Government of **Western Australia**
Department of **Environment and Conservation**

INTERIM RECOVERY PLAN NO. 320

(*Andersonia annelsii*)

INTERIM RECOVERY PLAN

2012–2017

March 2012
Department of Environment and Conservation
Manjimup

FOREWORD

Interim Recovery Plans (IRPs) are developed within the framework laid down in Department of Conservation and Land Management (CALM) Policy Statements Nos. 44 and 50. Note: the Department of CALM formally became the Department of Environment and Conservation (DEC) in July 2006. DEC will continue to adhere to these Policy Statements until they are revised and reissued.

These plans outline the recovery actions that are required to urgently address those threatening processes most affecting the ongoing survival of threatened taxa or ecological communities, and begin the recovery process.

DEC is committed to ensuring that Threatened taxa are conserved through the preparation and implementation of Recovery Plans (RPs) or IRPs, and by ensuring that conservation action commences as soon as possible and, in the case of Critically Endangered taxa, always within one year of endorsement of that rank by the Minister.

This plan will operate from March 2012 to February 2017 but will remain in force until withdrawn or replaced. It is intended that, if the species is still ranked as Critically Endangered in WA, this plan will be reviewed after five years and the need for further recovery actions assessed.

This plan was given regional approval on 30th March 2012 and was approved by the Director of Nature Conservation on 19th April 2012 The provision of funds identified in this plan is dependent on budgetary and other constraints affecting DEC, as well as the need to address other priorities.

Information in this plan was accurate at March 2012.

PLAN PREPARATION

This plan was prepared by Jo Smith[1], Ian Wilson[2], Robyn Luu[3] and Andrew Brown[4].

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ACKNOWLEDGEMENTS

The following people provided assistance and advice in the preparation of this plan:

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Andrew Crawford	Principal Technical Officer (Threatened Flora Seed Centre), DEC Science Division
Roger Hearn	Regional Ecologist, Warren Region
Amanda Shade	Assistant Curator (Nursery), Botanic Gardens and Parks Authority

Thanks also to the staff of the W.A. Herbarium for providing access to Herbarium databases and specimen information.

Cover photograph by Samantha Clarke.

CITATION

This plan should be cited as: Department of Environment and Conservation (2012) *Andersonia annelsii* Interim Recovery Plan 2012–2017. Interim Recovery Plan No. 320 Department of Environment and Conservation, Western Australia.

SUMMARY

Scientific Name:	***Andersonia annelsii***	**Common Name:**	NA
Family:	Ericaceae	**Flowering Period:**	October
DEC Region:	Warren	**DEC District:**	Donnelly
Shire:	Manjimup	**NRM Region:**	South West
Recovery Team:	Warren Region Threatened Flora Recovery Team (WRTFRT)	**IBRA Region:**	Jarrah Forest

Illustrations and/or further information: Hearn R.W., Meissner R., Brown A.P., Macfarlane T.D., and Annels T.R. (2006) *Declared Rare and Poorly Known Flora in the Warren Region*. Department of Environment and Conservation, Perth, Western Australia; Lemson, K. L. (2007) New species of *Andersonia* (Ericaceae) of conservation concern. *Nuytsia* 17, 195-214; Western Australian Herbarium (1998−) *FloraBase − The Western Australian Flora*. Department of Environment and Conservation. http://florabase.dec.wa.gov.au/.

Current status: *Andersonia annelsii* is declared as rare flora (DRF) in WA under the Western Australian *Wildlife Conservation Act 1950* and is ranked as Critically Endangered (CR) under International Union for Conservation of Nature (IUCN 2001) Red List criteria B1ab(v); B2ab(v) due to it being known from one location; a continuing decline in the number of mature individuals and the area of occupancy being less than 10 km^2. The species is not listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). The main threats to the species are the taxon's narrow distribution, vehicle traffic, dieback disease, inappropriate fire regimes and grazing.

Description: *Andersonia annelsii* is a wiry, woody shrub to 25 cm. Leaves glabrous, rhomboidal to ovate, 1–3 mm long, 1–2 mm wide, acute, spreading, straight, spiral, imbricate, sessile with adnate sheathing base. Flowers white, in ovoid to globular terminal spikes, each subtended by a bract about twice the dimensions of the leaves and 2 bracteoles, sepals 5, free, 7–12mm long; corolla tubular, 5 lobed, 7–12mm long and equal to sepals, pubescent inside, lobes 1.5–3 mm (about 25% of length of corolla) long, stamens 5, free, not exerted, staminal filaments glabrous; style glabrous, exerted. Fruit a 5–celled capsule (Hearn *et al*. 2006).

Habitat requirements: *Andersonia annelsii* is currently known from just one population northeast of Manjimup. It grows in white, sandy loam, over an exposed quartzite/granite ridge with *Hypocalymma ellipticum* and *Baeckea camphorosmae* in low heath.

Habitat critical to the survival of the species, and important populations: *Andersonia annelsii* is ranked in WA as CR, and as such it is considered that all known habitat for the wild population is critical to the survival of the species and that the wild population is an important population. Habitat critical to the survival of *A. annelsii* includes the area of occupancy of the population (both extant and previously known populations), areas of similar habitat surrounding the population (these providing potential habitat for population expansion and for pollinators), additional occurrences of similar habitat that may contain undiscovered populations of the species or be suitable for future translocations, and the local catchment for the surface and/or groundwater that maintains the habitat of the species.

Benefits to other species/ecological communities: Recovery actions implemented to improve the quality or security of the habitat of *Andersonia annelsii* will also improve the status of associated native vegetation as well as three priority flora species.

International Obligations: This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity, ratified by Australia in June 1993, and will assist in implementing Australia's responsibilities under that Convention. The species is not listed under Appendix II in the United Nations Environment Program World Conservation Monitoring Centre (UNEP-WCMC) Convention on International Trade in Endangered Species (CITES), and this plan does not affect Australia's obligations under any other international agreements.

Indigenous Consultation: A search of the Department of Indigenous Affairs Aboriginal Heritage Sites Register revealed no sites of Aboriginal significance adjacent to the population of *Andersonia annelsii*. However, the species occurs around granite outcrops and these are known to be culturally significant sites to Indigenous people. Input and involvement is being sought through the South West Aboriginal Land and Sea Council (SWALSC) and Department of Indigenous Affairs to determine if there are any issues or interests. Indigenous opportunity for future involvement in the implementation of the Recovery plan is included as an action in the plan.

Social and economic impacts: The implementation of this recovery plan may potentially cause some social and economic impact through the implementation of recovery actions and impediments to land management practices.

Affected interests: The known population is on Crown land vested in the Conservation Commission and managed by DEC.

Evaluation of the plan's performance: DEC, with assistance from the Warren Region Threatened Flora Recovery Team (WRTFRT), will evaluate the performance of this plan. In addition to annual reporting on progress and evaluation against the criteria for success and failure, the plan will be reviewed following four years of implementation.

Existing recovery actions: The following recovery actions have been or are currently being implemented.

1. Staff from DEC's Donnelly District have conducted surveys throughout the Perup area since 1994. Despite this, no additional populations of *Andersonia annelsii* have been located.
2. There are two seed collections of *Andersonia annelsii* currently stored at DECs Threatened Flora Seed Centre at -18°C.
3. Declared Risk Area (DRA) gates and signage have been erected at two road intersections to exclude vehicle access to the site containing the taxon.
4. Staff from DEC's Donnelly District are aware of and follow strict hygiene protocols when entering DRA areas.
5. In 2006, DEC staff re-surveyed the known population and located a number of additional individuals of the taxon.
6. Nine, 1m x 1m monitoring plots have been established throughout the three sites of the *Andersonia annelsii* population. Seedlings have also been tagged with identification numbers.
7. Staff from DEC's Donnelly District regularly monitor the population of the taxon.
8. The WRTFRT is assisting DEC to coordinate recovery actions for *Andersonia annelsii* along with other threatened species in the Region. Information on progress in implementing recovery actions will be reported through annual reports to DEC's Corporate Executive and funding bodies.

Objective: The objective of this plan is to abate identified threats and maintain or enhance populations to ensure the long-term preservation of the species in the wild.

Recovery criteria

Criteria for success: The number of populations has increased and/or the number of mature individuals has increased by 20 per cent or more over the term of the plan.

Criteria for failure: The number of populations has decreased and/or the number of mature individuals has decreased by 20 per cent or more over the term of the plan.

Recovery actions

1. Coordinate recovery actions
2. Monitor population
3. Realign road
4. Rehabilitate existing road
5. Develop and implement a fire management strategy
6. Undertake regeneration trials
7. Determine *Phytophthora cinnamomi* susceptibility
8. Undertake surveys
9. Map habitat critical to the survival of *Andersonia annelsii*
10. Maintain disease hygiene
11. Collect and store seed
12. Undertake and monitor translocation
13. Increase biological and ecological information
14. Promote awareness
15. Undertake liaison with Indigenous groups
16. Nominate *Andersonia annelsii* for listing under the Commonwealth EPBC Act
17. Review this plan and assess the need for further recovery actions

1. BACKGROUND

History

Andersonia annelsii was first collected by Tony Annels in 1982 and was recognised as distinct by Greg Keighery in 1990 (Hearn *et al*. 2006). Despite intensive survey in similar habitat throughout the Perup area the taxon is still only known from its original collection site.

Description

Andersonia annelsii is a wiry, woody shrub to 25cm. Leaves are glabrous, rhomboidal to ovate, 1–3mm long, 1–2mm wide, acute, spreading, straight, spiral, imbricate, sessile with adnate sheathing base. Flowers are white, in ovoid to globular terminal spikes, each subtended by a bract about twice the dimensions of the leaves and 2 bracteoles, sepals 5, free, 7–12mm long; corolla tubular, 5 lobed, 7–12mm long and equal to sepals, pubescent inside, lobes 1.5–3 mm (about 25% of length of corolla) long, stamens 5, free, not exerted, staminal filaments glabrous; style glabrous, exerted. Fruit a 5–celled capsule (Hearn *et al*. 2006). The species name is given in honour of Mr AR (Tony) Annels, whose substantially contributed to the flora of the southern forests of Western Australia (Lemson 2007).

Andersonia annelsii is similar morphologically to *A. arista* but differs in some vegetative and floral features. The leaves of *A. aristata* are terete-subulate from a short, pubescent sheath and are not glaucous. Major floral differences are in the proportional lengths of the corolla tube and lobes (Lemson 2007).

Distribution and habitat

Andersonia annelsii is known from a single population in low open heath of *Pericalymma ellipticum* and *Baeckea camphorosmae* east-northeast of Manjimup. It grows in white, sandy loam over an exposed quartzite/granite ridge. The population encompasses three separate sites all within approximately 300 m of each other, with a few individuals scattered in the surrounding vegetation.

Table 1. Summary of population land vesting, purpose and manager

Pop. No & Location	DEC District	Shire	Vesting	Purpose	Manager
1. ENE of Manjimup	Donnelly	Manjimup	Conservation Commission of WA	Nature Reserve	DEC

Biology and ecology

Andersonia annelsii appears to be killed by fire and regenerates from seed (Hearn *et al*. 2006). *Phytophthora* infection has coincided with a dramatic reduction in the size of the population suggesting the species is susceptible to *Phytophthora*. Further study is required to confirm susceptibility to the disease as well as other factors including phenology and tolerance to drought.

Threats

Andersonia annelsii is declared as rare flora (DRF) in WA under the Western Australian *Wildlife Conservation Act 1950* and is ranked as Critically Endangered (CR) under International Union for Conservation of Nature (IUCN 2001) Red List criteria B1ab(v); B2ab(v) due to it being known from one location; a continuing decline in the number of mature individuals and the area of occupancy being less than 10 km^2. The species is not listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). The main threats to the species are:

Narrow distribution is a threat to the species as it is only known from one population.

Vehicle traffic is a threat to one of the three sites containing *Andersonia annelsii*. Plants occur along the edges of a track and are threatened by vehicles or during road maintenance activities. Vehicle traffic may also introduce *Phytophthora* disease through contaminated soil being bought in on the wheels.

Dieback disease (*Phytophthora cinnamomi*), a pathogen that causes root rot resulting in susceptible plants dying of drought stress. The area in which the taxon occurs has been declared a disease risk site due to the presence of *P. cinnamomi*. Testing to confirm the species' susceptibility to the pathogen is required. *P. cinnamomi* is also indirectly a threat to the taxon through the degradation of its habitat.

Inappropriate fire regimes would affect the viability of the populations. *Andersonia annelsii* appears to be killed by fire and regenerates from seed. Seedlings appeared following a fire in 1995 but the time to first flowering is still not known. Fire would rapidly deplete the soil seed bank if it recurred before regenerating or juvenile plants reached maturity. However, occasional fires or other disturbances are likely to be required for the species to germinate from soil stored seed.

Grazing from herbivores is a potential threat to the species. Kangaroo scats have been observed at the population. Many seedlings were observed in open areas one year but not found the following year. It is possible that seedlings may have been targeted before their more unpalatable secondary leaves developed.

The intent of this plan is to provide actions that will deal with immediate threats to *Andersonia annelsii*. Although climate change and drought may have a long-term effect on the species, actions taken directly to prevent the impact of climate change and drought are beyond the scope of this plan.

Table 2. Summary of population information and threats

Pop. No & Location	Land Status	Year/ No of Plants		Condition of Habitat	Threats
1. NNE of Manjimup	Nature Reserve	2004 2006	300+ 11,500 +	Healthy	Narrow distribution, vehicle traffic, dieback disease, fire, grazing

Populations in **bold text** are considered to be Important Populations.

Guide for decision-makers

Section 1 provides details of current and possible future threats. Actions for development and/or land clearing in the immediate vicinity of *Andersonia annelsii* may require assessment.

Actions that could result in any of the following may potentially result in a significant impact on the species:

- Damage or destruction of occupied or potential habitat.
- Alteration of the local surface hydrology or drainage.
- Reduction in population size.
- A major increase in disturbance in the vicinity of a population.
- Spread or amplification of dieback disease.

Habitat critical to the survival of the species, and important populations

Andersonia annelsii is ranked in WA as CR and only known from one locality, and as such it is considered that all known habitat for the wild population is critical to the survival of the species and that the wild population is an important population. Habitat critical to the survival of *A. annelsii* includes the area of occupancy of the population (both extant and previously known populations), areas of similar habitat surrounding the population

(these providing potential habitat for population expansion and for pollinators), additional occurrences of similar habitat that may contain undiscovered populations of the species or be suitable for future translocations, and the local catchment for the surface and/or groundwater that maintains the habitat of the species.

Benefits to other species/ecological communities

Recovery actions implemented to improve the quality or security of the habitat of *Andersonia annelsii* will also improve the status of associated native vegetation. Three priority flora taxa occur within 500 m of *A. annelsii* (see table below).

Table 3. Conservation–listed flora species occurring within 500m of *Andersonia annelsii*

Species name	Conservation Status (WA)	Conservation Status (EPBC Act 1999)
Cryptandra arbutiflora var. *pygmaea*	Priority 3	-
Melaleuca micromera	Priority 3	-
Gastrolobium ovalifolium	Priority 4	-

For a description of the Priority categories see Smith (2010).

Andersonia annelsii does not occur in association with any Threatened Ecological Communities.

International obligations

This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity, ratified by Australia in June 1993 and will assist in implementing Australia's responsibilities under that Convention. The species is not listed under Appendix II in the United Nations Environment Program World Conservation Monitoring Centre (UNEP-WCMC) Convention on International Trade in Endangered Species (CITES) and this plan does not affect Australia's obligations under any other international agreements.

Indigenous consultation

A search of the Department of Indigenous Affairs Aboriginal Heritage Sites Register revealed no sites of Aboriginal significance adjacent to the population of *Andersonia annelsii*. However, the species occurs around granite outcrops and these are known to be culturally significant sites to Indigenous people. Input and involvement is being sought through the South West Aboriginal Land and Sea Council (SWALSC) and Department of Indigenous Affairs to determine if there are any issues or interests. Indigenous opportunity for future involvement in the implementation of the Recovery plan is included as an action in the plan.

Social and economic impacts

The implementation of this recovery plan is unlikely to cause any social and economic impacts as the population is on DEC managed land.

Affected interests

The known population is on Crown land vested in the Conservation Commission and managed by DEC.

Evaluation of the plan's performance

DEC, with assistance from the Warren Region Threatened Flora Recovery Team (WRTFRT), will evaluate the performance of this plan. In addition to annual reporting on progress and evaluation against the criteria for success and failure, the plan will be reviewed following four years of implementation.

2. RECOVERY OBJECTIVE AND CRITERIA

Objective

The objective of this plan is to abate identified threats and maintain or enhance populations to ensure the long-term preservation of the species in the wild.

Criteria for success: The number of populations has increased and/or the number of mature individuals has increased by 20 per cent or more over the term of the plan.

Criteria for failure: The number of populations has decreased and/or the number of mature individuals has decreased by 20 per cent or more over the term of the plan.

3. RECOVERY ACTIONS

Existing recovery actions

Staff from DEC's Donnelly District have conducted numerous surveys in the Perup area since 1994. Despite this, no additional populations of *Andersonia annelsii* have been located.

There are two collections of *Andersonia annelsii* seed stored at DECs Threatened Flora Seed Centre at -18°C. One collection contains no viable seed and the other (Accession #01624), which was from a bulked collection of 100 plants made in 2004, contains 12,800 seeds (7,315 seeds stored at the TFSC; 5,532 seed sent to MSB Kew as a duplicate for safe keeping). The TFSC also have 10 samples of 50 seeds each put aside for monitoring and a 400 seed sample set aside for germination testing which to date has not been undertaken.

Declared Risk Area (DRA) gates and signage have been erected at two road intersections to exclude vehicle access to the site containing the taxon.

Staff from DEC's Donnelly District are aware of and follow strict hygiene protocols when entering DRA areas.

In 2006, DEC staff re-surveyed the known population and located a number of additional individuals of the taxon.

Nine 1m x 1m monitoring plots have been established in the three areas of the *Andersonia annelsii* population. Seedlings have also been tagged with identification numbers.

Staff from DEC's Donnelly District regularly monitor the population.

The WRTFRT is assisting DEC to coordinate recovery actions for *Andersonia annelsii* along with other threatened species in the Region. Information on progress in implementing recovery actions will be reported through annual reports to DEC's Corporate Executive and funding bodies.

Future recovery actions

Where *Andersonia annelsii* occurs on lands other than those managed by DEC, permission has been or will be sought from appropriate owners/land managers prior to recovery actions being undertaken. The following recovery actions are generally in order of descending priority, influenced by their timing over the life of the plan. However this should not constrain addressing any of the actions if funding is available and other opportunities arise.

1. Coordinate recovery actions

The WRTFRT will assist DEC in coordinating recovery actions for *Andersonia annelsii* along with other threatened species. Information on progress in implementing recovery actions will be reported through annual reports to DEC's Corporate Executive and funding bodies.

Action: Coordinate recovery actions
Responsibility: DEC (Donnelly District) with assistance from the WRTFRT
Cost: $6,000 per year

2. Monitor population

Monitoring of factors such as grazing, weed invasion, habitat degradation, hydrology, population stability (expansion or decline), pollinator activity, seed production, recruitment, and longevity is essential.

Action: Monitor population
Responsibility: DEC (Donnelly District) with assistance from the WRTFRT
Cost: $5,000 per year

3. Realign road

To prevent vehicle traffic from passing through the population the road will be realigned and moved to the west.

Action: Realign road
Responsibility: DEC (Donnelly District)
Cost: $10,000 in year 1

4. Rehabilitate existing road

To discourage traffic flow after the re-alignment of the road to the west of the population, rehabilitation work will be undertaken along the existing road.

Action: Rehabilitate existing road
Responsibility: DEC (Donnelly District)
Cost: $10,000 in year 2

5. Develop and implement a fire management strategy

A fire management strategy will be developed to determine fire control measures and fire frequency. This strategy should incorporate other priority and threatened flora species in the area. To protect the population from the possible detrimental effects of autumn, winter and spring burns the habitat of *Andersonia annelsii* is currently excluded from prescribed burns. This no planned burn policy should be maintained until further scientific information on the species is available regarding the species' reproductive cycle and response to fire. Fire exclusion of the area will be maintained by the Donnelly District.

Action: Develop and implement a fire management strategy
Responsibility: DEC (Donnelly District)
Cost: $10,000 in year 1 and $2,000 in subsequent years

6. Undertake regeneration trials

Natural disturbance events (physical or fire) may be the most effective means of germinating *Andersonia*

annelsii in the wild. Different disturbance techniques should be investigated (i.e. soil disturbance and fire), to determine the most successful and appropriate method. Records will need to be maintained for future research. Any disturbance trials will need to be undertaken in conjunction with weed control.

Action: Undertake regeneration trials
Responsibility: DEC (Science Division and Donnelly District)
Cost: $7,000 in years 1 and 3, $2,000 in years 2, 4 and 5

7. Determine *Phytophthora cinnamomi* susceptibility

The susceptibility of *Andersonia annelsii* to *Phytophthora cinnamomi* is not known. Root and soil samples will be taken from any plants that are found to be recently dead in suspect areas. Significant fronts will be mapped and monitored in the vicinity of critical habitat. Aerial phosphite application will be used to target high priority areas and reduce the spread of *P. cinnamomi* into currently uninfested areas.

Action: Determine *Phytophthora cinnamomi* susceptibility
Responsibility: DEC (Donnelly District)
Cost: $2,000 in year 1

8. Undertake surveys

It is recommended that areas of potential suitable habitat be surveyed for the presence of *Andersonia annelsii*. All surveyed areas will be recorded and the presence or absence of the species documented to increase survey efficiency and reduce unnecessary duplicate surveys. Where possible, volunteers from the local community, Landcare groups, wildflower societies and naturalists clubs will be encouraged to become involved.

Action: Undertake surveys
Responsibility: DEC (Donnelly District) with assistance from the WRTFRT
Cost: $5,000 per year

9. Map habitat critical to the survival of *Andersonia annelsii*

Although habitat critical to the survival of the species is alluded to in Section 1, it has not yet been mapped and this will be addressed under this action. If additional populations are located, then habitat critical to their survival will also be determined and mapped.

Action: Map habitat critical to the survival of *Andersonia annelsii*
Responsibility: DEC (SCB and Donnelly District)
Cost: $6,000 in year 2

10. Maintain disease hygiene

The habitat in which the taxon occurs is susceptible to *Phytophthora* dieback, therefore hygiene measures are required. Dieback hygiene (outlined in CALM 2003 (now DEC)) will be followed for activities such as installation and maintenance of firebreaks and walking into the population in wet soil conditions. Purpose built signs advising of the dieback risk and high conservation values of the sites will be installed if required.

Action: Maintain disease hygiene
Responsibility: DEC (Donnelly District)
Cost: $2,000 per year

11. Collect and store seed

Preservation of genetic material is essential to guard against extinction of the species if the wild population is lost. It is recommended that seed be collected and stored by TFSC.

Action: Collect and store seed
Responsibility: DEC (Donnelly District and TFSC) and BGPA
Cost: $5,000 per year

12. Undertake and monitor translocation

Translocation may be deemed desirable for the conservation of this species. A translocation proposal will be developed and suitable translocation sites selected. Information on the translocation of threatened plants and animals in the wild is provided in DEC's Policy Statement No. 29 *Translocation of Threatened Flora and Fauna* (CALM 1995), and the Australian Network for Plant Conservation translocation guidelines (Vallee *et al*. 2004). All translocation proposals require endorsement by DEC's Director of Nature Conservation. Monitoring of translocations is essential and will be included in the timetable developed for the Translocation Proposal.

Action: Undertake and monitor translocation
Responsibility: DEC (Science Division and Donnelly District)
Cost: $10,000 in years 1 and 2; and $5,000 in subsequent years

13. Increase biological and ecological information

Increased knowledge of the biology and ecology of the species will provide a scientific basis for management of *Andersonia annelsii* in the wild. Overall investigations will ideally include:

1. Study of the soil seed bank dynamics and the role of various factors including disturbance, competition, drought, inundation and grazing in recruitment and seedling survival.
2. Determination of reproductive strategies, phenology and seasonal growth.
3. Investigation of reproductive sucess and pollination biology.
4. Investigation of minimum viable population size.
5. The impact of changes in hydrology in the habitat.

Action: Increase biological and ecological information
Responsibility: DEC (Science Division and Donnelly District)
Cost: $10,000 per year

14. Promote awareness

The importance of biodiversity conservation and the protection of *Andersonia annelsii* will be promoted to the public. This will be achieved through an information campaign using local print and electronic media and by setting up poster displays. An information sheet, which includes a description of the plant, its habitat type, threats, management actions and photos will be produced. Formal links with local naturalist groups and interested individuals will also be encouraged.

Action: Promote awareness
Responsibility: DEC (Donnelly District, SCB and Corporate Relations) with assistance from the WRTFRT
Cost: $4,000 in year 1 and $2,000 in years 2-5

15. Undertake liaison with Indigenous groups

Andersonia annelsii occurs in habitat which is suspected to be culturally sensitive and Indigenous consultation will be undertaken for guidance in recovery activities.

Action: Liaise with Indigenous groups
Responsibility: DEC (Donnelly District)
Cost: $2,000 per year

16. Nominate *Andersonia annelsii* for listing under the Commonwealth EPBC Act

Staff from DEC Species and Communities Branch (SCB) will develop a Species Profile and Threats (SPRAT) and/or nomination form for this species, and forward it to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities for referral to the Threatened Species Scientific Committee (TSSC) and Minister for the Environment for listing under the EPBC Act.

Action: Nominate *Andersonia annelsii* for listing under the Commonwealth EPBC Act
Responsibility: DEC (SCB)
Cost: $3,000 in year 1

17. Review this plan and assess the need for further recovery actions

If *Andersonia annelsii* is still ranked CR at the end of the five-year term of this plan, the need for further recovery actions, or a review of this plan will be assessed and a revised plan prepared if necessary.

Action: Review this plan and assess the need for further recovery actions
Responsibility: DEC (SCB and Donnelly District) with assistance from the WRTFRT
Cost: $3,000 in year 5

Table 3. Summary of Recovery Actions

Recovery Action	Priority	Responsibility	Completion Date
Coordinate recovery actions	High	DEC (Donnelly District) with assistance from the WRTFRT	Ongoing
Monitor population	High	DEC (Donnelly District) with assistance from the WRTFRT	Ongoing
Realign road	High	DEC (Donnelly District)	2013
Rehabilitate existing road	High	DEC (Donnelly District)	2014
Develop and implement a fire management strategy	High	DEC (Donnelly District)	Developed by 2013 with implementation ongoing
Undertake regeneration trials	High	DEC (Science Division and Donnelly District)	2017
Determine *Phytophthora cinnamomi* susceptibility	High	DEC (Donnelly District)	2013
Undertake surveys	High	DEC (Donnelly District) with assistance from the WRTFRT	Ongoing
Map habitat critical to the survival of *Andersonia annelsii*	High	DEC (SCB and Donnelly District)	2014
Maintain disease hygiene	High	DEC (Donnelly District)	Ongoing
Collect and store seed	High	DEC (Donnelly District and TFSC) and BGPA	2017
Undertake and monitor translocation	Medium	DEC (Science Division and Donnelly District)	2017
Increase biological and ecological information	Medium	DEC (Science Division and Donnelly District)	2017
Promote awareness	Medium	DEC (Donnelly District, SCB and Corporate Relations) with assistance from the WRTFRT	Ongoing
Undertake liaison with Indigenous groups	Medium	DEC (Donnelly District)	Ongoing

Nominate *Andersonia annelsii* for listing under the Commonwealth EPBC Act	Medium	DEC (SCB)	2013
Review this plan and assess the need for further recovery actions	Medium	DEC (SCB and Donnelly District) with assistance from the WRTFRT	2017

4. TERM OF PLAN

This plan will operate from March 2012 to February 2017 but will remain in force until withdrawn or replaced. If the species is still ranked CR after five years, the need for further recovery actions will be determined.

5. REFERENCES

Department of Conservation and Land Management (1992) Policy Statement No. 44 *Wildlife Management Programs*. Department of Conservation and Land Management, Perth, Western Australia.

Department of Conservation and Land Management (1994) Policy Statement No. 50 *Setting Priorities for the Conservation of Western Australia's Threatened Flora and Fauna*. Department of Conservation and Land Management, Perth, Western Australia.

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6. TAXONOMIC DESCRIPTION

Lemson, K. L. (2007) New species of *Andersonia* (Ericaceae) of conservation concern. *Nuytsia* 17, 195-214.

A low *shrub*, 15–25 cm high, 15–25 cm wide. *Stems* decumbent, blastotelic. *Leaves* squarrose, not twisted, widely ovate to circular, 2–5 mm long, adaxial surface shortly velutinous, rarely minutely strigillose, usually glaucescent, abaxially strigillose, usually glaucous, margins entire, not hyaline; apex acuminate, mucronate; sheath up to 1/4 of the lamina length, glabrous, usually glaucescent. *Flowers* axillary, in clusters of 3–8. *Pherophylls* leaf-like, erect, not twisted, widely ovate to almost circular, up to 1/4 calyx length, 2.0–5.0 mm long, adaxial surface shortly strigillose, abaxial surface shortly papillate or glabrous, margins erose, ciliate and hyaline near the base, apex shortly acuminate. *Floral prophylls* green in the upper half, cream in the lower half

and on the marginal flanges, erect, folded and keeled, ovate, often almost as long as the pherophyll, 2.0–4.0 mm long, glabrous throughout or papillate abaxially, margins entire, glabrous, apex acuminate, mucronate, trigonous. *Calyx* yellow to pink in bud, white to cream at anthesis; *sepals* linear, 10.0–12.0 mm long, apex broadly acute, glabrous, margins entire. *Corolla* white, exceeding the calyx in open flowers, 11.0–14.0 mm long; *tube* cylindrical, sparsely hairy above the ovary; *lobes* recurved to revolute after anthesis, shorter than the tube, 4.0–5.0 mm long, lanate almost to the apex, apex acute. *Stamens* 9.0–11.0 mm in open flowers, elongating at anthesis; *anthers* white or yellow, manifest and exposed by the spreading corolla lobes, linear, 3.0–4.0 mm long, pollen yellow; *filaments* white, straight, linear at first but becoming filiform with elongation, 3–4 times the length of the anther after anthesis, cylindrical, glabrous. *Hypogynous disc* 5-lobed, the lobes rounded and often retuse, 0.2–0.5 mm long. *Gynoecium* 10.0–12.0 mm long, not elongating at anthesis; *ovary* usually pink, globular to napiform, 0.9–1.0 mm long, 1.0–1.2 mm wide, locules rounded, papillate; *style* white, linear to filiform, often coiled or bent near the base, scabrous or strigillose below the stigma; *stigma* manifest and exposed, truncate; *ovules* 12–15 per locule.