ADVERTISED
PLAN

IRONBARK
Environmental Arboriculture

Targeted Flora Survey
Red-tip Greenhood (*Pterostylis clivosa*)

Belgrave Heights Christian School
Proposed Seniors Building

Belgrave 3160 VIC

Prepared by

[redacted]
B.Sc EnvSc (Wildlife & Conservation Biology)

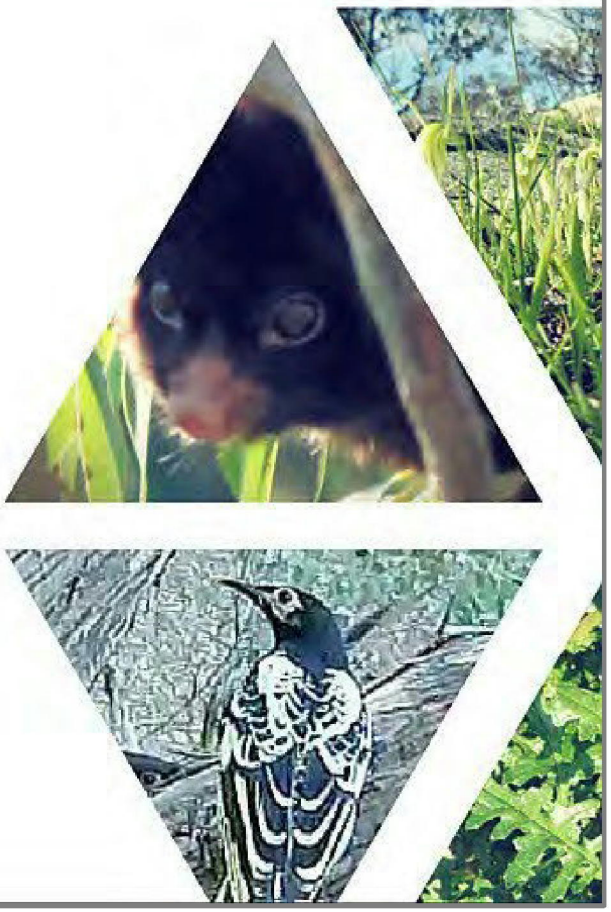
[redacted]
B.Sc EnvSc (Wildlife & Conservation Biology)

[redacted]
B.Sc EnvSc (Wildlife & Conservation Biology)
Dip Horticulture (Arboriculture)
Cert (Arboriculture & Forestry

Commissioned by

Millar Merrigan

9th May 2024



This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

Contents

Version Title	Action	Staff	Date
Belgrave Christian School - Red-tip Greenhood V1	Prepared	JE / SC	30/04/2024
Belgrave Christian School - Red-tip Greenhood V2	Reviewed	GH	09/05/2024
Belgrave Christian School - Red-tip Greenhood FINAL	Checked	SK	10/05/2024

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

Introduction

Millar Merrigan has commissioned Ironbark Environmental Arboriculture (IEA) to undertake a targeted flora survey of Red-tip Greenhood (*Pterostylis clivosa*) orchids (RTG) at Belgrave Heights Cristian School, Belgrave Heights.

The Department of Energy, Environment and Climate Action (DEECA) request for further information (PA2302062 15/02/2024) identifies the following:

> *The site has also been identified as a significant percentage of modelled suitable habitat for Red-tip Greenhood Pterostylis sp. aff. parviflora (Southern Victoria), with species offsets required.*

The *subject site* is 244 Mt Morton Road, Belgrave. The impacted area is the western section of the site where the proposed Seniors Building and associated infrastructure is to be constructed and is subsequently referred to as the *assessment area* (Figure 1).

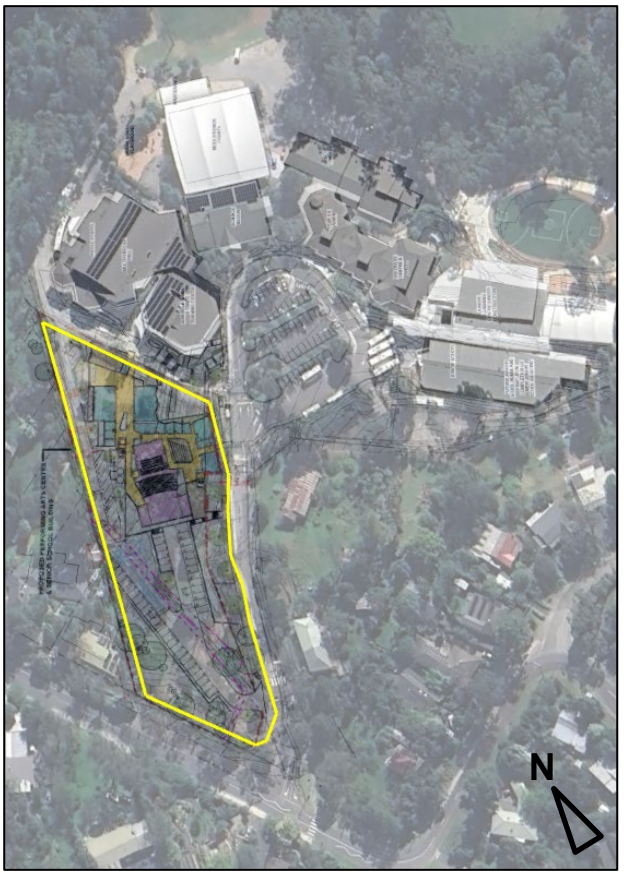


Figure 1: Assessment area (within yellow polygon). Adapted from *Proposed site plan,* Drawing DA0500, Smith Tracey Architects, 07/09/2022.

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

Pterostylis sp. aff. parviflora (Southern Victoria) is a synonym of *Pterostylis clivosa* (VicFlora 09/05/2024). Red-tip Greenhood (*Pterostylis clivosa*) is listed as *endangered* under the *Flora and Fauna Guarantee Amendment Act 2019.*

RTG is a terrestrial orchid that grows to between 10 to 45cm in height and bears 2 to 12 green and white flowers, which are reddish brown towards the apex (top). Uncrowded, plump, rounded flowers that are brownish and scabrous (rough surface) towards the apex are key identification features (VicFlora 09/05/2024) (Figure 2).

Most terrestrial orchids remain dormant, in the form of an underground tuber, for up to six months of the year when they cannot be detected during surveys (Commonwealth of Australia 2013).

The flowering of most winter flowering, southern terrestrial orchids is triggered by late Autumn and Winter rains (Commonwealth of Australia 2013). RTG flowers between March and June, with the greatest abundance of flowering in April (Figure 2).

Most orchids flower over a short period, usually in the order of weeks. Surveys early or late in the flowering period may miss plants in bud or those that have finished flowering. For this reason, more than one (1) survey in the flowering period is required (Commonwealth of Australia 2013).

Within Yarra Ranges Shire, RTG occurs most commonly in ecological vegetation classes (EVC) 29 *Damp Forest* and EVC 48 *Heathy Woodland*; often in loose colonies around the base of trees (Yarra Ranges Council 09/05/2024).

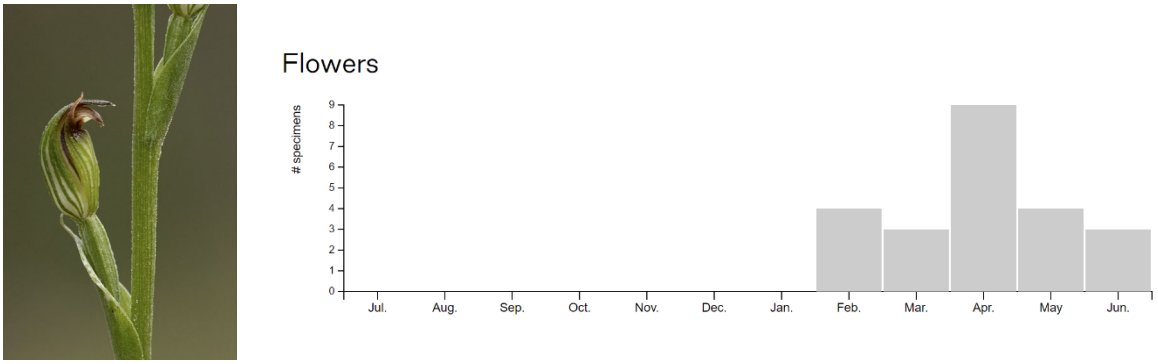


Figure 2: Left: RTG flower, Right: flowering phenology. Adapted from VicFlora 09/05/2024.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED
PLAN

Records of Occurrence

A search of *NatureKit* (DEECA 2024) found one (1) record of RTG from 2007 within Baluk William Flora Reserve approximately 2.5km to the south. A search of *iNaturalist* found an additional seven (7) records within Baluk William Flora Reserve, and one (1) in Belgrave South (Figure 3).

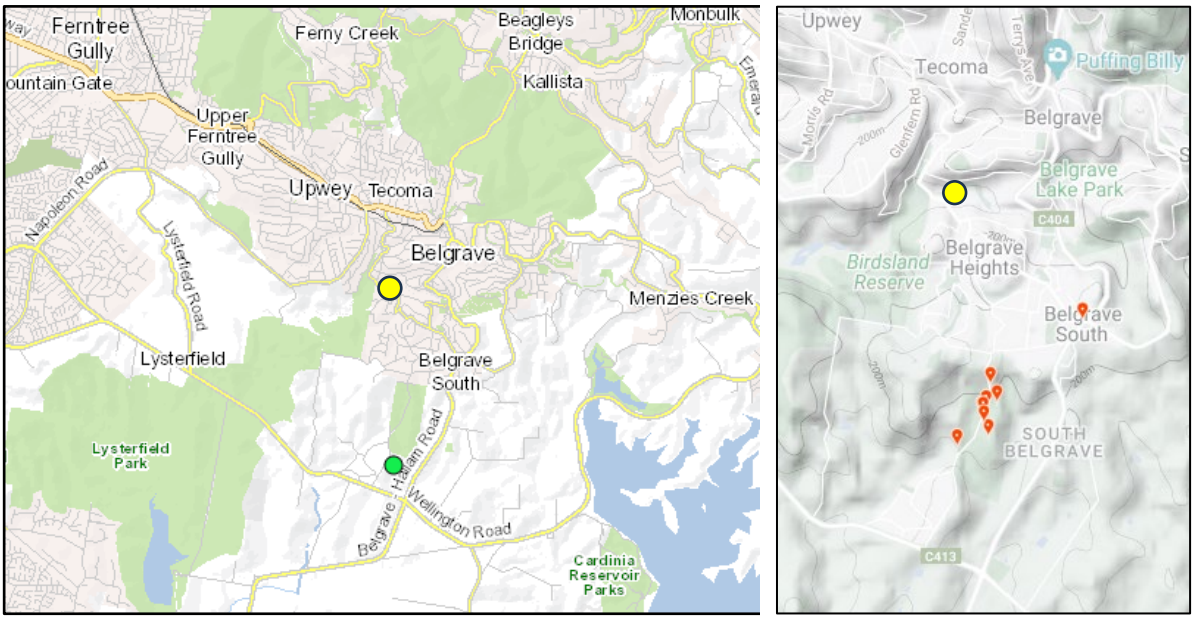


Figure 3: Left: Record of RTG from NatureKit (green) dot in relation to the subject site (yellow dot). Right: Proximity of records from *iNaturalist* (red pins) to the subject site (yellow dot).

Ecological vegetation class (EVC) mapping (DEECA 2024) shows the north of the site to be predominately *Herb-rich Foothill Forest* (EVC 23) with a small section of *Riparian Forest* (EVC 18) (Figure 4).

Figure 4: EVC mapping, showing *Herb-rich Foothill Forest* (green polygons) and *Riparian Forest* (blue polygon). Adapted from NatureKit, DEECA 10/05/2024.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED
PLAN

Site Conditions

The assessment area appears to have a history of slashing, with the most northerly section of the open space being utilised as staff car park overflow. Gravel has been introduced to facilitate the car parking area.

The south-eastern and south-western boundaries have been revegetated with indigenous plants and maintained within mulch beds. There are small patches of native vegetation persisting around and within stands of indigenous trees, consisting mainly of Weeping Grass (*Microlaena stipoides var stipoides*) and Kidney Weed (*Dichondra repens*).

Site Context Images		
		
Overflow carpark with gravel topping.	Indigenous trees and patches of native vegetation understorey	Small patches of Kidney Weed and Weeping Grass understorey.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED
PLAN

Survey Method

Targeted surveys were undertaken by James Egan of IEA on 08/04/2024 and 29/04/2024. Targeted surveys were undertaken within patches of native vegetation understorey, around the bases of trees and other areas of low disturbance, including revegetation areas.

Orchids can be sporadically scattered throughout a site and found in micro-habitats (Commonwealth of Australia 2013). For this reason, random meandering transects throughout the assessment area were also undertaken (Cropper 2003).

The *Survey Guidelines for Australia's Threatened Orchids* (Commonwealth of Australia 2013) section 3.1 *Select appropriate personnel to conduct surveys*, states that

Surveys should be conducted by experienced observers with appropriate experience and qualifications.

The consultant undertaking this assessment (Jame Egan) meets this criteria and has extensive experience in orchid surveying and conservation, particularly within Nillumbik Shire Council.

Results

- No RTP were found in the assessment area.
- No other orchid species were found within the assessment area.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED
PLAN

Discussion

There was abundant rainfall before and between the survey periods (Figure 4); it is likely that if dormant RTG were present flowering would have been stimulated.

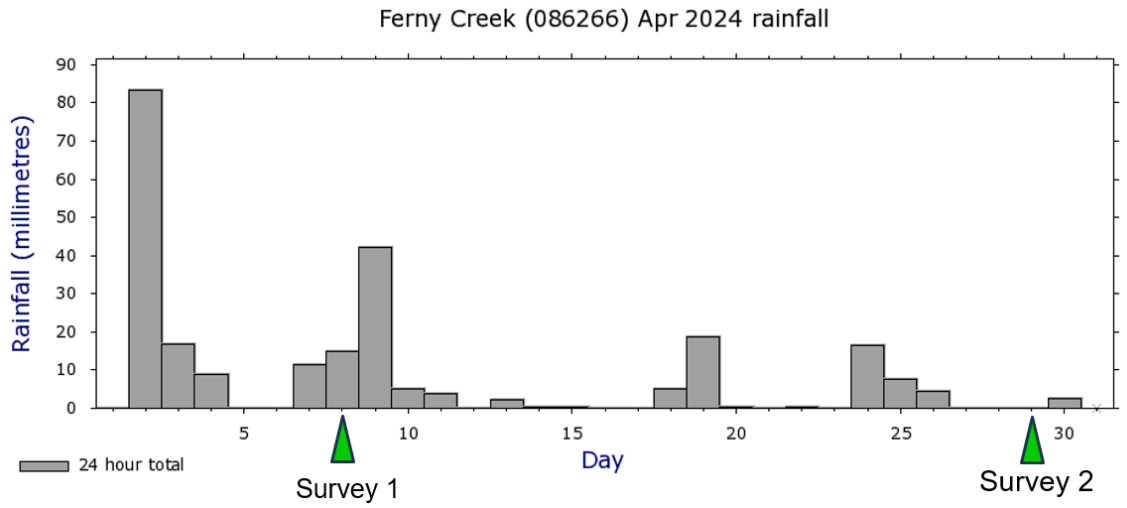


Figure 5: April 2024 Rainfall for Ferny Creek. Adapted from the Bureau of Meteorology, Climate Data Online 10/05/2024.

Terrestrial orchids are dependent on mycorrhizal (fungal) associations for nutrients and for water (Dearnaley 2007). The absence of woody debris and leaf litter in the assessment area means that the abundance and diversity of fungi are likely to be low, which is likely to limit orchid growth.

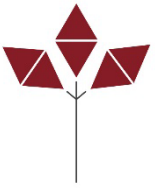
Within Yarra Ranges Council, RTG occurs most commonly in ecological vegetation classes (EVC) 29 *Damp Forest* and EVC 48 *Heathy Woodland*. The EVC mapping for the site is *Herb-rich Foothill Forest* (EVC 23) with a small section of *Riparian Forest* (EVC 18). Although EVCs are broad-scale map units, this also supports the conclusion the site conditions are not suitable for RTG.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED
PLAN

Conclusion

- No RTG or other orchid species were found in the assessment area.
- The search effort, timing, expertise and environmental conditions were suitable for the detection of RTG.
- There is a high confidence level that the survey results are accurate and that RTG is not present in the assessment area.



This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

Expertise to Provide Consultancy Services

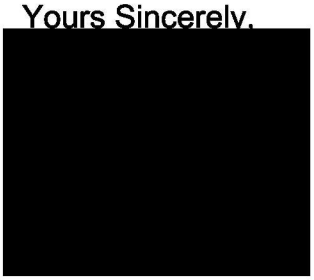
James Egan

I have over eighteen (18) years of experience in remnant bushland management, endangered butterfly conservation management, significant roadside vegetation management and data collection of rare flora and high-threat weed species.

I have over ten (10) years of ecological and environmental consultancy experience, specialising in minimising environmental impacts within large linear infrastructure projects and the associated risks to rare and threatened flora and fauna.

My relevant experience, training and qualifications enable me to provide impartial and informed independent assessments of issues pertaining to the management of vegetation and associated fauna.

Yours Sincerely,



Zoologist & Environmental Consultant

Grant Harris

I have over twenty (20) years of experience in arboricultural and ecological industries, including over sixteen (16) years of consultancy.

I have training and experience in the collection of biological samples and data for scientific research. I have co-authored papers published in peer-reviewed scientific journals. My qualifications, experience and expertise are in the fields of arboriculture, planning and wildlife biology, which ensures that I am qualified to make informed independent assessments of issues pertaining to the management of vegetation and associated fauna.

Yours Sincerely

Director and Principal Consultant

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

References

Commonwealth of Australia (2009) Survey Guidelines For Australia's Threatened Orchids, Guidelines For Detecting Orchids Listed As 'Threatened' Under The Environment Protection And Biodiversity Conservation Act 1999.

Dearnaley, J. D. W. (2007) Further advances in orchid mychorrhizal research. *Mycorrhiza* vol 17, p.475–486.

Yarra Ranges Council (09/05/2025) Pterostylis clivosa Red-tipped or Corranwarrabul Greenhood < https://www.yarraranges.vic.gov.au/PlantDirectory/Orchids/Pterostylis-clivosa>.

VicFlora (09/05/2024) Pterostylis clivosa <https://vicflora.rbg.vic.gov.au/flora/taxon/a7940689-cdd7-41e2-ba48-ac7f026e4365>.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright