, identification and removal of introduced flora within the Restoration Site. |
| 13. *Manage sites to prevent introduction of weeds in the local area, which could become a threat to Ironcaps Banksia, using appropriate methods.* | Section 4.4 identifies the approach to the prevention, identification and removal of introduced flora within the Restoration Site. |
| Enable Recovery of Additional Sites and/or Populations | |
| 14. *Undertake appropriate seed collection and storage.* | Section 4.4.1 identifies the approach for the collection of *Banksia dolichostyla* seed materials for the translocation. |

| Recovery Priority (DCCEEW 2008) | *Banksia dolichostyla* Offset Plan |
|---|---|
| 15. *Investigate options for linking, enhancing or establishing additional populations.* | Section 4.3 identifies that the translocation will occur in a cleared area between naturally occurring individuals of *Banksia dolichostyla* ; such that the translocation may assist to link or enhance the number of individuals at this location. |
| 16. *Implement national translocation protocols if establishing additional populations is considered necessary and feasible.* | Refer to Translocation Proposal in Appendix D required by DBCA. |

### 3.2.2 Offset Policy and Guidance

This plan demonstrates consideration of the six offsets principles defined in the WA Environmental Offset Policy and WA Environmental Offset Guidelines (Government of Western Australia 2011, 2014) as detailed in Table 3-3.

The eight principles defined in the Federal EPBC Act Environmental Offsets Policy are addressed in Table 3-4.

**Table 3-3: Assessment of Offset Strategy against EPA Offset Principles**

| Offset Principle | *Banksia dolichostyla* Offset Plan |
|---|---|
| 1. *Environmental offsets will only be considered after avoidance and mitigation options have been pursued.* | The Proposal has been designed to minimise the impact to *Banksia dolichostyla* to the maximum extent practicable, in accordance with the application of the Mitigation Hierarchy (i.e. Avoid, Minimise, Rehabilitate, Offset) as described within the Environmental Review Document (ERD) (Covalent 2024).<br>Following the application of the first steps of the Mitigation Hierarchy, the impact assessment has determined that environmental offsets are appropriate to counterbalance the SRI of the Proposal to 12 individuals of *Banksia dolichostyla* . |
| 2. *Environmental offsets are not appropriate for all projects.* | The Proposal has been designed to minimise the impact to *Banksia dolichostyla* to the maximum extent practicable, in accordance with the application of the Mitigation Hierarchy (i.e. Avoid, Minimise, Rehabilitate, Offset) as described within the ERD Covalent (2024).<br>Following the application of the first steps of the Mitigation Hierarchy, the impact assessment has determined that environmental offsets are appropriate to counterbalance the SRI of the Project to 12 individuals of *Banksia dolichostyla* . |
| 3. *Environmental offsets will be cost-effective, as well as relevant and proportionate to the significance of the environmental value being impacted.* | Following the application of the first steps of the Mitigation Hierarchy, the impact assessment has determined that environmental offsets are appropriate to counterbalance the SRI of the Project to 12 individuals of *Banksia dolichostyla* . This FOS proposes the translocation of 12 individuals of *Banksia dolichostyla* through restoration/ rehabilitation.<br>The establishment of 12 individuals of *Banksia dolichostyla* is proportionate to the significance of the environmental value to be impacted, and cost-effective relevant to the gain achieved by Covalent in being granted environmental approval to impact the 12 individuals. |

| Offset Principle | *Banksia dolichostyla* Offset Plan |
|---|---|
| 4. *Environmental offsets will be based on sound environmental information and knowledge.* | Environmental information on *Banksia dolichostyla* has been gained through multiple studies, as outlined within Section 3.1.3.<br>The establishment of 12 individuals of *Banksia dolichostyla* will be undertaken in consultation with industry professionals having significant experience in native flora (including flora translocations)<br>Evidence collected during field surveys to date indicates *Banksia dolichostyla* to be pioneering and readily colonises disturbed areas. |
| 5. *Environmental offsets will be applied within a framework of adaptive management.* | Section 4.4.7 describe the monitoring to be undertaken to determine whether the environmental objectives have been achieved.<br>Section 4.8 describes the contingency measures to be implemented (i.e. adaptive management) in the event the monitoring indicates the completion criteria are unlikely to be achieved. |
| 6. *Environmental offsets will be focussed on longer term strategic outcomes.* | This FOS seeks the establishment and maintenance of 69 individuals of *Banksia dolichostyla* on order to counterbalance the cumulative impact of the Approved Project (as required by EPBC Act approval 2017/7950) and the Proposal. This program will contribute to the understanding of translocation of conservation significant flora, in particular *Banksia dolichostyla.* |

**Table 3-4: Assessment of Offset Strategy against EPBC Act and Offset Policy Principles**

| Offset Principle | Offset Strategy |
|---|---|
| *Suitable offsets must:* | |
| 1. *Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action* | The restoration of 69 individuals of *Banksia dolichostyla* delivers an overall conservation and maintains the viability of the protected matter counter-balancing the SRI of the Proposal to 12 individuals of *Banksia dolichostyla*. |
| 2. *Be built around direct offsets but may include other compensatory measures* | The restoration of 69 individuals of *Banksia dolichostyla* is a direct offset for the SRI of the Proposal to 12 individuals of *Banksia dolichostyla* and indirect impact to 59 individuals required for EPBC Act approval 2017/7950.. |
| 3. *Be in proportion to the level of statutory protection that applies to the protected matter* | *Banksia dolichostyla* is classified as Vulnerable under the EPBC Act. This listing classification and the SRI of the Proposal to 12 individuals of *Banksia dolichostyla* was considered when determining the required offset. |
| 4. *Be of a size and scale proportionate to the residual impacts on the protected matter* | *Banksia dolichostyla* is classified as Vulnerable under the EPBC Act. This listing classification and the SRI of the Proposal to 12 individuals of *Banksia dolichostyla* was considered when determining the required offset. |

| Offset Principle | Offset Strategy |
|---|---|
| 5. *Effectively account for and manage the risks of the offset not succeeding* | Section 4.8 of this FOS addresses risks to the restoration effort and risks of not achieving the FOS completion criteria.<br>Table 4-5 identifies triggers and details corrective measures to be taken, if required.<br>The risk of completion criteria not being achieved is minimised through:<br>• Direct seeding and planting Tubestock<br>• Irrigation<br>• Hygiene procedures<br>• Introduced flora control<br>• Monitoring |
| 6. *Be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action)* | The proposed restoration methodology includes the seeding (96 expected individuals from 400 seeds) and translocation of tubestock (expect 200 individuals from 400 seeds). Refer to Translocation Proposal for details (Appendix D) |
| 7. *Be efficient, effective, timely, transparent, scientifically robust and reasonable* | The proposed offset is:<br>– efficient, as the offset is within access to the proposal site;<br>– effective, as the offset addresses the SRI directly;<br>– timely, as the offset will be immediately implemented and delivered over the foreseeable future;<br>– transparent, as the FOS will be published on Covalent's website;<br>– scientifically robust, as the offset is based on ecological survey information for the impact and offset; and<br>– reasonable, as attainment and maintenance of the offset completion criteria is achievable. |
| 8. *Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.* | Section 4.4.7 and Section 4.4.8 outline monitoring and completion criteria that will be applied to the FOS.<br>Section 4.4.9 and Section 4.6 outline the ongoing management and reporting. |

# 4 Restoration Plan

This document adopts the same methodology as the approved offset strategy for EPBC 2017/7950 (Appendix C) , to ensure the establishment of *Banksia dolichostyla* individuals within a designated restoration site, to meet the cumulative offset requirements for the current approved project and proposed LOM (Section 4.2.3).

Covalent acknowledges that native flora restorations (translocations) inherently have a level of uncertainty (risk). Most native flora in Western Australia, including *Banksia dolichostyla*, have not been subject to previous field restoration studies upon which to determine the likelihood of successful restoration. Accordingly, inherent risk is not unique to this proposal.

Restorations have been previously undertaken for other *Banksia* sp. taxa, and this can inform the detailed methodology for the field restoration of *Banksia dolichostyla* (for example refer to DBCA 2016; Murdoch University 2008; Brundrett *et al.* 2020). Other flora restorations in similar semi-arid environments can also further inform the methodology for *Banksia dolichostyla*. Evidence collected during field surveys to date indicate *Banksia dolichostyla* to be pioneering and readily colonise disturbed areas. Initial works by Western Botanical (for Covalent) have also demonstrated the ability to germinate *Banksia dolichostyla* from seed.

Restoration will also be subject to a translocation proposal, required to be approved by DBCA, with the current proposal provided in Appendix D.

## 4.1 Objectives

The objective of this FOS is to counterbalance the impact of the Proposal to *Banksia dolichostyla*.

The target of this *Banksia dolichostyla* Offset Plan is to:

- Establish and maintain at least 69 individuals of *Banksia dolichostyla* through direct seeding and translocation.

Implementation of the management and monitoring measures specified will ensure the objective and target of this *Banksia dolichostyla* Offset Plan are met.

## 4.2 Offset Quantum

### 4.2.1 EPBC Offset Calculator

The calculation of the required EPBC offset has been determined on the basis of the cumulative direct impact of up to 12 individuals of *Banksia dolichostyla* as shown in Table 4-1. The offset calculations supporting the offsets are provided in Appendix B and have been undertaken using the 'threatened species' part of the impact calculator and input for future value with offset (at least 69 individuals) to achieve an adequate offset.

The current EPBC Act approval requires offset of indirect impacts to 67 individuals, which at the time of the assessment were located within the vicinity of access roads. However, changes to mining operations, have seen these roads closed, with a distance exceeding 50 m from nearest mining activity and as such are no longer likely to be indirectly impacted.

The individuals identified as occurring within the indirect impact zone for they extended footprint for the LOM, at most risk are those within 0-10m from the disturbance footprint (106 individuals, which includes 47 individuals for LoM plus 59 individual identified in the Approved Proposal). As per the revised Environmental Impact Assessment for Conservation Significant Flora (JBS&G 2025), the focus for offsets is the direct impacts, loss of individuals within the indirect impact zone is not anticipated. For this reason, the offset calculator provided in Appendix A has only included the number of individuals directly impacted.

### 4.2.2 DWER Offset Calculator

The calculation of the required WA offset has been determined on the basis of a cumulative direct impact of up to 12 individuals of *Banksia dolichostyla* as shown in Table 4-1. The offset calculations supporting the offsets are provided in Appendix B and have been undertaken using the 'features' function for the calculations and considers the worst case required input for step 2 of the calculator for future number WITH rehabilitation (at least 69 individuals) to achieve an adequate offset in step 3.

### 4.2.3 Summary of significant residual impact and offset requirements

The SRI as defined within MS 1199 (Condition 4-1) were determined on the basis of direct impact to *Banksia dolichostyla* individuals, as a result of clearing of native vegetation for the project. The offset requirements for the Project as determined using the EPBC Act and EPA offset calculators are described in Table 4-1; and provide the minimum number of individuals required to be maintained to achieve at least 100% offset requirement.

**Table 4-1: Significant residual impacts and associated offset requirements**

| Impact | EPBC Act Approval 2017/7950 (as varied 29/3/22) | Original Proposal MS1118 | S46 Change to proposal MS1167 (supersedes MS1118) | Approved Proposal MS1199 (supersedes MS1167) | Life of Mine Proposal (under assessment) |
|---|---|---|---|---|---|
| Direct | 2 | 2 | 2 (no change) | 2 (no change) | **Additional 10 individuals**<br>(positioned in 2 small groupings in the area for the proposed new Tailings Storage Facilities / Waste Rock Landform in the north-eastern part of the extended Development Envelope)<br>**Cumulative impact = 12 individuals** |
| Indirect | 67 | 67 | The s46 changed the conditions of the approval to refer only to the direct impact to the 2 individuals as per EPA report 1697. | Indirect impacts not included in conditions | 47 individuals (located 0-10 m from disturbance footprint) plus<br>59 individuals identified for the Approved Proposal<br>**Cumulative impact = 106 individuals** |
| Total SRI to be offset | 69 | 69 | 2 Direct impact only | 2 | **12 individuals**<br>Direct impacts only as per approach with MS1167 and MS1199 |
| Offset requirement | 69<br>(condition 5) | | | 2 | Restoration of at least 69 individuals as currently required by EPBC Act 2017/7950 provides an adequate offset (DWER calculator, Appendix A; EPBC Act Calculator Appendix B). |

## 4.3 Restoration Site Selection

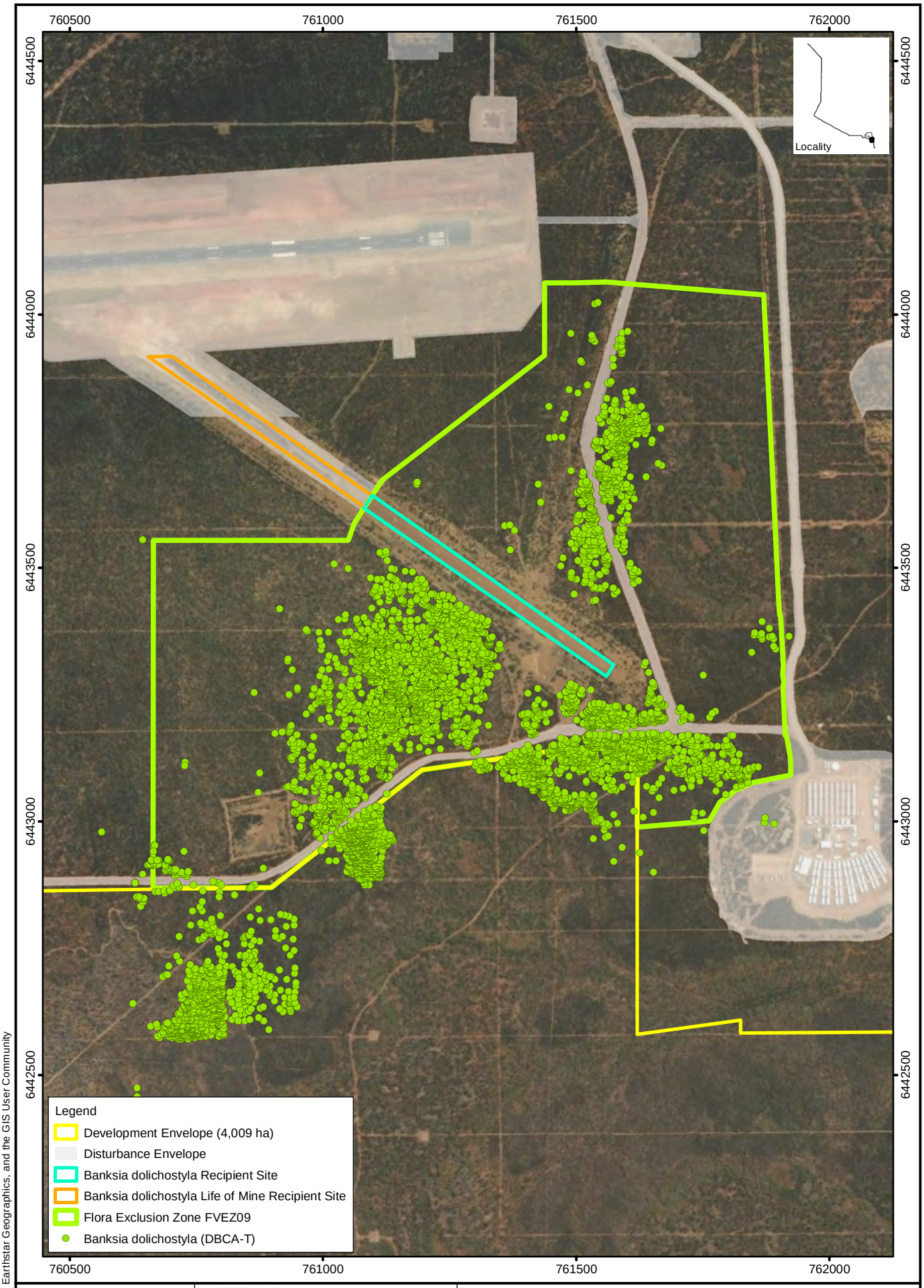
Restoration of *Banksia dolichostyla* will be undertaken within an approximately 3 ha land area within the Development Envelope that is part of a decommissioned airstrip (herein termed 'Restoration Site'), as identified by Figure 4-1.

The Restoration Site has been selected as it was a historically cleared and left unrehabilitated and is bordered on either side by remnant vegetation containing naturally occurring individuals of *Banksia dolichostyla*. Based on the currently mapped local distribution, it is considered likely that *Banksia dolichostyla* previously occurred within the area. Advice received from Western Botanical (for Covalent) indicates the Restoration Site has a laterite gravel profile generally consistent with the natural habitat for *Banksia dolichostyla*, and accordingly, the underlying soil types are likely to be suitable for the proposed restoration.

The Restoration Site is located within a FEZ; alternatively referred to as FPA; being an area in which mining operations are excluded.

The new *Banksia dolichostyla* will enhance the existing naturally occurring individuals at this location and reduce the current fragmentation, potentially reestablishing a linkage between existing populations (see Figure 4-1).

The Restoration Site is located at more than 500 m separation from Covalent's active mining operations, and accordingly, potential for indirect impact from the mining operations to the restored individuals of *Banksia dolichostyla* is considered very low.




Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 210 m

Scale: 1:10,000
MGA94 (Zone 50)

N

Author: A. Pate, A. Latto

Date: October 2025 | Rev: B | A4

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# Earl Grey Lithium Project
## Flora Offest Strategy
## *Banksia dolichostyla* Recipient Site

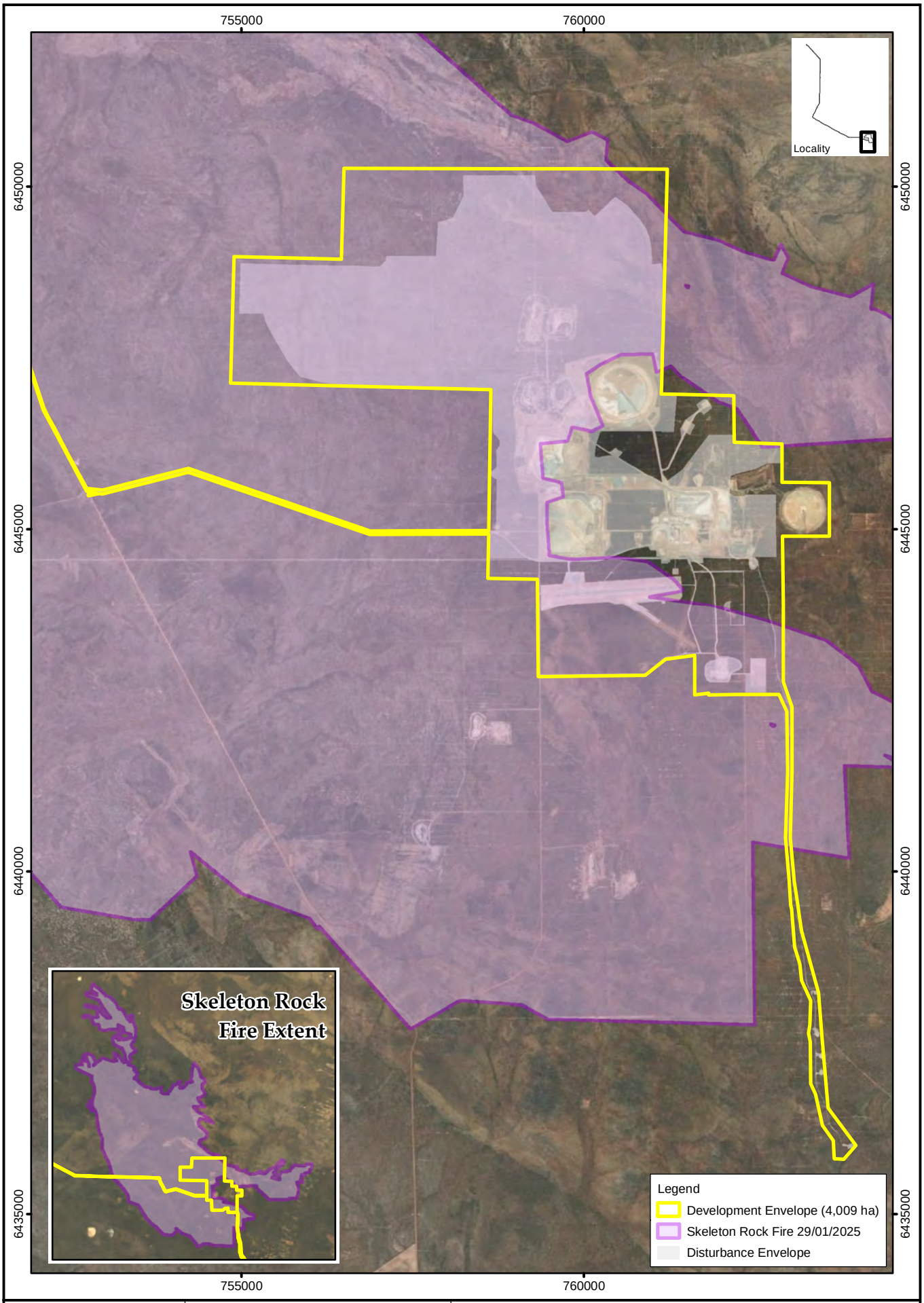
Figure 4-1

#### 4.3.1.1 Skeleton Rock Bush Fire - January 2025 Update

In January 2025, vegetation within and surrounding the mine site restoration site was impacted by a regional fire, referred to as the Skeleton Rock Bushfire. The fire burnt for approximately one week with Department of Fire and Emergency Services (DFES) conducting regional backburning and 'fire mopping up' activities for a further 10 days after the main fire was extinguished. Whilst the fire did not directly impact mine site infrastructure, approximately 2,500 ha of the extended LoM area was affected including the restoration site and over 35,000 ha regional vegetation was burnt (Figure 4-2). Approximately 8 ha of firebreaks were installed within the Development Envelope by DFES. Due to the high intensity of the bushfire, DFES have suggested that natural vegetation regeneration could take between 10 to 15 years.

All baseline flora and fauna surveys for the approved and proposed LoM Development Envelope had been completed prior to the fire. Local provenance *Banksia dolichostyla* seed was collected prior to the fire ensuring adequate seed stock is available for rehabilitation.

Whilst the actual impacts are still being assessed, monitoring and management requirements outlined in the Flora and Vegetation Management Plan and the Terrestrial Fauna Management Plan are now under review. Covalent is seeking appropriate amendments to the Management Plans in consultation with DWER.




0 1,500 m

Scale: 1:75,000
MGA94 (Zone 50)

N

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# Earl Grey Lithium Project
## Flora Offest Strategy
### Skeleton Rock Fire

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

## 4.4 Restoration Methodology

The restoration of *Banksia dolichostyla* will involve a combination of both direct seeding and the planting of seedlings (tubestock), to provide the best opportunity for success.

A staged approach will be adopted whereby seeds will be collected (Year 1), then the Restoration Site rehabilitated with native vegetation including *Banksia dolichostyla* (Year 2+) (see Table 4-2 for more detail).

The Restoration Site will be fenced, or alternatively, other suitable barrier types installed (e.g. tree guards), to minimise the risk of herbivore grazing (e.g. rabbits, kangaroos). The fencing/barriers will be maintained until the Completion Criteria are achieved.

The Restoration Site will be irrigated with fresh water to aid in the establishment of *Banksia dolichostyla* seeds/seedlings.

Introduced flora (weeds) have been recorded within the area of the Proposal and surrounds; believed to have been introduced from the abandoned Mt Holland Gold Mine (1988 to 2002) and/or nearby agriculture lands (> 50 years). In order to minimise the risk of introduction and/or spread of introduced flora within the Restoration Site, all vehicles/machinery and imported earthen materials (e.g. soil, fill, gravel, mulch) to be used in the restoration works will be subject to inspection prior to entry to the Proposal to confirm they do not contain seeds, vegetation or soil sods that are likely to host introduced flora.

Consistent with Covalent's current hygiene management procedure will be targeted towards *prevention* (rather than response), to be managed in accordance with:

- Vehicle and Mobile Equipment Weed Hygiene Inspection Form
    - Vehicle and Mobile Equipment Weed Hygiene Form (COV-000-EN-FOR-0003) is to be completed by the supplier for all machinery or vehicles prior to mobilisation to site. Photographs of machinery/vehicles will be included to visually demonstrate compliance with hygiene requirements.
    - Vehicles/machinery will not be permitted to enter the area unless the Vehicle and Mobile Equipment Weed Hygiene Form has been completed by the supplier and endorsed by the Covalent Site Senior Executive (or delegate) prior to mobilisation to site.
    - If upon arrival to site a visual inspection by Covalent personnel identifies the machinery/vehicles to be non-compliant with the declarations made within the Vehicle and Mobile Equipment Weed Hygiene Form, then the supplier will be directed by the Covalent Site Senior Executive (or delegate) to return the machinery/vehicles to its point of origin.
- Imported Materials Weed Hygiene Inspection Form
    - Imported Materials Weed Hygiene Inspection Form (COV-000-EN-FOR-0008) is to be completed by the supplier for all imported earthen materials prior to mobilisation to site.
    - Imported materials will not be permitted to enter the area unless the Imported Materials Weed Hygiene Inspection has been completed by the supplier and endorsed by the Covalent Site Senior Executive (or delegate) prior to mobilisation to site.
    - If upon arrival to site a visual inspection by Covalent personnel identifies the imported materials to be non-compliant with the declarations made within the Imported Materials Weed Hygiene Inspection Form, then the supplier will be directed by the Covalent Site Senior Executive (or delegate) to return the imported materials to its point of origin.

The preventative measures above will ensure the risk of introduced flora from vehicles/machinery and imported earthen materials to the Restoration Site is minimised as far as practicable.

To note, the Imported Materials Weed Hygiene Inspection Form will also be applicable for any proposed transfer of earthen materials from within other areas of the Proposal (e.g. from recently cleared areas) to the Restoration Site. The purpose of the Imported Materials Weed Hygiene Inspection Form for this purpose will be to ensure that introduced flora from other locations within the Development Envelope are not inadvertently transferred into the Restoration Site.

Where infestations of introduced flora are identified within the Restoration Site or identified within other areas to supply earthen materials to the Restoration Site, infestations will be reported to the Covalent Environment Team. The management of infestations of introduced flora will be determined on a case-by-case basis by the Covalent Manager Environment and Approvals through one or a combination of:

- Removal of introduced flora by hand (preferred - applicable to small infestations)
- Chemical herbicide spray (applicable to significant infestations).

Any proposed use of chemical herbicide spray must ensure no application of herbicide - including 'spray drift' - to native vegetation, including specific regard to any in situ *Banksia dolichostyla*. Any proposed use of chemical herbicide spray will also be required to be approved for use by the Covalent Health & Safety Team, with the storage and handling of chemical herbicide sprays additionally subject to specific occupational safety requirements.

Where seedlings are used in the restoration, the seedlings will be visually inspected to ensure the soil contains no visible introduced flora. Where introduced flora are identified with the seedlings, the introduced flora will be removed from the soil by hand prior to use of the seedlings (note chemical herbicide spray will not be used on seedlings).

Periodic inspections of the Restoration Site for the presence/absence of introduced flora will be undertaken by the Covalent Environment Team. Where the periodic inspections identify the presence of introduced flora the location and extent of the infestation will be documented and a plan for the control of the infestation determined and implemented (consistent with the practices identified above).

The above hygiene procedures are generally consistent with the hygiene practices implemented for the Project and will ensure the risk of introduced flora to both the restored individuals and the extant population of *Banksia dolichostyla* is minimised.

To note, the above hygiene procedures will additionally minimise the potential risk of introducing any plant or soil diseases to within both the restored individuals and the extant population of *Banksia dolichostyla.*

### 4.4.1 Plant Material

Seeds will be collected from naturally occurring individuals of *Banksia dolichostyla* located within the Development Envelope (preferably ≤ 500 m of the Restoration Site). The use of seeds from the adjacent naturally occurring individuals will seek to ensure consistent genetic structuring between the restored individuals and the adjacent naturally occurring individuals.

Seeds will be collected in accordance with a Licence granted by DBCA under the BC Act. A collection target of 1,000 seeds is proposed, with the proposed seed usage details described within Table 4-2 (consistent with the Translocation proposal in Appendix D). Seed will be collected from multiple individuals (target ≥ 50 individuals) to ensure broad local genetic variation/representation.

As identified by Western Botanical (2020a), *Banksia dolichostyla* adjacent to the Restoration Site have been observed to be carrying significant amounts of fully formed fruits containing follicles with up to one seed per follicle; such that it is believed there is a sufficient natural seed resource available to supply the restoration. Routine testing by DBCA has indicated the seed to have good viability (pers. comm. Crawford A (Dr.) of DBCA cited in Western Botanical 2020a).

Subject to the number of seeds collected, a proportion of the *Banksia dolichostyla* seeds will be germinated into seedlings by a reputable seedling nursery and grown to approximately 1 year of age prior to planting (translocation). The remainder of the collected seed will be temporarily stored, with the collected seeds to be broadcast/planted in parallel with the seedlings planting.

Seed collection and the germination of seedlings is anticipated to be undertaken over several years (nominally 2 years, subject to the initial success of establishment), to enable an ongoing supply of seeds and seedlings of *Banksia dolichostyla* if supplementary planting is necessary to achieve the Completion Criteria (including contingency measures, if required).

**Table 4-2: Seed collection target *Banksia dolichostyla***

| Purpose | Number of Seeds |
|---|---|
| Target Seedlings (tubestock) | 400 |
| Target Direct Seeding | 400 |
| DBCA seed lodgement (20 %) | 200 |
| **Total** | **1,000** |

### 4.4.2 Site Preparation

The Restoration Site will be prepared by the following general methodologies (in sequential order):

- Removal of the airstrip hardstand materials (bitumen and gravel).
- Deep crosshatch ripping of the subsoil to break up any existing sub-soil compaction and facilitate water infiltration (consistent with the approach outlined by Western Botanical 2020a).
- Import and spreading of topsoil/subsoil mix from recently cleared areas from the Proposal to provide a growth medium and initial seed store (ideally this material will be direct transfer following clearing, without temporary stockpiling).
- Establishment and operation of the irrigation system (design to be confirmed as either broadcast spray or drip-feed).
- Signposting of the boundary of the Restoration Site to minimise the risk of inadvertent access by personnel or machinery.

During site preparation, the naturally occurring individuals of *Banksia dolichostyla* located adjacent to the Restoration Site will be visually demarcated (by flagging tape or other appropriate visual means) to ensure that site preparation activities (e.g. mechanical deep crosshatch ripping of the subsoil) do not impact the adjacent naturally occurring individuals of *Banksia dolichostyla*.

To note, subject to seed availability and resources, additional broadcast seeding (of multiple flora taxa) may also be undertaken within the Restoration Site to supplement the initial soil-stored seed in the topsoil/subsoil material.

### 4.4.3 Seedlings and Seeding

Seedlings will be physically planted within the Restoration Site in a randomised pattern (not plantation rows).

Seeds will either be broadcast seeded within the Restoration Site, or physically planted in a randomised pattern, subject to the availability of the collected *Banksia dolichostyla* seed resource. The number of seeds broadcast/planted will be noted to later allow for an assessment of the seeding germination rate.

Each restored individual of Ironcaps Banksia (whether from germinated seed or a planted seedling) will be marked with a numbered stake to allow for ease of field identification and data collection. Planted seedlings will be marked when initially planted, with germinants from seeds later marked when identified during monitoring. All seedlings will have seedling guards installed to minimise the potential for herbivore grazing.

### 4.4.4 Irrigation

The Restoration Site will be irrigated with fresh water for a period of 2 years to assist in the establishment of *Banksia dolichostyla* individuals. Following this irrigation period, the irrigation will cease, and the restored individuals allowed to persist in the absence of supplementary watering.

The irrigation system may remain, such as to allow for latter contingency measures (i.e. if additional watering is necessary for continued survival of restored individuals in the event of drought conditions, or to water additional plants).

To note, irrigation has proven a successful technique in the initial establishment and survival of other Threatened flora taxa in semi-arid environments (for example, refer to plot irrigation of *Darwinia masonii* (EPBC-V) cuttings as outlined within MGM 2015), and is therefore the preferred methodology over a non-irrigation option.

### 4.4.5 Rehabilitation Trials

It is noted that many flora restoration projects may establish a series of experimental treatments to trial the success of differing methodologies (e.g. establishment of seeds compared to seedlings and/or cuttings, fenced plots compared to unfenced plots, irrigated plots compared to non-irrigated plots); with a view that the trial information may inform a later and larger restoration project.

An experimental treatment approach is not proposed for *Banksia dolichostyla* due to the low number of individuals required to be established (minimum 69 individuals as per EPBC Act approval 2017/7950); rather, multiple well-established techniques for successful restoration are being adopted from inception (i.e. seeds plus seedlings, site fencing/barriers and irrigated).

### 4.4.6 Management Actions and Schedule

Table 4-3 identifies the key management actions and schedule for the restoration of *Banksia dolichostyla*.

The initial actions will be focussed on collecting seed materials necessary for the restoration, with following years involving implementation of the restoration works, monitoring and contingencies.

The timing of actions set out on Table 4-3 is based on calendar years, representing 1 January to 31 December. For example, the first actions are forecast to take 2 years, from 1 January 2024 to 31 December 2025 (Years 1 and 2).

It should be noted that the forecasted schedule does not preclude Covalent from commencing activities ahead of schedule where possible. Where an action is not undertaken/completed within the specified year, that action will be undertaken in subsequent years.

**Table 4-3 Management actions and schedule *Banksia dolichostyla***

| Calendar Years | Action |
|---|---|
| Year 1 and 2<br>2024 to 2025 | • Prepare and submit to DBCA a Translocation Proposal in accordance with the BC Act.<br>• Prepare and submit application to DBCA for a Licence to enable seed collection in accordance with the BC Act. Following approval, commence the collection of seeds (approximately September to December).<br>• If required, prepare and submit to Department of Mines, Petroleum and Exploration (DMPE) an application to enable works within mining tenure in accordance with the *Mining Act 1978* (WA).<br>• Collection of seed material.<br>• If timing permits, commence germination of seedlings.<br>• Reporting. |
| Year 2 and 3<br>2025 to 2026 | • Restoration Site preparation:<br>  ○ Demarcation of adjacent vegetation<br>  ○ Removal of airstrip hard cap<br>  ○ Crosshatch deep ripping.<br>• Site rehabilitation works (approximately March – April):<br>  ○ Spreading of topsoil/subsoil materials from mining area<br>  ○ Establishment and operation of irrigation system.<br>• Planting of seeds (early winter) and, if available, seedlings.<br>• Weed control, if necessary.<br>• Irrigation commences after planting.<br>• Environmental monitoring.<br>• Collection of additional seed material, if necessary.<br>• Germination of seedlings in nursery for infill planting in Year 3.<br>• Reporting. |
| Year 4<br>2027 | • Environmental monitoring.<br>• Irrigation continues.<br>• Weed control (if necessary).<br>• Supplementary seeding / seedling planting, if necessary.<br>• Reporting. |
| Year 5<br>2028 | • Environmental monitoring.<br>• Implementation of contingency actions, if necessary.<br>• Irrigation ceases.<br>• Reporting. |
| Year 6 on<br>2029 on | • Environmental monitoring.<br>• Implementation of contingency actions, if necessary.<br>• Reporting. |

### 4.4.7 Environmental Monitoring

For each restored individual of *Banksia dolichostyla* (whether from germinated seed or planted seedling) the following information will be recorded annually:

- Survival (number live/dead)
- Size (height/width)
- Health condition
- Reproductive status (flowering/fruiting/setting seed)
- Photograph
- GPS location (for future locating)

- Observations of health/growth constraints (e.g. grazing, weeds).

The purpose of the environmental monitoring will be to demonstrate if the Completion Criteria (see below) have been achieved. The formal annual monitoring identified above will be in addition to any opportunistic visual observations by Covalent's environmental personnel on site. The results of both the formal annual monitoring and the opportunistic visual observations will be reported and publicly available.

To note, following the implementation of this LOM FOS (i.e. once implementation of the Strategy has been completed), it is anticipated that opportunistic visual observations by Covalent environmental personnel on site may continue. The results of these further opportunistic visual observations may be reported to Government and the community as part of Covalent's broader environmental management for the Proposal, however, such further reporting is expressly not an extension of implementation of this FOS.

### 4.4.8 Completion Criteria

Table 4-4 identifies Completion Criteria for *Banksia dolichostyla*.

In summary, the Completion Criteria will be achieved where the target number of live individuals of *Banksia dolichostyla* is ≥ 69, and the individuals considered healthy for two consecutive years (after any irrigation has ceased). In addition, individuals must have reproductive capability observed (i.e. flowering, fruiting and/or seeding) to demonstrate that individuals are mature and self-sustaining (i.e. potentially produce second generation individuals).

It is anticipated that the restored individuals of *Banksia dolichostyla* will continue to survive and function as part of the naturally occurring *Banksia dolichostyla* population following the two years of active management.

Where monitoring indicates that the Completion Criteria are unlikely to be achieved, the monitoring results may be compared to the health condition of naturally occurring individuals adjacent to the Restoration Site (to determine if the poor health condition of the translocated individuals is also evident in the naturally occurring individuals or is an outcome of the translocation itself).

If the monitoring results indicate that the Completion Criteria are unlikely to be achieved, Covalent will implement Response Actions within the Restoration Site, which may include (as appropriate):

- Additional site preparation works;
- Additional seed collection, seeding and/or seedling planting; and/or
- Additional irrigation of seeds and seedlings.

The above Response Actions will be implemented as soon as practicable; however, action implementation will occur generally within 12 months of confirming the need for the Response Actions.

If implementation of the above Response Actions is not likely to result in the Completion Criteria being met, then Covalent will consult with DWER, DBCA and DCCEEW on other potential Response Actions which could be implemented. Other Response Actions could include, for example, a change to the location of the restoration works into areas of native vegetation known to support *Banksia dolichostyla* (i.e. supplement existing population within existing habitat). Under these circumstances, Covalent will review and revise this FOS and submit the strategy for re-approval.

**Table 4-4: Completion criteria *Banksia dolichostyla***

| Restoration Plan Objective | Completion Criteria | Completion Criteria Measurement | Response Actions |
|---|---|---|---|
| ≥ 69 individuals of *Banksia dolichostyla* established | ≥ 69 live individuals established | Number of live individuals | • Additional seed collection and seeding/seedling planting<br>• Soil analysis to determine any soil deficiencies and development of a remediation plan (soil amelioration or further soil preparation trials)<br>• Additional site works as required<br>• Additional irrigation<br>• Review of environmental conditions and investigate additional irrigation requirements |
| | Individuals are healthy, two consecutive years after irrigation has ceased). | Plant health will be measured as:<br>• Individual is live (not dead)<br>• New growth is present (e.g. new leaves or flowering, fruiting, seeding)<br>• Nil to little indication of leaf discolouration (which may indicate stress or disease)<br>• Little to nil indication of insect of herbivore damage. | |
| | Individuals are self-sustaining | Reproductive capability (i.e. flowering, fruiting, seeding) consistent with extant population. | |

### 4.4.9 Ongoing Management

Following the Completion Criteria being achieved and implementation of all actions under this FOS being completed, Covalent anticipates that ongoing management of the Restoration Site may occur as part of Covalent's broader environmental management for the Project. To note, the ongoing management of the Restoration Site is expressly not an extension of implementation of this FOS. These ongoing management measures within the Restoration Site may include:

- Inspection and maintenance of the fencing/barriers to provide for reduced herbivore grazing pressure; and / or
- Inspections for introduced flora, and the undertaking of introduced flora controls if necessary.

## 4.5 Financial Provisioning

All requirements associated with implementation of this FOS will be funded by Covalent.

Covalent will ensure that sufficient provision is made in corporate accounts to appropriately allow for funding of the implementation (including personnel and equipment), monitoring, management and reporting that is required by this FOS.

## 4.6 Reporting

Covalent will report to DWER on the implementation of this *Banksia dolichostyla* Offset Plan as part of the annual Compliance Assessment Report (CAR) required EP Act and EPBC Act conditions of approval.

The report will include an outline of the progress and key outcomes from the implementation of the restoration works, including the results of the environmental monitoring.

## 4.7 Timeline and Responsibilities

Table 4-3 in Section 4.4.6 identifies that implementation actions and the schedule for implementation.

Consistent with the environmental approval conditions for the Proposal, Covalent will be responsible for the implementation and funding of the management, monitoring and reporting actions outlined within this FOS.

## 4.8 Risks and Contingency Actions

Risk factors and contingency actions relating to the implementation of this FOS are described in Table 4-5.

Where a risk Trigger is identified, the list of Contingency Actions will be considered, and the appropriate Contingency Action(s) identified and implemented. Contingency Actions will be taken as soon as practical; however, action implementation will be targeted to occur within 12 months of confirming the Contingency Action requirement.

**Table 4-5: Risk factors and contingency actions *Banksia dolichostyla***

| Risk Factor | Trigger | Contingency Actions |
|---|---|---|
| Nil or insufficient seed germination | Year 1 – 2: [2024 to 2025]<br>○ Germination of < 80 % of seed<br>Year 2-3: [2025 to 2026]<br>○ Seed and tubestock survival < 70 % following one year after germination | • Review initial germination and survival numbers to determine if further seed collection is required.<br>• If required, re-collect seed and undertaken an investigation into potential seed germination failure and survival.<br>• Consider other methods of germination to rehabilitate the species.<br>• Consider alternate treatments.<br>• Liaise with experts (e.g. Botanic Gardens and Parks Authority research division) to develop further trials trial.<br>• Consider supplementary planting of seedlings. |
| Nil or insufficient establishment | Year 2-4: [2025 to 2027]<br>• Survival of < 50 % of each years' plants beyond their first summer.<br>• Survival of < 40 % of all plants planted beyond their first three summers. | • Consider other methods of germination to rehabilitate the species.<br>• Consider alternate treatments.<br>• Liaise with experts (e.g. Botanic Gardens and Parks Authority research division) to develop further trials trial.<br>• Consider supplementary planting of seedlings. |
| Ongoing survival without irrigation does not occur | Year 5+: [2028 +]<br>• Survival of < 30 % of all plants planted.<br>• < 80 % of surviving plants are producing viable seed at a rate | |

| Risk Factor | Trigger | Contingency Actions |
|---|---|---|
| | similar to that of plants in natural populations.<br>• Plant survivorship and fully formed (effectively pollinated) fruit production is statistically less than that of the adjacent established *Banksia dolichostyla* in undisturbed vegetation.<br>Year 10+: [2032 +]<br>• *Banksia dolichostyla* healthy individual average heights < 1 m in height after 10 years. | |
| Clearing impacts to established individuals | The Restoration Site is protected through the FEZ (currently conditioned under MS 1199). | |
| Project related indirect impacts to established individuals | The Restoration Site is protected through the FEZ (currently conditioned under MS 1199). | |

## 4.9 Long-term Conservation

Covalent notes that mitigation, management and offset measures should focus on rehabilitation and protection in perpetuity of existing flora habitat and enhancement of natural regeneration.

Restoration of *Banksia dolichostyla* will occur within the Development Envelope adjacent to the naturally occurring population of *Banksia dolichostyla*; such that the restoration will enhance the extant population of this taxon.

Where *Banksia dolichostyla* are successfully restored, Covalent suggests that long-term protection of the restored individuals (i.e. beyond the Project mining life) could be ensured through a Section 19 exemption under the *Mining Ac 1978*; being a mechanism whereby the State Minister for Mines may exclude certain land areas from mining (and thereby prevent any future clearing of the restored individuals by mining in the future). The potential for application of Section 19 (or other alternate protection mechanism) will be subject to future consultation with EPA, DBCA and DMPE. It would be intended that the area of the Section 19 exemption would apply to the Restoration Site (or part thereof); not the whole of the Development Envelope. Alternatively, future consultation with EPA, DBCA and DMPE may identify that further protection mechanisms may not be necessary noting that the underlying land tenure (Unallocated Crown Land) is ultimately controlled by the State.

To note, whilst Condition 4 7(6) of the MS 1199 approval contemplated the Restoration Site being ceded to the State Government for the purpose of management for conservation, or by an equivalent conservation mechanism (e.g. a Conservation Covenant), such other measures are not available as the underlying lane tenure is Unallocated Crown Land that is already controlled by the State.

In addition to the above, the restored individuals of *Banksia dolichostyla* will be protected by the relevant provisions within the BC Act and the EPBC Act which control the removal of listed 'Threatened' species, as well as the provisions of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (WA) which control the clearing of all native flora.

# 5 Public Availability

Current conditions of approval require that all validated environmental data, management plans and reports relevant to the assessment and implementation of the Proposal be made publicly available.

Following approval of this FOS, Covalent will make this document publicly available through its public website at: www.CovalentLithium.com.

Further, the progressive implementation of this LOM FOS will be described within the annual Compliance Assessment Reports prepared under conditions of approval and will be made publicly available through Covalent's public website.

The LOM assessment may result in a new Ministerial Statement superseding the current MS 1199; and additional conditions issued under EPBC Act assessment for 2023/09711 and/or variation to EPBC 2017/7950 (regarding approved disturbance to number of individuals of *Banksia dolichostyla*). Where required, this plan may be updated to provide current conditions references.

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# 7 Declaration of Accuracy

I declare that:

To the best of my knowledge, all the information contained in, or accompanying the Earl Grey Lithium Project Threatened Fauna Offset Strategy (Revision 3) is complete, current and correct.

I am duly authorised to sign this declaration on behalf of the approval holder. I am aware that:

a. Section 490 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) makes it an offence for an approval holder to provide information in response to an approval condition where the person is reckless as to whether the information is false or misleading.

b. Section 491 of the EPBC Act makes it an offence for a person to provide information or documents to specified persons who are known by the person to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth) where the person knows the information or document is false or misleading.

c. The above offences are punishable on conviction by imprisonment, a fine or both.

Covalent shall implement the latest version of the TFOS.

Signed

Full Name Anthea Pate

Manager Environment and Approvals

Organisation Covalent Lithium Pty Ltd

Date: 21 October 2025

## Appendix A EPBC Offset Calculator

**Offsets Assessment Guide**

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

| Matter of National Environmental Significance | |
|---|---|
| Name | Banksia dolichostyla |
| EPBC Act status | Vulnerable |
| Annual probability of extinction<br>Based on IUCN category definitions | 0.1% |

| Key to Cell Colours |
|---|
| User input required |
| Drop-down list |
| Calculated output |
| Not applicable to attribute |

**Impact calculator**

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | | Units | Information source |
|---|---|---|---|---|---|---|
| *Ecological communities* | | | | | | |
| Area of community | No | | Area | | | |
| | | | Quality | | | |
| | | | Total quantum of impact | 0.00 | | |
| *Threatened species habitat* | | | | | | |
| Area of habitat | No | | Area | | | |
| | | | Quality | | | |
| | | | Total quantum of impact | 0.00 | | |
| **Protected matter attributes** | **Attribute relevant to case?** | **Description** | **Quantum of impact** | | **Units** | **Information source** |
| Number of features<br>e.g. Nest hollows, habitat trees | No | | | | | |
| Condition of habitat<br>Change in habitat condition, but no change in extent | No | | | | | |
| *Threatened species* | | | | | | |
| Birth rate<br>e.g. Change in nest success | No | | | | | |
| Mortality rate<br>e.g Change in number of road kills per year | No | | | | | |
| Number of individuals<br>e.g. Individual plants/animals | Yes | Banksia dolichostyla | 12 | | Count | Individuals indirectly and directly impacted by LOM proposal |

**Offset calculator**

| Protected matter attributes | Attribute relevant to case? | Total quantum of impact | Units | Proposed offset | Time horizon (years) | | Start area and quality | | Future area and quality without offset | | Future area and quality with offset | | Raw gain | Confidence in result (%) | Adjusted gain | Net present value (adjusted hectares) | % of impact offset | Minimum (90%) direct offset requirement met? | Cost ($ total) | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Ecological Communities* | | | | | | | | | | | | | | | | | | | | |
| Area of community | No | | | | Risk-related time horizon (max. 20 years) | | Start area (hectares) | | Risk of loss (%) without offset<br>Future area without offset (adjusted hectares) | 0.0 | Risk of loss (%) with offset<br>Future area with offset (adjusted hectares) | 0.0 | | | | | | | | |
| | | | | | Time until ecological benefit | | Start quality (scale of 0-10) | | Future quality without offset (scale of 0-10) | | Future quality with offset (scale of 0-10) | | | | | | | | | |
| *Threatened species habitat* | | | | | | | | | | | | | | | | | | | | |
| Area of habitat | No | | | | Time over which loss is averted (max. 20 years) | | Start area (hectares) | | Risk of loss (%) without offset<br>Future area without offset (adjusted hectares) | 0.0 | Risk of loss (%) with offset<br>Future area with offset (adjusted hectares) | 0.0 | | | | | | | | |
| | | | | | Time until ecological benefit | | Start quality (scale of 0-10) | | Future quality without offset (scale of 0-10) | | Future quality with offset (scale of 0-10) | | | | | | | | | |
| **Protected matter attributes** | **Attribute relevant to case?** | **Total quantum of impact** | **Units** | **Proposed offset** | **Time horizon (years)** | | **Start value** | | **Future value without offset** | | **Future value with offset** | | **Raw gain** | **Confidence in result (%)** | **Adjusted gain** | **Net present value** | **% of impact offset** | **Minimum (90%) direct offset requirement met?** | **Cost ($ total)** | **Information source** |
| Number of features<br>e.g. Nest hollows, habitat trees | No | | | | | | | | | | | | | | | | | | | |
| Condition of habitat<br>Change in habitat condition, but no change in extent | No | | | | | | | | | | | | | | | | | | | |
| *Threatened species* | | | | | | | | | | | | | | | | | | | | |
| Birth rate<br>e.g. Change in nest success | No | | | | | | | | | | | | | | | | | | | |
| Mortality rate<br>e.g Change in number of road kills per year | No | | | | | | | | | | | | | | | | | | | |
| Number of individuals<br>e.g. Individual plants/animals | Yes | 12 | Count | 69 | 10 | | 0 | | 0 | | 69 | | 69 | 60% | 41.40 | 40.58 | 338.18% | Yes | | |

# Appendix B DWER Offset Calculator

Revised 20/10/2025

Key:
- Data to be entered
- Drop-down selection
- Automatically-generated scores (Or, if appropriate, manual data entry permitted)

***Area / feature*** **(Impact site)**

| Conservation significance determination for the environmental value impacted | | |
|---|---|---|
| Conservation significance | Description | Banksia dolichostyla |
| | Type of environmental value | Species (flora/fauna) |
| | Conservation significance of environmental value | Rare/threatened Species - vulnerable |
| | Conservation significance score | 0.2% |

***Feature*** **(impact site)**

| Part A: Significant impact calculation *Feature* | | | |
|---|---|---|---|
| Significant impact | Description | Quantum of impact | |
| | Loss of 14 individuals | Type of feature | Number |
| | | Threatened flora individuals | 12.00 |
| | | Total quantum of impact | 12.00 |

| Part B: Rehabilitation credit calculation *Feature* (onsite) | | | | | |
|---|---|---|---|---|---|
| Rehabilitation credit | Description | Start number (of type of feature) | 0.00 | Time until ecological benefit (years) | 10.00 |
| | Translocation and seeding of individuals to 3 ha restoration site | Future number WITHOUT rehabilitation | 0.00 | Confidence in rehabilitation result (%) | 60.0% |
| | | Future number WITH rehabilitation | 69.00 | Rehabilitation credit | 40.58 |

| Part C: Significant residual impact calculation *Feature* | | |
|---|---|---|
| Significant residual impact | Total quantum of impact | 12.00 |
| | Rehabilitation credit | 40.58 |
| | Significant residual impact | -28.58 |

| | | | |
|---|---|---|---|
| Environmental value (step 1) | Banksia dolichostyla | Significant impact (step 2, part A) | 12.00 |
| | | Rehabilitation credit (step 2, part B) | 40.58 |
| | | Significant residual impact (step 2, part C) | -28.58 |

(SCROLL DOWN FOR FEATURE CALCULATION)

***Feature*** **(offset site)**

| Offset calculation *Feature* | | | | | | | |
|---|---|---|---|---|---|---|---|
| Offsets calculation | Description | Start number (of type of feature) | 0.00 | Time until ecological benefit (years) | 10.00 | Offset value | 40.58 |
| | New population maintained within restoration location (old airstrip) | Future number WITHOUT offset | 0.00 | Confidence in offset result (%) | 60.0% | | -142.0% |
| | | Future number WITH offset | 69.00 | | | | |
| | | | | | | OFFSET ADEQUATE? | YES |

# Appendix C Approved Conservation Plan for Ironcaps Banskia *Banksia sphaerocarpa var. dolichostyla*

# Covalent Lithium

# Earl Grey Lithium Project

# Conservation Plan for Ironcaps Banksia *Banksia sphaerocarpa* var. *dolichostyla*

# EPBC Approval 2017/7950

| Covalent Lithium Project | | | | | |
|---|---|---|---|---|---|
| **Document control** | | | | | |
| **Rev** | **Originator** | **Reviewer** | **Date** | **Covalent Approval** | **Date** |
| 0 | S Hawkins;<br>L Whitley | K Moyle | 2/12/20 | A Pate | 2/12/20 |
| 1 | L Whitley | A Pate | 13/1/20 | A Pate | 13/1/20 |
| 2 | L Whitley | A Pate | 1/2/21 | A Pate | 1/2/21 |

# Contents

## Tables



## Figures



## Appendices

## Declaration of Accuracy

I declare that:

1. To the best of my knowledge, all the information contained in, or accompanying this Management Plan (*Earl Grey Lithium Project Conservation Plan for Ironcaps Banksia Banksia sphaerocarpa var. dolichostyla Revision 2*) is complete, current and correct.

2. I am duly authorised to sign this declaration on behalf of the approval holder.

3. I am aware that:

   a. Section 490 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence for an approval holder to provide information in response to an approval condition where the person is reckless as to whether the information is false or misleading.

   b. Section 491 of the EPBC Act makes it an offence for a person to provide information or documents to specified persons who are known by the person to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth) where the person knows the information or document is false or misleading.

   c. The above offences are punishable on conviction by imprisonment, a fine or both.

Signed DocuSigned by: Anthea Pate FDBBFDD8035F44E...

Full Name Anthea Pate
Manager Environment and Approvals

Organisation Covalent Lithium Pty Ltd

Date 3/2/2021

# 1. Introduction

## 1.1 Project Description

Covalent Lithium (Covalent), a joint venture between Wesfarmers Limited and Sociedad Química y Minera (SQM), are proposing the development of the Earl Grey Lithium Project (the 'Project'), located approximately 105 kilometres (km) south of the town of Southern Cross, in Western Australia. The Project will comprise open cut mining and processing of lithium ore, with transport of a lithium concentrate to an existing port for export to overseas markets or a future potential lithium refinery.

The Project encompasses a total area of 667 hectares (ha) (the 'Development Envelope', Figure 1.1), comprising approximately 386 ha of native vegetation and 281 ha of cleared/disturbed areas from a former mining operation. The additional clearing required for the Project is required for an expansion of the existing mine pit, waste materials landforms and ancillary infrastructure.

The Project was referred under Section 68 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in May 2017 (Covalent Lithium 2017) for assessment of its environmental effects, including to the following 'Listed Threatened Species':

- *Banksia sphaerocarpa* var. *dolichostyla* (Ironcaps Banksia) (EPBC 'Vulnerable')

The Project was subsequently determined by the a delegate of the Federal Minister for the Environment to be a 'Controlled Action' requiring assessment and approval, with approval of the Project under the EPBC Act granted in February 2020 through the EPBC 2017/7950 approval (DAWE 2020).

## 1.2 Purpose of this Conservation Plan

The Project is expected to remove 2 known individuals of *B. sphaerocarpa* var. *dolichostyla*, with a further 67 known individuals located in close proximity (≤ 50 metres (m)) which may potentially be subject to indirect impacts from the Project.

In order to mitigate direct and potential indirect impacts of the Project to *B. sphaerocarpa* var. *dolichostyla*, Condition 5 of the EPBC 2017/7950 approval (as amended December 2020) requires the preparation and implementation of an 'Ironcaps Banksia Conservation Plan', with the objective to:

- Prevent impacts to *B. sphaerocarpa* var. *dolichostyla*
- Establish at least 69 *B. sphaerocarpa* var. *dolichostyla* plants within the Development Envelope.

This Conservation Plan has been prepared to meet the requirements of Condition 5 of the EPBC 2017/7950 approval for Project impacts to *B. sphaerocarpa* var. *dolichostyla*. The conditions of EPBC 2017/7950 approval are detailed in Table 1.2.

**Table 1.1: EPBC 2017/7950 approval condition requirements**

| Condition # | Requirement | Document reference |
|---|---|---|
| 5 | To mitigate significant impacts to the Ironcaps Banksia (Banksia sphaerocarpa var. dolichostyla), the approval holder must prevent impacts to Ironcaps Banksia other than as permitted under Condition 2 and, within 10 years from commencement of the action, establish at least 69 Ironcaps Banksia plants within the development envelope.<br><br>The approval holder must submit for the Minister's written approval an Ironcaps Banksia Conservation Plan (the Plan) to specify how it will achieve these requirements. The Plan must be prepared consistent with the Department's Environmental Management Plan Guidelines, and must: | This document |
| a) | to show how the approval holder will prevent impacts to Ironcaps Banksia, other than as permitted under Condition 2: | This document |
| i. | include maps that clearly show the location of Ironcaps Banksia within the development envelope and in relation to native vegetation to be cleared or otherwise disturbed; | Figure 3.1 |
| ii. | specify the total number and location of each Ironcaps Banksia plant within the development envelope; | Figure 3.1<br>Section 3.2 |
| iii. | identify potential impacts to Ironcaps Banksia from the action, and describe management measures to avoid and/or mitigate those impacts and corrective actions to be implemented if impacts are detected; | Section 3.3<br>section 3.4<br>Table 3.1 |
| iv. | include management triggers for detecting potential impacts to Ironcaps Banksia from the action; | Section 3.5 |
| v. | demonstrate that management measures are consistent with relevant approved conservation advices, recovery plans and threat abatement plans; | Table 1.2 |
| b) | to show how the approval holder will, within 10 years from commencement of the action, establish at least 69 Ironcaps Banksia plants within the development envelope: | Section 3.6 |
| i. | specify a portion of the development envelope, that is contained within an exclusion zone specified in Condition 6-1 of the Western Australian approval, in which Ironcaps Banksia can be established and protected; | Section 4.2 |
| ii. | include shapefiles to clearly define the location and boundaries of the Ironcaps Banksia establishment site (s), coordinates of the boundary points in decimal degrees, and the area of the establishment site (s) in hectares; | Attachment 1 |
| iii. | include establishment criteria for Ironcaps Banksia plants; | Section 4.5<br>Table 4.2 |
| iv. | include an analysis of the potential risks that may prevent Ironcaps Banksia plants being established and self-sustaining at the proposed establishment site(s); | Section 4.8<br>Table 4.4 |
| v. | describe management measures to achieve the establishment criteria, and corrective actions to be implemented if establishment criteria have not been, or are unlikely to be, achieved or maintained; | Section 4.3<br>Section 4.5<br>Table 4.2 |
| vi. | describe how establishment criteria will be maintained for the period of approval; | Section 4.4<br>Section 4.5<br>Table 4.2 |

| Condition # | Requirement | Document reference |
|---|---|---|
| c) | include a program that monitors the health of Ironcaps Banksia plants and is designed to detect management triggers and attainment of establishment criteria; | Section 4.7<br>Section 4.5<br>Table 4.2<br>Table 4.3<br>Section 4.8<br>Table 4.4 |
| d) | contain a schedule for evaluating and reporting, at least annually, on the health of Ironcaps Banksia plants, the detection of management triggers, progress against establishment criteria, and the effectiveness of management measures; and | Section 4.6<br>Section 4.5<br>Table 4.2 |
| e) | include timeframes for implementing corrective actions. | Section 4.8 |
| | The approval holder must not commence the action until the Plan is approved by the Minister in writing. The Plan must be implemented at least until the end date of the period of effect of the approval. | As required |

This Conservation Plan has been drafted consistent with the requirements of the DAWE (2014) document '*Environmental Management Plan Guidelines*', the DAWE (2008) document '*Approved Conservation Advice for Banksia sphaerocarpa var. dolichostyla (Ironcaps Banksia)'*, as well as having regard to the technical guidance provided by relevant experts in botany, mining and ecological restoration processes. Recovery priorities for this species and the priorities this strategy addresses are described in Table 1.2.

**Table 1.2: Offset Strategy alignment with *Approved Conservation Advice for Banksia sphaerocarpa var. dolichostyla***

| Recovery Priority | Conservation Plan alignment |
|---|---|
| Research Priorities | |
| • Design and implement a monitoring program, or, if appropriate, support and enhance existing programs. | A monitoring programme for indirect impacts to individuals and established individuals has been established (Section 3.6 and Section 4.7). |
| • More precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes. | Regional surveys to identify additional locations have assisted in determining *Banksia sphaerocarpa var. dolichostyla* distribution (Section 2.3). Restoration plan and ongoing monitoring (Section 3.6 and Section 4.7) will assist in determining ecological requirements and impacts of threatening processes. |
| • Investigate appropriate fire regimes for Ironcaps Banksia to allow maturation of individuals and promote seed germination. | Restoration plan and ongoing monitoring (Section 3.6 and Section 4.7) will assist in determining appropriate fire regimes. |
| Habitat Loss, Disturbance and Modification | |
| • Monitor known populations to identify key threats. | Ongoing monitoring (Section 3.6 and Section 4.7) will assist in determining impacts of threatening processes. |
| • Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary. | Restoration plan and ongoing monitoring (Section 3.6 and Section 4.7) will assist in determining effectiveness of management actions. |
| • Minimise adverse impacts from land use at known sites. | Impact prevention management measures (Table 3.1) will assist in minimising impacts. |
| • Identify populations of high conservation priority. | Regional surveys (Section 2.3) to identify additional locations have identified high conservation priority populations within the Development Envelope. |

| Recovery Priority | Conservation Plan alignment |
|---|---|
| • Ensure mining exploration, mining, road widening and maintenance activities involving substrate or vegetation disturbance in areas where Ironcaps Banksia occurs do not adversely impact on populations. | Impact prevention management measures (Table 3.1) will assist in minimising impacts. |
| • Investigate formal conservation arrangements such as the use of covenants, conservation agreements or inclusion in reserve tenure. | The restoration site and majority of individuals within Development Envelope have Vegetation Exclusion Zones established (Section 3.2; Table 3.1). |
| • Manage any changes to hydrology that may result in changes to the water table levels, increased run-off or salinity. | Impact prevention management measures (Table 3.1) will assist in minimising impacts. |
| Fire | |
| • Provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plans, risk register and/or operation maps. | Impact prevention management measures (Table 3.1) will assist in minimising impacts. |
| Invasive weeds | |
| • Identify and remove weeds in the local area, which could become a threat to the species, using appropriate methods. | Weed surveys have occurred within the Development Envelope and ongoing monitoring (Section 3.6) will occur. |
| • Manage sites to prevent introduction of weeds in the local area, which could become a threat to Ironcaps Banksia, using appropriate methods. | Impact prevention management measures (Table 3.1) will assist in minimising impacts from weeds. |
| Enable Recovery of Additional Sites and/or Populations | |
| • Undertake appropriate seed collection and storage. | Restoration Plan includes seed collection (Section 4.3.1), as per consultation with DBCA. |
| • Investigate options for linking, enhancing or establishing additional populations. | Restoration Plan includes restoration of a previously disturbed area within a known population (Section 4.2). |
| • Implement national translocation protocols if establishing additional populations is considered necessary and feasible. | The Restoration Plan and associated scientific evidence will support any further translocations. |

## 1.3 Stakeholder Consultation

This Conservation Plan has been informed by consultation between Covalent and external stakeholders and regulators, including DAWE. A composite register of consultation with respect to the protection and restoration of *B. sphaerocarpa* var. *dolichostyla* is provided in Appendix A.

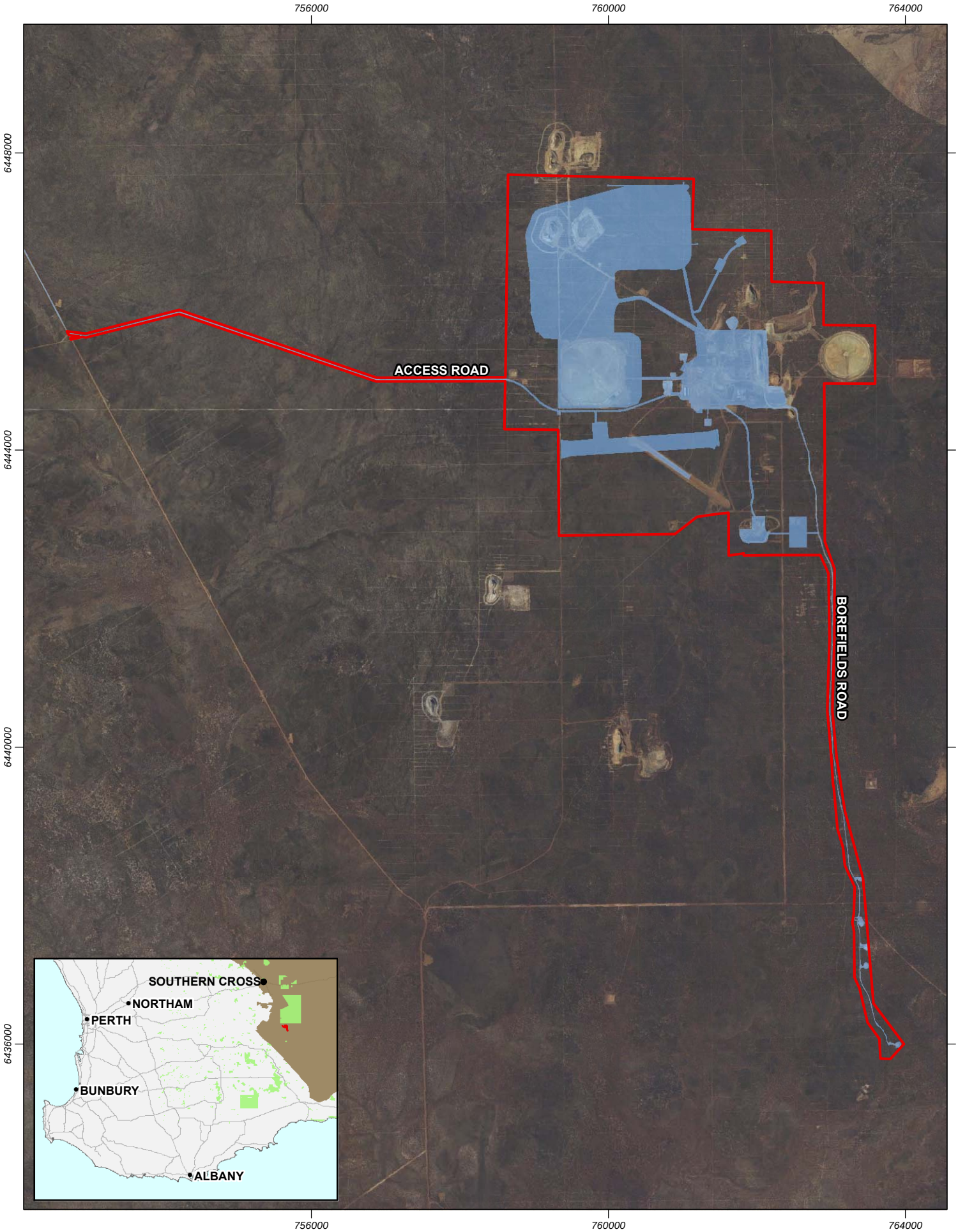


**Figure 1.1: Earl Grey Lithium Project Development Envelope**

N

Scale 1:65,000 at A4

0 500 1,000 m

Coordinate System: GDA 1994 MGA Zone 50

Date: 13/11/2020

**Legend**

- Development envelope
- Greater Western Woodland boundary
- Proposed layout

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Service Layer Credits: SLIP Public Services Locate Imagery 2020. Client: Covalent Lithium. . Created by: cthatcher

# 2. *Banksia sphaerocarpa* var. *dolichostyla*

## 2.1 Description

*Banksia sphaerocarpa* var. *dolichostyla*, also known as 'Ironcaps Banksia', is a dense-canopied shrub or small tree to 4 metres tall with bluish-green and narrowly linear leaves. Flower heads are golden and spherical, and fruiting cones are spherical with often crowded follicles. *Banksia sphaerocarpa* var. *dolichostyla* differs from other related *Banksia* taxa (*B. sphaerocarpa* var. *caesia* and *B. sphaerocarpa* var. *sphaerocarpa*) because of its longer floral whorl and its longer pistil (Brown *et al.* 1998 cited in DAWE 2008).

Images of *B. sphaerocarpa* var. *dolichostyla* are presented in Figure 2.1.

**Figure 2.1: *Banksia sphaerocarpa* var. *dolichostyla* Growth Form and Inflorescence** (images by Angus D and Gooding H in Strategen 2019)

## 2.2 Conservation Status

*Banksia sphaerocarpa var. dolichostyla* was declared a Listed Threatened Species of flora at the level of 'Vulnerable' (EPBC-V) under the EPBC Act in July 2000, as assessed using criteria generally consistent with that outlined by International Union for Conservation of Nature (IUCN) (IUCN 2012 as amended). DAWE (2008) has additionally prepared 'Conservation Advice' for *B. sphaerocarpa* var. *dolichostyla* to identify potential threats and outline the key management actions to ensure its long-term conservation.

In addition to the listing under the EPBC Act, *B. sphaerocarpa var. dolichostyla* has also been declared as 'Threatened Flora' under the State *Biodiversity Conservation Act 2016* (WA) (under the former *Wildlife Conservation Act 1950* (WA)) (WA Minister for Environment 2018).

## 2.3 Distribution and Habitat

*Banksia sphaerocarpa* var. *dolichostyla* has a linear distribution of approximately 70 kilometres, extending from Mount Holland in the north to South Ironcap in the south (Western Botanical 2020). The *Banksia sphaerocarpa* var. *dolichostyla* population comprises >18,300 individuals across 4 locations.

*Banksia sphaerocarpa* var. *dolichostyla* grows on iron-capped hills and rises on ironstone (lateritic) soil profiles, within associated vegetation of low woodland and low shrubland. Associated vegetation species include *Banksia* spp. and *Allocasuarina* spp. (George 1981, Patrick & Hopper 1982, Taylor & Hopper 1988, Hopper *et al.* 1990, Mollemans *et al.* 1993 and George 1999 all cited in DAWE 2008).

*Banksia sphaerocarpa* var. *dolichostyla* is one of several variants of the *Banksia sphaerocarpa* group (comprising 6 taxa), which have a broad distribution of approximately 700 km from Geraldton in the north to Albany in the south, and eastwards into the Goldfields region. The *Banksia sphaerocarpa* group occurs across a variety of landforms, vegetation types and soil types.

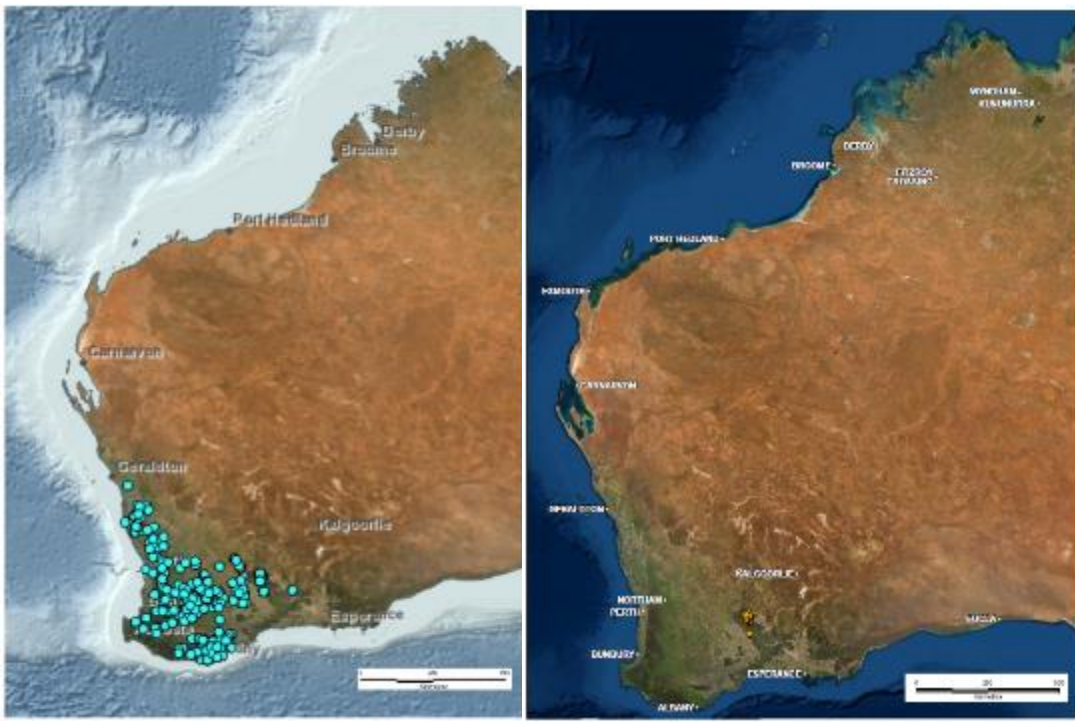


**Figure 2.2: *Banksia sphaerocarpa* Group Distribution (left) and *Banksia sphaerocarpa* var. *dolichostyla* Distribution (right)** (adapted from DBCA 2020a, 2020b)

## 2.4 Ecology

As outlined by Covalent Lithium (2019), individuals of *B. sphaerocarpa* var. *dolichostyla* recorded by field surveys were considered generally to be in an 'Excellent' health condition. Individuals ranged from recruiting juveniles though to large mature adult plants and included recruitment within previously burnt and disturbed areas. Based on field observations it was considered *B. sphaerocarpa* var. *dolichostyla* may be a good candidate for restoration in areas with suitable soils. Whilst no previously documented attempts for restoration of *B. sphaerocarpa* var. *dolichostyla* are known, multiple examples of restoration of other taxa in the *Banksia* genus have been well documented

in a variety of habitats (for example, refer to DBCA 2016; Murdoch University 2008, Brundrett *et al.* 2020).

## 2.5 Threats

The main threats to *B. sphaerocarpa* var. *dolichostyla* include direct removal through mining/exploration, cutting of survey lines, inappropriate fire regimes, weed invasion, changed hydrology, salinisation and fragmentation of locations (Mollemans *et al.* 1993 and NLWRA 2002 both cited in DAWE 2008).

Mining for gold was undertaken at Mt Holland (the site of the Project) between 1988 and 2002, for which the number of *B. sphaerocarpa* var. *dolichostyla* individuals previously removed has not been quantified.

Observations by botanists from Western Botanical (2020 unpublished) and Mattiske (2019) indicated that retained individuals bordering the previous mine operations were in good health; indicating that individuals of *B. sphaerocarpa* var. *dolichostyla* may perhaps be tolerant to indirect impacts from adjacent land disturbance (e.g. dust) and/or that individuals may have a capacity to recover from indirect impacts over time. *Banksia sphaerocarpa* var. *dolichostyla* has been evidenced to re-sprout after fire.

# 3. Impact Prevention

## 3.1 Objective

The objective of this section of the Conservation Plan is:

- prevent unauthorised direct and potential indirect effects of the Project to *B. sphaerocarpa* var. *dolichostyla*

Accordingly, the management and monitoring measures proposed by Covalent are to ensure the impact prevention objectives of this Conservation Plan are met.

## 3.2 Location and Distribution

The Project has been designed to minimise direct and indirect loss of *B. sphaerocarpa* var. *dolichostyla* to the maximum extent practicable. A total of 5,339 individuals of *B. sphaerocarpa* var. *dolichostyla* occur within the 'Development Envelope', of which 5,238 individuals are protected within designated 'Vegetation Exclusion Zones' (VEZ) (excluded from mine operations) for the life of approval.

The VEZ's are a requirement under the Western Australian Ministerial Statement 1118. The VEZs are shown with spatial data on file with the Department of Water and Environmental Regulation (DWER). The Ministerial Statement has the following conditions:

- Ensuring no proposal-related direct or adverse indirect impacts to flora and vegetation within the VEZs
- Ensure a Flora and Vegetation Environmental Management Plan is developed, approved and implemented. The Flora and Vegetation Environmental Management Plan includes trigger and threshold criteria to ensure no proposal-related impact to the VEZs occurs.
- Reporting and investigations of any threshold criteria exceedance of the Flora and Vegetation Environmental Management Plan

The Project is approved to remove at most 2 known individuals within the indicative 'Project Footprint' (clearing area), with a further 67 known individuals located in close proximity (≤ 50 m) which may have the potential to be subject to indirect impacts.

Figure 3.1 identifies the location of the Development Envelope and the indicative Project Footprint in relation to the recorded locations of *B. sphaerocarpa* var. *dolichostyla*. The locations of Vegetation Exclusion Zones for the protection of *B. sphaerocarpa* var. *dolichostyla* are also identified. The locations of each *B. sphaerocarpa* var. *dolichostyla* individuals are detailed in Appendix B.

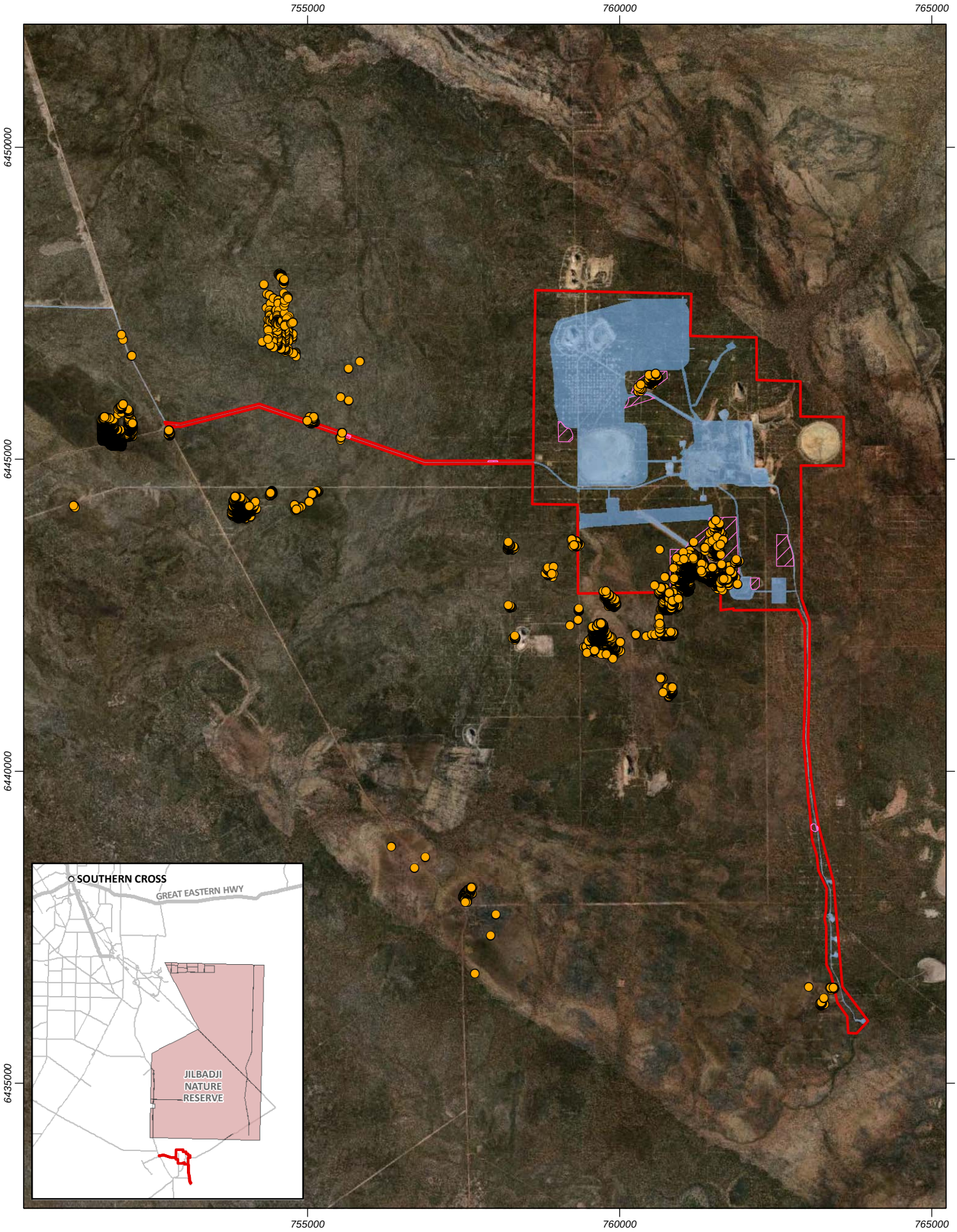


**Figure 3.1: Development Envelope, Vegetation Exclusion Zones, Project Footprint and Locations of *Banksia sphaerocarpa var. dolichostyla***

N

Scale 1:77,270 at A4

0 1 2 km

Coordinate System: GDA 1994 MGA Zone 50

Date: 2/12/2020

**Legend**

- Development envelope
- Proposed layout
- Vegetation exclusion zones

Flora species

- *Banksia sphaerocarpa* var. *dolichostyla*

covalent LITHIUM

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## 3.3 Potential Impacts

As outlined by the DAWE (2008) document '*Approved Conservation Advice for Banksia sphaerocarpa var. dolichostyla (Ironcaps Banksia)'*, the potential impacts (risks) to *B. sphaerocarpa* var. *dolichostyla* relevant to the Project may include:

- Direct effects:
  - clearing for mining operations:
- Potential indirect effects may include:
  - fire
  - introduction / spread of weeds and dieback (*Phytophthora cinnamomi*)
  - changed hydrology / salinisation
  - fragmentation

In addition, assessment of the Project by the State Environmental Protection Authority (EPA) (EPA 2019) identified the potential indirect effects may include:

  - dust generation; and
  - spills of hydrocarbons or hypersaline water.

Whilst noting 5,339 individuals of *B. sphaerocarpa* var. *dolichostyla* occur within the broader 'Development Envelope', the risk of the Project to *B. sphaerocarpa* var. *dolichostyla* is considered to generally be limited to:

- 2 individuals to be removed (direct effect); and
- 67 individuals in close proximity (≤ 50 m) (i.e. potential indirect effect).

## 3.4 Management Measures

Table 3.1 identifies the potential impacts, potential risk associated with the management objective to *B. sphaerocarpa* var. *dolichostyla* and proposed management actions to ensure the protection of the retained *B. sphaerocarpa* var. *dolichostyla*.

To note, many of the monitoring and management measures are also applicable to the protection of native vegetation generally.

**Table 3.1: Management Actions for Potential Impacts to the Ironcaps Banksias**

| Management Objective | Management Action | Management targets | Monitoring | Risk Rating |
|---|---|---|---|---|
| Direct Impacts | | | | |
| No proposal related direct impact to flora and vegetation within a VEZ | Avoidance<br>o implementation of an internal clearing permit procedure<br>o implementation of an internal procedure limiting access to VEZs by foot only or only by car where there is an existing track.<br>o VEZs to be delineated with flagging tape, physical barrier, signage or similar to alert all personnel of their location<br>o Inductions of all site personnel to include information on the location of VEZs, management targets, measures and expectations | o No unauthorised clearing within the Development Envelope or VEZs.<br>o No unauthorised access to a VEZ. | o Clearing register.<br>o Survey records of all clearing undertaken during operation of the Project. | Low – avoidance of VEZ and associated management actions will minimise risk of direct impacts |
| Indirect Impacts | | | | |
| Minimise dust deposition on vegetation from mining and related activities | The Proponent will minimise dust deposition on vegetation through:<br>o dust suppression on cleared areas<br>o maximise efficiency of loads when transporting ore or concentrate (including haul trucks and conveyers)<br>o use dust covers on machinery and dust suppressants on exposed areas where possible<br>o minimise open area footprint and rehabilitate or cover (using vegetation, rock, water and/or dust suppressant) exposed areas as soon as practicable<br>o design the mine layout to minimise dust emissions to VEZs where practicable | o Dust deposition (present as insoluble solids) at any gauge in excess of 10 g/m2/month. | o Dust deposition rates will be measured monthly using dust deposition gauges for the first 24 months from implementation of the proposal. | Medium – Whilst dust suppression and minimisation will be implemented, the impacts of dust deposition is unknown. |

| | | | | |
|---|---|---|---|---|
| Minimise spread of weeds / dieback | The Proponent will minimise the risk of introduction of invasive species and spread of dieback through:<br>o implementation of a vehicle hygiene procedure, dieback management procedure and weed control<br>o Development Envelope and VEZs will be surveyed for weeds periodically, so that any infestations of invasive species that establish can be eradicated before the plants can flower and set seed<br>o Phytophthora (dieback) controls including signage, cleandown points, vehicle hygiene shall be implemented. | o Minimise new weeds introduced to site.<br>o Prevent spread of weeds to VEZs.<br>o Prevent spread of dieback onsite. | o Annual weed monitoring across Development Envelope.<br>o A Dieback Management Plan will be produced and provided to DBCA, following the completion of baseline monitoring.<br>o Dieback monitoring programme to be developed.<br>o Quarterly observations of plant health on commencement of Proposal for first 12 months. Following the development of a strong dataset over this period, the monitoring methodology, frequency and monitoring sites will be reviewed.<br>o Quarterly health monitoring at vegetation quadrats within VEZs and control sites to include observations for weeds and if the presence of weeds is having a potential indirect impact. | Low – currently 16 weeds have been identified across the Development Envelope, with no significant impact to *B. sphaerocarpa* var. *dolichostyla*. The management actions are considered sufficient to minimise the risk of weed impacts. |

| Management Objective | Management Action | Management targets | Monitoring | Risk Rating |
|---|---|---|---|---|
| Avoid alteration of fire regimes | The Proponent will contribute to fire management at the mine site and in the region through the following measures:<br>o Internal procedures to prevent fires and manage the occurrence of fires due to operational activities (emergency response team, automated fire extinguishers on equipment, personnel trained to use firefighting equipment).<br>o implement fire management procedures (e.g. maintenance of fire breaks, Hot Work Permit system, firefighting training, Emergency Response Plan)<br>o firefighting equipment will be located on site and in vehicles<br>o lightning protection equipment will be installed as part of Project design where necessary<br>o coordination with DBCA and Department of Fire and Emergency Services (DFES) to undertake prescribed burns. | o Prevent fires attributed to mining and associated Project activities. | o Incident reports of fire.<br>o Quarterly observations of plant health on commencement of Proposal for first 12 months. Following the development of a strong dataset over this period, the monitoring methodology, frequency and monitoring sites will be reviewed. | Low – fire management actions are considered sufficient and anecdotal evidence indicates *B. sphaerocarpa* var. *dolichostyla* seeds germinate after fire. |

| Management Objective | Management Action | Management targets | Monitoring | Risk Rating |
|---|---|---|---|---|
| Avoid alteration surface hydrology | The Proponent will ensure the appropriate design of infrastructure including:<br>o Drainage measures designed and constructed to minimise changes to natural surface water flow, including diversion drains, rock cladding and contouring as required.<br>o Rehabilitation and closure to follow contours of natural landforms | o Prevent changes to surface water hydrology attributed to mining and associated Project activities. | o Quarterly observations of plant health on commencement of Proposal for first 12 months. Following the development of a robust dataset over this period, the monitoring methodology, frequency, and monitoring sites will be reviewed.<br>o Quarterly health monitoring at vegetation quadrats within VEZs and control sites | Low – an absence of drainage lines which *B. sphaerocarpa* var. *dolichostyla* may be reliant upon minimises the risk of impact. |

## 3.5 Management Triggers

Management triggers have been established as shown in Table 3-2 with corrective actions to be taken if they are exceeded.

Where monitoring indicates that unauthorised impacts to *B. sphaerocarpa* var. *dolichostyla* are not being avoided (or are unlikely to be), Covalent will implement additional actions which may include (as appropriate):

- Report internally as a Management Trigger in accordance with internal procedures (within 24 hours of identification to the Covalent Environment Manager).
- Notification to DAWE and other stakeholders if considered a non-compliance or incident (potential to impact on *B. sphaerocarpa* var. *dolichostyla)* (as per Condition 13) within two business days of identification. Further details of the non-compliance or incident are to be provided within ten business days.
- Review monitoring data;
- Review management strategies and implement changes to prevent future occurrences, which will include:
    - Investigation (to identify cause) is completed within 21 days;
    - Audit and review of training and staff inductions (i.e. increase in staff training and awareness on vegetation exclusion zones, legislative requirements, appropriate clearing procedures; and
    - Review and upgrade signage/delineation.
- Review/update of management and monitoring measures/frequency;
- Establish additional *B. sphaerocarpa* var. *dolichostyla* in a VEZ to offset additional impacts, at a 35:1 ratio;
- Reporting of monitoring outcomes against Management Targets with Annual Compliance Report to DAWE (as per Condition 12) within 12 months following date of commencement;
- Revise this plan and submit the revised plan for EPBC Act approval; and

**Table 3-2: Management triggers and actions**

| Management targets | Management trigger | Corrective action | Management trigger justification |
|---|---|---|---|
| No unauthorised clearing within the Development Envelope or VEZs.<br>No unauthorised access to a VEZ | • Vegetation clearing without an authorised internal permit within the Development Envelope, but outside of the VEZs<br>• Unauthorised access by personnel to a VEZ | • Report internally as Management Trigger Exceedance in accordance with internal procedures (within 24 hours of identification to the Covalent Environment Manager).<br>• Review proximity of potential disturbance within/to VEZ.<br>• Should disturbance or potential impact occur to *B. sphaerocarpa var. dolichostyla* as a result of Management Trigger Exceedance, report to DAWE within two business days of identification with further details within 10 business days<br>• Complete investigation within 21 days of identification<br>• Review management strategies and implement changes to prevent future occurrences. Further management measures to be considered will include:<br>o Review and upgrade VEZ signage/delineation where appropriate<br>o Audit and review of training and staff inductions (ie. Increase in staff training and awareness to include information on VEZ's, legislative requirements, appropriate clearing procedures)<br>o Ground disturbance permit training competency training<br>o Undertake rehabilitation of unauthorised clearing (ie disturbance from vehicle tracks, vegetation clearing) by appropriately qualified personnel as required, in accordance with rehabilitation procedure. | The means by which a direct proposal related impact may occur to a VEZ is vegetation clearing. If clearing occurs which has not received an approved internal clearing permit within the Development Envelope, but outside of the VEZ, it is considered a non-compliance or failure of the procedure which is in place to prevent vegetation clearing of the VEZs. Similarly, if personnel access a VEZ without authorisation, it also represents a failure in the procedure and permit to control access to the area. |

**Table 3-2: Management triggers and actions**

| Management targets | Management trigger | Corrective action | Management trigger justification |
|---|---|---|---|
| Minimisation of dust emissions | Dust deposition results at a single VEZ site exceeds 5 g/m$^2$ for two consecutive months. | • Report internally that Management Trigger Exceedance has been met in accordance with internal procedures (within 24 hours of identification to the Covalent Environment Manager).<br>• Should disturbance or potential impact occur to *B. sphaerocarpa var. dolichostyla* as a result of Management Trigger Exceedance, report to DAWE within two business days of identification with further details within 10 business days<br>• Complete investigation within 21 days of identification<br>• Investigate and determine improvement strategy<br>• Investigate the cause of the exceedance to determine if it is attributable to proposal related activities.<br>• Review dust monitoring program. Determine whether the changes observed in the VEZ are comparable with control monitoring sites.<br>• Review dust mitigation measures | Whilst 10 g/m$^2$ a month is the adopted management target for dust deposition, adopting an early response trigger limit will identify trends of increasing dust emissions. Also, managing dust deposition to 5 mg/m$^2$ or less will reduce the risk of dust deposition leading to a decline in plant health or function. |

**Table 3-2: Management triggers and actions**

| Management targets | Management trigger | Corrective action | Management trigger justification |
|---|---|---|---|
| Minimise new weeds introduced to site | One new weed species sighted during annual monitoring but with limited to negligible coverage. | • Report internally that Management Trigger Exceedance has been met in accordance with internal procedures (within 24 hours of identification to the Covalent Environment Manager).<br>• Should disturbance or potential impact occur to *B. sphaerocarpa var. dolichostyla* as a result of Management Trigger Exceedance, report to DAWE within two business days of identification with further details within 10 business days<br>• Complete investigation within 21 days of identification<br>• Review weed monitoring and control program and amend as required. Response actions to be considered will include the following:<br>o Review monitoring frequency (quarterly for initial 12 months then annually), adjust accordingly.<br>o Adjust timing of monitoring if appropriate, so that infestations of invasive species that establish can be eradicated before the plants can flower and set seed.<br>o Review suitability of weed monitoring locations, adjust accordingly.<br>o Determine whether the changes observed are comparable with control monitoring sites.<br>o If after the two consecutive monitoring events, a threshold exceedance has not been identified, resume standard monitoring.<br>o Develop and implement of a Weed Management Plan<br>o Staff training and awareness to include information on weed species and preventative measures such as vehicle/ weed hygiene procedures.<br>o Undertake further weed control | The potential for indirect effect on the health of *B. sphaerocarpa var. dolichostyla* due to weed impacts is currently unknown as impacts to populations have not been quantified.<br>As population monitoring data is gathered, trending will indicate any threats (including weeds) and acceptable population changes.<br>In the interim, the Management Trigger has been established to identify trends with relation to weeds that could result in a potential indirect impact to *B. sphaerocarpa var. dolichostyla* and provide an indication if the management actions require review. |

**Table 3-2: Management triggers and actions**

| Management targets | Management trigger | Corrective action | Management trigger justification |
|---|---|---|---|
| Prevent fires attributed to mining and associated activities | A fire occurrence within the Development Envelope that impacts on native vegetation. | • Report internally that Management Trigger Exceedance has been met in accordance with internal procedures (within 24 hours of identification to the Covalent Environment Manager).<br>• Should disturbance or potential impact occur to *B. sphaerocarpa var. dolichostyla* as a result of Management Trigger Exceedance, report to DAWE within two business days of identification with further details within 10 business days<br>• Complete investigation within 21 days of identification<br>• Internal audit of fire management plan<br>• Review fire mitigation strategies to limit spread of fire.<br>• Staff training and awareness to include information on the prevention and management of fires.<br>• Investigate the cause of the exceedance to determine if it is attributable to proposal related activities. | The management actions are considered sufficient to prevent fire impacts to the VEZs. However, in the event a fire occurs within the Development Envelope that impacts on native vegetation, this is an indicator that further refinement of the management actions is required. |

## 3.6 Monitoring

Table 3.1 specifies monitoring that will be undertaken of the health condition of retained *B. sphaerocarpa* var. *dolichostyla*, as well as dust deposition and weed monitoring within the Development Envelope and surrounds. The monitoring program will include monitoring of plant condition, dust deposition and weed monitoring in order to:

- determine if there are any changes occurring to flora and vegetation condition and health in the VEZs
- assess whether any changes in flora and vegetation are due to the Project or external/natural factors
- provide a methodology for ongoing monitoring to enable time-based comparisons.

### 3.6.1 Plant condition monitoring

Plant condition monitoring to provide a qualitative assessment of the vegetation condition will be undertaken at permanent representative sites within the VEZs and control sites away from any proposal related indirect effects. Each monitoring site will consist of a quadrat 10 m by 40 m arranged linearly with four sub quadrats of 10m x 10m, thereby providing an area equivalent to 20m x 20m and conforming to the recommended quadrat size for the bioregion (EPA Technical Guidance 2016).

The GPS coordinates of approximate quadrats is provided in Table 3-3 and shown by Figure 3.2.

**Table 3-3: Monitoring quadrat GPS coordinates**

| Site # | Type - Pair | Vegetation Community | Dust gauge (Y/N) | Easting | Northing |
|---|---|---|---|---|---|
| 1 | Control - A | W7 | N | 763363 | 6443557 |
| 2 | Impact – A | S1 | Y | 762678 | 6443570 |
| 3 | Control - B | H1 | N | 761675 | 6442044 |
| 4 | Impact - B | W9 | N | 761794 | 6443696 |
| 6 | Impact – C | CL | N | 761111 | 6444662 |
| 7 | Control – D | Unknown | Y | 760130 | 6451461 |
| 8 | Impact – D | W13 | Y | 760120 | 6444511 |
| 9 | Impact– E | S3 | Y | 760476 | 6446242 |
| 10 | Control – E | S3 | Y | 761102 | 6443126 |
| 11 | Control – F | W9 | Y | 761652 | 6441960 |
| 12 | Impact – G | W13 | N | 761457 | 6443963 |
| 13 | Control – H | W5 | N | 758853 | 6443230 |
| 14 | Impact – F | W9 | Y | 761826 | 6443962 |
| 15 | Control – G | W5 | N | 760469 | 6442964 |
| 16 | Impact – H | W6 | Y | 755088 | 6445627 |
| 17 | Control – I | Unknown | N | 758514 | 6454004 |
| 18 | Impact – I | W4 | Y | 757942 | 6444937 |
| 19 | Control – J | W11 | N | 760666 | 6442241 |
| 20 | Impact - J | W11 | N | 759552 | 6442928 |

Within each sub-quadrat, the following will be recorded:

- All plant species, both native and alien, present (this will allow for diversity calculations to be made and compared temporally). A specimen of all plant species recorded is to be collected for verification;
- The average height of each species present; and,
- The percentage foliage cover (dead / alive) of each species.

In addition, a minimum of five (dominant/keystone) species have been tagged, and the following information recorded for each specimen:

- Plant condition score, based on the scales in Table 3-4 and Table 3-5;
- Photographic record (taken from the north side of the quadrat to maintain temporal consistency);
- Reproductive status (vegetative, flowering, fruiting); and,
- Plant height and width.

A minimum of 20 plants will be individually tagged and scored within each quadrat. Conservation significant flora species have been tagged and where possible, the same species have been tagged in each of the sub-quadrats to provide for sample replication.

The visual assessment of a range of parameters to assist in determining plant condition score, is based on a stem classification system which has been used by Mattiske Consulting Pty Ltd on numerous projects, together with a modification of the method of Souter *et al*. (2010), to provide for visual assessments of a range of other characters. The range of visual characters used to assess plants has been designed to reduce inter-operator error when making assessments in the field.

Plant condition will be primarily measured by determining the extent and density of the foliage on the plant, or the crown cover of a tree (Table 3-5). In addition, a range of attributes will be scored to standardise the visual assessment process. Some of the attributes are positive, in terms of plant condition – signs of reproduction or new foliage growth. Some of the attributes are negative, in terms of plant health – increasing levels of leaf discolouration and death, insect damage. The attributes to be scored are:

- Leaf die-off
- New tip growth
- Reproductive state
- Epicormic growth
- Insect damage

These attributes will be assessed using the scale set out in Table 3-4.

**Table 3-4: Attributes scale**

| SCORE | DESCRIPTION |
|---|---|
| 0 | Absent - effect is not present |
| 1 | Scarce - effect is not obvious in a cursory examination, but is present. |
| 2 | Common - effect is clearly visible |
| 3 | Abundant - effect dominates the appearance of the shrub / tree |

**Table 3-5: Plant condition scoring**

| CONDITION | FACTORS |
|---|---|
| Healthy (score = 4) | • > 90% of foliage present<br>• canopy is intact |

| CONDITION | FACTORS |
|---|---|
| | • if a tree, then no epicormic growth present<br>• none or little indication of leaf discolouration or loss<br>• none to minor evidence of insect damage, no fungal or other pathogen attack |
| Slightly stressed (score = 3) | • 75% - 90% of foliage present<br>• some minor canopy loss<br>• if a tree, then no epicormic growth<br>• minor evidence of leaf discolouration; potentially some dead leaves on branch tips<br>• minor evidence of insect damage, fungal or other pathogen attack |
| Stressed (score = 2) | • 50% - 75% of foliage present<br>• moderate canopy loss<br>• if a tree, then none to some epicormic growth evident<br>• evidence of leaf discolouration; evident damage to leaves significant<br>• evidence of insect, fungal or other pathogen attack obvious |
| Very stressed (score = 1) | • < 50% of foliage present<br>• major canopy loss<br>• if a tree, then epicormic growth likely<br>• leaf discolouration significant; evident damage to leaves significant<br>• evidence of insect, fungal or other pathogen attack obvious |
| Dead (score = 0) | • plant dead<br>• foliage may present, but is brown and desiccated. If a tree then the bark is still attached (DR – dead recent)<br>• foliage is absent, fine twigs still present. If a tree bark may be present (DM – dead moderate)<br>• foliage and file twigs absent. If a tree the bark is also absent (DO- dead old) |

The condition of the vegetation in each quadrat will also be assessed, based on the vegetation condition scale of Trudgeon (1988), for assessment of disturbance within the Eremaean and Northern Botanical Provinces. The disturbance scale is set out in Table 3-6.

**Table 3-6: Vegetation condition scale (adapted from Trudgeon, 1988)**

| VEGETATION CONDITION | DESCRIPTION |
|---|---|
| Excellent (Ex) | Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement. |
| Very Good (VG) | Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks. |
| Good (G) | More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds. |
| Poor (P) | Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds. |
| Degraded (D) | Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species. |
| Completely Degraded (CD) | Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs. |

Baseline plant condition monitoring will consist of two baseline monitoring events conducted prior to commencement of construction and operations in spring and summer. On commencement of

the action, plant condition monitoring will be undertaken quarterly for the first 12 months during construction and operations. The data gained over this period will be used to review monitoring and inform the methodology and frequency of future monitoring. Should triggers be exceeded at any point, monitoring intensity shall be reviewed, and potentially increased and remain increased until such time as the trigger is no longer exceeded.

The mean condition monitoring scores will be compared across species and sites and appropriate statistical analysis undertaken to determine if there is a statistically significant difference between VEZs and control sites.

### 3.6.2 Plant health monitoring

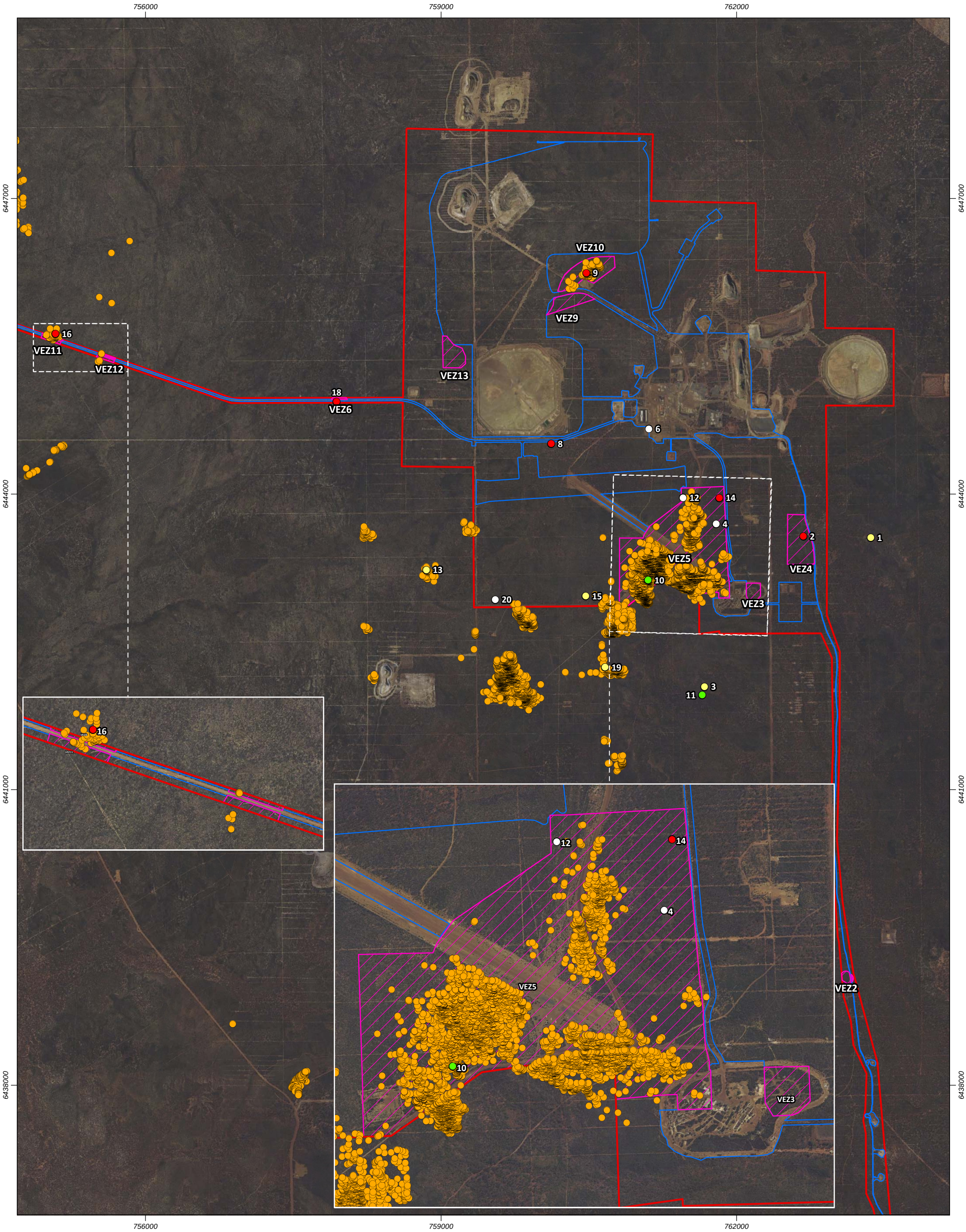
The use of a plant pigment efficiency analyser (PEA) is an increasingly accepted method of determining plant health and function within the mining, forestry and agricultural industries. The PEA records a score of between 0.0 to 1 for Fv/Fm (index of chlorophyll inflorescence) with most plant taxa being considered healthy within a range of 0.7 to 0.8 (Kalaji et al 2014). When plants are experiencing stress, the ratio may decline and potentially represent a reduction in physiological function or healthy function of the plant. To date, it has generally been accepted that a Fv/Fm score of <0.6 in most regions is an indicator a plant is stressed.

Within or adjacent to each of the monitoring quadrats detailed by section 3.6.1, 25 plants (five from each keystone species) will be selected for testing with a PEA. Given control sites will be monitored, the requirement for monitoring prior to commencement of construction and operations is not considered necessary. As per section 3.6.1, monitoring will initially be undertaken quarterly following implementation of the action for the first 12 months to generate a robust dataset. For each monitoring event, the mean of each species Fv/Fm ratio will be compared between VEZs and control sites and appropriate statistical analysis used to determine if a significant difference is apparent. After the first 24 months the dataset will be reviewed and used to inform future monitoring requirements.

### 3.6.3 Dust monitoring

Dust deposition rates will be measured with dust deposition gauges (DDGs) in accordance with AS/NZS 3580.10.1:2003. Data will be recorded monthly, commencing prior to construction or production enabling a baseline level to be established.

Nine DDGs will be installed at the select monitoring quadrats as detailed by Table 3-3 and shown by Figure 3.2. This will enable a comparison of results between VEZs and control sites and assist with determining any proposal related indirect effects.




## Figure 3.2: Monitoring locations

N

Scale 1:35,000 at A3

0 500 1,000 m

Coordinate System: GDA 1994 MGA Zone 50

Date: 7/01/2021

**Legend**

- Development envelope
- Proposed layout
- Vegetation exclusion zones

Flora species

- *Banksia sphaerocarpa* var. *dolichostyla*

Monitoring locations

Dust and vegetation monitoring

- Control
- Impact

Vegetation monitoring

- Control
- Impact

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Service Layer Credits: SLIP Public Services Locate Imagery 2020. Client: Covalent Lithium. Created by: cthatcher

# 4. Restoration Plan

## 4.1 Objectives and targets

The objective of this section of the Conservation Plan is to:

- Within 10 years of Project commencement, establish at least 69 *B. sphaerocarpa* var. *dolichostyla* plants within the Development Envelope to mitigate significant impacts to the species

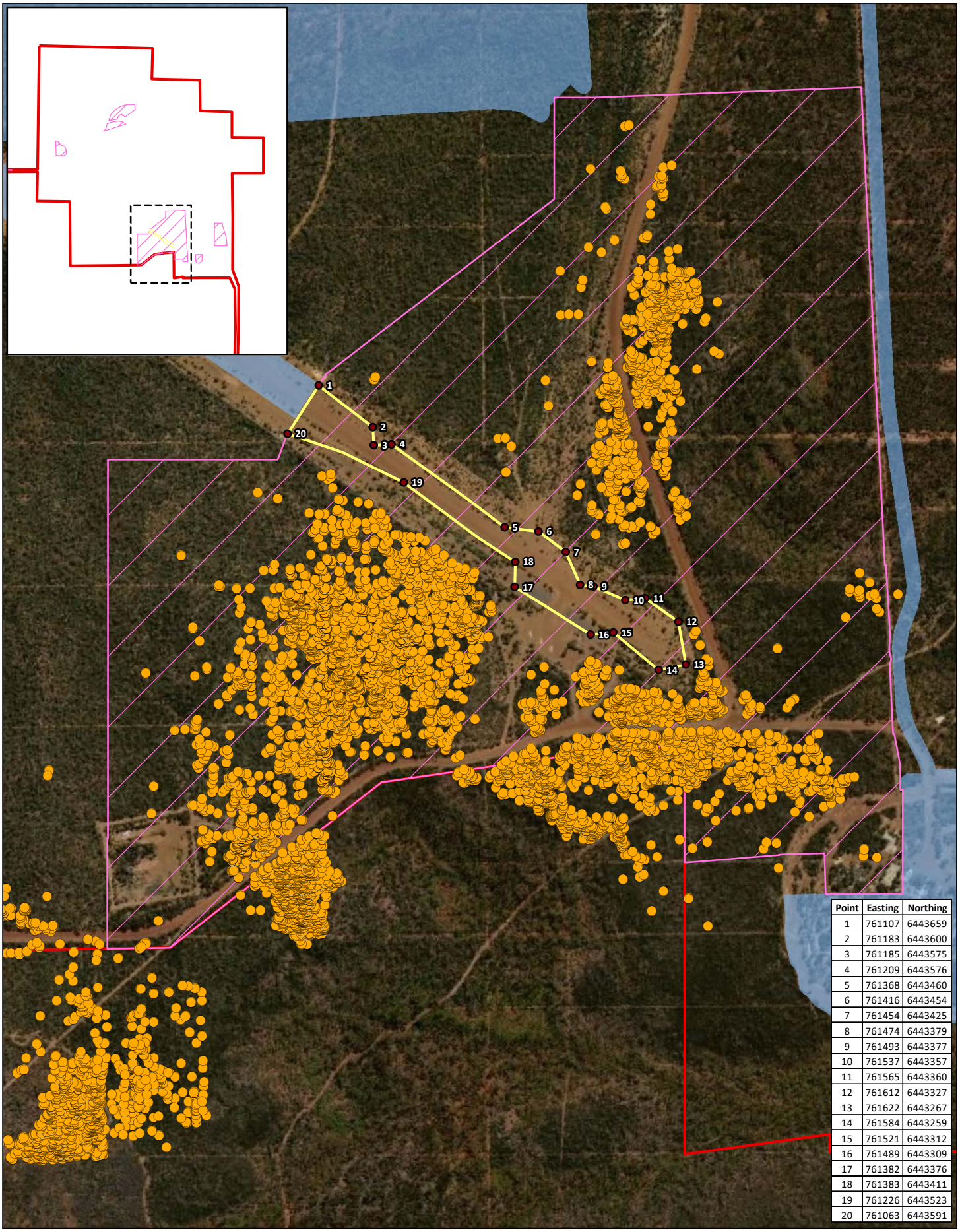
The Restoration Plan is designed to mitigate approved direct indirect impacts of the Project on *B. sphaerocarpa* var. *dolichostyla*. Accordingly, the implementation of the management measures and monitoring by Covalent can be expected to ensure the restoration objectives of this Conservation Plan are met.

## 4.2 Establishment Site

Restoration of *B. sphaerocarpa* var. *dolichostyla* will be undertaken within land currently part of an airstrip in the vicinity of the Project (approximately 3 ha), as identified by Figure 4.1. The airstrip is proposed to be decommissioned, with the southern end to be used for the restoration of *B. sphaerocarpa* var. *dolichostyla* individuals ('Establishment Site').

This Establishment Site has been selected as it is currently cleared and bordered on either side by remnant vegetation in which individuals of *B. sphaerocarpa* var. *dolichostyla* naturally occur. Based on the mapped distribution, it is considered likely that *B. sphaerocarpa* var. *dolichostyla* previously occurred within the area of the airstrip (and as such, indicating that the underlying soil types may be suitable).

The new individuals of *B. sphaerocarpa* var. *dolichostyla* to be established through the restoration process will contribute towards the existing number of naturally occurring individuals at this location and reduce the current fragmentation between individuals caused by the airstrip.




| Point | Easting | Northing |
|---|---|---|
| 1 | 761107 | 6443659 |
| 2 | 761183 | 6443600 |
| 3 | 761185 | 6443575 |
| 4 | 761209 | 6443576 |
| 5 | 761368 | 6443460 |
| 6 | 761416 | 6443454 |
| 7 | 761454 | 6443425 |
| 8 | 761474 | 6443379 |
| 9 | 761493 | 6443377 |
| 10 | 761537 | 6443357 |
| 11 | 761565 | 6443360 |
| 12 | 761612 | 6443327 |
| 13 | 761622 | 6443267 |
| 14 | 761584 | 6443259 |
| 15 | 761521 | 6443312 |
| 16 | 761489 | 6443309 |
| 17 | 761382 | 6443376 |
| 18 | 761383 | 6443411 |
| 19 | 761226 | 6443523 |
| 20 | 761063 | 6443591 |

**Figure 4.1:** ***Banksia sphaerocarpa var. dolichostyla*** **Restoration Site and Vegetation Exclusion Zone**

N

Scale 1:7,000 at A4

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 50

Date: 2/12/2020

**Legend**

- Development envelope
- Proposed layout
- Ironcaps Banksia establishment site (3.34ha)
- Vegetation exclusion zones

Flora species

- *Banksia sphaerocarpa* var. *dolichostyla*

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## 4.3 Restoration Methodology

Generally, the restoration methodology for *B. sphaerocarpa* var. *dolichostyla* will involve a combination of both direct seeding and the planting of seedlings (tubestock); with the combination of both options expected to provide the best opportunity for successful restoration.

The Establishment Site will be within an existing disturbed area, with a 'staged approach' to the works whereby seeds will be collected (Year 1), then the site will be rehabilitated with native vegetation and *B. sphaerocarpa* var. *dolichostyla* (Year 2+).

The Establishment Site will be fenced to minimise the risk of herbivorous grazing (rabbits and kangaroos) and irrigated with fresh water to aid in the establishment of *B. sphaerocarpa* var. *dolichostyla* seeds/seedlings. The fence will be sufficient to exclude rabbits and kangaroos, therefore may be up to 2 m in height with lapwiring to prevent rabbit access. Fencing will be maintained until Establishment Criteria is met.

### 4.3.1 Plant Material

Seeds will be collected from naturally occurring individuals located within adjacent Vegetation Exclusion Zone (Figure 4.1, being nominally ≤500m of the Establishment Site). The use of seeds from the adjacent naturally occurring individuals will ensure consistent genetic structuring between the restored individuals and the adjacent naturally occurring individuals. Adequate supply of viable seed is available from naturally occurring individuals adjacent to the restoration site.

Seeds will be collected under DBCA Licence TFL 3-1920 (DBCA 2019) (or equivalent) granted under the State *Biodiversity Conservation Act 2016* (WA), with a target of between 500 to 1,000 seeds to be collected. Details of seed usage are included in Table 4.1 Seed will be collected from multiple individuals (≥ 50 individuals) to ensure genetic variation/representation. As identified by Western Botanical (2020), *B. sphaerocarpa* var. *dolichostyla* adjacent to the Establishment Site have been observed to be carrying significant amounts of fully formed fruits containing follicles with up to one seed per follicle; such that it is believed there is a sufficient natural seed resource available to supply the restoration. Routine testing by the State Department of Biodiversity, Conservation and Attractions (DBCA) has indicated the seed to have good viability (pers. comm. Crawford A (Dr.) of DBCA cited in Western Botanical 2020).

Subject to the number of seeds collected, a proportion of the seeds will be germinated into seedlings by a reputable seedling nursery and grown to approximately 1 year of age prior to planting. The remainder of the seed will be temporarily stored, with the seeds to be broadcast/planted later at the same time as the seedlings.

Seed collection and the germination of seedlings will be undertaken over a number of years (minimum 2 years, subject to the initial success of establishment), to enable an ongoing supply of seeds and seedlings should supplementary planting be necessary to achieve the restoration outcome and/or to meet contingency commitments.

**Table 4.1: Seed collection**

| Purpose | Number of seeds |
|---|---|
| Target Tubestock | 400 |
| Target Direct Seeding | 400 |
| Additional seeds allowing for 80% germination rate | 270 |
| Target DBCA TFSC Seed Lodgement | 270 |
| Total | 1,340 |

### 4.3.2 Site Preparation

Restoration of *B. sphaerocarpa* var*. dolichostyla* will be undertaken within land currently part of an airstrip, which will be decommissioned during implementation of the Project. The Establishment Site will be prepared by the following general methodologies (in sequential order):

- Removal of the airstrip hardstand materials (bitumen and gravel);
- Deep cross-hatch ripping of the subsoil to break-up any existing sub-soil compaction and facilitate water infiltration (consistent with the approach outlined by Western Botanical 2020);
- Import and spreading of topsoil/subsoil mix from recently cleared areas from the Project to provide a growth medium and initial seed store (ideally this material will be direct transfer following clearing, without temporary stockpiling);
- Establishment and operation of the irrigation system (design to be confirmed as either broadcast spray or drip-feed); and
- Signposting of the remainder of the boundary of the Restoration Site to minimise the risk of inadvertent access into the Restoration Site by personnel or machinery.

To note, subject to seed availability and resources, additional broadcast seeding (of multiple flora taxa) will be undertaken within the Establishment Site to supplement the initial soil-stored seed in the topsoil/subsoil material.

### 4.3.3 Seeding and Seedlings

Seeds will either be broadcast seeded, or physically planted in a randomised pattern (not plantation rows), subject to the availability of the collected *B. sphaerocarpa* var*. dolichostyla* seed resource. The number of seeds broadcast/planted will be noted to assist in latter assessment of the seeding germination rate.

Each restored individual of *B. sphaerocarpa* var*. dolichostyla* (whether from a planted seedling or germinated seed) will be field marked with a numbered stake to allow for ease of field identification and data collection. Planted seedlings will be marked initially when planted, with germinants from seeds later marked when identified during monitoring. Planted seedlings will have seedling guards installed to minimise impacts of grazing.

### 4.3.4 Irrigation

The Establishment Site will be irrigated with fresh water for a period of 2 years to assist in the establishment of *B. sphaerocarpa* var*. dolichostyla* individuals (Year 2, and potentially Year 3 if necessary).

Seeds and seedlings will be irrigated for a period of 2 years following planting, after which irrigation will cease and the restored individuals allowed to persist in the absence of supplementary watering.

The irrigation system may remain, such as to allow for latter contingency measures (i.e. if additional watering is necessary for continued survival of restored individuals in the event of drought conditions, or to water additional plants).

To note, irrigation has proven a successful technique in the initial establishment and survival of other threatened flora taxa in semi-arid environments (for example, refer to plot irrigation of *Darwinia masonii* (EPBC-V) cuttings as outlined within MGM 2015), and is therefore the preferred methodology over the non-irrigation option.

### 4.3.5 Experimental Treatments

It is noted that many plant restoration projects may establish a series of experimental treatments to trial the success of differing methodologies (e.g. establishment of seeds compared to seedlings and cuttings, fenced plots compared to unfenced plots, irrigated plots compared to non-irrigated plots); with a view that the trial information will inform a later and larger restoration project. This approach is not being adopted for restoration of *B. sphaerocarpa* var. *dolichostyla* due to the low number of individuals required to be established; rather, well established techniques for successful restoration are being adopted from inception (i.e. seeds plus seedlings, site fenced and irrigated).

## 4.4 Ongoing Management

Ongoing management of the Establishment Site will occur, as detailed in Table 3-2 for the life of the approval (2069). Additional management measures include:

- Inspection and maintenance of the fence to ensure exclusion of feral animals;
- Inspection and maintenance of irrigation infrastructure;
- Weed inspection and weed control programmes are required; and
- Maintenance of Project site fire breaks to minimise risk of fire.

## 4.5 Establishment Criteria

Table 4.2 identifies Establishment Criteria for *B. sphaerocarpa* var. *dolichostyla* individuals restored under this Conservation Plan.

The Establishment Criteria will be met where the number of live individuals of *B. sphaerocarpa* var. *dolichostyla* is ≥ 69 with individuals in a 'Good' or better health condition for three consecutive years after irrigation has ceased. In addition, individuals must have reproductive capability observed (i.e. flowering and successfully pollinated) to demonstrate individuals are mature and self-sustaining (i.e. potentially produce second generation individuals).

It is intended that the restored individuals will continue to survive and function as part of the naturally occurring *B. sphaerocarpa* var. *dolichostyla* population (i.e. continue to grow and hold seed within the canopy). Following the Establishment Criteria being achieved (as demonstrated by monitoring and measurement), Covalent will continue to informally inspect the restored individuals over the life of the EPBC approval, in order to confirm and report on their status for the duration of the Project.

Where monitoring indicates that the Establishment Criteria are unlikely to be met, Covalent will implement additional actions at the Restoration Site, which will include (as appropriate):

- additional site preparation works.
- additional seed collection, seeding and/or seedling planting; and/or
- additional irrigation of seeds and seedlings.

Additional actions will be taken as soon as practical; however, action implementation will occur within 12 months of confirming action requirement.

If the above additional actions are considered unlikely to result in the Establishment Criteria being met, then Covalent will consult with DBCA and DAWE on other potential contingency actions which could be implemented. Other contingency actions could include, for example, a change to the

location of the restoration works into areas of native vegetation known to support *B. sphaerocarpa* var. *dolichostyla* (i.e. supplement existing population within existing habitat). Under these circumstances Covalent will review and revise this plan and submit the revised plan for EPBC Act approval.

**Table 4.2: Restoration Establishment Criteria**

| Restoration Plan Objective | Establishment Criteria | Establishment Criteria Measurement | Contingency Actions |
|---|---|---|---|
| ≥ 69 individuals of *B. sphaerocarpa* var. *dolichostyla* established | 69 individuals established | Number of live individuals ≥ 69 | o Additional seed collection and seeding/seedling planting<br>o Soil analysis to determine any soil deficiencies and development of a remediation plan (soil amelioration or further soil preparation trials)<br>o Review of environmental conditions and investigate additional irrigation requirements |
| | Individuals are considered healthy | Health condition of 'Good' or better for x2 consecutive years after irrigation has ceased | |
| | Individuals are considered self-sustaining | Reproductive capability observed (i.e. flowering, successful pollination and seed production) | |

## 4.6 Schedule

The schedule for the restoration of *B. sphaerocarpa* var. *dolichostyla* has been based upon year periods (i.e. Year 1, Year 2; rather than calendar years) following Project commencement. Project commencement is expected to occur in 2021. The commencement date for the implementation of this Conservation Plan will be subject to the commencement date of the Project (i.e. personnel/equipment on site, clearing to provide rehabilitation topsoil/subsoil materials).

Where an action is not undertaken/completed within the specified year, that action will then be undertaken in subsequent years. The likelihood of this occurring is considered low and potential implications to the overall success of the Restoration Plan are low. The implications of other actions not been undertaken or completed are considered low, as the potential result is a delay in meeting Establishment Criteria.

**Table 4.3: Restoration Schedule**

| Year | Restoration Action |
|---|---|
| Year 1 (2021) | o Collection of seed material (approximately September to December 2021)<br>o Germination of seedlings in nursery |
| Year 2 (2022) | o Restoration site preparation:<br>  o fencing of adjacent vegetation<br>  o removal of airstrip hard cap<br>  o crosshatch deep ripping<br>o Site rehabilitation works (approximately March – April): |

| Year | Restoration Action |
|---|---|
| | ○ spreading of topsoil/subsoil materials from mining area<br>○ establishment and operation of irrigation system<br>○ Planting of seeds and seedlings (early winter)<br>○ Twice yearly monitoring of site rehabilitation success (to confirm site suitability)<br>○ Weed control of restoration site (if necessary)<br>○ Irrigation commences immediately after planting (as required)<br>○ *B. sphaerocarpa* var. *dolichostyla* monitoring commences every two months<br>○ Collection of additional seed material<br>○ Germination of additional seedlings in nursery |
| Year 3 | ○ *B. sphaerocarpa* var. *dolichostyla* monitoring continues every four months<br>○ Irrigation continues<br>○ Weed control (if necessary)<br>○ Supplementary seeding / seedling planting (if necessary) |
| Year 4 | ○ *B. sphaerocarpa* var. *dolichostyla* monitoring continues every six months<br>○ Implementation of contingency actions (if necessary)<br>○ Irrigation ceases |
| Year 5 + | ○ *B. sphaerocarpa* var. *dolichostyla* monitoring continues every six months<br>○ Implementation of contingency actions (if necessary) |

## 4.7 Environmental Monitoring

For each restored individual of *B. sphaerocarpa* var. *dolichostyla* (whether from germinated seed or planted seedling) the following information will be recorded annually:

- survival (number live/dead);
- size (height/width);
- health condition, similar to the methodology presented in Table 3-5÷
- reproductive status (flowering/fruiting/setting seed);
- photograph;
- GPS location (for future locating); and
- observations of health/growth constraints (e.g. grazing, weeds).

The purpose of the environmental monitoring will be to demonstrate if the Establishment Criteria have been met. The formal annual monitoring identified above will be in addition to opportunistic visual observations by Covalent environmental personnel on site.

## 4.8 Risks and contingency measures

Risk factors and contingency actions in relation to the Restoration Plan are described in Table 4.4. Actions will be taken as soon as practical; however, action implementation will occur within 12 months of confirming action requirement.

**Table 4.4: Risk factors and contingency actions for rehabilitation**

| Risk factor | Trigger | Contingency action / response |
|---|---|---|
| No or insufficient seed germination | Year 1 – 2:<br>• Germination of <80% of seed<br>Year 2-3:<br>• Seed and tubestock survival <70% following one year after germination | • Review initial germination and survival numbers to determine if further seed collection is required.<br>• If required, re-collect seed and undertaken an investigation into potential seed germination failure and survival.<br>• Consider other methods of germination to rehabilitate the species.<br>• Consider alternate treatments.<br>• Liaise with experts (e.g. Botanic Gardens and Parks Authority research division) to develop further trials trial.<br>• Consider supplementary planting of seedlings. |
| No or insufficient establishment | Year 2-4:<br>• Survival of <50% of each year's plants beyond their first summer<br>• Survival of <40% of all plants planted beyond their first three summers | • Consider other methods of germination to rehabilitate the species.<br>• Consider alternate treatments.<br>• Liaise with experts (e.g. Botanic Gardens and Parks Authority research division) to develop further trials trial.<br>• Consider supplementary planting of seedlings. |
| Ongoing survival without irrigation does not occur | Year 5+:<br>• Survival of <30% of all plants planted<br>• <80% of surviving plants are producing viable seed at a rate similar to that of plants in natural populations<br>Plant survivorship and fully formed (effectively pollinated) fruit production is statistically less than that of the adjacent established *B. sphaerocarpa var. dolichostyla* in undisturbed vegetation.<br>Year 10+:<br>• *B. sphaerocarpa var. dolichostyla* healthy individual average heights < 1 m in height after 10 years | |
| Clearing impacts to established individuals | Refer to Table 3-2. The Establishment Site is protected through the Vegetation Exclusion Zone associated with the Western Australian approval. | |
| Proposal related indirect impacts to established individuals | Refer to Table 3-2. The Establishment Site is protected through the Vegetation Exclusion Zone associated with the Western Australian approval. | |

# 5. Administration

## 5.1 Responsibility

Implementation of this Conservation Plan will be coordinated by the Manager Environment and Approvals, with support of the site-based Environmental Officers and Registered Mine Manager, as detailed in Table 5-1.

The implementation of the Conservation Plan will be assisted through an Environmental Management System that will incorporate systems, processes, procedures and work instructions relating to the management, monitoring and reporting components of the Conservation Plan.

**Table 5-1: Summary of roles and responsibilities**

| Role | Responsibility |
|---|---|
| Covalent | • Covalent have the overall responsibility for the implementation of this Ironcaps Banksia Conservation Plan if any roles are delegated to a contractor or consultant, Covalent has the responsibility to audit compliance and ensure any contingency actions are implemented. |
| Covalent Environmental Manager | • overall accountability for auditing and compliance assessment with this Ironcaps Banksia Conservation Plan during operation to ensure it is maintained and meets objectives and targets<br>• provide technical support to all Project personnel to ensure this Ironcaps Banksia Conservation Plan is implemented correctly and complied with<br>• implement and maintain this Ironcaps Banksia Conservation Plan, review its effectiveness and review the implementation as required<br>• obtain relevant approvals for disturbance as required<br>• ensure all personnel involved in the project are inducted and will adhere to FVMP requirements<br>• undertaking ongoing monitoring and documenting monitoring results<br>• liaise with stakeholders and technical advisors for advice and resolution of management aspects/objectives as required<br>• review and close out any contingency actions<br>• report as required to regulating authorities<br>• may delegate all or part responsibility to an appropriately qualified person |
| Construction Manager or Registered Manager (if different to Environmental manager) | • overall accountability for auditing and compliance assessment with this Ironcaps Banksia Conservation Plan during construction to ensure it is maintained and meets objectives and targets<br>• overall accountability to ensure this Ironcaps Banksia Conservation Plan is implemented, reported and maintained on-site<br>• ensure personnel attend inductions, have sufficient resources and training to meet the requirements of this Ironcaps Banksia Conservation Plan<br>• support the Proponent's flora management initiative and culture<br>• comply with all legal requirements and the requirements<br>• seek advice from the Proponent when in doubt about requirements<br>• appoint appropriate consultants to undertake specific activities set out if required. |
| All personnel | • must receive induction prior to commencement of work on site<br>• comply with all legal requirements and the requirements<br>• attend environmental inductions and any other training required<br>• participate in toolbox meetings and encourage personnel to suggest improvements. |

Covalent will undertake consultation with DBCA's Species and Communities Program related to seeding, germinating, or planting *Banksia sphaerocarpa var. dolichostyla* are being considered as part of a translocation proposal. The preparation and approval of a translocation proposal as required in Part 7 of the *Biodiversity Conservation Regulations 2018* will be undertaken, including consultation with DBCA's Species and Communities Program. Impact to threatened flora as outlined in the *Biodiversity Conservation Act 2016* is defined as 'taking all or part of an individual'. Damage to all or any part of a threatened flora individual requires a section 40 authorisation.

## 5.2 Funding

Funding of the implementation of this Conservation Plan will be provided by Covalent as the proponent for the Project.

## 5.3 Reporting

Implementation of this Conservation Plan will be reported annually with the Annual Compliance Report required under Condition 12 of the EPBC 2017/7950 approval (DAWE 2019).

The information to be reported will identify:

- Environmental Management -
  - Implementation status of the management actions;
  - Results of the environmental monitoring (health condition, dust, weeds); and
  - Implementation and outcomes of contingency actions (if required).
- Restoration -
  - Implementation status of the restoration actions;
  - Results of the environmental monitoring (live individuals, health condition, reproductive status); and
  - Implementation and outcomes of contingency actions (if required).

Any non-compliances or incidents will be reported to DAWE within two business days, with further details provided within 10 business days as required under Condition 14 of the EPBC 2017/7950 approval.

# 6. References


Brundrett M, Wilsolith A, Collins M, Longman V and Clarke K (2020) *Several Complementary Methods of Plant Establishment are Required for Effective Restoration of Banksia Woodland*. In press, August 2020.

Covalent Lithium Pty Ltd (2017) *Earl Grey Lithium Project*. Referral of the Earl Grey Lithium Project by Covalent Lithium Pty Ltd under Section 68 of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. May 2017.

Covalent Lithium Pty Ltd (2019) *Covalent Lithium Earl Grey Lithium Project Environmental Review Document*. Prepared by Strategen-JBS&G (formerly as Strategen Environmental Consultants Pty Ltd) for Covalent Lithium Pty Ltd. January 2019.

Department of Agriculture, Water and the Environment (2008) *Approved Conservation Advice for Banksia sphaerocarpa var. dolichostyla (Ironcaps Banksia)*. Conservation advice prepared by the Commonwealth Department of Agriculture, Water and the Environment (formerly as the Department of the Environment, Water, Heritage and the Arts) for the Commonwealth Minister for the Environment under Section 266B of the Environment Protection and Biodiversity Conservation Act 1999 (C'th). October 2008

Department of Agriculture, Water and the Environment (2014) *Environmental Management Plan Guidelines*. Prepared by the Department of Agriculture, Water and the Environment (formerly as the Department of the Environment).

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Department of Biodiversity, Conservation and Attractions (2016). *Banksia Woodland Restoration Project Annual Report 4 January - December 2015*. Report prepared by Brundrett M, Longman V, Wisolith A, Jackson K, Fielder J, Collins M and Clarke K of the Department of Biodiversity, Conservation and Attractions (formerly as the Department of Parks and Wildlife). February 2016.

Department of Biodiversity, Conservation and Attractions (2019). *Authorisation to Take or Disturb Threatened Species: Banksia sphaerocarpa var. dolichostyla*. Licence TFL 3-1920 approval granted by the Department of Biodiversity, Conservation and Attractions granted to Angus D of Mattiske Consulting Pty Ltd. July 2019.

Department of Biodiversity, Conservation and Attractions (2020a). *Naturemap: Banksia sphaerocarpa, Banksia sphaerocarpa varcaesia, Banksia sphaerocarpa var. dolichostyla, Banksia sphaerocarpa var. latifolia, Banksia sphaerocarpa var. pumilio, Banksia sphaerocarpa var. sphaerocarpa*. Accessed from the Department of Biodiversity, Conservation and Attractions Naturemap website at https://naturemap.dbca.wa.gov.au/. November 2020.

Department of Biodiversity, Conservation and Attractions (2020b). *Naturemap: Banksia sphaerocarpa var. dolichostyla*. Accessed from the Department of Biodiversity, Conservation and Attractions Naturemap website at https://naturemap.dbca.wa.gov.au/. November 2020.

Environmental Protection Authority (2019) *Earl Grey Lithium Project*. Report and recommendations of the Environmental Protection Authority under Section 44 of the Environmental Protection Act 1986 (WA). Report 1651. October 2019.

International Union for Conservation of Nature (2012) *IUCN Red List Categories and Criteria*. Version 3.1. Second Edition. Gland, Switzerland and Cambridge, UK.

Keighery B (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of Western Australia (Inc.), Nedlands.

Mount Gibson Mining Limited (2015) *Mount Gibson Range Mine Operations at Iron Hill Deposits: Environmental Impact Assessment (Public Environmental Review).* Report prepared by Globe Environments Australia Pty Ltd and Eco Logical Australia. Final. November 2015.

Murdoch University (2008) *Restoration of Banksia Woodland after the Removal of Pines at Gnangara: Evaluation of Seeding Trials*. Report prepared by Maher K, Standish R and Hallett L of Murdoch University for the Department of Biodiversity, Conservation and Attractions (formerly as the Department of Environment and Conservation). December 2008.

Strategen-JBS&G (2019) *Translocation / Rehabilitation Trial Proposal Banksia sphaerocarpa var. dolichostyla*. Report prepared by Chesney R of Strategen-JBS&G (formerly as Strategen Environmental) for Covalent Lithium Pty Ltd and Mattiske Consulting Pty Ltd. October 2019.

Western Australian Minister for Environment (2018) Wildlife Conservation (Rare Flora) Notice 2018. In: *Government Gazette*. No. 135. September 2018.

Western Botanical (2020) *Review of the Distribution of Banksia sphaerocarpa var. dolichostyla.* Report prepared by Cockerton G of Western Botanical for Covalent Lithium Pty Ltd. Report 936. Revision 3.1. November 2020.

# Appendices

# Appendix A Stakeholder Consultation Register

| Stakeholder | Date | Type of Consultation | Persons Involved | Summary of Communication | Comments Received and Issues Raised | Proponent Response and/or resolution | Stakeholder Response to changes |
|---|---|---|---|---|---|---|---|
| **DBCA**<br>**DWER – EPA Services** | 1/9/20 | Meeting | Helen Butterworth, Garry Ogston (EPA)<br>Nicholas Woolfrey, Murray Baker, Lindsay Bourke (DBCA)<br>Anthea Pate, Brigitta Longbottom (Covalent)<br>Louise Whitley (Strategen JBS&G) | • Update on Offset Plan and discussion on suitability of sites.<br>• Discussion on roles and responsibilities for subdivision, acquisition and transfer process<br>• Development a Memorandum of Understanding | • Preferred sites were considered suitable, pending site inspections and further information<br>• Covalent will facilitate the acquisition and purchase process with an In Principle agreement in place for transfer to DBCA for management and conversion to conservation reserve | - | - |

# Appendix D DBCA Translocation Proposal

## Instructions for completing a Translocation Proposal

A **Translocation Proposal** is a detailed document that must be completed, submitted to and approved by DBCA (Executive Director of Biodiversity and Conservation Science) **prior** to the translocation of organisms undertaken by any person anywhere in Western Australia, and **prior** to the translocation of Western Australian organisms to interstate locations (as per the Department's *Corporate Guideline No. 36 – Conservation and Recovery of Threatened Species Through Translocation and Captive Breeding or Propagation*). The purpose of a Translocation Proposal is to demonstrate that the risks and feasibility of the translocation have been adequately assessed and to document the technical design and logistics.

This document is the template that must be used for the development of a Translocation Proposal and provides guidance on what information must be included. Proponents should discuss their translocation plans with the Species and Communities Program before developing their proposal using this template. Further guidance on the preparation of Translocation Proposals, and DBCA's assessment process, can be found in "Guidelines for planning conservation translocations in Western Australia" (In prep).

**Instructions for completing the template:**

- Every section must be addressed (except where instructed) to gain approval for a translocation.
- You may reformat the proposal so long as you retain all sections (except where instructed) with the original numbering, headings and order.
- Provide as much detail as possible, including monitoring and modelling data or results, as relevant. Proposals lacking in detail may be returned for revision prior to a full assessment.
- Figures, tables and maps can be incorporated within the text or prepared as separate documents (and referred to as appendices or attachments in your responses).
- Examples are provided for some sections in blue text. These should be replaced with your own text.
- Fauna Translocation Proposals should be prepared for one species to one recipient site (location). Multiple source sites may be included in the same Proposal. Separate Translocation Proposals should be developed for translocations of multiple species or to multiple recipient sites.
- Flora Translocation Proposals may include multiple recipient sites and/or multiple species.
- Do not include this instruction page with your submission.

**Instructions for submission:**

- Translocation Proposals should be submitted at least **six months prior** to the planned date of the first action. If you do not allow enough time for assessment, your translocation may be delayed.
- Include copies of all relevant permits, approvals and licences with your submission.
- Completed Translocation Proposals should be sent to the Species and Communities Program for review:
    - Fauna translocations – fauna.recovery@dbca.wa.gov.au
    - Flora translocations – flora.data@dbca.wa.gov.au

You cannot proceed with the translocation of any organisms until this translocation proposal, **and**, for fauna, approval from an Australian Ethics Committee constituted in accordance with the terms of reference and membership laid down in the *Australian code for the care and use of animals for scientific purposes* has been granted. You are responsible for gaining animal ethics approvals and ensuring you have the appropriate licenses, permits, authorisations, other approvals, undertaken appropriate Traditional Owner consultation, and where necessary written permission from private landholders/managers to access non-DBCA lands. For threatened species, your proposal must be aligned with actions in the relevant recovery plan and be supported by the associated recovery team.

# Translocation proposal

| **Proposal version:** | | | | | |
|---|---|---|---|---|---|
| **Initial submission** ☐ | **Revision** ☒ | **Amendment** ☐ | **Version #:** 2 | **Version date:** | 23/06/2025 |

## 1 TRANSLOCATION DETAILS

### 1.1 Proponents

Identify the lead proponent and provide affiliation and contact details. Provide names and affiliations for other proponents.

**Covalent Lithium**

**Name:** Dave Brown
**Position:** Senior Advisor Environment - Rehabilitation
**Email:** Dave.Brown@covalentlithium.com
**Phone:** 0438 161 276

**Signature**: _____

**Natural Area Consulting Management Services**

**Name:** Matthew Wood
**Position:** Business development & seed operations
**Email:** Matt.wood@naturalarea.com.au
**Phone:** (08) 9209 2767
**Mobile:** 0488 297 373

**Signature:** _____

### 1.2 Species

Provide the common and scientific names (include family, genus and species) for the species proposed for translocation.

**Family:** Proteaceae
**Genus:** *Banksia*
**Species:** *dolichostyla*
**Common Name:** Ironcaps Banksia

### 1.3 Project title

Include species name, source and recipient site and year.

*Banksia dolichostyla* Bounty Airstrip 2025 (BdBA).

Earl Grey Lithium Project (EGLP) is located 105 km south-southeast of Southern Cross (Shire of Yilgarn). Seed from *Banksia dolichostyla* (previously *Banksia sphaerocarpa var. dolichostyla*) is to be collected from a minimum 200 individual plants from a population of 5,298 individual plants mapped within the EGLP development envelope, (Mattiske, 2021c) (Figure 1). An indicative timeline is outlined in Section 1.4 below.

### 1.4 Years of translocation

Specify the time period over which translocation actions (harvest and release/planting) will occur.

An indicative timeline for implementation of translocation actions such as harvest, propagation and installation of tubestock is outlined in Table 1 below.

**Table 1: Indicative schedule for restoration activities/actions**

| Year | Restoration Action |
|---|---|
| Year 1 (2024) | ▪ Initial collection of seed material (September to December) |
| Year 2 (2025) | ▪ Seed viability tests to be conducted (X-ray)<br>▪ Germination of seeds in nursery<br>▪ Additional seed collection (If required (Sept – Dec) |
| Year 3 (2026) | ▪ Installation of tubestock/ direct seeding<br>▪ Condition monitoring of revegetation *B. dolichostyla* every 2 months<br>▪ Additional seed collection (If required (Sept – Dec) |
| Year 4 (2027) | ▪ Supplementary seeding/ seedling planting<br>▪ Condition monitoring of revegetation *B. dolichostyla* every 4 months |
| Year 5 -10 (2028-2034) | ▪ Contingent on outcomes of previous year monitoring,<br>▪ Supplementary seeding/ seedling planting if required<br>▪ Condition monitoring of revegetation *B. dolichostyla* every 6 months |
| Year 11 onwards (2034- 2064) | ▪ Ongoing population health assessments and condition monitoring of revegetation *B. dolichostyla* as recommended by outcomes of previous year monitoring. |

### 1.5 Summary

Provide a brief (maximum one page) summary of the proposed translocation. Include information on the species (including conservation status and current threats), source site/s and founders, recipient site/s, and experimental design (if relevant). Include a brief justification for the translocation, and the criteria and timeframes that will be used to assess success.

*Banksia dolichostyla* (previously *Banksia sphaerocarpa* var. dolichostyla) was declared a Listed Threatened Species of flora level 'vulnerable' the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) in July 2000, as assessed using criteria generally consistent with that outline by International Union for Conservation of Nature (IUCN) (IUCN, 2012). In addition to the listing under the EPBC Act *B. dolichostyla* has been listed as 'vulnerable' under the Biodiversity Conservation Act 2016 (WA) (BC Act).

The species occurs mostly on vacant crown land in areas of significant gold and nickel deposits. Mining leases are common over these areas and future developments may threaten the species (Taylor & Hopper, 1998; Mollemans et al., 1993; Brown et al., 1998). The main identified threats to *B. dolichostyla* are:

- the direct destruction of plants through gravel mining, mineral exploitation and cutting of survey lines
- inappropriate fire regimes
- weed invasion
- changed hydrology

- salinisation and
- fragmentation (Mollemans *et al*., 1993).

To offset potential impacts and removal of 2 individuals of *B. dolichostyla,* Covalent have committed to collecting ~1,340 seeds (approximately 400 fruits) from a minimum of 50 individuals (> 200 individuals will be targeted) from within the development boundary of EGLP tenements (Figure 1). Seed will be collected from the bushland adjacent to the recipient site (Figure 5). The recipient site is located within the Flora and Vegetation Exclusion Zone (FVEZ)09, within the EGLP development envelope that is surrounded by *B. dolichostyla.*

As per EPBC 2017/7950 condition 4A(b) the approval holder will, within 10 years from commencement of the action, establish at least 69 Banksia *dolichostyla* plants within the development envelope. Once restored population is established, its health along with the remnant population will be monitored annually for the entire project life (40 years; expiry November 2062).

It should be noted that in January 2025, the Skeleton Rock bushfire (the fire) extensively impacted vegetation within and surrounding the Project area. Initial estimates suggest around 500 hectares within the Project Development Envelope were impacted, including Vegetation Exclusion Zones (VEZs), large populations of priority flora, and the majority of existing flora and dust monitoring locations. However, some putative unburnt areas remain, including several parts of the VEZs. The area surrounding the translocation site was heavily impacted with ~98% of FVEZ09 impacted by the fire. Figure 2.


**Figure 1: EGLP Development Envelope and Tenement Boundaries**

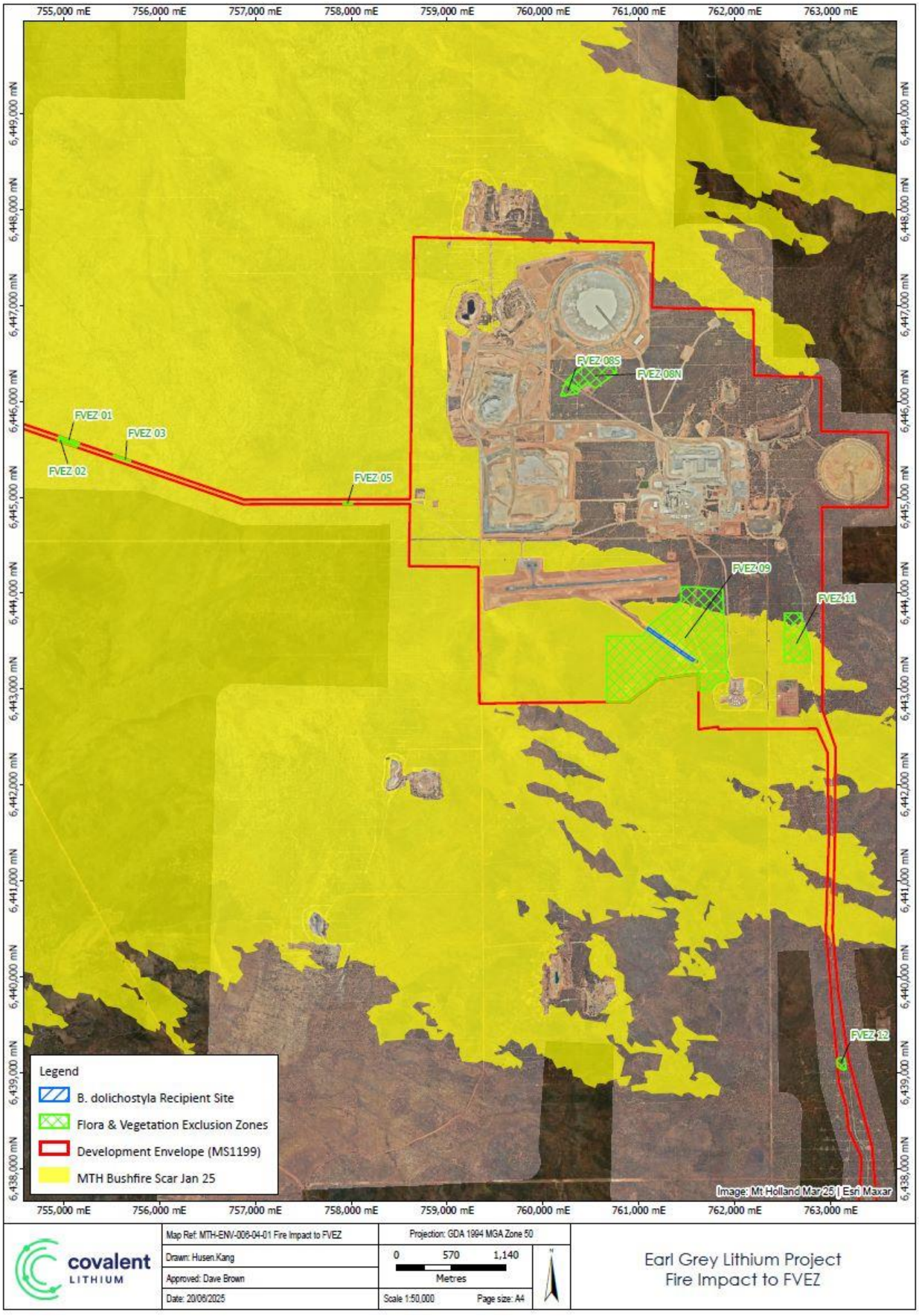


**Figure 2: Fire Impact to FVEZ**

### 1.6 Proposed releases/planting

Complete the proposed releases/planting summary table below to the best of your ability. Please be as specific as possible.

**Table 2: Proposed revegetation schedule**

| Date | Source site | Recipient site | Propagule type | Total |
|---|---|---|---|---|
| May 2026 | EGLP/MH Gold PTY LTD L77/208 G77/134 | EGLP L77/200 | Seed | 400 |
| May 2026 | EGLP/MH Gold PTY LTD L77/208 G77/134 | EGLP L77/200 | Plant (seedling) | Estimated 288 (produced from 400 seeds) |
| May 2027 | EGLP/MH Gold PTY LTD L77/208 G77/134 | EGLP L77/200 | Plant (seedling) | Dependent on success |
| May 2028 (if required) | EGLP/MH Gold PTY LTD L77/208 G77/134 | EGLP L77/200 | Plant (seedling) | Dependent on success |

## 2 TRANSLOCATION PURPOSE, GOALS AND JUSTIFICATION

### 2.1 Translocation purpose

Select **one** primary purpose. Multiple secondary purposes can be identified.

**Table 3: Translocation primary and secondary purposes**

| | Primary | Secondary |
|---|---|---|
| Species Conservation | ☐ | ☒ |
| Ecological Restoration | ☐ | ☐ |
| Species Restoration | ☒ | ☐ |
| Research (incl. trial translocations) | ☐ | ☒ |
| Population / genetic reinforcement | ☐ | ☐ |
| Education* | ☐ | ☐ |
| Mitigation / Salvage / Relocation* | ☐ | ☒ |
| * Translocations with either of these options as the primary purpose are generally not supported. | | |

### 2.2 Translocation type

Select **one** only.

**Table 4: Translocation type**

| | |
|---|---|
| Augmentation | ☒ |
| Reintroduction | ☒ |
| Conservation introduction (flora) | ☐ |
| Introduction (assisted colonisation) | ☐ |
| Introduction (ecological replacement) | ☐ |
| Captive breeding / propagation program | ☐ |

### 2.3 Translocation goal/s

State the goal/s of the translocation, i.e. express what you want to achieve overall. The goal/s should clearly reflect the purpose/s identified above and should articulate the intended conservation benefit (or other benefit dependent on the purpose). The goal/s should be specific, clear, concise, measurable and time bound.

To meet EPBC 2017/7950 condition 4A(B) within 10 years of project commencement establish at least 69 *Banksia dolichostyla* plants within the development envelope to mitigate significant impacts to species and connect existing populations of the species.

### 2.4 Translocation objectives

State the objectives of the translocation. The objectives should detail how the goal/s will be realised.
The objectives should be clear, concise and measurable.

Restoration of *B. dolichostyla* will be undertaken within land currently part of a disused airstrip in the vicinity of the Project (approximately 1.75 ha), as identified by Figure 5. The airstrip is decommissioned, with the southern end to be used for the restoration of *B. dolichostyla* individuals ('recipient site'). This recipient site has been selected as it is currently cleared and bordered on either side by remnant vegetation in which individuals of *B. dolichostyla* naturally occur. Based on the mapped distribution, it is considered likely that *B. dolichostyla* previously occurred within the area of the airstrip (and as such, indicating that the underlying soil types may be suitable).

The new individuals of *B. dolichostyla* to be established through the restoration process will augment the existing naturally occurring subpopulation and reduce the current fragmentation between individuals caused by the old airstrip.

The restoration methodology for *B. dolichostyla* will involve a combination of both direct seeding and the planting of seedlings (tubestock); with the combination of both options expected to provide the best opportunity for successful restoration (Western Botanical, 2020). The recipient site is within an existing disturbed area, with a 'staged approach' to the works whereby seeds will be collected (Year 1), then the site will be rehabilitated with native vegetation and *B. dolichostyla* (Year 3+).

The recipient site will be fenced to minimise the risk of herbivorous grazing (kangaroos) and irrigated with fresh water to aid in the establishment of *B. dolichostyla* seeds/seedlings. Fencing will be maintained until success criteria is met.

### 2.5 Justification

Justify why the proposal represents the best conservation action for the target species. Compare the expected results to other conservation actions (including doing nothing).
If relevant, explain how the translocation will improve and/or contribute to recovery actions for the species.
Provide details on expected population size and area of occupancy of the translocated population.
Provide details on the expected likelihood that the translocation will succeed, including reference to past translocation attempts.

Include reference to actions detailed in recovery and management plans, and, if a recovery team exists demonstrate that the recovery team has endorsed the proposal.

The *Earl Grey Lithium Project Conservation Plan for Ironcaps Banksia, Banksia dolichostyla* (Covalent, 2021) aligns with the *Approved Conservation Advice for Banksia sphaerocarpa var. dolichostyla (Ironcaps Banksia)* (DAWE, 2008).

**Table 5: Conservation and management actions of translocation**

| Conservation Action | Management Actions | Expected Results | Expected population | Translocation Success workings | | Likelihood translocation will succeed |
|---|---|---|---|---|---|---|
| | | | | Expected loss | Expected survival | |
| Nothing | N/A | Population separates further. Overall decline in species genetics | None | N/A | | N/A |
| Direct seeding | Irrigation Fencing Weed control | Increase in population over recipient site linking existing populations of target species | 400 seeds approx. 96 expected (24% survival) | Initial | 400 | Assuming 60% survival following first summer approximately 96 individuals are expected to survive with ongoing site management. |
| | | | | 50% loss to predation (birds/insects) | 200 | |
| | | | | 80% germination success | 160 | |
| | | | | 60 % survival following first summer | 96 | |
| Tubestock installation | Irrigation Fencing Weed control | | 400 seeds approx. 200 expected (50% survival) | Initial | 400 | Assuming 70% survival rate following installation, approximately 200 individuals are expected to survive after first summer. With watering and ongoing management of site this number may be greater. |
| | | | | 80% germination success | 320 | |
| | | | | 10% loss following 6 months | 288 | |
| | | | | 70% survival following first summer | 201 | |
| Combination of direct seeding and Tubestock installation | Irrigation Fencing Weed control | | Total 800 seeds 96 expected (direct seeding) 200 expected (tubestock) | As above | 297 | As above |

## 2.6 Alignment with Recovery Plan

If there is a Recovery Plan or Conservation Advice for the species, describe how the proposal address the recommended recovery actions. Include the priority level of the recovery actions the proposal addresses.

The *Earl Grey Lithium Project Conservation Plan for Ironcaps Banksia, Banksia sphaerocarpa* var. *dolichostyla* (Covalent, 2021) aligns with the *Approved Conservation Advice for Banksia sphaerocarpa* var. *dolichostyla (Ironcaps Banksia)* (DAWE, 2008). The sections relevant to this translocation proposal are outlined in Table 6

**Table 6:Translocation Proposal alignment with Approved Conservation Advice for Banksia dolichostyla (Covalent, 2021)**

| Recovery Priority | Conservation Plan Alignment |
|---|---|
| ***Research Priority*** | |
| Design and implement a monitoring program (or support and enhance existing program) | Monitoring program for plant condition of retained *B. dolichostyla* is in place and outlined in Covalent 2021. This monitoring will track plant condition following seed collection to ensure no detrimental impact on individuals.<br><br>Monitoring for each restored individual of *B. dolichostyla* to be conducted annually the following is to be recorded:<br>▪ Survival (alive/dead)<br>▪ Size (height/width)<br>▪ Health condition<br>▪ Reproductive status (flowering, fruiting, seeding)<br>▪ Photograph<br>▪ GPS location<br>▪ Observation of health/growth constraints (grazing/weeds etc)<br><br>These records will be compiled annually and assessed against trigger values to determine if contingency/management actions need to be implemented. |
| ***Enable recovery of additional sites and/or populations*** | |
| Undertake appropriate seed collection and storage. | Seed collection and storage will be undertaken as per section 7.1. *Conservation Plan for Ironcaps Banksia: Banksia sphaerocarpa var. dolichostyla.* Section 4.3.1 further describe that seed will be collected from naturally occurring individuals located within adjacent FVEZ's. This will ensure consistent genetic structuring between the restored individuals and adjacent naturally occurring individuals. |
| Investigate options for linking, enhancing or establishing additional populations. | Recipient site is located within a previously disturbed are that is surrounded by naturally occurring individuals. |

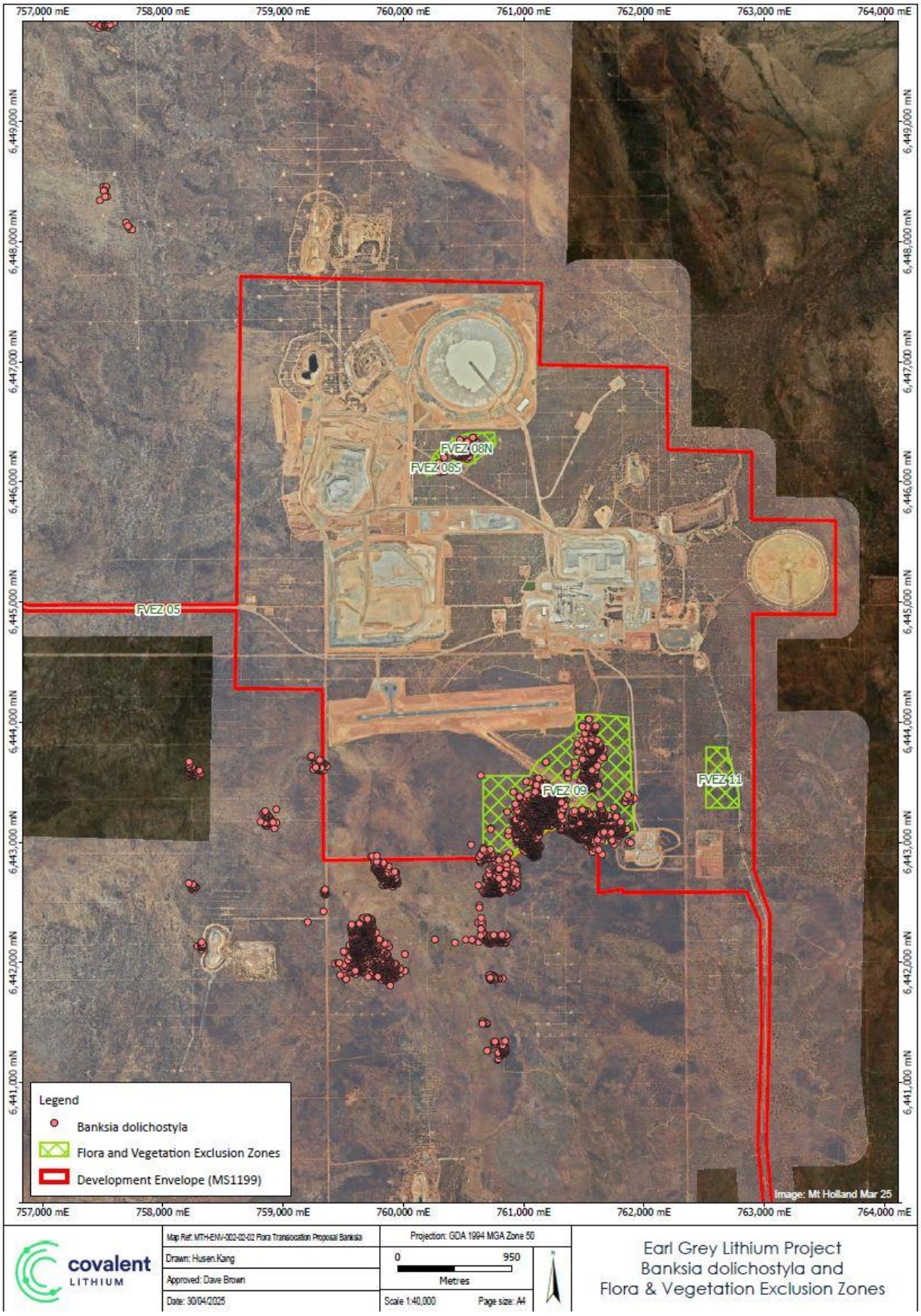


**Figure 3**: *Banksia dolichostyla* and Flora & Vegetation Exclusion Zones

## 2.7 Risk assessment

Identify and list the risks associated with the proposed translocation. Using the risk assessment matrix in Appendix 1, indicate the level of residual risk (i.e. the risk remaining after the actions detailed in this proposal are implemented). Outline how the residual risks will be addressed, managed and/or countered by the conservation benefits. Examples are provided in the table below. At a minimum, consider risks in the following categories:

- Risks to the translocated individuals/population
- Risks to the source population
- Risks to the species and ecosystems (and recipient population during augmentations) at the recipient site
- Risks of spreading disease
- Risks of species becoming invasive at the recipient site
- Risk of hybridisation between the translocated species and extant species at the recipient site
- Risks to socio-economic values

**Table 7:** Risk Assessment of translocation activities

| Risk | Residual risk level | Management actions, conservation benefits |
|---|---|---|
| Environmental weeds invade flora recipient site due to vegetation disturbance for translocation | Moderate | Site monitored for weed presence via regular inspections. If new weed species are detected or existing weeds increase in density, weeds will be treated with appropriate control methods, all disturbed areas will be rehabilitated, and further translocation actions will be suspended. |
| Hard compacted nature of airstrip surface may reduce success of translocation. | Moderate | Considerable site preparation works will be undertaken such as:<br>- Removal of hard surface layer<br>- Deep ripping of subsurface compacted soil<br>- Placement of topsoil stored from clearing of new airstrip site to the north of the recipient site. |
| Detrimental effects to source population due to harvest activities | Moderate | Ensure personnel follow hygiene procedure and do not cause any excess harm to the source plant. Tools are to be clean and free from disease. A maximum of 10% of seed will be taken from any individual with a target of two fruits will be taken from each source plant to reduce impact to each specimen. |
| Introduction of Dieback or other disease/pests | Moderate | Hygiene standards for all equipment and vehicles entering site is implemented as part of site procedures. Regular (Annual) Dieback monitoring is undertaken as part of site procedures. |

| Risk | Residual risk level | Management actions, conservation benefits |
|---|---|---|
| *Banksia dolichostyla* becomes invasive at the recipient site | Low | The current population of *B. dolichostyla* surrounds the recipient site in high numbers. It is likely that the species was historically within the revegetation boundary that was cleared for an air strip. |
| Hybridisation between *B. dolichostyla* and other *Banksia* species within the area of the recipient site. | Low | As the species is present within the immediate area of the recipient site and the individuals to be installed will be from seed of the individuals in the area this is unlikely to be an issue. |
| Unplanned fire causing habitat degradation | Low | Managed firebreak, investigation into cause of fire and if it could have been mitigated. Surrounding area severely burnt in Skeleton Rock bushfire in January 2025. |
| Unauthorised access by vehicles causing habitat degradation | Low | Restoration area will be fenced and access restricted. Entry into Environmental Exclusion Zones is prohibited unless authorised for monitoring purposes. |

## 3 THE SPECIES

### 3.1 Conservation status

Indicate the current conservation status (listing) of the species at the national (EPBC Act 1999) and WA State level (Biodiversity Conservation Act 2016).

**Table 8:** Conservation Status of Banksia dolichostyla

| EPBC listing | | WA listing | |
|---|---|---|---|
| Extinct in the wild | ☐ | Extinct in the wild | ☐ |
| Critically endangered | ☐ | Critically endangered | ☐ |
| Endangered | ☐ | Endangered | ☐ |
| Vulnerable | ☒ | Vulnerable | ☒ |
| Conservation dependant | ☐ | Priority/other (provide details) | ☐ |

### 3.2 Additional information

For translocations with inter-state components, provide inter-state status.
Provide a summary of the historic changes to status, if relevant.

N/A

### 3.3 Taxonomy

Briefly describe any taxonomic uncertainty or recent taxonomic changes for the species/sub-species.

*Banksia dolichostyla* was first collected in 1979 and was officially described in 1981 as a variety of *Banksia sphaerocarpa* var. dolichostyla (George, 1981). *B. dolichostyla* was elevated to species rank by Dr. Kevin Thiele in 2023 (Parker & Percy, 2024).

### 3.4 Description

Provide a brief physical description of the species/sub-species.

*Banksia dolichostyla* (*Banksia sphaerocarpa* var. *dolichostyla*) is a dense-canopy shrub or small tree to 4m tall. It has bluish green, narrowly linear, toothless, glaucous leaves. Branchlets glabrous or hairy. Leaves petiolate, alternate 60-105 mm long, 1.2-1.5 mm wide; petiole 2-3 mm Long; lamina flat, entire, the margins revolute. Flower heads are golden, erect and spherical. Inflorescence tomentose with matted or tangled, soft, woolly hairs. Perianth 46-55 mm long, hairy, all over, limb apex hirsute with long rough and course hairs without awns. Pistil 58-65 mm long, hooked, style glabrous. Follicles hairy, hirsute with long rough and course hairs. Elliptic 15-30mm long (WA Herbarium, 1998-).

Fruiting cones are spherical with up to 60, often crowded, follicles, it differs from Rounded-fruited Banksia (*Banksia* sphaerocarpa var. *caesia)* and Fox Banksia (*Banksia sphaerocarpa* var. *sphaerocarpa)* in its longer floral whorl (46-55 mm long) and its longer pistil (carpel, female flower parts) (Brown et al., 1998). Flowers between March to May (WA Herbarium, 1998-).

### 3.5 Distribution and number of populations

Describe the current and historic distribution of the species. Provide details on the number of current wild, translocated and captive/*ex situ* populations. Indicate source of information and include detailed maps.

*Banksia dolichostyla* has a linear distribution of approximately 70 km, extending from Mount Holland in the north to South Ironcap in the south (Western Botanical, 2020). Summary of population and regional impacts is outlined in *Earl Grey Lithium Project: Banksia sphaerocarpa* var. *dolichostyla (T) Targeted Survey* (Mattiske, 2019). During the survey eighteen discrete population both within and outside the EGLP development envelope during this survey a total of 16,503 *B. dolichostyla* were recorded across all survey areas (Mattiske, 2019). When including estimated numbers, the population is potentially 22,586 plants (Mattiske, 2019). Maps of populations around and inside the EGLP development envelope are provided in Figure 4 and Figure 5 below.

### 3.6 Demographics

What are the overall trends for this species (e.g. population size, population dynamics, age distribution, sex ratio etc)? Describe recent trends for each population, if known.

*B. dolichostyla* has been recorded within the Avon Wheatbelt (AW1), Southern Cross (COO2), and Western Mallee (MAL2) IBRA subregions (Mattiske, 2019). The population of *B. dolichostyla* was surveyed across 20 search areas during a targeted survey conducted by Mattiske Consulting in 2018. The 20 search areas were comprised of 18 discreet populations. A total of 16,503 individuals were recorded within the survey areas when including additional estimated numbers, the population increased to 22,856 plants (Mattiske, 2019). Of the 16,503 recorded individuals 5,220 were located within the EGLP development envelope. Figure 4.

The condition of *B. dolichostyla* plants encountered during the 2018 survey was generally excellent, this included plants growing in fire burnt areas. Plants ranged from juveniles through to large mature adult plants ranging from 2.5 m to 3m in height with a similar width (Mattiske, 2019). During this survey only presence of the individuals was recorded no data on if each individual was a mature adult or juvenile was recorded.

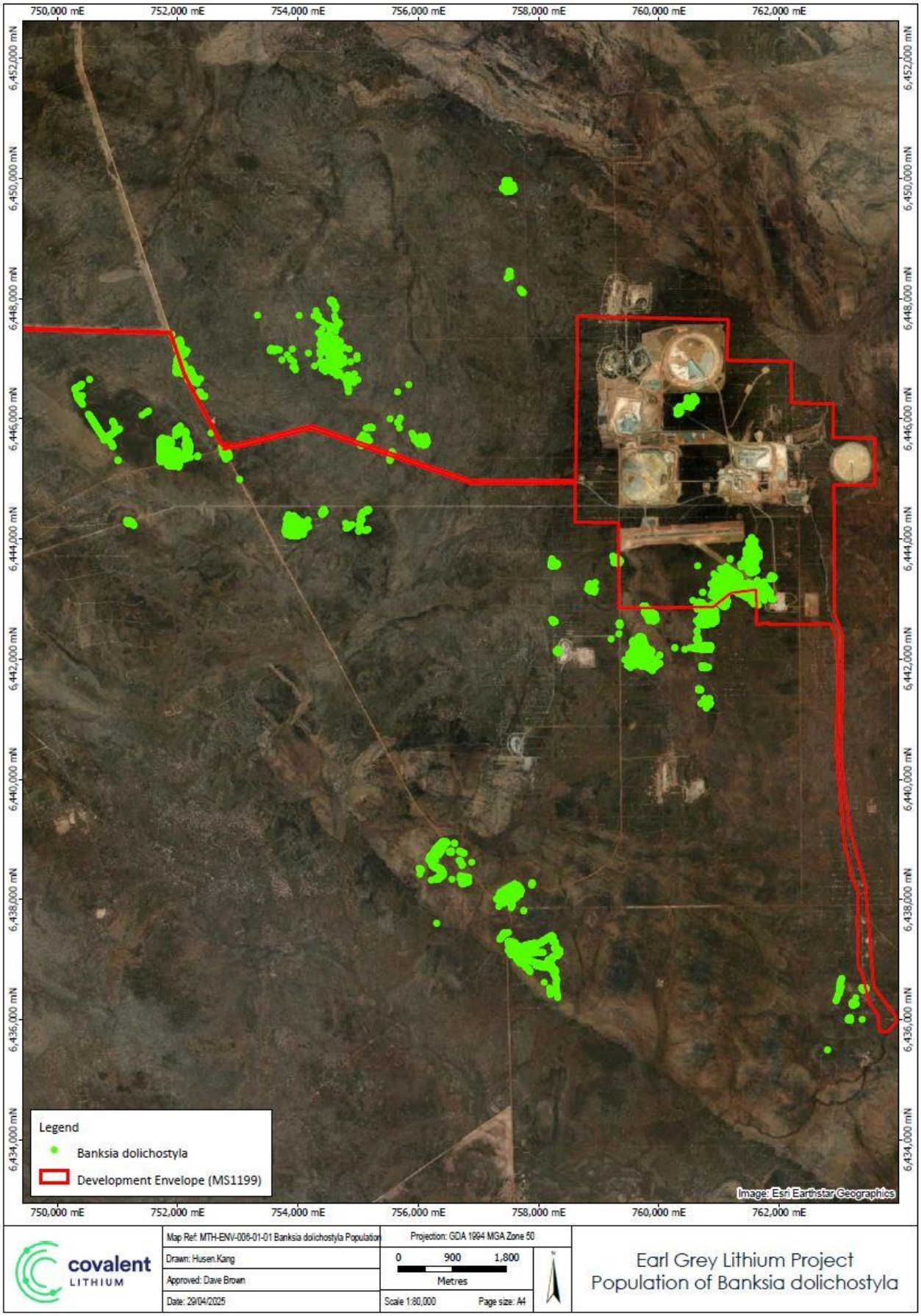


**Figure 4: EGLP Population of Banksia dolichostyla**

### 3.7 Ecology and biology

Provide a brief overview of the species' biology and ecology focussing on aspects that are relevant to the long-term success of the translocation such as habitat requirements, reproduction and longevity.
For fauna, this should include information on diet, behaviour, dispersal, home range and minimum area required to support a viable population.
For flora, this should include information on soil, vegetation and hydrological characteristics of the habitat, pollinators, breeding system, seed dispersal agents, disturbance response and mycorrhizal associations.

*B. dolichostyla* grows on lateritic gravel, in low open woodland and low shrubland (George, 1981). Near Mount Holland *B. dolichostyla* grows on low gravely laterite and ironstone hills overlaying greenstones (Mattiske, 2019). Populations surveyed as part of the *Banksia sphaerocarpa var. dolichostyla Targeted Survey* conducted my Mattiske were located across seven soil systems as described in Table 9 (DPIRD, 2022).

**Table 9:** Soil systems where *B. dolichostyla* have been recorded, green indicates source and recipient soil type (DPIRD, 2022)

| Symbol | Name | Description |
|---|---|---|
| 261d3 | AC1 Atlas system | Gently sloping to gently undulating plateau areas, or uplands, on granites, gneisses, and allied rocks, with long gentle slopes and, in places, abrupt erosional scarps |
| 261o3 | X17 atlas system | slopes and valleys |
| 261o5 | Ya28 atlas system | Sandy plains with some clay pans and small salt lakes, dunes, and lunettes |
| 261k4 | Ms8 Atlas system | Gently undulating plains with broad shallow drainage depressions |
| 250j7 | JJ16 atlas system | Broken terrain characterized by rock outcrops (granitic bosses and tors) which may cover very large areas within the unit |
| 250h9 | DD10 atlas system | Plains with some clay pans and small salt lakes, dunes and lunettes |
| 250Ln_2 | Lillian 2 subsystem | Level to very gently inclined plains in lower slope positions. Stream channels where present are incipient and drain to adjoining playa lakes; Alkaline grey shallow sandy duplex soils and associated calcareous loamy earth |

*B. dolichostyla* has predominantly been located within two vegetation types in the EGLP development envelope (Mattiske, 2018). These are described as:

- S3 - Allocasuarina acutivalvis, Eucalyptus burracoppinensis tall sparse shrubland over Banksia purdieana, Hakea subsulcata, Melaleuca cordata mid sparse shrubland over Micromyrtus erichsenii, Persoonia helix low isolated shrubs on gravelly yellow brown to orange brown clay to clayey sand soils on flats.
- W9 - Eucalyptus urna, Eucalyptus ravida, Eucalyptus prolixa low mallee woodland over Melaleuca pauperiflora, Dodonaea stenozyga, Daviesia argillacea mid sparse shrubland over Acacia merrallii, Grevillea acuaria, Microcybe multiflora subsp. multiflora low sparse shrubland.

As outlined in The *Earl Grey Lithium Project Conservation Plan for Ironcaps Banksia, Banksia sphaerocarpa var. dolichostyla* (Covalent, 2019), individuals of *Banksia dolichostyla* recorded by field surveys were considered generally to be in an 'excellent' health condition. Individuals ranged from recruiting juveniles through large mature adult plants and included recruitment within previously burnt and disturbed areas. Based on field observations it was considered that the species may be a good candidate for restoration in areas with suitable soils.

### 3.8 Threats and causes of decline

List the known threats and causes of decline for the species. Detail how the species is being impacted, i.e. severity, extent, evidence of the impact.

The *Approved Conservation Advice for Banksia sphaerocarpa var. dolichostyla (Ironcaps Banksia)* (DAWE, 2008) has identified the main threats to the Ironcaps Banksia are:

- direct destruction of plants through gravel mining, mineral exploration and cutting of survey lines
- inappropriate fire regimes:
- weed invasion
- changed hydrology
- salination and
- fragmentation.

Mining-related activities may increase weed invasion and encourage inappropriate fire regimes. The species occurs mostly on vacant Crown land in areas of significant gold and nickel deposits. Mining leases are common over these areas and future developments may threaten this species.

### 3.9 Translocation history

Briefly describe the outcomes of previous translocations, including whether they met their success criteria. Describe how the methods, results and learnings from any previous translocations will be incorporated into the proposed translocation.

No previously documented attempts for restoration of the species are known. Multiple examples of restoration of other taxa in the *Banksia* genus have been well documented in a variety of habitats. Majority of past research has been limited to population genetics of translocated or fragmented populations. As the proposed translocation within this project is not establishing a new population but connecting an existing population and reducing the potential future fragmentation the issues outlined in these reports such as genetic erosion and genetic bottlenecking is not considered to be a concern within this project.

Although population genetics and pollination outlined in previous research projects may not be directly relevant for the BdBA project, aspects of the research such as significance of seed weight, seed germination and seedling growth methodology from these research projects have helped to refine the methodology of this project.

Numerous studies have found seed weight to be a good predictor of seed germination (Heschel and Paige, 1995; Stanton, 1984) and seedling growth (González-Varo et al., 2010; Oostermeijer et al., 1994; Stanton, 1984; Vaughton and Ramsey, 1998) or seedling survival (Oostermijer et al., 1994). Seed weight is a strong contributor to variation in all measures of progeny performance in *Banksia sphaerocarpa*

(Llorens *et al.,* 2013). The relationship between seed weight and progeny performance can be due to greater stored energy and nutrient resources giving larger seeds a direct competitive advantage over less well-provisioned seeds or due to larger seeds having a superior genotype that confers a selective advantage independent of stored resources or a combination of these two effects (Llorens *et al.,* 2013). The BdBA project will focus propagation and seeding efforts of seeds that have the greatest weight. Assessment of seeds following extraction from the cones will be undertaken to determine what seeds are the best quality and suitable from propagation.

Over the past three decades proteaceous species with a range of animal pollinators have been established at over 30 translocation sites in the south-western Western Australia (DBCA, Unpubl. data). Several of these projects have achieved the goals of survival, growth and reproduction at rates compared to wild populations. These populations provide an opportunity for further evaluation of translocation success through assessment of genetic diversity capture maintenance of mating system function and reproductive output (Dillon *et al.,* 2023). *Banksia brownii* is a threatened proteaceous shrub that has been targeted for translocation in Western Australia and provides a model system of investigation into the effects on genetic diversity mating systems and reproductive output. Seed extraction methodology outlined for the *Banksia brownii* in Dillion *et al.* will be used to extract the *B dolichostyla* seed collected for the BdBA project. This methodology includes burning, soaking and drying the cones,

## 4 SOURCE SITES, POPULATIONS AND FOUNDERS

### 4.1 Source site/s

Provide the name, location (address or GPS co-ordinates), map, tenure and identify the landowner or manager[1]. Describe the habitats and climate.

[1] The landowner/manager must endorse the final version of the Translocation Proposal by signing the relevant section on the cover sheet.

A summary of the tenements associated with the EGLP are provided in below Table 10.

**Table 10:** Tenements associated with the EGLP source site

| Tenement | Tenement Owner | Tenement Area (ha) | Granted | Expiry |
|---|---|---|---|---|
| G77/130 | MH Gold | 28.0 | 05/10/2017 | 04/10/2038 |
| G77/134 | MH Gold | 31.0 | 18/04/2019 | 17/04/2040 |
| L77/208 | MH Gold SQM | 20.0 | 05/04/2013 | 04/04/2034 |
| M77/1065 | Montague | 960.0 | 13/12/2004 | 12/12/2025 |
| E77/2099 | MH Gold SQM | | 02/05/2014 | 01/05/2026 |

The source site as mapped in Figure 5 is located within the Ironcap Hills vegetation complexes (Mt Holland, Middle, North and South Ironcap hills, Digger Rock and Hatter Hill) (Banded Ironstone Formation) priority ecological community (PEC) (Priority 3). The vegetation community within the source site that the *B. dolichostyla* will be harvested from is within the S3 vegetation community. The S3 community covers an area of 106 ha and contains Allocasuarina acutivalvis, Eucalyptus burracoppinensis tall sparse shrubland over Banksia purdieana, Hakea subsulcata, Melaleuca cordata mid sparse shrubland over Micromyrtus erichsenii, Persoonia helix low isolated shrubs on gravelly yellow brown to orange brown clay to clayey sand soils on flats.

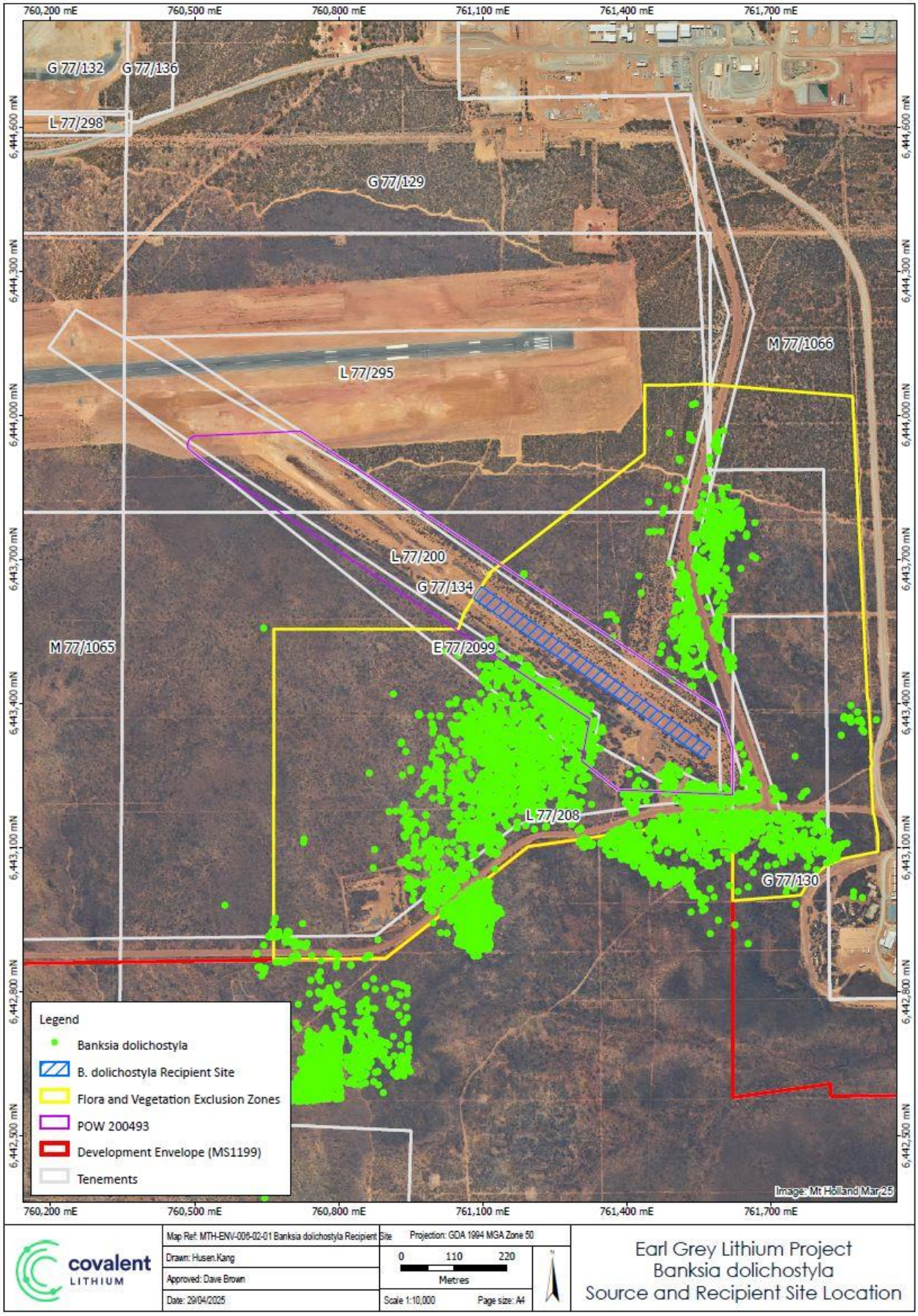


**Figure 5**: Banksia Dolichostyla Source and Recipient site

The closest Bureau of Meteorology (BoM) weather station currently operating near the EGLP is Hyden (Station ID 10568) approximately 90 km from the source/recipient site. The climate within the project area is described as dry warm Mediterranean. Hyden recorded 240.2 mm of rain in 2023, which is 171.1 mm less than 2022 and 99.7 mm below the long-term average rainfall of 339.9 (BoM, 2024). Mount Holland also has a site weather station. Data from this weather station is also presented for 2024 and 2025 (YTD) Rainfall as a comparison.

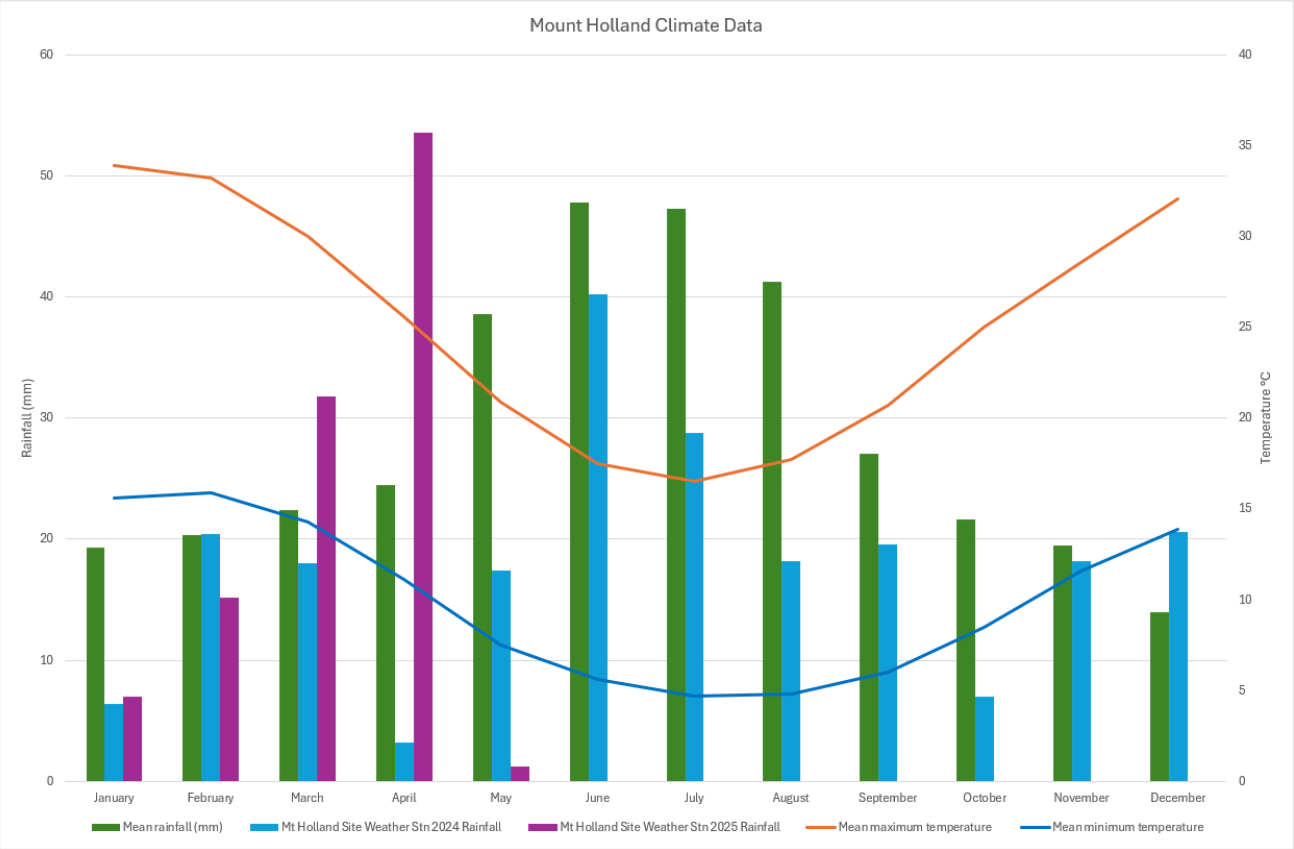


**Figure 6: Average rainfall and temperature records BOM & Site Weather Stations**

### 4.2 Identify the source type

Select all that apply

**Table 11:** Source type of *Banksia dolichostyla* for translocation program

| **Flora:** | | | | | |
|---|---|---|---|---|---|
| Wild | ☐ | *Ex situ* propagation | ☒ | Relocation | ☐ |
| Seed | ☒ | Seedling | ☒ | *In situ* propagation | ☐ |
| Mature plant | ☐ | Translocated population | ☐ | Other | ☐ |

### 4.3 Captive / *ex situ* populations

If founders are being sourced from a captive breeding/*ex situ* propagation program, describe the original source sites if known, who manages the breeding program, existence of studbook/propagation records and

who manages them, success of the program, quarantine considerations and the suitability of captive bred/propagated individuals for survival *in situ*.

Not applicable founders will be sourced from in situ populations.

### 4.4 Founders

Provide details of the number of individuals proposed to be sourced from each site, and when.

No more than 410 fruits or 1,340 seeds will be taken from a minimum of 50 individuals (target of > 200 individuals) from within the development envelope in October – December 2024 as per Threatened Flora Licence (TFL-2425-0018).

### 4.5 Source population/s

Provide details on the population size, trends, health and genetics of the population/s. If recent data not available, provide details of proposed pre-harvest survey/monitoring of the source populations.

Observations made in the field during the *Earl Grey Lithium Project Banksia sphaerocarpa* var. *dolichostyla Targeted Survey* (Mattiske, 2019) and reinforced on multiple follow up flora & vegetation surveys and condition monitoring reports, indicate that the source population TPFL 12A contains an estimated population of 5011 healthy specimens.

The population were observed to be healthy, recruiting juveniles and in areas which have been subject to fires have recovered rapidly.

It should be noted that in January 2025, post initial seed collection the source population was impacted by a major fire event. Mapping and survey of the impact on the population is underway however this may affect any additional seed collection events that may be required.

### 4.6 Sustainable harvest

Provide evidence (e.g. using population viability analyses) that the source population/s can support the removal of the proposed founders.

Source population TPFL 12A contains an estimated 5011 mature adults. Seed collection has been limited to the following conditions:

- Less than 10% of available seed per plant to avoid over harvesting.
- The maximum quantity of material to be taken shall be no more than 2 fruit per plant.
- No more than 410 fruit in total (containing 1370 seeds).

See conditions in seed collection S.40 authorisation TFL-2425_0018 for further details.

### 4.7 Justification

**Source site selection**

If there was more than one choice of possible source site/population, provide reasons why the proposed source population/s was chosen.

The source site was selected as it in close proximity to the recipient site and is within the development boundary. It is expected that the individuals that seed is collected from will have the best genetics for success in the recipient site.

### 4.8 Genetics

Describe how the sourcing strategy (source, number and characteristics of founding individuals) is appropriate for achieving the aims for genetic management of the translocated population.

A target of 1,340 seeds to be collected. Details of purpose of seed quantities are included in Table 12. Seed will be collected from multiple individuals (≥ 50 individuals) to ensure genetic variation/representation. As identified by Western Botanical (2020), *B. dolichostyla* adjacent to the recipient site have been observed to be carrying significant amounts of fully formed fruits containing follicles with up to one seed per follicle; such that it is believed there is a sufficient natural seed resource available to supply the restoration.

Routine testing by the State Department of Biodiversity, Conservation and Attractions (DBCA) has indicated the seed to have good viability (pers. comm. Crawford A (Dr.) of DBCA cited in Western Botanical 2020). Subject to the number of seeds collected, a proportion of the seeds will be germinated into seedlings by a reputable seedling nursery and grown to approximately 1 year of age prior to planting. Heavier seeds will be prioritised for propagation as discussed in Section 3.9. The remainder of the seed will be temporarily stored, with the seeds to be broadcast/planted later at the same time as the seedlings. Seed collection and the germination of seedlings will be undertaken over a number of years (minimum 2 years, subject to the initial success of establishment), to enable an ongoing supply of seeds and seedlings should supplementary planting be necessary to achieve the restoration outcome and/or to meet contingency commitments.

An estimated seed viability of 80 % has been applied based on industry experience with other banksia species. Viability will be assessed initially by weight using a vacuum separator. Following this viability will be assessed via x -ray.

**Table 12:** Seed collection

| Purpose | Number of seeds |
|---|---|
| Target Tubestock | 400 |
| Target Direct Seeding | 400 |
| Additional seeds allowing for 80% germination rate | 270 |
| Target DBCA TFSC Seed Lodgement | 270 |
| **Total** | 1,340 |

## 5 RECIPIENT SITE

### 5.1 Location, tenure and management environment

Provide the name, location (address or GPS co-ordinates), map, tenure and identify the landowner or manager[1].

[1] The landowner/manager must endorse the final version of the Translocation Proposal by signing the relevant section on the cover sheet.

The EGPL is situated within a number of Mining Lease, General Purpose Lease and Miscellaneous Licence Tenements granted under the *Mining Act 1978* (WA), with Covalent Lithium having commercial agreements with the tenement holders to grant land access and authorise mining operations. The Recipient site is located on:

- General Purpose Lease 77/134 MH GOLD PTY LTD
- Miscellaneous Licence 77/208 MH GOLD PTY LTD

Please refer to Figure 1 and Figure 5 for detailed information on location.

By way of an unincorporated joint venture agreement dated 21 December 2017 between MH Gold and SQM (amongst others) (**JV Agreement**) Covalent was appointed manager of the Mount Holland Lithium Project to develop the Earl Grey lithium deposit and has authority to apply for and carry out the Proposed Works in relation to these tenements for and on behalf of the Mt Holland joint venturers.

### 5.2 Management environment

Describe the management environment. Provide evidence that the site will provide long-term security for the species, that long-term management of the site is feasible and that sufficient resources for long-term management will be available. If the proponent will not be responsible for the management of the translocated population in perpetuity, provide details of who will take over.

The recipient site will be monitored on a minimum annual basis following establishment for the entirety of the approval (40 years). While mining progresses, the area is protected by a flora and vegetation exclusion zone under MS1199. Post mining it is envisaged that the area will be covered by a conservation covenant under the Soil and Land Conservation Act prohibiting exploration or mining activities occurring.

### 5.3 Site suitability

Provide the total size and area of suitable habitat at the site. Provide evidence that the site has a sufficient area of suitable habitat to support a viable population of the species. Include details on the connectivity of the site to other areas of suitable habitat or populations of the species, if relevant.

The total size of the recipient site is 1.75 ha of which 100% is suitable habitat. The recipient site is located within FVEZ09 (Figure 5) which contains two populations separated by historical clearing it is likely that the recipient site historically had *B. dolichostyla* and it was removed when the runway was installed. Areas adjacent to the recipient site have high density populations of *B. dolichostyla, and* it is estimated that there is greater than 150 individuals per hectare, therefore the 1.75 ha recipient site will have sufficient area to sustain the translocated individuals. Although the minimum required density of *B. dolichostyla* required is 69

plants within the 1.75 ha (39.4 plants/ha) it is expected that a minimum of 297 plants will be established through both direct seeding and tubestock installation (approximately 169.7 plants/ha) (Table 4).

### 5.4 Habitat

Describe the habitat at the recipient site and explain how (e.g. using habitat modelling) it meets the requirements of the species throughout its life cycle. Include details about habitat condition.

Recipient site is located within the same soil and vegetation complex as the source site and is located within 50 m of the source site (Attachment 3).

### 5.5 Climate

Provide evidence that the site is climatically suitable for the species, and will remain so under multiple future climatic scenarios, including through seasonal or episodic environmental variation.

As per Section 4.1. Above

### 5.6 Resources

Provide evidence that the site can provide all the resources required by the species.
For flora, include details on pollinators, soil and geology, hydrology, landform and suitable microsite availability.
For fauna, include details on shelter and food resources.

As per Section 4.1 & 5.4 Above

### 5.7 Threatening processes

Describe current threats operating at the recipient site and how they are controlled.
For reintroductions, provide evidence that the cause/s of local extinction are no longer operating or are sufficiently controlled.
Use the strongest possible scientific justification (e.g. robust monitoring data) to show that the control of threats is sufficient for the translocated population to establish and persist.

Recipient site is cleared of all vegetation as it is an historical airstrip that has been decommissioned. The main threats to the recipient site are outlined in Table 13. Where *Banksia dolichostyla* are successfully restored, Covalent suggests that long-term protection of the restored individuals (i.e. beyond the Project mining life) could be ensured through a Section 19 exemption under the Mining Act; being a mechanism whereby the State Minister for Mines may exclude certain land areas from mining (and thereby prevent any future clearing of the restored individuals by mining in the future).

**Table 13:** Threats, management and contingency actions for recipient site

| Threat | Management Action |
|---|---|
| Unauthorised access to site causing damage to vegetation | ▪ FVEZ is Fenced and access restricted to authorised personnel only – Locked gates, signage etc.<br>▪ FVEZ protocol included within site induction process |

| Threat | Management Action |
|---|---|
| Increased weed presence / Introduction of dieback | ▪ Conduct weed and seed inspections on all incoming equipment and vehicles<br>▪ Conduct regular weed control<br>▪ Undertake weed and dieback surveys on an annual basis. |

### 5.8 Other values

Describe the conservation (e.g. conservation significant species, communities or ecosystems) and social values known to be present at the recipient site. Provide evidence that appropriate means, such as desktop and/or field surveys, have been used to identify potential values at the site.

A conservation significant flora target survey was conducted in 2018 by Mattiske Consulting (Mattiske, 2019a). The species provided in Table 14 were all recorded within the flora and vegetation exclusion zone 09 (source and recipient site). Follow up annual surveys have confirmed the below data.

**Table 14:** Significant flora taxa located within flora and vegetation exclusion zone 09

| Species | Priority Listing |
|---|---|
| *Banksia dolichostyla* | T |
| *Boronia ternate* var *promiscua* | P3 |
| *Chamelaucium sp. Mt Holland* | P1 |
| *Daviesia sarissa subsp. redacta* | P2 |
| *Eutaxia lasiocalyx* | P2 |
| *Grevillea lissopleura* | P1 |
| *Hibbertia tuberculata* | P1 |
| *Labichea rossii* | P1 |
| *Microcorys elatoides* | P1 |
| *Microcorys sp. Mt Holland (D. Angus DA2397)* | P1 |
| *Stylidium sejunctum* | P3 |

**5.9 Impacts to recipient site**

Describe any negative impacts that the translocation may have on other species, communities, ecosystems or values at the recipient site (e.g. hybridisation, spread of disease, pathogens or weeds, unsustainable predation of existing species, or removal of vegetation for translocation infrastructure). Provide details on the measures that will be used to control or mitigate negative impacts.

Restoration activities that may negatively impact the recipient site are outlined in Table 15.

**Table 15**: Potential impacts to recipient site from revegetation activities.

| Potential impact | Control |
|---|---|
| Increased weed load or new weeds present within site boundary | Implementation of a vehicle hygiene procedure, Annual weed monitoring across Development Envelope. Control where necessary. |
| Spread of disease or pathogens within recipient site boundary | Should Phytophthora (dieback) be detected, controls including signage, clean down points, vehicle hygiene shall be implemented. |
| Erosion caused via ripping or fencing activities | Drainage measures designed and constructed to minimise changes to natural surface water flow, including diversion drains, rock cladding and contouring as required. |
| Reticulation damage | Undertake regular inspections and maintenance activities |

## 6 FAUNA TRANSLOCATION LOGISTICS

* Leave blank if your proposal relates to flora.

## 7 FLORA TRANSLOCATION LOGISTICS

* Leave blank if your proposal relates to fauna

### 7.1 Harvest

Describe how and when founder individuals or material will be/have been collected. Provide evidence that appropriate permission has been/will be obtained.

A Threatened Flora Authorisation was obtained in November 2024 (s40 TFL 2425 0018) in order to collect *Banksia dolichostyla* seed in 2025. Seed was collected from the population adjacent to the recipient site within flora and vegetation exclusion zone 09/ TPFL population 12a. Seed collection is restricted to no more than 10 % of available seed per subpopulation and no more than 2 fruits (cones) per plant to avoid over harvest of seed and increase genetic diversity captured.
The number of cones collected will be determined by the average number of filled follicles held on the inflorescence (cone). A total of *1,340 seeds* will be targeted with allocations attributed to:

- 400 seeds to tubestock propagation
- 400 seeds to direct seeding
- 270 seeds to be lodged to DBCA Seed Centre
- An additional 270 contingency seedstock to allow for varying germination rates or unforeseen nursery failures.
- Cones will be assessed for filled follicles, with the newest cones available which show mature follicles being selected. This will be confirmed by a simple scratch test on the follicle to check maturity.
- The cones will be cleanly removed from the plant using clean and sharp secateurs.
- Cones will be transported in breathable calico bags and then spread out within 24 hours of collection to discourage formation of mould. Due to the large size and ample airflow surrounding the cones, this is unlikely to occur.

Given the inflorescence physio-morphology (hairy and held deep within the plant) it is likely that follicles are opened by fire. Flaming will not be used in the first instance until it is determined that it will not affect the viability of the seed.

In order, the following methodologies will be trialled to determine the most appropriate method for opening follicles.

1. Cones will be dried in 15% Relative Humidity (RH) and 15°C for a minimum of three weeks.
2. Sample cones from the batch will undergo exposure to 70°C for up to four hours under constant supervision. If unsuccessful, cones will undergo exposure to higher heats (intervals of 10°C) for shorter periods of time until the best temperature has been determined.
3. Cones will undergo a wetting and drying cycle.
4. Cones will undergo flash flaming.

Following extraction from the cones, seeds will undergo preliminary quality control through vacuum separation with light weight seed separated off as assumed they will be of lower quality/viability. A sample of the remaining seed will undergo x-ray assessment to determine seed fill and likely viability. Seed will be stored in 15% RH and 15°C conditions.

### 7.2 Propagation

Describe the propagation methods and the facilities in which plants are being generated, including in relation to plant hygiene. Describe pre-translocation hardening off or acclimatisation protocols that will be used, if any.

Natural Area is partnered with Curtin University's Native Seed Technology and Innovation Hub who will undertake x-ray imaging to determine seed fill. Seed purity, seed fill and germinability will be assessed following the RIAWA Seed Testing Standards utilising composite samples appropriate to the size of the final collection. Germination trials will also be conducted within Natural Area's Nursery Industry Accreditation Scheme Australia (NIASA) certified native plant nursery such as:

- dry smoke application
- application of smoke water (10% diluted) following sowing
- no treatment.

As *B. dolichostyla* is serotinous, smoke is often used in a nursery setting to improve plant vigour following germination. All results will be provided in a seed treatment and germination report card. Following the initial trials, a portion of the batch will be propagated using the best germination method to determine suitability and timeframes for nursery production. Further to this, seed will be categorised into a minimum of two weight groups which are to be tracked through the germination/propagation process and continue through the entirety of the project.

Plants will be grown in forestry tubes which are expected to provide best success rates upon transplant. Natural Area will propagate plant material under strict hygiene protocols to ensure plant stock is not affected by disease, weeds or pests, with observations and treatments provided in the seed treatment and germination report card.

Natural Area's NIASA (Nursery Industry Accreditation Scheme Australia) accredited Nursery is audited annually to ensure quality stock produced adheres to industry best management practices. Propagation methods include transplanting of seedlings, cuttings and division. Growing media and nursery plastics follow strict hygiene protocols before use. Growing media is NIASA accredited but is batched and sent off for further testing. Depending on the season, stock is hardened off in internal infrastructures for up to 10 days prior to relocation in the open areas. All stock is inspected weekly followed by an action plan if required. Pre-cautionary treatments and nutrient regimes are targeted and documented to minimise undesirable outcomes.

### 7.3 Translocation design Timing

State the time of year the plants/seeds will be planted or sown and provide evidence that this is biologically appropriate.

Plants/ seeds are planned to be installed in April/May 2026 as per the Department of Water and Environmental Regulations *A guide to preparing Revegetation Plans for Clearing Permits* Specified periods for direct seeding and planting in a particular area of the state (DWER, 2018).

### 7.4 Planting design

Describe the planting design and explain why this design will be used. Provide details on how many plants/propagules will be planted at each location. Provide evidence that the strategy is biologically appropriate (e.g. regarding the breeding strategies, typical recruitment environment in healthy wild populations and microhabitat requirements of the species).

*Ironcap Banksia Conservation Plan* Section 4 outlines that revegetation methodology will involve a combination of direct seeding and planting of tubestock. This is described further in Section 7.5. Plants propagated in the nursery will be given a specific code to ensure they are tracked once planted in the field and seed is to be separated into their weight category and tracked in the field. Both direct seeding and planting will be conducted in the same areas. (Figure 7).

Any additional seeds available following the propagation of 400 tubestock and treatment of 400 seeds prior to direct seeding will be stored in Natural Area Consulting Managements Services seed storage facility that is maintained at 15 degrees Celsius and 15% relative humidity for optimum storage state for long term storage.

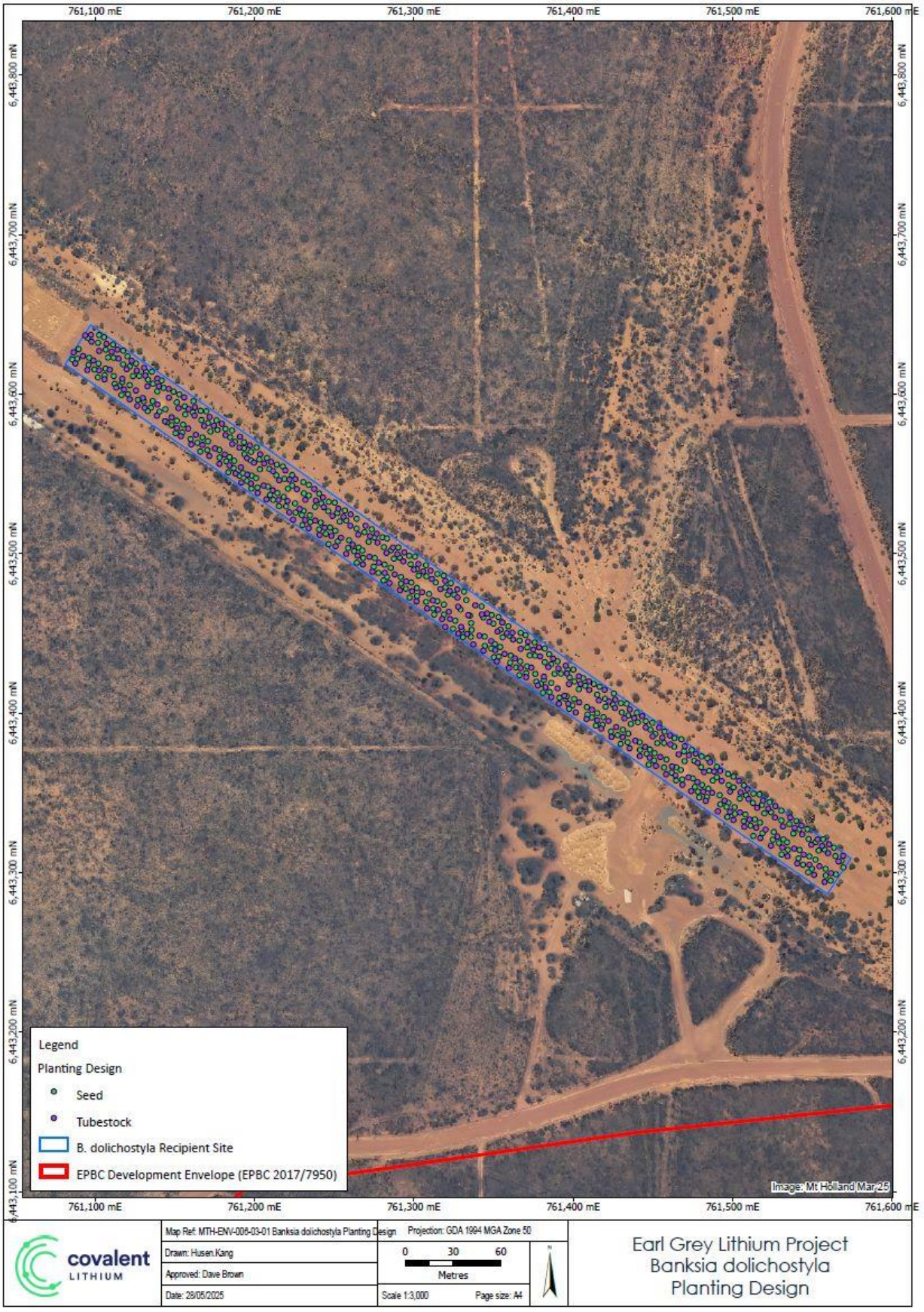


**Figure 7:** ELGP Banksia Dolichostyla Indicative Planting Design

### 7.5 Planting treatments and post-planting support

Describe any treatments that will be applied at the time of planting (e.g. fertiliser, soil wetting agents etc) and/or post-planting support (e.g. watering, fencing) that will be provided. Provide justification for the choice of treatment or support provision.

Prior to revegetation work the following will occur:

- Removal of all airstrip and hardstand materials
- Installation of fencing
- Deep cross-hatch ripping of the subsoil to break up any compaction and facilitate water infiltration
- Spreading of topsoil from cleared areas from the project (Figure 8)
- Installation of irrigation system (TBC)
- Installation of signage

Other species to be installed within the revegetation site will be that found within the vegetation type S3 (Appendix 3) described as *Allocasuarina acutivalvis, Eucalyptus burracoppinensis* tall sparse shrubland over *Banksia purdieana, Hakea subsulcata, Melaleuca cordata* mid sparse shrubland over *Micromyrtus erichsenii, Persoonia helix* low isolated shrubs. Species listed as being within this vegetation type in Mattiskes (2018) flora and vegetation assessment will be prioritised for installation.

Tubestock will be installed using the following methodology:

- When planting directly into the ground, tubestock will be installed utilising Pottiputki's or augers as required.
- All plants will be installed at a sufficient depth to enable the root ball of the tubestock to be below the surface of the soil.
- Soil surrounding the installed plant will be backfilled and patted down firmly to eliminate air pockets from forming around the root ball.

The revegetation site will be fenced to minimise the risk of herbivores grazing (kangaroos and rabbits) and irrigated with fresh water to aid the establishment of the seed/seedlings. Revegetation will be watered for a minimum of 2 years following plant installation. Ongoing management will occur for the life of the approval. Management actions include:

- Inspection and maintenance of fence
- Inspection and maintenance of irrigation system
- Weed control
- Maintenance of firebreak and fire fuel load reduction (If applicable).

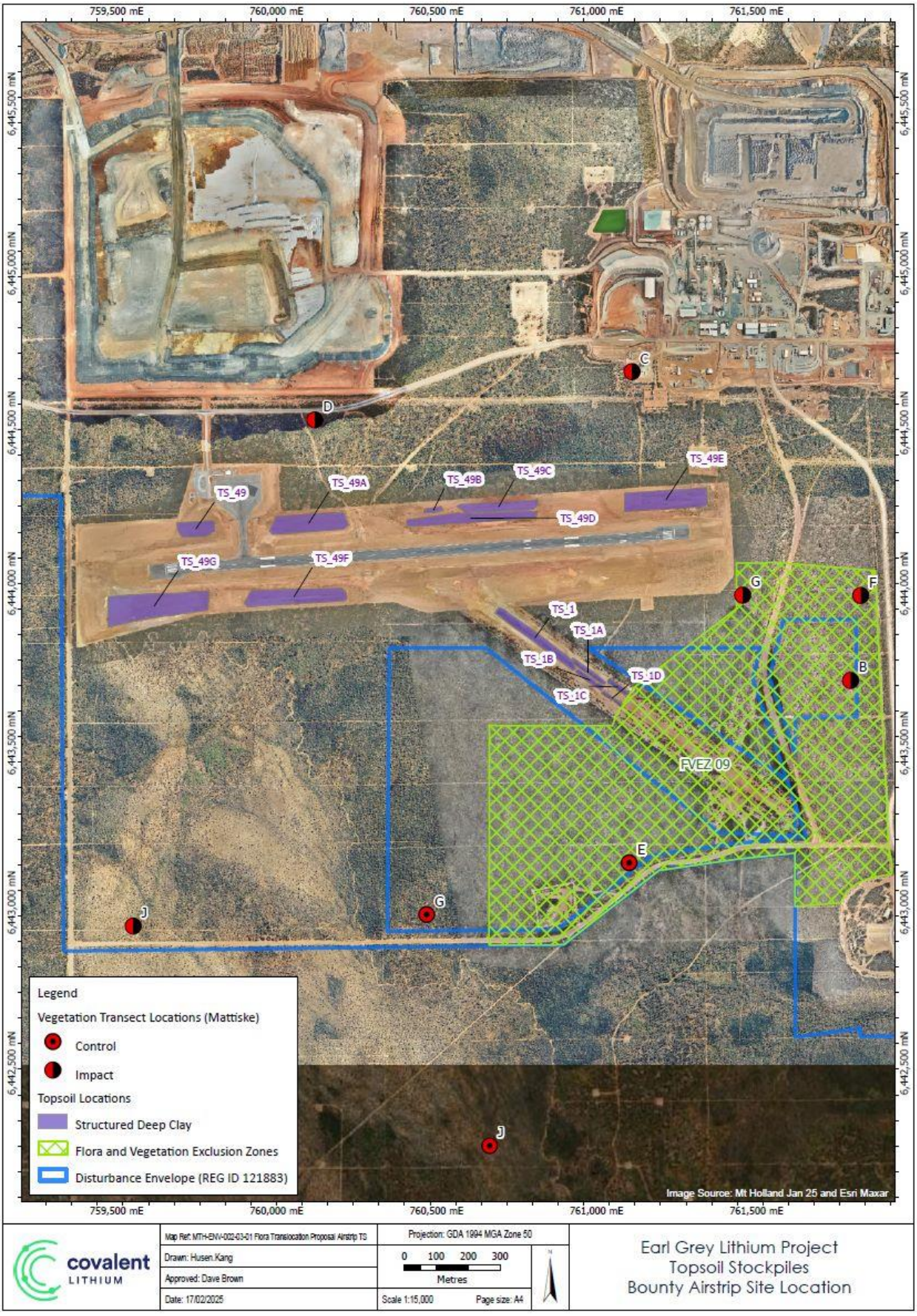


**Figure 8:Topsoil Stockpiles & Vegetation Transect locations**

### 7.6 Experimental design

For translocations that have an experimental component, describe the experimental design, including replication and sample sizes of treatments, and indicate the type of statistical analysis that will be used.

This translocation will not include any experimental components.

### 7.7 Capture of founders

Describe how founder individuals will be captured (e.g. trapping methods, timing).

### 7.8 Selection of founders

Describe how founder individuals will be selected. Include details on age, size, sex, reproductive condition, health assessments etc.

### 7.9 Transportation and holding

Describe how the animals will be transported within and between the source and recipient sites. Include details on vehicle type, environmental conditions, time frames and contingency arrangements.
Describe how founder individuals will be held between and during capture, processing, transportation and release. Include details on containment method (e.g. bag or nest box), environmental conditions, time frames and any provision of food or water.

### 7.10 Release protocols

Select all that apply

**Hard release** ☐ fill out 7.12

**Soft release** ☐ fill out 7.13

### 7.11 Timing

Detail the time of day when the animals will be released, and explain why this is biologically appropriate.

### 7.12 Hard release strategy

Explain why a hard release strategy is appropriate. Provide details on how many individuals will be released at each point and the microhabitat/resources available in the area around the release points. Provide evidence that the strategy is biologically appropriate (e.g. regarding the sociality, shelter and food requirements of the species).

### 7.13 Soft release strategy

Explain why a soft release strategy is appropriate. Provide details on what resources will be provided, how animals will be contained (if relevant) and how long resource provision/containment will continue. Provide evidence that the strategy is biologically appropriate (e.g. regarding the sociality, shelter and food requirements of the species).

# 8 SUCCESS CRITERIA AND CONTINGENCY PLANS

## 8.1 Success criteria

If the translocation has multiple goals, include criteria for all goals. Ensure the criteria are consistent with the goal/s of the translocation, are measurable and have time-frames relevant to the translocation/species. Provide a specific date or time since translocation for each criterion (e.g. January 2023 or 6 months post-release not 2023-24 or 6-12 months post release).

**Table 16:** Overall Success Criteria

| Objective | Establishment criteria | Establishment criteria measurement | Contingency actions |
|---|---|---|---|
| >69 individuals of *Banksia dolichostyla* established by 2035 | 69 individuals established | Number of live individuals > 69 | ▪ Additional seed collection and seeding/seedling planting<br>▪ Soil analysis to determine any soil deficiencies and development of a remediation plan<br>▪ Review of environmental conditions and conduct investigation to determine causes of deaths to species such as disease and pest presence. |
| | Individuals are considered healthy | Health condition of 'good' or better for x2 consecutive years after irrigation has ceased | |
| | Individuals are considered self-sustaining | Reproductive capability observed (i.e. flowering, successful pollination and viable seed production) | |

## 8.2 Short-term success criteria

List criteria that will be used to assess the initial survival and success of the founders.

**Table 17:** Success criteria years 1 to 4

| Success Criteria | Year | Trigger Value | Contingency Action |
|---|---|---|---|
| 1,340 *Banksia dolichostyla* seeds collected for revegetation work | Year 1 (2024) | < 1,340 seeds collected | - Consider additional seed collection events |
| Germination of seed > 80% | Year 1 - 2 (2024/2025) | Germination of seed < 80 % | - Review initial germination and survival numbers to determine if additional seed collection is required<br>- Undertake additional seed collection (if required)<br>- Undertake investigation into additional germination trials such seed size vs germination and propagation success |

| Success Criteria | Year | Trigger Value | Contingency Action |
|---|---|---|---|
| | | | - Consider alternate treatments/methodology |
| Propagation survival rate > 70 % | Year 2 - 3 (2025/2026) | < 70 % of propagated tubestock survives 1 year following gemination | - Undertake additional seed collection (if required)<br>- Undertake investigation into further trials (propagation material and watering increments etc)<br>- Consider alternate treatments/methodology<br>- Determine if seed size has any influence on tubestock survival |
| Tubestock survival rate > 50 % following installation following first summer | Years 4 (2027) | Survival after first summer < 50 % | - Undertake additional seed collection (if required)<br>- Undertake investigation into further trials (ripping, watering, additives etc.)<br>- Consider alternate treatments/methodology<br>- Consider supplementary planting of tubestock<br>- Investigate possibility of pest or disease presence and soil contamination |

### 8.3 Medium-term success criteria

List criteria that will be used to assess population establishment.

**Table 18:** Success criteria years 5 to 10

| Success Criteria | Year | Trigger Value | Contingency Action |
|---|---|---|---|
| Tubestock survival rate > 40 % following first three summers | Years 4 - 7 (2027-2029) | Survival < 40 % of installed tubestock | - Undertake additional seed collection (if required)<br>- Undertake investigation into further trials<br>- Investigate causes for decline in health<br>- Consider alternate treatments/methodology<br>- Consider supplementary planting of tubestock |

| Success Criteria | Year | Trigger Value | Contingency Action |
|---|---|---|---|
| | | | - Investigate possibility of pest or disease presence and soil contamination<br>- Investigate the influence of seed size on germination and propagation success, and plant survival and reproduction. |
| Tubestock survival > 30 % | Year 7-10 | Survival < 30 % of installed tubestock | - Undertake additional seed collection (if required)<br>- Undertake investigation into further trials<br>- Undertake investigation into causes for decline<br>- Consider alternate treatments/methodology<br>- Consider supplementary planting of tubestock |
| > 80 % of surviving plants are producing viable seed at a rate similar to that of natural populations | Year 8-10 | < 80 % of surviving plants are producing viable seed at a rate similar to that of natural populations | - Undertake investigation to determine reasons plants are not producing seed/ flowering |

### 8.4 Long-term success criteria

List criteria that will be used to assess population persistence and viability.

**Table 19:** Success criteria years 10 to 40

| Success Criteria | Year | Trigger Value | Contingency Action |
|---|---|---|---|
| > 80 % of surviving plants are producing viable seed at a rate similar to that of natural populations | Year 10 - 40 | < 80 % of surviving plants are producing viable seed at a rate similar to that of natural populations | - Undertake investigation to determine reasons plants are not producing seed/ flowering<br>- Undertake investigation to determine decline in health of plants |
| *Banksia dolichostyla* considered healthy and individual heights > 1 m (Health characteristics outlined in Section 9) | Year 10 - 40 | *Banksia dolichostyla* health considered less than healthy and individual heights < 1 m | - Undertake investigation of poor health |

| Success Criteria | Year | Trigger Value | Contingency Action |
|---|---|---|---|
| No vegetation cleared without an authorised internal permit within the development envelope but outside the FVEZs | All Years | Vegetation cleared without authorisation | - Report within 24 hours of disturbance<br>- Revies proximity of disturbance in relation to FVEZs<br>- Determine if disturbance will impact *B. dolichostyla*<br>- Complete investigation within 21 days of identification<br>- Review management strategies<br>- Undertake rehabilitation of disturbance footprint |
| No unauthorised access by personnel to FVEZs | All Years | Unauthorised access into FVEZs | - Review and update signage<br>- Audit and review training and staff inductions<br>- Undertake rehabilitation of disturbance footprint (if required) |
| No vegetation is cleared within FVEZ | All Years | Vegetation cleared within FVEZ | - Report within 24 hours of disturbance<br>- Determine if disturbance will impact *B. dolichostyla*<br>- Complete investigation within 21 days of identification<br>- Review management strategies<br>- Undertake rehabilitation of disturbance footprint |

### 8.5 Failure criteria

List criteria to determine when the translocation can be considered to have failed, both in the short and long-term. If the failure to meet success criteria will be used to define translocation failure, state this. Provide a specific date or time since translocation for each criterion (e.g. January 20 23 or 6 months post-release not 2023-24 or 6-12 months post release).

The project will be considered a failure if it fails to meet the Performance criteria set out below within the scheduled time frame as per Section 8 above:

- ≥ 69 individuals of *B. dolichostyla* established
- Individuals are considered healthy
- Individuals are considered self-sustaining

### 8.6 Short-term failure criteria

List criteria that will be used to define translocation failure prior to population establishment.

As per 8.2

### 8.7 Long-term failure criteria

List criteria that will be used to define translocation failure after the population was considered established.

As per 8.4

### 8.8 Contingency plans

Identify triggers for action, and what will be done, if short- or medium-term success criteria are not met or indicate further management action needs to be taken to improve survivorship.
Outline an exit strategy if detrimental impacts exceed likely conservation benefits.

As per 8.1-8.4

# 9 MONITORING

## 9.1 Short-term monitoring of translocated population

Describe how the initial survival and dispersal (fauna only) will be monitored. Ensure the selected methods are appropriate for assessing the short-term success criteria.

***Restored Banksia dolichostyla Plant Health Monitoring program***

For each restored individual of *B. dolichostyla* the following will be recorded annually for 10 years:

- survival (live/dead)
- size (width (at the widest part of the plant) and height (perpendicular to the width measurement))
- health condition (healthy, slightly stressed, stressed, very stressed, dead)
- reproductive status (flowering/fruiting/setting seed)
- photograph
- GPS location
- Observation of healthy/growth constraints (grazing, weed presence, other disturbance factors).

As part of the plant health monitoring of *B. dolichostyla* additional monitoring will be undertaken in both the recipient and recently burnt areas to compare regenerating individuals with those translocated. Monitoring Quadrats will be developed in recently burnt areas where regrowth of B.dolichostyla is recorded.

## 9.2 Medium and long-term monitoring of translocated population

Describe how the establishment, persistence and continued viability of the population will be monitored. Ensure the selected methods are appropriate for assessing the medium- and long-term success criteria and will inform progress towards all translocation goals and objectives. Identify how an adaptive management or experimental approach to the post-translocation monitoring and management will be implemented, if relevant.

Restored *Banksia dolichostyla* Plant Health Monitoring program continued for the life of the project.

## 9.3 Monitoring of threatening processes

Describe the monitoring that will be conducted to detect and assess threats to the translocated population.

Any health/growth constraints (grazing, weed presence, other disturbance factors) will be investigated and monitored. Dust and Weed monitoring programs are currently underway and will continue for the life of the project.

## 9.4 Monitoring of impacts to recipient site

Describe monitoring that will be conducted to detect and assess impacts of the translocation on the recipient site (e.g. the spread of disease, pathogens or weeds, unsustainable predation of existing species, failure of cleared vegetation to re-establish).

As per Vegetation Condition Monitoring Program Section 9.1

### 9.5 Monitoring of source population/s

Describe post-harvest monitoring of the source population/s (if this is to be conducted by the proponent) or state who is responsible.

The population within the development envelope will be included in Annual monitoring of plant condition, and weed monitoring in order to:

- Determine if there are any changes occurring to flora and vegetation condition and health in the FVEZs
- Assess whether any changes in flora and vegetation are due to the project or external/natural factors
- Provide a methodology for ongoing monitoring to enable time-based comparisons.

Plant condition monitoring will be conducted by Covalent Lithium to provide qualitative assessment of the vegetation condition will be undertaken at representative sites within the FVEZs and control sites away from any proposal related indirect effects. GPS coordinated for each existing quadrat is outlined in *Earl Grey Lithium Project Conservation Plan for Ironcaps Banksia; Banksia Sphaerocarpa var. dolichostyla EPBC Approval 2017/7950* (Covalent, 2021). (Figure 8). New monitoring quadrats to be developed post planting.

## 10 FUNDING AND RESOURCES

### 10.1 Funding source

Identify the source of funds for the translocation. Provide evidence that funding is available for the life-time of the project (i.e. until long-term success criteria can be met). Note that any DBCA Staff involvement, assistance or resources must be fully funded and included in the budget.

Funding of the implementation will be provided by Covalent as the proponent for the Project.

### 10.2 Personnel resources

Identify who will be responsible for managing the translocation both in the short- and long-term. Provide evidence that there is a commitment to managing the translocated population in perpetuity.

Responsibility for this translocation and ongoing monitoring will sit with Covalent Lithium. A summary of roles and responsibilities are set out in the *Earl Grey Lithium Project Conservation Plan for Ironcaps Banksia* and will be coordinated by the Manager Environment and Approvals, with support of the site-based Environmental Team and Senior Site Executive, as detailed in Table 5-1 of the *Earl Grey Lithium Project Conservation Plan for Ironcaps Banksia.* The implementation of the Conservation Plan will be assisted through an Environmental Management System that will incorporate systems, processes, procedures and work instructions relating to the management, monitoring and reporting components of the Conservation Plan.

## 11 REPORTING AND COMMUNICATION

### 11.1 DBCA translocation reporting

DBCA requires proponents to submit a Translocation Record Form within one month of any translocation action. Thereafter, progress reports must be submitted annually for the first five years and at 10 years after the initial translocation. Some translocations will require additional reports (e.g. 15 and 20 year reports for long-lived plant species).

Using your proposed dates of action, provide an indication of the years in which reporting to DBCA will be required

**Table 20:** Proposed reporting schedule

| Report | Year/s due |
|---|---|
| Seed Return of Protected Flora form | Within 3 months of collection (2024/2025) |
| Translocation Record Form | 1 month after release or planting (2026) |
| Annual reports (years 1-5) | 2025 – 2030 |
| 10-year report | 2035 |
| Post 10 years (5 yearly reporting) | 2040, 2045 etc. |

### 11.2 Public reporting/dissemination of information

Provide details on how progress, results and learnings from the translocation will be communicated to the key stakeholders, scientific community and general public.

Covalent will report annually with the Annual Compliance Report required under Condition 12 of the EPBC 2017/7950 approval (DAWE 2019). The Annual Compliance Report is made public.

## 12 LICENCES, PERMITS, AUTHORISATIONS AND APPROVALS

### 12.1 Western Australian licences, permits, authorisations and approvals

https://www.dbca.wa.gov.au/licences-permits

Provide approval/licence numbers or state progress towards obtaining the necessary licences, permits, authorisations and approvals.

S.40 Authorisation TFL 2425-0018 for seed collection activities
TFL2425-0047 for monitoring activities

Following translocation Section 40 will be applied for prior to any population maintenance activities.

### 12.2 Landowner/manager agreement

Provide details of any formal agreements (e.g. a Memorandum of Understanding or contract for service) between the proponents and the landowner/managers of the source and/or recipient sites including consultation with and agreement of Traditional Owners (attach as necessary).
All landowners/managers must endorse the final version of the Translocation Proposal by signing the relevant section on the cover sheet.

Refer to letter of approval of Conservation Plan for Ironcaps Bankia under EPBC 2017/7950. Attachment 7

### 12.3 Inter-state approvals and permits

For translocations with interstate components, provide details of interstate licences, permits and approvals.

N/A

# 13 REFERENCES

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Provide full citations for information provided in the proposal.

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## 14 APPENDIX 1 – RISK ASSESSMENT MATRIX AND DEFINITIONS

| Likelihood | Consequences | | | | |
|---|---|---|---|---|---|
| | Not significant | Minor | Moderate | Major | Catastrophic |
| **Almost certain** | Low | Moderate | Very high | Very high | Very high |
| **Likely** | Low | Moderate | High | Very high | Very high |
| **Possible** | Low | Moderate | High | Very high | Very high |
| **Unlikely** | Low | Low | Moderate | High | Very high |
| **Rare/unknown** | Low | Low | Moderate | High | Very high |

**Categories for likelihood are defined as follows**

| Likelihood | Definition |
|---|---|
| Rare/unknown | May occur only in exceptional circumstances OR It is unknown how often the event will occur |
| Unlikely | Such events are known to have occurred for other translocations but only a few times |
| Possible | Might occur in some translocations |
| Likely | Expected to occur at least once in every five years or translocation events |
| Almost certain | Expected to occur in every translocation |

**Categories for consequences are defined as follows**

| Consequence | For translocated population | For source or recipient sites, other species or ecosystems |
|---|---|---|
| Not significant | No long-term effect on individuals or population | No effect on individuals, sub-populations, entire population or site beyond the first year |
| Minor | Individuals are adversely affected but no effect on translocated population | Individuals/small areas are adversely affected but no effect at sub-population/population or site level |
| Moderate | Translocated population growth (i.e. progress towards establishment or self-sustainment) stalls or slows | Sub-population/populations experience temporary declines in population size; Source/recipient sites or ecosystems experience temporary declines in condition |
| Major | Translocated population declines | Sub-population/populations experience severe declines in population size but recovery possible; Source/recipient sites or ecosystems experience severe declines in condition but recovery possible |
| Catastrophic | Complete translocation failure | Population extinction; irreparable degradation of condition |

**Levels of risk are defined as follows**

| Likelihood | Definition |
|---|---|
| Very high | Reconsider translocation unless exceptionally high conservation benefit is likely |
| High | Careful monitoring and an adaptive management or mitigation plan required |
| Moderate | Monitor for occurrence and develop an adaptive management or mitigation plan if required |
| Low | Monitor for occurrence and reassess risk level if likelihood or consequences change |

## 15 Appendix 2 – Conservation Codes

**Western Australia**

| Conservation Code | Name | Description |
|---|---|---|
| T | Threatened | Flora or fauna that is rare or likely to become extinct, ranked according to their level of threat using IUCN Red List criteria (Schedules 1-3 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice) |
| CR | Critically endangered | Species considered to be facing an extremely high risk of extinction within the wild in the immediate future |
| EN | Endangered | Species considered to be facing a very high risk of extinction in the wild in the near future |
| VU | Vulnerable | Species considered to be facing a high risk of extinction in the wild in the medium-term future |
| EX | Extinct Species | Species where 'there is no reasonable doubt that the last member of the species has died (Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice) |
| EW | Extinct in the Wild | Species that are known to only survive in cultivation, in captivity, or as a naturalised population well outside its past range; and it has not been recorded in its known or expected habitat at appropriate seasons anywhere in its past range, despite surveys over a timeframe appropriate to its life cycle and form |
| MI | Migratory Species | Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth (Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice) |
| CD | Conservation Dependent | Species of special conservation interest (conservation dependent fauna), being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened (Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice) |
| OS | Specially Protected | Fauna otherwise in need of special protection to ensure their conservation (Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice) |
| P | Priority Species | Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna |

| Conservation Code | Name | Description |
|---|---|---|
| | | or flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring. |
| P1 | Priority One | Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation. |
| 2 | Priority Two | Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar. |
| 3 | Priority Three | Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat |
| 4 | Priority Four | Rare or near threatened and other species in need of monitoring. |

(Source: Department of Biodiversity, Conservation and Attractions, 2020a)

**Commonwealth**

| Category | Description |
|---|---|
| **Critically Endangered** | Species facing an extremely high risk of extinction in the wild in the immediate future |
| **Endangered** | Species facing a very high risk of extinction in the wild in the near future |
| **Vulnerable** | Species facing a high risk of extinction in the wild in the medium term |

(Source: Department of Biodiversity, Conservation and Attractions, 2019)

## 16 Appendix 3 Vegetation Communities (Mattiske, 2018)

Green indicates is located within currently monitored quadrats.

| Code | Vegetation description |
|---|---|
| H1 | Melaleuca cliffortioides, Allocasuarina campestris, Dodonaea adenophora mid open heathland over Grevillea lissopleura (P1), Trymalium myrtillus subsp. myrtillus low sparse shrubland on rocky red-brown sandy clay soils on slopes. |
| S1 | Allocasuarina acutivalvis, Allocasuarina spinosissima tall closed shrubland over Hakea subsulcata, Melaleuca cordata, Micromyrtus erichsenii mid sparse heathland on lateritic orange-red clay soils on flats and lower slopes. |
| S2 | Allocasuarina acutivalvis, Allocasuarina spinosissima, Eucalyptus burracoppinensis tall open shrubland over Thryptomene kochii, Persoonia helix, Micromyrtus erichsenii mid sparse heathland over Cyathostemon heterantherus, Hibbertia exasperata, Drummondita hassellii low sparse shrubland on orange brown clayey sand soils on flats |
| S3 | Allocasuarina acutivalvis, Eucalyptus burracoppinensis tall sparse shrubland over Banksia purdieana, Hakea subsulcata, Melaleuca cordata mid sparse shrubland over Micromyrtus erichsenii, Persoonia helix low isolated shrubs on gravelly yellow brown to orange brown clay to clayey sand soils on flats. |
| MW6 | Eucalyptus burracoppinensis, Eucalyptus eremophila mid open mallee woodland over Thryptomene kochii, Melaleuca laxiflora, Acacia acuminata mid open shrubland over Drummondita hassellii, Microcybe ambigua low sparse heathland on grey brown to orange brown clay to clayey sand on flats. |
| MW7 | Eucalyptus capillosa subsp. polyclada mid open mallee woodland over Allocasuarina spinosissima, Callitris canescens, Hakea minyma mid tall sparse shrubland over Phebalium megaphyllum low sparse shrubland on orange brown clay soils on flats and slopes. |
| MW8 | Eucalyptus eremophila low open mallee woodland over Melaleuca hamata, Leptospermum erubescens, Melaleuca lateriflora mid sparse shrubland over Thomasia sp. Salmon Gums (C.A. Gardner s.n. PERTH 02708639), Darwinia sp. Karonie (K. Newbey 8503) low sparse shrubland on orange brown clay in minor drainage channel. |
| W4 | Eucalyptus flocktoniae subsp. flocktoniae, Eucalyptus eremophila low open mallee woodland over Melaleuca depauperata, Callitris canescens, Melaleuca phoidophylla mid-tall sparse shrubland over Acacia tetraptera, Grevillea acuaria low isolated heath shrubs on orange brown sandy clay soils with ironstone or quartz pebbles on flats and slopes. |
| W5 | Eucalyptus rigidula, Eucalyptus burracoppinensis low open mallee woodland over Micromyrtus erichsenii, Persoonia helix, Hakea erecta mid sparse heathland over Hibbertia rostellata, Hibbertia stowardii low isolated shrubs on gravelly orange brown clayey sand soils on flats and slopes. |
| W6 | Eucalyptus burracoppinensis, Allocasuarina acutivalvis, Allocasuarina spinosissima tall open mallee woodland over Hakea erecta, Petrophile stricta, Banksia laevigata subsp. fuscolutea mid sparse heathland over Drummondita hassellii, Hibbertia exasperata, Psammomoya choretroides low sparse shrubland on yellow brown sandy soils on flats. |
| W7 | Burnt Eucalyptus spp. (E. cylindriflora, E. flocktoniae subsp. flocktoniae, E. prolixa, E. salmonophloia, E. eremophila, E. capillosa subsp. polyclada) low open woodland over Melaleuca |

| Code | Vegetation description |
|---|---|
| | hamata, Melaleuca eleuterostachya mid sparse shrubland over Daviesia argillacea, Acacia hemiteles, Acacia deficiens low sparse heathland on orange brown sandy clay soils on flats. |
| W8 | Eucalyptus prolixa, Eucalyptus salmonophloia, Eucalyptus urna mid mallee woodland over Santalum acuminatum, Daviesia argillacea, Melaleuca eleuterostachya mid sparse heathland over Acacia merrallii, Daviesia argillacea, Microcybe multiflora subsp. multiflora low sparse shrubland on red brown sandy clay flats. |
| W9 | Eucalyptus urna, Eucalyptus ravida, Eucalyptus prolixa low mallee woodland over Melaleuca pauperiflora, Dodonaea stenozyga, Daviesia argillacea mid sparse shrubland over Acacia merrallii, Grevillea acuaria, Microcybe multiflora subsp. multiflora low sparse shrubland. |
| W10 | Eucalyptus spp. (E. urna, E. cylindrocarpa, E. rigidula, E gracilis) low mallee woodland over Melaleuca pauperiflora, Daviesia scoparia mid sparse shrubland over Acacia merrallii, Grevillea huegelii, Olearia muelleri low sparse shrubland on red clay soils on flats. |
| W11 | Eucalyptus eremophila, Eucalyptus rigidula, Eucalyptus flocktoniae subsp. flocktoniae low mallee woodland over Melaleuca lateriflora, Melaleuca eleuterostachya, Melaleuca acuminata subsp. acuminata mid sparse shrubland over Grevillea acuaria, Acacia hystrix subsp. hystrix, Microcybe ambigua low sparse shrubland on orange brown clay soils on flats. |
| W12 | Eucalyptus cylindriflora, Eucalyptus cylindrocarpa, Eucalyptus prolixa low open mallee woodland over Melaleuca eleuterostachya, Melaleuca lateriflora, Daviesia argillacea mid sparse shrubland over Grevillea acuaria, Acacia merrallii, Acacia camptoclada low sparse shrubland on yellow brown to red brown sandy clay soils on flats. |
| W13 | Callitris canescens, Eucalyptus rigidula low open mallee woodland over Micromyrtus erichsenii, Persoonia helix, Allocasuarina spinosissima mid tall sparse shrubland over Beyeria sulcata, Drummondita hassellii low sparse shrubland on yellow brown to orange brown clayey sands on flats and slopes. |
| W14 | Burnt Eucalyptus salmonophloia, Eucalyptus eremophila mid open woodland over Santalum acuminatum, Senna artemisioides subsp. filifolia mid sparse shrubland over Acacia hemiteles, Olearia muelleri low sparse shrubland on orange brown clay spoils on flats. |
| W15 | Burnt Allocasuarina acutivalvis, Eucalyptus spp. (E. cylindriflora, E. eremophila, E, gracilis, E. rigidula, E. burracoppinensis) low open mallee woodland over Hakea minyma, Melaleuca cordata, Melaleuca hamata mid sparse shrubland over Dampiera sacculata, Pimelea sulfurea, Hybanthus floribundus subsp. floribundus low sparse forbland. |
| W16 | Burnt Eucalyptus spp. (E. cylindriflora, E. tenuis, E. burracoppinensis, E. eremophila) low open mallee woodland over Persoonia helix, Gastrolobium spinosum, Acacia assimilis mid sparse shrubland over Dampiera tenuicaulis subsp. curvula, Glischrocaryon aureum, Dampiera eriocephala low sparse forbland on orange red gravelly sandy loam soils on flats. |
| W17 | Eucalyptus capillosa subsp. polyclada low open mallee woodland over Hakea pendens (P3), Beyeria sulcata, Santalum acuminatum mid sparse shrubland over Rinzia sessilis, Westringia cephalantha subsp. cephalantha, Hibbertia ancistrophylla low sparse shrubland on lateritic red brown clayey sand on slopes and ridges. |
| W18 | Eucalyptus rigidula. Eucalyptus platycorys, Callitris canescens low open mallee woodland over Melaleuca hamata, Allocasuarina spinosissima, Hakea erecta mid sparse shrubland over Hibbertia gracilipes, Phebalium obovatum, Cyathostemon heterantherus low sparse shrubland on yellow brown sandy soils on flats. |

| Code | Vegetation description |
|---|---|
| W19 | Eucalyptus prolixa low open mallee woodland over Daviesia argillacea, Santalum acuminatum mid sparse shrubland over Acacia merrallii, Microcybe ambigua, Grevillea acuaria low sparse shrubland on orange-red brown sandy clay soils on flats. |
| W20 | Burnt Eucalyptus urna, Eucalyptus salmonophloia, Eucalyptus tenuis mid open mallee woodland over Melaleuca pauperiflora mid sparse shrubland over Acacia deficiens, Daviesia argillacea, Daviesia grahamii low sparse shrubland on red brown clay soils on flats. |
| W21 | Eucalyptus eremophila, Eucalyptus flocktoniae subsp. flocktoniae low open mallee woodland over Melaleuca hamata over Acacia acanthoclada subsp. acanthoclada, Dampiera sacculata, Westringia cephalantha subsp. cephalantha low sparse shrubland on grey brown clayey sand soils on flats and slopes. |
| W22 | Eucalyptus eremophila low open mallee woodland over Melaleuca hamata, Melaleuca eleuterostachya, Melaleuca laxiflora mid sparse shrubland over Hibbertia exasperata, Cyathostemon heterantherus, Acacia sphacelata subsp. sphacelata low sparse shrubland on slightly gravelly yellow-orange brown clay soils on flats and slopes. |

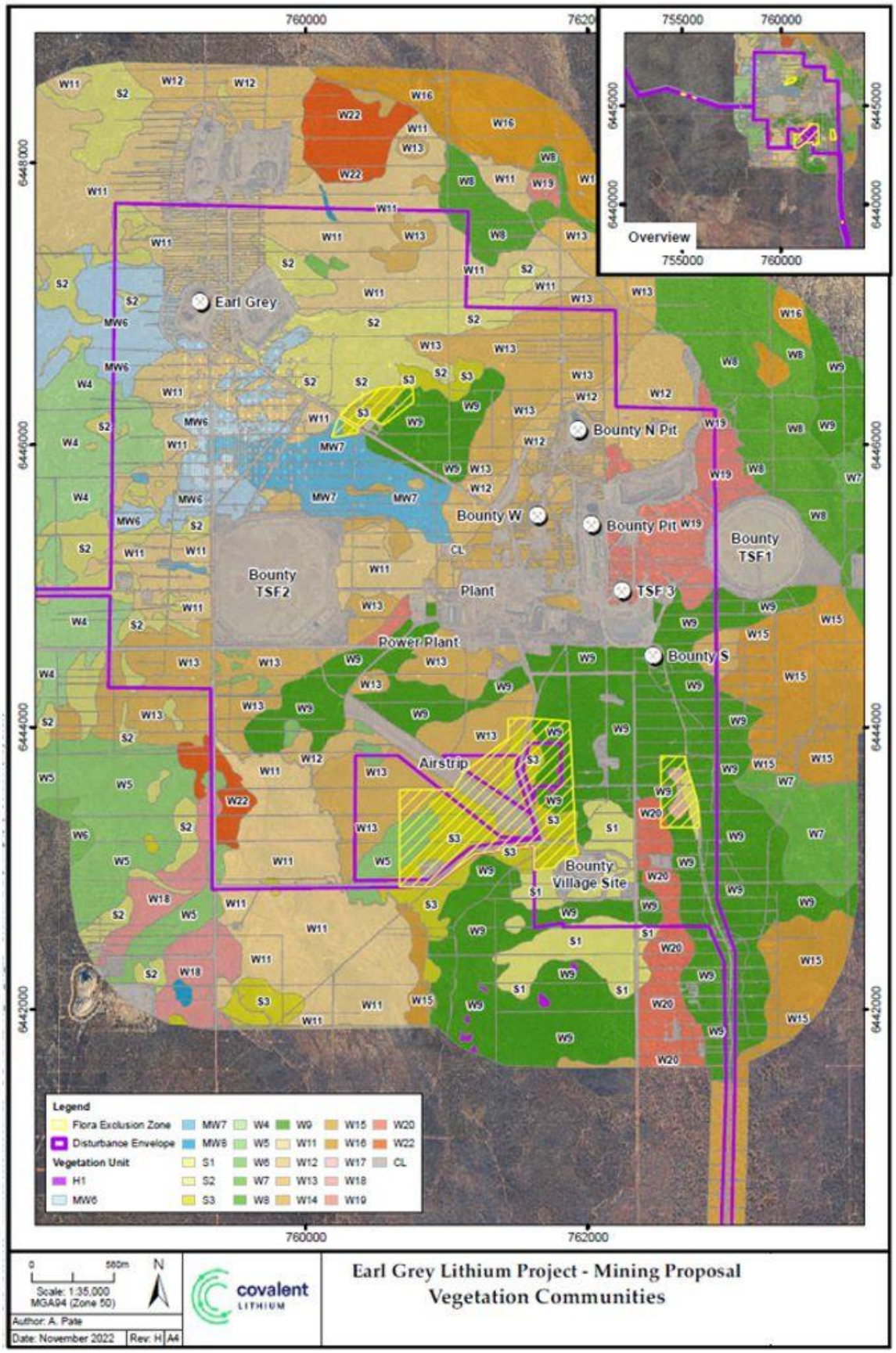


**Figure 9: Mining Proposal Vegetation Communities**

## 17 Appendix 4 – Plant Condition Monitoring Scoring

| Condition | Factors |
|---|---|
| Healthy (Score 4) | ▪ 90% of foliage present<br>▪ canopy is intact<br>▪ if a tree, then no epicormic growth present<br>▪ none or little indication of leaf discolouration or loss<br>▪ none to minor evidence of insect damage, no fungal or other pathogen attack |
| Slightly Stressed (Score 3) | ▪ 75% - 90% of foliage present<br>▪ some minor canopy loss<br>▪ if a tree, then no epicormic growth<br>▪ minor evidence of leaf discolouration; potentially some dead leaves on branch tips<br>▪ minor evidence of insect damage, fungal or other pathogen attack |
| Stressed (Score 2) | ▪ 50% - 75% of foliage present<br>▪ moderate canopy loss<br>▪ if a tree, then none to some epicormic growth evident<br>▪ evidence of leaf discolouration; evident damage to leaves significant<br>▪ evidence of insect, fungal or other pathogen attack obvious |
| Very Stressed (Score 1) | ▪ < 50% of foliage present<br>▪ major canopy loss<br>▪ if a tree, then epicormic growth likely<br>▪ leaf discolouration significant; evident damage to leaves significant<br>▪ evidence of insect, fungal or other pathogen attack obvious |
| Dead (Score 0) | ▪ plant dead<br>▪ foliage may present, but is brown and desiccated. If a tree then the bark is<br>▪ still attached (DR – dead recent)<br>▪ foliage is absent, fine twigs still present. If a tree bark may be present (DM dead moderate)<br>▪ foliage and file twigs absent. If a tree the bark is also absent (DO- dead old) |

## 18 Appendix 5 – Earl Grey Lithium Project Conservation Plan for Ironcaps Banksia

See Attachment

# 19 Appendix 6 – Flora and Vegetation Management Plan

See Attachment

## 20 Appendix 7 – EPBC 2017/7950: Earl Grey Lithium Project, WA

Australian Government
Department of Agriculture, Water and the Environment

Mr Ross Martelli
Chief Executive Officer and Project Director
Covalent Lithium Pty Ltd
PO Box Z5200 St Georges Terrace, Perth, WA 6000

via: Ross.Martelli@covalentlithium.com

**EPBC 2017/7950: Earl Grey Lithium Project, WA – Ironcaps Banksia Conservation Plan**

Dear Mr Martelli

Thank you for your email dated 3 February 2021 to the Department, seeking approval of the Ironcaps Banksia Conservation Plan in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Officers of the Department have advised me on the Plan and the relevant EPBC Act conditions of approval. On this basis, and as a delegate of the Minister for the Environment, I have decided to approve the 'Conservation Plan for Ironcaps Banksia *Banksia sphaerocarpa* var. *dolichostyla*', Revision 2, 1 February 2021.

This approved plan must now be implemented.

As you are aware, the Department has an active monitoring program which includes monitoring inspections, desktop document reviews and audits. Please ensure that you maintain accurate records of all activities associated with, or relevant to, the conditions of approval so that they can be made available to the Department on request.

Should you require any further information please contact Hannah McFarlane on (02) 6274 2973 or postapproval@environment.gov.au.

Yours sincerely

Declan O'Connor-Cox
Assistant Secretary
Assessments (Vic, Tas) and Post Approvals Branch

12 February 2021

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## 21 Authorisation to Take or Disturb Threatened Species

See Attachment

## Document Distribution

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