Threatened species nomination

For nominations/assessments under the Common Assessment Method (CAM).

Cover Page *(Office use only)*

Species name (scientific and common name)**:**	***Lasiopetalum moullean***
Nomination for (addition, deletion, change)**:**	**Addition**
Nominated conservation category and criteria:	**Critically Endangered B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C2a(i); D**

TSSC assessment of eligibility against the criteria:			
This assessment is consistent with the standards set out in Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding.			Yes ☐ No ☐
A.	Population size reduction	•	
B.	Geographic range	•	
C.	Small population size and decline	•	
D.	Very small or restricted population	•	
E.	Quantitative analysis	•	

Outcome*:*			
TSSC Meeting date:			
TSSC comments:			
Recommendation:			
Ministerial approval:		*Government Gazette/ Legislative effect:*	

Nomination summary *(to be completed by nominator)*

Current conservation status				
Scientific name:	*Lasiopetalum moullean*			
Common name:				
Family name:	Malvaceae (formerly Sterculiaceae)	Fauna ☐	Flora **X**	
Nomination for:	Listing **X**	Change of status ☐	Delisting ☐	
Is the species currently on any conservation list, either in WA, Australia or Internationally?		Yes **X** *If Yes; complete the following table*	No ☐ *If No; go to the next question*	

Jurisdiction	**List or Act name**	**Date listed or assessed**	**Listing category i.e. critically endangered**	**Listing criteria i.e. B1ab(iii)+2ab(iii)**
International	IUCN Red List			
National	EPBC Act			
State of WA	WC Act	Assessed 5/4/2017 under previous name *Lasiopetalum* sp. Mount Caroline (S.D. Hopper SDH 6381)	Critically Endangered	B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C2a(i); D
	DPaW Priority list	1☐	2 **X** 3☐	4☐ 5☐
Other States or Territories				

Consistent with Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding, it is confirmed that:	
• this assessment meets the standard of evidence required by the Common Assessment Method to document the eligibility of the species under the IUCN criteria;	Yes ☒ No ☐
Comments:	
• surveys of the species were adequate to inform the assessment;	Yes ☒ No ☐
Comments:	Refer to nomination
• 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.	Yes ☒ No ☐
Comments:	

Nominated conservation status: category and criteria (including recommended categories for deleted species)

Presumed extinct (EX) ☐	Critically endangered (CR) **X**	Endangered (EN) ☐ Vulnerable (VU) ☐
None (least concern) ☐	Data Deficient ☐	Conservation Dependent ☐
What criteria support the conservation status category above?		**B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C2a(i); D**
Eligibility against the criteria		
*Provide justification for the nominated conservation status; is the species eligible or ineligible for listing against the five criteria. For **delisting**, provide details for why the species no longer meets the requirements of the current conservation status.*		
A.	Population size reduction	• Currently there are only two extant individual plants known at two separate populations that are *c*. 13 km apart. Other than the 2016 survey data, and 1988 observations in which the species was noted as 'common', no historical data is available to determine population size reduction. • **Insufficient information to assess**
B.	Geographic range	• Very restricted geographic range. EOO 8 km^2 and AOO 8 km^2 • Known from two locations, which are both threatened by fire, grazing and weeds. However the population occurs on granite outcrops within two geographically distinct areas that are highly fragmented and isolated (surrounded by farmland). It is unlikely plants will disperse between sites. • Continuing observed and projected decline in: (i) EOO, (ii) AOO, (iii) quality of habitat, (iv) number of locations or subpopulations, and (v) number of mature individuals. Although a new plant was discovered in a nearby reserve 2016, increasing the EOO and AOO, the historic trend has been a declining EOO and AOO. Surveys in past years failed to relocate living plants at known collection sites (based on WA Herbarium records). Given the very low numbers of plants at present, and the lack of seedlings or juveniles suggests the species may not be self-sustaining and is at risk of becoming extinct. There has also been a decline in habitat quality due to invading weeds and rabbits from surrounding farmland. • **Meets criteria for Critically Endangered B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)**
C.	Small population size and decline	• A decline in the species is inferred as it was noted to be "common" at Kellerberrin in 1988 (see label on herbarium specimen *J.J. Alford* 1106, PERTH 01950797), but now numbers are 2 plants in 2 locations. • A continuing decline is projected due to the low number of plants and threats including weeds, fire, and grazing by macropods (trampling) and rabbits. • **Meets criteria for Critically Endangered C2a(i)**
D.	Very small or restricted population	• Known from 2 mature individuals. • **Meets criteria for Critically Endangered D**
E.	Quantitative analysis	• Unable to assess

Summary of assessment information *(detailed information to be provided in the relevant sections of the form)*					
EOO	< 300 ha. Recalculated to 8 km^2 so as not to be less than AOO	AOO	8 km^2 using 2 km x 2 km grid method. Actual area occupied habitat 4 m^2	Generation length	Unknown

No. locations	2	Severely fragmented	Yes ☒ No ☐
No. subpopulations	2	No. mature individuals	2

Percentage global population within WA	100
Percentage global population within Australia	100
Percentage population decline over 10 years or 3 generations	unknown

Summary of subpopulation information *(detailed information to be provided in the relevant sections of the form)*						
Location	Land tenure	Survey information: Date of survey and No. mature individuals	Area of subpopulation	Site / habitat Condition	Threats *(note if past, present or future)*	Specific management actions
Kellerberrin	A class nature reserve	2016 – one mature plant found	2 m^2	excellent	Trampling by macropods and rabbits (past and present), grazing (past)	Annual weed control and rabbit control within the reserve to prevent encroachment on the habitat. Area rabbit proof fenced (completed 2016), rabbit control conducted throughout reserve, rock wallaby numbers to be managed over time
Northeast of Kwolyin	C class nature reserve	2016 – one mature plant found	2 m^2	good	Grazing by macropods and rabbits (past and present)	Annual weed control and rabbit control within the reserve to prevent encroachment on the habitat if necessary.

Nomination detail

Please refer to the Departments guidelines on nominating species for amendment of the Western Australian threatened species lists at http://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/Threatened_Species_Nomination_Guidelines_2014.pdf

For technical information on terminology used in this form, and the intent of information requirements, as they relate to an assessment of this nomination against the IUCN Red List criteria, refer to the 2001 *IUCN Red List Categories and Criteria. Version 3.1*
http://www.iucnredlist.org/documents/redlist_cats_crit_en.pdf

and *Guidelines for Using the IUCN Red List Categories and Criteria Version 11* (February 2014)
http://cmsdocs.s3.amazonaws.com/RedListGuidelines.pdf

Section 1: Taxonomy

1.1 Current taxonomy		
Species name and Author:	*Lasiopetalum moullean* K.A. Sheph. & C.F. Wilkins (previously *Lasiopetalum* sp. Mount Caroline (S.D. Hopper SDH 6381))	
Subspecies name(s) and Author:		
Is the species/subspecies conventionally accepted?	Yes **X**	No ☐
Is there any controversy about the taxonomy?	Yes ☐	No **X**
If not conventionally accepted and/or if there is any controversy; provide details:		
Has the species/subspecies been formally named?	Yes **X**	No ☐
Has the species/subspecies been recently described?	Yes **X**	No ☐
If the species has not been formally named or described; is it in the process of being described? Is there an anticipated date for the publication of the description? Has a type specimen been deposited? And if so provide the registration number and where deposited.	This taxon is to be named and described as a distinct new species in a publication that was recently submitted for publication in the journal *Nuytsia* (https://florabase.dpaw.wa.gov.au/nuytsia/), authored by Kelly A. Shepherd & Carolyn F. Wilkins (Western Australian Herbarium). The type specimen was collected in 2016 (*K.A. Shepherd & C.F. Wilkins* KS 1621) and is currently being accessioned in the Western Australian Herbarium (PERTH Accession number 7103). Note: the species name and description has recently been published in *Nuytsia* 28 (2017) by K.A. Shepherd and C.F. Wilkins. The species will be referred hereafter as *Lasiopetalum moullean*.	
If there are any closely related taxa provide details and include key distinguishing features:	This taxon is similar to species allied to *Lasiopetalum floribundum* in having soft, pliable leaves and a loose inflorescence comprising small, pink or white flowers that are subtended by a narrow, non-petaloid, epicalyx bract. *Lasiopetalum floribundum* is distinguished from *L. moullean*, in having narrower calyx lobes (< 1.1 mm wide *cf*. 1.4–1.7 mm wide), the base of the inner calyx being dark red (*cf*. green and dark red) and more flowers per inflorescence (10–23(–40) flowers *cf*. 2–3). *Lasiopetalum moullean* is most similar to *L. rutilans* in having bright red, stellate hairs evident on new growth of the stem, outer surface of calyx, pedicels and peduncle. It is distinguished from this taxon in having	

	different hairs on the abaxial leaf surface, fewer flowers, more hairs on the outer surface of the petaloid calyx and narrower calyx lobes. KEY (from Shepherd and Wilkins 2017) Abaxial leaf surface with two layers of stellate hairs (large and small); calyx lobes 1.4–1.7 mm wide, inner surface with stellate hairs; aril a cream-brown cap with 2–5 arms, 1.6–2.3 mm long (Kellerberrin–Kwolyin area) ……. ***Lasiopetalum moullean*** Abaxial leaf surface with one layer of large stellate hairs; calyx lobes (1.7–)2–2.8 mm wide, inner surface glabrous; aril a white cap with 2 arms, *c.* 1.3 mm long (Mt Lesueur area) …… ***Lasiopetalum rutilans***

1.2 Taxonomic history		
Are there recent synonyms for the species?		Yes ☐ No **X**
If Yes; provide details of synonyms:		
Have there been recent changes in the taxonomy or nomenclature?		Yes ☒ No
If Yes; provide details of changes:	Previoulsy *Lasiopetalum* sp. Mount Caroline (S.D. Hopper SDH 6381), now formally named as *Lasiopetalum moullean.*	

1.3 Hybridisation		
Is there any known hybridism with other species in the wild?	Yes ☐ No **X**	Unknown ☐
If Yes; Where does this occur and how frequently?		

Section 2: Species information

2.1 Morphology / physical description
Insert photograph(s) of species or provide as an attachment:

Images by Kelly Shepherd (above) and Andrew Crawford (below).

Species description:	Erect, but spreading *shrub* 0.4–1.8 m high, *c.* 1.5 m wide. *Young stems* densely hairy from medium density, red, stellate hairs, mainly sessile or with a stalk to 0.15 mm long and 7–10 erect arms, each to 1.8 mm long, over medium density, white, stellate hairs with 6–8, erect arms to 0.2 mm long, glandular hairs absent; mature stems red-brown, glabrescent. *Petioles* (0.6–)2.3–9.1 mm long, indumentum as for young stems. *Mature leaf blades* soft, ovate, scarcely discolorous, (2–) 5.6–22.7 mm long, (1.6–)6–16 mm wide, base cordate, apex acute; margin entire to sinuate, flat or scarcely recurved; abaxial surface with yellowish cream or tan, stellate hairs with 6–10 erect arms, each to 0.8 mm long, over moderately dense, white, stellate hairs with 8–10 erect arms, each to 0.15–3 mm long; adaxial surface with scattered to moderately dense, cream-brown, stellate hairs with 8–10 erect arms each to 0.8 mm long, glandular hairs absent; midrib depressed on upper surface, raised on lower surface. *Inflorescence* a loose, monochasium or dichasium 1.7–4.8 cm long, with 2–6 flowers per inflorescence; *peduncles* 14.3–34.1 mm long, with medium density to dense, stellate hairs with *c*. 12 horizontal arms, each to 0.15 mm long and scattered to medium density, red-tipped, glandular hairs to 1.5 mm long and with or without scattered, bright red, stellate hairs with 4–8 erect arms, each to 1.1 mm long. *Pedicels* 4.3–7.3 mm long, indumentum as for peduncles. *Bract* at base of pedicel, very narrowly ovate or very narrowly elliptic, 1.5–3.5 mm long, 0.15–0.5 mm wide. *Epicalyx bract* green, attachment 0.1–0.9 mm below the calyx, very narrowly elliptic, 1–2.7 mm long, 0.15–0.5 mm wide; abaxial surface with scattered, tan, stellate hairs with *c*. 6 erect arms each to 0.5 mm long; adaxial surface with a white, apical, stellate hair with *c*. 6–10 erect arms each to 0.8 mm long and with or without occasional to scattered, stellate hairs with *c.* 6 horizontal arms each to 0.2 mm long, glandular hairs absent. *Calyx* pale mauve pink, base with dark red markings surrounded by green, 5.5–6.2 mm long, with a tube 0.5–0.9 mm long; lobes almost divided to the base, narrowly ovate, 4.8–5.7 mm long, 1.4–1.7 mm wide, apex acute; outer surface with tan, stellate hairs with *c*. 6 erect arms, each to 0.7 mm long, over moderately dense, white, stellate hairs, throughout, each with *c*. 6 erect arms to 0.15 mm long and scattered, glandular hairs to 1.3 mm long; inner calyx lobes with scattered, white, stellate hairs with 1–6 erect arms, each 0.15 mm long. *Petals* absent. *Staminal filaments* 0.5–0.7 mm long, 0.15–0.2 mm wide. *Anthers* ovate, red-purple, 1.5–1.7 mm long, 0.6–0.8 mm wide, with apical pores, glabrous. *Ovary* 3-carpellate, 0.8–1 mm long, 0.8–1 mm wide; outer surface with dense, white, stellate hairs to 0.3 mm long, rarely one glandular hair to 0.2 mm long. *Style* filiform, 2.5–2.8 mm long, with dense, white, stalked and reflexed, fan-shaped stellate hairs for most of length, glabrous towards the base and apex. *Ovules* 2 per carpel. *Fruit* ellipsoid to scarcely obovoid capsule, 3–4 mm long, 3–4 mm wide, with residual, moderately dense, small, white, stellate hairs. *Seed* ellipsoid, dull, blackish brown with few to medium density, dense , stellate hairs, 2–2.3 mm long, 1–1.3 mm wide, rarely one glandular hair to 0.2 mm long; aril a cream-brown cap with 2–5arms as long as, or longer than seed, aril 1.6–2.3 mm long, 1–1.3 mm wide (Shepherd and Wilkins 2017).

2.2 Biology *(provide details)*

The single plant from the Kwolyin population has produced seed.

2.3 Ecology *(provide details)*

Little is known of the biology and ecology of *Lasiopetalum moullean*; however, juvenile plants of another species of *Lasiopetalum* produced viable seeds two years after a fire (WA DEC 2007). This species may be an obligate re-seeder similar to other species of *Lasiopetalum* (Clarke 2006) whereby it is killed by fire and germinates following disturbance (Wilkins et al. 2007). Layering has been observed in a mature plant of another species where roots are produced from lateral above-ground branches that touch the soil. This could be a survival strategy in the absence of fire (Wilkins et al. 2007).

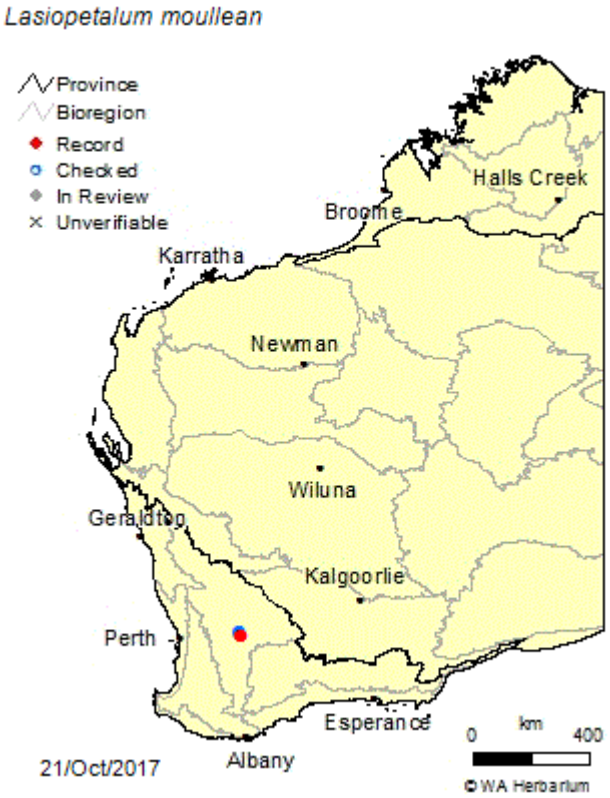
Lasiopetalum are generally pollinated by native bees.

It is unclear if species of *Lasiopetalum* are self-incompatible (due to the presence of either pre- or post-zygotic barriers). As there is only a single extant plant in each population, *Lasiopetalum moullean* must successfully be able to self-pollinate to produce viable seed. Seed has been collected from the Kwolyin plant but they have not yet been tested for viability. Even if sustainable plant numbers can be re-established at the known sites from the two remaining source plants, the populations will be at significant risk from inbreeding depression.

Section 3: Geographic range

3.1 Distribution

Insert map(s) of the species distribution, or provide as an attachment:



From Western Australian Herbarium (1998–).

What is the current distribution of the species within Western Australia?	Kellerberrin and northeast of Kwolyin only
What percentage of the species distribution is within WA?	100
What is the current distribution of the species within the other Australian States and Territories?	nil
Does the species occur outside of Australia?	Yes ☐ No ☒
If Yes, what percentage of the species distribution is within Australia, or what is the significance of the occurrence in Australia?	
What is the current international trend for the species?	

3.2 Migration *(fauna only)*

Is the species migratory?	Yes ☐ No ☐
Is the migration within WA or within Australia or international?	

3.3 Extent of Occurrence (EOO) within Australia	
What is the current EOO?	<300 ha
How has this been calculated?	Using mapping
What is the historical EOO?	Unknown but only previously recorded from Kellerberrin
What is the current EOO trend?	Decreasing ☒ Increasing ☐ Stable ☐
Provide details on the current trend – quantify if possible	Surveys in past years failed to relocate living plants at known collection sites (based on WA Herbarium records). Given the very low numbers of plants at present (2), it is not clear what the trend is for the species but the lack of numbers at either site suggests the trend for this species is towards loss of subpopulations and hence decline in EOO. More surveys are required over time to determine if the two known plants are self-sustaining, being capable of setting seed, which in turn germinates and establishes further adult plants.
If there has been a change in EOO when did this change occur?	A new plant was discovered in a nearby reserve 2016, increasing the EOO, but the historic trend has been a declining EOO.
Was the change observed, estimated, inferred or projected?	Observed
If the EOO is decreasing / declining, is it continuing?	Yes ☐ No ☒
Is the continuing decline observed, estimated, inferred or projected?	Observed as plants not relocated at previous collection sites
Is there extreme fluctuation in EOO?	Yes ☐ No ☒
If Yes, provide details:	
3.4 Area of Occupancy (AOO) within Australia	
What is the current AOO?	Estimated AOO 8 km². The actual area of occupied habitat of subpopulations is 4 m².
How has this been calculated?	The population is limited to 2 plants in 2 discrete locations. The AOO was estimated using the 2 km x 2 km grid method. The actual area of occupied habitat based on a 2 m^2 area for each plant.
What is the historical AOO?	Known to be more widespread within suitable areas Kellerberrin.
What is the current AOO trend?	Decreasing ☒ Increasing ☐ Stable ☐
Provide details on the current trend – quantify if possible	More surveys required over time but the current trend is towards a significant decline and extinction.
If there has been a change in AOO when did this change occur?	This change has occurred over the past 20 years.
Was the change observed, estimated, inferred or projected? Give details.	The change has been observed using past and current survey data.

If the AOO is decreasing / declining, is it continuing?		Yes ☒ No ☐
Is the continuing decline observed, estimated, inferred or projected? Give details.	The trend is towards extinction as it seems the 'subpopulations' i.e. two extant plants, may not be self-sustaining. No seedlings or juvenile plants were observed at either site. Given the current distribution and association with large granite outcrops, it is likely that this species was never widespread in the first place and the current trend is towards significant decline.	
Is there extreme fluctuation in AOO?		Yes ☐ No ☒
If Yes, provide details:		
Does the species have a restricted AOO?		Yes ☒ No ☐
If Yes, provide details:	The species is restricted to winter wet, well vegetated areas within the Moullean granites. These areas are highly constrained due to the fragmented agricultural landscape in which the granites are located.	

3.5 Number of Locations

'Locations' are defined as 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. (IUCN 2001).

At how many locations does the species occur?	2	
Has there been a change in the number of locations?	Decrease ☐ Increase ☒ No change ☐	
If there has been a change, when did this change occur?	2016	
Was the change observed, estimated, inferred or projected? Give details.	A new population (comprising a single plant) was located in spring 2016 northeast of Kwolyin.	
If the number of locations is decreasing / declining, is it continuing?		Yes ☐ No ☒
Is the continuing decline observed, estimated, inferred or projected? Give details.		
Is there extreme fluctuation in the number of locations?		Yes ☐ No ☒
If Yes, provide details:		
Does this species occur on any off-shore islands?		Yes ☐ No ☒
If Yes, provide details:		

3.6 Fragmentation

Is the distribution fragmented?	Yes ☒ No ☐

The phrase '**severely fragmented**' refers to the situation in which increased extinction risks 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.	
Is the distribution severely fragmented?	Yes ☒ No ☐
If Yes, provide details:	Even though a new 'population' was discovered this comprised a single plant. Given the apparent preferred habitat associated with large granite outcrops the number of suitable habitats is limited. The natural landscape is highly fragmented (surrounded by farmland) and it is unlikely plants will disperse between sites.
3.7 Land tenure	
Is the species known to occur on lands managed primarily for nature conservation? i.e. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation	Yes ☒ No ☐
If Yes; provide details:	Species only collected from nature reserves in the Moullean.
Is the species known to occur on lands that are under threat? i.e. mining tenement, zoned for development	Yes ☐ No ☒
If Yes; provide details:	
Provide details of other land tenures where the species occurs as this relates to the species conservation status	

Section 4: Habitat

4.1 Habitat *(provide details in response to the question below)*	
Described the habitat suitable for the species (biological and non-biological). Include descriptions of specific purpose habitat (e.g. foraging, breeding, roosting, seasonal migration, different life stages).	This species grows in loam over massive granite, or at the base of granite rock, under *Eucalyptus caesia* with sedges and grasses or associated with *Tetratheca deltoidea* thickets.
If the species occurs in a variety of habitats, is there a preferred habitat?	n/a
Does the species use refugia? *(include what is it and when is it used)*	n/a
Is the habitat restricted in extent or number of locations?	Yes ☒ No ☐
If Yes, provide details:	The habitat only occurs in isolated areas within the Central Wheatbelt.
Is this species reliant on a threatened or priority species or ecological community?	Yes ☒ No ☐
If Yes, provide details:	Suspect that the species requires sheltered winter wet sites that typically also contain *Eucalyptus caesia* and sedges.

Are there any other species (sympatric species) that may affect the conservation status of the nominated species?		Yes ☒ No ☐
If Yes, provide details:	The species coexists at Subpopulation 1 with the same habitat as the Critically Endangered *Tetratheca deltoidea* and is adjacent to prime refugia for the largest colony of Black Footed Rock wallabies (Vulnerable) in the Central Wheatbelt.	
What is the area, extent, abundance of habitat?	The habitat is restricted within the reserves and at other sites.	
What is the quality of habitat?	Excellent	
Is there a decline in habitat area, extent or quality?		Yes ☐ No ☒
If there is a decline, is the decline continuing?		Yes ☒ No ☐
Provide details:		
What is the critical habitat or habitat important for the survival of the species?	Suspect that the species requires sheltered winter wet sites that typically also contain *Eucalyptus caesia* and sedges.	

Section 5: Population

'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 mature individuals of the taxon. 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. (IUCN 2001)

'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).

5.1 Subpopulations

Location	Land tenure	Survey information: Date of survey and No. mature individuals	Area of subpopulation	Site / habitat Condition
Kellerberrin	A class nature reserve	2016 – one mature plant found	2 m^2	excellent
Northeast of Kwolyin	C class nature reserve	2016 – one mature plant found	2 m^2	good

5.2 Population size (Australian context) *(include how numbers were determined/calculated)*

What is the total population size?	2
What is the number of subpopulations?	2
What percentage of the population is within WA?	100
What percentage of the population is within Australia?	100
5.3 Population dynamics (Australian context) *(include how numbers were determined/calculated)*	
What is the number of mature individuals?	2
What is the number of immature individuals?	0
What is the number of senescing/past reproductive individuals?	unknown
What is the maximum number of mature individuals per subpopulation?	1
What is the percentage of mature individuals in the largest subpopulation?	50
What percentage of mature individuals is within WA?	100
What percentage of global mature individuals is within Australia?	100
What is the age of sexual maturity?	Unknown but suspect within 2 years
What is the life expectancy?	unknown
What is the generation length?	unknown
What is the reproductive capacity? (i.e. litter size or number of seeds)	unknown
What is the reproductive success?	Unknown
5.4 Population trend	
What is the current population trend (mature individuals)?	Decreasing ☒ Increasing ☐ Stable ☐
What is the percentage of the population change and over what time period?	unknown
How has this been calculated?	
If the trend is decreasing; are the causes of the reduction understood?	Yes ☐ No ☒
Have the causes of the reduction ceased?	Yes ☐ No ☐

Are the causes of the reduction reversible?		Yes ☐ No ☐
Is the reduction continuing (continuing decline)?		Yes ☒ No ☐
Has the change been observed, estimated, inferred or is it suspected (direct observation, index of abundance appropriate to the species)?	Observed	
When was the reduction or is it anticipated to occur?	Past ☒ Present ☐ Future ☒	
What is the period of time for the reduction (in years and generations)?	unknown	
Has there been a reduction in the number of subpopulations?		Yes ☒ No ☐
If Yes, provide details:	Surveys in past years failed to relocate living plants at known collection sites (based on WA Herbarium records).	
Are there extreme fluctuations in population size?		Yes ☐ No ☒
If Yes, provide details:	unknown	

5.5 Translocations and captive/enclosed subpopulations

Have there been translocations (introduction or re-introduction)?		Yes ☐ No ☒
Are there proposed translocations (introduction or re-introduction)?		Yes ☐ No ☒
Are there captive/enclosed/cultivated subpopulations?		Yes ☐ No ☒
Are there proposed captive/enclosed/cultivated subpopulations?		Yes ☐ No ☒
Are there self-sustaining translocated subpopulations?		Yes ☐ No ☒
If Yes, provide details:		
Are there translocated subpopulations that are not self-sustaining?		Yes ☐ No ☒
If Yes, provide details:		
Are there self-sustaining captive/enclosed subpopulations?		Yes ☐ No ☒
If Yes, provide details:		
Are there captive/enclosed subpopulations that are not self-sustaining?		Yes ☐ No ☒
If Yes, provide details:		
Other information on translocations and captive/enclosed subpopulations for the species (including failures):		

5.6 Important subpopulations

Identify any subpopulations that are important or necessary for the long-term survival of the species and provide details for why they are considered as such (i.e. key breeding, edge or range, maintenance of genetic diversity):

Section 6: Survey

6.1 Survey methods *(Provide details)*	
What survey methods are applicable to the species?	Standard flora surveys are applicable
Are there preferred or recommended survey methods that yield better results for the species?	Survey during flowering period may assist with detection in the field.
Are there special requirements, techniques, expertise or other considerations that are necessary when surveying for this species?	no
Are there reasons why the species may not be detected during surveys?	no

Can the species be identified in the field?		Yes ☒ No ☐
Provide details:	The species has soft, pliable leaves and a loose inflorescence comprising small, pink or white flowers that are subtended by a narrow, non-petaloid, epicalyx bract.	
Can the species be easily confused within similar species in the field?		Yes ☐ No ☒
Provide details:	There are no other similar species recorded from the Moullean area.	

List any published survey guidelines, guidance statements, protocols, standard operating procedures or other documents that are relevant to conducting surveys for this species.

6.2 Survey effort		
Has the species been well surveyed?		Yes ☒ No ☐
Have targeted surveys been conducted for the species?		Yes ☒ No ☐
Provide details of the successful and unsuccessful surveys undertaken for the species:	The Moullean Granites have been the target of district flora surveys during 2014–2016. It was during these surveys in 2016 that both plants were detected. Previously opportunistic surveys have been undertaken over these granites by Steve Hopper when undertaking his granite outcrop surveys, when surveying for the threatened *Eucalyptus caesia* (at the time) and *Tetratheca deltoidea*, when undertaking rock wallaby work, and as part of general nature reserve management activities. The species has not been found in previous surveys during this project nor during previous opportunistic surveys by others.	

6.3 Research *(Provide details)*		
Has the species been well researched?		Yes **X** No ☐ Partially ☒
What research has been or is	This taxon has been known to be distinct for more than 20 years as it was	

being conducted?	phrase-named by Kelly Shepherd, who was working on a revision of the genus from 1993–1996. A thorough recent taxonomic study has been made of this taxon and it is confirmed to be a distinct species (published in 2017).
What are the knowledge gaps for the species?	Information about the population structure, recruitment etc. of this species are lacking due to the fact that there are currently only two extant plants known.
Research recommendations:	A better understanding of the overall life history and seed biology of the species is required in order to apply best practise management actions or conservation measures.
6.4 Monitoring *(Provide details)*	
Is the species being monitored, either directly (targeted) or indirectly (general monitoring)?	The species is included in the Central Wheatbelt district monitoring program for DRF and priority flora. Further searches of these reserves and neighbouring ones will be made a priority in future works programs and funding applications.
What methods are used for monitoring?	Actual count of known individuals and searches in adjoining suitable habitat for more plants.
Monitoring recommendations:	Recommend annual monitoring and plant counts. Include the collection of seed where possible and extended surveys in suitable habitat to try and increase known population.

Section 7: Threats

7.1 Threats *(detail how the species is being impacted, i.e. how severe, the extent, evidence of the impact)*				
Threat *(describe how the threat impacts on the species. Include abiotic and biotic causes, human related e.g. exploitation, and biological characteristics of the species e.g. low genetic diversity)*	Extent *(give details of impact on whole species or specific subpopulations)*	Impact *(what is the level of threat to the conservation of the species)*	Evidence	Time period *(past, present, future)*
Habitat fragmentation	whole population	extreme	The species is restricted to winter wet, well vegetated areas within the Moullean granites. These areas are highly fragmented due to extensive clearing of surrounding land for agriculture.	Past, present
Decline in current habitat condition through weed invasion	whole population	extreme	Weed invasion observed on the boundary of the reserves and can invade if not controlled.	Past, present and future
Grazing and trampling impact from largest colony of Black Footed Rock wallabies (VU) in the Central Wheatbelt, rabbits and other macropods	whole population	extreme	Direct observation of wallaby impact on the granite vegetation. Rabbits are being controlled on the margins and have the potential to impact the habitat if control not effected.	Past
Decline of genetic health of population due to such low numbers of plants	whole population	extreme	Assumption based on genetic science.	Future
Insect predation on seeds	Subpopulation 1	extreme	Insect predation of seed is currently the major threat to the nearby *Tetratheca deltoidea* population	Past and present
Decline in habitat condition through climate change	whole population	extreme	Granite soils are shallow and susceptible to drying which is exacerbated by the drying climate.	Future

			Climate change modelling for the south west region 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.	

Section 8: Management

8.1 Current management		
Is the species managed?	Yes, directly ☐ Yes, indirectly ☒ No ☐X	
If Yes; provide details of current or past management actions:	The species is managed indirectly through the management of rock wallaby numbers in both reserves, weed control and rabbit control conducted every year by the district.	
Does the species benefit from the management of another species or ecological community?	Yes ☒ No ☐	
If Yes; provide details:	Work funded to conserve the Critically endangered *Tetratheca deltoidea* will also benefit the *Lasiopetalum moullean*.	
8.2 Recovery planning		
Is there an approved Recovery Plan (RP) or Interim Recovery Plan (IRP) for the species?	Yes ☐ No ☒	
List all relevant recovery plans or interim recovery plans (including draft, in-preparation, out-of-date, national and other State/Territory plans, and plans for other species or ecological communities that may benefit or be relevant to the nominated species)		
List other documents that may be relevant to the management of the species or the lands on which it occurs (i.e. area management plans, conservation advices, referral guidelines)		
8.3 Management recommendations		

The highest priorities for this species is to continue targeted surveys to locate more plants in nearby and adjoining suitable habitat, collect seeds and store appropriately. Continue to manage potential threats (weeds and rabbits) as already identified by the district.

Recommended management actions include:

- Monitor subpopulations for evidence of grazing and weed impacts, or changes in plant or site health;
- Install exclusion fencing if practical to reduce the impact of grazing and trampling from macropods;
- Develop and implement a fire management strategy, including the need for, and method of, the construction and maintenance of firebreaks;
- Undertake surveys in areas of potentially suitable habitat;
- Establish new subpopulations through translocation into disease free areas;
- Research biology and ecology of the species, with a focus on genetic diversity, pollination effectiveness, seed viability, conditions required for natural germination, response to threats and disturbances, and reproductive biology.

Section 9: Nominator details

Nominator name(s):	
Contact details:	

Date submitted:	27 January 2017
If the nomination has been refereed or reviewed by experts, please provide their names and contact details:	

Section 10: References

9.1 References

Clarke, V. (2006). Translocation Proposal: Wing-fruited Lasiopetalum (Lasiopetalum pterocarpum ms). Perth, Western Australia: Department of Conservation and Land Management.

Jones, A. (2015). *Threatened and Priority Flora list for Western Australia*. (Department of Parks and Wildlife: Kensington, Western Australia.)

Shepherd, K.A. & Wilkins, C.F. (2017). A revision of the *Lasiopetalum floribundum* group (Malvaceae), including recognition of four new species. *Nuytsia* 28: 273–298.

Western Australian Herbarium (1998–). *FloraBase—the Western Australian Flora*. Department of Parks and Wildlife. https://florabase.dpaw.wa.gov.au/ [accessed 28 October 2015].

Wilkins, C.F., Vincent, B.J., Crawford, A.D., Ladd, P.G., Sage, L.W. (2007). *Conservation biology of a naturally rare but critically endangered shrub Lasiopetalum pterocarpum (Malvaceae s.l.): report to DEC, February 2007.* University of Western Australia, School of Plant Biology, Crawley. 22 p.

Wilkins, C.F., Ladd, P.G., Vincent, B.J., Crawford, A.D. & Sage, L.W. (2009) Using hierarchies of cause to inform conservation of a naturally rare but critically endangered shrub *Lasiopetalum pterocarpum* (Malvaceae *s.l.*). *Australian Journal of Botany* 57: 414–424.