

INVESTIGATION REPORT
RARE AND THREATENED FLORA SPECIES DETECTION AND
RAINFOREST SITE OF SIGNIFICANCE
(RSOS: EG87 – Serpentine Creek)

Cyathea leichhardtiana
(Prickly Tree-fern)

DINAH DIVIDE-JACK TWO TRACK
867-502-0007, 867-502-0008, 867-502-0009, 864-505-0011 and 866-501-0004

Abstract

Sections within and adjacent to VicForests clear-fell logging coupes 867-502-0007, 867-502-0008 and 866-501-0004 were investigated to identify the presence of rare or threatened flora species and other biodiversity conservation values within or adjacent to these scheduled logging coupes. Rare or threatened flora species presence was documented and species location details and photographic records were obtained.

This investigation identified the presence of *Cyathea leichhardtiana* (Prickly Tree-fern) adjacent to VicForests clear-fell logging coupes 867-502-0007, 867-502-0008 and 866-501-0004 and nearby to 867-502-0009 and 864-505-0011.

Analysis of this information shows that to date planning processes have not identified the location of rare plant species or provided appropriate adaptive management plans for *Cyathea leichhardtiana* (Prickly Tree-fern) leaving this species vulnerable to the effects of VicForests scheduled logging operations.

VicForests operations have to date not complied with their obligations to conserve significant ecological values, including through application of the precautionary principle and implementation of Special Protection or Management Zones for rare and threatened species identified at this location.

Recommendations are made to the Department of Environment, Land, Water and Planning (DELWP) to pursue the requirements of the precautionary principle and the need to apply appropriate management zones within the study location and ensure that rare and threatened species throughout State Forest areas are not affected by the impact of VicForests logging operations.

Relevant Legislation

- Code of Practice for Timber Production 2014, Department of Environment and Primary Industries, The State of Victoria, 2014
- “Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”, Department of Environment and Primary Industries, The State of Victoria, 2014
- “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”, Department of Environment and Primary Industries, The State of Victoria, 2014

Relevant organisations

- VicForests

Status of Site

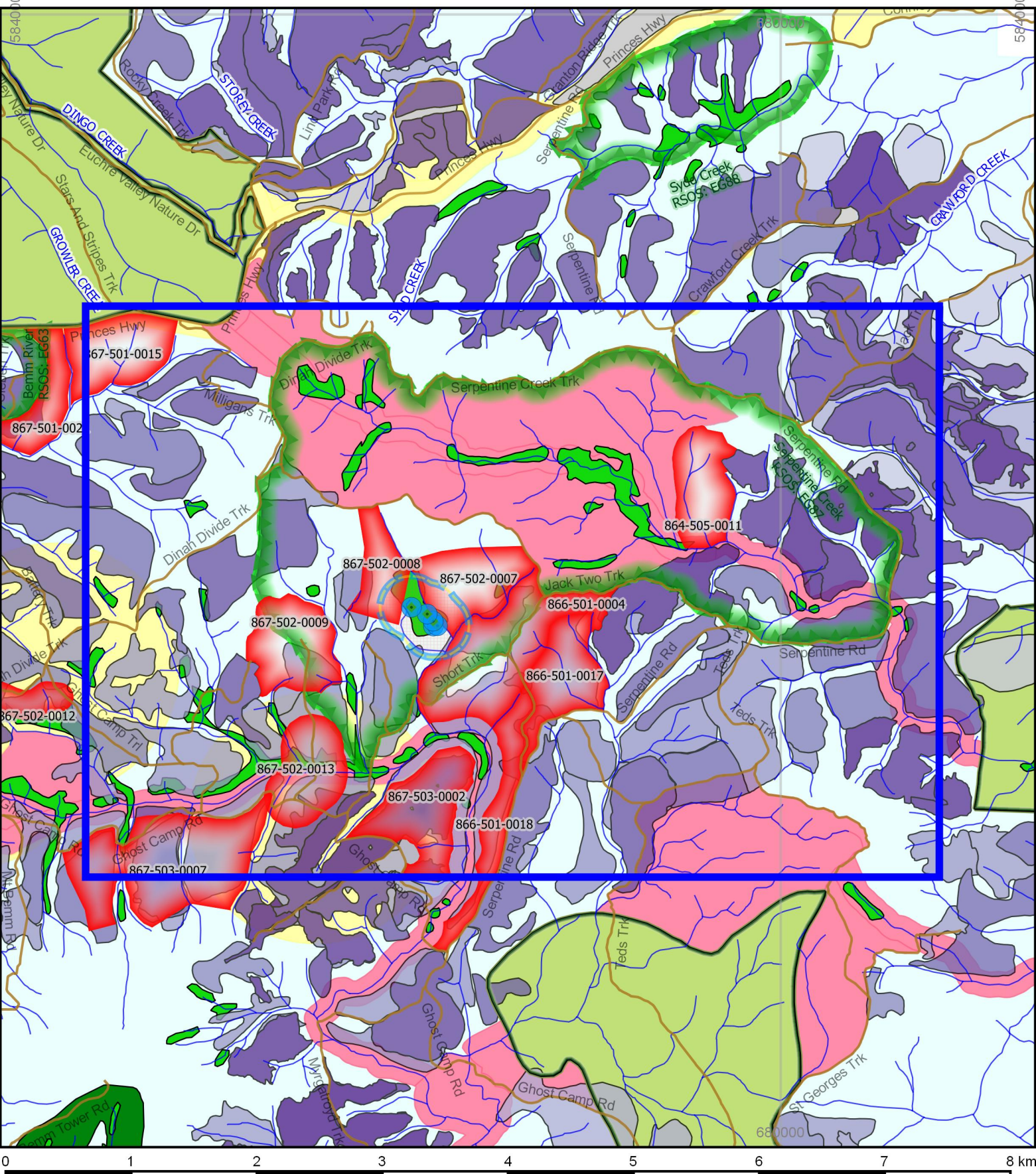
Coupes 867-502-0007, 867-502-0008, 867-502-0009, 864-505-0011 and 866-501-0004 are scheduled for logging with coupe 867-502-0007 listed by VicForests as “harvest pending”.

Date of Investigation
07/06/2015, 08/06/2015
Date of report
07/08/2015

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Figure A(ii). Study Location Overview - Dinah Divide/Jack Two Trk; *Cyathea leichhardtiana* (Prickly Tree-fern); Rainforest Sites of Significance; Forest Management Zoning [DEPI, June, 2014]; Logging History [LASTLOG25]; Scheduled Logging [TRP]



Legend <i>Cyathea leichhardtiana</i> (Prickly Tree-fern) 250m Buffer on <i>Cyathea leichhardtiana</i> (Prickly Tree-fern) Rainforest Site of Significance Selected Ecological Vegetation Classes [NV2005_EVCBCS] Warm Temperate Rainforest		Wet Forest Forest Management Zoning [FMZ100; DEPI, June, 2014] Conservation Parks and Reserves Special Protection Zone Special Management Zone General Management Zone		Parks & Reserves [PARKRES] Timber Release Plan (VicForests) [Approved_TRP_April2015] Roads Watercourses		Prior Logging History [2014: LASTLOG25] 	Projection: EPSG: 28355 GDA94/MGA Zone 55 Map Scale: 1:40,000
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Method 1 (method used - Rare and threatened plant detections)

Incidental rare and threatened plant detections [07/06/2015, 08/06/2015]

Survey technique and Method used:

1. A preliminary investigatory transect within and adjacent to sections of VicForests scheduled logging coupes 867-502-0007 and 866-501-0004 was walked searching for the presence of rare or threatened flora species and other biodiversity conservation values.
2. During the course of this preliminary investigation multiple *Cyathea leichhardtiana* (Prickly Tree-fern) individuals were encountered.
3. A selection of the *Cyathea leichhardtiana* (Prickly Tree-fern)'s encountered were photographed and their GPS locations were noted.
4. Location details of these *Cyathea leichhardtiana* (Prickly Tree-fern) detections were analysed against the publicly available Forest Management Zoning scheme.
5. To date no flora species detections of *Cyathea leichhardtiana* (Prickly Tree-fern) or appropriate responsive adaptive management actions through the application of mandatory management zones were discovered.
6. **See the Results section below for further details of the *Cyathea leichhardtiana* (Prickly Tree-fern) detections including photographic records, location details and spatial distribution and details of minimum adaptive management actions to be put in place following these detections.**



Method 2 (analysis/recommendations)

Excerpts from: “Code of Practice for Timber Production 2014, Department of Environment and Primary Industries, The State of Victoria, 2014”¹

1 General

1.2 The Code of Practice for Timber Production

1.2.6 Compliance on State forest

Under the *Sustainable Forests (Timber) Act 2004*, compliance with this Code is mandatory for any person planning for or conducting a timber harvesting operation on **State forest**. Penalties for noncompliance may apply if timber harvesting operations on State forest are not in accordance with the Code.

Timber harvesting operations on public land other than State forest are governed by lease and licence conditions which may specify a requirement to comply with this Code.

The Code is a prescribed legislative instrument made and enforced under relevant law listed in the *Conservation, Forests and Lands Act 1987*. For the purposes of each relevant law the **Secretary** is an **authorised officer** and is therefore responsible for ensuring compliance with the Code on State forest. Compliance is also monitored by other authorised officers appointed by the Secretary pursuant to the *Conservation, Forests and Lands Act 1987*.

2 Code Application – State Forests

This Chapter applies to the planning, harvesting, roading, **tending** and **regeneration** of **State forests** where **timber harvesting operations** are conducted, including both **native forests** and **plantation forests** that are owned and managed by the State.

2.2 Environmental Values in State forests

Timber harvesting operations in native forests may have local impacts on environmental values such as water quality and **biodiversity**. Appropriate planning and management through the lifecycle of the timber harvesting operation can minimise these impacts. This section includes requirements that must be observed during planning, roading, harvesting, tending and regeneration of native forests.

2.2.2 Conservation of Biodiversity

Operational Goal

Timber harvesting operations in **State forests** specifically address **biodiversity** conservation risks and consider relevant scientific knowledge at all stages of planning and management.

Harvested State forest is managed to ensure that the **forest** is regenerated and the biodiversity of the **native forest** is perpetuated.

The natural floristic composition and representative gene **pools** are maintained when regenerating native forests by protecting long-lived **understorey** species and using appropriate seed sources and mixes of dominant species.

Forest health is monitored and maintained by employing appropriate preventative, protective and remedial measures.

Chemicals are only used where appropriate to the site conditions and are conducted with due care for the maintenance of forest health, water quality, biodiversity and soil values.

Mandatory Actions

Addressing biodiversity conservation risks considering scientific knowledge

2.2.2.1 Planning and management of timber harvesting operations must comply with relevant

¹ *Code of Practice for Timber Production 2014*, pp. 11, 21, 23, 31-32, 34-35

biodiversity conservation measures specified within the **Management Standards and Procedures**.

- 2.2.2.2 The **precautionary principle** must be applied to the conservation of biodiversity values. The application of the precautionary principle will be consistent with relevant monitoring and research that has improved the understanding of the effects of forest management on forest ecology and conservation values.
- 2.2.2.3 The advice of relevant experts and relevant research in conservation biology and flora and fauna management must be considered when planning and conducting timber harvesting operations.
- 2.2.2.4 During planning identify biodiversity values listed in the Management Standards and Procedures prior to roading, harvesting, **tending** and **regeneration**. Address risks to these values through management actions consistent with the Management Standards and Procedures such as appropriate location of **coupe infrastructure**, **buffers**, **exclusion areas**, modified harvest timing, modified silvicultural techniques or retention of specific structural attributes.
- 2.2.2.5 Protect areas excluded from harvesting from the impacts of timber harvesting operations.
- 2.2.2.6 Ensure chemical use is appropriate to the circumstances and provides for the maintenance of biodiversity.
- 2.2.2.7 **Rainforest** communities must not be harvested.

Perpetuating the biodiversity of harvested native forests

- 2.2.2.8 Long-term (strategic) **forest** management planning must incorporate **wildlife corridors**, comprising appropriate widths of retained forest, to facilitate animal movement between patches of forest of varying ages and stages of development, and contribute to a linked system of reserves.
- 2.2.2.9 Modify **coupe** size and **rotation** periods to maintain a diversity of forest structures throughout the landscape.
- 2.2.2.10 Retain and protect **habitat trees** or habitat patches and long-lived **understorey** species to provide for the continuity and replacement of old hollow-bearing trees and existing vegetation types within each coupe.
- 2.2.2.11 Use silvicultural systems that suit the ecological requirements of the **forest type**.
- 2.2.2.12 Regenerate harvested areas using seed from **overstorey** species with **provenances** native to the area.

Maintaining forest health

- 2.2.2.13 Implement appropriate vehicle and equipment hygiene precautions when moving from areas of known pest plant, pest animal and pathogen infestations.
- 2.2.2.14 Implement appropriate control actions where **timber harvesting operations** have introduced or exacerbated a pathogen or weed.
- 2.2.2.15 Report the suspected introduction of new or unknown **exotic** agents to DEPI's Biosecurity section.
- 2.2.2.16 Where Myrtle Wilt (*Chalara australis*), Cinnamon Fungus (*Phytophthora cinnamomi*) or Root Rot (*Armillaria*) is known to exist, apply appropriate measures to minimise the spread of these pathogens.

Glossary

'**precautionary principle**' means when contemplating decisions that will affect the environment, careful evaluation of management options be undertaken to wherever practical avoid serious or irreversible damage to the environment; and to properly assess the risk-weighted consequences of various options. When dealing with threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

From: “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”²

4. Biodiversity

4.5 Flora – detection based zoning

4.5.1 Statewide

- 4.5.1.1 Apply the management actions outlined in Table 5 (Detection based FMZ rules for flora) below for zoned rare or threatened flora values.
- 4.5.1.2 Implement FMZ amendments and reviews in accordance with Table 5 (Detection based FMZ rules for flora) below for new verified rare or threatened flora records and FMZ amendment requirements outlined in section 2.

4.5.2 East Gippsland FMA

- 4.5.2.1 Include all verified populations of species regarded as threatened at a State or national level in the SPZ or SMZ.
- 4.5.2.2 Include substantial representative populations of species that are rare in Victoria, and poorly known, have few records or are at the edge of their range in East Gippsland in the SPZ or SMZ.
- 4.5.2.3 Wherever practicable include populations in larger parts of the SPZ or SMZ in combination with other values.
- 4.5.2.4 Plan disturbances in SMZ in consultation with DEPI biologists to ensure the species is adequately protected.

Table 5 Detection based FMZ rules for flora.³

FMA	Common name	Scientific name	Zoning management actions	Management actions	Review
East Gippsland	Prickly Tree-fern	Cyathea leichhardtiana	Establish a SMZ of 250 m radius over verified populations.	Conduct a site inspection and detailed planning in consultation with DEPI to ensure the species is adequately protected during timber harvesting operations.	

Excerpts from: “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”

Table 6 Buffer widths for Rainforest Sites of Significance by category and priority.

Site of Significance category	Priority			
	1	2	3	4
National	See 4.6.1.1	100 m	60 m	60 m
State	60 m	60 m	40 m	40 m
Regional	40 m	40 m	40 m	40 m

Note: Priority areas are identified in the Sites of Significance for Rainforest spatial layer.⁴

² Planning Standards, pp. 16, 69, 71, 77

³ Planning Standards, “Table 5 Detection based FMZ rules for flora”, p. 71, 77

⁴ Planning Standards, p. 114

Results 1 – *Cyathea leichhardtiana* (Prickly Tree-fern) detections

Figure 1(a). *Cyathea leichhardtiana* (Prickly Tree-fern) at various locations including: 55H 0677234 5835131; 55H 0677266 5835133; 55H 0677232 5835170; 55H 0677185 5838226; 55H 0677059 5835280 (GDA94 UTM). Indicative photo from study site [see Results 2. Figure 2.]



Results 1 – *Cyathea leichhardtiana* (Prickly Tree-fern) detections

Figure 1(b). *Cyathea leichhardtiana* (Prickly Tree-fern) at various locations including: 55H 0677234 5835131; 55H 0677266 5835133; 55H 0677232 5835170; 55H 0677185 5838226; 55H 0677059 5835280 (GDA94 UTM).
Indicative photo from study site [see Results 2. Figure 2.]

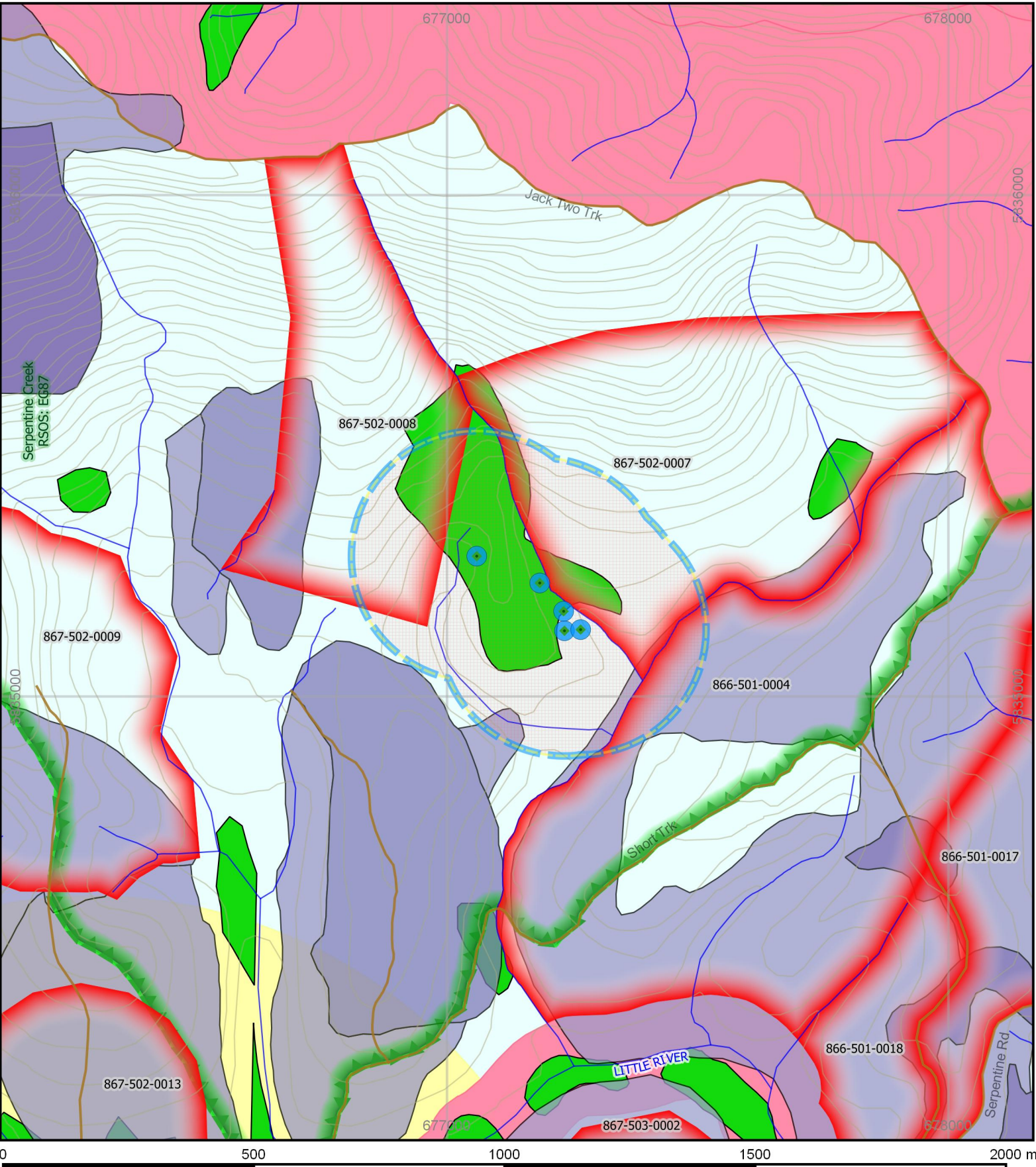


Results 1 – *Cyathea leichhardtiana* (Prickly Tree-fern) detections

Figure 1(c). *Cyathea leichhardtiana* (Prickly Tree-fern) at various locations including: 55H 0677234 5835131; 55H 0677266 5835133; 55H 0677232 5835170; 55H 0677185 5838226; 55H 0677059 5835280 (GDA94 UTM).
Indicative photo from study site [see Results 2. Figure 2.]



Results 2. Figure 2. Dinah Divide/Jack Two Track; *Cyathea leichhardtiana* (Prickly Tree-fern); Rainforest Sites of Significance; Forest Management Zoning [DEPI, June, 2014]; Logging History [LASTLOG25]; Scheduled Logging [TRP]; Roads, Watercourses, Contours



Legend

<i>Cyathea leichhardtiana</i> (Prickly Tree-fern)	Selected Ecological Vegetation Classes [NV2005_EVCBCS]	General Management Zone
250m Buffer on <i>Cyathea leichhardtiana</i> (Prickly Tree-fern)	Warm Temperate Rainforest	Timber Release Plan (VicForests) [Approved_TRP_April2015]
Rainforest Site of Significance	Forest Management Zoning [FMZ100; DEPI, June, 2014]	Roads
	Special Protection Zone	Watercourses
	Special Management Zone	Contours

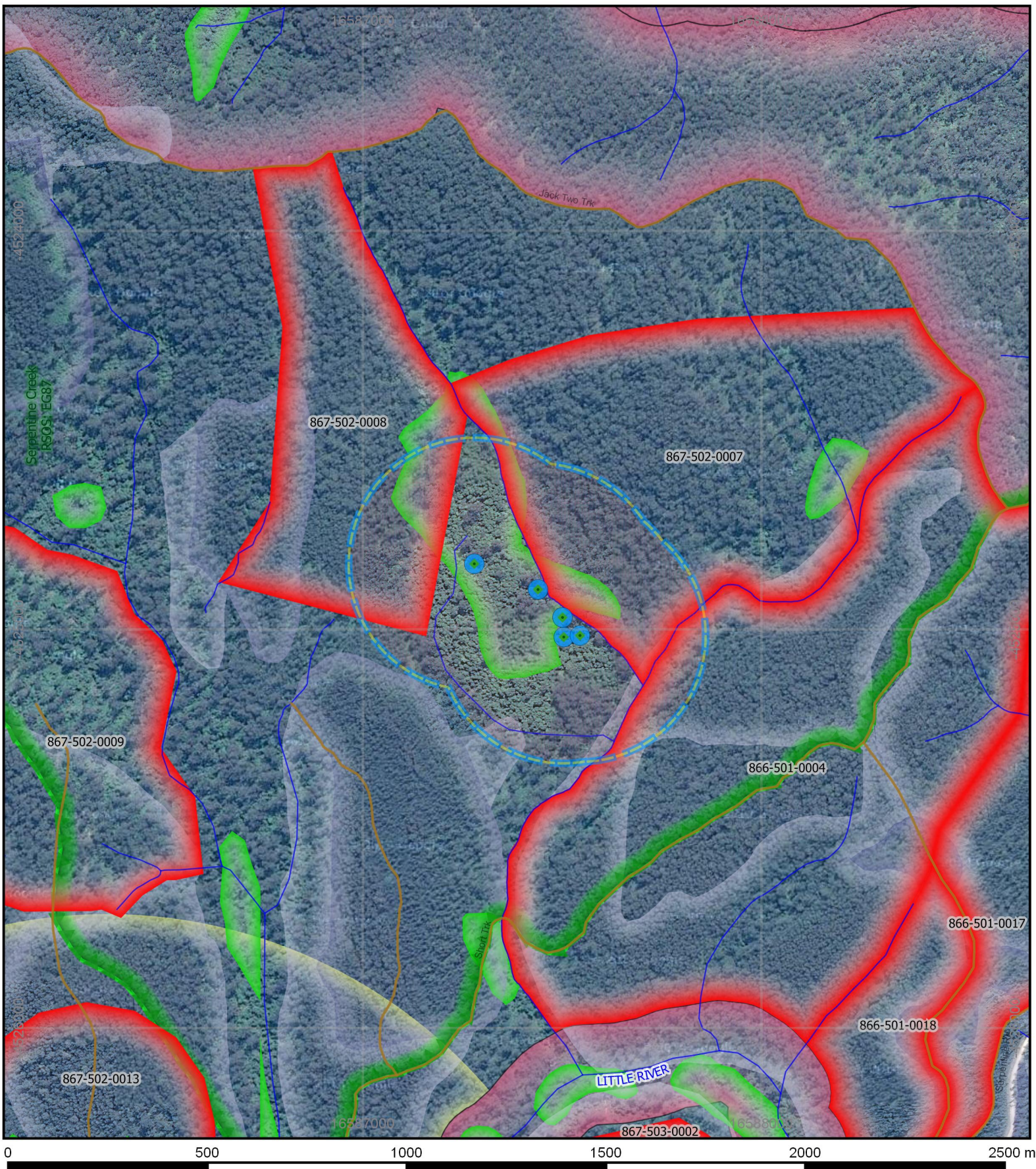
Prior Logging History [2014: LASTLOG25]

	195960
	196970
	197980
	198990
	199900
	200910
	201314

Projection: EPSG: 28355
GDA94/MGA Zone 55

Map Scale:
1:10,000

Results 2. Figure 3. Dinah Divide/Jack Two Track; *Cyathea leichhardtiana* (Prickly Tree-fern); Rainforest Sites of Significance; Forest Management Zoning [DEPI, June, 2014]; Logging History [LASTLOG25]; Scheduled Logging [TRP]; Roads, Watercourses, Satellite



Legend <ul style="list-style-type: none"> <i>Cyathea leichhardtiana</i> (Prickly Tree-fern) 250m Buffer on <i>Cyathea leichhardtiana</i> (Prickly Tree-fern) Rainforest Site of Significance 		Selected Ecological Vegetation Classes [NV2005_EVCBCS] <ul style="list-style-type: none"> Warm Temperate Rainforest 		General Management Zone <ul style="list-style-type: none"> Watercourses Roads Timber Release Plan (VicForests) [Approved_TRP_April2015] 	
Forest Management Zones [DEPI; June 2014; FMZ100] <ul style="list-style-type: none"> Special Protection Zone Special Management Zone 		Prior Logging History [DELWP; April 2015; LASTLOG25] <ul style="list-style-type: none"> 196970 197980 198990 199900 200910 201314 		Projection: EPSG: 3857 WGS 84 Pseudo Mercator Map Scale: 1:12,500	



Discussion/Conclusions/Recommendations

Considering the following management prescriptions

From: “Code of Practice for Timber Production 2014, Department of Environment and Primary Industries, The State of Victoria, 2014”⁵

Mandatory Actions

Addressing biodiversity conservation risks considering scientific knowledge

2.2.2.2 The **precautionary principle** must be applied to the conservation of biodiversity values. The application of the precautionary principle will be consistent with relevant monitoring and research that has improved the understanding of the effects of forest management on forest ecology and conservation values.

‘**precautionary principle**’ means when contemplating decisions that will affect the environment, careful evaluation of management options be undertaken to wherever practical avoid serious or irreversible damage to the environment; and to properly assess the risk-weighted consequences of various options. When dealing with threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

From: “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”⁶

4.5 Flora – detection based zoning

4.5.2 East Gippsland FMA

4.5.2.1 Include all verified populations of species regarded as threatened at a State or national level in the SPZ or SMZ.

4.5.2.2 Include substantial representative populations of species that are rare in Victoria, and poorly known, have few records or are at the edge of their range in East Gippsland in the SPZ or SMZ.

4.5.2.3 Wherever practicable include populations in larger parts of the SPZ or SMZ in combination with other values.

Table 5 Detection based FMZ rules for flora.⁷

FMA	Common name	Scientific name	Zoning management actions	Management actions	Review
East Gippsland	Prickly Tree-fern	Cyathea leichhardtiana	Establish a SMZ of 250 m radius over verified populations.	Conduct a site inspection and detailed planning in consultation with DEPI to ensure the species is adequately protected during timber harvesting operations.	

Cyathea leichhardtiana (Prickly Tree-fern)

1. *Cyathea leichhardtiana* (Prickly Tree-fern) was identified and recorded from adjacent to VicForests scheduled logging coupes 867-502-0007, 867-502-0008 and 866-501-0004 and nearby to 867-502-0009 and 864-505-0011 at the locations displayed as the “light blue circle” symbols in Figure 2. in Results 3 above.
2. *Cyathea leichhardtiana* (Prickly Tree-fern) is considered “vulnerable” in Victoria according to the Department of Environment, Land, Water and Planning (DELWP) “Advisory list of rare or threatened plants in Victoria – 2014”.⁸

⁵ Code of Practice for Timber Production 2014, pp. 11, 21, 23, 31-32, 34-35

⁶ Planning Standards, pp. 16, 69, 71, 78

⁷ Planning Standards, “Table 5 Detection based FMZ rules for flora”, p. 71, 78

⁸ See: http://www.depi.vic.gov.au/_data/assets/pdf_file/0005/277565/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

3. The existence of this vulnerable species at this location is not apparently known to either VicForests or DELWP. This implication is inferred through considering the absence of any flora records of this species on the VBA and the lack of any responsive management zoning present on the Forest Management Zone Scheme (FMZ_100 and/or FMZ_100MAP) or via <http://nremap-sc.nre.vic.gov.au/MapShare.v2/imf.jsp?site=forestexplorer>.
4. The “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014” (section 4.5.2.1) requires that all verified populations of *Cyathea leichhardtiana* (Prickly Tree-fern) be “[included]in the SPZ or SMZ”. Further, these “Planning Standards” require that on detection of verified *Cyathea leichhardtiana* (Prickly Tree-fern) records, an SMZ of 250m radius must be established over each population.
5. These measures have not occurred and logging operations are planned by VicForests in coupe 867-502-0007, been listed as “Harvesting Pending” since its “THSZ activation date” of 27/03/2015 less than 20m from many of the *Cyathea leichhardtiana* (Prickly Tree-fern) records identified within this investigation.⁹
6. The failure of both VicForests and DELWP to detect and adaptively manage for these significant conservation values in an appropriate way constitutes a serious breach of planning and operational obligations to abide by the 'precautionary principle' as mandated in the *Code of Practice for Timber Production 2014* and to adhere to section 4.5.2.1 of the “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”.
7. As a regulator of operations within Victoria's State Forests DELWP must ensure VicForests abides by these mandatory principles and prescriptions including by applying the minimum 250m Special Protection Zone buffers displayed in Results 2. Figure 2. for the *Cyathea leichhardtiana* (Prickly Tree-fern) locations displayed and any others found within 250m of VicForests' scheduled logging coupes.
8. DELWP must restrain VicForests from logging in the area of these *Cyathea leichhardtiana* (Prickly Tree-fern) records including within coupes 867-502-0007, 867-502-0008 and 866-501-0004 as well as any additional surrounding areas where the species is present.
9. A thorough search for the presence of and evaluation of the extent and population health of *Cyathea leichhardtiana* (Prickly Tree-fern) must be undertaken within any further areas where VicForests intends to log and the species presence is possible.
10. All records of *Cyathea leichhardtiana* (Prickly Tree-fern) should be placed in a Special Protection Zone of a minimum 250m buffer from which logging is excluded around each record and, where the record is located along a watercourse or gully system, that watercourse or gully system should be buffered by a minimum 100m vegetated buffer for a minimum of 1km up and down stream.

⁹ See: <http://www.vicforests.com.au/timber-harvesting-safety-zones> (Accessed 05 August 2015)

Excerpts from: “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”

Table 6 Buffer widths for Rainforest Sites of Significance by category and priority.

Site of Significance category	Priority			
	1	2	3	4
National	See 4.6.1.1	100 m	60 m	60 m
State	60 m	60 m	40 m	40 m
Regional	40 m	40 m	40 m	40 m

Note: Priority areas are identified in the Sites of Significance for Rainforest spatial layer.¹⁰

Rainforest Sites of Significance

1. As stated above, scheduled logging coupes 867-502-0007, 867-502-0008, 864-505-0011, 867-501-0014 and large parts of 866-501-0004 and 867-502-0009 are located within a Regional Rainforest Site of Significance (RSOS: EG87 – Serpentine Creek).
2. The designation of these sites of significance is based on the identification for protection of rainforest stands, and the sub-catchments which they are contained within, that support the best examples of extant rainforest throughout Victoria's distinct management regions.
3. The rainforest stands within and adjacent to coupes 867-502-0007, 867-502-0008 and 866-501-0004 is very large containing many large examples of significant rainforest species including potentially up to 50 rare and threatened *Cyathea leichhardtiana* (Prickly Tree-fern) individuals.
4. According to “Table 6” on page 114 of the “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014” all rainforest stands within Regional Rainforest Site of Significance (RSOS: EG87 – Serpentine Creek) must be protected as a minimum by the application of 40m vegetative buffers from which all logging is excluded and DELWP must restrain and VicForests must refrain from logging within 40m of any and all rainforest stands falling within Regional Rainforest Site of Significance (RSOS: EG87 – Serpentine Creek).
5. According to the LASTLOG25 spatial dataset (current to the beginning of 2014) the 1,031 hectare Rainforest Site of Significance (RSOS: EG87 – Serpentine Creek) has historically had logging in ~25% (254ha) of its catchment area from ~25 logging coupes. A further ~136ha of logging are planned in 5 scheduled logging coupes on the current VicForests Timber Release Plan within this RSOS. The result of this logging will leave at least 25% of the Rainforest Site of Significance degraded and fragmented from logging (this figure does not necessarily take into account the fragmentary impacts of already existent roads or the edge effects of prior or planned logging operations or historic or future fire events).

The remainder of RSOS: EG87 – Serpentine Creek, as well as all of Victoria's 432 RSOS's, should be fully protected from future planned disturbance by the exclusion of any future logging operations including those of scheduled logging coupes 867-502-0007, 867-502-0008, 864-505-0011, 866-501-0004 and 867-502-0009.

¹⁰ *Planning Standards*, p. 114