




**YILGARN OPERATIONS
FLORA AND VEGETATION MANAGEMENT PLAN
242-EN-PLN-0002**

Revision Number	Issue Date	Prepared By	Approved By	GM Signature
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1. PURPOSE AND SCOPE

Yilgarn Iron Ore Pty Ltd.'s (YIPL) Yilgarn Operations includes mineral exploration and mining operations at the Koolyanobbing Range, Mt Jackson Range, Windarling Range, Johnston Range (Deception Deposit), ore processing at Koolyanobbing and road and rail transport between these operations and the Port of Esperance. The general location of YIPL's Yilgarn Operations is shown in Figure 7.1.

The environmental aspects of YIPL's Yilgarn Operations are managed in accordance with YIPL's Environmental Policy and Environmental Management System (EMS). While not accredited, the EMS has been developed and is implemented in accordance with Australian and New Zealand ISO Standards. The Flora and Vegetation Management Plan forms part of YIPL's EMS. This management plan has been prepared to address:

- Environmental risks associated with flora and vegetation for all of YIPL's Yilgarn Operations, shown in Figure 7.1.
- Statutory obligations relating to flora and vegetation under Ministerial Statement 982 (see Section 2, below) applying to YIPL's operations at Windarling Range, Mt Jackson Range, Deception Deposit and the hauls road and associated infrastructure linking these operations to Koolyanobbing.

The purpose of this plan is to outline the management actions YIPL will implement to address the environmental risks and regulatory obligations associated with flora and vegetation. While the primary focus of this plan is on the protection of flora of conservation significance, the scope of the plan includes other native flora and vegetation. The plan applies to all of YIPL's Yilgarn Operations (as shown in Figure 7.1).

2. LEGISLATION AND GUIDELINES

The legislation and associated guidelines and standards relevant to flora and vegetation include:

- a) *Environmental Protection Act 1986* (WA) (EP Act). Specific environmental approvals applying to YIPL's Yilgarn Operations under the EP Act are contained in Ministerial Statement 982 (WA Minister for the Environment 2014).
- b) Environmental Assessment Guideline for Preparation of management plans under Part IV of the EP Act (EAG 17, Environmental Protection Authority, August 2015).
- c) *Biodiversity Conservation Act 2016* (WA) (BC Act).
- d) *Environmental Protection and Biodiversity Conservation Act 1999* (C'wth) (EPBC Act).
- e) Conservation Codes for Western Australian Flora and Fauna (DBCA 2019).

3. CONSERVATION SIGNIFICANT FLORA

All native flora in Western Australia is protected under the EP Act by virtue of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (WA). Specific flora species may be afforded special protection under the EPBC Act as listed 'Threatened Species' of flora, with similar protection also available under the BC Act for flora taxa declared as 'Rare Flora'. The EPBC Act may also afford special protection to vegetation units as 'Threatened Ecological Communities'.

For the purpose of this management plan, 'conservation significant flora' is taken to mean those species classified as 'Threatened' under the EPBC Act, or as 'Rare' or 'Priority Flora' by the Department of Biodiversity Conservation and Attractions (DBCA). The classifications used are as follows:

Threatened Species

Threatened Species of flora may be declared by the Commonwealth Minister for Environment for protection under the EPBC Act as a matter of national environmental significance for it being extinct, facing a risk of extinction, or in need of a conservation program to prevent the species from a risk of extinction.

Under the BC Act native flora can be listed as Threatened (Critically Endangered, Endangered or Vulnerable) or Extinct in Western Australia. Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora.

Priority Flora

Priority Flora is a classification system developed by the DBCA for flora taxa which are known from one, a few or several occurrences, which may or may not be under threat, or may otherwise be rare. Four priority categories are used, with Priority 1 (P1) being of the highest conservation significance. Priority Flora are identified and determined by DBCA (DBCA 2019).

The conservation significant flora occurring in the vicinity of YIPL's Yilgarn Operations are listed in Schedule 2 of Ministerial Statement 982 as including, but not limited to: *Tetratheca paynterae* subsp. *paynterae*, *Ricinocarpos brevis*, *Calytrix viscida* and *Baeckea ochropetala*. A full list of conservation significant flora occurring in the vicinity of YIPL's Yilgarn Operations is provided in Attachment 1.

4. ASPECTS REQUIRING MANAGEMENT

The relevant aspects identified in the YIPL EMS and in Ministerial Statement 982 as requiring management to address potential effects on flora and vegetation are:

- Unauthorised disturbance;
- Saline water;
- Altered surface water flow;
- Fire;
- Dust;
- Weeds; and
- Feral fauna.

Management controls and actions that have been implemented to address these aspects are listed in Section 6.

5. MANAGEMENT OBJECTIVE

The management objective is:

- a) To ensure that the implementation of the proposal (as per Ministerial Statement 982) is carried out in a manner that minimises the direct and indirect impacts to conservation significant flora and vegetation; and
- b) To minimise environmental effects on native flora and vegetation generally from YIPL's Yilgarn Operations.

6. MANAGEMENT CONTROLS AND ACTIONS

YIPL has implemented a range of management controls and actions to minimise the potential for project activities to adversely affect flora and vegetation. Table 6.1 summarises the controls YIPL will maintain to manage the aspects outlined in Section 4.

Table 6.1 – Aspects, Associated Risks and Risk Ranking, and Management Controls

Aspect	Risk/Potential Impact*	Risk-based Priority*	Management Controls
Saline water	Decline or loss of flora due to uncontrolled release of saline water or spray drift.	1	<ul style="list-style-type: none"> • Inductions and awareness training • Incident reporting and corrective action process • Spill/leak containment infrastructure (V drains, bunding, shut-off valves) • Daily saline water infrastructure inspections
Unauthorised disturbance	Decline or loss of flora due to physical disturbance.	2	<ul style="list-style-type: none"> • Site disturbance permit process • Inductions and awareness training • Incident reporting and corrective action process • Clearing procedures • Approvals implementation process
Weeds	Decline or loss of flora due to weed invasion.	3	<ul style="list-style-type: none"> • Weed register • Weed control program
Fire	Decline or loss of flora due to wildfire.	4	<ul style="list-style-type: none"> • Inductions and awareness training • Incident reporting and corrective action process • Fire breaks • Fire fighting vehicles and equipment
Dust	Decline or loss of flora due to smothering by dust.	5	<ul style="list-style-type: none"> • Dust control procedures • Dust monitoring
Feral fauna	Decline or loss of flora due to grazing or trampling by feral fauna.	6	<ul style="list-style-type: none"> • Fauna sightings and interaction register • Feral fauna control program
Altered surface water flow	Decline or loss of flora due to altered surface water flow.	7	<ul style="list-style-type: none"> • Mine planning process • Approvals implementation process • Surface water management infrastructure

**The risk/potential impact column refers to a risk or potential impact from YIPL's mining and exploration activities. The risk-based priority column shows the relative risk posed by each issue in the absence of management controls. The risk ranking is based on the results of the environmental risk assessment that forms part of the YIPL's EMS.*

Specific management actions related to obligations under Ministerial Statement 982 are listed in Table 6.2.

Table 6.2 – Management Actions Related to Ministerial Statement 982

Action	Timing	Responsibilities
Undertake monitoring of Rare Flora taxa and native vegetation for potential effects from mining operations (refer to Section 7).	Annually	Environmental Superintendent
Implement a five year research and restoration program for <i>Ricinocarpos brevis</i> aimed at the establishment of the species on rehabilitated landforms and disturbed areas.	Completed in 2017.	Environmental Superintendent (in collaboration with Botanic Gardens and Parks Authority)
Undertake a targeted regional survey (in accordance with EPA Guidance Statement 51) to determine the presence and abundance of <i>Calytrix viscida</i> outside of the Deception Deposit proposal area.	Within 18 months of the disturbance to this flora species.	Environmental Superintendent
Ensure no ground disturbing activities occur in 'Area A' at Windarling Range, as identified in Statement 982.	At all times	Environmental Superintendent
Ensure no ground disturbing activities occur in 'Area B' at Windarling Range, as identified in Ministerial Statement 982.	Until the Minister for Environment provides consent for ground disturbing activity in Area B.	Environmental Superintendent
Maintain an incident reporting system to include damage or loss of native flora and vegetation. Report any incidents to the relevant regulatory authorities (refer to Section 9).	Ongoing	Environmental Superintendent

7. MONITORING

Monitoring locations related to flora and vegetation for Ministerial Statement 982 and the Koolyanobbing operations are shown in Figure 7.1. The monitoring actions and methods are listed in Table 7.1 and Table 7.2.

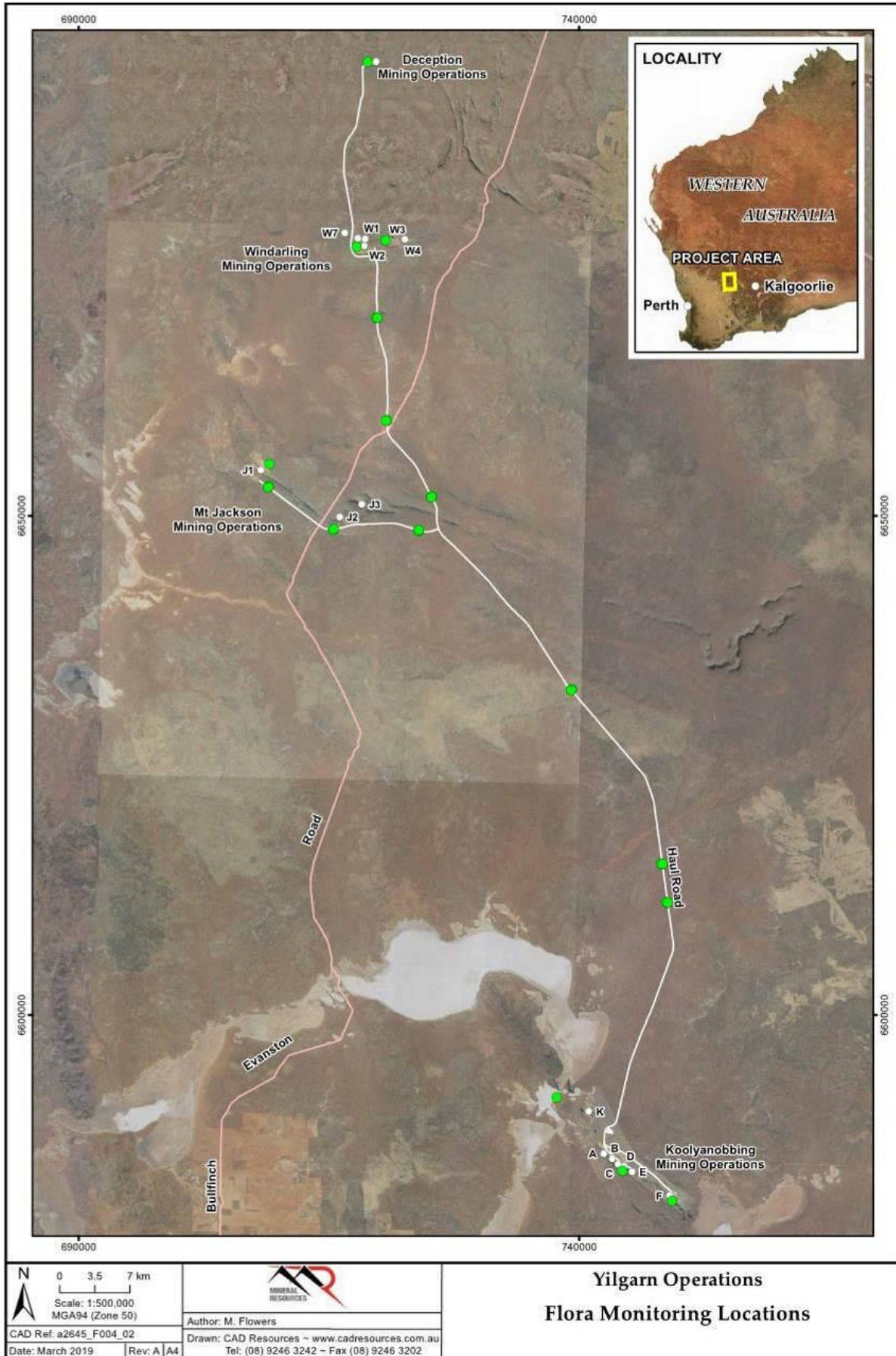


Figure 7.1 – YIPL’s Yilgarn Operations showing flora monitoring locations

Table 7.1 – Monitoring Actions Related to Ministerial Statement 982

Action	Monitoring Procedure	Timing	Responsibilities
For Rare Flora taxa occurring in the immediate vicinity of mining operations, monitor condition, reproductive status, recruitment and mortality for potential effects from mining operations.	242-EN-WIN-0001 – Annual Monitoring of <i>Tetratheca paynterae</i> at Windarling 242-EN-WIN-0002 – Annual Monitoring of <i>Ricinocarpos brevis</i> at Windarling	Annually	Environment Superintendent
Monitor native vegetation for plant condition and mortality at selected locations within 100m of mining operations (including haul roads) and at representative reference sites (beyond 100m).	242-EN-WIN-0013 – Windarling Flora Monitoring 242-EN-WIN-0003 – Mt Jackson J1 Flora Monitoring 242-EN-WIN-0004 – Transport Corridor Vegetation Monitoring	Annually	Environment Superintendent

Table 7.2 – Monitoring Actions Related to Koolyanobbing Operations

Action	Monitoring Procedure	Timing	Responsibilities
Monitor native vegetation for plant condition and mortality at selected locations within 100m of mining operations (including haul roads) and at representative reference sites (beyond 100m).	242-EN-WIN-0030 – Koolyanobbing C Pit Flora Monitoring	Annually	Environment Superintendent
Monitor the health of fringing vegetation around the edges of Lake K at Koolyanobbing and representative reference sites.	242-EN-WIN-0029 – Koolyanobbing Lake K Vegetation Monitoring	Annually whilst discharging saline water to Lake K.	Environment Superintendent

Monitoring of Rare Flora taxa is undertaken in accordance with a sampling framework designed by specialist statisticians (DAA 2010 & 2011). Monitoring utilises fixed area plots for *Tetratheca paynterae* subsp. *paynterae* and *Ricinocarpos brevis* (Attachment 2) to measure a representative subsample of the populations. Approximately 20% of the total population of *Tetratheca paynterae* subsp. *paynterae* and 16% of the total population of *Ricinocarpos brevis* at Windarling occurs within the sampling areas.

For Rare Flora, data is obtained annually for:

- Plant condition (as a ratio of live to dead leaf material);
- Life stage (seedling, juvenile or adult);

- Reproductive status (vegetative, flowering and/or fruiting);
- Recruitment; and
- Mortality.

The monitoring has been designed to provide a means of detecting change in condition and/or population numbers, both spatially and over time.

8. TRIGGER CRITERIA

For Rare Flora taxa, reporting and contingency actions will be triggered if:

- Annual monitoring indicates a decline of greater than 15% in plant condition relative to the previous year; and rainfall is >150mm between annual sampling dates (i.e. the change is unlikely to be a result of drought conditions); and/or
- Annual monitoring indicates a mortality of greater than 10% of the sampled population since the previous year and rainfall is >150mm between annual sampling dates;
- Annual monitoring indicates a consistent pattern of decline in population numbers over a longer time scale (2+ years);
- Annual monitoring indicates a spatial pattern of decreasing plant condition and/or higher mortality that may be related to proximity to mining operations;
- Any direct effect on Rare Flora occurs as a result of YIPL's activities e.g. unauthorised ground disturbance, fire;
- Any significant short term (i.e. < 1 year) decline in Rare Flora is detected at any time.

For other conservation significant flora, reporting and contingency actions will be triggered if:

- Annual monitoring indicates a decline of greater than 15% in the plant condition at monitoring sites relative to reference sites and rainfall is >150mm between annual sampling dates;
- Any direct effect on conservation significant flora occurs as a result of YIPL's activities;
- Any significant short term (i.e. < 1 year) decline in conservation significant flora is detected at any time.

The trigger criteria for Rare Flora taxa have been developed with reference to the data available from the monitoring of *Tetratheca paynterae* subsp. *paynterae* at Windarling. The largest annual changes in condition recorded for *Tetratheca paynterae* subsp. *paynterae* have been in the 10-15% range. This has occurred twice over a ten year monitoring period. Both events coincided with periods of low rainfall, i.e. approximately 150mm annual rainfall (versus 267mm average annual rainfall over the same period). The trigger level for plant condition (>15% decrease) has thus been set slightly above the observed level of change in condition that would be expected to occur as a result of normal climatic variation.

For the period in which quantitative data on recruitment and mortality is available (2011-2015), the largest annual decline in population numbers for *Tetratheca paynterae* subsp. *paynterae* was 8.8% (between 2013 and 2014). Plant deaths were found to be concentrated in northern aspect locations relatively distant from mining activities and thus appear likely to reflect natural mortality rates.

The nominated trigger level is intended to represent a value that is likely to be outside the typical annual variability. The trigger level for annual mortality has thus been set at 10%. This figure will be

reviewed after a period of five years, at which point it can be replaced by a figure based on a defined measure of variability e.g. standard deviation from the mean.

9. REPORTING AND CONTINGENCY ACTIONS

Where any of the above trigger criteria are met, YIPL will report the findings to the Executive Director – EPA Services of the Department of Water and Environment Regulation (DWER) within 21 days of the decline being identified and provide information which allows determination of the cause of the decline. If the decline is determined by the DWER to be a result of activities undertaken in implementing the proposal (WA Minister for the Environment 2014), YIPL will submit actions to be undertaken to remediate the decline to the DWER within 21 days of the determination made by the DWER. YIPL will implement the actions to remediate the decline upon approval of the DWER, on advice of DBCA Parks and Wildlife Service, and continue until such time as the DWER, on advice of the Parks and Wildlife Service, determines that the remedial actions may cease.

10. PERFORMANCE INDICATORS

The performance indicator applying to this management plan shall be:

No detectable effect on the health and abundance of conservation significant flora and vegetation in the vicinity of YIPL operations as a result of YIPL activities, as measured by monitoring.

11. RECORDS

Records and data relating to the activities outlined in this document shall be maintained as part of this management plan.

12. REVIEW

YIPL will review and update the management controls and actions contained in this management plan in accordance with the Environmental Management System Manual. Any material changes to this management plan or supporting procedures will be referred to the relevant regulatory authorities for approval prior to implementation of such changes.

13. SUPPORTING DOCUMENTS

- 242-EN-PRO-0001 Groundwater Management Procedure
- 242-EN-PRO-0002 Land Clearing Procedure
- 242-EN-PRO-0003 Saline Water Infrastructure Procedure
- 242-EN-PRO-0007 Dust Management Procedure
- 242-EN-PRO-0010 Site Disturbance Permit Procedure
- 242-EN-PRO-0011 Weed Management Procedure
- 242-EN-WIN-0001 Annual Monitoring of *Tetratheca paynterae* at Windarling
- 242-EN-WIN-0002 Annual Monitoring of *Ricinocarpos brevis* at Windarling
- 242-EN-WIN-0003 Mt Jackson J1 Flora Monitoring
- 242-EN-WIN-0004 Transport Corridor Vegetation Monitoring
- 242-EN-WIN-0005 Botanical Surveys – Exploration

- 242-EN-WIN-0013 Windarling Flora Monitoring
- 242-EN-WIN-0024 Environmental Approvals and Implementation
- 242-EN-WIN-0029 Koolyanobbing Lake K Vegetation Monitoring
- 242-EN-WIN-0030 Koolyanobbing Flora Monitoring
- 242-EN-FRM-0003 Fauna Sightings and Interaction Register
- 242-EN-PLN-0014 Fire Management Plan
- Safety Incident Procedures

The above documents are internal YIPL EMS documents and do not form part of this management plan.

14. REFERENCES

- DAA (2010) Monitoring of *Ricinocarpos brevis* at Windarling. Report prepared for Cliffs Natural Resources Pty Ltd by Data Analysis Australia, February 2010.
- DAA (2011) Review of *Tetratheca paynterae* subsp. *paynterae* sampling methodology. Report prepared for Cliffs Natural Resources Pty Ltd by Data Analysis Australia, April 2011.
- DBCA (2019). Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, January 2019.
- Western Australian Minister for Environment (2014). Yilgarn Operations - Windarling Range, Mt Jackson Range and Deception Deposit – Shire of Yilgarn and Shire of Menzies. Statement 982. Approval granted to Cliffs Asia Pacific Iron Ore Pty Ltd under s46 of the Environmental Protection Act 1986 (WA). September 2014.

Attachment 1 – Conservation Significant Flora Occurring in the Vicinity of YIPL’ s Yilgarn Operations

Table A1 – Conservation Significant Flora Occurring in the Vicinity of YIPL’s Yilgarn Operations

Species	Rating*		Koolyanobbing Range	Mt Jackson Range	Windarling Range	Deception Deposit	Haul Roads
	BC Act	EPBC Act					
RARE FLORA / THREATENED							
<i>Ricinocarpos brevis</i>	E	EN			✓		
<i>Tetradlea erubescens</i>	VU	VU	✓				
<i>Tetradlea harperi</i>	VU	VU		✓			
<i>Tetradlea paynterae</i> subsp. <i>paynterae</i>	CR	EN			✓		
PRIORITY FLORA							
<i>Acacia haematites</i>	1	-	✓				
<i>Beyeria rostellata</i>	1	-	✓	✓			
<i>Calytrix viscida</i>	1	-		✓		✓	
<i>Hysterobaeckea ochropetala</i> subsp. <i>ochropetala</i>	1	-					✓
<i>Lepidosperma jacksonense</i>	1	-		✓			
<i>Acacia dissona</i> var. <i>indoloria</i>	3	-	✓				
<i>Austrostipa blackii</i>	3	-	✓	✓	✓		
<i>Bossiaea</i> sp. Jackson Range	3	-		✓			
<i>Hibbertia lepidocalyx</i> subsp. <i>tuberculata</i>	3	-	✓				
<i>Hysterobaeckea cornuta</i>	3	-					✓
<i>Lepidium genistoides</i>	3	-	✓				
<i>Lepidosperma ferricola</i>	3	-	✓	✓			
<i>Leptospermum macgillivrayi</i>	3	-		✓			
<i>Philothea coateana</i>	3	-					✓
<i>Philothea deserti</i> subsp. <i>brevifolia</i>	3	-					✓
<i>Rinzia triplex</i>	3	-				✓	
<i>Stenanthemum newbeyi</i>	3	-	✓	✓			
<i>Styphelia</i> sp. Bullfinch (M. Hislop 3574)	3	-	✓				
<i>Banksia arborea</i>	4	-	✓	✓	✓	✓	
<i>Eucalyptus formanii</i>	4	-		✓	✓	✓	✓
<i>Grevillea erectiloba</i>	4	-		✓	✓		✓

*E – Endangered, VU – Vulnerable, CR – Critically Endangered

Attachment 2 - *Tetratheca paynterae* subsp. *paynterae* and *Ricinocarpos brevis* Annual Monitoring Sites at Windarling Range

