

Attachment 11: Ecology Surveys (EHP, 2023)

Ecological Advice under the Biodiversity Conservation Strategy for 510 Summerhill Road, Wollert, Victoria

Date: 7th June 2022

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Ref: 16087

1 Introduction

Ecology and Heritage Partners Pty Ltd was commissioned by Cleanaway Waste Management Limited to provide a letter of advice regarding the habitat offset implications associated with the proposed Energy-from-waste plant at 510 Summerhill Road, Wollert, Victoria (the study area).

The aim of this assessment is to identify the ecological values known to, or likely to occur within the study area, and determine the potential regulatory and legislative implications associated with a proposed development.

2 Study Area

The study area is located at 510 Summerhill Road, Wollert approximately 26 kilometres north of Melbourne's CBD. The site covers approximately 80 hectares and is bound by Summerhill Road to the South, and open pastureland to the North, East and West (Plate 1). The study area is within the Northern Quarries Precinct Structure Plan (PSP) which has be to be completed.

The study area is covered by Farming Zone (FZ) and Rural Conservation Zone – Schedule 1 (RCZ1). The study area is subject to an Environmental Significance Overlay – Schedule 4 (ESO4) and is also within a Bushfire Prone Are (DELWP 2022a)

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management Tool (DELWP 2022b), the study area occurs within the Victorian Volcanic Plain bioregion. It is located within the jurisdiction of the Port Phillip and Westernport Catchment Management Authority (CMA) and the Whittlesea City Council municipality.



Plate 1. Ariel image of 510 Summerhill Road, Wollert with reference to the Standard Parcel Identifier (SPI); 10B/PP2819 [Source: VicPlan (DELWP 2022a)].

3 Background

3.1 Biodiversity Conservation Strategy

The study area is located within the Melbourne Strategic Assessment (MSA) area, and any development is subject to approval conditions in accordance with the Biodiversity Conservation Strategy (BCS) (DEPI 2013a).

The BCS and associated sub-regional species' strategies (DEPI 2013b; 2013c; DSE 2009) identify conservation outcomes and offset consolidation strategies for Victoria's native vegetation and Matters of National Environmental Significance (MNES) under the *Environment Protection and Biodiversity*

Conservation Act 1999 (EPBC Act), including mechanisms for how these outcomes will be delivered. The BCS covers Melbourne's four growth corridors within the expanded 2010 Urban Growth Boundary, as well as 28 precincts under the 2005 Urban Growth Boundary, except where a planning scheme amendment to introduce a Precinct Structure Plan has been approved prior to 1st March 2012.

To facilitate the planning approvals process for Melbourne's growth areas, the Victorian Government has introduced the 'Time Stamping' project (DSE 2009). This project captures, and 'time stamps' native vegetation information within Melbourne's urban growth areas. This data can then be used to calculate native vegetation offsets for future development, and to prepare Native Vegetation Precinct Plans (NVPP) for these areas.

Classes of actions associated with urban development in most of the land in Melbourne's growth corridors have been approved under Section 146B of the EPBC Act by the Commonwealth Environment Minister (Minister). The approval was made in relation to the western, north-western and northern growth corridors on 5 September 2013.

The study area is located within the northern growth corridor. The Commonwealth approvals are subject to conditions, which included the former Habitat Compensation Obligations (HCO) and the restriction of urban development in identified conservation areas.

3.2 Melbourne Strategic Assessment (Environment Mitigation Levy) Act 2020

The Melbourne Strategic Assessment (Environment Mitigation Levy) Act 2020 (MSA Act) established a Victorian legislative framework for the existing Melbourne Strategic Assessment (MSA) program. It imposes a levy to fund mitigation measures for impacts on biodiversity caused by the development of Melbourne's growth corridors.

The environmental mitigation levies, as set out in the MSA Act, replaces the Biodiversity Conservation Strategy Habitat Compensation Obligations (HCO) fee system. The conservation outcomes that the MSA program has committed to deliver do not change.

The liability to pay an MSA Levy is triggered when a levy event occurs within the levy area. The only levy events are the (MSA 2020):

- Issue of a Statement of Compliance for a plan of subdivision (i.e. subdivision of land),
- The certification of a plan of subdivision submitted under section 35 of the *Subdivision Act 1998*,
- Application for a building permit for the construction of a building,
- Approval of a work plan under the Mineral Resources (Sustainable Development) Act 1990,
- Approval of a variation of a work plan under the Mineral Resources (Sustainable Development) Act 1990,
- Construction of utility infrastructure on Crown land,
- Construction of a road on Crown land.

Any relevant event, undertaken in the levy area, will trigger a levy liability. The liability is triggered regardless of who undertakes the activity.

3.3 MSA Levy Fees

The MSA Act requires that the levy rates are adjusted annually according to a composite index designed to reflect changes to the cost of delivering the MSA program over time. The composite index is composed of one third Consumer Price Index, and two thirds Wage Price Index. In addition to annual indexation, the legislation provides for an additional adjustment to be applied for the first five years of the operation of the MSA Act. This will bring the MSA program back to full cost recovery by the 2024/25 financial year. From 2025/26, only the composite index will apply. The levies for FY2021/2022 have been calculated based on an updated cost model for the delivery of mitigation measures required by the Commonwealth approval and associated conditions. The base costs of implementing the program have almost doubled since the introduction of the BCS in 2013. The new FY2022/2023 levies are set out in Table 1 below.

Table 1. MSA levy fees comparison for FY2021/22 and FY2022/23.

Levy Type	Rate per hectare/ unit from 1 July 2021	Rate per hectare/ unit from 1 July 2022
Native Vegetation	\$136,688	\$166,874
Scattered Trees (per tree)	\$18,999	\$23,195
Golden Sun Moth	\$12,773	\$16,522
Growling Grass Frog	\$8,257	\$8,805
Matted Flax-lily	\$11,625	\$12,063
Southern Brown Bandicoot	\$4,309	\$5,261
Spiny Rice-flower	\$9,244	\$10,160

4 Results

4.1 Current Levy Fees

In accordance with the Commonwealth approval conditions of the BCS made on 5 September 2013, provided the relevant MSA Levies relating to the project area are met and the action is in accordance with the BCS, typically, there are no further assessments required (i.e. native vegetation surveys, or targeted surveys for significant species) to comply with this existing approval or further approvals under the BCS.

The environmental mitigation levies set out in the MSA Act (MSA 2020) replaces the Biodiversity Conservation Strategy Habitat Compensation Obligations (DEPI 2013a) fee system. The levies for FY2021/2022 are calculated with the following considerations:

Native vegetation:

- Offsets for patches of native vegetation will be based on the extent of Time Stamping data, with all native vegetation considered to be Very High conservation significance. Clearance of native vegetation will invoke an offset fee **\$136,688.00** per hectare cleared.

Scattered Trees:

- The BCS does not require the retention of trees outside conservation areas. However, some large old trees may be retained for landscape or aesthetic reasons as a result of precinct structure planning. Removal of scattered trees invokes an offset cost of **\$18,999.00** per tree.

Matted Flax-lily:

- All native vegetation patches within the northern growth area and the Outer Metropolitan Ring Transport Corridor will invoke a compensatory habitat fee of **\$11,625.00** per hectare cleared to cover the cost of securing and managing conservation reserves for Matted Flax-lily. This is additional to the abovementioned offset for clearance of native vegetation.

Golden Sun Moth:

- All habitat within the northern, north-western and western growth areas and the Outer Metropolitan Ring Transport Corridor (native and non-native grassland and woodlands) and excluding any areas identified as Growling Grass Frog habitat will be deemed to be “confirmed habitat”. However only non-native habitat will invoke a compensatory habitat fee as fees for native habitat have been built into the price of native vegetation offsets. All non-native habitat cleared will invoke a compensatory habitat fee of **\$12,773.00** per hectare cleared.

Growling Grass Frog:

- All land within the northern, north-western, western and south-eastern growth areas and the Outer Metropolitan Ring Transport Corridor mapped as Category 1 or 2 habitat will invoke a compensatory habitat fee of **\$8,257.00** per hectare cleared to cover the cost of establishing and managing the Growling Grass Frog corridors as set out in the Sub-regional Species Strategy.

No other matters of National Environmental Significance (NES) are shown to occur within the construction footprint based on the MSA program’s habitat compensation layer. There is no salvage and translocation requirement for the study area.

4.1.1 MSA Fees Associated with the Study Area

Under the BCS the total current levy amount of **\$1,142,901.87** will apply to the study area. This comprises:

- \$238,657.25 for the removal of 1.746ha of native vegetation;

- \$20,297.25 for the removal of 1.746ha of Matted Flax-lily;
- \$393,293.44 for the removal of 30.791ha of Golden Sun Moth habitat;
- \$395,658.93 for the removal of 47.918ha of Growling Grass Frog habitat; and,
- \$94,995.00 for the removal of five scattered trees.

An approximate estimate and breakdown of the parcel levy liability for the study area, based on the MSA program’s habitat layers is summarised below (Table 2), and these areas are shown in Figure 1. A summary of the Environmental Mitigation Levy is also provided in Appendix 1 for FY 2021/22.

Table 2. MSA Levy Estimates for the study area under the BCS for FY 2021/22.

Environmental Mitigation Levy Liability for the Study Area			
Levy Type	Costs under BCS per hectare	Total (hectares/number)	Offset cost
Native Vegetation	\$136,688.00	1.746	\$238,657.25
Matted Flax-lily	\$11,625.00	1.746	\$20,297.25
Golden Sun Moth	\$12,773.00	30.791	\$393,293.44
Growling Grass Frog	\$8,257.00	47.918	\$395,658.93
Scattered Tree	\$18,999.00	5	\$94,995.00
TOTAL			\$1,142,901.87

An approximate estimate and breakdown of the parcel levy liability for FY2022/23 in the study area is summarised below for FY2022/23 in Table 3.

Table 3. MSA Levy Estimates for the study area under the BCS for FY 2022/23.

Habitat Compensation Fees Applicable to the Study Area			
Levy Type	Costs under BCS per hectare	Total (hectares/number)	Offset cost
Native Vegetation	\$166,874.00	1.746	\$291,362.00
Matted Flax-lily	\$12,063.00	1.746	\$21,062.00
Golden Sun Moth	\$16,522.00	30.791	\$508,728.90
Growling Grass Frog	\$8,805.00	47.918	\$421,917.99
Scattered Tree	\$23,195.00	5	\$115,975.00
TOTAL			\$1,359,045.89

Offsets are payable to DELWP prior to removal of vegetation or habitats and will likely be a condition of the permit issued for the study area. Payments can be made either as a lump sum or in stages subject to the approval of DELWP.

1.1.1 Works In Conservation Area

A portion of the study area is also a designated Conservation Area 28A (CA28A). A Works In Conservation Area (WICA) application would be required and to be submitted to DELWP prior to any works commencing in this area. The WICA application must be accompanied by an Environmental Management Plan as outlined in Section 4 of the BCS Guidance Note (DELWP 2015).

5 Other Implications

5.1 Flora and Fauna Guarantee Act 1988 (Victoria)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage lines and public reserves). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

As the study area is located on private land a permit under the FFG Act is not required.

1.2 Wildlife Act 1975 and Wildlife Regulations 2013 (Victoria)

The *Wildlife Act 1975* (and associated *Wildlife Regulations 2013*) is the primary legislation in Victoria providing for protection and management of wildlife. Authorisation for habitat removal may be obtained under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958*, or under any other Act such as the *Planning and Environment Act 1987*.

Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*, issued by DELWP.

Tree inspections and fauna salvage will likely be a condition of the planning permit and must be undertaken prior to the removal of any potential fauna habitat (i.e. trees).

5.2 Bushfire Management

The study area is located within a Bushfire Prone Area. Bushfire management practices including appropriate setbacks and management of vegetation will likely be required prior to the commencement of construction within the land parcel.

5.3 Planning and Environment Act 1987

The removal of native vegetation within the study area is not exempt from the requirement for a planning permit in accordance with the schedule to Clause 52.17 of the Whittlesea Planning Scheme. As the Northern Quarries PSP has yet to be published, additional requirements may be included as part of the planning permit including avoidance and minimisation of impacts to areas of native vegetation.

Based on our recent experience in these scenarios, the Responsible Authority usually inserts a standard condition within the permit addressing native vegetation and the payment mitigation levies. The standard permit condition is usually as follows:

Native Vegetation

'Prior to the issue of a Statement of Compliance for the subdivision and/or development, evidence must be provided to Council that an appropriate habitat compensation payment has been made to the Department of Environment, Land, Water and Planning in accordance with the requirements of the Biodiversity Conservation Strategy for Melbourne's Growth Areas (DEPI 2013).'

5.4 Kangaroo Management Plan

Kangaroo Management Plans have been mandated in response to urban development in Melbourne's four urban growth corridors. Urban growth on Melbourne's fringe has led to increasing pressure on EGK populations and habitat, including the loss of grassland, grassy woodland, and farmland (DELWP 2014). In Victoria, EGKs, like all indigenous fauna, are protected under the *Wildlife Act 1975* and the *Prevention of Cruelty to Animals Act 1986*. This KMP is required by Whittlesea City Council to comply with the Whittlesea Planning Scheme.

A KMP will likely be required to be prepared as part of the planning permit process and approved by DELWP prior to the commencement of construction.

6 Discussion

The study area is located within the Northern Growth Corridor of Melbourne's BCS. In accordance with the Commonwealth approval conditions of the BCS made on 5 September 2013, provided the relevant MSA Levy Obligations relating to the study area are met, there are no further assessments (e.g. vegetation assessments, targeted surveys for significant species such as Golden Sun Moth or listed flora species) required to comply with the existing approvals. The bushfire management requirements relating to the study area will also need to be addressed. A KMP will also likely be required for the study area.

MSA Levy obligations relating to 510 Summerhill Road, Wollert currently amount to **\$1,142,901.87**. The levy obligations for the study area effective from 1 July 2022 will increase to **\$1,359,045.89**.

References

- DELWP 2014. Draft Kangaroo Management Plan Guidelines: Preparing a KMP for Melbourne's Growth Corridors. Victorian Department of Environment, Land, Water and Planning.
- DELWP 2015. Guidance note: Implementing the Biodiversity Conservation Strategy for Melbourne's Growth Corridors. Working document, February 2015. Melbourne Strategic Assessment. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2022a. VicPlan Online [www Document]. URL: <<https://mapshare.vic.gov.au/vicplan/>>. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2022b Native Vegetation Information Management Tool [www Document]. URL: <<https://nvim.delwp.vic.gov.au/>>. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DEPI 2013a. Biodiversity Conservation Strategy for Melbourne's Growth Corridors. Victorian Government Department of Environment and Primary Industries, Melbourne, August 2013.
- DEPI 2013b. Sub-Regional Species Strategy for the Golden Sun Moth. Victorian Government Department of Environment and Primary Industries, Melbourne, May 2013.
- DEPI 2013c. Sub-Regional Species Strategy for the Growling Grass Frog. Victorian Government Department of Environment and Primary Industries, Melbourne, May 2013.
- DSE 2009. *Sub-Regional Species Strategy for the Southern Brown Bandicoot*. Victorian Government Department of Sustainability and Environment, October 2009.
- MSA 2020. Melbourne Strategic Assessment (Environmental Mitigation Levy) Act 2020, Part 3. No. 1 of 2020. Victorian Government.

Figures

Figure 1. The extent of mapped native vegetation and Matted Flax-lily (brown colour), modelled Growling Grass Frog habitat (green), modelled Golden Sun Moth habitat (pink) and scattered trees (circle with dot) across the study areas (DELWP 2021b).



**Appendix 1 - Estimate of Melbourne Strategic Assessment Environment
Mitigation Levy (FY2021/22)**

Summary of Obligations

Total levy liability estimate: \$1,142,901.87

This total levy liability estimate and the following summary of obligations are provided as estimates for indicative purposes only. The obligations stated may be incomplete. The levy liability is calculated as at the date of this document, and is subject to change.

Levy liability (1 parcels)

Habitat Type	Area/locations	Applicable rate	Estimated subtotal
Native Vegetation	1.746 ha	\$136,688	\$238,657.25
Scattered trees	5 trees	\$18,999	\$94,995
Golden Sun Moth	30.791 ha	\$12,773	\$393,293.44
Growling Grass Frog	47.918 ha	\$8,257	\$395,658.93
Matted Flax-Lily	1.746 ha	\$11,625	\$20,297.25
Southern Brown Bandicoot	0 ha	\$4,309	\$0
Spiny Rice Flower	0 ha	\$9,244	\$0

Conservation Areas

One or more parcels contain conservation areas.

ID	Type	Area
28A	Nature conservation	1.112 ha

Salvage and Translocation

Parcel(s) are not labelled as 'Potential Salvage Operations' and salvage is therefore not required.

Next Steps

The Biodiversity Conservation Strategy and a number of approvals under section 146B of the Environment Protection and Biodiversity Conservation Act 1999 (Cth), and the *Melbourne Strategic Assessment (Environment Mitigation Levy) Act 2020* form part of the Melbourne Strategic Assessment (MSA) program.

For information about how to meet a levy liability under the Melbourne Strategic Assessment (Environment Mitigation Levy) Act 2020, or how conservation areas are treated and secured under the Melbourne Strategic Assessment (MSA) program, please refer to the [MSA website](#).

Parcel Details (10B\PP2819)

Standard Parcel Identifier (SPI): 10B\PP2819

Address: 510 SUMMERHILL ROAD WOLLERT 3750

Parcel levy liability estimate: \$1,142,901.87

This parcel levy liability estimate and the following summary of obligations are provided as estimates for indicative purposes only. The obligations stated may be incomplete. The levy liability is calculated as at the date of this document, and is subject to change.

Levy liability

Habitat Type	Area/locations	Applicable rate	Estimated subtotal
Native Vegetation	1.746 ha	\$136,688	\$238,657.25
Scattered trees	5 trees	\$18,999	\$94,995
Golden Sun Moth	30.791 ha	\$12,773	\$393,293.44
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Southern Brown Bandicoot	0 ha	\$4,309	\$0
Spiny Rice Flower	0 ha	\$9,244	\$0

Conservation Areas

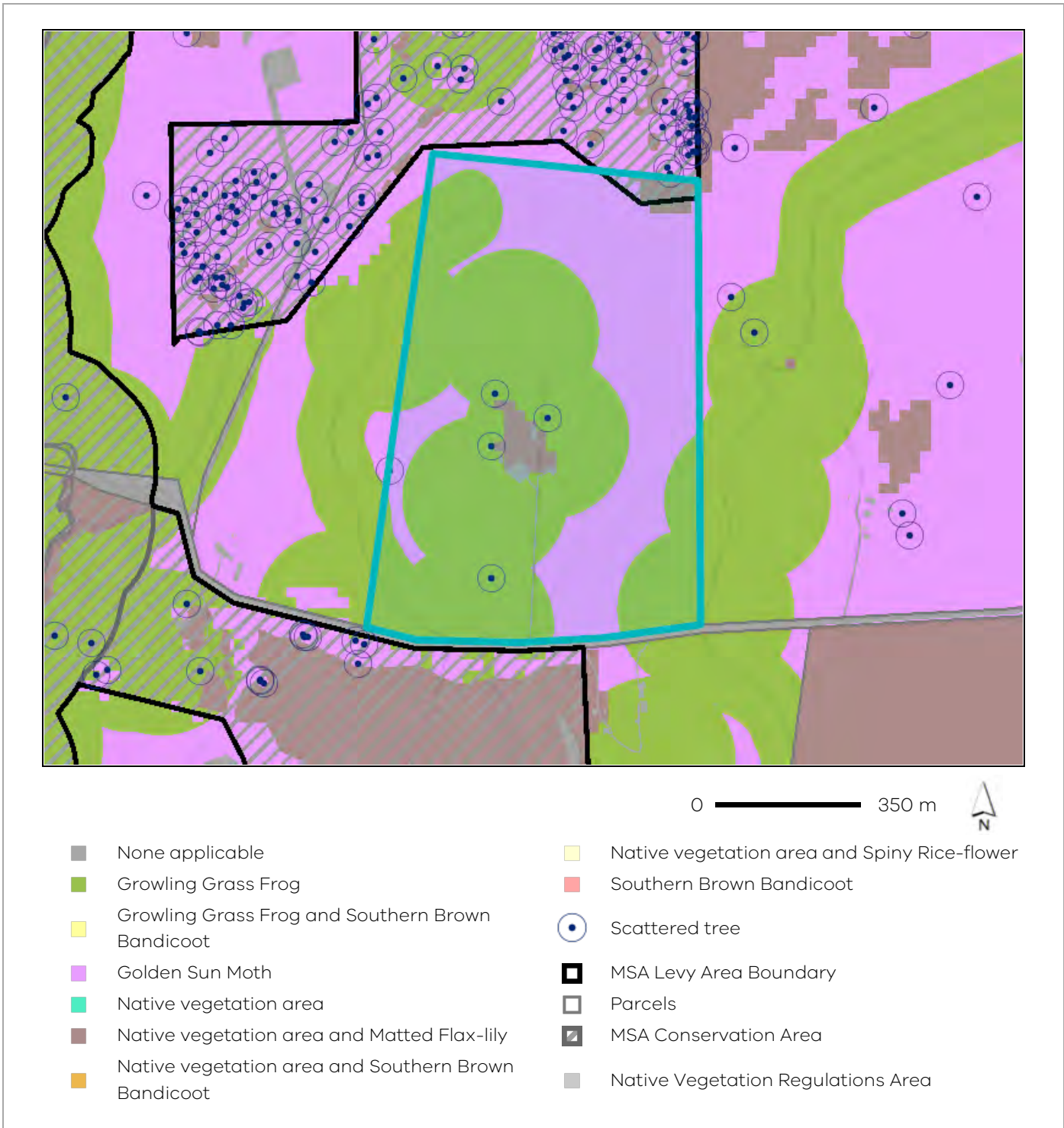
This parcel contains conservation areas.

ID	Type	Area
28A	Nature conservation	1.112 ha

Salvage and Translocation

This parcel is not labelled as 'Potential Salvage Operations' and salvage is therefore not required.

Parcel Map (10B\PP2819)



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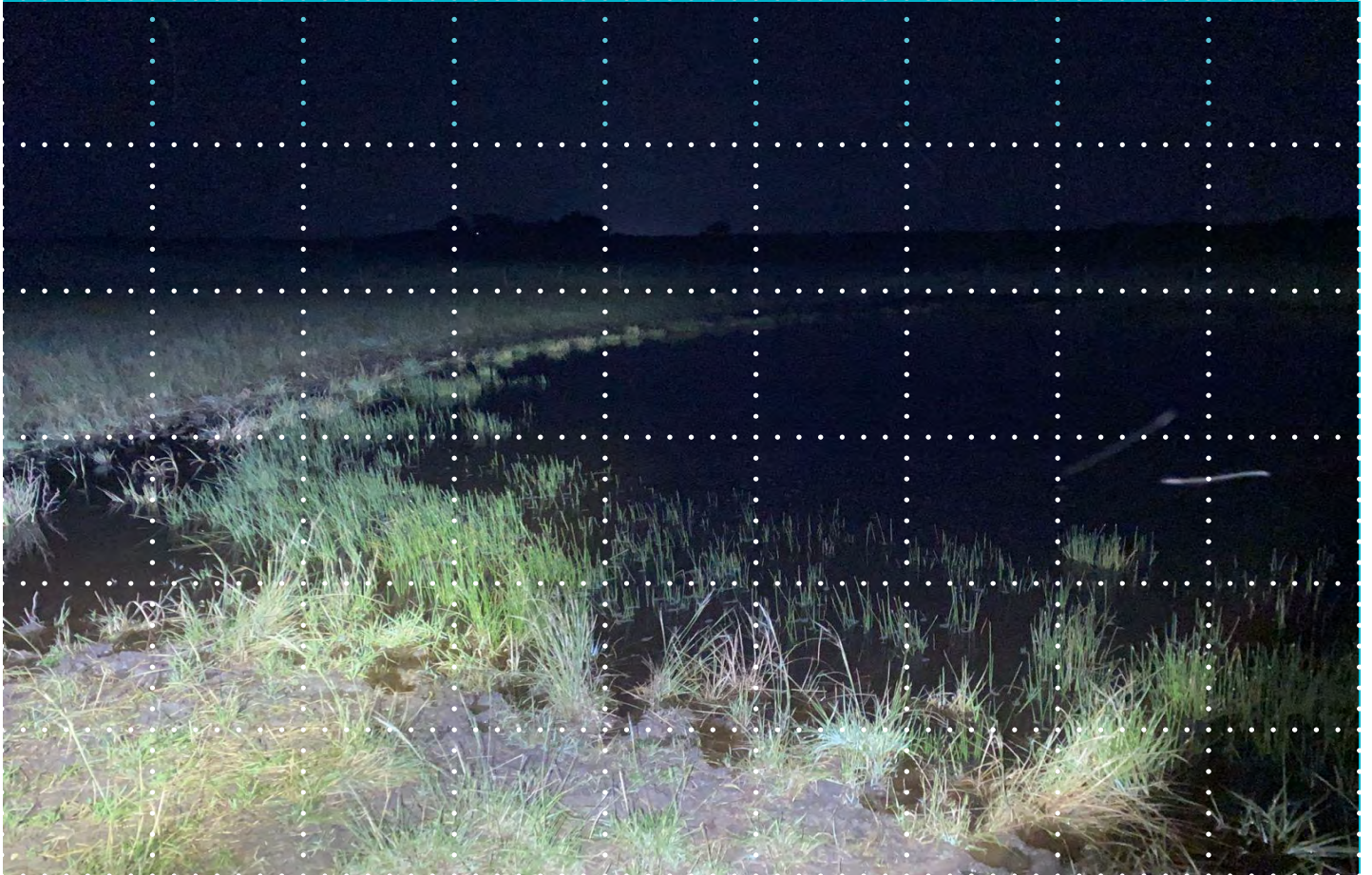
Final Report

Targeted Surveys for Growling Grass Frog *Litoria rainformis*, 510 Summerhill Road, Wollert, Victoria

Prepared for

Cleanaway Operations Pty Ltd

March 2023



Ecology and Heritage Partners Pty Ltd

DOCUMENT CONTROL

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Mapping	Monique Elsley (GIS Coordinator)
File name	16414_EHP_510SummerhillRd_Wollert_GGF_Final_22032023
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CMA	Yarra Valley Water
Council	City of Whittlesea

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EXECUTIVE SUMMARY

Introduction

Ecology and Heritage Partners Pty Ltd was engaged by Cleanaway Operations Pty Ltd (Cleanaway) to undertake targeted Growling Grass Frog *Litoria raniformis* surveys at 510 Summerhill Road, Wollert, Victoria (the 'proposal area'). The surveys were required to determine the presence or absence of Growling Grass Frog and address any implications for the construction of the proposed waste-to-energy (WtE) facility known as the Melbourne Energy and Resource Centre (MERC) under Commonwealth and State environmental legislation.

Methods

Numerous online-resources and databases including DELWP Naturekit Map (DELWP 2022a) and the Victorian Biodiversity Atlas (VBA) (DELWP 2022b) were consulted to provide an assessment of flora and fauna values associated with the proposal area. An inspection was undertaken on 8 November 2022 by a qualified zoologist to identify the extent and suitability of potential habitat for Growling Grass Frog within the proposal area. Three nights of nocturnal Growling Grass Frog surveys were then undertaken within the proposal area and land adjacent, including the Merri Creek (referred to as the 'study area') by two experienced zoologists. A habitat assessment occurred in conjunction with targeted surveys. Surveys were conducted in accordance with approved methodology identified within relevant approved guidelines for detecting Growling Grass Frog, with surveys focusing on suitable habitat identified within the proposal area (DEWHA 2009).

Limitations

It is important to acknowledge that the number of documented records for the Growling Grass Frog within and around the proposal area is not necessarily a reflection of population size or density and does not offer information on how a species is making use of an area.

The Growling Grass Frog calling season typically occurs between October – December and the species is known to be active until late March. This behaviour may be impacted by above average rainfall and La Nina weather patterns.

Results

At the time of the assessment there were approximately 306 records of Growling Grass Frog within 10 kilometres of the proposal area (DELWP 2022b), with the most recent record dating to 2021. Habitat surveys within the proposal area revealed waterbodies of a similar quality (moderate), with emergent, floating and fringing aquatic vegetation. The use of dams as water sources for livestock has negatively impacted water quality with highly turbid water and pugging in the riparian zone. Merri Creek contained habitat of a higher quality with emergent and fringing vegetation present. Recent flooding events has negatively impacted sections of the creek with widespread damage to much of the vegetation, and banks of the river. Water quality was considered habitable for all surveyed bodies of water, with other frog species observed in all waterbodies within the proposal area (Table 3).

Targeted surveys for Growling Grass Frog were conducted in October-November of 2022. Growling Grass Frog were confirmed calling at the reference sites on the 9th and 28th of November, however were not detected within the proposal area or neighbouring Merri Creek during the surveys.

Legislative and Policy Implications

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

No Growling Grass Frog were recorded within the proposal area or at Merri Creek, with a population of species unlikely to be present within the proposal area due to a history of disturbance onsite. The proposal area does not contain areas of existing high or medium quality habitat, or areas required for habitat creation or enhancement. Therefore, a referral to the Commonwealth Environment Minister under the EPBC Act is not required for the species.

Flora and Fauna Guarantee Act 1988 (FFG Act - Victoria)

There were no Growling Grass Frog observed within the proposal area and no other threatened and/or protected species found under the FFG Act. Further, an FFG Act permit is not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

Conclusion

Targeted surveys were conducted at all waterbodies and inundated areas at 510 Summerhill Road, Wollert, Victoria. Despite targeted surveys being undertaken in accordance with the appropriate methodology, during optimal conditions, with Growling Grass Frog heard calling at local reference sites, Growling Grass Frog were not detected within the proposal area.

The absence of species within the proposal area may be due to aspects such as reduced water quality, increased pollution, numerous dispersal barriers between waterbodies and debris from recent flooding. However, the Merri Creek site should still be considered moderate to high quality habitat for the species based on aspects such as permanent hydrology of the site, good cover of fringing vegetation and the presence of terrestrial refugia.

The proposal area could potentially be used for dispersal activities, however, targeted survey results indicate low likelihood of an extant population occurring within the proposal area.

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1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was engaged by Cleanaway Operations Pty Ltd (Cleanaway) to undertake targeted surveys for Growling Grass Frog *Litoria rainformis* at 510 Summerhill Road, Wollert (the 'proposal area') (Figure 1). The proposal area has recently been purchased and a waste-to-energy (WtE) facility known as the Melbourne Energy and Resource Centre (MERC) is proposed to be developed on site.

The purpose of this assessment was to undertake targeted surveys for Growling Grass Frog to determine the presence or absence of this species, and where possible to ascertain its distribution, abundance and the extent of the species habitat within the proposal area. Three surveys were undertaken between October and November of 2022 under suitable conditions.

Although the proposal area is located within the Melbourne Strategic Assessment (MSA) area, and any development is subject to approval conditions in accordance with the Biodiversity Conservation Strategy (BCS) (DEPI 2013a), targeted surveys were undertaken as part of a precautionary approach due to the nature of the proposed development.

1.1.1 Biodiversity Conservation Strategy

The BCS and associated sub-regional species' strategies (DEPI 2013b) identify conservation outcomes and offset consolidation strategies for Victoria's native vegetation and Matters of National Environmental Significance (MNES) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), including mechanisms for how these outcomes will be delivered. The BCS covers Melbourne's four growth corridors within the expanded 2010 Urban Growth Boundary, as well as 28 precincts under the 2005 Urban Growth Boundary, except where a planning scheme amendment to introduce a Precinct Structure Plan has been approved prior to 1 March 2012.

To facilitate the planning approvals process for Melbourne's growth areas, the Victorian Government has introduced the 'Time Stamping' project (DSE 2009). This project captures, and 'time stamps' native vegetation information within Melbourne's urban growth areas. This data can then be used to calculate native vegetation offsets for future development, and to prepare Native Vegetation Precinct Plans (NVPP) for these areas.

Classes of actions associated with urban development in most of the land in Melbourne's growth corridors have been approved under Section 146B of the EPBC Act by the Commonwealth Environment Minister (Minister). The approval was made in relation to the western, north-western and northern growth corridors on 5 September 2013.

The proposal area is located within the northern growth corridor. The Commonwealth approvals are subject to conditions, which included the former Habitat Compensation Obligations (HCO) and the restriction of urban development in identified conservation areas.

1.2 Scope and Objectives

The objectives of the targeted surveys were to:

- Confirm the presence/absence of Growling Grass Frog within the proposal area and adjacent to the proposal area
- If Growling Grass Frog is detected:
 - Determine any potential indirect impacts on Growling Grass Frog, and its habitat at a National and State level associated with the proposed development
 - Provide advice on mitigation measures that may be undertaken to avoid and/or mitigate potential adverse impacts on Growling Grass Frog
 - Provide information in relation to any implications of Commonwealth and State environmental legislation and Government policy associated with future proposed development of the proposal area.

1.3 Proposal Area

The proposal area is located at 510 Summerhill Road, Wollert, and is approximately 26 kilometres north of Melbourne's CBD (Figure 1). The proposal area covers approximately 82 hectares in area and is bound by Summerhill Road to the south, and is surrounded by undeveloped pastureland to the north, east and west.

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management Tool (DELWP 2022b), the proposal area occurs within the Victorian Volcanic Plain bioregion, within the jurisdiction of the Yarra Valley Water Catchment Management Authority (CMA) and the City of Whittlesea municipality.

The proposal area falls within the Farming Zone (FZ), Rural Conservation Zone (RCZ) and includes Environmental Significance Overlay – Schedule 4 (ESO4). The proposal area also falls within Reach 2 for Conservation Area 34 of the Growling Grass Frog Masterplan, with the Merri Creek identified as containing important population and habitat for species persistence (DELWP 2017d). The proposal area is within the Northern Quarries Precinct Structure Plan (PSP) area within the MSA area and is subject to the assessment process and Environment Mitigation Levy under the Biodiversity Conservation Strategy (BCS) Melbourne's Growth Corridors and Sub-regional Species Strategy for the Growling Grass Frog (DEPI 2013b).

The site has recently been acquired by Cleanaway and is currently being used for agriculture (cattle grazing) and is heavily modified, with a residence and associated sheds in the central portion of the property. The site is predominantly low lying with several low rising stony knolls present throughout. Three large dams are located within the site and have previously inundated areas of the paddocks during past weather events.

Two dams are located along the southern boundary, one in the west and one in the east (Figure 2a). Another sits just north of this residence (Figure 2a). Approximately 500m of Merri Creek was also included in the survey effort to detect Growling Grass Frog (Figure 2b). This stretch of Merri Creek is located approximately 1 kilometre west of 510 Summerhill Road, Wollert. Two reference sites for Growling Grass Frog, located in Donnybrook, were visited prior to surveying the proposal area.

Vegetation within the site consists predominantly of exotic pasture grasses including Perennial ryegrass *Lolium perenne*, Toowoomba Canary-grass *Phalaris aquatica*, Chilean Needle Grass *Nassella neesiana* and Yorkshire Fog *Holcus lanatas*. Scattered native species are present within the site, including Kangaroo Grass *Themeda triandra*, Blue Devil *Eryngium ovinum* and Rush *Juncus* spp, primarily within stony knolls and low-lying inundated areas within the site. Patches of insavies weeds such as Artichoke thistle *Cynara cardunculus* and Gorse *Ulex europaeus* are also present across the site.

1.4 Growling Grass Frog (*Litoria raniformis*)

EPBC Act Conservation Status: Vulnerable

FFG Act Conservation Status: Vulnerable

Although formerly widely distributed across southern eastern Australia, including Tasmania (Hero *et al.* 1991), Growling Grass Frog (Plate 1) populations have declined markedly over the past two decades in many areas, particularly in south and central Victoria where some populations have experienced local extinction.



Plate 1. Growling Grass Frog *Litoria raniformis* (Ecology and Heritage Partners Pty Ltd)

Growling Grass Frog are largely associated with permanent or semi-permanent still or slow flowing waterbodies (i.e. streams, lagoons, farm dams and old quarry sites) (Hero *et al.* 1991; Barker *et al.* 1995; Cogger 1996). The species can also utilise temporarily inundated waterbodies during breeding season, to facilitate reproduction (Organ 2003). The presence of key habitat attributes, primarily an extensive cover of emergent, submerged and floating vegetation (Robertson *et al.* 2002, Organ 2004, 2005), and the spatial orientation of waterbodies (Robertson *et al.* 2002; Heard *et al.* 2004; Hamer and Organ 2008) are strong determinants of the species' presence. Terrestrial vegetation such as grasses and sedges, rocks and other ground debris around wetland perimeters also provide important foraging, dispersal and overwintering sites. Dispersal is thought to occur primarily along drainage lines or other low-lying areas between waterbodies, and unhindered movement between and within waterbodies is considered important for population viability.

2 METHODS

2.1 Desktop Assessment

The following information sources were reviewed prior to the targeted surveys for Growling Grass Frog, to provide an overview of the fauna values associated with the proposal area:

- The DELWP Native Vegetation Information Management (NVIM) Tool (DELWP 2022c) and NatureKit Map (DELWP 2022a) for:
 - Modelled data for location risk, native vegetation patches, scattered trees and habitat for rare or threatened species
 - The extent of historic and current Ecological Vegetation Classes (EVCs).
- The Victorian Biodiversity Atlas (VBA) for previously documented fauna records within the proposal locality (DELWP 2022b)
- Aerial photography of the proposal area.

2.2 Habitat Assessment

An assessment of the proposal area was undertaken by a qualified zoologist on 8 November 2022. The inspection sought to identify the extent and suitability of potential habitat for Growling Grass Frog present within the proposal area.

The following attributes of habitat quality for the Growling Grass Frog were recorded as part of the preliminary habitat assessment:

- The hydroperiod
- The location and extent of instream pools and off-stream waterbodies
- Habitat values of each waterbody including the type (dam, dam, wetland, creek, billabong, drain or ditch) flow (still, slow, rapid), depth and presence of terrestrial refuge sites (e.g. rocks, logs, debris)
- Aquatic vegetation cover (% cover of emergent, submergent and floating aquatic plants)
- Barriers to frog movement between waterbodies.

The hydroperiod (as defined in Heard et al., 2010) is the likelihood that an individual wetland will remain inundated over the course of a single breeding season, on an ordinal scale where:

- 0 = fills only in years with above average rainfall (intermittent)
- 1 = fills and dries out annually with average rainfall (ephemeral)
- 2 = dries out only during years of below average rainfall (semi-permanent)
- 3 = never dries out regardless of rainfall (permanent).

Habitat quality was defined with reference to the following criteria:

- **High quality habitat:** Areas that currently contain or have a high likelihood to contain important habitat attributes required by the species for breeding as well as foraging and dispersal (e.g. permanent or semi-permanent, extensive aquatic vegetation, high water quality, connected to other occupied sites, absence or low densities of predatory fish, high cover of terrestrial refuge sites).
- **Moderate quality habitat:** Habitat that supports one or more key habitat characteristics outlined above, but not all (for example site may be important for dispersal or foraging but not breeding).
- **Low quality habitat:** Sites unlikely to be used by Growling Grass Frog for breeding and a low likelihood for dispersal due to one or more of the following; absence or lack of aquatic vegetation, low water quality, presence of predatory fish, lack or low cover of terrestrial refuge sites.
- **No suitable habitat / degraded:** Areas consisting of open pasture have generally been cleared from previous land use activities and are highly modified areas dominated by exotic vegetation (i.e. open pasture) in poor condition and located some distance (e.g. over 200 metres) from wetland habitat.

2.3 Targeted Surveys

Nocturnal Growling Grass Frog surveys were undertaken across the proposal area along the edges of dams and inundated areas, as well as the edges of the Merri Creek by two experienced zoologists. A habitat assessment was undertaken in conjunction with targeted surveys on 8 November 2022. As such, the entirety of the site was surveyed.

Three nights of survey (8, 9 and 28 November 2022) took place during weather conditions considered suitable for Growling Grass Frog activity (Table 1). The surveys were conducted with reference to the prescribed methodology detailed in the following guidelines:

- Significant Impact Guidelines for the Vulnerable Growling Grass Frog (*Litoria raniformis*) EPBC Act Policy Statement 3.14 (DEWHA 2009d)
- Survey Guidelines for Australia's Threatened Frogs (DEWHA 2010).

Based on the survey protocols adhered to for this assessment, this would achieve a probability detection threshold of 0.99 as per the probability thresholds specified by DELWP (Heard *et al.*, 2010).

Each survey involved spotlighting surveys, call identification, and active searching for adults and metamorphs. More specifically:

- An initial period of five minutes was spent listening to any calling frogs (all species) in and adjacent to habitats
- Following the initial period, the advertisement call was broadcast to elicit a response from any adult males present
- Surveyors used "Olight" LED hand-held spotlights (up to 1020 lumens/8.4 volts) to locate any calling males on floating vegetation in the waterbody and around the perimeter of waterbodies
- Surveyors actively searched ground-level habitat including surface rocks, underneath hard litter, and at the base of vegetation for frogs

- Surveyors used the resulting information to determine the significance of any recorded Growling Grass Frog populations.

Prior to conducting each survey, nearby reference sites with confirmed Growling Grass Frog populations (both artificial dams) were visited to determine if weather conditions facilitated the species calling. In total, two local reference sites were visited prior to each survey. One reference site is located approximately 300m north of Donnybrook Railway Station along Springs Road, Donnybrook (37°32'19.4"S 144°58'16.9"E). The other reference site is approximately 500m west of the first reference site bordering Nature Promenade, Donnybrook (37°32'17.1"S 144°57'56.8"E). Growling Grass Frog were heard calling at the reference sites on the 9 and 28 November 2022, confirming the suitability of survey conditions at the time the surveys were undertaken across the proposal area.

2.4 Assessment Qualifications and Limitations

It is considered that the survey effort, timing and results presented meet the objectives of the survey guidelines.

The survey guidelines (DEWHA 2009) recommend surveying on nights with a daytime air temperature greater than 15 °C and night time air temperature greater than 12 °C. The 2022/23 season was heavily impacted by atypical wet and cold conditions throughout the Growling Grass Frog survey season, which limited days available to conduct surveys in optimal conditions. As such two surveys were conducted on consecutive days (8 and 9 November), to take advantage of suitable weather conditions.

The targeted survey efforts were undertaken within the Growling Grass Frog calling season (October – December), however Growling Grass Frog are known to be active until late March. Despite it being within the calling period, Growling Grass Frog have been observed via active searches late into the season (late February and early March) which may be due to above average rainfall and La Nina weather patterns.

All fieldwork was carried out under the appropriate licences, including a Research Permit (10009538) and Scientific Procedures Fieldwork Licence (SPFL 20005) issued by DELWP under the Victorian *Wildlife Act 1975*, and an Animal Research permit issued by the Wildlife and Small Institutions Animal Ethics Committee (05.17).

3 RESULTS

3.1 Desktop Assessment

The VBA contains 306 records of Growling Grass Frog within 10 kilometres of the proposal area (DELWP 2022b), with the most recent record dated in 2021.

3.2 Habitat Assessment

Habitats favoured by Growling Grass Frog include permanent or largely permanent still waterbodies with extensive emergent and submergent vegetation (DEPI 2013a; Hero *et al.* 1991; Robertson *et al.*, 2002). The species is also associated with swamps, irrigated areas, farm dams, former quarry holes and off-stream habitats (DSE 2012). Suitable terrestrial habitat for post-breeding dispersal and overwintering refuge sites are also required and can include dense ground-level vegetation, rocks, logs and other ground debris (Robertson *et al.*, 2002). This species can also utilise temporarily inundated waterbodies for breeding purposes providing they contain water over the breeding season (Organ 2003).

The proposal area is highly modified, containing exotic pasture grass and weeds throughout the property and surrounding the periphery of the dams. Emergent, fringing and submergent vegetation was present in varying levels around the dams (Plate 2). The Merri Creek was found to be substantially littered with debris due to recent flooding events, with noxious weeds surrounding the perimeter of creek (Plate 3).

The waterbodies within the proposal area were similar in habitat quality. They exist as medium sized open dams of moderate quality, with emergent, floating or fringing aquatic vegetation (Plate 2, 3 and 4). The emergent and fringing vegetation consists predominantly of Spiny rush *Juncus acutus*, Spike sedge *Eleocharis palustris* and Duck weed *Lemnoideae*. These dams persist entirely as a water source for agricultural and livestock purposes, which has negatively impacted habitat quality for Growling Grass Frog (Table 1). There is evidence that the dams were previously fouled by cattle due to highly turbid water, presence of litter and fetid smell. Throughout the banks of the waterbodies in the proposal area, there is evidence of pugging in the riparian zone and within the waterbody itself due to the presence of cattle. Pugging occurs when the soil is very wet, and the penetration of animal hooves remoulds the soil surface into a series of holes and mounds (Plate 5). This process can destroy soil structure by removing large soil pores and can kill plants or push propagules further down the soil profile.

Merri Creek was surveyed during the inspections (Plate 6) and contained higher quality habitat for Growling Grass Frog (Table 1), with emergent vegetation present and fringing vegetation in parts. This location had stretches of both fast-flowing rapids and slower flowing parts with still inlets. However, recent flooding has littered the Creek with floating debris and along the banks. This has resulted in widespread damage to much of the emergent and floating vegetation which once persisted (Plate 7).

Salinity levels is a key parameter to determine habitat quality for Growling Grass Frog. Salinity levels below 7.0 mS/cm are required for a body of water to be deemed habitable to Growling Grass Frog (Christy and Dickman 2002, SWIFT). Water quality was considered habitable for in all bodies of water within the proposal area and

within Merri Creek with salinity level readings for dams 1, 2, 3 and Merri Creek were 0.176 (mS/cm), 0.204 (mS/cm), 0.190 (mS/cm), 0.095 (mS/cm) respectively (Table 3).

While these salinity readings are well within the optimal range to support a Growling Grass Frog population, other factors (e.g. quality and amount of floating vegetation) suggest there is a low likelihood that the waterbodies surveyed currently support a breeding population of Growling Grass Frog.



Plate 2. Banks with some emergent vegetation (*Juncus acutus*) at dam 1 (Ecology and Heritage Partners Pty Ltd 08/11/2022).



Plate 3. Banks with some emergent vegetation (*Juncus acutus*) at dam 2 (Ecology and Heritage Partners Pty Ltd 08/11/2022).



Plate 4. Emergent vegetation (*Juncus acutus*) at dam 3 (Ecology and Heritage Partners Pty Ltd 08/11/2022).



Plate 5. Evidence of plugging from cattle movement around dam 1 (Ecology and Heritage Partners Pty Ltd 08/11/2022).



Plate 6. Section of Merri Creek with emergent vegetation (Ecology and Heritage Partners Pty Ltd 08/11/2022).



Plate 7. Floating debris at Merri Creek survey location (Ecology and Heritage Partners Pty Ltd 08/11/2022).

Table 1. Percentage cover of aquatic vegetation type at survey sites

Aquatic Vegetation Type	Dam Number			Merri Creek	
	1	2	3	North	South
Emergent (%)	5	5	5	40	5
Floating (%)	0	10	0	0	0
Open water (%)	95	90	95	30	90
Fringing aquatic vegetation (%)	10	5	15	20	5

Table 2. Habitat features at survey sites

Habitat Features	Dam Number			Merri Creek	
	1	2	3	North	South
Water depth	High	High	High	High	High
Hydrology	Permanent	Permanent	Permanent	Flowing	Flowing
Water flow	Still	Still	Still	Slow	Slow-rapid
Litter	Present	Absent	Absent	Absent	Present
Introduced fauna species	Not observed	Not observed	Not observed	Not observed	Not observed

Table 3. Water quality results for all waterbodies within proposal area and within Merri Creek

Water Quality Measurements	Dam Number			Merri Creek
	1	2	3	
Temperature (°C)	23.10	22.24	20.88	19.53
Acidity (pH)	6.84	6.11	7.61	8.82
Salinity (mS/cm)	0.176	0.204	0.190	0.095
Dissolved oxygen (ms/LDO)	6.26	4.80	7.61	17.01
Total dissolved solids (g/L)	0.114	0.132	0.124	0.049

3.3 Targeted Surveys

Targeted surveys for Growling Grass Frog were undertaken in accordance with survey guidelines with the weather conditions being conducive for frogs to be active. Despite surveys being undertaken during the active calling period for Growling Grass Frog, extra consideration was given to the survey effort, timing and methods. Active searches were employed to determine the presence/absence of the species.

Growling Grass Frog was not detected within the proposal area during the surveys. Several other common native frog species were heard calling within the proposal area during the targeted surveys, including Spotted Marsh Frog *Limnodynastes tasmaniensis*, Striped Marsh Frog *Limnodynastes peronii*, Southern Brown Tree Frog *Litoria ewingii*, Eastern Common Froglet *Crinia signifera* and Eastern Banjo Frog *Limnodynastes dumerilii* (Table 3).

Table 3. Summary of Growling Grass Frog survey results.

Survey Date	Weather conditions						Species
	Survey Temp (°C)	Wind direction	Wind speed (km/hr)	Relative Humidity (%)	Cloud Cover (%)	Rain	
08/11/2022	16.7	NE	9.3	71	5	0	Spotted Marsh Frog; Eastern Banjo Frog; Striped Marsh Frog; Eastern Common Froglet; Southern Brown Tree Frog.
09/11/2022	19	N	20.4	65	5	0	Spotted Marsh Frog; Eastern Banjo Frog; Striped Marsh Frog; Eastern Common Froglet.
28/11/2022	15.5	E	9.2	72	0	0	Spotted Marsh Frog; Striped Marsh Frog; Eastern Common Froglet; Eastern Banjo Frog

4 LEGISLATIVE AND POLICY IMPLICATIONS

4.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions (i.e. project, development, undertaking, activity, or series of activities) that are likely to have a significant impact on matters of national environmental significance (MNES), or on Commonwealth land. An action, unless otherwise exempt, requires approval from the Commonwealth Environment Minister if it is considered likely to have an impact on any MNES.

4.1.1 Implications

Under condition 2 of the Commonwealth Government's approvals for urban development in Melbourne's Growth Corridors, actions resulting in a net loss of 'habitat' for MNES (i.e. Growling Grass Frog) require the agreement of the Commonwealth Minister for the Environment. Targeted surveys were completed for Growling Grass Frog, however, despite systematic survey efforts no individuals were recorded, and no other significant fauna were detected. The proposal area does not contain areas of existing high or medium quality habitat, or areas required for habitat creation or enhancement. Therefore, a referral to the Commonwealth Environment Minister under the *EPBC Act* is not required for the species.

4.2 *Flora and Fauna Guarantee Act 1988* (Victoria)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage lines and public reserves). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

Although the proposal area is privately owned and therefore a permit to remove protected flora species, listed vegetation communities and listed fish species is not required, the Responsible Authority and/or the Department of Energy, Environment and Climate Action (DEECA) take into consideration the presence of FFG Act matters (e.g. species, ecological communities and threatening processes) as part of the strategic and statutory assessment and approval process (e.g. rezoning and planning permit application). Despite targeted surveys being undertaken during an appropriate survey period and conditions, Growling Grass Frog was not recorded within the proposal area. Consequently, there are no implications under the FFG Act relating to these species for any future development of the proposal area.

5 CONCLUSION

Targeted surveys were conducted at all waterbodies and inundated areas at 510 Summerhill Road, Wollert. A total of three dams were surveyed, and most of the proposal area was traversed on foot to account for any areas of inundation. Additional survey effort was undertaken at a nearby stretch of Merri Creek which resided west of the proposal area.

Targeted Growling Grass Frog surveys were undertaken on 8, 9 and 28 November 2022 at 510 Summerhill Road, Wollert. Despite the targeted surveys being undertaken according to the appropriate methodology (see Section 2), during optimal conditions when Growling Grass Frog was heard calling at local reference sites, Growling Grass Frog was not recorded within the proposal area. The absence of the species at these dams may be due to several factors including;

- Reduced water quality associated with water fouling by cattle or livestock, or increased salinity
- Increased pollution and pesticide/herbicide use
- Barriers to movement between waterbodies, including access to Merri Creek
- Debris from recent flooding driven habitat destruction.

Whilst the targeted surveys did not record any Growling Grass Frog at the Merri Creek site, this area is still considered to provide moderate to high quality habitat for the species based on the following characteristics:

- The permanent hydrology of the sites
- The good cover of fringing vegetation
- The presence of terrestrial refuge sites (i.e. logs, rocks, debris, vegetation etc).

The dams within the proposal area did not display these characteristics and were characterised as having low to medium quality habitat.

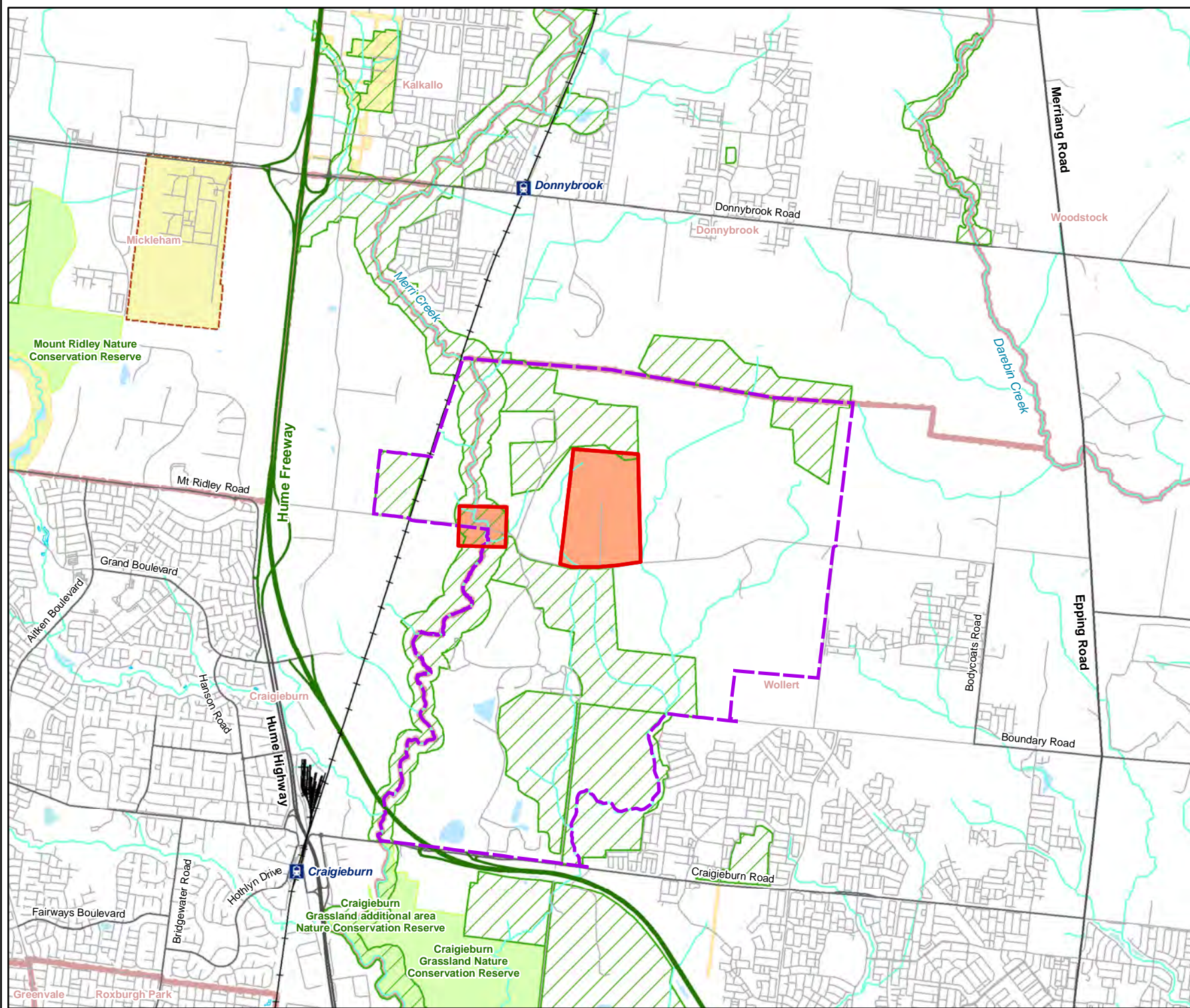
The proposal area could potentially be used for dispersal activities; however, the results of these targeted surveys indicate there is a low likelihood that an extant population of Growling Grass Frog currently occurs within the proposal area.

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FIGURES

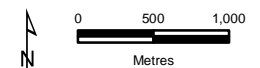


Legend

- Proposal Area
- Northern Quarries PSP
- Railway
- Freeway
- Major Road
- Collector Road
- Minor Road
- Minor Watercourse
- Permanent Waterbody
- Wetland/Swamp
- Parks and Reserves
- BCS Conservation Area
- Commonwealth Land
- Crown Land
- Localities



Figure 1
Location of the proposal area
Targeted Growling Grass Frog surveys for 510 Summerhill Road, Wollert



Map Scale: 1:50,000 @ A4
 Coordinate System: GDA2020 MGA Zone 55



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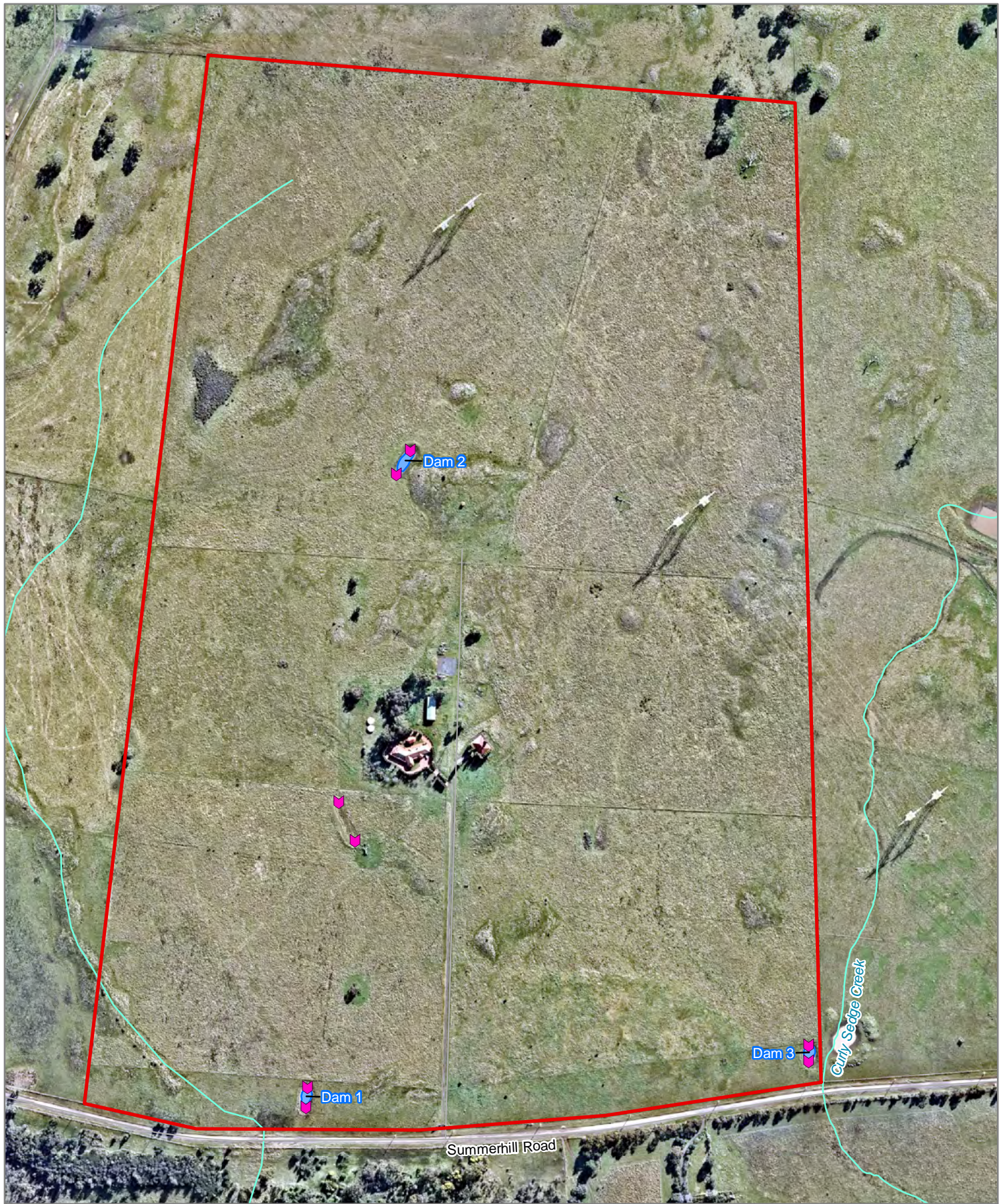
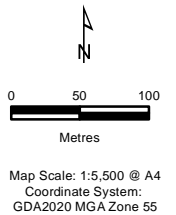


Figure 2a
Growing Grass Frog
survey results
Growing Grass Frog
Targeted Survey - 510
Summerhill Road, Wollert

- Legend**
- Proposal Area
 - Dam
 - Minor Watercourse
- Survey locations**
- ▶ Call playback



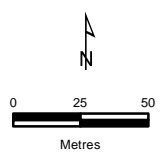
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Figure 2b
Growling Grass Frog
survey results
Growling Grass Frog
Targeted Survey - Merri
Creek, Wollert

- Legend**
- Study Area
 - Minor Watercourse
- Survey locations**
- ♣ Call playback



Map Scale: 1:2,800 @ A4
 Coordinate System:
 GDA2020 MGA Zone 55

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- Legend**
- Proposal Area
 - Northern Quarries PSP
 - 10km buffer
 - Growing Grass Frog records (VBA 2022)

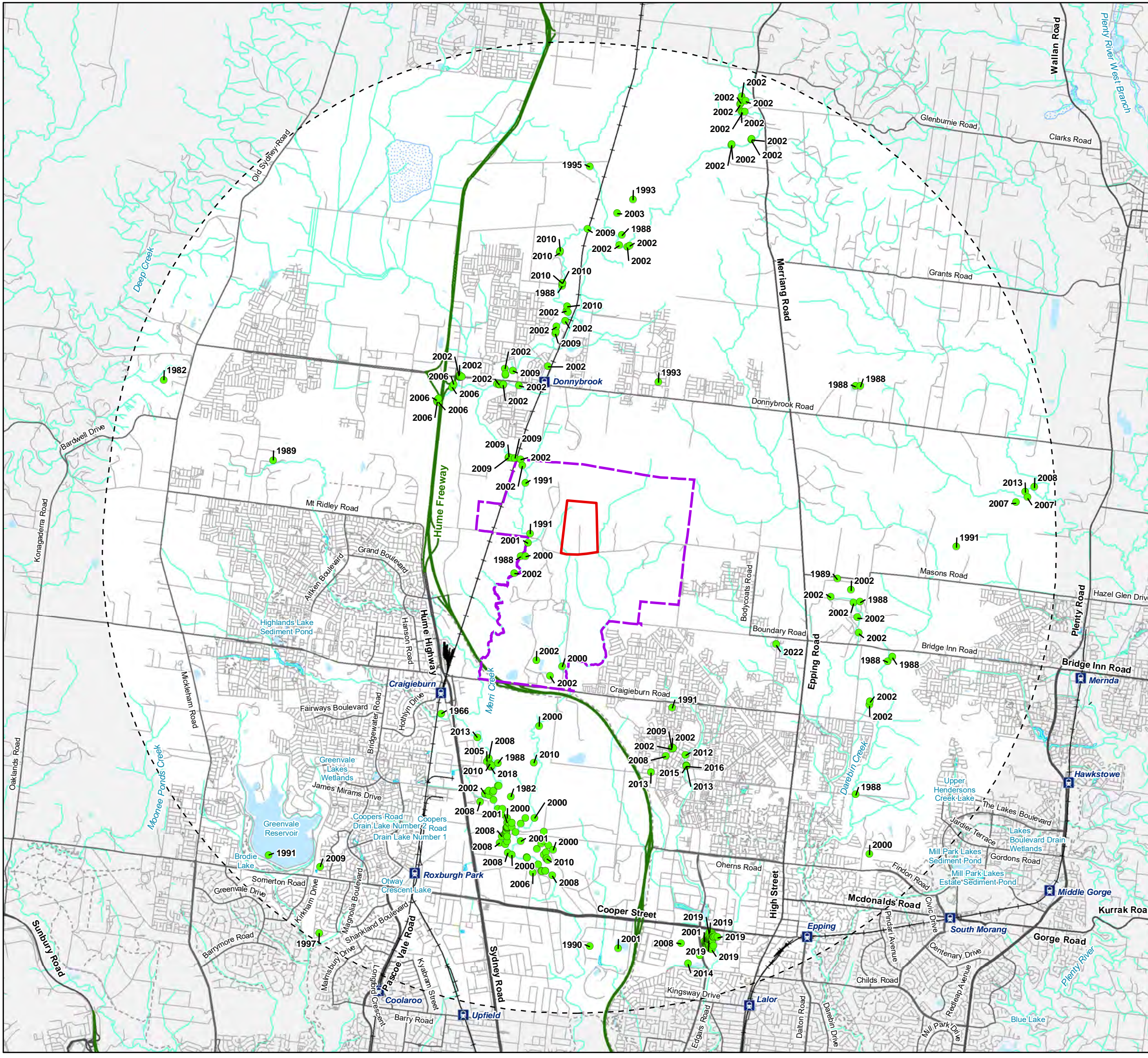
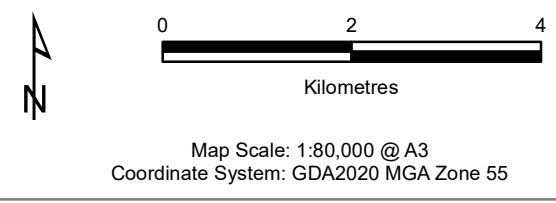


Figure 3
Previously documented Growing Grass Frog records within 10km of the proposal area
Growing Grass Frog Targeted Survey - 510 Summerhill Road, Wollert



Victorian Biodiversity Atlas (VBA) // Sourced from: 'VBA_FLORA25', 'VBA_FLORA100', 'VBA_FAUNA25' and 'VBA_FAUNA100'. Updated November 2022 © The State of Victoria, Department of Energy, Environment and Climate Action. Records prior to 1949 not shown.

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Final Report

Targeted Surveys for Matted Flax-lily *Dianella amoena*, 510 Summerhill Road, Wollert, Victoria

Prepared for

Cleanaway Operations Pty Ltd

March 2023



Ecology and Heritage Partners Pty Ltd

DOCUMENT CONTROL

Assessment	Targeted Surveys for Matted Flax-lily
Address	510 Summerhill Road, Wollert, Victoria
Project number	16414
Project Manager	Callum Luke (Senior Zoologist)
Report Author	Elliot Day (Botanist)
Report Reviewer	Jeremy Coyne (Team Leader – Natural Heritage / Zoologist), Claire Ranyard (Senior Botanist)
Other EHP staff	Matthew Boyd (Ecologist), Braden Callaway (Field Technician)
Mapping	Monique Elsley (GIS Coordinator)
File name	16414_EHP_510SummerhillRoad_Wollert_MFL_Final_22032023
Client	Cleanaway Operations Pty Ltd
Bioregion	Victorian Volcanic Plain
CMA	Yarra Valley Water
Council	City of Whittlesea

Report versions	Comments	Comments updated by	Date submitted
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Acknowledgements

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EXECUTIVE SUMMARY

Introduction

Ecology and Heritage Partners Pty Ltd was engaged by Cleanaway Operations Pty Ltd (Cleanaway) to undertake targeted Matted Flax-lily *Dianella amoena* surveys at 510 Summerhill Road, Wollert, Victoria (the 'proposal area'). The surveys were undertaken to determine the presence or absence of Matted Flax-lily and address any implications for the construction of the proposed waste-to-energy (WtE) facility known as the Melbourne Energy and Resource Centre (MERC) under Commonwealth and State environmental legislation.

Methods

Relevant resources such as the DELWP Native Vegetation Information Management (NVIM) Tool (DELWP 2022a) and NatureKit Map (DELWP 2022b) were reviewed to provide an overview of flora values associated with the proposal area. Habitat assessments were then undertaken by two qualified ecologists to determine key areas of potential high-quality habitat for Matted Flax-lily within the proposal area. Targeted flora surveys were undertaken during the known flowering period of the species (November-January). Areas of potential habitat were walked by ecologists familiar with recognising the species and any Matted Flax-lily would have been recorded by GPS and the number of plants per land parcel were totalled if they had been found on the property.

Limitations

It is important to acknowledge that due to the size of the proposal area, key habitat areas had to be prioritised for surveying with some surveying conducted between identified patches of high-quality habitat. At the time of assessment, portions of the site were inundated with water. Livestock also were found actively grazing within the site during the time of assessment.

Results

At the time of the assessment there were approximately three documented records of Matted Flax-lily were recorded in the Victorian Biodiversity Atlas (VBA) within a 1-kilometre radius of the proposal area, with most recent records occurring in January 2022 (DELWP 2022c). Conditions within the site were generally consistent with the habitat preferences of the species with stony rises containing higher quality vegetation including native herbs and grasses, however large portions of the site were covered by exotic grasses. No Matted Flax-lily was detected within the proposal area, though surveys were conducted in optimal conditions and at a time when Matted Flax-lily is known to be flowering. The history of disturbance at the site is likely to have resulted in degradation of existing Matted Flax-lily habitat.

Legislative and Policy Implications

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act, 1999)

No Matted Flax-lily were recorded within the proposal area, with a population of species unlikely to be present within the proposal area due to a history of disturbance onsite. It is unlikely the proposed development will

impact Matted Flax-lily species. Therefore, a referral to the Commonwealth Environment Minister under the EPBC Act is not required for the species.

Flora and Fauna Guarantee Act 1988 (FFG Act - Victoria)

There were no Matted Flax-lily observed within the proposal area and no other threatened and/or protected species found under the FFG Act. Further, an FFG Act permit is not required for removal of protected flora species or communities on private land.

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1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was engaged by Cleanaway Operations Pty Ltd (Cleanaway) to undertake targeted surveys for Matted Flax-lily *Dianella amoena* at 510 Summerhill Road, Wollert (proposal area) (Figure 1). The surveys were undertaken to address any implications for the construction of the proposed waste-to-energy (WtE) facility known as the Melbourne Energy and Resource Centre (MERC) under Commonwealth and State environmental legislation.

Targeted surveys for Matted Flax-lily were recommended to be undertaken by City of Whittlesea prior to the completion of the ecological due diligence for this site (Ecology and Heritage Partners 2022).

The purpose of this assessment was to undertake targeted surveys for Matted Flax-lily to determine the presence or absence of this species, and where possible to ascertain its distribution and abundance and the extent of the species habitat within the proposal area.

The proposal area falls within the Northern Quarries Precinct Structure Plan (PSP) area within the Melbourne Strategic Assessment (MSA) and is subject to the assessment process and Environment Mitigation Levy under the Biodiversity Conservation Strategy. This report addresses any implications under Commonwealth and State environmental legislation and provides information on mitigation measures associated with the proposed development that would have been required had Matted Flax-lily been identified within the proposal area.

1.1.1 Biodiversity Conservation Strategy

The BCS (DEPI 2013) identifies conservation outcomes and offset consolidation strategies for Victoria's native vegetation and Matters of National Environmental Significance (MNES) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), including mechanisms for how these outcomes will be delivered. The BCS covers Melbourne's four growth corridors within the expanded 2010 Urban Growth Boundary, as well as 28 precincts under the 2005 Urban Growth Boundary, except where a planning scheme amendment to introduce a Precinct Structure Plan has been approved prior to 1 March 2012.

To facilitate the planning approvals process for Melbourne's growth areas, the Victorian Government has introduced the 'Time Stamping' project. This project captures, and 'time stamps' native vegetation information within Melbourne's urban growth areas. This data can then be used to calculate native vegetation offsets for future development, and to prepare Native Vegetation Precinct Plans (NVPP) for these areas.

Classes of actions associated with urban development in most of the land in Melbourne's growth corridors have been approved under Section 146B of the EPBC Act by the Commonwealth Environment Minister (Minister). The approval was made in relation to the western, north-western and northern growth corridors on 5 September 2013.

The proposal area is located within the northern growth corridor. The Commonwealth approvals are subject to conditions, which included the former Habitat Compensation Obligations (HCO) and the restriction of urban development in identified conservation areas.

1.2 Scope and Objectives

The objectives of the targeted surveys were to:

- Confirm the presence/absence of Matted Flax-lily within the proposal area.
- If Matted Flax-lily is detected:
 - Determine any potential indirect impacts Matted Flax-lily, and its habitat at a National and State level associated with the proposed development
 - Provide advice on mitigation measures that may be undertaken to avoid and/or mitigate potential adverse impacts on Matted Flax-lily
 - Provide information in relation to any implications of Commonwealth and State environmental legislation and Government policy associated with future proposed development of the proposal area.

1.3 Proposal area

The proposal area is located at 510 Summerhill Road, Wollert, and is approximately 26 kilometres north of Melbourne's CBD (Figure 1). The proposal area covers approximately 82 hectares in area and is bound by Summerhill Road to the south, and is surrounded by undeveloped pastureland to the north, east and west.

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management Tool (DELWP 2022b), the proposal area occurs within the Victorian Volcanic Plain bioregion, within the jurisdiction of the Yarra Valley Water Catchment Management Authority (CMA) and the City of Whittlesea municipality.

The proposal area falls within the Farming Zone (FZ), Rural Conservation Zone (RCZ) and includes Environmental Significance Overlay – Schedule 4 (ESO4). The proposal area is within the Northern Quarries Precinct Structure Plan (PSP) area within the MSA area and is subject to the assessment process and Environment Mitigation Levy under the Biodiversity Conservation Strategy (BCS) Melbourne's Growth Corridors (DEPI 2013).

The site has recently been acquired by Cleanaway and is currently being used for agriculture (cattle grazing) and is heavily modified, with a residence and associated sheds in the central portion of the property. The site is predominantly low lying with several low rising stony knolls present throughout. Three large dams are located within the site and have previously inundated areas of the paddocks during past weather events.

Vegetation within the site consists predominantly of exotic pasture grasses (Plate 1; Plate 2; Plate 3) including Perennial ryegrass *Lolium perenne*, Toowoomba Canary-grass *Phalaris aquatica*, Chilean Needle Grass *Nassella neesiana* and Yorkshire Fog *Holcus lanatas*. Scattered native species are present within the site, including Kangaroo Grass *Themeda triandra* (Plate 4), Blue Devil *Eryngium ovinum* and Rush *Juncus* spp, primarily within stony knolls and low-lying inundated areas within the site. Patches of insavies weeds such as Artichoke thistle *Cynara cardunculus* and Gorse *Ulex europaeus* are also present across the site.



Plate 1: Stony knoll and grass cover within the site (Ecology and Heritage Partners Pty Ltd 08/11/2022)



Plate 2: View from the top of a stony knoll showing typical paddock within the site (Ecology and Heritage Partners Pty Ltd 08/11/2022)



Plate 3: Stony knoll and surrounding pasture grass (Ecology and Heritage Partners Pty Ltd 08/11/2022)



Plate 4: Kangaroo grass on stony knoll within the site (Ecology and Heritage Partners Pty Ltd 08/11/2022)

1.4 Matted Flax-lily *Dianella amoena*

EPBC Act Conservation Status: Endangered

FFG Act Conservation Status: Critically Endangered

Matted Flax-lily (Plate 5) is a perennial, tufted, mat-forming lily which can form patches of up to five metres wide. The plant can grow vegetatively, through sending underground rhizomatous roots, which rise above the ground with a tiller of several leaves, spread over a distance from the parent plant.

The leaves of Matted Flax-lily are generally glaucous, blue in colour but may be red at the base and usually but not always having small hooks (teeth) along the margins and midrib. The leaves taper to approximately 45 centimetres long depending on site and climatic conditions and are born on tillers with the leaves arranged



Plate 5. Matted Flax-lily (*Dianella amoena*) Ecology and Heritage Partners Pty Ltd.

alternatively, with several leaves per tiller. Matted Flax-lily generally flowers between November and February but may continue flowering with summer and autumn rains. It has pale blue to violet flowers with bright yellow stamens and berries, which are generally purple in colour. The flowers and berries are born on culms extending to typically 30 cm in height but this may alter depending on location and season (DSE 2010).

Matted Flax-lily generally occurs in grassland and grassy woodland habitats, on well drained to seasonally wet fertile sandy loams to heavy cracking clay soils derived from Silurian or Tertiary sediments, or from volcanic geology (DSE 2010).

Due to the history of agricultural land use within the property, targeted surveys primarily covered fenced vegetation patches and stony knolls, which were identified as key areas of potential Matted Flax-lily habitat (Section 2.3). Eighteen key areas were identified during the pre-survey habitat assessment (Figure 2). A reference site located in Epping was visited prior to surveying the proposal area where the species was seen flowering.

2 METHODS

2.1 Nomenclature

Common and scientific names of vascular plants follow the Victorian Biodiversity Atlas (VBA) (DELWP 2022c). Vegetation community names follow the Department of Energy, Environment and Climate Action (DEECA) (formerly the Department of Environment, Land, Water and Planning) Ecological Vegetation Classes (EVC) benchmarks (DEECA 2023). The names of aquatic and terrestrial vertebrate and invertebrate fauna follow the VBA (DEPI 2022).

2.2 Desktop Assessment

The following information sources were reviewed prior to the targeted surveys for Matted Flax-lily, to provide an overview of the flora values associated with the proposal area:

- The DELWP Native Vegetation Information Management (NVIM) Tool (DELWP 2022a) and NatureKit Map (DELWP 2022b) for:
 - The extent of historic and current EVCs.
- The VBA for previously documented flora records within the project locality (DELWP 2022c)
- The National Recovery Plan for the Matted Flax-lily *Dianella amoena* for species description and habitat specifications (DSE 2010)
- Aerial photography of the proposal area
- Previous ecological assessments for the proposal area, including:
 - Ecological Due Diligence for 510 Summerhill Road, Wollert, Victoria (Ecology and Heritage Partners 2022).

2.3 Habitat Assessment

An assessment of the proposal area was undertaken by two qualified ecologists on 8 November 2022. The entire site was walked in 100 metres transects with the intention of determining potential habitat for further detailed surveying. The inspection sought to identify the extent and suitability of potential habitat for Matted Flax-lily present within the proposal area, and to identify key areas of high quality habitat to prioritise within the site.

The following attributes of habitat quality for the Matted Flax-lily were recorded as part of the preliminary habitat assessment:

- Areas protected from disturbance by livestock and vehicles
- Areas of mapped native vegetation
- Areas with low high-threat weed cover

- Stony knolls.

Habitat quality was defined with reference to the following criteria:

- **High quality habitat:** Areas that currently contain important habitat attributes required by the species for undisturbed growth (e.g. protection from livestock grazing, areas of remnant native vegetation, stony knolls, soils and habitat quality consistent with DSE (2010))
- **Moderate quality habitat:** Habitat that supports one or more key habitat characteristics outlined above, but not all
- **Low quality habitat:** Habitat unlikely to support Matted Flax-lily due to one or more of the following; lack of native vegetation, presence of high-threat weeds, heavy grazing by livestock, low vegetation cover
- **No suitable habitat / degraded:** Highly modified areas dominated by high-threat weeds, or areas with no vegetation cover.

2.4 Targeted Surveys for Matted Flax-lily

Targeted flora surveys were undertaken on 25 November 2022 by two experienced botanists, to coincide with the known flowering period of the species (November to February). A reference site known to support a population of the species located at Epping Recreation Reserve, Epping, was used to examine the diagnostic features of the species prior to undertaking surveys within the proposal area, and to confirm active flowering.

Matted Flax-lily surveys were undertaken using the following standards as outlined in the *Biodiversity Precinct Structure Planning Kit* (DSE 2010):

- Targeted surveys were conducted by people familiar with recognising the species
- The survey effort was directed to all potential habitat areas (i.e. remnant grassland and the degraded grassy areas surrounding the remnant grassland)
- Transects were walked at five-metre grid intervals through high quality potential habitat
- Where found, locations of Matted Flax-lily were recorded by GPS (accuracy of +/- three metres) and the number of plants per land parcel was totalled.

2.5 Assessment Qualifications and Limitations

Due to the size of the proposal area, key habitat areas were prioritised for surveying (Section 2.3, Figure 2). The proposal area was walked on foot and surveying was conducted in between identified patches of high-quality habitat. At the time of assessment, portions of the site were inundated, particularly in the south of the site and around the three dams (Plate 6). Livestock were actively grazing within the site at the time of assessment (Plate 7) and there was significant soil disturbance in low lying areas and around waterbodies.

Data collected during the field assessment, and information obtained from relevant sources (e.g. biological databases and relevant literature) are considered adequate to provide an accurate assessment of the presence/absence of Matted Flax-lily within the proposal area.



Plate 6: Inundated patch within the site



Plate 7: Livestock grazing at base of a stony knoll

3 RESULTS

3.1 Desktop Assessment

According to NatureKit (DELWP 2022b) mapped vegetation within the site consists of small patches of Plains Grassland (EVC 132) and Plains Grassy Wetland (EVC 125), with the majority of vegetation within the site considered to be exotic pasture grass. Three Matted Flax-lily specimens are recorded in the VBA within one kilometre of the site, with the most recent record occurring in January 2022. The nearest significant population of Matted Flax-lily occurs at Kalkallo Common Grassland and Cemetery, approximately five kilometres north west of the site (Figure 3). Conditions within the site are generally consistent with the habitat preferences of the species, as a grassland with seasonally wet soils (DSE 2010). Stony rises are present throughout the site and were expected to provide greater native species diversity and potential habitat for Matted Flax-lily due to protection provided from trampling and grazing among the rocks and lack of suitability for cropping (Bull 2018) and other potential historic disturbance events.

3.2 Habitat Assessment

A habitat assessment of the proposal area was undertaken by two qualified ecologists on 8 November 2022. The site was walked in 100 metres transects, with particular attention given to identified stony rises. Stony rises throughout the site were found to contain comparatively higher quality vegetation, including native herbs and grasses. Large portions of the site consisted of a dense cover of exotic grasses, predominantly Toowoomba Canary Grass and Perennial Rye Grass; native grasses were not observed across the majority of the site during the habitat assessment. Low lying areas within the site were inundated and showed moderate trampling damage from livestock.

The eighteen stony knolls and their surrounds were determined to contain the highest quality habitat for Matted Flax-lily in the habitat assessment based on the presence of remnant native vegetation, reduced grazing impact from livestock, and low cover of exotic grasses.

3.3 Targeted Surveys

In accordance with the recommendation from the City of Whittlesea, targeted surveys were conducted across suitable habitat at 510 Summerhill Road, Victoria on 25 of November 2022. A total of 18 key habitat areas were surveyed, and most of the proposal area was traversed on foot to account for any areas of remnant native vegetation or areas of refugia not mapped in the initial site assessment.

No Matted Flax-lily were detected within the proposal area, despite systematic surveys across the entire site during optimal survey conditions and at a time when Matted Flax-lily is known to be flowering and when detection is highest.

Most of the proposal area has been modified and disturbed as a result of historic and current land uses. These disturbances include grazing by cattle and sheep and the presence of introduced fauna species including European Rabbit *Oryctolagus cuniculus*.

The absence of the species within the proposal area may be due to several factors including:

- Consistent grazing by livestock
- Sowing of exotic pasture grass species
- Encroachment by high-threat weeds
- Reduction in population in surrounding landscape due to development resulting in a lack of dispersal and recruitment
- Pesticide/herbicide use.

These factors are consistent with Matted Flax-lily decline across the state, as described by Carter (DSE 2010) in the Matted Flax-lily Recovery Plan.

4 LEGISLATIVE AND POLICY IMPLICATIONS

4.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions (i.e. project, development, undertaking, activity, or series of activities) that are likely to have a significant impact on matters of national environmental significance (MNES), or on Commonwealth land. An action, unless otherwise exempt, requires approval from the Commonwealth Environment Minister if it is considered likely to have an impact on any MNES.

4.1.1 Implications

Targeted surveys were completed for Matted Flax-lily, however despite systematic survey efforts no individuals were recorded. Therefore, a referral to the Commonwealth Environment Minister under the *EPBC Act* is not required for the species.

4.2 *Flora and Fauna Guarantee Act 1988* (Victoria)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage lines and public reserves). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

Although the proposal area is privately owned and therefore a permit to remove protected flora species, listed vegetation communities and listed fish species is not required, the Responsible Authority and/or the Department of Energy, Environment and Climate Action (DEECA) take into consideration the presence of FFG Act matters (e.g. species, ecological communities and threatening processes) as part of the strategic and statutory assessment and approval process (e.g. rezoning and planning permit application). Despite targeted surveys being undertaken during an appropriate survey period and conditions, Matted Flax-lily was not recorded within the proposal area. Consequently, there are no implications under the FFG Act relating to these species for any future development of the proposal area.

5 CONCLUSION

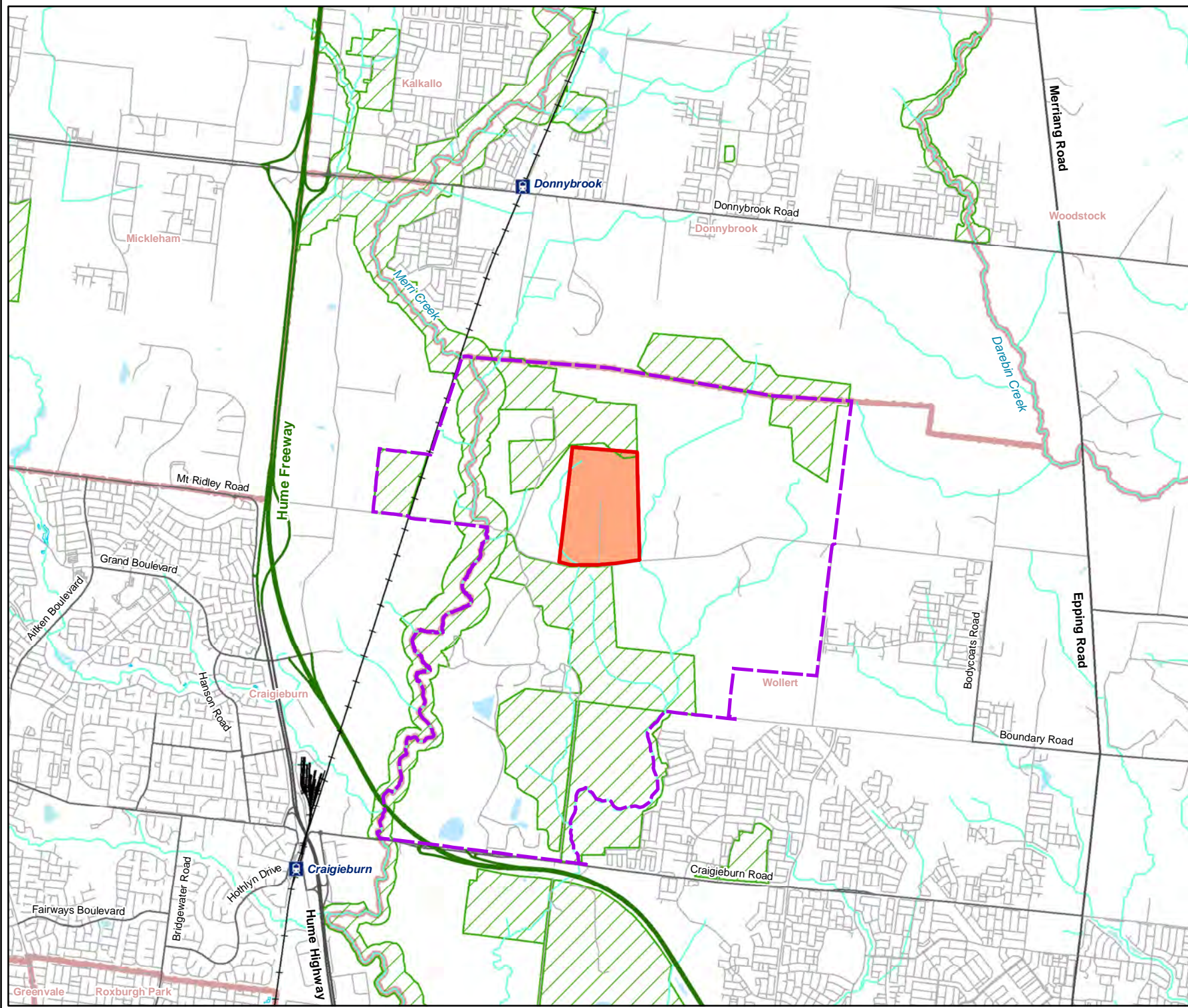
Targeted flora surveys were conducted at 510 Summerhill Road, Wollert on 25 November 2022 to coincide with the known flowering period for Matted Flax-lily. Surveys on areas of potential habitat for the species, primarily remnant grassland and the degraded grassy areas surrounding the remnant grassland.

Despite targeted surveys been undertaken during optimal survey conditions when the species was known to be flowering at a nearby reference site, the species was not detected within the proposal area. As such, based on available information a resident population does not exist within the proposal area and the species will not be impacted by the proposed development of the proposal area.

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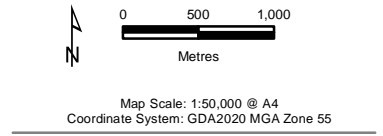
FIGURES



- Legend**
- Proposal Area
 - Northern Quarries PSP
 - Railway
 - Freeway
 - Major Road
 - Collector Road
 - Minor Road
 - Minor Watercourse
 - Permanent Waterbody
 - Wetland/Swamp
 - BCS Conservation Area
 - Localities



Figure 1
Location of the proposal area
Targeted Matted Flax-lily surveys for 510 Summerhill Road, Wollert



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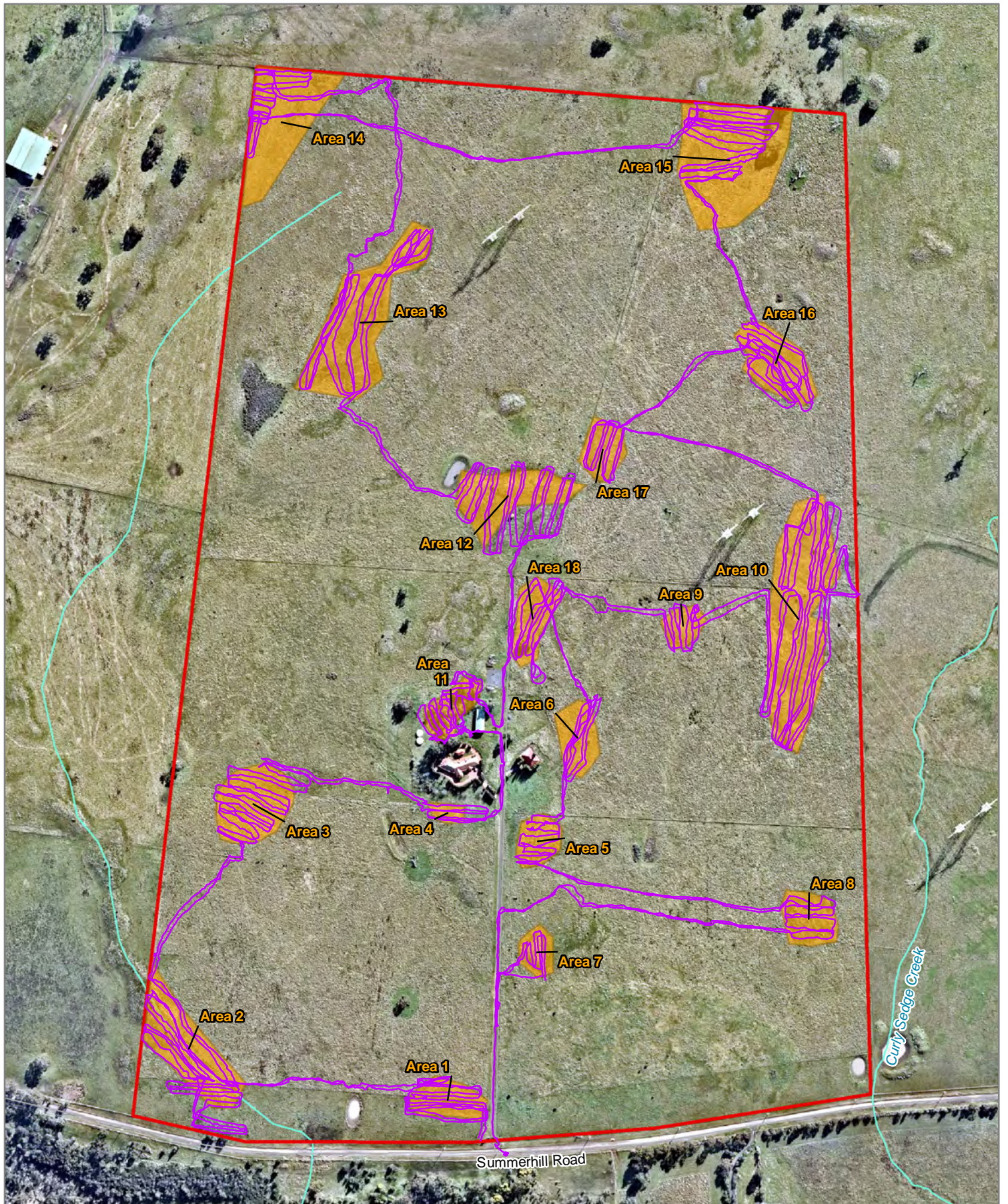
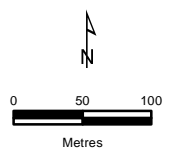


Figure 2
Survey results
 Targeted Matted Flax-lily surveys for 510 Summerhill Road, Wollert

- Legend**
- Proposal Area
 - Survey area
 - Minor Watercourse
 - Matted Flax-lily survey transects (survey date: 25/11/2022)



Map Scale: 1:5,500 @ A4
 Coordinate System: GDA2020 MGA Zone 55

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- Legend**
- Proposal Area
 - Northern Quarries PSP
 - 10km buffer
 - Matted Flax-lily records (VBA 2022)

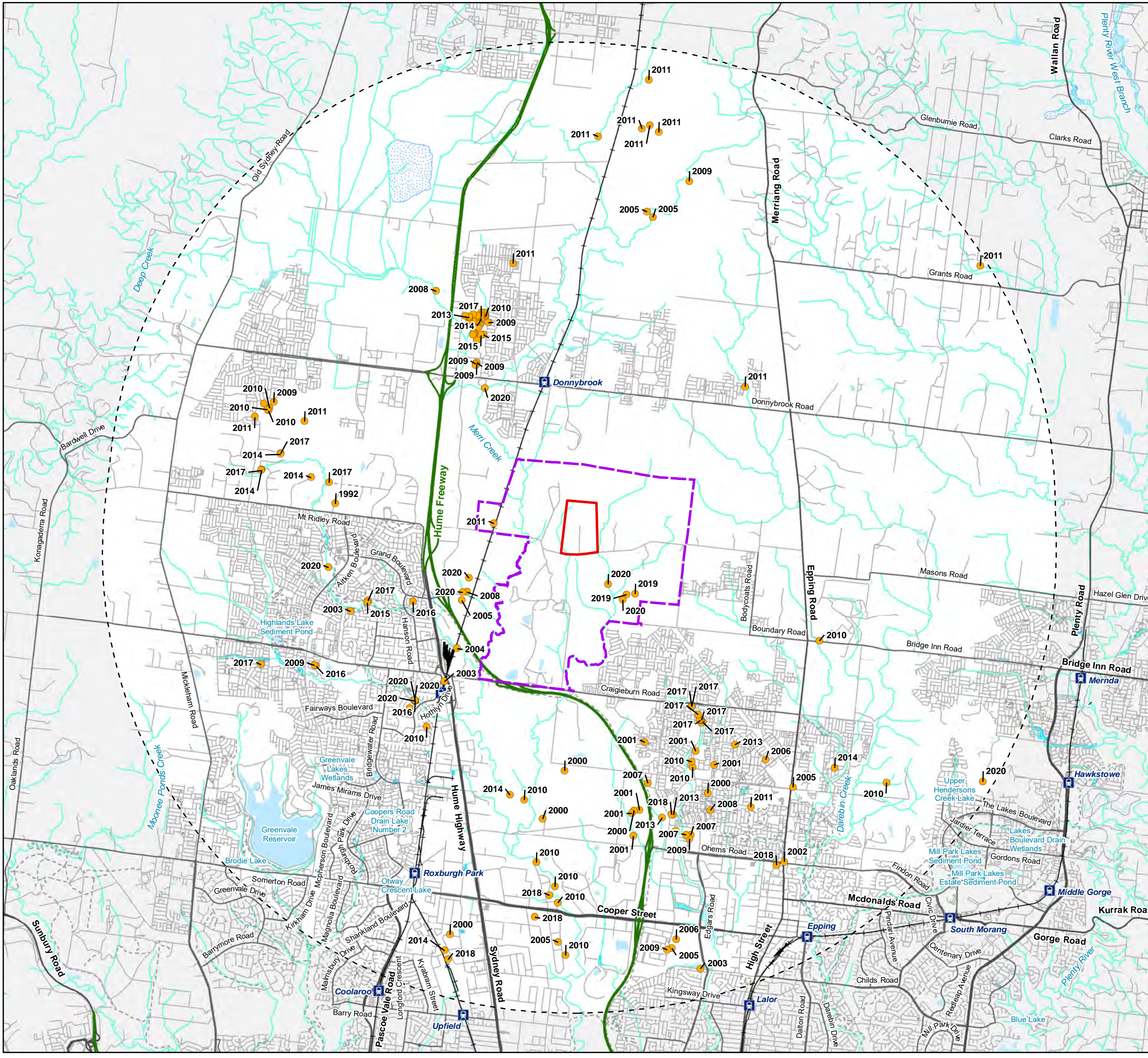
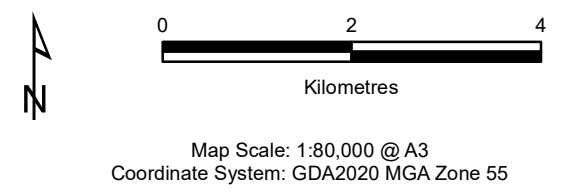


Figure 3
 Previously documented Matted Flax-lily records within 10km of the proposal area
Targeted Matted Flax-lily surveys for 510 Summerhill Road, Wollert



Victorian Biodiversity Atlas (VBA) // Sourced from: 'VBA_FLORA25', 'VBA_FLORA100', 'VBA_FAUNA25' and 'VBA_FAUNA100'. Updated November 2022 © The State of Victoria, Department of Energy, Environment and Climate Action. Records prior to 1949 not shown.

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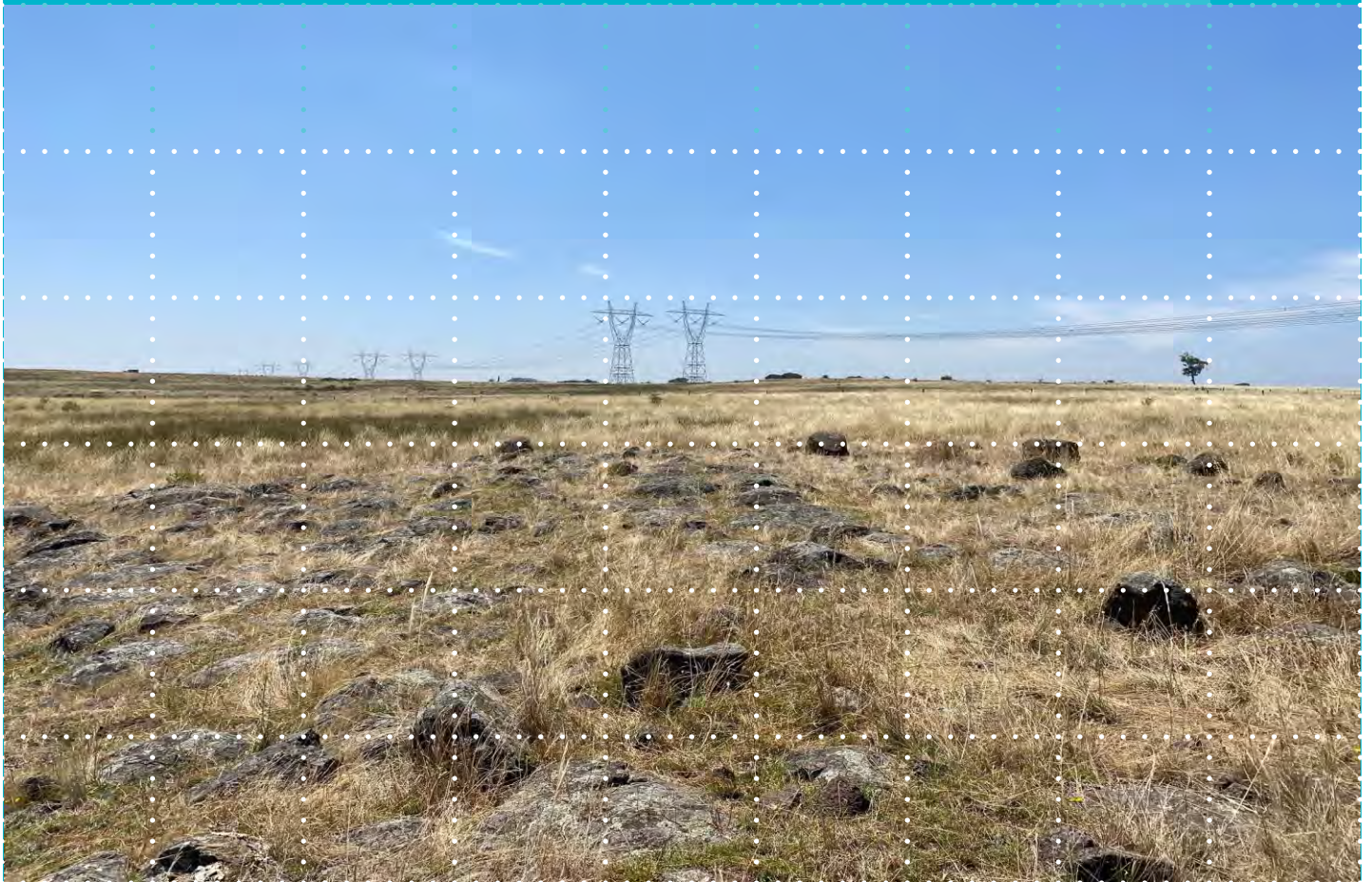
Final Report

Targeted Golden Sun Moth *Synemon plana* Surveys, 510 Summerhill Road, Wollert, Victoria

Prepared for

Cleanaway Operations Pty Ltd

March 2023



Ecology and Heritage Partners Pty Ltd

DOCUMENT CONTROL

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Project manager	Callum Luke (Senior Zoologist)
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EXECUTIVE SUMMARY

Introduction

Ecology and Heritage Partners Pty Ltd was engaged by Cleanaway Operations Pty Ltd (Cleanaway) to undertake targeted Golden Sun Moth *Synemon plana* surveys at 510 Summerhill Road, Wollert, Victoria (the 'proposal area'). The surveys were undertaken to determine the presence or absence of Golden Sun Moth and address any implications for the construction of the proposed waste-to-energy (WtE) facility known as the Melbourne Energy and Resource Centre (MERC) under Commonwealth and State environmental legislation.

Methods

Targeted surveys for Golden Sun Moth were undertaken during the known flight period of the species between December 2022 and January 2023 in accordance with the recommended survey guidelines detailed in the significant impact guidelines for the species (DEWHA 2009). Areas of suitable habitat were walked by qualified zoologists at a time which is considered suitable for detecting the species (i.e. between 10am and 3pm on warm (over 20°C by 10am) days with minimal cloud cover and still conditions).

Limitations

It is important to acknowledge that the number of documented records for the Golden Sun Moth within and around the proposal area is not necessarily a reflection of population size or density and does not offer information on how a species is making use of an area. It also must be noted that survey guidelines recommend four (4) surveys to be completed to determine presence/absence of a species, however only three (3) surveys were completed due to atypical wet and cold conditions impacting the Golden Sun Moth survey season.

Results

At the time of the assessment there were approximately 2433 documented Golden Sun Moth records in the Victorian Biodiversity Atlas (VBA) dated between 2012-2021 within a 10-kilometre radius of the proposal area (DELWP 2022a). No Golden Sun Moth were detected within the proposal area during the three surveys, though Golden Sun Moth were recorded at the reference site at all three occasions. The history of disturbance through farming of livestock at the site is likely to have resulted in degradation of existing Golden Sun Moth habitat, with the site supporting large open areas of non-native grasses and invasive weeds. The likelihood of Golden Sun Moth presence within the proposal area is considered low due to the absence of suitable habitat and history of disturbance of the site.

Legislative and Policy Implications

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

No Golden Sun Moth were recorded within the proposal area, with a population of species unlikely to be present within the proposal area due to a history of disturbance onsite. It is unlikely the proposed development will impact Golden Sun Moth species. Therefore, a referral to the Commonwealth Environment Minister under the EPBC Act is not required for the species.

Flora and Fauna Guarantee Act 1988 (FFG Act - Victoria)

There were no Golden Sun Moth observed within the proposal area and no other threatened and/or protected species found under the FFG Act. Further, an FFG Act permit is not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

Conclusion

Targeted surveys for Golden Sun Moth were undertaken on 19 December 2022, 12 and 27 January 2023. Surveys concentrated on areas identified as potential habitat, primarily those dominated by the exotic Chilean Needle-grass which is a known food sources for Golden Sun Moth.

Despite targeted surveys been undertaken during optimal survey conditions when the species was known to be flying at reference sites the species was not detected within the proposal area. As such, based on available information a resident population does not exist within the proposal area and the species will not be impacted by the proposed development of the proposal area.

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1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was engaged by Cleanaway Operations Pty Ltd (Cleanaway) to undertake targeted Golden Sun Moth *Synemon plana* surveys at 510 Summerhill Road, Wollert, Victoria (the 'proposal area'). The proposal area has recently been purchased and a waste-to-energy (WtE) facility known as the Melbourne Energy and Resource Centre (MERC) is proposed to be developed on site.

The purpose of this assessment was to undertake targeted surveys for Golden Sun Moth to determine the presence or absence of this species, and where possible to ascertain its distribution and abundance and the extent of the species habitat within the proposal area. Three surveys were undertaken between December and January of 2023 under suitable conditions.

Although the study is located within the Melbourne Strategic Assessment (MSA) area, and any development is subject to approval conditions in accordance with the Biodiversity Conservation Strategy (BCS) (DEPI 2013a), targeted surveys were undertaken as part of a precautionary approach to gain a complete understanding of the biodiversity values on the site.

1.1.1 Biodiversity Conservation Strategy

The BCS and associated sub-regional species' strategies (DEPI 2013b) identify conservation outcomes and offset consolidation strategies for Victoria's native vegetation and Matters of National Environmental Significance (MNES) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), including mechanisms for how these outcomes will be delivered. The BCS covers Melbourne's four growth corridors within the expanded 2010 Urban Growth Boundary, as well as 28 precincts under the 2005 Urban Growth Boundary, except where a planning scheme amendment to introduce a Precinct Structure Plan has been approved prior to 1 March 2012.

To facilitate the planning approvals process for Melbourne's growth areas, the Victorian Government has introduced the 'Time Stamping' project. This project captures, and 'time stamps' native vegetation information within Melbourne's urban growth areas. This data can then be used to calculate native vegetation offsets for future development, and to prepare Native Vegetation Precinct Plans (NVPP) for these areas.

Classes of actions associated with urban development in most of the land in Melbourne's growth corridors have been approved under Section 146B of the EPBC Act by the Commonwealth Environment Minister (Minister). The approval was made in relation to the western, north-western and northern growth corridors on 5 September 2013.

The proposal area is located within the northern growth corridor. The Commonwealth approvals are subject to conditions, which included the former Habitat Compensation Obligations (HCO) and the restriction of urban development in identified conservation areas.

1.2 Objectives

The objectives of the targeted surveys were to:

- Determine the presence/absence of Golden Sun Moth within the proposal area

- Provide information in relation to any implications under Commonwealth and State environmental legislation and Government policy associated with the proposed development
- Determine any potential impacts on Golden Sun Moth, and its habitat at a National and State level associated with the proposed development
- If relevant, provide advice on mitigation measures that should be undertaken to avoid and/or mitigate potential adverse impacts on significant ecological values.

1.3 Proposal Area

The proposal area is located at 510 Summerhill Road, Wollert, and is approximately 26 kilometres north of Melbourne's CBD (Figure 1). The proposal area covers approximately 82 hectares in area and is bound by Summerhill Road to the south, and is surrounded by undeveloped pastureland to the north, east and west.

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management Tool (DELWP 2022b), the proposal area occurs within the Victorian Volcanic Plain bioregion, within the jurisdiction of the Yarra Valley Water Catchment Management Authority (CMA) and the City of Whittlesea municipality.

The proposal area falls within the Farming Zone (FZ), Rural Conservation Zone (RCZ) and includes Environmental Significance Overlay – Schedule 4 (ESO4). The proposal area is within the Northern Quarries Precinct Structure Plan (PSP) area within the MSA area and is subject to the assessment process and Environment Mitigation Levy under the Biodiversity Conservation Strategy (BCS) Melbourne's Growth Corridors (DEPI 2013).

The site has recently been acquired by Cleanaway and is currently being used for agriculture (cattle grazing) and is heavily modified, with a residence and associated sheds in the central portion of the property. The site is predominantly low lying with several low rising stony knolls present throughout. Three large dams are located within the site and have previously inundated areas of the paddocks during past weather events.

Vegetation within the site consists predominantly of exotic pasture grasses including Perennial ryegrass *Lolium perenne*, Toowoomba Canary-grass *Phalaris aquatica*, Chilean Needle Grass *Nassella neesiana* and Yorkshire Fog *Holcus lanatas*. Scattered native species are present within the site, including Kangaroo Grass *Themeda triandra*, Blue Devil *Eryngium ovinum* and Rush *Juncus* spp, primarily within stony knolls and low-lying inundated areas within the site. Patches of insavies weeds such as Artichoke thistle *Cynara cardunculus* and Gorse *Ulex europaeus* are also present across the site.

1.4 Golden Sun Moth

EPBC Act Conservation Status: Vulnerable

FFG Act Conservation Status: Vulnerable

Golden Sun Moth typically occurs in native grassland, grassy woodland, dominated by greater than 40% cover of wallaby-grass, in particular *Rytidosperma* spp. (Brown and Tolsma 2010; DSE 2004), but may also inhabit areas dominated by Kangaroo Grass *Themeda triandra* (Endersby and Koehler 2006) and introduced grassland dominated by Chilean Needle-grass (*Nassella neesiana*) and other introduced species. Male flight is typically low, to about a metre above the ground, fast and can be prolonged, but they are generally not recorded flying more than 100 metres from suitable habitat (Clarke and O’Dwyer 1999).

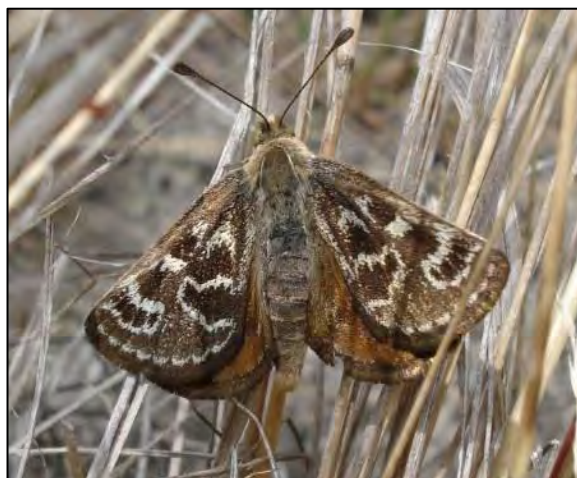


Plate 1. Golden Sun Moth (Ecology and Heritage Partners Pty Ltd)

Prior to European settlement, the Golden Sun Moth was widespread and relatively continuous throughout its range, inhabiting grassy open woodlands and grassland, although it now mainly inhabits small, isolated sites (DSE 2004). The species is threatened by habitat loss, disturbance and fragmentation due to agricultural expansion and urbanisation. Many populations are isolated and fragmented, impeding the ability of the relatively immobile females to recolonise areas, thereby reducing the likelihood of genetic exchange (DSE 2004). Such populations are therefore vulnerable as there is little likelihood of recolonisation in the event of a local extinction.

The proposal area at 510 Summerhill Road, Wollert, Victoria was identified as having suitable Golden Sun Moth habitat due to the occurrence of grassland dominated by Chilean Needle-grass *Nassella neesiana*, and recent records of Golden Sun Moth within 10 kilometres of the proposal area.

2 METHODS

2.1 Nomenclature

Common and scientific names of vascular plants follow the Victorian Biodiversity Atlas (VBA) (DELWP 2022a) and the Census of Vascular Plants of Victoria (Walsh and Stajsic 2007). Vegetation community names follow DELWP's Ecological Vegetation Classes (EVC) benchmarks (DELWP 2022c). The names of terrestrial vertebrate and invertebrate fauna follow the Victorian Biodiversity Atlas (VBA) (DELWP 2022a).

2.2 Desktop Assessment

Relevant literature, online-resources and numerous databases were reviewed as part of this investigation to provide an assessment of flora and fauna values associated with the proposal area. The following information sources were reviewed:

- The DELWP NatureKit Map (DELWP 2022d) for modelled data for location risk, native vegetation patches, scattered trees and habitat for rare or threatened species
- The VBA for previously documented flora and fauna records within the project locality (DELWP 2022a)
- *Significant impact guidelines for the critically endangered Golden Sun Moth (Synemon plana)*. EPBC Act policy statement 3.12 (DEWHA 2009)
- Relevant federal and State legislation and policies, including the EPBC Act and FFG Act
- Aerial photography of the proposal area.

2.3 Targeted Surveys

Surveys for Golden Sun Moth were undertaken in accordance with the recommended survey guidelines detailed in the significant impact guidelines for the species (DEWHA 2009).

Targeted surveys for Golden Sun Moth were undertaken on the 19 December 2022, 12 and 27 January 2023. Four separate attempts were made to conduct the final survey however due to poor weather conditions this survey was unable to be completed. Surveys were conducted by zoologists experienced in the detection and identification of the species. Surveys covered the entire proposal area, concentrating on areas of grassland identified as potential Golden Sun Moth habitat due to being dominated by exotic Chilean Needle-grass *Nassella neesiana*, which is a known food source for Golden Sun Moth (Figure 2).

Prior to conducting each survey, a reference site was checked at a nearby location with a known population of Golden Sun Moth. Reference sites are surveyed to confirm that the species is flying on a particular day. Golden Sun Moth were detected at reference sites on all three survey days, confirming the suitability of survey conditions at the time the surveys were undertaken across the proposal area.

Areas of suitable habitat were walked by qualified zoologists over three separate days during the known flight season (i.e. November to early January). Surveys were undertaken at a time which is considered suitable for detecting the species (i.e. between 10am and 3pm on warm (over 20°C by 10am) days with minimal cloud cover and still conditions).

2.4 Assessment Qualifications and Limitations

It is important to acknowledge that the number of documented records for Golden Sun Moth within and surrounding the proposal area is not necessarily a reflection of population size or density. Furthermore, a documented record may indicate a species' presence in an area at a given point in time, but it generally does not offer information about how a species is making use of an area (e.g. foraging, dispersing, reintroducing, etc.). This can be important information when determining the potential impact of a proposed action on a threatened species.

The survey guidelines (DEWHA 2009) recommend against surveying across two consecutive days or within two days following heavy rainfall, with four surveys recommended to determine species presence or absence. Based on past information, the typical Golden Sun Moth flight season commences in late November to early December, with moths confirmed to be flying around Melbourne at occupied sites through to late January. The 2022/23 season was heavily impacted by atypical wet and cold conditions throughout the Golden Sun Moth survey season, which limited days available to conduct surveys in optimal conditions. As such, only three surveys were completed for the proposal area, with four attempts made to conduct the final survey on 19 and 24 January and 1 and 6 February 2023. The fourth survey was unable to be conducted due to unfavourable conditions.

Fauna surveys were conducted under the Ecology and Heritage Partners Pty Ltd research permit (#10009538) issued by DELWP under the *Wildlife Act 1975*.

3 RESULTS

3.1 Desktop Assessment

There are approximately 2433 documented Golden Sun Moth records in the Victorian Biodiversity Atlas (VBA) dated between 2012-2021 within a 10-kilometre radius of the proposal area, with the most recent being in 2021 (DELWP 2022a). Most of these Golden Sun Moth were observed at Aurora Conservation Reserve in Epping, approximately 10 kilometres from the proposal area (Figure 3).

As Golden Sun Moth are known to inhabit introduced grasslands dominated by Chilean Needle-grass, there is potential for Golden Sun Moth habitat to occur within the proposal area. However, the history of disturbance at the site (e.g. planting of exotic species, extensive weed invasion, farming of livestock) is likely to have resulted in the degradation of existing habitat. As it is unlikely that Golden Sun Moth has since recolonised these highly disturbed areas, these sections of the proposal area were considered unsuitable Golden Sun Moth habitat. The small size of the proposal area further suggests a low likelihood of the proposal area supporting a population of Golden Sun Moth.

3.2 Survey Results

No Golden Sun Moth were detected within the proposal area during the surveys. It must be noted that surveys on 11 January were not fully completed due to time constraints, and therefore two remaining paddocks were surveyed on 12 January. Surveys on 24 January were attempted and then cancelled due to unpredicted rain, with a small area of the site being surveyed prior to rain commencing. A summary of weather conditions and survey results is provided in Table 1.

Golden Sun Moth was recorded at reference sites on all occasions (Table 2) confirming the suitability of survey conditions at the time of the surveys undertaken across the proposal area. Species observed onsite included Common brown butterfly *Heteronympha merope*, Cabbage white butterfly *Pieris rapae*, Cunninghams Skink *Egernia cunninghami*, Shingleback Lizard *Tiliqua rugosa* and Red Fox *Vulpes vulpes*.

Table 1. Golden Sun Moth survey site weather conditions and results

Date	Survey times	Temperature (°C) (start and end of survey)		Wind (km/hr)	Cloud cover (%)	No. of days since rain	No. Golden Sun Moth recorded within the proposal area
19/12/2022	10:00-15:00	21	24.8	18	10	2	0
11/01/2023	10:00-15:00	24.4	32.7	5.5	0	6	0
12/01/2023	10:00-15:00	23	23	25.9	0	7	0
24/01/2023	10:00-15:00	21.6	22	22.2	60	4	0
27/01/2023	10:00-15:00	21.9	28.9	7.4	0	1	0

Note 1: Bureau of Meteorology (BOM) weather for Melbourne Airport Weather Station. 10 kilometres from Broadmeadows Valley Park, Victoria (January 2023), Australian Government, ACT.

Table 2. Golden Sun Moth survey reference site weather conditions and results

Date	Survey times	Temperature (°C) (start and end of survey)		Wind (km/hr)	Cloud cover (%)	No. of days since rain	No. Golden Sun Moth recorded within the proposal area
19/12/2022	10:00-15:00	21	24.8	18	10	2	2
11/01/2023	10:00-15:00	24.4	32.7	24	40	6	2
12/01/2023	10:00-15:00	23	23	13	100	7	2
24/01/2023	10:00-15:00	21.6	22	3	70	4	4
27/01/2023	10:00-15:00	21.9	28.9	11.1	0	1	1

Note 1: Bureau of Meteorology (BOM) weather for Melbourne Airport Weather Station. 10 kilometres from Broadmeadows Valley Park, Victoria (January 2023), Australian Government, ACT.

3.3 Habitat Assessment

Small patches of native Wallaby Grass *Rytidosperma caespitosum* and Kangaroo Grass *Themeda triandra* were identified within low stony knolls due to the past geological history promoting shallow well drained soil, suitable for native species (DELWP 2022b) (Plate 2 and Plate 3). Some native *Eucalyptus* trees occur along the northern boundary with several scattered in the centre of the property (Plate 4).

The site supports large open areas of non-native grasses and is dominated by Perennial ryegrass *Lolium perenne*, Toowomba Canary-grass *Phalaris aquatica*, Yorkshire Fog *Holcus lanata* and Chilean Needle-grass *Nassella neesiana*. Areas with a high cover of Chilean Needle-grass *Nassella neesiana* are known to be a preferred food source for Golden Sun Moth. Substantial cover of Chilean Needle-grass *Nassella neesiana* occurred throughout most of the proposal area and was considered potential habitat for Golden Sun Moth (Plate 5). Low lying areas near the dams contained high proportions of unsuitable Juncus grasses and waterlogged soil (Plate 6). Whilst the south-eastern section of the proposal area contained some unsuitable habitat with high levels of disturbance and large quantities of Toowomba Canary-grass (Plate 7).

The remainder of the proposal area comprised of patches of the invasive weed Artichoke thistle *Cynara cardunculus* and Gorse *Ulex europaeus*. Numerous exotic shrubs were present throughout the site such as African Boxthorn *Lycium ferocissimum*.



Plate 2. Low lying Stony Knolls present within the proposal area (Ecology and Heritage Partners Pty Ltd 06/02/2023).



Plate 3. Kangaroo grass growing between Stony Knolls (Ecology and Heritage Partners Pty Ltd 06/02/2023).



Plate 4. Native eucalypt trees along the northern proposal area boundary (Ecology and Heritage Partners Pty Ltd 29/11/2022).



Plate 5. Open areas of grassland dominated by Chilean Needle-grass *Nassella neesiana* within the proposal area (Ecology and Heritage Partners Pty Ltd 06/02/2023).



Plate 6. Juncus grasses located near southern dam (Ecology and Heritage Partners Pty Ltd 29/11/2022).



Plate 7. Cattle within the proposal area disturbing soil (Ecology and Heritage Partners Pty Ltd 07/02/2023)

4 LEGISLATIVE AND POLICY IMPLICATIONS

4.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions (i.e. project, development, undertaking, activity, or series of activities) that are likely to have a significant impact on MNES, or on Commonwealth land. An action, unless otherwise exempt, requires approval from the Commonwealth Environment Minister if it is considered likely to have an impact on any MNES.

The criteria for assessing a significant impact to the vulnerable Golden Sun Moth is detailed below in Table 3.

Table 3. Significant impact thresholds for the Golden Sun Moth (DEWHA 2009).

Ecological element affected	Impact threshold	Comment
Large or contiguous habitat area (>10ha)	Habitat loss, degradation or fragmentation >0.5 ha.	Not applicable as the suitable habitat within the proposal area is not large or contiguous (i.e. it is <10ha) and no GSM were observed.
Small or fragmented habitat area (<10ha)	Any habitat loss, degradation or fragmentation.	There is a small area of suitable habitat within the proposal area (< 10ha), however no GSM were observed during the site visits and therefore impacts to suitable habitat will not be considered significant.
Habitat connectivity	Fragmentation of a population through the introduction of a barrier to dispersal. Barriers to dispersal could include breaks in habitat of >200 m, structures that prohibit movement (for example buildings, solid fences)	Given that no GSM were observed during targeted surveys, it is unlikely that any development of the proposal area would result in the fragmentation of connectivity between habitats.

4.1.1 Implications

Despite the surveys being undertaken during appropriate seasonal conditions in accordance with the recommended survey method, no Golden Sun Moth were recorded within the proposal area. As such, a population of the species is unlikely to be present within the proposal area and therefore the species and associated habitat will not be significantly impacted by the proposed development.

4.2 *Flora and Fauna Guarantee Act 1988* (Victoria)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage lines and public reserves). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

Although the proposal area is privately owned and therefore a permit to remove protected flora species, listed vegetation communities and listed fish species is not required, the Responsible Authority and/or the Department of Energy, Environment and Climate Action (DEECA) take into consideration the presence of FFG

Act matters (e.g. species, ecological communities and threatening processes) as part of the strategic and statutory assessment and approval process (e.g. rezoning and planning permit application). Despite targeted surveys being undertaken during an appropriate survey period and conditions, Golden Sun Moth was not recorded within the proposal area. Consequently, there are no implications under the FFG Act relating to these species for any future development of the proposal area.

5 CONCLUSION

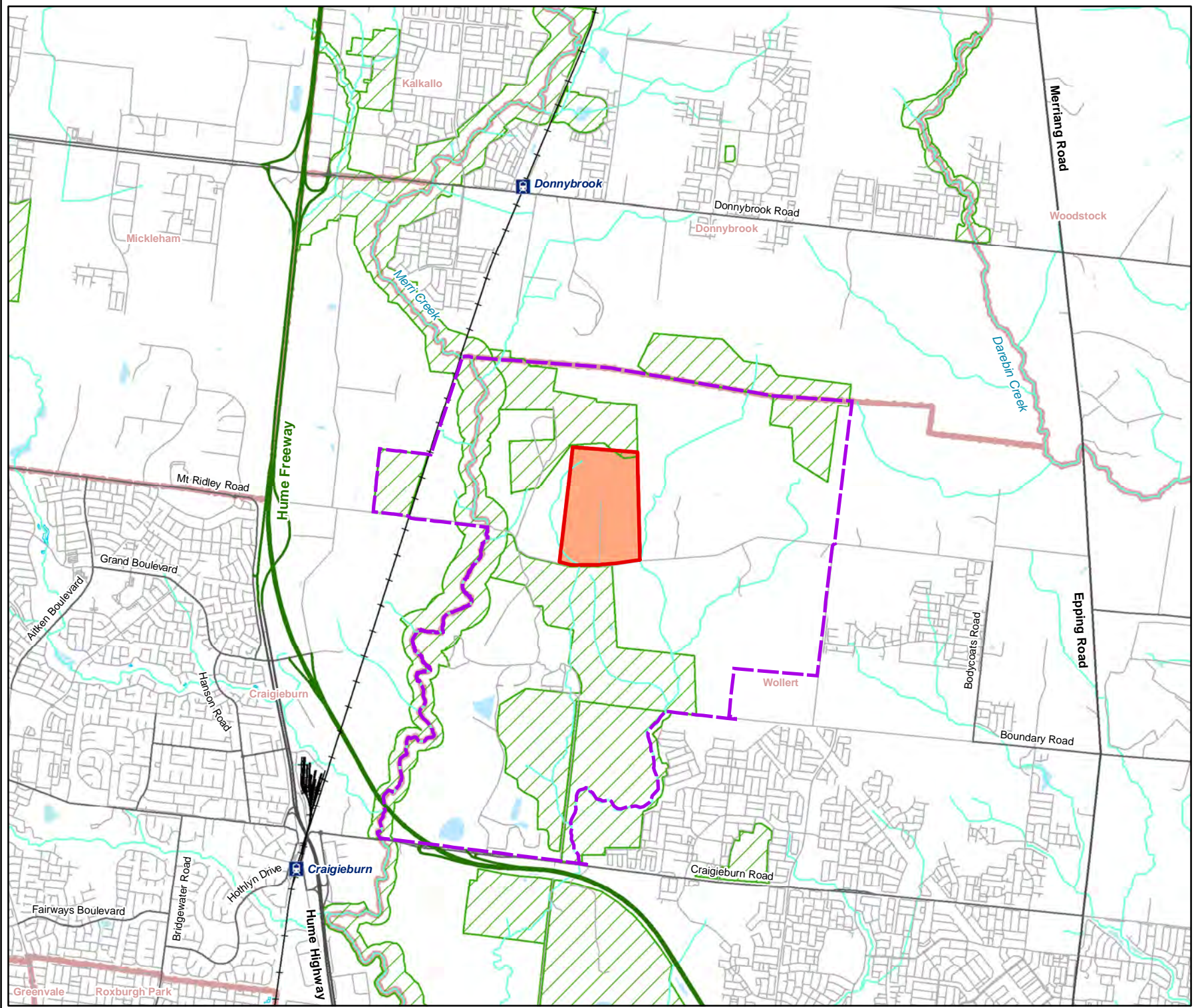
Targeted surveys for Golden Sun Moth were undertaken on 19 December 2022, 12 and 27 January 2023. Surveys concentrated on areas identified as potential habitat, primarily those dominated by the exotic Chilean Needle-grass which is a known food source for Golden Sun Moth.

Despite targeted surveys been undertaken during optimal survey conditions when the species was known to be flying at reference sites the species was not detected within the proposal area. As such, based on available information a resident population does not exist within the proposal area and the species will not be impacted by the proposed development of the proposal area.

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FIGURES



- Legend**
- Proposal Area
 - Northern Quarries PSP
 - Railway
 - Freeway
 - Major Road
 - Collector Road
 - Minor Road
 - Minor Watercourse
 - Permanent Waterbody
 - Wetland/Swamp
 - BCS Conservation Area
 - Localities

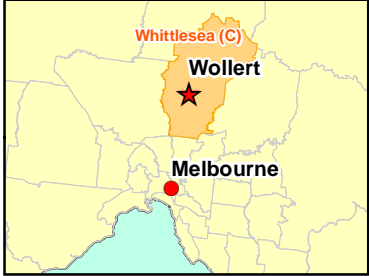
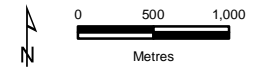


Figure 1
Location of the proposal area
Targeted Golden Sun Moth surveys for 510 Summerhill Road, Wollert



Map Scale: 1:50,000 @ A4
 Coordinate System: GDA2020 MGA Zone 55



VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

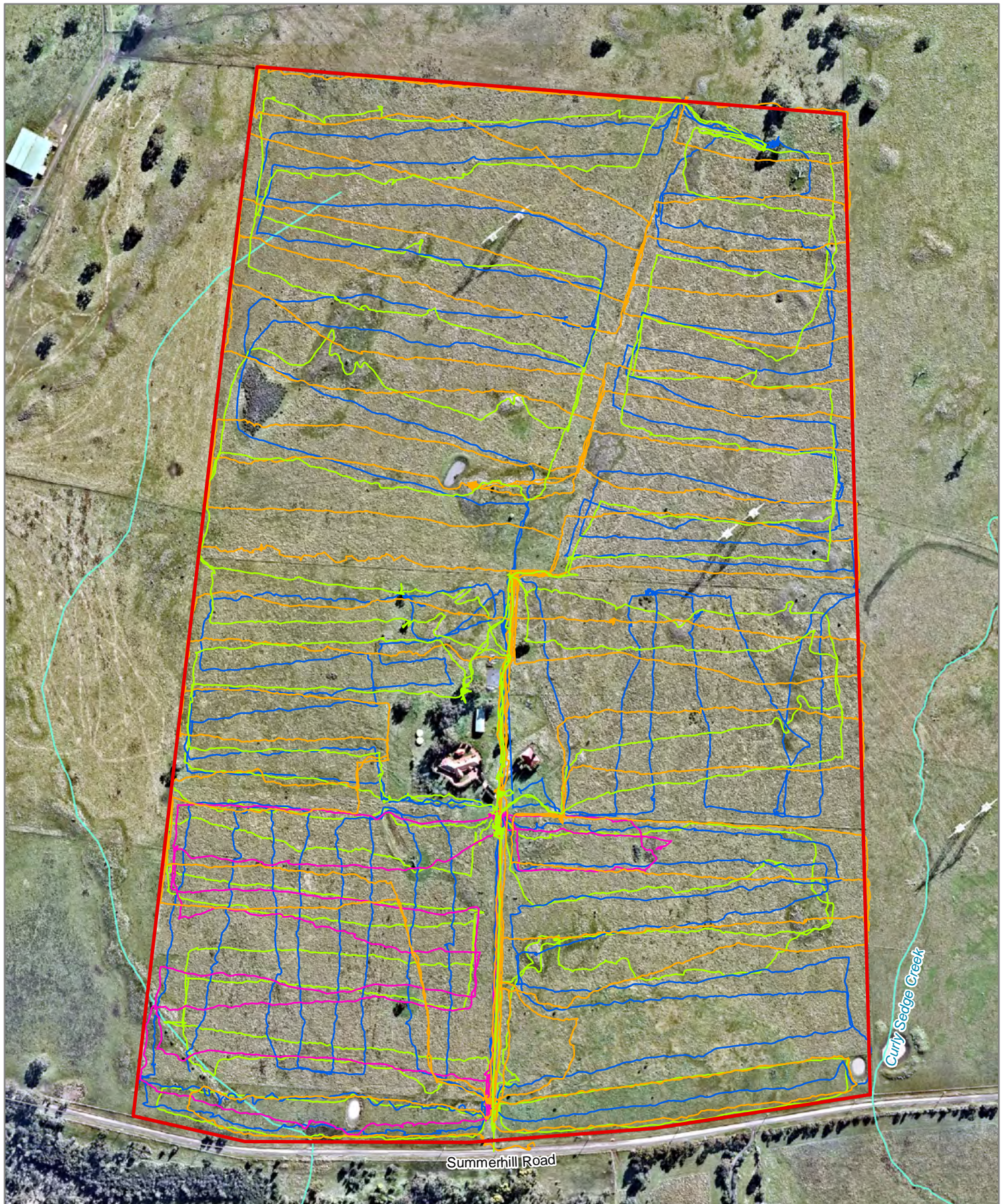
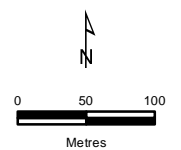


Figure 2
Survey results
 Targeted Golden Sun
 Moth surveys for 510
 Summerhill Road, Wollert

- Legend**
- Proposal Area
 - Minor Watercourse
- Survey transects**
- 19/12/2022
 - 12/01/2023
 - 24/01/2023
 - 27/01/2023



Map Scale: 1:5,500 @ A4
 Coordinate System: GDA2020 MGA Zone 55

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Legend

- Proposal Area
- Northern Quarries PSP
- 10km buffer
- Minor Watercourse

Golden Sun Moth records (VBA 2022)

- 2020-2022
- 2010-2019
- 2000-2009
- 1990-1999
- 1970-1989
- 1950-1969



Figure 3
Previously documented Golden Sun Moth records within 10km of the proposal area
Targeted Golden Sun Moth surveys for 510 Summerhill Road, Wollert

0 2 4
 Kilometres

Map Scale: 1:80,000 @ A3
 Coordinate System: GDA2020 MGA Zone 55



Victorian Biodiversity Atlas (VBA) // Sourced from: 'VBA_FLORA25', 'VBA_FLORA100', 'VBA_FAUNA25' and 'VBA_FAUNA100'. Updated November 2022 © The State of Victoria, Department of Energy, Environment and Climate Action. Records prior to 1949 not shown.

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