

Ecological Thinning Management Plan

9 Henley Road

Glenrowan VIC 3675

February 2021



Table of Contents

Background	3
Trust for Nature	3
Bush for Birds.....	3
Site Information	4
Landowner Details	4
Site Description.....	4
Land Title.....	5
Vegetation Quality Assessment	6
Ecological Vegetation Class Benchmarks.....	7
Site Photos	9
Site Map	10
Rationale	11
Methodology.....	12
References	13

Background

Trust for Nature

Trust for Nature (TFN) is one of Australia's oldest conservation organisations. It is a non-profit organisation and operates under the Victorian Conservation Trust Act 1972.

For over 45 years, TFN has been working in partnership with private landholders to protect over 65,000 ha of habitat on more than 1,400 properties through conservation covenants. Covenants are on-title agreements that allow private landholders to protect their land for conservation in perpetuity. This is a unique power that TFN holds in Victoria.

Additionally, TFN owns and manages 44 conservation reserves across the state covering more than 35,000 ha. In North East Victoria, TFN works with the North East Catchment Management Authority (NECMA) and other partners to deliver a range of conservation projects.

Bush for Birds

'Bush for Birds: Landscape Scale Restoration for the Regent Honeyeater and the Swift Parrot' is a five-year project funded by the Australian Government's National Landcare Program and delivered by TFN in partnership with NECMA.

The Regent Honeyeater and Swift Parrot are both patch rich nomadic species. They are wide ranging and highly mobile, following seasonal flowering events, and they have a heavy reliance on the nectar of particular Eucalypt species. Primary forage tree species include Yellow Box (*Eucalyptus melliodora*), White Box (*Eucalyptus albens*), Grey Box (*Eucalyptus microcarpa*) and Mugga Ironbark (*Eucalyptus sideroxylon*).

Their range broadly coincides with fertile plains, where forage trees provide particularly abundant nectar. The previously extensive grassy woodlands of the region occurred across all the flatter valleys of the North East, but have been extensively cleared for agriculture. It is the loss of these nectar-rich woodlands on fertile plains that has contributed most to the decline of the Regent Honeyeater and Swift Parrot.

The Bush for Birds project utilises a multi-faceted, landscape scale approach to ameliorate key threats to the critically endangered Regent Honeyeater and Swift Parrot. The most pressing threat to these species – habitat loss – is being directly addressed using a range of proven strategies at a scale that is meaningful.

The project uses a fixed price incentive model to support landholders to undertake on-ground works that protect, manage and increase habitat for the Regent Honeyeater and Swift Parrot. Eligible activities include permanent protection of land under a TFN conservation covenant, fencing of remnant woodland and forest habitat, weed control, revegetation and ecological thinning.

All successful project sites have been subject to ecological assessment, endorsement by an evaluation committee (with representatives from TFN, NECMA, DELWP, Landcare and the Regent Honeyeater Project), approval by the NECMA CEO, and are subject to a 10 year Conservation Management Agreement.

The aim of thinning is to restore vegetation structure to expedite the development of large old trees, which are a critical habitat component that continue to be lost at an alarming rate. Additional benefits of ecological thinning include an increase in understorey, ground cover and woody debris.

Site Information

Landowner Details

Landowner/s	Hamilton Park Co-operative Ltd
Mailing address	PO Box 647, Wangaratta VIC 3676
Property address	9 Henley Road, Glenrowan VIC 3675
Phone	0408 475 235 (Bob Shaw, Secretary)
Email	bshaw@westnet.com.au

Site Description

Two bushland sites totalling 6.72 ha on the common land of the Hamilton Park residential estate. Located in the Northern Inland Slopes bioregion, containing the Ecological Vegetation Class Low Rises Grassy Woodland, with a small area of Valley Grassy Forest. Highly modified with the majority regrowth forest, very few large old trees and hydrological impacts of major dam construction.

Blakely's Red Gum is the dominant canopy species, with Long-leaved Box, Apple Box, Red Box and Kurrajong to a lesser extent. Dense regrowth of Blakely's Red Gum occurs across much of site in densities of up to 4,500 stems/ha.

Understorey trees include Lightwood, Silver Wattle, Drooping She-oak and Cherry Ballart. A mostly sparse shrub layer contains Common Fringe-myrtle, Daphne Heath, Prickly Tea-tree, Grass Trees and Grey Guinea-flower.

The ground layer has a high cover of annual grassy weeds such as Quaking Grass and Veldt Grass. However there is still a reasonable diversity of native grasses and herbs including Kangaroo Grass, Common Wheat-grass, Wallaby Grasses, Dense Spear-grass, Cane Wire-grass, Early Nancy, Chocolate Lily, Black-anther Flax-lily, Sundew, Nodding Blue-lily, Native Geranium, Wattle Mat-rush, Raspwort and Bulbine Lily.

Land Title

Register Search Statement - Volume 10905 Folio 638

Copyright State of Victoria. This publication is copyright. No part may be reproduced by any process except in accordance with the provisions of the Copyright Act 1968 (Cth) and for the purposes of Section 32 of the Sale of Land Act 1962 (Vic) or pursuant to a written agreement. The information is only valid at the time and in the form obtained from the LANDATA REGD TM System. None of the State of Victoria, LANDATA REGD TM System, Victorian Land Registry Services Pty. Ltd. ABN 86 627 986 396 as trustee for the Victorian Land Registry Services Trust ABN 83 206 746 897 accept responsibility for any subsequent release, publication or reproduction of the information.

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10905 FOLIO 638

Security no : 124087912806F
Produced 03/02/2021 03:05 PM

LAND DESCRIPTION

Lot 9 on Plan of Subdivision 092693.
PARENT TITLE Volume 08914 Folio 069
Created by instrument AD106175B 10/09/2004

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
HAMILTON PARK CO-OPERATIVE LTD of KINGFISHER LANE SOUTH WANGARATTA VIC 3678
J553461 21/07/1981

ENCUMBRANCES, CAVEATS AND NOTICES

COVENANT (as to whole or part of the land) in instrument J553461 21/07/1981

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE LP092693 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 9 HENLEY ROAD GLENROWAN VIC 3675

DOCUMENT END

Vegetation Quality Assessment

Bioregion	Northern Inland Slopes	
EVC	Low Rises Grassy Woodland	
	Component	Score
Site condition	Large trees	3/10
	Tree canopy cover	5/5
	Lack of weeds	6/15
	Understorey	20/25
	Recruitment	6/10
	Organic litter	3/5
	Logs	4/5
Score	48/75	
Total for site scoring (score/100 x 20 rounded off)	13/20	

Landscape context	Patch size	6/10
	Neighbourhood	3/10
	Distance to core area	3/5
Score	12/25	
Total for site scoring (score/25 x 10 rounded off)	5/10	

Ecological Vegetation Class Benchmarks



Description:

A variable open eucalypt woodland to 15 m tall or occasionally Sheoak woodland to 10 m tall on more skeletal soils. Understorey includes a diverse ground layer of grasses and herbs. The shrub component is usually sparse. It occurs on sites with moderate fertility on gentle slopes or undulating hills on a range of geologies.

Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	70 cm	15 / ha
<i>Allocasuarina</i> spp.	40 cm	

Tree Canopy Cover:

%cover	Character Species	Common Name
15%	<i>Eucalyptus microcarpa</i>	Grey Box
	<i>Eucalyptus albens</i>	White Box
	<i>Eucalyptus melliodora</i>	Yellow Box
	<i>Eucalyptus blakeyi</i>	Blakely's Red Gum
	<i>Allocasuarina verticillata</i>	Drooping Sheoak

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	1	5%	T
Medium Shrub	3	10%	MS
Small Shrub	4	5%	SS
Prostrate Shrub	1	1%	PS
Large Herb	3	5%	LH
Medium Herb	12	20%	MH
Large Tufted Graminoid	1	5%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	19	40%	MTG
Medium to Tiny Non-tufted Graminoid	4	5%	MNG
Ground Fern	1	1%	GF
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C

LF Code

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Acacia pycnantha</i>	Golden Wattle
MS	<i>Bursaria spinosa</i> ssp. <i>spinosa</i>	Sweet Bursaria
MS	<i>Acacia acinacea</i> s.l.	Gold-dust Wattle
SS	<i>Templetonia stenophylla</i>	Leafy Templetonia
SS	<i>Pimelea curviflora</i> s.l.	Curved Rice-flower
SS	<i>Pimelea humilis</i>	Common Rice-flower
SS	<i>Eutaxia microphylla</i>	Common Eutaxia
PS	<i>Astroloma humifusum</i>	Cranberry Heath
LH	<i>Wahlenbergia stricta</i>	Tall Bluebell
MH	<i>Asperula conferta</i>	Common Woodruff
MH	<i>Einadia nutans</i> ssp. <i>nutans</i>	Nodding Saltbush
MH	<i>Gonocarpus tetragynus</i>	Common Raspwort
LTG	<i>Austrostipa mollis</i>	Supple Spear-grass
MTG	<i>Dianella revoluta</i> s.l.	Black-anther Flax-lily
MTG	<i>Themeda triandra</i>	Kangaroo Grass
MTG	<i>Bothriochloa macra</i>	Red-leg Grass
MTG	<i>Poa sieberiana</i>	Grey Tussock-grass
MNG	<i>Austrostipa elegantissima</i>	Feather Spear-grass
GF	<i>Cheilanthes austrotenuifolia</i>	Green Rock Fern
SC	<i>Convolvulus erubescens</i> spp. agg.	Pink Bindweed

EVC 175_61: Low Rises Grassy Woodland - Northern Inland Slopes bioregion

Recruitment:

Continuous

Organic Litter:

20 % cover

Logs:

15 m²/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
LH	<i>Plantago lanceolata</i>	Ribwort	high	low
LH	<i>Salvia verbenaca</i>	Wild Sage	high	high
LH	<i>Carduus tenuiflorus</i>	Winged Thistle	high	high
MH	<i>Petrorhagia velutina</i>	Velvety Pink	high	low
MH	<i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Narrow-leaf Clover	high	low
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
MH	<i>Parentucella latifolia</i>	Red Bartsia	high	low
MH	<i>Spergularia rubra</i> s.l.	Red Sand-spurrey	high	low
MH	<i>Trifolium campestre</i> var. <i>campestre</i>	Hop Clover	high	low
MH	<i>Anagallis arvensis</i>	Pimpernel	high	low
LNG	<i>Avena fatua</i>	Wild Oat	high	low
MTG	<i>Romulea minutiflora</i>	Small-flower Onion-grass	high	low
MTG	<i>Bromus hordeaceus</i> ssp. <i>hordeaceus</i>	Soft Brome	high	low
MTG	<i>Lolium lolaceum</i>	Stiff Rye-grass	high	low
MTG	<i>Lolium perenne</i>	Perennial Rye-grass	high	low
MTG	<i>Ehrharta longiflora</i>	Annual Veldt-grass	high	low
MTG	<i>Briza maxima</i>	Large Quaking-grass	high	low
MNG	<i>Dactylis glomerata</i>	Cocksfoot	high	high
MNG	<i>Vulpia muralis</i>	Wall Fescue	high	low
MNG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	low
MNG	<i>Bromus rubens</i>	Red Brome	high	low
MNG	<i>Aira elegantissima</i>	Delicate Hair-grass	high	low
MNG	<i>Aira cupaniana</i>	Quicksilver Grass	high	low

Published by the Victorian Government Department of Sustainability and Environment April 2004

© The State of Victoria Department of Sustainability and Environment 2004

This publication is copyright. Reproduction and the making available of this material for personal, in-house or non-commercial purposes is authorised, on condition that:

- the copyright owner is acknowledged;
- no official connection is claimed;
- the material is made available without charge or at cost; and
- the material is not subject to inaccurate, misleading or derogatory treatment.

Requests for permission to reproduce or communicate this material in any way not permitted by this licence (or by the fair dealing provisions of the Copyright Act 1968) should be directed to the Nominated Officer, Copyright, 8 Nicholson Street, East Melbourne, Victoria, 3002.

For more information contact: Customer Service Centre, 136 186

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

www.dse.vic.gov.au

Site Photos

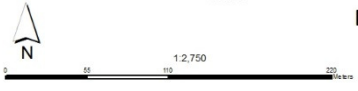


Figure 1: Southern patch, east side.



Figure 2: Southern patch, west side.

Site Map



Bush for Birds - Project Area Site Map
 Grant Recipient: Hamilton Park
 Site Plan: 181-14176

Disclaimer: This publication may be of assistance to you, but the State of Victoria, its employees and the employees of the Trust for Nature do not guarantee that the publication is without error of any kind or in which appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Rationale

In North East Victoria, many areas of woodland and forest contain dense Eucalypt regrowth, also known as thickets. Factors contributing to these thickets include changes to historical land use, changes to burning regimes, timber harvesting practices and clearing (Lunt, 1991). The 2000-2010 drought exacerbated the issue by baring off ground cover and providing the opportunity for Eucalypt seed to germinate and establish. Trust for Nature have found that some sites contain up to 7,000 stems per hectare of species such as Blakely's Red Gum, Red Stringybark, White Box and Grey Box.

Benchmark large old tree density is 10-20 trees per hectare, however many seedlings and young trees die over time to end up with this spacing. For areas with small trees (<10 cm DBH) there should be at least 400 stems per hectare and for areas with larger trees (>10 cm DBH) there should be at least 250 stems per hectare (Rawlings et al, 2012).

Eucalypt thickets can be a major threat to forest and woodland ecosystems. Trees are thin and even aged with overall low habitat heterogeneity, there is limited understorey regeneration and an overall lack of structural diversity and woody debris (TFN, 2012). Having a large number of trees competing for limited resources results in smaller trees with poor growth rates (Murray & Thompson, 2000). These dense, even aged stands reduce the cover of understorey species, alter resource availability and cause declines in the species richness of faunal communities (Price & Morgan, 2008).

Eucalypt thickets inhibit the development of large old hollow-bearing trees through competition for resources, which has implications for hollow-dependent fauna. 16 mammal species and 44 bird species depend on hollows in Victoria, including 14 threatened species (Emison et al 1987; Menkhorst 1984). A healthy ecosystem needs 3-10 hollow-bearing trees per hectare with up to 30 hollows per tree (Gibbons and Lindenmayer, 1997). Thinning has been shown to improve habitat value by producing 20 hollow-bearing trees per hectare after 42 years compared with un-thinned sites which produced none (Horner, 2010).

Large old trees also provide an important forage resource for birds and mammals. Bat communities have responded positively to thinning with 60% less bat activity and 80% less foraging activity noted in unthinned regrowth compared to reference sites (Blakey et al, 2016).

Research has also found an increase in the biomass of both ground cover vegetation and remaining stems in areas subject to thinning treatment (McHenry et al, 2006). Increased levels of ground cover has proven benefits for soil conservation and water retention. The use of thinning has been applied to forestry operations for centuries and is now becoming a mainstream management action to restore vegetation structure and reinstate ecological processes (Dwyer et al, 2010).

Ecological thinning is recommended on sites where Eucalypt thickets significantly exceed natural stem densities (i.e. more than 1,000 stems per hectare). The aim of thinning is to restore vegetation structure to expedite the development of large old trees, whilst also increasing understorey, ground cover and woody debris.

Methodology

Assess the site before undertaking works, noting trees for retention including all large standing dead trees, all trees over 30 cm DBH, all hollow-bearing trees and any trees containing active nests.

Multiple coppice stems, small or stunted stems are to be prioritised for removal. Retain stem numbers at the upper level of natural densities based on the Ecological Vegetation Class benchmark and local knowledge. For areas with small trees (<10 cm DBH) retain approximately 400 stems per hectare (5 m spacing) and for areas with larger trees (>10 cm DBH) retain approximately 250 stems per hectare (7 m spacing). Aim for a patchy structure (not evenly spaced across the entire area) with representation of different species at similar ratios to a good quality remnant.

Stems are to be cut with a chainsaw and painted immediately with an appropriate herbicide to prevent regrowth. Retain logs and cut stems in situ to the Ecological Vegetation Class benchmark level of 150 lineal metres per hectare.

Alternatively, a rubber tracked posi-track loader with mulching head may be used in sites where high stem density and narrow stem diameter make chainsaw use inefficient (e.g. >5,000 stems/ha <7 cm DBH). This machine minimises soil compaction and disturbance, mulching stems in situ rather than removing and piling stems as the case may be with an excavator or bulldozer. The mulch then acts to minimise erosion and reduce germination of annual weeds. This work is undertaken in autumn before the break which also minimises soil disturbance and impact on native ground layer species which tend to flower in spring.

After mulching, follow up spot spraying with an appropriate selective herbicide is required when stem regrowth reaches a height of approximately 30 cm. Spot spraying is generally undertaken 12 months after mulching (the following autumn) to minimise impact on native ground layer species. Ensure herbicide application is undertaken in accordance with the manufacturer's directions and be mindful of potential off-target impacts and contamination of waterways.

Take care to minimise the impact on native vegetation that is not subject to ecological thinning. Works should be undertaken when the ground is firm to reduce soil disturbance. Avoid undertaking works in high fire danger periods due to the risk of sparks from machinery igniting a fire. Ensure works are undertaken by skilled and qualified operators with thinning experience.

References

- Blakey, R.V., Law, B.S., Kingsford, R.T., Stoklosa, J., Tap, P. & Williamson, K. (2016). *Bat communities respond positively to large-scale thinning of forest regrowth*. *Journal of applied ecology*, 53, 1694-1703.
- Department of Sustainability and Environment (DSE) (2011). *Vegetation Works Standards: Victorian Investment Framework*. Victorian Government, Melbourne.
- Dwyer, J.M., Fensham, R., & Buckley, Y.M. (2010). *Restoration thinning accelerates structural development and carbon sequestration in an endangered Australian ecosystem*. *Journal of applied ecology*, 47, 681-691.
- Emison, W.B., Beardsell, C.M., Norman, F.I., Loyn, R.H. & Bennett, S.C. (1987) *Atlas of Victorian Birds*. Department of Conservation Forests & Lands and RAOU, Melbourne.
- Gibbons, P., Lindenmayer, D.B. (2002). *Tree Hollows and Wildlife Conservation in Australia*. CSIRO Publishing, Melbourne.
- Horner G.J., Baker P.J., Mac Nally R., Cunningham S. C., Thomson J. R., Hamilton F. (2010). *Forest Structure, habitat and carbon benefits from thinning floodplain forests: Managing early stand density makes a difference*. *Forest Ecology and Management* 259, 286-293.
- Jones, C.S., Duncan, D.H., Rumpff, L, Thomas, F.M., Morris, W.K., & Vesk, P.A. (2015). *Empirically validating a dense woody regrowth 'problem' and thinning 'solution' for understorey vegetation*. *Forest Ecology and Management*, 340, 153-162.
- Lunt, I.D. (1991). *Management of remnant lowland grasslands and grassy woodlands for nature conservation: a review*. *Victorian Naturalist*, 108 (3): 56-66.
- Menkhorst, P.W. (1984). *The application of nestboxes in research and management of possums and gliders* pp 517-525 in *Possums and Gliders*. (eds) Smith, A.P., & Hume, I.D. Australian Mammal Society, Sydney.
- McHenry, M.T., Wilson, B.R., Lemon, J.M, Donnelly, D.E., & Growns, I.G. (2006). *Soil and vegetation response to thinning White Cypress Pine (Callitris glaucophylla) on the North Western Slopes of New South Wales, Australia*. *Plant Soil*, 285, 245-255.
- Murray, J., & Thompson, D. (2000). *Native Regrowth – A Farmer's Guide to Maintaining Biodiversity When Thinning Regrowth Forest*. Rural Industries Research and Development Corporation, ACT.
- Price, J.N. & Morgan, J.W. (2008). *Woody plant encroachment reduces species richness of herb-rich woodlands in southern Australia*. *Austral ecology*, 33, 278-289.
- Rawlings, K., Freudenberger, D., & Carr, D. (2012). *A guide to managing box gum grassy woodlands*. Department of Environment, Water, Heritage and the Arts, Canberra.
- Trust for Nature (2012). *Bush Family Reserve Ecological Thinning Trial 2012*. Unpublished report.