Abridged Threatened Species Nomination Form

For nominations under the Common Assessment Method (CAM) where supporting information is available, but not in a format suitable for demonstrating compliance with the CAM, and assessment against the IUCN Red List threat status.

Cover Page *(Office use only)*

Species name (scientific and common name)**:**	***Austrostipa jacobsiana***
Nomination for (addition, deletion, change)**:**	**Addition**
Nominated conservation category and criteria:	**Critically Endangered: B2ab(ii,iii)**

Scientific committee 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*:*			
Scientific committee meeting date:			
Scientific committee comments:			
Recommendation:			
Ministerial approval:		*Date of Gazettal/ Legislative effect:*	

Nomination summary *(to be completed by nominator)*

Current conservation status				
Scientific name:	*Austrostipa jacobsiana*			
Common name:	N/A			
Family name:	Poaceae		Fauna ☐	Flora ☒
Nomination for:	Listing ☒	Change of status ☐		Delisting ☐
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 (WC Act 1950)	7/4/2014	Critically Endangered	B2ab(ii,iii)
	2.			
	3.			

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:	Three surveys have been undertaken between 1995 and 2014 at the Southern River subpopulation during the early summer months. Targeted surveys in 2003 involved a thorough search of the area and a reliable population estimate, with a follow up survey in 2014 to monitor population size using transects. Two surveys have been undertaken at the Bunbury subpopulation in 2005 and in late summer in 2014. Both surveys mapped the location of the plants and conducted population estimates. Other vegetation surveys and ecological community surveys have been conducted in much of the remnant vegetation of the Swan Coastal Plain in previous years.
• 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:	The species was nominated and accepted for listing by the WA TSSC in April 2014. No new information is available relevant to the assessment.

Nominated national conservation status: category and criteria

Presumed extinct (EX) ☐ Critically endangered (CR) ☒ Endangered (EN) ☐ Vulnerable (VU) ☐

None (least concern) ☐ Data Deficient ☐ Conservation Dependent ☐

What are the IUCN Red List criteria that support the recommended conservation status category?	**B2ab(ii,iii)**

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 **delisting**, provide details for why the species no longer meets the requirements of the current conservation status.*

A.	Population size reduction (evidence of decline)	• Other suitable habitat surrounding the Southern River subpopulation has been cleared, and it is highly probable that historically more of the plants occupied the wetlands within this area. • At Southern River, habitat has been highly disturbed by road maintenance activities and grazing. The number of mature individuals on the north side of the road verge declined by 56% from 50 to 22 individuals during the period 2003 to 2014. • The plants at Southern River have declined in condition and size (usually a dense caespitose plant) by grading and grazing and are now found in significantly smaller clumps that are separated. It is projected that the size and condition will continue to decline in the future. • Insufficient information to assess overall for the species
B.	Geographic range (EOO and AOO, number of locations and evidence of decline)	• (B2) The AOO is 8 km^2 (using the 2x2km grid. • (a) It is severely fragmented occurring at two widely separated locations (~170 km) on the extensively cleared Swan Coastal Plain • (b) It is projected that there will be ongoing decline in the (ii) AOO and the (iii) area, extent and/or quality of habitat. • Other suitable habitat surrounding the Southern River subpopulation has been cleared, and it is highly probable that historically more of the plants occupied the wetlands within this area. Clearing of the area adjoining the southern extent of the Bunbury subpopulation has also occurred and it is highly probable that plants existed in the cleared wetlands. • At Southern River, the plants and the area which they currently occupy have been seriously damaged through road maintenance activities and grazing. Plant numbers reflect an increase, but this is probably due to survey methodology or the response of the plants to disturbance. The plants have declined in condition and size (it is normally a dense caespitose plant) by grading and grazing and are now found in significantly smaller clumps that are separated. • **Meets criteria under Critically Endangered B2ab(ii,iii)**

C.	Small population size and decline (population size, distribution and evidence of decline)	• Population size is estimated to be 389 mature individuals. • Clearing of habitat and impact from road maintenance and grazing has likely caused a loss of plants, however, no rate of decline is able to be predicted. • Largest subpopulation 273 mature individuals • The other subpopulation has 116 mature individuals • **Meets criterion for Vulnerable C2(a)(i)**
D.	Very small or restricted population (population size)	• Population size is estimated to be 389 mature individuals. • **Meets criterion for Vulnerable D1**
E.	Quantitative analysis (statistical probability of extinction)	• No information to assess

Summary of assessment information

EOO	665 km^2 (MCP)	AOO	8 km^2 (2kmx2km grid)	Generation length	Unknown

No. locations	2	Severely fragmented	Yes ☒ No ☐ Unknown ☐
No. subpopulations	3	No. mature individuals	389

Percentage global population within Australia	100%
Percentage population decline over 10 years or 3 generations	Unknown

Threats *(detail how the species is being impacted)*

Threat *(describe the threat and how it impacts on the species. Specify if the threat is past, current or potential)*	Extent *(give details of impact on whole species or specific subpopulations)*	Impact *(what is the level of threat to the conservation of the species)*
Road, firebreak and utilities maintenance. • Threats including grading, chemical spraying, construction of drainage channels and the slashing of roadside vegetation. Several of these actions also encourage weed invasion • The Bunbury subpopulation occurs adjacent to a partially closed and revegetated firebreak. Re-grading of this firebreak will result in plant loss. • Utilities maintenance by Telstra and Water Corporation also has the potential to impact on plants at the Southern River subpopulation Present and future	Bunbury subpopulation and potentially Southern River subpopulation	Moderate

Weed invasion • Weeds cause habitat degradation. • Weeds affecting the species include *Eragrostis curvula*, *Briza maxima, Avena fatua* and *Brachypodium distachyon,* couch grass and other annual weed grasses Past, present and future	Entire	Severe
Grazing and trampling • The road verges containing plants have been mown and grazed. It is not known if grazing is by stock or kangaroos, or if stock have access to plants on the adjacent private property. Past, present and future	Southern River subpopulation	Moderate
Lack of recruitment due to grazing/mowing of plants • Few fruiting spikes were noted at Southern River subpopulation during the 2014 survey and this may be due to grazing/mowing of plants. Past and present	Southern River subpopulation	Moderate
Farming activities • Threatened by chemical and fertiliser drift, weeds, grazing and trampling. Past, present and future	Southern River subpopulation	Moderate
Rubbish dumping • Garden refuse and building waste has been dumped along the road verge. • Rubbish can promote the growth of weeds Present	Southern River subpopulation	Moderate
Vegetation clearing • The Southern River subpopulation is currently under an application to lift the current zoning of the private property to enable it to be subdivided. Future	Southern River subpopulation	Moderate
Altered fire regimes • The response of *Austrostipa jacobsiana* to fire is unknown. • Frequent burning would deplete the soil seed store, and fire also may also facilitate weed invasion. Future (potential)	Entire (potential)	Moderate
Management and Recovery		

Is there a Recovery Plan (RP) or Conservation Management Plan operational for the species?	Yes ☐ No ☒

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). *Interim Recovery Plan No. #:* Austrostipa jacobsiana *Interim Recovery Plan 2016–2021*. Perth, Western Australia: Department of Parks and Wildlife.
- Department of Conservation and Land Management (2000). *Interim Recovery Plan No. 57: Shrubland and woodlands on Muchea limestone 2000-2003*. Available from: www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/198-approved-interim-recovery-plans

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

- Landholders have been notified of the location and threatened status of *Austrostipa jacobsiana*
- Monitoring and surveys have been carried out to determine population numbers and observe threats.
- The City of Gosnells is picking up dumped rubbish from the road verge of the Southern River subpopulation once a month and a permit is being applied for to remove building waste.

List further recommended management or research actions, if any, that would benefit the conservation of the species.

- Monitor populations and the species' habitat to determine population trends and potential management requirements.
- Protect the Southern River subpopulation on private land from grazing and firebreak maintenance
- Install DRF markers for the Southern River subpopulation on the road verge to reduce the risk of accidental damage during road maintenance activities
- Undertake weed control at all subpopulations
- Collect and store seed to safe guard against the extinction of the natural subpopulations.
- Undertake a genetic study to determine the relationship between the two widely separated subpopulations.
- Establish vegetation buffers around the subpopulation to assist in habitat rehabilitation at the Southern River subpopulation on private land.
- As habitat disturbance (physical or fire) is thought to promote germination of soil stored seed, it is recommended that disturbance trials be undertaken.
- Develop a translocation proposal and select a disease free translocation site.
- 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.
- Research biology and ecology of the species, with a focus on pollination effectiveness, seed viability, conditions required for natural germination, response to threats and disturbances, and reproductive biology
- Ongoing liason with land managers and Aboriginal communities to ensure that populations of *Austrostipa bronwenae* are not accidentally damaged or destroyed, and the habitat is maintained in a suitable condition for the conservation of the species.
- Map habitat critical to the survival of *Austrostipa jacobsiana* to facilitate its protection and appropriate management
- Promote awareness of the species with land managers/owners and general public

Nomination prepared by:	
Contact details:	
Date submitted:	7/7/2016
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 subpopulations	Site / habitat Condition	Threats *(note if past, present or future)*	Specific management actions
N and S verge of Passmore St, Southern River 115.9689, -32.1142	Shire road reserve	2009: 100 individuals 2014: 113 individuals	190 m^2	Degraded	Grazing and trampling (past, present and future) Lack of recruitment (present and future) Weed invasion (present and future) Road and utilities maintenance (past, present and future) Rubbish dumping (present) Fire (future) Vegetation clearing (past and future)	See above
Lot 1789, Phoebe St, Southern River 115.9685, -32.1141	Private property	2014: 3 individuals	5 m^2	Degraded	Grazing and trampling (past, present and future) Weed invasion (present and future) Firebreak and fence maintenance (past, present and future) Fire (future) Vegetation clearing (past and future) Farming activities (past, present and future)	See above

Hay Park CR 30601, Bunbury 115.6412, -33.3738	Shire reserve (Purpose: recreation)	2005: 50 individuals 2014: 273 individuals	13,000 km^2	Excellent	Weed invasion (present and future) Firebreak maintenance (present) Fire (future)	See above

Department of
Environment and Conservation

Our environment, our future

Form to nominate a Western Australian species for listing as threatened, change of category or delisting 2014 (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.

SECTION 1. NOMINATION					
1.1. Nomination for:					
Flora ☒ | **Fauna** ☐ | **Threatened / DRF** ☒ **Change of category** ☐ **Delisting** ☐					
1.2. Scientific Name **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.**					
Austrostipa jacobsiana A.R. Williams					
1.3. Common Name **If the species has a generally accepted common name, please show it here.**					
1.4. Current Conservation Status. If none, type 'None'.					
	IUCN Red List Category e.g. Vulnerable			**IUCN Red List Criteria e.g. B1ab(iv);D(1)**	
International IUCN Red List	None				
National EPBC Act 1999	None				
State of Western Australia	Critically Endangered [2016]			B2ab(ii,iii) [2016]	
State of WA Priority	1☐	2☐	3☐	4☐	5☐
1.5. Nominated Conservation Status.					
	IUCN Red List Category e.g. Vulnerable			**IUCN Red List Criteria e.g. B1ab(iv);D(1)**	
State of Western Australia	Critically Endangered			B2ab(ii,iii)	
State of WA Priority	1☐	2☐	3☐	4☐	5☐
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.					
No ☒ **Yes** ☐					

1.6. Reasons for the Nomination.
Briefly summarise the reasons for the nomination in dot points. Please include details relevant to the IUCN Categories and Criteria where appropriate.

Only known from two small highly disjunct populations (Southern River and Bunbury).

1. Reduction in population size (observed, inferred and projected [explanations below]).

   Observed

   - At Southern River, the plants and the area which they currently occupy have been seriously damaged through road maintenance activities and grazing. Plant numbers viewed on their own reflect an increase. However, it is quite clear that they have been highly reduced in size (it is normally a dense caespitose plant) by grading and grazing into significantly smaller clumps that are now separated (photo page attached).

   Inferred

   - At Southern River, the area of suitable habitat surrounding the Southern River population has been cleared. It is highly probable that more of the plants occupied the wetlands within this area.
   - At Bunbury, clearing of the area adjoining the southern extent of the population has also occurred and again it is highly probable that plants existed in the cleared wetlands.

   Projected

   - At the Southern River site, plant sizes and condition will almost certainly further decline if the current practices are not ceased.
   - Plants at the Bunbury site were noted to be under stress on the western edge of the population.

2. Area of occupancy is <10 km^2.
3. Continuing decline (observed, inferred and projected) in the area of occupancy and area, extent & quality of habitat.

   Continuing damaging activities through site management, un-secure reservation, weed competition and a drying climate will impact further on the habitat at both sites.

4. Number of locations are <5 (2) and severely fragmented.
5. There are <2,500 (389) mature individuals.

SECTION 2. SPECIES

2.1. Taxonomy.

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.

First recorded from Gosnells in 1995. Separated as *Austrostipa juncifolia* subsp. Southern River (BJ Keighery 2906) in PERTH. Subsequently described as *Austrostipa jacobsiana* by AR Williams in a revision of the subgenus in which it occurs (Williams, A.R. (2011) *Austrostipa* (Poaceae) subgenus *Lobatae* in Western Australia. Telopea 13: 177-192.)

A key to the group is presented on page 180 and a very detailed comparison of the 4 known species is given on page 185.

The Swan Coastal Plain species (*A. bronwenae* and *A. jacobsiana*) differ from wheatbelt species (*A. geoffreyi* and *A. juncifolia*) of the subgenus in having basal leaf sheaths 2-4 mm wide, vs 7-11, ligule lobes 0-1 mm long (vs 2.5-12 mm long) with distinct sheath lobes.

Austrostipa jacobsiana differs from *A. bronwenae* having a broad ligule between short sheath lobes, shorter and folded leaves, lacking an involucral of hairs almost encircling the culm, upper glume 5 nerved and lemma hairs white at maturity, shorter and narrower panicle and anthers sessile, ca 3 mm long.

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).

No ☐ **Yes** ☒

Describe any known hybridisation with other species in the wild, indicating where this occurs and how frequently.

None known

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 (e.g. short lived, long lived, geophytic, etc).

Perennial rhizomatous grass to 1.2 metres tall (with flower spikes). Leaves to 45 cm long, folded and swollen giving a terete appearance, abaxial surface strongly ribbed. Inflorescence 10-20 cm long. Flowering in October through November.

2.3. Distribution

Describe the distribution of the species <u>in Australia</u> and, if possible, provide a map.

Swan Coastal Plain, southwest Western Australia. *Austrostipa jacobsiana* is currently known from one population at Southern River (~21 km SSE of Perth) and one population at Hay Park, Bunbury (~190 km S of Perth) (refer Map 1 attached).

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

Austrostipa jacobsiana grows on the Swan Coastal Plain in a flat low-lying area on the fringe of a seasonally wet depression on calcareous clay to fine sandy clay This site is a degraded example of a Muchea Limestone TEC [Keighery, G.J. and Keighery, B.J. (1995)] and therefore, does not fall into the mapped boundary.

The Bunbury population occurs in a flat low-lying dampland on sandy loam over a lime-marl like rock. The site is predominantly within a mapped TEC, Swan Coastal Plain 18 – 'Shrublands on calcareous silts of the Swan Coastal Plain'.

Biological habitat

At Southern River, the associated vegetation is sparse *Corymbia calophylla* trees over *Xanthorrhoea preissii, Viminaria juncea* and *Jacksonia sternbergiana* over occasional *Phyllanthus calycinus, Tricoryne elatior, Lepidosperma longitudinale* and *Mesomelaena tetragona* amongst weeds of Poaceae and Iridaceae spp.

At the Hay Park, Bunbury site, the associated vegetation is *Melaleuca rhaphiophylla, M. viminea* Low Open Forest, over *Kunzea recurva, Hakea varia, Acacia saligna* Shrubland with emergent *Spyridium globulosum* over *Gahnia trifida*, *Chaetanthus aristatus* and *Lepidosperma longitudinale* sedges. The area is described as a transitional zone between seasonally shallowly inundated *Melaleuca* and *Gahnia* wetland and dampland of a *Eucalyptus rudis, Xanthorrhoea brunonis and Cyathochaeta avenacea* community.

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

N/A

Is the species part of, or does it rely on, a listed threatened ecological community? Is it associated with any other listed threatened species?

Yes. The site at Southern River occurs on a degraded example of the Muchea Limestone TEC that is unmapped. A Priority 3 rush, *Meeboldina decipiens* subsp. *decipiens* occurs ~30m into a partially cleared paddock to the south.

The majority of the population at Bunbury is within the SCP18 TEC.

2.5. Reproduction
Provide an overview of the breeding system.
For <u>fauna</u>: 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 <u>flora</u>: 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?

Flowering is from October through November. Mature seeds present November through December with some spikelets not falling until early January. Pollinated by wind.

Some suggestions are that germination occurs after fire, but requires testing.

2.6. Population dynamics
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).

The population at Southern River was highly impacted by grading and grazing. A number of non-flowering individuals were present. However, they were of sufficient size to infer maturity. Therefore, no plants were recorded as juveniles.

Questions 2.7 and 2.8 apply to <u>fauna</u> nominations only

2.7. Feeding
Summarise food items or sources and timing/availability.

Briefly describe feeding behaviours, including those that may make the species vulnerable to threatening processes.

2.8. Movements
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.

SECTION 3. INTERNATIONAL CONTEXT

For species that are distributed both in Australia and in other countries.

3.1. Distribution
Describe the global distribution.

Swan Coastal Plain, southwest Western Australia

Provide an overview of the global population size, trends, threats and security of the species outside of Australia.

N/A

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?

The entire species is in southwest Western Australia.

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).

At Southern River in 2003, the population was estimated to be equally separated on both road verge sides at 50 plants (large clumps) on each side. A detailed survey in 2014, recorded 91 plants on the southern side and 22 on the northern, with 3 plants in the adjoining private property. Although this indicates an increase in plant numbers, it is more likely due to the separation of the clumps through grading and heavy grazing over the intervening years. The habitat has reduced and the numbers on the north side verge have declined by 56% from 50 to 22. Without protection this population is under serious threat.

At Hay Park, Bunbury in 2009, it was estimated that 50 plants occurred in a partial survey. In 2014, it was estimated (± 20%) that 273 plants occur over a 1.3 ha area.

Overall the current total population is recorded as 389 plants (clumps).

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.

Austrostipa jacobsiana occurs in two widely separated locations (~170 km) and is seriously threatened at the Southern River road verge location from declining habitat.

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 (DPaW 2014)	Number of individuals at location	Area of occupancy at location	Condition of site (Gov't of WA 2000)
(Pop 1) 2009	Passmore St. Southern River	Road verge	100		
(Pop 1) 2014	Passmore St. Southern River	Road verge City of Gosnells	113	190 m^2	Degraded
(Pop 2) 2014	Lot 1789 Phoebe St. Southern River	Freehold Private landowner	3	5 m^2	Degraded
(Pop 3) 2005	Hay Park, Bunbury	CR 30601 Public recreation	50		
(Pop 3) 2014	Hay Park, Bunbury	CR 30601 Public recreation	273	1.3 ha	Excellent

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

The number of plants (clumps) were accurately counted and recorded with a Differential GPS at the Southern River site. An estimate was given for the Bunbury site.

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

Without protection, it is highly likely that the Southern River population will continue to be impacted by road maintenance activities and grazing, as well as the potential of higher density housing, which has significantly encroached into the area over the past 10 years. Plants in the adjacent private lot are under serious threat from stock trampling and grazing.

What is the extent of occurrence (in km^2) 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.

The linear distance between the two known locations from Southern River to Hay Park, Bunbury is ~175 km. As these populations are highly disjunct with a mostly cleared vegetation in-between it is not accurate to quantify the km^2 extent of occurrence.

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.

It is conceivable that without localised protection of the Southern River population, the decline of the overall total known population would be 50%, over the next 10 years.

Is the distribution of the species severely fragmented? Why?

Yes. There are only two known populations occurring ~170 km apart, in a region that has been largely cleared and continues to be pressured by further developments.

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.

All occurrences of this species are important.

4.2. Survey effort

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.

Three surveys have been undertaken since 1995 at the Southern River site during early summer, which is the appropriate season for spikelet production. The first visit coincided with community mapping of a nearby Bush Forever site when plants were noted and an estimation of numbers taken. The second survey in 2003 was a thorough survey of the area and a more reliable estimation of numbers taken. The third survey in mid-summer 2014 involved accurate plant numbers being recorded with a differential GPS during a transect-based search.

Two surveys of the Bunbury site have been carried out. The first in early summer coinciding with a TEC survey, where plants were noted and an estimation of numbers taken. The second survey in late summer 2014 involved mapping of the boundary where plants occurred and a more reliable estimate of plant numbers (clumps) recorded.

Provide details on the distinctiveness and detectability of the species, or the distinctiveness of its habitat, that would assist survey success.

The large size of the plant and its long persistent and visible glumes on old inflorescences make it noticeable in accompanying vegetation so it is unlikely to have been overlooked in a now very well surveyed area.

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.

Yes. Considering the number of surveys undertaken within remnant vegetation of the eastern side of the Swan Coastal Plain over many years for the Swan Coastal Plain Floristic Survey, System 6 update, Bush Forever and Swan Bioplan). As well as numerous surveys for potential TEC sites by Departmental staff.

4.3. Threats

Identify past, current and future threats indicating whether they are actual or potential. For each threat describe:

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?).

If possible, provide information threats for each current occurrence/location:

Location	Past threats	Current threats	Potential threats	Management requirements (see section 4.4)

(Pop 1) Southern River on Passmore St, north and south verges.	Road widening, firebreak maintenance	Grading, slashing, herbicide spraying, weed invasion, grazing, boundary fence upgrading & maintenance, low seed set and dispersal.	Road widening due to urban expansion. Continuing slashing, spraying & grazing. Weed invasion. Inappropriate fire intervals. Hydrological change through drying climate.	Prepare a Recovery Plan for this species to address current and potential threats specific to each location.
(Pop 2) Southern River within Lot 1789 Phoebe St (freehold). Passmore St adjoins the southern side.	Clearing for agricultural practices	Grazing, weed competition, low seed set and dispersal through constant grazing.	Reduction in plant condition and recruitment through constant grazing. Clearing through fence upgrading & maintenance. Hydrological change through drying climate.	Prepare a Recovery Plan for this species to address current and potential threats specific to each location.
(Pop 3) Hay Park, Bunbury	Clearing for extension of Sports facilities, road & firebreak construction and urban development	Hydrological change, weed invasion, fire management & prevention activities	Weed competition, hydrological change through drying climate.	Prepare a Recovery Plan for this species to address current and potential threats specific to each location.

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.

Habitat specificity has resulted in a rapidly declining regional area of occupation and extent of occurrence. There is now low population numbers, leading to enhanced chance events.

4.4. Management

Identify key management documentation for the species e.g. recovery plans, conservation plans, threat abatement plans etc.

None

Does this species benefit from the management of another species or community? Explain.

Yes. Management of Muchea Limestone and SCP18 TECs, and general management of wetlands on the eastern side of the Swan Coastal Plain.

How well is the species represented in conservation reserves or covenanted land? Which of these are actively managed for this species? Provide details.

None are currently represented in conservation reserves. The population at Bunbury is in a Crown Reserve, but the purpose is Public Recreation.

Are there any management or research recommendations that will assist in the conservation of the species? Provide details.
Need genetic studies on differences between these highly disjunct populations and on the variation within each population to determine management priorities. Translocation of some of the plants from the Southern River population into pots for future planting should be seen as a high priority to conserve the genetic diversity.
4.5. Other **Is there any additional information that is relevant to consideration of the conservation status of this species?**
Fire response.

SECTION 5. NOMINATOR	
Nominator(s) name(s)	
Organisation(s)	
Address(s)	
Telephone number(s)	
Email(s)	
Date	10/20/2014

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

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.

Government of Western Australia (2000) Bushforever, Vol. 2 Directory of Bush Forever Sites. Government of Western Australia

Keighery, BJ and Trudgen, ME (1992) The Remnant Vegetation of the Eastern Side of the Swan Coastal Plain. Report to the Department of Conservation and Land Management for the National Estates Grants Program.

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Williams, A.R. (2011) *Austrostipa* (Poaceae) subgenus *Lobatae* in Western Australia. Telopea 13: 177-192.)

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Western Australian Herbarium (1998–). *FloraBase—the Western Australian Flora*. Department of Environment and Conservation. http://florabase.dpaw.wa.gov.au [last accessed on 11 February 2014].

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Austrostipa jacobsiana **at Passmore St. Southern River. Photos taken by Una Bell in 2003 and Anne Harris in 2014.**

2003 (Pop'n 1)

2003

2014 (Pop'n 1)

2014