

# THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

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The Minister approved this conservation advice and included this species in the Critically Endangered category, effective from 11/05/2018.

## Conservation Advice

### *Grevillea* sp. Gillingarra (R.J. Cranfield 4087)

#### **Summary of assessment**

##### **Conservation status**

*Grevillea* sp. Gillingarra (R.J. Cranfield 4087) has been found to be eligible for listing in the Critically Endangered category, as outlined in the attached assessment.

##### **Reason for conservation assessment by the Threatened Species Scientific Committee**

This advice follows assessment of information provided by Western Australia as part of the Common Assessment Method process, to systematically review species that are inconsistently listed under the EPBC Act and relevant state/territory legislation or lists.

More information on the Common Assessment Method is available at:

<http://www.environment.gov.au/biodiversity/threatened/cam>

The information in this assessment has been compiled by the relevant state/territory government. In adopting this assessment under the EPBC Act, this document forms the Approved Conservation Advice for this species as required under s266B of the EPBC Act.

##### **Public consultation**

Notice of the proposed amendment and a consultation document was made available for public comment for 33 business days between 3 October 2017 and 16 November 2017. Any comments received that were relevant to the survival of the species were considered by the Committee as part of the assessment process.

##### **Recovery plan**

A recovery plan for this species under the EPBC Act is not recommended, because the Approved Conservation Advice provides sufficient direction to implement priority actions and mitigate against key threats. The relevant state/territory may decide to develop a plan under its equivalent legislation.

#### **Recommendations**

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the Critically Endangered category:  
*Grevillea* sp. Gillingarra (R.J. Cranfield 4087)
- (ii) The Committee recommends that there not be a recovery plan for this species.

Threatened Species Scientific Committee

28 February 2018

# Nomination/Proposal summary *(to be completed by nominator)*

Current conservation status				
Scientific name:	Grevillea sp. Gillingarra (R.J. Cranfield 4087)			
Common name:	None			
Family name:	Proteaceae	Fauna <input type="checkbox"/>	Flora <input checked="" type="checkbox"/>	
Nomination for:	Listing <input checked="" type="checkbox"/>	Change of status/criteria <input type="checkbox"/>	Delisting <input type="checkbox"/>	
1. Is the species currently on any conservation list, either in a State or Territory, Australia or Internationally? 2. Is it present in an Australian jurisdiction, but not listed?		Provide details of the occurrence and listing status for each jurisdiction in the following table		
Jurisdiction	State / Territory in which the species occurs	Date listed or assessed (or N/A)	Listing category i.e. critically endangered or 'none'	Listing criteria i.e. B1ab(iii)+2ab(iii)
International (IUCN Red List)				
National (EPBC Act)				
State / Territory	1. WA	2012	Critically Endangered	D
		5/4/2017	Critically Endangered	B1ab(iii)+2ab(iii); D
	2.			
Consistent with Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding, it is confirmed that:				
<ul style="list-style-type: none"> <li>this assessment meets the standard of evidence required by the Common Assessment Method to document the eligibility of the species under the IUCN criteria;</li> </ul>			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Comments:				
<ul style="list-style-type: none"> <li>surveys of the species were adequate to inform the assessment;</li> </ul>			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Comments:	Further surveys undertaken in 2013 and 2015 showed an increase in subpopulation size from 12 mature individuals to 15 mature individuals.			
<ul style="list-style-type: none"> <li>the conclusion of the assessment remains current and that any further information that may have become available since the assessment was completed supports or is consistent with the conclusion of the assessment.</li> </ul>			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Comments:	Assessment is consistent and criteria remains current for Criterion D. Also meets CR under criteria B1ab(iii)+B2ab(iii) given decline in habitat condition noted.			
Nominated national conservation status: category and criteria				
Presumed extinct (EX) <input type="checkbox"/>	Critically endangered (CR) <input checked="" type="checkbox"/>	Endangered (EN) <input type="checkbox"/>	Vulnerable (VU) <input type="checkbox"/>	
None (least concern) <input type="checkbox"/>	Data Deficient <input type="checkbox"/>	Conservation Dependent <input type="checkbox"/>		

What are the IUCN Red List criteria that support the recommended conservation status category?		B1ab(iii)+B2ab(iii), D			
Eligibility against the IUCN Red List criteria (A, B, C, D and E)					
Provide justification for the nominated conservation status; is the species eligible or ineligible for listing against the five criteria. For <b>delisting</b> , provide details for why the species no longer meets the requirements of the current conservation status.					
A.	Population size reduction (evidence of decline)	<ul style="list-style-type: none"> <li>The total known number of mature individuals has increased from 12 when initially surveyed in 1991 to 15 in 2015.</li> <li><b>Does not meet criteria</b></li> </ul>			
B.	Geographic range (EOO and AOO, number of locations and evidence of decline)	<ul style="list-style-type: none"> <li>(B1) The EOO is 4 km<sup>2</sup> which was determined from the AOO estimation.</li> <li>(B2) Area of Occupancy is 4 km<sup>2</sup> estimated by the 2x2 km grid method.</li> <li>(a) The species is only known from one location.</li> <li>(b) Continuing decline observed and projected:</li> <li>(iii) Ongoing threats to habitat condition from rail maintenance, weeds, poor recruitment, fire and a drying climate.</li> <li><b>Meets criteria for Critically Endangered B1ab(iii)+B2ab(iii)</b></li> </ul>			
C.	Small population size and decline (population size, distribution and evidence of decline)	<ul style="list-style-type: none"> <li>Known from 15 mature individuals in total.</li> <li>(C2) Plant numbers appear to fluctuate increasing from 12 when initially surveyed in 1991, to 23 in 2011, but then declined to 15 in 2015. If management does not succeed in protection of the habitat it is likely that plant numbers will decline due to ongoing rail maintenance and weeds.</li> <li>(a) (i) and (ii): 15 plants (100%) occur in only one subpopulation.</li> <li><b>Does not currently meet criteria as a decline in number of individuals is not able to be demonstrated</b></li> </ul>			
D.	Very small or restricted population (population size)	<ul style="list-style-type: none"> <li>(D) There are 15 mature individuals in total.</li> <li><b>Meets Critically Endangered D</b></li> </ul>			
E.	Quantitative analysis (statistical probability of extinction)	<ul style="list-style-type: none"> <li>No information to assess.</li> </ul>			
Summary of assessment information					
EOO	0.0002 km <sup>2</sup> , calculated to 4 km <sup>2</sup> based on AOO estimation	AOO	4 km <sup>2</sup> (2 km x 2 km grid). Area of subpopulation 0.0002 km <sup>2</sup> .	Generation length	Unknown
No. locations	1	Severely fragmented	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown <input type="checkbox"/>		
No. subpopulations	1	No. mature individuals	15		

Percentage global population within Australia	100	
Percentage population decline over 10 years or 3 generations	Unknown	
<b>Threats</b> (detail how the species is being impacted)		
<b>Threat</b> (describe the threat and how it impacts on the species. Specify if the threat is past, current or potential)	<b>Extent</b> (give details of impact on whole species or specific subpopulations)	<b>Impact</b> (what is the level of threat to the conservation of the species)
Rail maintenance <ul style="list-style-type: none"> <li>Grading, chemical spraying, construction of drainage channels and the mowing of vegetation. Flooding and remediation works on the railway line in 2011 destroyed nearly 50% of the population.</li> </ul> Past, present and future	Whole population	Catastrophic
Weeds <ul style="list-style-type: none"> <li>Weeds suppress early plant growth by competing for soil moisture, nutrients and light. They also increase the fire hazard.</li> </ul> Past, present and future	Whole population	Severe
Altered fire regimes <ul style="list-style-type: none"> <li>Although the species may germinate from soil-stored seed following fire, it may not have enough time to set seed and recover if the interval between fires is too short.</li> </ul> Past, current and future	Whole population	Severe
Poor recruitment <ul style="list-style-type: none"> <li>The species is likely to require a disturbance to recruit, but if disturbance is too frequent or is followed by a drought, the population may be impacted. Some recruitment has been observed but is negated by a continuing loss of plants.</li> </ul> Current, future	Whole population	High
Drought <ul style="list-style-type: none"> <li>This is a threat to the species if it occurs over a number of years.</li> <li>Climate change modelling for the south west predicts a decline in rainfall, and some seasonal shift to summer rainfall events, which is likely to increase the potential impact of drought on the species.</li> </ul> Future	Whole population	Severe
<b>Management and Recovery</b>		
Is there a Recovery Plan (RP) or Conservation Management Plan operational for the species?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

List all relevant recovery or management plans (including draft, in-preparation, out-of-date, national and State/Territory recovery plans, recovery plans for other species or ecological communities, or other management plans that may benefit or be relevant to the nominated species).

- Department of Parks and Wildlife (2016 DRAFT) *Grevillea* sp. Gillingarra (R.J. Cranfield 4087) Interim Recovery Plan 2016–2021. Interim Recovery Plan No. #. Department of Parks and Wildlife, Western Australia.

List current management or research actions, if any, that are being undertaken that benefit the conservation of the species.

- Monitoring and surveys have been carried out to determine plant numbers and impact of threats.
- Threatened flora markers have been installed at the subpopulation of *Grevillea* sp. Gillingarra (R.J. Cranfield 4087).

List further recommended management or research actions, if any, that would benefit the conservation of the species. Please ensure that this section addresses all identified threats.

#### Management

- Monitor subpopulation annually or near-annually for factors such as habitat degradation, population stability (expansion or decline), pollinator activity, seed production, recruitment, and longevity;
- Ongoing liaison with Brookfield Rail and Aboriginal communities to ensure that subpopulation of *Grevillea* sp. Gillingarra (R.J.Cranfield 4087) is not accidentally damaged or destroyed, and the habitat is maintained in a suitable condition for the conservation of the species;
- Undertake weed control at subpopulation;
- Develop and implement a fire management strategy, including associated weed control measures and the need for and method of the construction and maintenance of firebreak;
- Undertake revegetation using local plant species of the gully slopes following rail remediation works in 2011;
- Collect and store seeds to guard against the extinction of natural populations. Collections should aim to sample and preserve the maximum range of genetic diversity possible;
- Undertake surveys in areas of potentially suitable habitat between winter and spring;
- Develop a translocation proposal and select a disease free translocation site;
- Map habitat critical to the survival of the species to facilitate its protection and appropriate management;
- Promote awareness of the species with general public.

#### Research

Research biology and ecology of the species including:

- a study of the soil seed bank dynamics and the role of various factors including disturbance, competition, drought and inundation in recruitment and seedling survival;
- determination of reproductive strategies, phenology and seasonal growth;
- investigation of the mating system and pollination biology;
- investigation of population genetic structure, levels of genetic diversity and minimum viable population size; and
- the impact of changes in hydrology in the habitat.

**Nomination prepared by:**

**Contact details:**

**Date submitted:**

6/9/2016

If the nomination has been refereed or reviewed by experts, please provide their names and contact details:

Summary of subpopulation information (detailed information to be provided in the relevant sections of the form)						
Location (include coordinates)	Land tenure	Survey information: Date of survey and No. mature individuals	Area of subpopulat ion	Site / habitat Condition	Threats (note if past, present or future)	Specific management actions
Rail reserve, south of Gillingarra.	Rail reserve	1991: 12 2011: 23 2011: 12 (loss of 11 plants from rail works) 2013: 21 2015: 15	0.02 ha	Habitat degraded by ongoing rail maintenance and weeds.	Rail maintenance (past, present, future) Weeds (past, present, future) Fire (past, present, future) Lack of recruitment (present, future) Drought (future)	Install markers Undertake weed control Develop a fire management plan Undertake regeneration trials



Form to nominate a Western Australian species for listing as threatened, change of category or delisting 2012 (Updated 2016).

NOTICE: Incomplete forms may result in delays in assessment, or rejection of the nomination. To fill out this form you must refer to the Guidelines and contact the relevant Officer in the DEC Species and Communities Branch. DEC staff can advise you on how to fill out the form and may be able to supply additional, unpublished information.

Answer all relevant sections, filling in the white boxes and indicating when there is no information available. Note, this application form applies to both flora and fauna species, and hence some questions or options may not be applicable to the nominated species – for these questions, type "N/A".

To mark boxes with a cross, double click the box and select not checked or checked.

<b>SECTION 1. NOMINATION</b>				
<b>1.1. Nomination for:</b>				
Flora <input checked="" type="checkbox"/>	Fauna <input type="checkbox"/>	Threatened / DRF <input checked="" type="checkbox"/>	Change of category <input type="checkbox"/>	Delisting <input type="checkbox"/>
<b>1.2. Scientific Name</b>				
This name will be used to identify the species on all official documentation. Use the approved name used by the Western Australian Museum or Herbarium, if possible.				
Grevillea sp. Gillingarra (R.J. Cranfield 4087)				
<b>1.3. Common Name</b>				
If the species has a generally accepted common name, please show it here.				
<b>1.4. Current Conservation Status. If none, type 'None'.</b>				
	IUCN Red List Category e.g. Vulnerable		IUCN Red List Criteria e.g. B1ab(iv);D(1)	
International IUCN Red List				
National EPBC Act 1999				
State of Western Australia	Critically Endangered		D	
State of WA Priority	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>1.5. Nominated Conservation Status.</b>				
	IUCN Red List Category e.g. Vulnerable		IUCN Red List Criteria e.g. B1ab(iv);D(1)	
National EPBC Act 1999	Critically Endangered		B1ab(iii)+2ab(iii), D	
State of Western Australia	Critically Endangered		B1ab(iii)+2ab(iii), D	
State of WA Priority	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>Is the species listed as 'Threatened' in any other Australian State or Territory? If Yes, list these States and/or Territories and the status for each.</b>				
No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>				

<p><b>1.6. Reasons for the Nomination.</b>  <b>Briefly summarise the reasons for the nomination in dot points. Please include details relevant to the IUCN Categories and Criteria where appropriate.</b></p>
<p>The species has a low area of occupancy and extent of occurrence, estimated as 4km<sup>2</sup>, with actual area of subpopulation 0.0002 km<sup>2</sup> or 0.2 hectares, and is only known from a single road/railside population.</p>
<p>Population partially destroyed by flooding and remediation works for railway in 2011 when population reduced from 23 to 12 plants. 15 mature individuals in 2015. The habitat is degraded and is likely to decline due to ongoing rail maintenance.</p>
<p>The small number of individuals and the area of occupancy and extent of occurrence, and continuing decline in habitat condition, enable this species to meet the IUCN category Critically Endangered B1ab(iii)+2ab(iii), D.</p>
<p><b>SECTION 2. SPECIES</b></p>
<p><b>2.1. Taxonomy.</b>  <b>Describe the taxonomic history, using references, and describe the key distinguishing features that can be used to separate this taxon from closely related taxa. Include details of the type specimen, changes in taxonomy, scientific names and common names used for the species.</b></p>
<p>Part of the <i>Grevillea thelemaniana</i> complex. Collections of this species have been placed in <i>Grevillea preissii</i> because of its secondary leaf divisions. However, unlike <i>G. preissii</i> which occurs on coastal limestones this species occurs on deep riverine clays on the Dandaragan Plateau.</p> <p>Plants lack a lignotuber and are much larger in stature than the coastal <i>G. preissii</i>. Stems are almost glabrous compared to pubescent to tomentose in <i>G. preissii</i> and the flowers are glabrous outside compared to having a conspicuous indumentum. The leaves are much shorter (&lt;2 cm long) and relatively rigid compared to coastal <i>G. preissii</i>.</p> <p>Current PhD studies on the genetics of the complex by Tanya Hevrov, show the species is distinct from all other members of the complex and is allied to the northern <i>Grevillea delta/hirtella</i> species group rather than <i>G. preissii</i>.</p>
<p><b>Is this species conventionally accepted? If no, explain why. For example, is there any controversy about the taxonomy? For undescribed species, detail the location of voucher specimens (these should be numbered and held in a recognised institution and be available for reference purposes).</b></p>
<p>No <input type="checkbox"/> Yes <input checked="" type="checkbox"/></p>
<p>Reference specimen Cranfield 4087 located at PERTH, specimen number 01845411.</p>
<p><b>Describe any known hybridisation with other species in the wild, indicating where this occurs and how frequently.</b></p>
<p>None known</p>

## 2.2. Description

Describe the physical appearance, habit, behaviour/dispersion and life history. Include anatomy or habit (e.g. size and/or weight, sex and age variation, social structure) and dispersion (e.g. solitary, clumped or flocks etc), and life history (eg short lived, long lived, geophytic, etc).

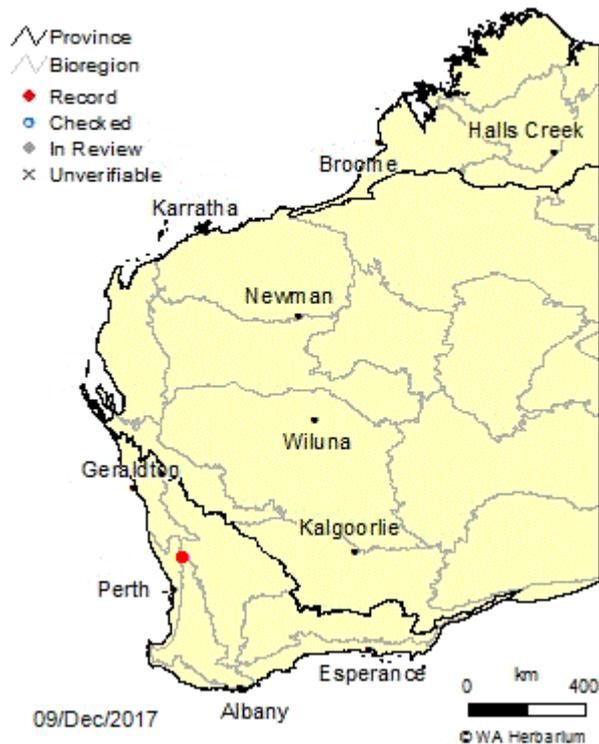
Erect spreading dense shrub, 50 cm to 2m tall by 1-1.5 m wide, lacking a lignotuber. Branches terete, almost glabrous. Leaves 1.5-2.0 cm long, (3) 5-7 sect, primary lobes closely aligned, at least basal ones usually with secondary and sometimes tertiary divisions, lobes linear to narrowly linear, 0.5 mm wide, weakly pungent but relatively rigid, margin incurved-revolute to near midvein, upper surface glabrous, lower surface tomentose to villous. Conflouescence decurved, secund, 36-56 flowered, 4-5 cm long, sericeous. Perianth limb red, limb pale, glabrous outside, densely pubescent in throat inside. Pistil 22-28 mm long.

## 2.3. Distribution

Describe the distribution of the species in Australia and, if possible, provide a map.

Only known from a single road/rail verge population approximately south of Gillingarra.

*Grevillea* sp. Gillingarra (R.J. Cranfield 4087)



*Grevillea* sp. Gillingarra location (from Western Australian Herbarium (1998--)).

## 2.4. Habitat

Describe the non-biological habitat (e.g. aspect, topography, substrate, climate) and biological habitat (e.g. forest type, associated species, sympatric species). If the species occurs in various habitats (e.g. for different activities such as breeding, feeding, roosting, dispersing, basking etc) then describe each habitat.

### Non-biological habitat

Occurs along ephemeral creek banks in species-rich Kwongan.

### Biological habitat

Does the (fauna) species use refuge habitat e.g. in times of fire, drought or flood? Describe this habitat.

Creecline
<b>Is the species part of, or does it rely on, a listed threatened ecological community? Is it associated with any other listed threatened species?</b>
Found with <i>Darwinia acerosa</i> .
<b>2.5. Reproduction</b> Provide an overview of the breeding system. For <b>fauna</b> : Provide an overview of the breeding system and breeding success, including: when does it breed; what conditions are needed for breeding; are there any breeding behaviours that may make it vulnerable to a threatening process? For <b>flora</b> : When does the species flower and set fruit? Is the seed produced viable? What conditions are needed for this? What is the pollinating mechanism? If the species is capable of vegetative reproduction, a description of how this occurs, the conditions needed and when. Does the species require a disturbance regime (e.g. fire, ground disturbance) in order to reproduce?
Flowers over a long period in winter and spring. Pollinated by nectar feeding birds. Killed by fire and lacks a lignotuber, No vegetative reproduction. Seed is shed once mature. Soil seed bank unknown. Disturbance regimes unknown.
<b>2.6. Population dynamics</b> Provide details on ages of sexual maturity, extent of breeding success, life expectancy and natural mortality. Describe population structure (presence of juveniles/seedlings, mature and senescing individuals).
Were 23 mature individuals, reduced to 12 in 2011 after site disturbance. Recovered to 21 mature individuals in 2013, and declined again to 15 mature individuals in 2015.
<b>Questions 2.7 and 2.8 apply to fauna nominations only</b>
<b>2.7. Feeding</b> Summarise food items or sources and timing/availability.
<b>Briefly describe feeding behaviours, including those that may make the species vulnerable to threatening processes.</b>
<b>2.8. Movements</b> Describe any relevant daily or seasonal pattern of movement for the species, including relevant arrival/departure dates if migratory. Provide details of home range/territories.
<b>SECTION 3. INTERNATIONAL CONTEXT</b>
<b>For species that are distributed both in Australia and in other countries.</b>
<b>3.1. Distribution</b> Describe the global distribution.
<b>Provide an overview of the global population size, trends, threats and security of the species outside of Australia.</b>
<b>Explain the relationship between the Australian population and the global population. What percentage of the global population occurs in Australia? Is the Australian population distinct, geographically separate or does part, or all, of the population move in/out of Australia's jurisdiction? Do global threats affect the Australian population?</b>

**SECTION 4. CONSERVATION STATUS AND MANAGEMENT**

**4.1. Population**

What is the total population size in terms of number of mature individuals? Has there been any known reduction in the size of the population, or is this likely in the future? – provide details. Are there other useful measures of population size and what are they? Or if these are unavailable, provide an estimate of abundance (e.g. scarce, locally abundant etc).

Currently 15 mature individuals.

Provide locations of: captive/propagated occurrences or *ex situ* collections; recent re-introductions to the wild; and sites for proposed re-introductions. Have these sites been identified in recovery plans?

N/A

How many locations do you consider the species occurs in and why? Where a species is affected by more than one threatening event, location should be defined by considering the most serious plausible threat.

One

For flora, and where applicable, for fauna, detail the location, land tenure, estimated number of individuals, area of occupancy, and condition of site for each known date, location or occurrence.

Date of survey	Location	Land status	Number of individuals at location	Area of occupancy at location	Condition of site
1991	South of Gillingarra	Shire Road Reserve Rail Reserve	12	200m <sup>2</sup>	Damaged due to flooding and rail maintenance work
2011			23		
2011			12		
2013			21		
2015			15		

Has the number of individuals been counted, or is this an estimate? Provide details of the method of determining the number of individuals.

Yes all individuals marked and counted for DNA studies in 2010.

Has there been any known reduction in the number of locations, or is this likely in the future? – provide details.

N/A

What is the extent of occurrence (in km<sup>2</sup>) for the species; explain how it was calculated and datasets used. If an accurate estimate is unavailable, provide a range of values or a minimum or maximum area estimate. Include estimates of past, current and possible future extent of occurrence.

One stand over 200 m<sup>2</sup> .

If available, include data that indicates the percentage decline over 10 years or 3 generations (whichever is longer) that has occurred or is predicted to occur.

N/A, but management activities declined the sole known population by over 50% in 2011.

<b>Is the distribution of the species severely fragmented? Why?</b>				
Yes, only a single subpopulation known.				
<b>Identify important occurrences necessary for the long-term survival and recovery of the species? This may include: key breeding populations, those near the edge of the range of the species or those needed to maintain genetic diversity.</b>				
Only a single subpopulation known.				
<b>4.2. Survey effort</b>				
<b>Describe the methods to conduct surveys. For example, (e.g. season, time of day, weather conditions); length, intensity and pattern of search effort (including where species not encountered); any limitations and expert requirements.</b>				
All reserves on Dandaragan Plateau have been visited normally at several times of the year. Entire rail/road verge from Moora to Bindoon checked.				
<b>Provide details on the distinctiveness and detectability of the species, or the distinctiveness of its habitat, that would assist survey success.</b>				
Large shrub with bright red inflorescences. Only member of this group in area. Only found along red ironstone clay creeklines.				
<b>Has the species been reasonably well surveyed? Provide an overview of surveys to date (include surveys of known occurrences and surveys for additional occurrences) and the likelihood of its current known distribution and/or population size being its actual distribution and/or population size. Include comments on potential habitat and surveys that were conducted, but where the species was not present/found.</b>				
yes				
<b>4.3. Threats</b>				
<b>Identify past, current and future threats indicating whether they are actual or potential. For each threat describe:</b>				
a). how and where they impact this species				
b). what the effect of the threat(s) has been so far (indicate whether it is known or suspected				
c). present supporting information/research				
d). does it only affect certain populations?				
e). what is its expected effect in the future (is there supporting research/information; is the threat only suspected; does it only affect certain populations?).				
<b>If possible, provide information threats for each current occurrence/location:</b>				
<b>Location</b>	<b>Past threats</b>	<b>Current threats</b>	<b>Potential threats</b>	<b>Management requirements (see section 4.4)</b>
South of Gillingarra	Rail verge management Road verge management	Rail verge management Road verge management	Rail verge management Road verge management	Site protection Land manager awareness Seed collection Ex-situ cultivation

<b>Identify and explain why additional biological characteristics particular to the species are threatening to its survival (e.g. low genetic diversity). Identify and explain any models addressing the survival of the species.</b>	
Single population with low number of individuals.	
<b>4.4. Management</b> <b>Identify key management documentation for the species e.g. recovery plans, conservation plans, threat abatement plans etc.</b>	
none	
<b>Does this species benefit from the management of another species or community? Explain.</b>	
Found in association with DRF <i>Darwinia acerosa</i> but site management has caused damage to the site in 2011.	
<b>How well is the species represented in conservation reserves or covenanted land? Which of these are actively managed for this species? Provide details.</b>	
Not	
<b>Are there any management or research recommendations that will assist in the conservation of the species? Provide details.</b>	
<p>Management requirements to include:</p> <ul style="list-style-type: none"> <li>• Maintain liaison with road and rail managers to minimise disturbance to remnant vegetation when maintaining road and rail;</li> <li>• Monitor the population for evidence of weed impacts, or changes in plant or site health;</li> <li>• Control infestations of weeds that might impact the species;</li> <li>• Revegetate gully slopes using local plant species;</li> <li>• Protect the site from fire unless required for ecological reasons, and implement early intervention in any wildfires which may threaten the site;</li> <li>• Collect and store seed;</li> <li>• Survey any newly identified areas of suitable habitat;</li> <li>• Establish new populations in more secure locations, if a suitable location can be found;</li> <li>• Determine fire response;</li> <li>• Undertake systematic monitoring of populations to determine population trends.</li> </ul>	
<b>4.5. Other</b> <b>Is there any additional information that is relevant to consideration of the conservation status of this species?</b>	
<b>SECTION 5. NOMINATOR</b>	
<b>Nominator(s) name(s)</b>	
<b>Organisation(s)</b>	
<b>Address(s)</b>	
<b>Telephone number(s)</b>	
<b>Email(s)</b>	
<b>Date</b>	1-2-2012
<b>If the nomination has been refereed or reviewed by experts, provide their names and contact details.</b>	

Andrew Brown – SCB

**SECTION 6. REFERENCES**

**What references or sources did you use to prepare your nomination? Include written material, electronic sources and verbal information. Include full references, address of web pages and the names and contact details of authorities with whom you had verbal communications.**

Personal Field Knowledge, Supervising PhD on group. Revised taxonomy of group.

Western Australian Herbarium (1998–) *FloraBase—the Western Australian Flora*. Department of Environment and Conservation. <http://florabase.dpaw.wa.gov.au>.