Nomination *(to be completed by nominator)*

Current conservation status	
Name of ecological community:	Lesueur-Coomallo Floristic Community D1 as described by Griffin and Hopkins (1990)
Other names:	Lesueur D1
Description:	The community occurs in Hill River. It comprises a species-rich low heath on moderately to well-drained lateritic gravels on lower slopes and low rises, dominated by *Allocasuarina microstachya* with *Allocasuarina ramosissima* (dwarf sheoak), *Allocasuarina humilis*, *Babingtonia grandiflora* (large-flowered babingtonia), *Borya nitida* (pincushions), *Calytrix flavescens* (summer starflower), *Calothamnus sanguineus* (silky-leaved blood flower), *Conostylis androstemma* (trumpets), *Cryptandra pungens*, *Banksia armata* (prickly dryandra), *Gastrolobium polystachyum* (horned poison), *Hakea auriculata*, *Hakea incrassata* (marble hakea), *Hakea ?erinacea*, *Hibbertia hypericoides* (yellow buttercups), *Hypocalymma xanthopetalum*, *Melaleuca trichophylla*, *Petrophile chrysantha*, *Schoenus subflavus* (yellow bog-rush) and *Xanthorrhoea drummondii*. The community was originally described by Griffin E.A. and Hopkins A.J.M. in the vegetation chapter (pp. 25-38) of Burbidge A.A., Hopper S.D. and van Leeuwen S. (eds.) (1990) "Nature conservation, landscape and recreation values of the Lesueur area" (A report to the Environmental Protection Authority from the Department of Conservation and Land Management. Bulletin 424, Environmental Protection Authority, Perth).
Nomination for:	Listing under BC Act ☒ Change of status ☐ Delisting ☐

1. *Is the ecological community 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	**List or Act name**	**Date listed or assessed (or N/A)**	**Listing category eg. critically endangered (or none)**	**Listing criteria eg. B1ab(iii)+2ab(iii) (or none)**
National				
Western Australia	Threatened list; under WA Minister ESA list in policy	6/11/2000	Critically Endangered	B) i) and B) ii)
	Priority list		1 ☐ 2 ☐ 3 ☐ 4 ☐	
Other State/Territory				

Nominated conservation status: category and criteria (include recommended status for deleted ecological communities)

Critically endangered (CR) ☒ Endangered (EN) ☐ Vulnerable (VU) ☐ Collapsed (CO) ☐

Priority 1 ☐	Priority 2 ☐	Priority 3 ☐	Priority 4 ☐	None ☐

What criteria support the conservation status category for listing as a threatened ecological community or collapsed ecological community? *Refer to Section 32 of the Biodiversity Act 2016 for definition of 'Collapsed', and Appendix 3 table 'IUCN Red List Criteria for ecosystems version 2.2'.*	CR B1c; B2c

Eligibility against the criteria		
*Provide justification for the nominated conservation status; is the ecological community eligible or ineligible for listing against the five criteria. For **delisting**, provide details for why the ecological community no longer meets the requirements of the current conservation status.*		
A.	Reduction in geographic distribution *(evidence of decline)*	☐ **A1** ☐ **A2a** ☐ **A2b** ☐ **A3**
	Justification of assessment under Criterion A.	• For criteria A and B, the community is assumed to collapse when the mapped distribution declines to zero. • Does not meet criterion as there is no evidence that the community's geographic distribution has declined or changed. Aerial photography indicates that the area as originally mapped by Griffin and Hopkins (1990) remains vegetated. Burbidge, Hopper and Van Leeuwen (1990) refer to the Lesueur area being first traversed by Europeans in 1839, and from 1850 onwards the areas was avoided because of "it's rugged terrain and abundance of poisonous plants…". • **Does not meet Criterion A**
B.	Restricted geographic distribution *(EOO and AOO, number of locations and evidence of decline)*	☒ **B1** (specify at least one of the following): ☐ **a)(i)** ☐ **a)(ii)** ☐ **a)(iii)** ☐ **b)** ☒ **c);** CR ☒ **B2** (specify at least one of the following): ☐ **a)(i)** ☐ **a)(ii)** ☐ **a)(iii)** ☐ **b)** ☒ **c);** CR ☐ **B3 (only for Vulnerable Listing)** VU
	Justification of assessment under Criterion B.	B1: EEO is 0.0778km² (<2,000km^2). a): Insufficient evidence available to indicate a decline in a measure of spatial extent, environmental quality or disruption to biotic interactions to support ranking under B1a) or B2a). b) The EEO is extremely restricted at 0.004% of the minimum threshold for critically endangered (2,000km^2). Currently there is no evidence of presence or impact from dieback disease caused by *Phytopthora* spp., or significant impacts of too frequent fire or other threats in the community, and threats are considered 'trivial'.

		C): Community exists at one threat-defined location as the single known occurrence is very vulnerable to future threats from dieback disease, too frequent or severe fire and impacts associated with climatic drying (threshold for CR is one and for EN is five threat-defined locations). (Threat-defined location **"***A geographically or ecologically distinct area in which a single threatening event can rapidly affect all occurrences of an ecosystem type*": IUCN 2017). B2: AOO is occupies 1 10x10km² grid cell). Known from a single occurrence that covers 0.07ha over a range of 0.05km. The AOO is extremely restricted at 0.08% of the minimum threshold for critically endangered (1 grid square is 100km^2). • **Meets criteria for Critically Endangered B1c; B2c** B3: Known from one threat defined location as the only known occurrence is under potential future threat from dieback disease, and too frequent or severe fire, and other currently unobserved impacts of threats. The threshold for vulnerable under the criterion is less than 5 threat defined locations. • **Meets criteria for CR B1c, B2c. Meets VU under B3**
C.	Environmental degradation of abiotic variable *(Evidence of decline over 50-year period)*	☐ **C1** ☐ **C2** ☐ **C3**
	Justification of assessment under Criterion C.	C1, C2: Inappropriate fire regimes is a significant abiotic variable affecting the community. Collapse is defined a fire regime of frequent hot fires that results in complete loss of all fire sensitive flora in community. Information on fire regimes was sourced, as there have been a series of major fires in the general area caused by lightning strikes in summer. The community was in excellent condition when last surveyed in 1989. According to DBCA records, the location was last burnt in May 2006. There is inadequate evidence, to indicate that the community meets the minimum proportion of the extent (≥30%) or proportional severity of disruption of biotic processes (≥30%) over any 50-year period to meet VU under criteria C1, C2. C3: Inadequate data are available to indicate that the community meets the threshold fraction of the extent (≥50%) or relative severity of disruption of abiotic processes (≥50%) since ~1750 to meet VU. **Inadequate evidence to indicate that community meets criterion C**

D.	Disruption of biotic processes or interactions *(Evidence of decline over 50-year period)*	☐ **D1** ☐ **D2** ☐ **D3**
	Justification of assessment under Criterion D.	• D1, D2: Dieback disease is a significant biotic variable that has potential to impact the community. Collapse in this

		context is loss of all dieback sensitive species as a consequence of the disease. Information on dieback disease was sourced from DBCA GIS layers however no data were available for the location in which the community occurs. • No available data indicate the community will likely meet the threshold for 30% severity over 30% of the extent of the community in any 50 year time period, or 50% thresholds since ~1750 to meet VU. • **Inadequate evidence to indicate that community meets criterion D**.
E.	Quantitative analysis *(statistical probability of ecosystem collapse)*	• No quantitative estimates of the risk of ecosystem collapse have been completed. • Unable to assess

Reasons for change of status

Genuine change ☐ New knowledge ☐ Previous mistake ☐ Review/Other ☒

Provide details: The community was initially ranked as Vulnerable using ranking criteria developed in WA that differ to those in the IUCN Red List Criteria for Ecosystems (version 2.2).

Summary of assessment information *(provide detailed information in the relevant sections of the nomination form)*

EOO	0.0778km²	AOO	Less than 100 km^2 - 1 grid (10x10km grid method).
No. locations	1	Severely fragmented	Yes ☒ No ☐ Unknown ☐
Justification		The community is only known from a single small isolated occurrence. Community is surrounded by intact vegetation.	
Current known area			0.0778km² ha
Pre-industrialisation extent or its former known extent (if known)			Occupies original extent: 0.0778km²
Estimated percentage decline			Extent unlikely to have declined.

Summary assessment against IUCN RLE Criteria

Criterion	Rank indicated	Overall conclusion
A1	-	• Does not meet
A2a	-	• Does not meet
A2b	-	• Does not meet
A3	-	• Does not meet
B1a	-	• EOO is 0.0778km² ≤2,000km^2 • There is no data to indicate decline in spatial extent, environmental quality or disruption to biotic interactions that would meet minimum thresholds of the criterion (VU) • Does not meet criterion
B1b	-	• EOO is 0.0778km² ≤2,000km^2 • The threat of dieback disease caused by the plant pathogens *Phytophthora* species, altered fire regimes and other potential threats is currently considered 'trivial'.
B1c	CR	• EOO is 0.0778km² ≤2,000km^2 • Community exists at one threat-defined location as the single occurrence is very vulnerable to future threats • Meets criterion for CR
B2a	-	• AOO is one grid cell • Inadequate data available to indicate decline in spatial extent, environmental quality and disruption to biotic interactions to support ranking under B2a • Does not meet criterion
B2b	-	• AOO is one grid cell • The threat of dieback disease, altered fire regimes is currently considered 'trivial' • Does not meet criterion
B2c	CR	• AOO is one grid cell • Community exists at one threat-defined location as known from a single occurrence that is very vulnerable to future threats • Meets criterion for CR
B3	VU	• Known from one threat-defined location • Prone to inferred future threats • Meets criterion for VU
C1	-	• Inadequate evidence to indicate the community meets the thresholds for proportion of the extent (≥30%) or proportional severity of degradation (≥30%) over past 50 years to meet VU.
C2	-	• Inadequate evidence to indicate the community meets the thresholds for proportion of the extent (≥30%) or proportional severity of degradation (≥30%) over any 50-year period to meet VU.
C3	-	• Inadequate evidence to indicate the community meets the thresholds for proportion of the extent (≥50%) or proportional severity of disruption of abiotic processes (≥50%) since ~1750 to meet VU.
D1	-	• Inadequate evidence to indicate the community meets thresholds for proportion of the extent (≥30%) or proportional severity of degradation (≥30%) over any 50-year period to meet VU.
D2	-	• Inadequate evidence to indicate the community meets thresholds for proportion of the extent (≥30%) or proportional severity of degradation (≥30%) over any 50-year period to meet VU.
D3	-	• Inadequate evidence to indicate the community meets thresholds for proportion of the extent (≥50%) or proportional severity of disruption of biotic processes (≥50%) since ~1750 to meet VU.
E	NA	• No quantitative estimates of the risk of ecosystem collapse.

		'*The highest risk category obtained by any of the assessed criteria will be the overall risk status of the ecosystem'* (IUCN RLE Guidelines V1.1 page 42). **Meets CR under B1c; B2c**

Summary of location (occurrence) information *(provide detailed information in the relevant sections of the nomination form)*						
Occurrence	Land tenure	Survey information: date of survey	Condition	Area of occurrence (ha)	Threats *(note if past, present or future)*	Specific management actions
Lesueur-Coomallo D1	Crown freehold (DBCA interest)	1989	100% Excellent*	0.0778km²	Clearing (historical), too frequent fire (future), disease invasion and spread (future - *Phytophthora cinnamomi*), weed invasion (future) and resource extraction (on mining tenement 70/1122)	Collect seed material from component fora, implement dieback hygiene, determine and implement appropriate fire regime.

*For the purposes of relating condition to IUCN Criteria, condition categories from (Keighery (1994) Vegetation Condition Scale in Bush Forever (Government of WA 2000)) are defined below:

Good ('Pristine', 'Excellent', 'Very Good' using Bush Forever (2000) scale): This includes vegetation ranging from 'Pristine' - with no obvious signs of disturbance, to 'Excellent' - Vegetation structure intact, with disturbance only affecting individual species, weeds are non-aggressive species and 'Very Good' - Vegetation structure altered, obvious signs of disturbance eg: from repeated fires, dieback, logging, grazing.

APPENDIX 1 THREATS

Fire - too frequent

Hot fires have recently been reasonably frequent recently in this area, and frequency may increase in future with drier warming climate. A number of the component flora are endemic and fire sensitive and may be increasingly under threat in future if fire intervals are inadequate to allow obligate seeding flora to produced sufficient seed.

The presence of *Allocasuarinas* as a dominant in an assemblage increases the severity of fires.

Land Clearing

The occurrence was previously located on private land and was historically subject to mine proposals. The location has since been acquired for conservation, and the mine proposal is not current. Hence, historical threats of clearing and mining for coal are not current.

Disease - invasion and spread

The threat of dieback disease caused by the plant pathogens *Phytophthora* species is a serious threat as there are a high number of susceptible species in and surrounding the community ([redacted][1], personal communication). *Phytophthora citricola* occurs in Lesueur National Park (Mills 1992) to the north of the occurrence, while three other species of *Phytophthora*, including the virulent *P*. *cinnamomi*, are known from within 30 km of the Park ([redacted][1], personal communication). There are currently no specific hygiene measures in place for the occurrence.

Weed invasion

Weed invasion is a potential future threat. Weeds can have significant impacts through competition with the native species, prevention of regeneration and alteration of fire regimes (Hobbs and Mooney 1993). Disturbances such as fires, grazing and death through disease can predispose areas to weed invasion if weed propagules are present.

Climatic drying and warming

By 2030, mean annual temperature is projected to increase by 0.5–1.2°C (Sudmeyer *et al*. 2016). Additionally, the drying trend in the south-west is predicted to continue. By 2030, mean rainfall is expected to decrease by 5-6% (Sudmeyer *et al*. 2016). In response to increased temperatures and decreased rainfall fire frequency and severity are likely to also increase.

[1] Previously a DBCA Scientist

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APPENDIX 2 Lesueur-Coomallo D1 community

0 0.751.5 3 4.5 6 Kilometers

N

Lesueur Coomallo D1 TEC

Lesueur-Coomallo D1

APPENDIX 3 IUCN Red List Criteria for ecosystems (version 2.2) (IUCN 2017)

A. Reduction in geographic distribution over ANY of the following time periods:

		CR	EN	VU
A1	Present (over the past 50 years).	≥ 80%	≥ 50%	≥ 30%
A2a	Future (over the next 50 years).	≥ 80%	≥ 50%	≥ 30%
A2b	Future (over any 50 year period including the present and future).	≥ 80%	≥ 50%	≥ 30%
A3	Historic (since 1750).	≥ 90%	≥ 70%	≥ 50%

B. Restricted geographic distribution indicated by EITHER B1, B2 or B3:

		CR	EN	VU
B1	Extent of a minimum convex polygon enclosing all occurrences (Extent of Occurrence)	≤ 2,000 km²	≤ 20,000 km²	≤ 50,000 km²
	AND at least one of the following (a-c):			
	(a) An observed or inferred continuing decline in **EITHER**:			
	i. a measure of spatial extent appropriate to the ecosystem; **OR**			
	ii. a measure of environmental quality appropriate to characteristic biota of the ecosystem; **OR**			
	iii. a measure of disruption to biotic interactions appropriate to the characteristic biota of the ecosystem.			
	(b) Observed or inferred threatening processes that are likely to cause continuing declines in geographic distribution, environmental quality or biotic interactions within the next 20 years.			
	(c) Ecosystem exists at …	1 location	≤ 5 locations	≤ 10 locations
B2	The number of 10 × 10 km grid cells occupied (Area of Occupancy)	≤ 2	≤ 20	≤ 50
	AND at least one of a-c above (same sub-criteria as for B1).			
B3	A very small number of locations (generally fewer than 5) **AND** prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and thus capable of collapse or becoming Critically Endangered within a very short time period (B3 can only lead to a listing as VU).			VU

C. Environmental degradation over ANY of the following time periods:

C1 The past 50 years based on change in an abiotic variable affecting a fraction of the extent of the ecosystem and with relative severity, as indicated by the following table:

Extent (%)	Relative severity (%) ≥ 80	≥ 50	≥ 30
≥ 80	CR	EN	VU
≥ 50	EN	VU	
≥ 30	VU		

C2 The next 50 years, or any 50-year period including the present and future, based on change in an abiotic variable affecting a fraction of the extent of the ecosystem and with relative severity, as indicated by the following table:

	≥ 80	≥ 50	≥ 30
≥ 80	CR	EN	VU
≥ 50	EN	VU	
≥ 30	VU		

C3 Since 1750 based on change in an abiotic variable affecting a fraction of the extent of the ecosystem and with relative severity, as indicated by the following table:

	≥ 90	≥ 70	≥ 50
≥ 90	CR	EN	VU
≥ 70	EN	VU	
≥ 50	VU		

D. Disruption of biotic processes or interactions over ANY of the following time periods:

D1 The past 50 years based on change in a biotic variable affecting a fraction of the extent of the ecosystem and with relative severity, as indicated by the following table:

Extent (%)	Relative severity (%) ≥ 80	≥ 50	≥ 30
≥ 80	CR	EN	VU
≥ 50	EN	VU	
≥ 30	VU		

D2

	≥ 80	≥ 50	≥ 30

	(D2a) The next 50 years, or (D2b) any 50-year period including the present and future, based on change in a biotic variable affecting a fraction of the extent of the ecosystem and with relative severity, as indicated by the following table: OR	≥ 80	CR	EN	VU
		≥ 50	EN	VU	
		≥ 30	VU		
			≥ 90	≥ 70	≥ 50
D3	Since 1750, based on a change in a biotic variable affecting a fraction of the extent of the ecosystem and with relative severity, as indicated by the following table:	≥ 90	CR	EN	VU
		≥ 70	EN	VU	
		≥ 50	VU		
E. Quantitative analysis					
			CR	EN	VU
	… that estimates the probability of ecosystem collapse to be:		≥ 50% within 50 years	≥ 20% within 50 years	≥ 10% within 100 years