growth areas AUTHORITY

Biodiversity Assessment Report (Native Vegetation)
Melton - Wyndham Investigation Area: Section C

March 2010

Citation

Growth Areas Authority (2010), Biodiversity Assessment Report (Native Vegetation): Melton-Wyndham Investigation Area – Section C
Growth Areas Authority, Melbourne

Published by the Growth Areas Authority, Melbourne, March 2010

Authorised by the Growth Areas Authority, Level 29, 35 Collins Street, Melbourne 3000.

ISBN 978-1-921747-33-5

For more information contact the GAA at **info@gaa.vic.gov.au**

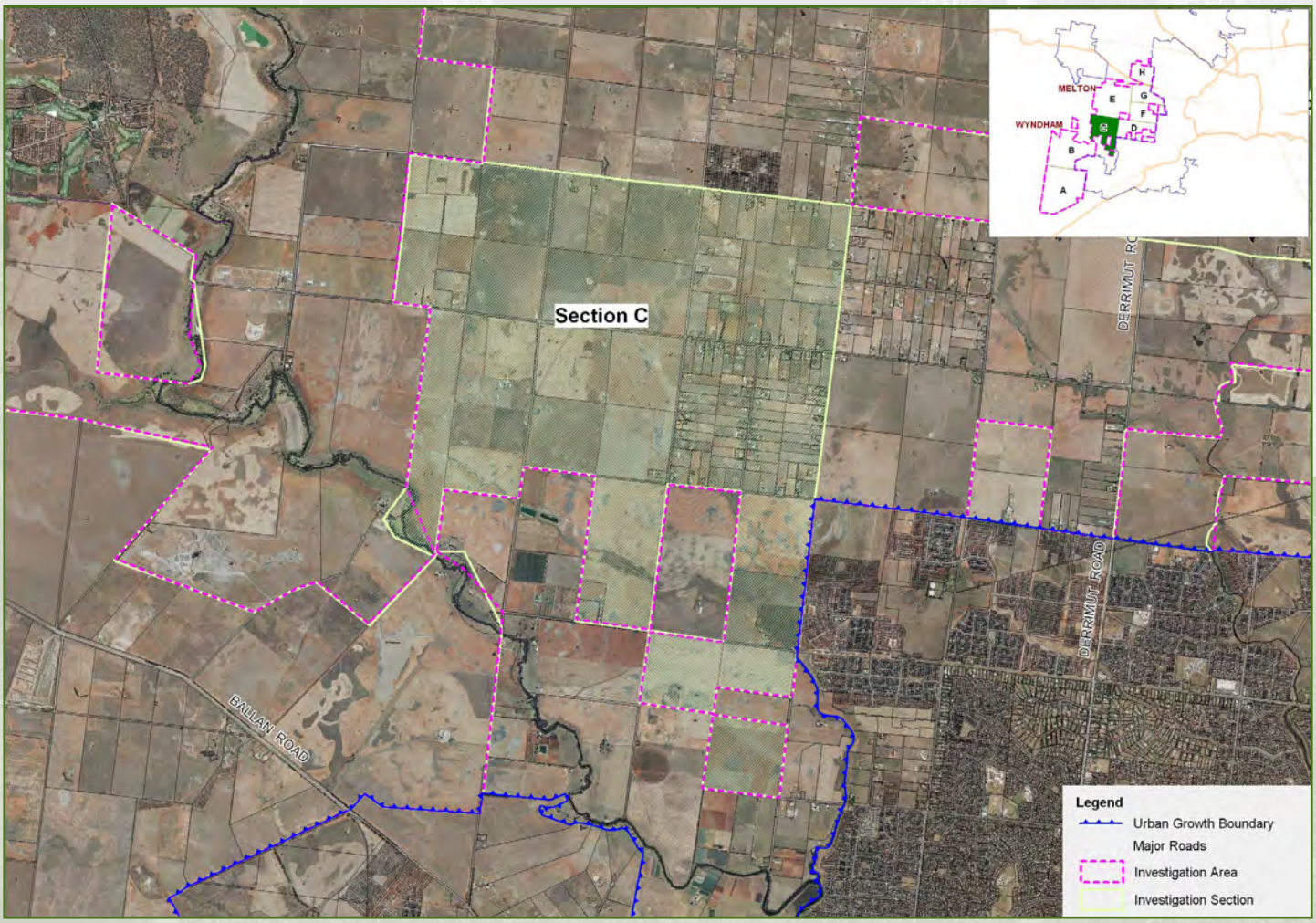
www.gaa.vic.gov.au

growth areas AUTHORITY

Biodiversity Assessment Report (Native Vegetation)
Melton - Wyndham Investigation Area: Section C

Growth Areas Authority

March 2010



MAP: Melton - Wyndham Investigation Area: Section C

Biodiversity Assessment Project (Native Vegetation)
Quality Assurance - Verification Sheet
Melton-Wyndham Investigation Area - Section C

Document Title	Biodiversity Assessment Report (Native Vegetation)		
Precinct (Name and Number)	Melton - Wyndham Investigation Area: Section C		
Organisation Name	Biosis Research Pty Ltd		
Prepared by	Nicky Forge, Daniel Gilmore, Steve Mueck		
Checked by	Matt Dell		
Project Manager	Nicky Forge		
Address	38 Bertie Street, Port Melbourne VIC 3207		
Email	gaamanagement@biosisresearch.com.au		
Telephone	(03) 9646 9499	**Fax**	(03) 9646 9242
GAA Contract Manager	Bill Vasiliadis, Manager (Native Vegetation)		
ISBN Number	978-1-921747-33-5		

This document is approved for release	**Organisation**
	Growth Areas Authority ..... **Director, Policy and Strategy:** **Date:** ..15..../ ..01...../ ..10.....
	Department of Sustainability and Environment ..... **Director, Ecosystem Services:** **Date:** ..15..../ ..01...../ ..10.....

Quality Assurance: Report Verification Checklist			
Company		**Biosis Research Pty Ltd**	
		Date	**Verifier**
Contract Signed		August 2008	Bill Vasiliadis
Habitat Hectare Competency Training Completed		August 2008	Nicky Forge
Survey Period	**Start**	October 2008	Matt Dell
	Completed	May 2009	Matt Dell
Vegetation Assessment Surveys completed in accordance with DSE's Vegetation Quality Assessment Manual Version 1.3 (2004)		January 2009	Matt Dell
Mapping completed to agreed standards		June 2009	Matt Dell
Data authenticated by DSE		July 2009	Simon Denby
Habitat Hectare Assessment completed using 'Habitat Hectares for ArcPad' in accordance with agreed DSE approved methodology		January 2009	Matt Dell
Targeted Fauna surveys completed in accordance with agreed with DSE's agreed methodology		No targeted fauna surveys completed as part of this assessment	Matt Dell
Survey Results not included with this Report		Targeted Flora and Fauna Surveys	N/A
Internal Quality Control completed		June 2009	Nicky Forge
Final Report completed		November 2009	Matt Dell

ACKNOWLEDGMENTS

Biosis Research acknowledges the contribution of the following people and organisations in preparing this report:

Growth Areas Authority

- Bill Vasiliadis
- Steve Dunn
- Ken King

Department of Sustainability and Environment

- Simon Denby
- Sheri Burmeister
- Kim Lowe
- Access to ecological databases (Flora Information System, Atlas of Victorian Wildlife)
- Provision of finalised GIS layers

Biosis Research

- Sally Mitchell, Robert Suansri, Paul Young and Robert Fitzgerald for mapping
- Nathan Wong, Sam Gilbert and Victoria Allen for reconnaissance level assessments
- Julia Franco, Nathan Wong, Sam Gilbert, Rebecca Steer, Deborah Peeters, Catherine Costello, Nicola Barnes, Jeff Yugovic, Victoria Allen and Kylie Payze for field assessments of the Melton/Wyndham Investigation Area
- Kylie Payze and Victoria Allen for landowner liaison
- Victoria Allen for database searches and data entry
- Matt Dell and Nathan Wong for contributions to draft report

Others

- Hannah Nicholas for landowner liaison
- Sera Cutler for field assessments of the Melton/Wyndham Investigation Area
- Melanie Birtchnell for field assessments of the Melton/Wyndham Investigation Area
- Tim Wills (GHD) for field assessments of the Melton/Wyndham Investigation Area
- Zoë Hall (GHD) for field assessments of the Melton/Wyndham Investigation Area

ABBREVIATIONS

AVW	Atlas of Victorian Wildlife – 2007 version
DSE	Department of Sustainability & Environment (formerly NRE)
DPI	Department of Primary Industry (formerly NRE)
EPBC	*Environment Protection and Biodiversity Conservation Act 1999*
EVC	Ecological Vegetation Class
FFG	*Flora and Fauna Guarantee Act 1988*
FIS	Flora Information System – 2007 version
IUCN	International Union for the Conservation of Nature
NRE	Department of Natural Resources & Environment (now DSE)

CONTENTS

FIGURES

BIODIVERSITY REPORT OVERVIEW

This Biodiversity Report provides native vegetation and fauna habitat information on the municipality of Wyndham and the Shire of Melton. The report was prepared by Biosis Research Pty. Ltd. and commissioned by the Growth Areas Authority. Information gathered and presented in this report is intended to inform the preparation of Precinct Structure Plans and Native Vegetation Precinct Plans for this area in the possible future.

The assessment surveys were conducted by Biosis Research between October 2008 and May 2009. The survey methodologies used in preparation of this report are in accordance with guidelines and training provided by the Department of Sustainability and Environment (Victoria). Any limitations to the report or to the application of its findings are outlined in Part 2 - Section 2.9 of this report.

PART 1
Synopsis by the Growth Area Authority

1.0 BACKGROUND AND PURPOSE

1.1 Project Scope

The Growth Area Authority (GAA) engaged contractors during 2008/2009 to map and assess native vegetation and fauna habitat in designated Precinct Structure Plan areas surrounding Melbourne (Figure 1). The scope and design of this project was developed jointly with the Department of Sustainability and Environment (DSE). The purpose of this mapping and assessing was to:

- Prepare biodiversity reports as essential background input into precinct structure planning at an early stage in the planning process;
- Inform the preparation of precinct structure plans in areas designated for future urban development (in most cases this will also include preparation of a Native Vegetation Precinct Plan)
- The identification of priorities for protection and enhancement of biodiversity including potential reserve areas, biodiversity corridors and areas with potential to provide offsets for vegetation lost as a result of urban development; and
- Long term planning related to infrastructure including liaison with relevant service authorities to ensure their requirements are met over the next 30 to 50 years.

This new approach focuses on achieving the objectives of the Victorian Native Vegetation Framework and planning development within the Urban Growth Zone at a regional level. This approach will improve the clarity and flexibility of native vegetation management, reduce the administrative burden on local government, provide greater certainty for urban development and improve biodiversity outcomes.

The mapping and assessment undertaken as part of this project has been undertaken in sufficient detail and of a sufficient standard to be used for the preparation of Native Vegetation Precinct Plans and Precinct Structure Plans.

The contractors assessed and mapped vegetation outside the existing precinct planning areas inside the Urban Growth Boundary (UGB). Contractors were required to submit a GIS data layer of all site assessments, together with other site information and observations on a monthly basis. The site assessments included:

- The extent of native and non-native vegetation;
- Mapped polygons of sites / zones;
- Confirmation of the native vegetation type (EVC);
- Native vegetation condition assessment (Habitat Hectares site and landscape context score) and other site attributes including land use, dominant weeds etc.;
- The species, size (small, medium, large) and location of all remnant indigenous trees (either as patches or individual trees when scattered in the landscape);
- The location of all observed rare or threatened plants or observed native flora; and
- The location of all observed rare or threatened native fauna or habitat and land use features for fauna.

The outputs of the Vegetation and Fauna Assessment and Mapping project will include 2 parts, Part A and Part B:

- PART A: Vegetation condition/Rare or Threatened Flora species/ Habitat and Land Use Features; and
- PART B: Fauna Surveys

After consideration of the maps, information and records collected in Part A above and existing fauna data and mapping provided by DSE, GAA in consultation with DSE proposed to identify Study Sites for a general assessment of fauna and habitats. This original approach to fauna surveys was amended through negotiation and agreement with DSE to a targeted approach to survey for significant species. The specifications for these surveys are outlined in Appendix 1.

The priority for fauna surveys during 2008 / 2009 was to assess areas associated with the next group of precinct structure plans; including PSP numbers 10, 13, 16, 23, 25, 26, 37, & 40 (total area 6796 hectares).

This report provides a more detailed analysis of the results obtained through the vegetation mapping undertaken by Biosis Research Pty. Ltd. in the Melton/Wyndham Investigation area. To assist in analysis and presentation of the data, the GAA have split the Melton/Wyndham Investigation area into eight key sections based on likely future precinct areas. As such, the results of the vegetation mapping assessment are documented in eight stand-alone reports, each covering a different section of this broader area (Figure 1). This report focuses on one of these sections: Section C (Figure 1).

1.2 Amended Project Scope

The GAA became aware that the State Government was preparing to commission other major transport infrastructure projects and to plan for the future growth of Melbourne. All these proposed projects were within or in close proximity to the GAA study areas and required assessment and mapping of vegetation and fauna. GAA staff negotiated with the Department's responsible for these projects for them to use the established GAA contract and project arrangements to obtain the vegetation and fauna information for their projects.

Additional PSP areas (PSP number 11 and 4) were contracted to be assessed in 2008 for the extent and quality of native vegetation. PSP 4 was later withdrawn (late Nov 2008) as the surveys had been commissioned by City of Cardinia.

The outputs of the vegetation, fauna assessment and mapping project will also provide some of the vegetation and fauna data for four key Government projects:

1. Investigation to plan for the future growth of Melbourne;
2. Regional Rail Link between West Werribee and Southern Cross via Tarneit and Sunshine;
3. Outer Metropolitan Ring Transport Corridor Reservation Project; and
4. Ensuring critical grasslands are protected as the State Government is committed to the creation of two large areas as grassland protected areas.

Only Project No. 2 (above) directly involved existing PSP areas. The results for these projects will be reported in separate reports being prepared for each Project.

2.0 SPECIFICATIONS AND MANAGEMENT

2.1 Tenders and Contractor Selection

The Request for Tender was prepared by Growth Areas Authority jointly with the Department of Sustainability and Environment to ensure that the survey methodologies and all data collected and recorded as part of the project complied with Departmental standards. The Request for Tender was advertised in the Herald – Sun and on the VicTender web site on the 23rd July 2008.

The Tenders were assessed against the Evaluation Criteria and four Contracts were awarded on the 26th August 2008 for Part A (Vegetation condition/Rare or

Threatened Flora species/Habitat attributes and Land Use Features). Two Contracts were also awarded for Part B (Fauna Surveys).

2.1.1 Vegetation Condition Assessment and Mapping

Each contractor used a GPS to map habitat zones (as described in Vegetation Quality Assessment Manual Version 1.3 DSE 2004) within the assigned study sites. Habitat zones were mapped across all vegetation, regardless of whether it was native vegetation.

Contractors also identified the Ecological Vegetation Class (EVC) of each mapped habitat zone and conducted a habitat hectare assessment using 'Habitat Hectares for Arc Pad'. Each contractor recorded land use, other habitat features and dominant weed species at each zone. DSE supplied each contractor with 'Habitat Hectares for Arc Pad' which was used when mapping and undertaking habitat hectare assessments.

Contractors undertook a 30 minute assessment to identify and (using a GPS) record (i) all Victorian rare or threatened species (VROTS) and; (ii) any habitat features for native fauna. A count or estimate of the number of individual VROTS was provided at each recorded point location. DSE provided an assessment sheet for recording habitat and land use features for fauna likely to be present in the study area including hollow logs, tree hollows, litter, rocks and rock walls. This assessment sheet was also made available to load onto PDAs and these land use and habitat attributes were recorded for all properties that have been assessed and mapped.

For scattered trees, contractors identified and recorded the location of all individual indigenous trees encountered within any habitat zone, including the species, diameter at breast height and assessment to determine ecological/ habitat significance.

2.1.2 Targeted Fauna Surveys

No targeted fauna surveys were undertaken by Biosis Research Pty. Ltd. for significant fauna species in these investigation areas.

2.2 Training of Contractors

The GAA and DSE provided a mandatory (3 day) training course in the assessment methods and tools. The dates for this training course were 27, 28 &, 29 August 2008. This included Habitat Hectares assessments and mapping (to ensure the method is being applied in a consistent manner), use of the Habitat Hectares for Arc Pad software, other data collection requirements, OH&S and landowner engagement

Staff of contractors were trained in field situations using the habitat hectare assessment methodology by DSE and in the use of hand held GPS devices loaded with Arc View software provided by DSE.

2.3 Access and Landowner Communications

GAA developed procedures for access to properties and protocols for contact with landowners. Contractors were provided with GAA authorised identification documentation to be carried by all staff whilst undertaking field surveys. The GAA assisted in the engagement of landowners in the process and facilitated access to properties to undertake site assessments.

A letter explaining the mapping project and requesting access to properties was sent to each landowner and occupier. Fact sheets explaining precinct structure planning and the vegetation mapping project were also forwarded with the letter to landowners. Land owners were given the choice to make contact with the respective contractor to arrange access to their property. Contractors also spent considerable resources in making contact with land owners and arranging site visits. A small number of landowners refused to provide access to their properties and in some cases the land owner data base did not lead to any contact being made with the land owner or occupier. Contractors provided regular updates as to which landowners had denied the contractor access to their property to conduct a survey.

In cases where access to a property has not been possible, mapping in this report will show the DSE modelled data layer of information and the contractors confirmation of this by a 'drive by' assessment. While this is not ground survey results it provides an indication of likely vegetation and habitat. In some cases, finalisation of the precinct structure plan and /or native vegetation precinct plan will require additional on ground assessment surveys to be undertaken at these properties.

2.4 Access to Existing Reports/Databases

In some parts of the precinct planning areas flora and/or fauna surveys had been previously arranged by landowners, councils or property developers. The GAA, where possible, sought access to these reports and provided a copy to the relevant contractor. DSE staff also provided copies of reports that they knew existed for some of these areas.

Contractors were provided with a copy of or access to the DSE corporate flora and fauna databases e.g. Atlas of Victorian Wildlife / Flora Information System / Aerial photography. Access to landowner and property information was arranged through the DSE and in some cases a contractor was engage to

compile a telephone contact database to enable contractors to contact property owners.

2.5 DSE Quality Assurance Arrangements

Field surveys were undertaken by qualified and experienced botanists and ecologists who had participated in the training provided by the DSE as part of this project. DSE also undertook quality assurance site visits with the contractors to ensure that the assessment methodology was being applied in a consistent manner.

Contractors provided monthly reports to the GAA contract manager including an account of hectares assessed and the data collected. The GAA undertook a check of GIS integrity and then arranged for DSE to check the data for its biological integrity.

Audits of the data files were conducted by DSE to ensure that the records conformed to DSE standards and that all attributes had been recorded accurately. Any deficiencies were reported to each contractor for correction and improvement prior to acceptance of the results and finalisation of payments.

2.6 Project Governance

A Native Vegetation Project Control Group was established by the GAA and the Group initially included the GAA and DSE representatives. The Project Control Group has met regularly since the project commenced.

Representatives of VicRoads and Department of Transport were invited to join the Project Control Group when it was decide that the GAA contracts would be used to undertake the assessment and data gathering for their road and rail project. The Department of Transport also arranged for their project manager (Maunsell AECOM) to attend the meetings.

2.7 Monthly Reporting

Monthly updates and data files were provided on the progress of the assessments along with the contractor's updated project plan to ensure completion of the planned extent of assessment/mapping within the time period provided for the assessment. Initially the assessments were to be completed by the end of December 2008 but the GAA negotiated with contractors to extend the survey deadline into early 2009 to maximise the areas assessed and mapped.

PART 2
Flora Assessment and Mapping
Completed by Bioisis Research Pty. Ltd

EXECUTIVE SUMMARY

Biosis Research was commissioned by the Growth Areas Authority (GAA) to map and assess native vegetation within the Melton/Wyndham Investigation Area west of Melbourne (Figure i). The field assessments were undertaken between October and March on all properties within the Melton/Wyndham Investigation Area where owner permission to access the lands was able to be obtained. Subsequent reconnaissance level surveys to provide additional information were undertaken from public access points (mainly roads) for the remaining properties within the Melton/Wyndham Investigation Area in May 2009.

With a view to analysing and presenting the data captured during these assessments, the GAA have split the Melton/Wyndham Investigation area into eight key sections based on likely future precinct areas. This report covers Section C, which is located in the Melton Shire and is bound to the north by Boundary Road, to the south in part by Leakes Road, Sayers Road and Hogans Road, to the west by Mount Cottrell Road and private property west of Shanahans Road and to the east by Davis Road (Figure i).

Provision of Access

Section C covers an area of about 2011 ha, and of this roughly 1134 ha or 56% of private land within Section C was inspected and subject to a habitat hectare assessment (referred to as the Melton/Wyndham Investigation). The remaining 44% of the area was subject to a reconnaissance level field survey only.

Ecological Vegetation Classes

Prior to European settlement most of Section C supported the Ecological Vegetation Class (EVC) Plains Grassland (EVC 132), which is listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as the critically endangered community *Natural Temperate Grassland of the Victorian Volcanic Plain*. Despite over two centuries of farming and urban development, remnants of native vegetation are present within Section C.

Five EVCs (one with two communities), *Low-rainfall* Plains Grassland (EVC 132-63), *Heavier-soils* Plains Grassland (EVC 132-61), Escarpment Shrubland (EVC 895), Lignum Swamp (EVC 104), Plains Grassy Wetland (EVC 125) and Floodplain Riparian Woodland (EVC 56), were recorded within Section C during the Melton/Wyndham Investigation. A number of scattered trees are also

present and these are considered remnants of Plains Woodland (EVC 803).

Significant Species

One nationally significant flora species, Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* (critically endangered) was recorded during the current assessment and has been previously recorded in Section C on the FIS database.

No fauna species listed under the EPBC Act were recorded in Section C during the current assessment. The AVW has records of one species, Growling Grass Frog *Litoria raniformis* (vulnerable) from Section C (the Werribee River). The Werribee River supports a significant population of this species.

Fifteen fauna species of national significance have been recorded from the local area in the AVW and/or BA database or are predicted to occur on the DEWHA database. Of these, Plains-wander *Pedionomus torquatus* (vulnerable), Striped Legless Lizard *Delma impar* (vulnerable) and Golden Sun Moth *Synemon plana* (critically endangered) all have a high likelihood of occurrence in Section C and may be found in areas of Plains Grassland and even areas of grassy Degraded Treeless Vegetation. The remaining 12 species of national significance are considered to have a medium to negligible likelihood of occurrence based on the habitat present.

Two flora species of state significance, Buloke *Allocasuarina leuhmannii* and Wimmera Woodruff *Asperula wimmerana*, were recorded within Section C during the current assessment. The Flora Information System supports records of an additional eight species of state significance within Section C.

No fauna species of state significance were recorded within Section C during the current assessment. One species, Blue-billed Duck *Oxyura australis* has been recorded from the study area in the AVW (the Werribee River). Eight species of state conservation significance are recorded from the local area in the AVW and/or BA database or are predicted to occur on the DEWHA database. Two of these species, Red-chested Button Quail *Turnix pyrrhothorax* and Black Falcon *Falco subniger* have a high likelihood of occurrence in Section C and remnant Plains Grassland in Section C provides good habitat for both species. In general, the habitat is poorly represented for the remaining species, which have a medium to negligible likelihood of occurrence in Section C.

There has been no systematic targeted survey for any listed species with Section C so the size and extent of populations of such species is not known.

Vegetation Quality Assessment (Melton/Wyndham Investigation)

Of the 1133.42 ha within Section C assessed during the Melton/Wyndham

Investigation, a total of **273.32 ha** of indigenous vegetation (83 patches) were recorded.

The 273.32 ha of indigenous vegetation present equate to 136.34 habitat hectares of Low-rainfall Plains Grassland, 3.29 habitat hectares of Heavier-Soils Plains Grassland, 0.13 habitat hectares of Escarpment Shrubland,1.65 habitat hectares of Lignum Swamp, 0.27 hha of Plains Grassy Wetland and 0.95 habitat hectares of Floodplain Riparian Woodland. Therefore, a total of **142.63 habitat hectares** are present within the 1133.42 ha assessed during the Melton/Wyndham investigation.

Reconnaissance Survey

Approximately 40 blocks (totalling approximately 540 ha) were identified as *Highly Likely Native Vegetation - Grassy* during the reconnaissance survey (Figure 2). Most of these areas were observed to support broad areas of Plains Grassland dominated by Kangaroo Grass and are likely to be mainly primary grassland of Very High conservation significance. A further 58 hectares (approximately) were identified as *Possible Native Vegetation*. The remaining area (approximately 337 ha) was considered likely to support less than 25% indigenous vegetation projective foliage cover (excluding bare ground). These areas were mapped as *No Native Vegetation* and are likely to be areas of Degraded Treeless Vegetation (Figure ii).

Government legislation and policy

All sections of the Melton/Wyndham Investigation Area (including Section C) support matters of NES which would trigger the EPBC Act. In response to this the GAA has engaged with DEWHA to conduct a strategic assessment process in relation to the entire Melton/Wyndham Investigation Area. At the time of the field assessment and report preparation for the current assessment, the strategic assessment was in the process of being prepared, hence the outcome of the strategic assessment had not been agreed to by the Commonwealth Government.

A planning permit to remove native vegetation would typically be required under the Melton Shire Planning Scheme (Clause 52.17). However, it will be possible that some or all of Section C will be subject to a Native Vegetation Precinct Plan (NVPP) (Clause 52.16) which would negate the need for a permit under Clause 52.17 (or other relevant clause), if removal is in line with the NVPP.

A permit will be required from DSE under the Victorian *Flora and Fauna Guarantee Act 1988* to remove protected flora from public land within Section A.

Potential losses of native vegetation associated with any development of Section

C will be subject to the guidelines provided by Victoria's Native Vegetation Management Framework (Net Gain policy).

Key Ecological Areas

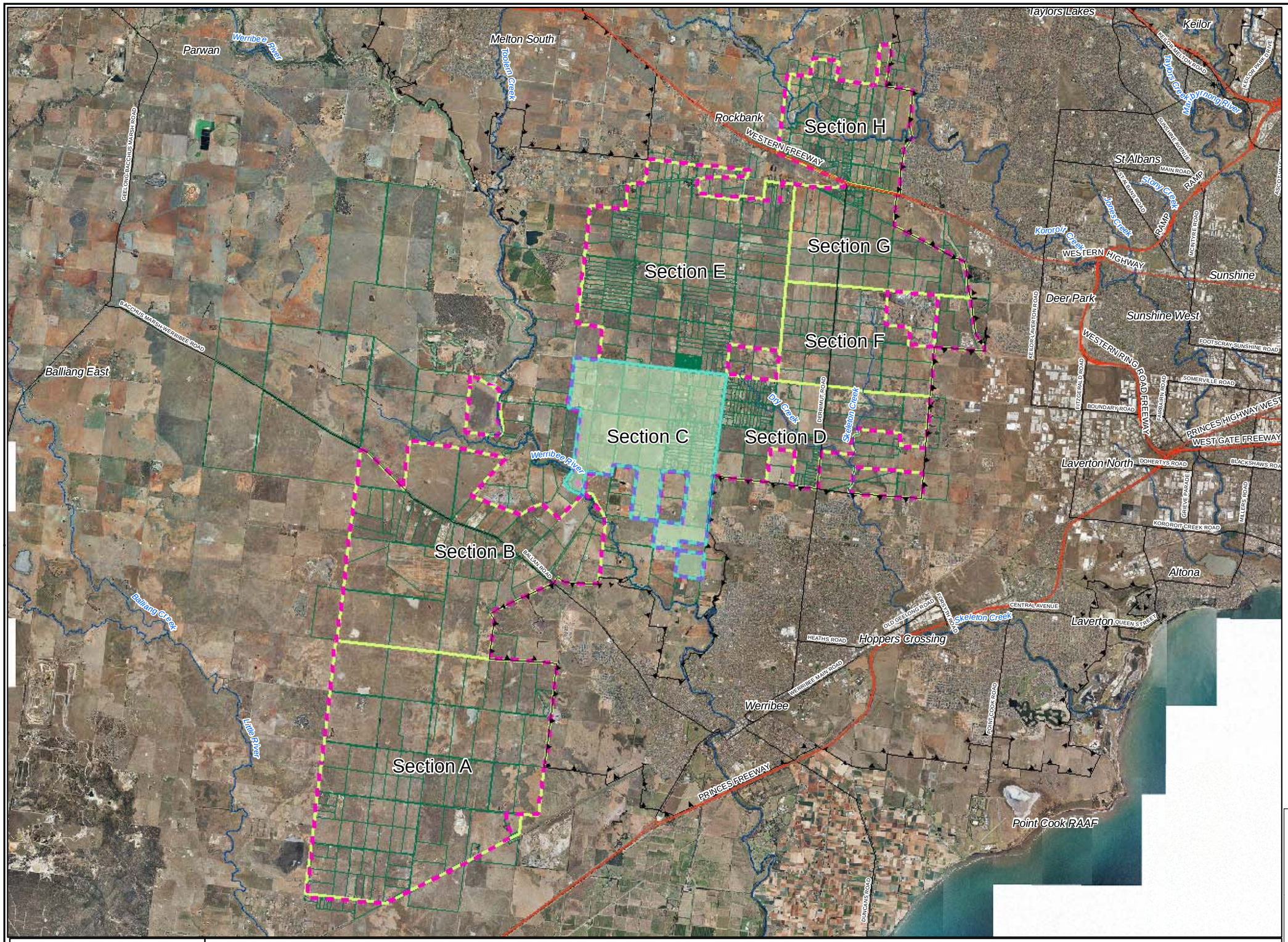
Vegetation mapping undertaken during the Melton/Wyndham Investigation identified seven Key Ecological Areas (Key Areas) within Section C, totalling approximately 221 ha. These are concentrated in the northern area of Section C (Figure ii).

In addition to ecological values such as presence of significant species and listed communities, these Key Areas provide landscape stepping stones between other remnants of Plains Grassland. They contribute to landscape linkages between larger areas of unassessed vegetation in close proximity to assessed areas, which are also considered likely to support additional areas of these endangered EVCs.

The Key Areas within Section C have been variously modified, however all consist of more than 10 ha of contiguous native vegetation of Very High conservation significance. The main Ecological Vegetation Class present is *Low-rainfall* Plains Grassland. In addition to ecological values such as presence of significant species and listed communities, these Key Areas provide good examples of primarily Low rainfall Plains-grassland in the Melton/Wyndham Investigation Area. There are few listed threatened species present in these Key Areas and surrounding Management Zones (which are largely made up of Highly Likely Native Vegetation areas known to contain native vegetation values) and they provide good although highly fragmented example of the critically endangered *Natural Temperate Grassland of the Victorian Volcanic Plain.*

Conclusions

The areas assessed within Section C as part of the Melton/Wyndham Investigation contain a significant area of native vegetation, comprising the endangered EVCs *Low-rainfall* Plains Grassland, *Heavier-soils* Plains Grassland, Escarpment Shrubland, Floodplain Riparian Woodland and Lignum Swamp, as well as the EPBC Act listed ecological community *Natural Temperate Grassland of the Victorian Volcanic Plain*. Seven Key Ecological Areas of Very High conservation significance have been identified within Section C, based on their conservation significance, size, habitat for threatened species and habitat connectivity values. Some of these areas are considered to provide the excellent examples of Low Rainfall Volcanic Plains Landscapes. Identification of these Key Areas provides opportunities for the precinct planning process to consider and implement the 3-step process of avoid, minimise and offset.



Legend

- Section C
- Urban Growth Boundary
- Melton/Wyndham Investigation Area
- Section boundary
- Parcels

Figure i: Location of Section C within the Melton/Wyndham Investigation Area.

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig i.mxd

0 0.5 1 2 3 4 5
Kilometers

N W E S

1.0 INTRODUCTION

1.1 Project Background

Biosis Research Pty. Ltd. was commissioned by the Growth Areas Authority (GAA) to map and assess native vegetation within the Melton/Wyndham Investigation Area west of Melbourne (Figure 1). The purpose of this mapping was to inform the preparation of precinct structure plans in areas designated for future urban development.

The biodiversity information collected as part of our investigations will be used to inform the Government's review of the Urban Growth Boundary (UGB) and Urban Growth Zone (UGZ) to the west of Melbourne.

In March 2009, Biosis Research produced the *Background Technical Report 2c: Biodiversity; Assessment of the Investigation Area in Melbourne's West*. This report covered two main areas known as the Melton Desktop Area (east of Melton, west of Sydenham, south of Mount Kororoit and north of Mount Atkinson) and the Vegetation Assessment Areas (incorporates the Melton/Wyndham Investigation Area shown in Figure 1 as well as an additional area to the west). Biosis Research (2009) referred to these areas collectively as the GAA Investigation Area. The report aimed to assess biodiversity constraints in the GAA Investigation Area and provide broad-scale recommendations for areas of retention priority.

The current report aims to provide a more detailed analysis of the results obtained through the vegetation mapping undertaken by Biosis Research in the Melton/Wyndham Investigation area. To assist in analysis and presentation of the data, the GAA have split the Melton/Wyndham Investigation area into eight key sections based on likely future precinct areas. As such, the results of the vegetation mapping assessment are documented in eight stand-alone reports, each covering a different section of this broader area (Figure 1). This report focuses on one of these sections: Section C (Figure 1).

1.2 Aims

The objectives of the study are to:

- Document the biodiversity values within each section of the Melton/ Wyndham Investigation Area identified by the vegetation mapping project;
- Analyse the data to determine key areas of vegetation/habitat to be priorities for retention.

- Present the habitat hectare and large old tree data collected.

These objectives will be achieved by:

- Providing a consolidated species list of flora and fauna recorded during the mapping project and augment these with database records provided by database searches within 5 km of each section;
- Mapping Ecological Vegetation Classes (EVCs) using field data collected from the Melton/Wyndham Investigation Area;
- Assigning a conservation significance to all patches of native vegetation, as per Appendix 3 of the Native Vegetation Framework (NRE 2002 – the Framework);
- Determining the location of significant biodiversity values; and
- Identifying the limitations of the current assessment.

1.3 Section C

Section C is located centrally within the broader Melton/Wyndham Investigation Area on the western fringe of Melbourne (Figure 1). Section C covers an area of about 2011 ha and is within the Victorian Volcanic Plain bioregion. It is bounded to the north by Boundary Road, to the south in part by Leakes Road, Sayers Road and Hogans Road, to the west by Mount Cottrell Road and private property west of Shanahans Road and to the east by Davis Road. It includes no major roads, but is dissected by Davis Creek and associated tributaries.

The topography is generally flat to gently undulating, resulting from lava flows of the late Tertiary–early Quaternary periods (Collie Margules 1990).

2.0 METHODS

2.1 Taxonomy

Common and scientific names for flora and fauna follow the Flora Information System (FIS 2007 version) and the Atlas of Victorian Wildlife (AVW 2007 version) which are curated by DSE.

Classification of native vegetation in Victoria follows a typology developed by DSE in which Ecological Vegetation Classes (EVCs) are the primary level of classification. An EVC contains one or more plant (floristic) communities, and represents a grouping of broadly similar environments (www.dse.vic.gov.au).

2.2 Literature and Database Review

Information in the FIS and AVW databases was reviewed and a search of the Birds Australia database (1998–2008) was undertaken. The Department of the Environment, Water, Heritage and the Arts (DEWHA) online database for the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act Protected Matters Search Tool, hereafter referred to as the DEWHA database) was searched. The current (2005) distribution and 1750 EVCs (DSE mapping of native vegetation present at these dates) present within each section of the Melton/Wyndham Investigation Area and their bioregional conservation status was reviewed (www.dse.vic.gov.au).

2.3 Vegetation Assessments

Field assessments were undertaken on 7, 14, 23, 27, 28, 29, 30 October 2008; 5, 7, 17, 19, 20, 21, 24, 25, 27, 28 November 2008; 12, 20, 21, 27, 28 January 2009 and 18, 26 February 2009 (24 days). Some additional days between this period were spent undertaking reconnaissance of the study area and other field tasks required for planning and quality assuarance of data being collected in the field.

The presence of native vegetation within the Melton/Wyndham Investigation Area (including Section C) was determined by field inspection. Access details for private property within these areas were provided by the GAA. Where possible, land owners were contacted and permission obtained to inspect each property. Initially no inspections were conducted without land owner approval and roughly **891 ha** of land were inspected in this manner. However, where access was denied, right to forced access was obtained in some instances and about **243 ha** were accessed in this manner. In total, therefore, roughly **1134 ha** (56% of private land within Section C) was inspected and subject to a habitat

hectare assessment.

The vegetation of each property assessed within the Melton/Wyndham Investigation Area was inspected by vehicle and on foot by up to three teams of two botanists between October 2008 and February 2009. Where access was denied or contact was unable to be made with the listed owner of a parcel of land, incidental observations were made from all available access points including where permitted access was available. During reconnaissance level surveys undertaken in May 2009, these observations were recorded in four main categories: highly likely native vegetation, possible native vegetation, wetland habitat or no native vegetation (See Section 2.4 for more detail).

The inspection of each property where access was permitted focused on delineating the extent of areas definable as a patch of native vegetation. A patch is defined by DSE (2007a) as an area where at least 25% of the total understorey plant cover is native (excluding bare ground). For each patch identified, a habitat hectare assessment was conducted and habitat score calculated. A summary of this method is provided in Appendix 1.

All areas that did not meet the 25% threshold were mapped as Degraded Treeless Vegetation. Typically this included cropped sites, cultivated areas sown with exotic pasture species and other areas dominated by introduced species. Seasonal wetlands are an exception to this as they are not generally dominated by native species when dry. Seasonally inundated wetlands are allocated a default habitat score as outlined by DSE (2007a). Vegetation quality was assessed within each accessed property using a standard method contained in a manual published by the Department of Sustainability and Environment (DSE 2004).

Indigenous canopy trees were also assessed and mapped in accordance with the Framework (NRE 2002). For scattered trees, contractors identified and recorded the location of all individual indigenous trees encountered within any habitat zone, including the species, diameter at breast height and assessment to determine ecological/ habitat significance

2.4 Reconnaissance Field Survey

A number of properties within Section C were not accessed during the Melton/Wyndham Investigation because of lack of available access, namely due to denial of access by landowners that were able to be contacted or incorrect contact details for remaining landowners. The presence of native vegetation within areas that were not able to be accessed was subsequently assessed using limited on-ground (reconnaissance) field survey informed by DSE's Native Vegetation Modelling (NVE 2005), mapping data from previous Biosis Research

assessments and other available reports, together with an analysis of recent aerial photography (January 2008).

Reconnaissance field survey for the Melton/Wyndham Investigation Area (including Section C) was carried out over three days in May 2009, in order to fill in knowledge gaps. Access was limited to roadsides.

The likely occurrence of native vegetation within these unsurveyed areas was split into one of six categories:

- *Highly Likely Native Vegetation - Grassy*
- *Highly Likely Native Vegetation - Structurally Modified*
- *Highly Likely Native Vegetation - Woody*
- *Possible Native Vegetation*
- *Wetland Habitat*
- *No Native Vegetation*

2.5 Mapping

Mapping data collected are displayed at a scale of 1:10,000. While all areas of native vegetation were considered in line with the DSE requirements for this project, no minimum area of native vegetation to be mapped was defined. Patches of native vegetation were delineated at the discretion of field staff to define the location of any significant features.

2.6 Rare or Threatened Species

Information on any populations of rare or threatened species (FIS 2007, DSE 2007b) observed during property site inspections were also recorded during the Melton/Wyndham Investigation field assessments. Data collected included a GPS waypoint, estimated distribution and estimated population size. However, no systematic survey was conducted for any threatened species.

2.7 Defining Key Areas

The future proposed land use within Section C may result in significant impacts to existing biodiversity values by (amongst other factors):

- the permanent removal of some native species and their habitats;
- the division of native species popoulations into genetically and geographically isolated smaller populations;

- changes to wildlife behaviour;
- disturbance of soil; and
- landscape level changes to water supply, movement and quality.

A number of aspects were considered when determining how Key Areas within the Melton/Wyndham Investigation Area should be defined. It is important that biodiversity values within Key Areas should be viable in the long term and that more mobile species, particularly rare or threatened species should have access to a network of suitable environments connected through a series of habitat corridors. Designation of Key Areas based on these concepts will minimise the risks of extinction during extreme environmental conditions such as fire and drought, or in association with future climate change.

The Victorian Volcanic Plain supports nationally significant values such as *Natural Temperate Grassland of the Victorian Volcanic Plain*, Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* and Golden Sun Moth *Synemon plana* (listed as critically endangered), Grassland Earless Dragon *Tympanocryptis pinguicolla* and Swift Parrot *Lathamus discolor* (listed as endangered), Striped Legless Lizard *Delma impar*, Plains-wanderer *Pedionomus torquatus*, Australian Painted Snipe *Rostratula australis*, Large-fruit Fireweed *Senecio macrocarpus*, River Swamp Wallaby-grass *Amphibromus fluitans* and Growling Grass Frog *Litoria raniformis*. All of these are matters of national environmental significance protected under the EPBC Act. These values should remain a conservation focus of ecological reserves within the region.

With the above concepts in mind, Key Areas within the Melton/Wyndham Investigation Area were defined using the following criteria:

- Large areas (more than 10 ha of contiguous native vegetation of Very High conservation significance);
- Areas providing habitat connectivity as either corridors or stepping stones; and
- Smaller areas (less than 10 ha) with a Site Condition score of >50 or areas that support significant populations of threatened species.

This assessment of Key Areas applies only to areas that have been subject to on-ground mapping and habitat hectare assessments as part of the original Melton/Wyndham Investigation. Areas within Section C where on-ground access was unable to be obtained have been subject to reconnaissance level surveys only, and have been excluded from the assessment of Key Areas as outlined above. It must be noted that patches of native vegetation that would meet the Key Area criteria are almost certainly present within these areas. In considering these areas decision makers should refer to the results of the reconnaissance level surveys (Figure 6) and Biosis Research (2009)

which defines areas of High/Medium and Low Retention priority throughout the Melton/Wyndham Investigation Area. This data will provide some indication of likely Key Areas within the reconnaissance survey sites.

2.8 Conservation Significance

The Framework (NRE 2002) defines conservation significance (Very High, High, Medium and Low) that relates to the bioregional level only. The primary measure used for determining the conservation significance of a patch of native vegetation as defined by the Framework is the Habitat Score. As all EVCs within the broader Melton/Wyndham Investigation Area (including Section C) are rated as endangered (except for Cane Grass Wetland EVC 291 which is rated as vulnerable) all patches of native vegetation within the Melton/Wyndham Investigation Area are rated to be at least of High conservation significance. Any patches with a Habitat Score of 40/100 or more have Very High conservation significance.

DSE have stipulated that consultants should utilise the Landscape Context Modelling Data layer (NV2005_QUAL_CSDL DSE 2003) provided in the Biodiversity Interactive Map 2.0 (http://nremap-sc.nre.vic.gov.au/MapShare.v2/imf.jsp?site= bim external) to assign landscape scores for each patch of native vegetation within the Melton/Wyndham Investigation Area. The legend in the Biodiversity Interactive Map qualifies the dataset by stating that "*datasets must be used with care, given their modelled nature. They are designed for use at a large scale (1:25,000 to 1:100,000) and are not intended to be used at a site or property scale*". To ensure that the Habitat Score for each patch could accurately be applied to determine conservation significance landscape scores were reviewed on a patch scale and revised where appropriate based on ground-truthed knowledge.

The second measure used for determining the conservation significance of a patch of native vegetation as defined by the Framework is the presence of the best 50% of habitat for a threatened species (NRE 2002: Appendix 3). Criteria for determining the presence of such habitat are described by DSE (2007a: Table 2). Where a patch of native vegetation was not determined to be of Very High conservation significance based on its condition, all available data on the presence of threatened species were used to determine if that patch represented the best 50% of habitat for a threatened species.

A third measure used for determining the conservation significance of a patch of native vegetation as defined by the Framework is the presence of other attributes as defined by NRE (2002: Appendix 3). Where a patch of native vegetation was not already determined as Very High conservation significance because of its condition or the presence of the best 50% of threatened species habitat, the site

was assessed for the presence of these other attributes.

2.9 Limitations

The following limitations apply to the current assessment:

1. Section C covers an area of approximately 2011 ha. Access was obtained for about 1134 ha and this area was subject to site inspection and a habitat hectare assessment where relevant. The remaining 877 ha (44% of Section C) was primarily subject to a reconnaissance level assessment using existing information, aerial photo interpretation and limited ground truthing. Ground truthing was restricted to viewing areas from public access points (primarily roads). A full assessment of the ecological values of these areas was not conducted. However, this assessment can be used to identify sites that require further field assessment to satisfy environmental legislation and policy requirements.
2. The classification of native vegetation within sections of the Melton/ Wyndham Investigation Area as *highly likely, possible* or *no native vegetation* is in relation to 'native vegetation' as per the definition of a remnant patch or scattered trees by DSE (2007a). It does not imply that sites mapped as having no native vegetation contain no scattered indigenous species, rather, that any native vegetation present is likely to be below the thresholds for assessment as a patch of native vegetation as prescribed under the Framework (NRE 2002).
3. The Melton/Wyndham Investigation Area was assessed using current DSE standards (DSE 2004). However, defining remnants (patches) of the EVC Plains Grassland using the Native Vegetation Framework (DSE 2007) does not necessarily correlate with the definition of the EPBC Act listed community *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP). While the two definitions for this community generally correspond well, there are instances where grassy vegetation does not qualify as a patch of Plains Grassland, but does meet the condition thresholds for NTGVVP. While the listing of NTGVVP indicates its intent to protect the better quality examples of this community, the definition provided by EPBC Act Policy Statement 3.8 is very broad. Therefore, some areas of Degraded Treeless Vegetation within the Melton/Wyndham Investigation Area may qualify as the EPBC Act listed community. These unmapped areas of grassland were generally of lower quality examples of this community resulting from the recolonisation of cultivated sites.
4. It is important to note that significant species, both flora and fauna, can occur in areas that are not considered to support patches of native vegetation. Examples of such species include the nationally significant Golden Sun Moth, Striped Legless Lizard, Growling Grass Frog and Spiny Rice-flower.

In some circumstances, areas not definable as a patch of native vegetation can support substantial populations of these species. It is therefore important to recognise that areas of non-native vegetation may still contain biodiversity values.

5. Additional limitations are as follows:

    - The assessment includes only vascular flora (ferns, conifers, flowering plants) and terrestrial vertebrate fauna (birds, mammals, reptiles, frogs), with the exception of Golden Sun Moth, which was recorded when observed. Non-vascular flora (e.g. mosses, liverworts) were not sampled although their presence is noted as part of the cover of native species in the definition of a patch.
    - Note that this assessment did not include any formal fauna survey and the significance assessments provided rely on incidental observations of significant fauna and existing database records. Subsequent fauna assessments could increase the conservation significance of areas not already rated to be of Very High conservation significance.
    - The presence of threatened flora and fauna were noted where they were encountered. However, such observations are likely to underestimate the distribution of these species, many of which are cryptic or only seasonally visible. Seasonal targeted surveys for threatened flora and fauna species should be conducted within relatively intact areas of native vegetation before any decisions are made as to their presence, absence or population size.
    - Comprehensive flora species lists were not compiled for each property visited. While plants observed in patches of native vegetation were recorded, the objective of the assessments was to complete habitat hectare assessments, which are based on presence and cover of plant lifeforms, rather than species information. As such, some species have been recorded to genus level only.
    - The assessment was conducted over a range of seasonal conditions which included both optimal and sub-optimal times for survey. As such the majority of seasonally visible species are likely to have been overlooked with a single site visit.
    - Field mapping is conducted using hand-held (uncorrected) GPS units and aerial photo interpretation. The accuracy of this mapping is therefore subject to the accuracy of the GPS units (manufacturer states +/- 15m but generally +/-2 to 5 metres) and dependent on the limitations of aerial photo resolution, rectification and registration. As such, these points should not be relied on for survey grade design

purposes.

- Agricultural areas are often heavily grazed making detection and/or identification of certain species, and estimation of life form cover difficult.

- Data from other assessments are generally available from the species records (including threatened species) and defined area species lists submitted by Biosis Research and other consultants to the FIS and AVW on a regular basis. Data collected post 2007 by other consultants will not be in the database currently available to consultants which subscribe to this database.

- The presence or absence of significant native vegetation described in other reports is generally relatively old and/or is otherwise superseded by the site inspections associated with this assessment. In that context a review of the more broadly available literature covering areas of land within Section C is not seen as critical to this assessment. However, a review of literature relating to the GAA investigation areas (including Section C) can be found in Biosis Research (2009).

3.0 RESULTS

3.1 Flora Species

3.1.1 Records within Section C

A total of 167 (98 indigenous and 69 introduced) plant species have been recorded from Section C (Appendix 2, Table A2.1) during the Melton/Wyndham Investigation (current assessment). Planted species have not been recorded unless they are spreading (naturalised).

3.1.2 Database records

The FIS contains records of an additional 392 (215 indigenous species and 177 introduced) plant species within 5 km of Section C (Appendix 2, Table A2.2). Twelve indigenous species were recorded during this assessment which are new records for this local area one of which, Wimmera Woodruff *Asperula wimmerana*, is rare in Victoria.

The DEWHA database also predicts the occurrence of, or suitable habitat for an additional three listed flora species (Curly Sedge *Carex tasmanica*, Large-headed Fireweed and Maroon Leek-orchid *Prasophyllum frenchii*) within 5 km of the study area. There is no suitable habitat, or habitat is poorly represented for these species within Section C for Curly Sedge and Maroon Leek-orchid, however habitat is well represented for Large-headed Fireweed (Appendix 2, Table A2.3).

3.2 Ecological Vegetation Classes

Thirteen EVCs (one with two communities) were recorded within the Melton/Wyndham Investigation Area:

- Plains Grassy Woodland (EVC 55)
- Floodplain Riparian Woodland (EVC 56)
- Creekline Grassy Woodland (EVC 68)
- Lignum Swamp (EVC 104)
- Plains Grassy Wetland (EVC 125)
- *Heavier-soils* Plains Grassland (EVC 132_61)
- *Low-rainfall* Plains Grassland (EVC 132_63)
- Cane Grass Wetland (EVC 291)
- Plains Sedgy Wetland(EVC 647)
- Stony Knoll Shrubland (EVC 649)
- Creekline Tussock Grassland (EVC 654)
- Brackish Wetland (EVC 656)

- Plains Woodland (EVC 803)
- Escarpment Shrubland (EVC 895)

DSE mapping of 1750 vegetation (a 1:100,000 scale map of vegetation as at this date) models the majority of Section C as previously supporting Plains Grassland (EVC 132) with small areas of Plains Grassy Wetland (EVC 125). The DSE 2005 EVC vegetation mapping indicates that substantial sections of the study area have been cleared but extensive areas of Plains Grassland remain to the north of Dohertys Road and scattered occurrences elsewhere.

The remaining remnants within Section C are typically good example of the low rainfall Kangaroo-grass dominated grassland which occurs in this region. Section C is relatively flat and has several slightly undulating volcanic rises running in an east west direction across the section. The rocky nature of these undulating rises has resulted in relatively low intensity land use and therefore a range of threatened species, listed at both national and state levels, are likely to be found here.

Five EVCs, one with two communities, were recorded within Section C during the Melton/Wyndham Investigation:

- Floodplain Riparian Woodland (EVC 56)
- Lignum Swamp (EVC 104)
- Plains Grassy Wetland (EVC 125)
- *Low-rainfall* Plains Grassland (EVC 132-63);
- *Heavier-soils* Plains Grassland (EVC 132_61); and
- Escarpment Shrubland (EVC 895).

The following general descriptions are based on data collected during this assessment.

3.2.1 *Low-rainfall* Plains Grassland

In total, 259.43 ha (68 patches) of Low-rainfall Plains Grassland was mapped in Section C. This EVC is present on cracking basalt soils in areas that receive less than 500 mm annual rainfall. The vegetation present commonly includes grass species such as, Kangaroo-grass *Themeda triandra*, Kneed Spear-grass *Austrostipa setacea*, Rough Spear-grass *Austrostipa scabra*, Rigid Panic *Whalleya proluta* and Short Wallaby-grass *Austrodanthonia carphoides*. Other common species present include Grassland Wood-sorrel *Oxalis perennans*, Lemon Beauty-heads *Calocephalus citreus*, Wingless Blue-bush *Maireana enchylaenoides* and Berry Saltbush *Atriplex semibaccata*.

Introduced weed species commonly found in this EVC include Wimmera Rye-grass *Lolium rigidum*, Onion Grass *Romulea rosea*, Cat's Ear *Hypochoeris radicata*, Buck's Horn Plantain *Plantago coronopus* and scattered Chilean

Needle-grass *Nassella neesiana* and Serrated Tussock *Nassella trichotoma*.

3.2.2 *Heavier-soils* Plains Grassland

A total of 7.71 ha (in three patches) of Heavier-soils Plains Grassland was mapped in Section C. This community of Plains Grassland differs from the Low-rainfall variety in that it occurs in areas that receive more than 500 mm annual rainfall. It typically lacks small and prostrate shrubs but is richer in herbaceous species. The vegetation commonly includes grasses such as Kangaroo-grass spear-grasses *Austrostipa* sp. and wallaby-grasses *Austrodanthonia* spp. Common herb species present include Grassland Wood-sorrel *Oxalis perennans*, Lemon Beauty-heads *Calocephalus citreus* and crane's-bill *Geranium* spp.

Typical weeds include Serrated Tussock, Onion Grass, fescue *Vulpia* spp. and heron's-bill *Erodium* spp.

3.2.3 Plains Grassy Wetland

A total of 0.56 ha (3 patches) of Plains Grassland was mapped in Section C during the Melton/Wyndham Investigation. This EVC occurs on the heavy black to grey clays found in swampy drainage lines and seasonally waterlogged wet depressions surrounded by Plains Grassland.

The characteristic ground cover is dominated by grasses, small sedges and (in relatively intact examples) forbs. The vegetation is typically species-rich on the outer verges but is usually species-poor in the wetter central areas. It reflects an example of the Plains Grassy Wetland found in the rain shadow regions to the west of Melbourne with dominant grasses including Brown-back Wallaby-grass *Austrodanthonia duttoniana*, Weeping Grass, *Microleana stipoides* and Kangaroo Grass. Other herbs were uncommon at the time of assessment.

Weed species commonly occurring within Plains Grassy Wetland include Spear Thistle *Cirsium vulgare* and Cane Needle-grass *Nassella hyalina*.

3.2.4 Lignum Swamp

A total of 3.30 hectares (1 patch) of Lignum Swamp were mapped in Section C. This EVC occurs on heavy grey clays, waterlogged for much of the year but also experiencing periods of extreme dryness. It is typically dominated by an open to moderately dense shrubland of Tangled Lignum *Muehlenbeckia florulenta* with a variable understorey depending on the length and frequency of inundation and the levels of salinity.

An overstorey is absent in this section. The ground layer species include Common Tussock-grass *Poa labillardierei,* Common Nardoo *Marsilea drummondii* and Common Woodruff *Asperula conferta*.

Typical weeds include Spear Thistle, Common Sow-thistle *Sonchus oleraceus*, Ox-tongue *Helminthotheca echioides,* and Serrated Tussock.

3.2.5 Escarpment Shrubland

A total of 0.52 hectares (7 patches) of Escarpment Shrubland was mapped in Section C. This EVC occurs on escarpments associated with the incutting of the Davis Creek drainage system. The tallest stratum in this example of the EVC is the shrub layer. Common shrub species include Tree Violet *Melicytus dentata*, Black Wattle *Acacia mearnsii*, Hedge Wattle *Acacia paradoxa*, Sweet Bursaria *Bursaria spinosa* and Sticky Hop-bush *Dodoanea viscosa*.

The ground layer consists of a few grasses and herbs such as Stiped Wallaby-grass *Austrodanthonia racemosa* var. *racemosa*, Weeping Grass *Microlaena stipoides*, Kidney-weed *Dichondra repens*, Kangaroo Grass and Nodding Saltbush *Einadia nutans* subsp. *nutans*.

Typical weeds include African Box-thorn *Lycium ferocissimum*, Horehound *Marrubium vulgare*, Serrated Tussock and Perennial Rye-grass *Lolium perenne*.

3.2.6 Floodplain Riparian Woodland

A total of 1.81 hectares (1 patch) of Floodplain Riparian Woodland was mapped in Section C. This EVC occurs on the floodplain of the Werribee River. The tallest stratum in this example of the EVC is the eucalypt canopy which is made up of Red Gums closest to the river and merging into Werribbe Blue Box at the furthest point from the river. Common shrub species include Heath Tea-tree *Leptospermum myrsinoides*, Blackwood *Acacia melanoxylon*, Black Wattle *Acacia mearnsii* and Sweet Bursaria *Bursaria spinosa*.

The ground layer consists of a high cover of grasses in open spaces. These include species such as Wallaby-grasses *Austrodanthonia* spp., Weeping Grass *Microlaena stipoides* and Common Tussock-grass *Poa labillardierei*.

Typical weeds include Horehound *Marrubium vulgare*, Toowoomba Canary-grass *Phalaris aquatica* and Gorse *Ulex europaeus*.

3.3 Scattered Trees

Within the areas of Section C assessed as part of the Melton/Wyndham Investigation, 13 very large, 8 large, 9 medium and one small locally

indigenous canopy trees are present (Appendix 4, Table A4.2). These are all outside patches of native vegetation (previous section).

The scattered trees present within Section C are remnants of Plains Grassy Woodland. Areas of scattered trees have been mapped as scattered tree polygons (Figure 2). Based on these polygons, there are 4.14 hectares containing scattered trees within Section C.

Further survey of areas not accessed as part of the Melton/Wyndham investigation may reveal the presence of scattered Large Old Trees which should be considered in line with the requirements of the Framework (NRE 2002).

3.4 Degraded Treeless Vegetation

Degraded Treeless Vegetation is primarily composed of highly disturbed agricultural land consisting of predominantly introduced vegetation. It mainly consists of areas used for cereal crop production and as such is dominated by typical crop weed species.

Section C supports 860.10 ha of Degraded Treeless Vegetation in areas mapped during the Melton/Wyndham Investigation. These areas generally contain large amounts of bare ground with the vegetation dominated by a mix of introduced annual grasses and other herbs. Common species include Spear Thistle, Artichoke Thistle *Cynara cardunculus*, Wimmera Rye-grass, Squirrel-tail Fescue *Vulpia bromoides* and Buck's-horn Plantain.

Low quantities and cover of indigenous grasses and other herbs including Common Wallaby-grass *Austrodanthonia caespitosa*, Bristly Wallaby-grass *A. setacea*, Brown-back Wallaby-grass, Grassland Wood-sorrel, Slender Dock *Rumex brownii* and Berry Saltbush are present within this vegetation. However the cover of these species does not meet the thresholds to be defined as a patch of native vegetation under the Native Vegetation Framework (NRE 2002).

3.5 Reconnaissance Level Survey

A number of properties (totalling approximately 541 ha) were identified as *Highly Likely Native Vegetation - Grassy* during the reconnaissance survey (Figure 2). Most of these areas were observed to support broad areas of Plains Grassland dominated by Kangaroo Grass and are likely to be mainly primary grassland of Very High conservation significance. A further 58 hectares (approximately) were identified as *Possible Native Vegetation*. The remaining area (approximately 337 ha) was considered likely to support less than 25% indigenous vegetation projective foliage cover (excluding bare ground). These areas were mapped as *No Native Vegetation* and are likely to be areas of

Degraded Treeless Vegetation.

3.6 Vegetation Quality Assessment

The benchmark for each EVC recorded within Section C is provided in Appendix 3.

3.6.1 Vegetation in Patches

A total of 83 habitat zones (or indigenous vegetation polygons) were identified within Section C (Figure 2). Assessment criteria, scores and the overall habitat score for properties assessed, are presented in Appendix 4. Site condition scores, giving an overview of vegetation quality, are mapped in Figure 3.

Because Plains Grassland, Plains grassy Wetland, Escarpment Shrubland and Lignum Swamp are or can be treeless, the site condition scores of these EVCs are standardised (as appropriate) to maintain the relative weighting of site condition and landscape scores (DSE 2004).

Section C contains a total of 273.3 ha of indigenous habitat zones within properties subject to assessment, which comprises **142.63 habitat hectares (hha).** This is comprised of 259.43 ha (136.33 hha) of Low-rainfall Plains Grassland, 7.71 ha (3.29 hha) of Heavier-Soils Plains Grassland, 0.56 ha (0.27 hha) of Plains Grassy Wetland, 0.52 ha (0.11 hha) of Escarpment Shrubland, 3.3 (1.65 hha) of Lignum Swamp and 1.80 ha (0.95 hha) of Floodplain Riparian Woodland.

No Large Old Trees were recorded in patches of native vegetation within Section C.

Conservation significance

The conservation significance of each polygon of native vegetation within Section C is shown in Appendix 4. Section C supports 252.30 ha (135.12 habitat hectares) of Very High conservation significance and 21.54 ha (7.51 habitat hectares) of High conservation significance vegetation (Figure 4).

3.6.2 Scattered Trees

As outlined in Section 3.3, a total of 13 very large, 8 large, 9 medium and 1 small locally indigenous scattered canopy trees were mapped within Section C (Appendix 4, Table A4.2). Scattered tree polygons and point locations of Very Large (VLOT) and Large Old Trees (LOTs) are shown on Figure 2.

Conservation significance

Scattered old trees are assigned the lowest conservation significance category appropriate to the EVC to which they originally belonged, unless there are threatened species or other attributes that increase their rating (DSE 2007a p11). As these remnants of Plains Woodland provide the Best 50% of habitat for either Buloke Mistletoe *Amyema linophylla* subsp. *orientale*, the scattered trees within the study area have Very High conservation significance. The conservation significance of scattered tree polygons is mapped in Figure 4 and directly relates to the scattered trees conservation significance of the scattered trees contained within the polygon.

Scattered small trees within the study area are assigned a conservation significance of 'low' as there are no threatened species or other attributes that increase their rating (DSE 2007a p11).

3.7 Significant Flora Species

The locations of all significant flora species records (including database records) within Section C are shown on Figure 5.

3.7.1 Nationally Significant Species

One flora species listed under the EPBC Act - Spiny Rice-flower - was recorded in Section C during the current assessment. This species had also been previously recorded in Section C on the FIS database. No other nationally significant plant species has been recorded within Section C.

The FIS database contains records of two additional species of national conservation significance from within 5 km of Section C (Appendix 2). None of these species were recorded during the current assessment or in the study area on the FIS. However, of these species, Button Wrinklewort is considered to have a High likelihood of occurrence in the study area based on the habitat present. The remaining species, Clover Glycine *Glycine latrobeana* is considered to have a Low likelihood of occurrence (Appendix 2).

The DEWHA database predicts the occurrence of, or suitable habitat for three additional species listed under the EPBC Act, Curly Sedge, Large-headed Fireweed, and Maroon Leek-orchid. There is no suitable habitat, or habitat is poorly represented for Curly Sedge and Maroon Leek-orchid, however Large-headed Fireweed is considered to have a high likelihood of occurrence based on available habitat within Section C (Appendix 2).

3.7.2 State Significant Species

Apart from Buloke, no records of FFG listed species were recorded during the current assessment or are recorded by the FIS in Section C. One additional flora species of state significance (DSE 2007), Wimmera Woodruff, was also identified during the current assessment. Eight other rare or threatened species have been previously recorded within Section C by the FIS (Appendix 2).

The FIS database does not contain records of any additional species of state conservation significance from the local area (within 5 km). Due to the presence of a range of EVCs, eight of these species (Buloke *Allocasuarina leuhmannii*, Heath Spear-grass *Austrostipa exilis*, Half-bearded Spear-grass *Austrostipa hemipogon*, Buloke Mistletoe, Small Scurf-pea *Cullen parvum*, Fragrant Saltbush *Rhagodia parabolica*, Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra) and Austral Tobacco *Nicotiana suaveolens*) are considered to have a high likelihood of occurrence based on habitat present within Section C (Appendix 2).

Some of these species have no recent or very few records (in total) in the vicinity of the study area on the FIS. However because these species require specific conditions to emerge, are visible for only short periods of time, or are otherwise cryptic, the likelihood of occurrence within Section C is still considered to be high.

The remaining species, Marsh Saltbush *Atriplex paludosa* is a species of coastal saltmarsh environments and is considered to have a low likelihood of occurrence based on available habitat.

3.8 Significant Fauna Species

The locations of all significant fauna species records (including database records) within Section C are shown on Figure 4.

3.8.1 Nationally Significant Species

No fauna species listed under the EPBC Act were recorded in Section C during the current assessment

The AVW has records of one species, Growling Grass Frog *Litoria raniformis* (vulnerable) from Section C (the Werribee River). The Werribee River supports a significant population of this species.

Fifteen fauna species of national significance have been recorded from the local area in the AVW and/or BA database or are predicted to occur on the DEWHA database. Of these, Plains-wander *Pedionomus torquatus* (vulnerable), Striped

Legless Lizard *Delma impar* (vulnerable) and Golden Sun Moth *Synemon plana* (critically endangered) have a high likelihood of occurrence in Section C and may be found in areas of Plains Grassland and even areas of grassy Degraded Treeless Vegetation.

The remaining 12 species are considered to have a medium to negligible likelihood of occurrence based on the habitat present (Appendix 5).

3.8.2 State Significant Species

No fauna species of state significance were recorded within Section C during the current assessment (Appendix 5). One species, Blue-billed Duck *Oxyura australis* has been recorded from the study area in the AVW (the Werribee River).

Eight species of state conservation significance are recorded from the local area in the AVW and/or BA database or are predicted to occur on the DEWHA database. Two of these species, Red-chested Button Quail *Turnix pyrrhothorax* and Black Falcon *Falco subniger* have a high likelihood of occurrence in Section C (Appendix 5). Remnant Plains Grassland in Section C provides good habitat for both species.

In general, the habitat is poorly represented for the remaining species, which have a medium to negligible likelihood of occurrence in Section C (Appenix 5).

3.9 Significant Vegetation Communities

Section C contains the EPBC listed ecological community *Natural Temperate Grassland of the Victorian Volcanic Plain* (critically endangered). The Australian Government Policy Statement 3.8 indicates that the community is present within the western suburbs of Melbourne and extends to Hamilton in western rural Victoria, and follows most closely the floristics of Plains Grassland (EVC 132) and Creekline Tussock Grassland (EVC 654). Creekline Tussock Grassland has not been mapped during the current assessment within Section C, however Plains Grassland (likely to be the EPBC ecological community in most instances) is widely distributed within Section C (Figure 2).

The Western (Basalt) Plains Grassland Community is listed under the FFG Act 1988. The description contained within the relevant FFG Action Statement equates the community to Plains Grassland (EVC 132) present within the area bounded by the Plenty River (Melbourne) to the east, Hamilton to the west, Beaufort to the north and Colac to the south. Therefore, all Plains Grassland mapped within Section C (Figure 2) is also considered to be the Western (Basalt) Plains Grassland Community. All EVCs recorded in Section C are endangered in the Victorian Volcanic Plain bioregion.

4.0 BIODIVERSITY LEGISLATION AND GOVERNMENT POLICY

Biodiversity legislation and government policy that is relevant to the Melton/Wyndham Investigation Area, including Section C, is discussed below.

4.1 Commonwealth

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to developments and associated activities that have the potential to significantly impact on matters protected under the Act.

Under the Act, unless exempt, actions require approval from the Australian Government Minister for Environment, Heritage and the Arts (the Minister) if they are likely to significantly impact on a 'matter of national environmental significance'. There are currently seven matters of national environmental significance (NES):

- World Heritage properties;
- National Heritage places;
- nationally listed threatened species and ecological communities;
- listed migratory species;
- Ramsar wetlands of international importance;
- Commonwealth marine areas; and
- nuclear actions (including uranium mining).

The EPBC Act also applies to the environment in general if actions are taken on Commonwealth land, or if actions that are taken outside Commonwealth land will impact on the environment on Commonwealth land.

Any person proposing to take an action that may, or will, have a significant impact on a matter of national environmental significance must refer the action to the Minister for determination as to whether the action is a 'controlled action' or is not approved. 'Significant impacts' are defined in *EPBC Act Policy Statement 1.1 Significant Impact Guidelines: Matters of National Environmental Significance* (DEH 2006).

NES matters relevant to Section C

There are three matters of national significance that are of relevance to the proposed development:

- listed threatened species and ecological communities;
- listed migratory species; and
- wetlands of international importance (Ramsar sites).

These are summarised below.

Listed threatened species and/or ecological communities

Ecological communities: One listed ecological community, Natural *Temperate Grassland of the Victorian Volcanic Plain*, occurs within the study area.

Listed flora species: Flora species listed under the Act are discussed in Section 3.6 and listed in Appendix 2. In summary, one listed species, Spiny Rice-flower was recorded in Section C during the current assessment. No additional listed species have been previously recorded within Section C by the FIS (Figure 5). Habitat is also moderately well represented or well represented within Section C for two additional species: Large-headed Fireweed and Button Wrinklewort.

There are two existing records of Spiny Rice-flower on the FIS, and five additional records identified during the Melton/Wyndham Investigation within Section C. There are no existing records of any other nationally significant species within the section. However, the presence and extent of any population(s) of Spiny Rice-flower or any other nationally listed species with suitable habitat, is uncertain as no areas within Section C have been systematically searched for listed species.

Listed fauna species: Fauna species listed under the Act are discussed in Section 4.8 and listed in Appendix 5. In summary The AVW has records of one species, Growling Grass Frog *Litoria raniformis* (vulnerable) from Section C (the Werribee River). The Werribee River supports a significant population of this species. Although not recorded, Plains-wander *Pedionomus torquatus* (vulnerable), Striped Legless Lizard *Delma impar* (vulnerable) and Golden Sun Moth *Synemon plana* (critically endangered) have a high likelihood of occurrence in Section C and may be found in areas of Plains Grassland and even areas of grassy Degraded Treeless Vegetation. There has been no systematic targeted survey for any listed species with Section C so the size and extent of populations of these species is not known.

Other nationally significant fauna species listed on various databases are

considered to have a medium–negligible likelihood of occurrence in Section C based on available habitat.

Listed migratory species

The list of migratory species under the EPBC Act is a compilation of species listed under four international conventions: China-Australia Migratory Bird Agreement (CAMBA), Japan-Australia Migratory Bird Agreement (JAMBA), Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Species listed under the 'migratory' provisions of the EPBC Act are summarised below:

- One species have been recorded within Section C by the AVW and/or BA database.
- Ten species are recorded from the local area (AVW and/or BA database).
- Five additional species are predicted to occur, or their habitat is predicted to occur, within 5 km of the study area (DEWHA database).

While some of these species would be expected to use the study area on occasions, and some of them may do so regularly or may be resident, it does not provide important habitat for an ecologically significant proportion of any of these species.

Wetlands of International Importance (Ramsar sites)

The study area is identified by the DEWHA database as being within the catchment of a Wetland of International Significance (Ramsar site): Port Phillip Bay (western shoreline) and Bellarine Peninsula. However, the study area does not drain directly into this wetland and development in this region is not likely to result in a significant impact to a Ramsar wetland.

Implications Section C

All sections of the Melton/Wyndham Investigation Area (including Section C) support matters of NES which would trigger the EPBC Act. In response to this the GAA has engaged with DEWHA to conduct a strategic assessment process to address changes to the Melbourne Urban Growth Boundary.

4.2 State

4.2.1 Flora and Fauna Guarantee Act 1988

The FFG Act is the key piece of Victorian legislation for the conservation of

threatened species and communities and for the management of potentially threatening processes.

A permit is required from DSE to 'take' protected flora species from public land. Taking protected flora from private land requires the permission of the landowner and not DSE unless the land is declared 'critical habitat'. Most native vegetation contains some protected flora species.

Protected flora are native plants or communities of native plants that have legal protection under the FFG Act. The protected flora list has three sources:

- plant taxa (species, subspecies or varieties) listed as threatened;
- plant taxa belonging to communities listed as threatened; and
- plant taxa which are not threatened but require protection for other reasons.

Some species which are attractive or highly sought after, such as orchids and grass-trees, are protected so that removal of these species from the wild can be controlled. Not all of these species are rare in the wild or highly significant. Protection includes living (e.g. flowers, seeds, shoots, roots) and non-living (e.g. bark, leaves, other litter) plant material (DSE website).

A permit is also required for the taking, trading or keeping of fish that are members of taxa or communities of flora and fauna on the Threatened List. The controls mean that authorisation under the FFG Act is required to catch, possess, keep or sell listed fish (DSE website).

Implications for Section C

Much of land in Section C is privately owned and is not declared 'critical habitat'. Therefore a permit to 'take' listed flora and fauna species is not required under the FFG Act on these lands.

One threatened community, Western (Basalt) Plains Grassland Community, is present within Section C. This community is mapped as Plains Grassland (EVC 132) on Figure 2.

Areas of Section C that are public land require a permit from DSE under the FFG Act to remove listed species. Listed threatened and protected species recorded in Section C during the current assessment are identified in Appendix 2, Table A2.1. All species part of the Western (Basalt) Plains Grassland Community are also protected under the Act.

Precinct planning for the Melton/Wyndham Investigation Area should have regard to the Action Statements prepared under the FFG Act for:

- Plains-wanderer
- Growling Grass Frog
- Striped Legless Lizard
- Golden Sun Moth
- Grassland Earless Dragon

- Sunshine Diuris
- Large-fruit Groundsel
- Button Wrinklewort
- Small Milkwort
- Small Scurf-pea
- Narrow Goodenia
- Pale Plover-daisy
- Western (Basalt) Plains Grassland

4.2.2 Victorian Planning Provisions

A planning permit may be required to remove, destroy or lop native vegetation under the relevant local government planning scheme (e.g. Clause 52.17) unless exemptions in a clause apply or if the removal, destruction or lopping of vegetation is in accordance with a Native Vegetaton Precinct Plan (Clause 52.16) that has been incorporated into the planning scheme. A Native Vegetation Precinct Plan may form part of a Precinct Structure Plan and may also determine whether exemptions to the requirement of a permit under Clause 52.16-4 apply.

Implications for Section C

It is possible that some or all of Section C will be the subject of a Native Vegetation Precinct Plan, drawing on information collected by this and other ecological surveys. Such a plan would identify which areas of native vegetation are to be retained and which are permitted to be cleared and offset.

4.2.3 Native Vegetation Management Framework

The Native Vegetation Management Framework (the Framework) is State Government policy for the protection, enhancement and revegetation of native vegetation in Victoria (NRE 2002). Native vegetation provisions were introduced to all planning schemes in 1989 and the Framework was incorporated into the Victoria Planning Provisions in 2003. The primary goal of the Framework is:

> *a reversal, across the whole landscape, of the long-term decline in the extent and quality of native vegetation, leading to a Net Gain* (NRE 2002).

In association with the regional Native Vegetation Plans, the Framework provides decision-making tools for native vegetation management.

Where an application is made to remove native vegetation, a proponent for a development must explain the steps that have been taken to:

- Avoid the removal of native vegetation, where possible.
- Minimise the removal of native vegetation.

- Appropriately offset the loss of native vegetation, if required.

A proponent for a development must demonstrate that the option to avoid and minimise vegetation clearance has been fully explored before considering offsets.

An offset may be achieved by improvements in the quality or extent of native vegetation in a selected 'offset area', either within a project area or off-site. An area that is revegetated and protected or set aside for natural regeneration may provide some, or all, of the required offset. The conservation significance of vegetation to be removed is also taken into account when offsets are determined.

This assessment identifies what level of offset would be prescribed if all the native vegetation within the Section was cleared and what offsets would be prescribed if the Key Areas identified were retained but all other native vegetation was permitted to be cleared.

Offsets are typically generated by managing an area of remnant vegetation on private land. Active ecological management of such areas will generally yield a gain in habitat score of 20 % (approximately) over the nominated 10 years.

Implications for Section C

An assessment of the net gain implications of the above development scenarios is discussed in Appendix 6.

4.2.4 Wildlife Act 1975 and associated Regulations

The *Wildlife Act 1975* is the primary legislation in Victoria providing for protection and management of wildlife. For the purposes of the Act, wildlife means indigenous vertebrate species (except those declared as pest animals), invertebrate species listed under the FFG Act, and some introduced game species.

The Wildlife Regulations 2002 of the Act prescribe penalties for the purposes of the Wildlife Act. These include penalties for persons who wilfully damage, disturb or destroy any wildlife habitat without appropriate authorisation (Section 9 of the Wildlife Regulations 2002). Authorisation for habitat removal may be obtained under the Wildlife Act; through a licence granted under the *Forests Act* 1958; or under any other Act.

Authorisation to destroy or possess wildlife may be required under Sections 41– 47 of the *Wildlife Act 1975*. Permits under the Act may be needed where it is expected that wildlife will need to be destroyed or moved.

Implications for Section C

A permit will be required for removal of habitat at the site. It may be that removal of habitat will be covered by a permit to remove native vegetation, therefore a separate permit under the Wildlife Act would not be required.

If construction activities are likely to result in the death of wildlife or the need to move wildlife short distances, permits will be required.

4.2.5 Port Phillip and Westernport Native Vegetation Plan

This document (PPWCMA 2006) has been prepared to develop a strategic and co-ordinated approach to the management of native vegetation within the region. The plan is designed to complement the Native Vegetation Management Framework and contains specific information and objectives relating to the region. The information in the plan is centred on four strategic directions:

- Retain the quantity of native vegetation by minimising clearing;
- Protect native vegetation with reservation and management agreements;
- Maintain and improve the quality of native vegetation; and
- Increase the quantity of native vegetation.

Responses and offset requirements for clearing native vegetation are outlined in Appendix 3.4 of the document (PPWCMA 2006: pg 52).

Implications for Section C

The objectives of the Native Vegetation Plan are similar to those of the Native Vegetation Management Framework and should be met if the three step approach to achieving a Net Gain outcome is followed.

Offsets for unavoidable tree losses that are not covered by the Framework replacement ratios are calculated using the Port Phillip and Westernport Native Vegetation Plan.

4.2.6 Environment Protection Act 1970: State Environmental Protection Policy (Waters of Victoria) 2003

This policy provides a legal framework for state and local government agencies, businesses and communities to work together to protect and rehabilitate Victoria's surface water environments.

Beneficial uses of this channel need to be protected. Uses to be protected

include:

- Maintenance of natural aquatic ecosystems and aquatic wildlife.
- Passage of indigenous fish.
- Maintenance of indigenous riparian vegetation.
- Water based recreation.
- Commercial and recreational use of edible fish and crustacea.
- Agricultural water supply.
- Other commercial purposes.

Impacts to surface water quality must not exceed water quality objectives specified to protect beneficial uses. Relevant clauses must be adhered to. Of particular relevance are:

- 43 - surface water management and works.
- 53 - vegetation protection and rehabilitation.
- 56 - construction activities.

Implications for Section C

Construction managers need to monitor affected surface waters to assess if beneficial uses are being protected. The GAA may need to consult with EPA and the relevant catchment management authority with regard to establishing appropriate water quality objectives and monitoring requirements.

4.3 Local

4.3.1 Local Government Planning Scheme (City of Wyndham)

There is an Environmental Significance Overlay Schedule 1 (ESO1) covering the land below the break of slope leading down to Davis Creek (http://www.dse.vic.gov.au/planningschemes/).

Implications for Section C

Impacts on these areas will need to consider the objectives of the overlays and a permit will be required to impact on any native vegetation.

5.0 KEY AREAS

The Key Areas within Section C are presented in Figure 6. The Key Areas have been identified based on the methodology outlined in Section 2.8.

Vegetation mapping undertaken during the Melton/Wyndham Investigation identified seven Key Areas within Section C covering approximately 168 ha of native vegetation. These are concentrated in the northern half of Section C. Key Areas within Section C (Figure 6) are identified in Table 1.

In addition to ecological values such as presence of significant species and listed communities, these Key Areas provide some relatively small and highly fragmented examples of Low-rainfall Plains-grassland in the Melton/Wyndham Investigation Area. There are relatively few listed threatened species present in these Key Areas (although they are yet to be thoroughly searched) and surrounding management zones. The areas which are most likely to contain extensive areas of native vegetation and therefore the majority of the native vegetation issues were unable to be accessed in the investigation and will be most likely to form the basis of any potential reserve network in this region. The assessed areas generally provide lower quality examples of the critically endangered *Natural Temperate Grassland of the Victorian Volcanic Plain*.

Key Area 1 is a large area (approximately 70 ha) the majority of which is primary grassland. This Key Area is contiguous with surrounding areas of *Highly Likely Native Vegetation* which is likely to contain high value Plains Grassland. The grassland throughout this area is generally dominated by Kangaroo Grass with occasional other indigenous herbs including Kindney weed *Dichondra repens* and Blushing Bindweed *Convolvulus angustissimus*. Key Area 1 and the adjacent Management Zones contain an example of Low-rainfall Plains Grassland remnants in the Melton/Wyndham Investigation Area.

Key Area 2 contains two habitat zones (approximately 14 hectares) of Low-rainfall Plains Grassland vegetation. The larger of these has had some low levels of rock removal in the past although it still contains a high quality example of this EVC. The smaller habitat zone contains an excellent example of this EVC and is the only zone in which and the nationally listed Spiny Rice-flower was recorded in Section C Key Areas during the investigation. This Key Area contains a range of native herbs includingLemon Beauty-heads and Common Everlasting *Chrysocephalum sp 1*.

Table 1: Key Areas within Section C

Key Area #	Habitas ID #	Habitat Zone #	EVC
1	50242680	1A	Low-rainfall PG
	50242680	2A	Low-rainfall PG
	50242680	3A	Low-rainfall PG
	50242709	1A	Low-rainfall PG
	50242709	2A	Plains Grassy Wetland
2	50242707	1A	Low-rainfall PG
	50242707	1B	Low-rainfall PG
3	1773905	1A	Low-rainfall PG
	1773906	1A	Low-rainfall PG
	1773906	1B	Low-rainfall PG
	1773906	1C	Low-rainfall PG
	1773907	1A	Low-rainfall PG
	1773908	1A	Heavier-soils PG
	1773908	3A	Heavier-soils PG
	1773909	1A	Low-rainfall PG
	1773909	2A	Low-rainfall PG
	1773910	1A	Low-rainfall PG
	1778593	1A	Low-rainfall PG
	1778593	1B	Low-rainfall PG
	1861786	1A	Low-rainfall PG
	1861786	1B	Low-rainfall PG
	204150978	1A	Low-rainfall PG
	204150978	1B	Low-rainfall PG
	204150986	1A	Low-rainfall PG
	204150986	1B	Low-rainfall PG
4	3001452	1A	Low-rainfall PG
	3001452	1B	Low-rainfall PG
	3001452	1C	Low-rainfall PG
	3001452	1D	Low-rainfall PG
5	1778584	1A	Low-rainfall PG
	1778585	1A	Low-rainfall PG
	1779679	1A	Low-rainfall PG
	1779684	1A	Low-rainfall PG
	1779684	2A	Low-rainfall PG
6	50242719	1A	Low-rainfall PG
	50242719	5A	Lignum Swamp
	50242719	6A	Plains Grassy Wetland
7	50242717	1A	Floodplain Riparian Woodland

Key Area 3 is a large area which is made up of many small parcels and comprises a range of qualities of primary and secondary grassland (approximately 61 ha) which is occasionally dominated by Kangaroo Grass. Occasional herbaceous species were identified during the assessment including Sheeps Burr *Acaena echinata*, Lemon Beuty-heads, Cut-leaf Goodenia and Blue Devils. This area has been previously subdivided and as a result the majority of the remnant vegetation exists in small patches which have had a variety of degrading impacts leading to a high level of variation between patches.

Key Area 4 contains four habitat zones (approximately 15 ha) of Low-rainfall Plains Grassland vegetation. The larger patches are primarily low quality, wallaby-grass dominated vegetation. The smaller patches were higher quality and observed to contain a range of native grasses and herbaceous species including Kangaroo-grass, Wallaby-grass, Spear-grass, Lemon Beuty-heads and Blue Devils.

Key Area 5 is a large area that is made up of five parcels including management zones. These are all small parcels and comprise primary and secondary grassland (approximately 17 ha) of variable quality. These are all classified as management zones although they contain good examples of Low Rainfall Plains Grassland, are contiguous with adjacent *Highly Likely Native* Vegetation which is known to be high quality, and have a range of species which are rarely observed elsewhere in the Melton/Wyndham Investigation Area. Occasional herbaceous species were identified during the assessment including Kidney Weed, Blue Devils and Black-anther Flax-lily *Dianella revoluta*. This area has been previously subdivided and as a result the majority of the remnant vegetation exists in small patches which have been subject to a variety of degrading impacts leading to a high level of variation between patches.

Key Area 6 contains three habitat zones (approximately 28 ha). A section of one of these habitat zones is within Section C (approximately 6 ha) and the remainder of this Key Area lies outside of the Melton/Wyndham Investigation Area. These habitat zones contain species-poor examples of Low rainfall Plains Grassland, Lignum Swamp and Plains Grassy Wetland. The main area of note is the Plains Grassy Wetland which is contained outside of the study area and contains *Eleocharis pallens* which has been observed to be widespread in the Plains Grassy Wetland in the southern section of the Melton/Wyndham Investigation Area.

Key Area 7 contains a single habitat zone (approximately 16 ha (1 ha within Section C)) and is contiguous with a vegetation corridor along the Werribee River which has been previously assessed by Biosis Research. This Key Area contains Floodplain Riparian Woodland with a large number of trees including 19 VLOTs, 20 LOTs, 16 MOTs and 17 STs. It has a diversity of flora in a range of life forms which where not observed elsewhere in the study area

including River Red Gum, Werribee Blue Box, Woolly Tea-tree, Blackwood, Black Wattle and Sweet Bursaria. This area provides and important corridor and refuge within this landscape for tree and shrub dependant species.

5.1 Reconnaissance Survey of Key Areas

The assessment of Key Areas above applies only to properties that have been subject to on-ground mapping and habitat hectare assessments as part of the original Melton/Wyndham Investigation. The reconnaissance surveys undertaken on areas where on-ground access was not available provide an indication of the broader amount of native vegetation present. It must be noted that some of these patches would also meet the criteria for delineation as a Key Area. Decision makers should refer to Biosis Research (2009) which defines areas of High/Medium and Low Retention priority throughout the Melton/Wyndham Investigation Area and will provide some indication of likely Key Areas within the reconnaissance survey sites.

All areas identified as Highly Likely Native Vegetation to the east of Sinclairs Road are known to contain high quality native vegetation and will be highly likely to be of Very High conservation significance. The other areas identified as Highly Likely Native Vegetation are not as well known although they contain areas which are likely to be mainly primary grassland or ephemeral wetland EVCs such as Lignum Swamp of Very High conservation significance.

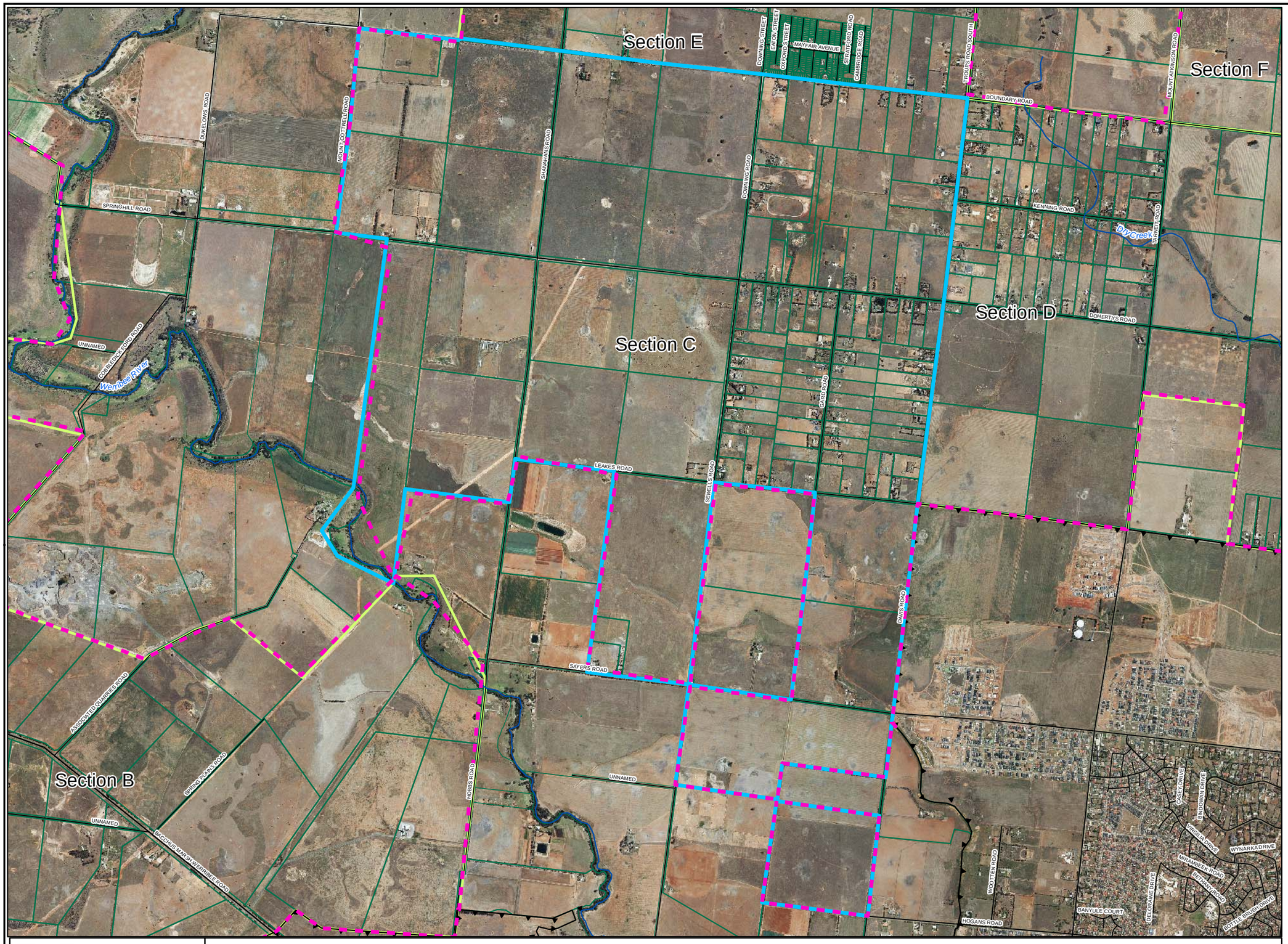
6.0 CONCLUSIONS

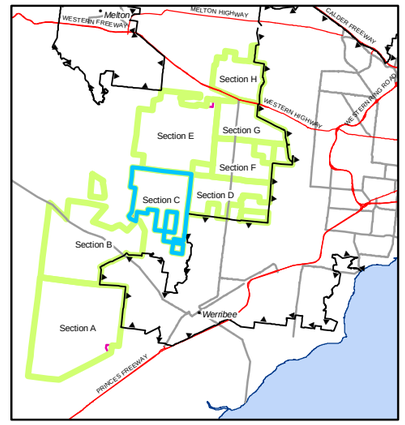
The areas assessed within Section C as part of the Melton/Wyndham Investigation contain a significant area of native vegetation, comprised of the endangered EVCs *Low-rainfall* Plains Grassland (259.43 ha), *Heavier-soils* Plains Grassland (7.71 ha), Plains Grassy Wetland (0.56 ha), Escarpment Shrubland (0.52 ha), Floodplain Riparian Woodland (1.80 ha) and Lignum Swamp (3.30 ha). The majority of Plains Grassland within this area is also likely to meet the criteria for the EPBC Act listed ecological community *Natural Temperate Grassland of the Victorian Volcanic Plain* (critically endangered) and the Western (Basalt) Plains Grassland Community listed under the FFG Act. In addition, the area provides valuable habitat for nationally significant species Spiny Rice-flower, Plains Wanderer, Growling Grass Frog, Striped Legless Lizard and Golden Sun Moth (most of which have been previously recorded in Section C). A number of state significant species have also been recorded within the section, or have potential to occur. Within areas not subject to assessment during the Melton/Wyndham Investigation, a further 541 ha (approx.) within Section C were identified as *highly likely native vegetation – grassy* during the reconnaissance surveys.

Of the roughly 274 ha of native vegetation mapped in Section C during the Melton/ Wyndham Investigation, approximately 217 ha have been identified as part of Key Ecological Areas. Seven Key Ecological Areas have been identified based on their conservation significance, size, habitat for threatened species and habitat connectivity values. Key Area 1-3 are contiguous with surrounding areas of *Highly Likely Native Vegetation* known to contain high value Plains Grassland in Section C and E. It is likely that these areas will be identified as a single large Key Area with on ground mapping of area unable to be assessed in the current study. Decision makers should refer to Biosis Research (2009) which defines areas of High/Medium and Low Retention priority throughout the Melton/Wyndham Investigation Area and will provide some indication of additional likely Key Areas within the reconnaissance survey sites.

Identification of these Key Areas within Section C provides opportunities for the precinct planning process to consider and implement the Net Gain 3-step process of avoid, minimise and offset.

FIGURES





Legend

- Melton/Wyndham Investigation Area
- Section C
- Urban Growth Boundary
- Section boundary
- Parcels

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

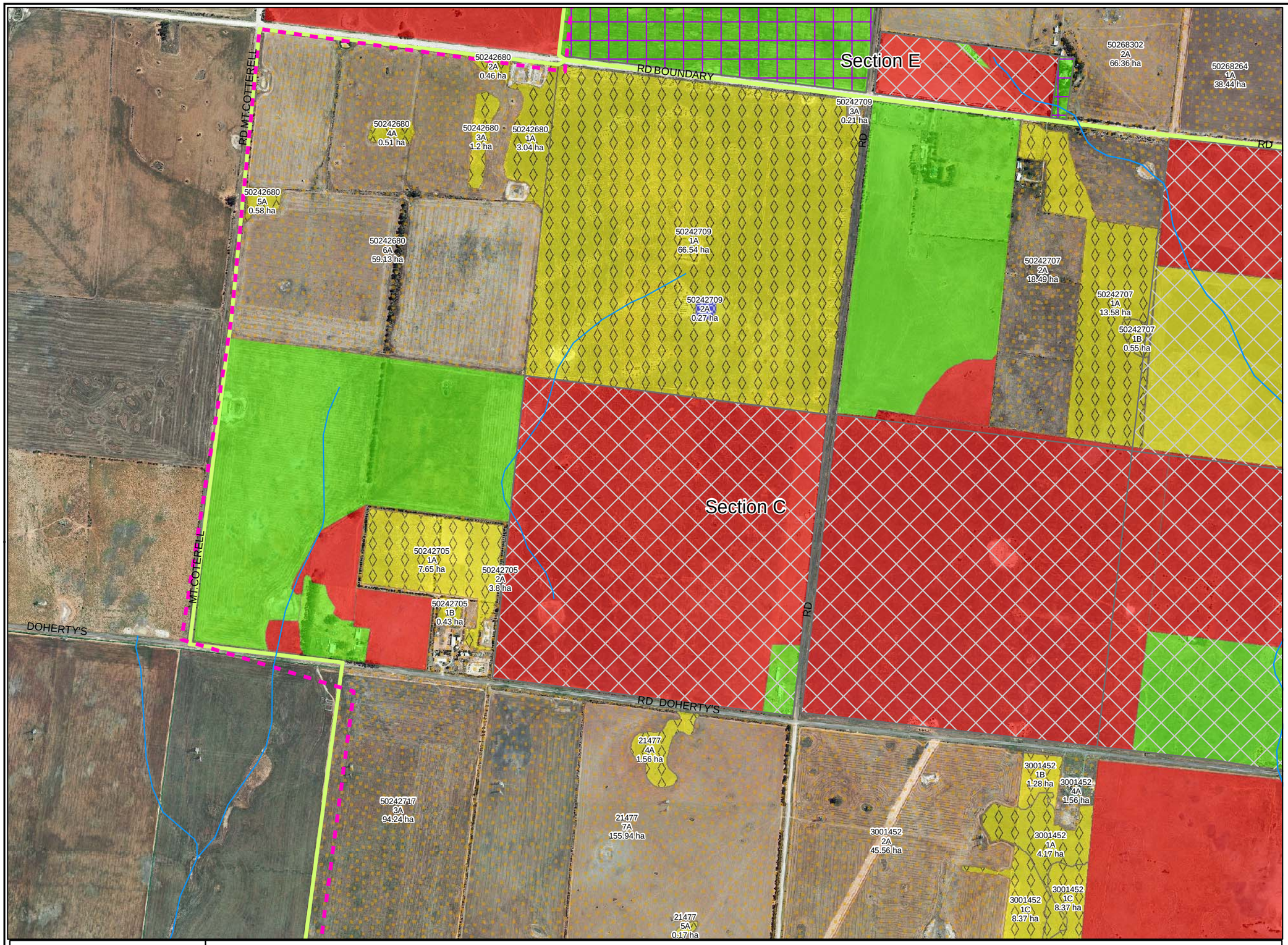
Figure 1: Location of Section C within the Melton/Wyndham Investigation Area.

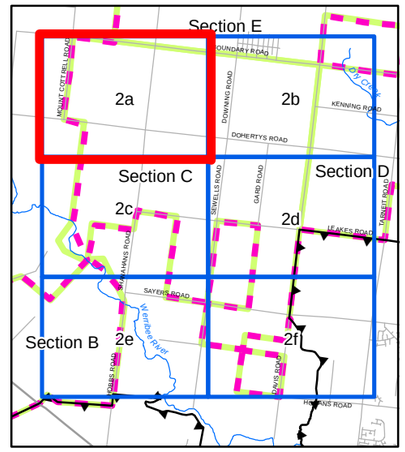
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 1.mxd

0 0.3 0.6 0.9 1.2
Kilometers

N
W E
S





Legend

EVC

- 104 Lignum Swamp
- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 56 Floodplain Riparian Woodland
- 895 Escarpment Shrubland
- Degraded Treeless Vegetation

Scattered Trees

- Very Large Old Tree
- Large Old Tree
- Scattered Trees polygons

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

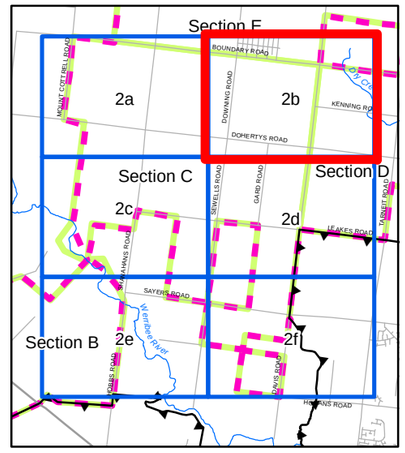
Figure 2 a : Native Vegetation, Section C.

Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 2.mxd

0 50100 200 300 400 500
Meters

N W E S



Legend

EVC

- 104 Lignum Swamp
- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 56 Floodplain Riparian Woodland
- 895 Escarpment Shrubland
- Degraded Treeless Vegetation

Scattered Trees

- Very Large Old Tree
- Large Old Tree
- Scattered Trees polygons

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

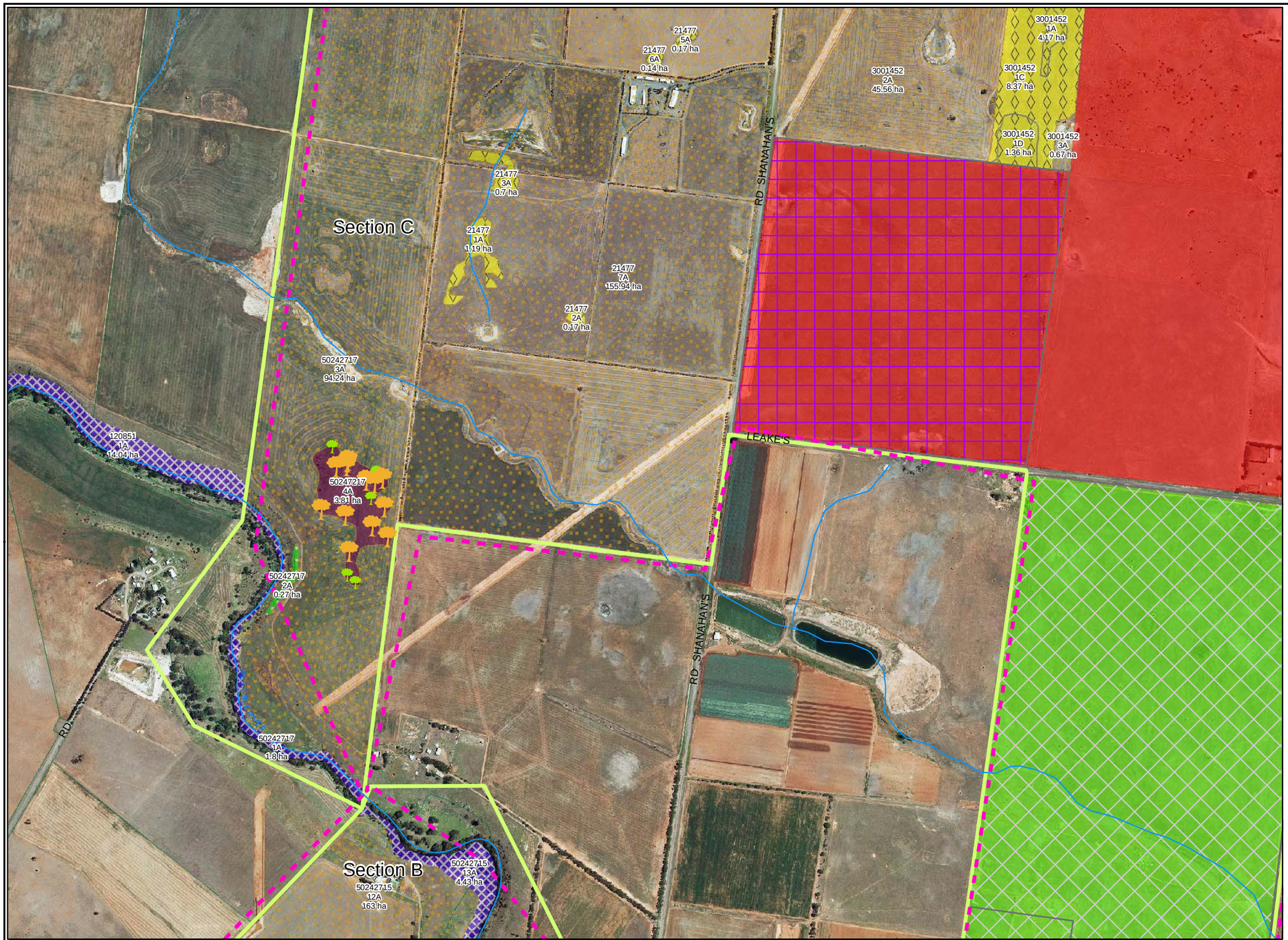
Figure 2 b: Native Vegetation, Section C.

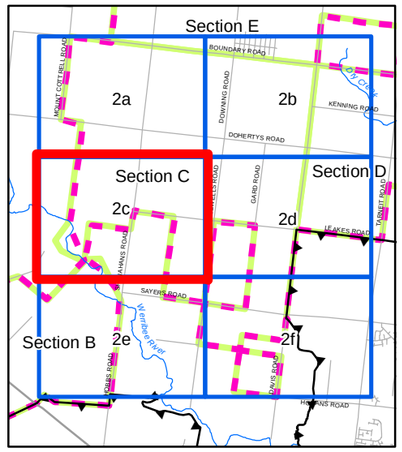
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 2.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

EVC

- 104 Lignum Swamp
- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 56 Floodplain Riparian Woodland
- 895 Escarpment Shrubland
- Degraded Treeless Vegetation

Scattered Trees

- Very Large Old Tree
- Large Old Tree
- Scattered Trees polygons

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

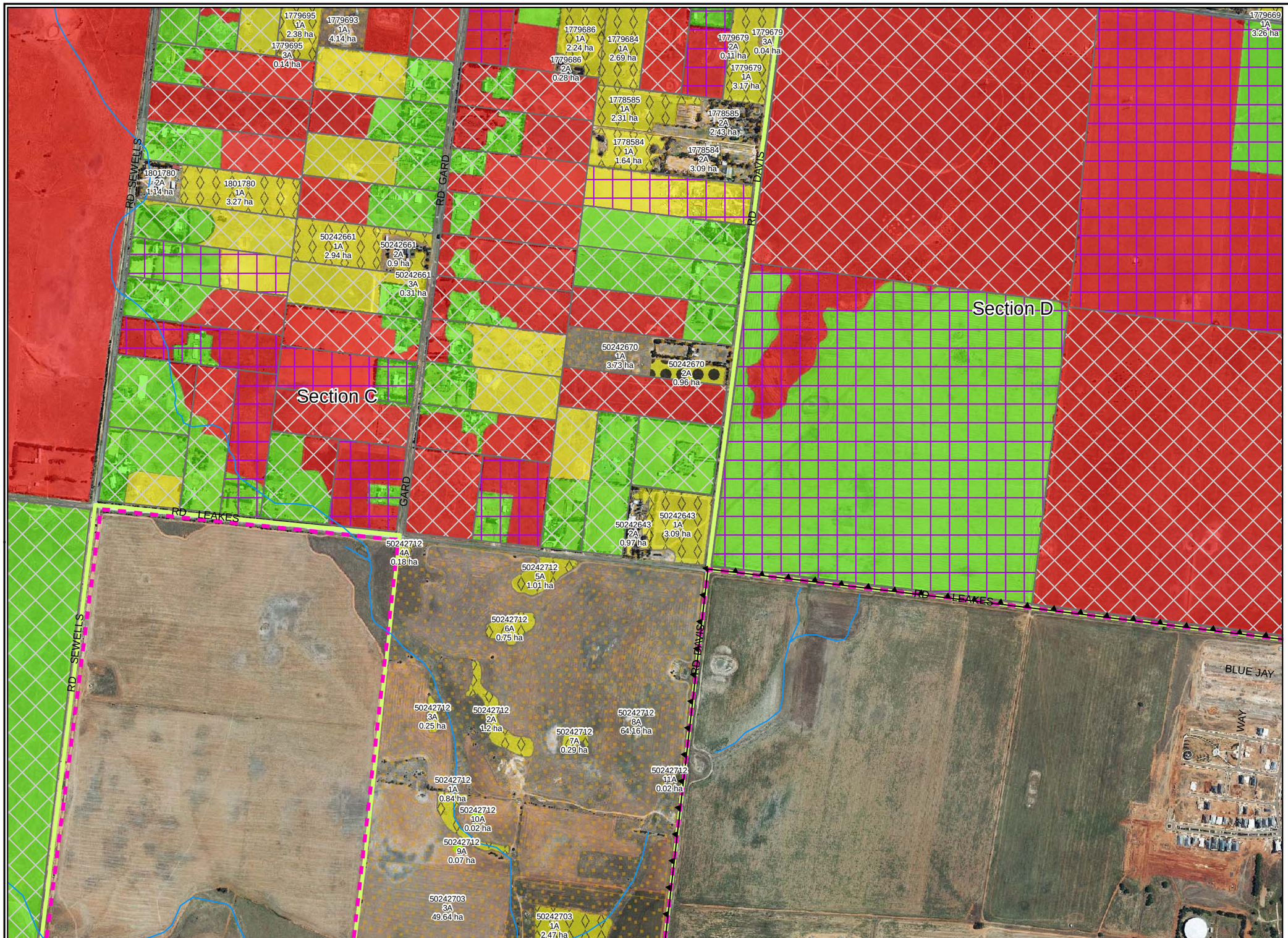
Figure 2 c : Native Vegetation, Section C.

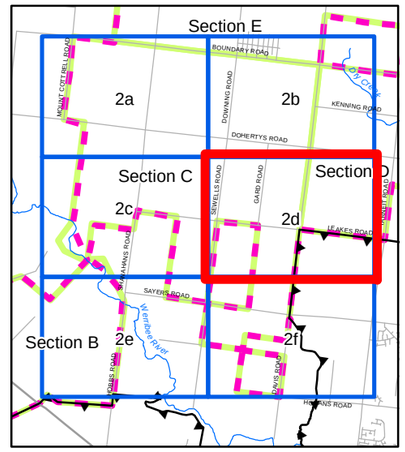
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 2.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

EVC

- 104 Lignum Swamp
- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 56 Floodplain Riparian Woodland
- 895 Escarpment Shrubland
- Degraded Treeless Vegetation

Scattered Trees

- Very Large Old Tree
- Large Old Tree
- Scattered Trees polygons

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

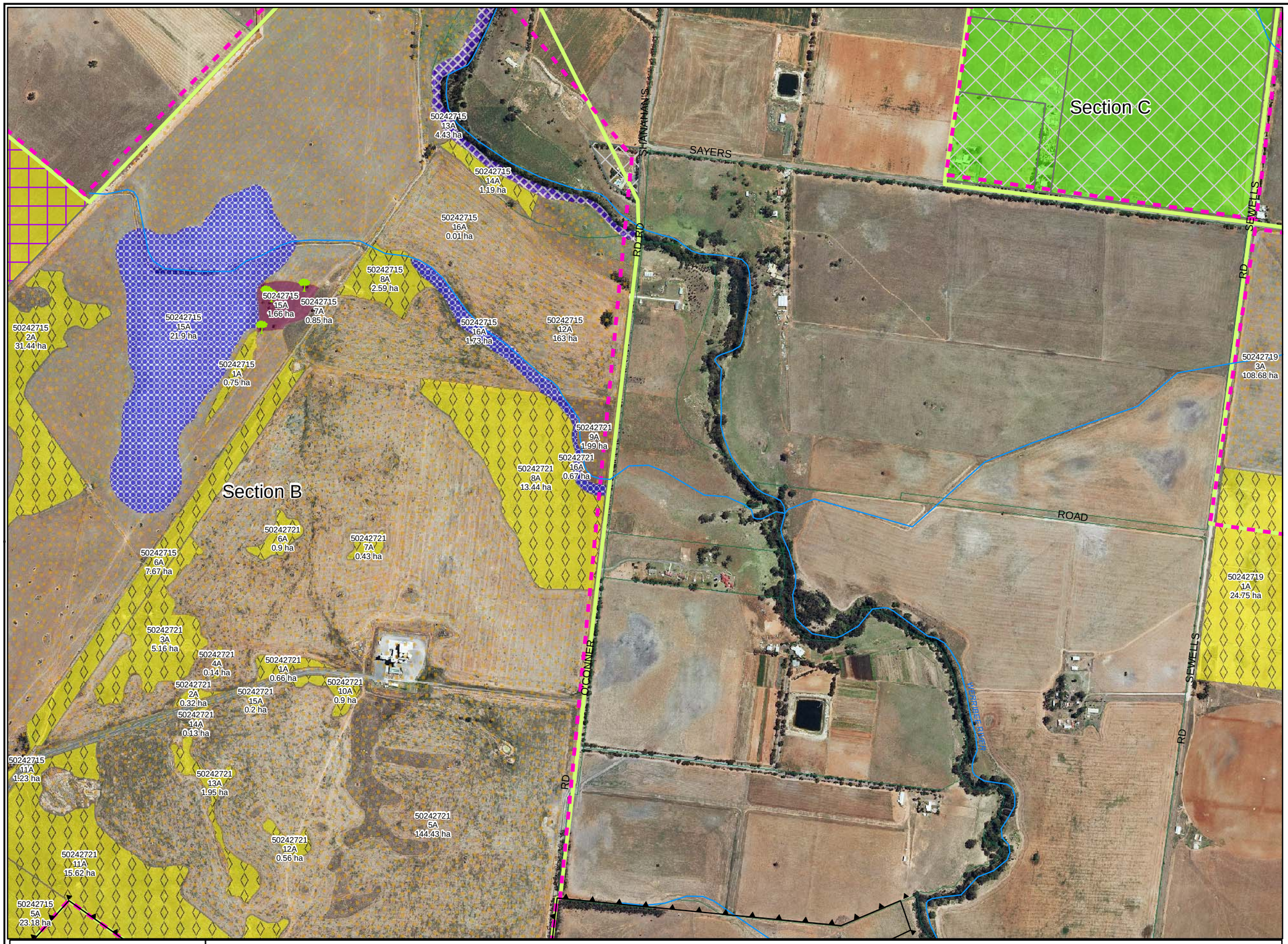
Figure 2 d: Native Vegetation, Section C.

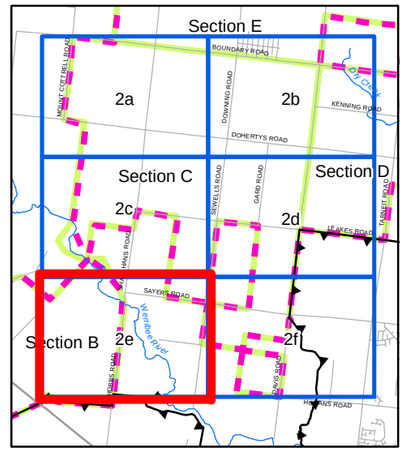
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 2.mxd

0 50100 200 300 400 500
Meters

N
W E
S





Legend

EVC

- 104 Lignum Swamp
- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 56 Floodplain Riparian Woodland
- 895 Escarpment Shrubland
- Degraded Treeless Vegetation

Scattered Trees

- Very Large Old Tree
- Large Old Tree
- Scattered Trees polygons

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

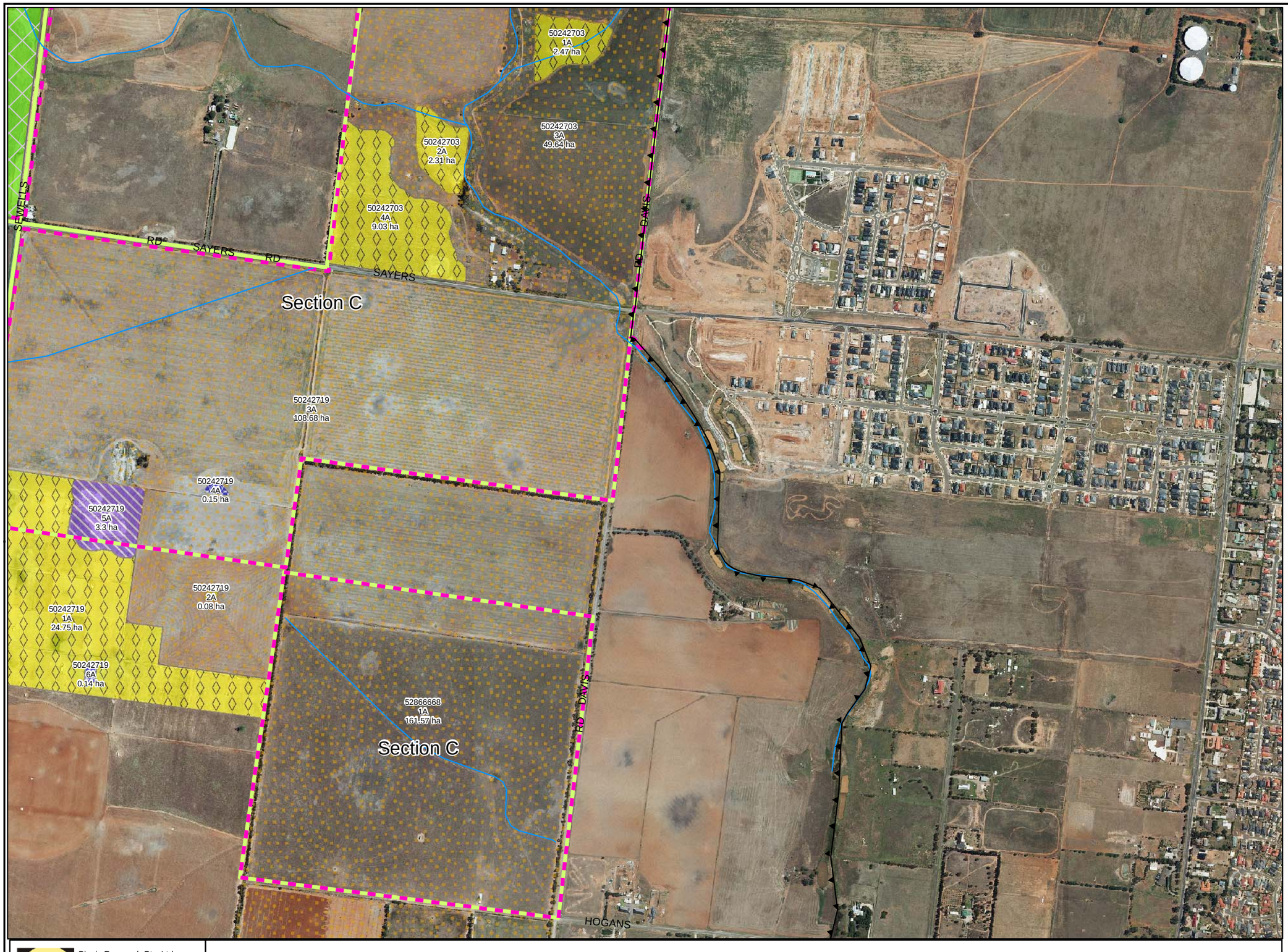
Figure 2 e : Native Vegetation, Section C.

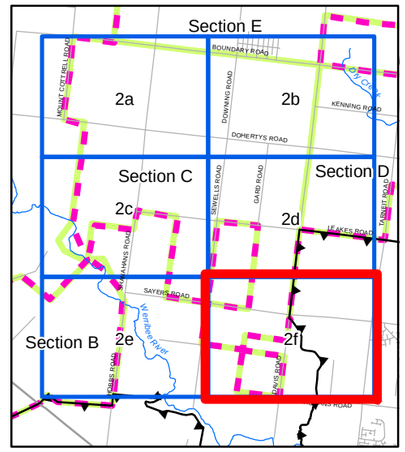
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 2.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

EVC

- 104 Lignum Swamp
- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 56 Floodplain Riparian Woodland
- 895 Escarpment Shrubland
- Degraded Treeless Vegetation

Scattered Trees

- Very Large Old Tree
- Large Old Tree
- Scattered Trees polygons

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

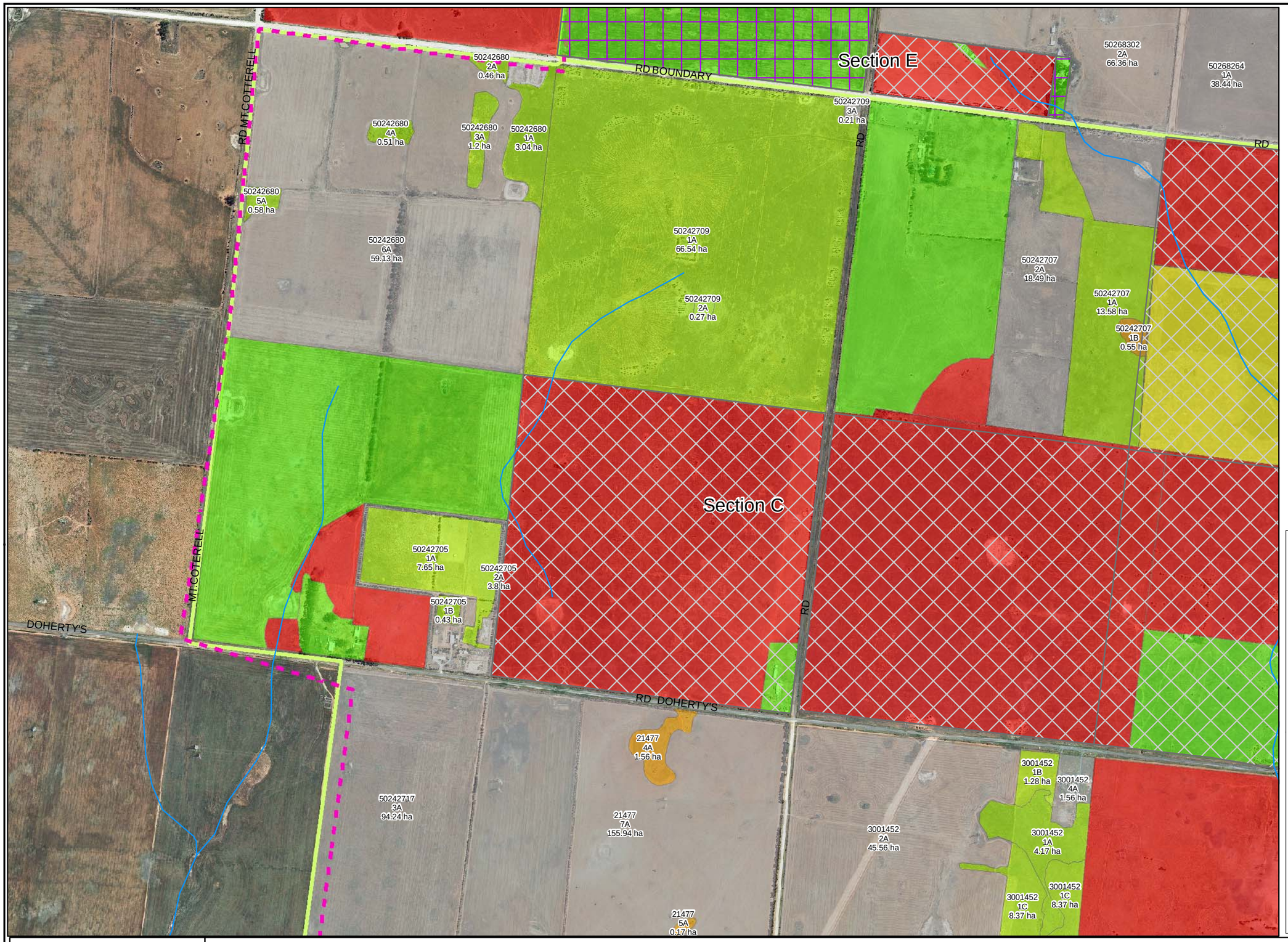
Figure 2 f : Native Vegetation, Section C.

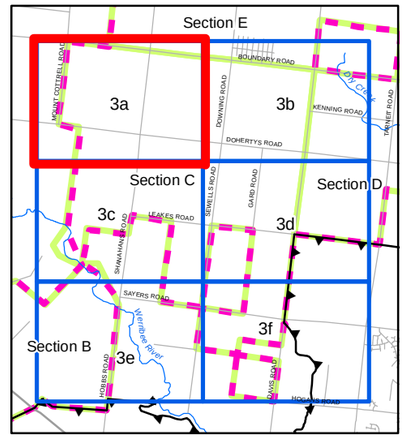
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 2.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Site Condition Score

- Degraded Treeless Vegetation
- 1 to 20
- 20 to 30
- 30 to 75

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

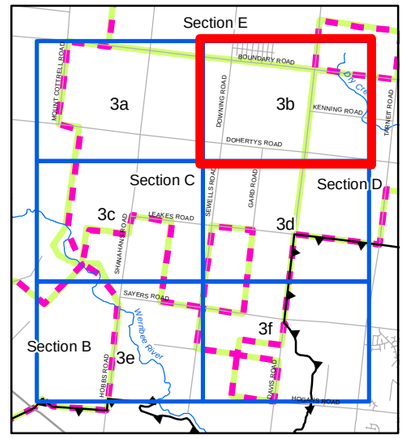
Figure 3a : Vegetation quality of habitat zones and results of reconnaissance survey, Section C.

Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 3.mxd

0 50100 200 300 400 500
Meters

N W E S



Legend

Site Condition Score

- Degraded Treeless Vegetation
- 1 to 20
- 20 to 30
- 30 to 75

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

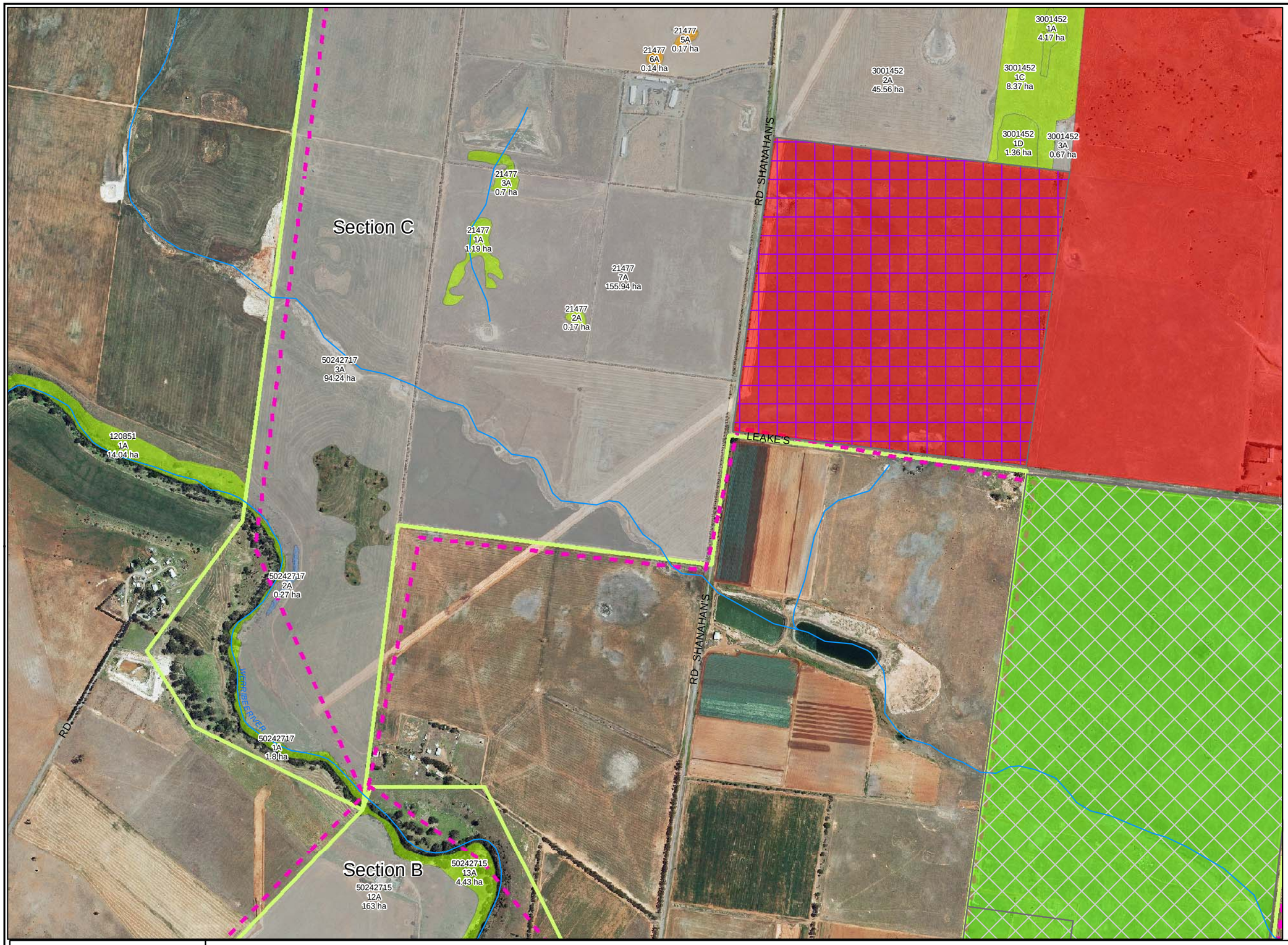
Figure 3b : Vegetation quality of habitat zones and results of reconnaissance survey, Section C.

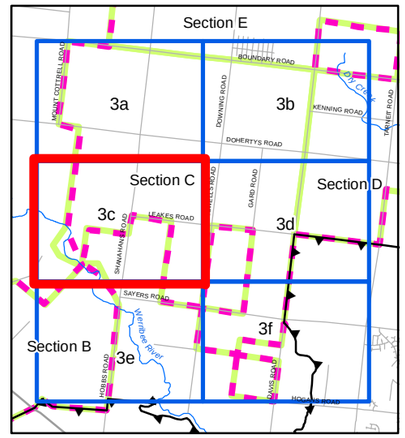
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 3.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Site Condition Score

- Degraded Treeless Vegetation
- 1 to 20
- 20 to 30
- 30 to 75

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

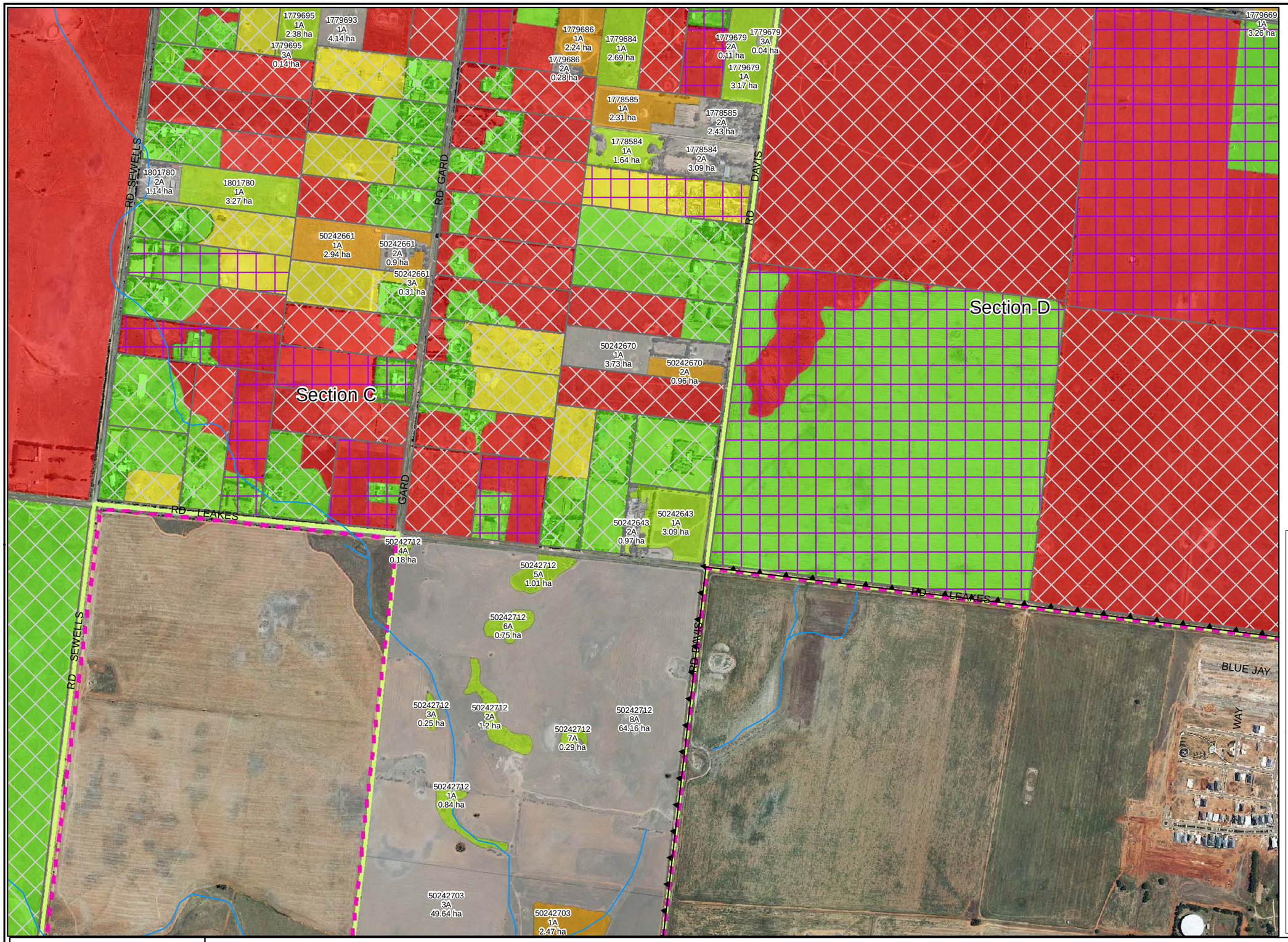
Figure 3c : Vegetation quality of habitat zones and results of reconnaissance survey, Section C.

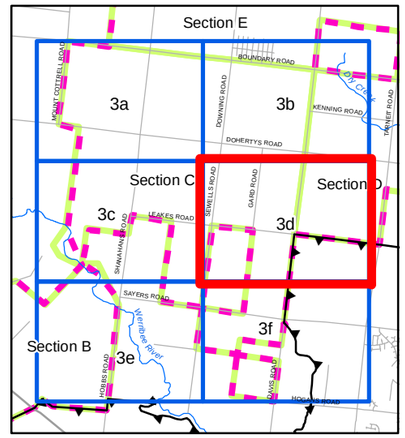
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 3.mxd

0 50100 200 300 400 500
Meters

N
W E
S





Legend

Site Condition Score

- Degraded Treeless Vegetation
- 1 to 20
- 20 to 30
- 30 to 75

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

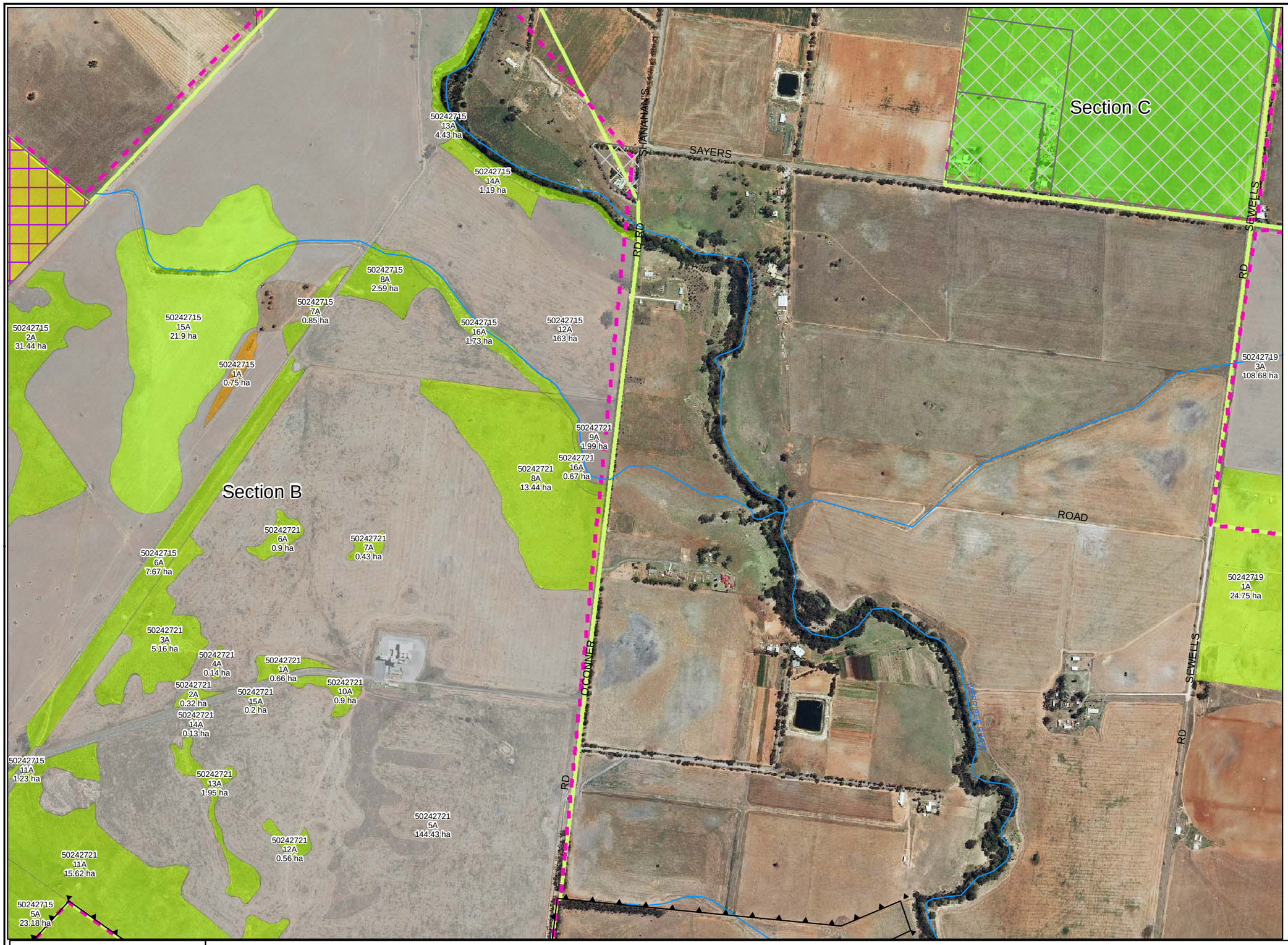
Figure 3d : Vegetation quality of habitat zones and results of reconnaissance survey, Section C.

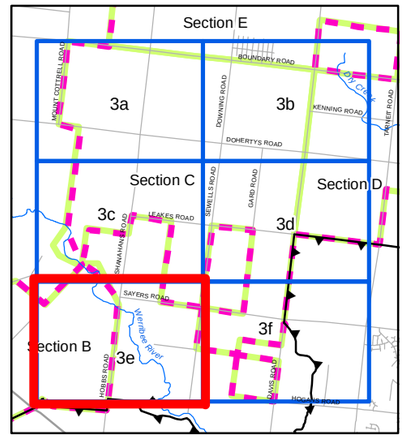
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 3.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Site Condition Score

- Degraded Treeless Vegetation
- 1 to 20
- 20 to 30
- 30 to 75

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

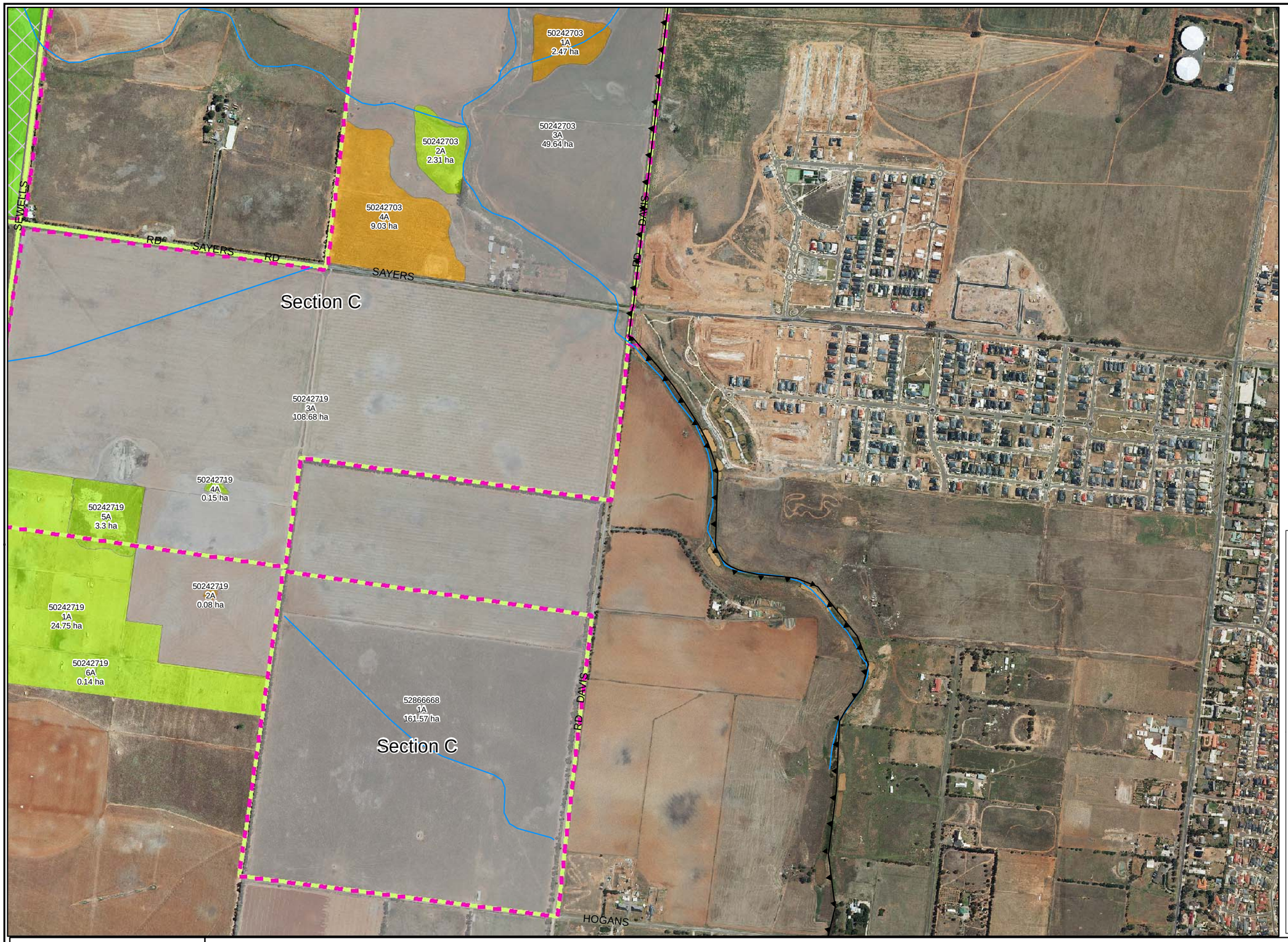
Figure 3e : Vegetation quality of habitat zones and results of reconnaissance survey, Section C.

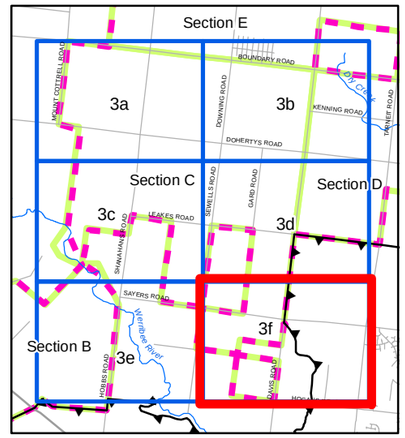
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 3.mxd

0 50100 200 300 400 500
Meters

N
W E
S





Legend

Site Condition Score

- Degraded Treeless Vegetation
- 1 to 20
- 20 to 30
- 30 to 75

Reconnaissance Survey

- Highly Likely Native Vegetation - Grassy
- Possible Native Vegetation
- No Native Vegetation
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

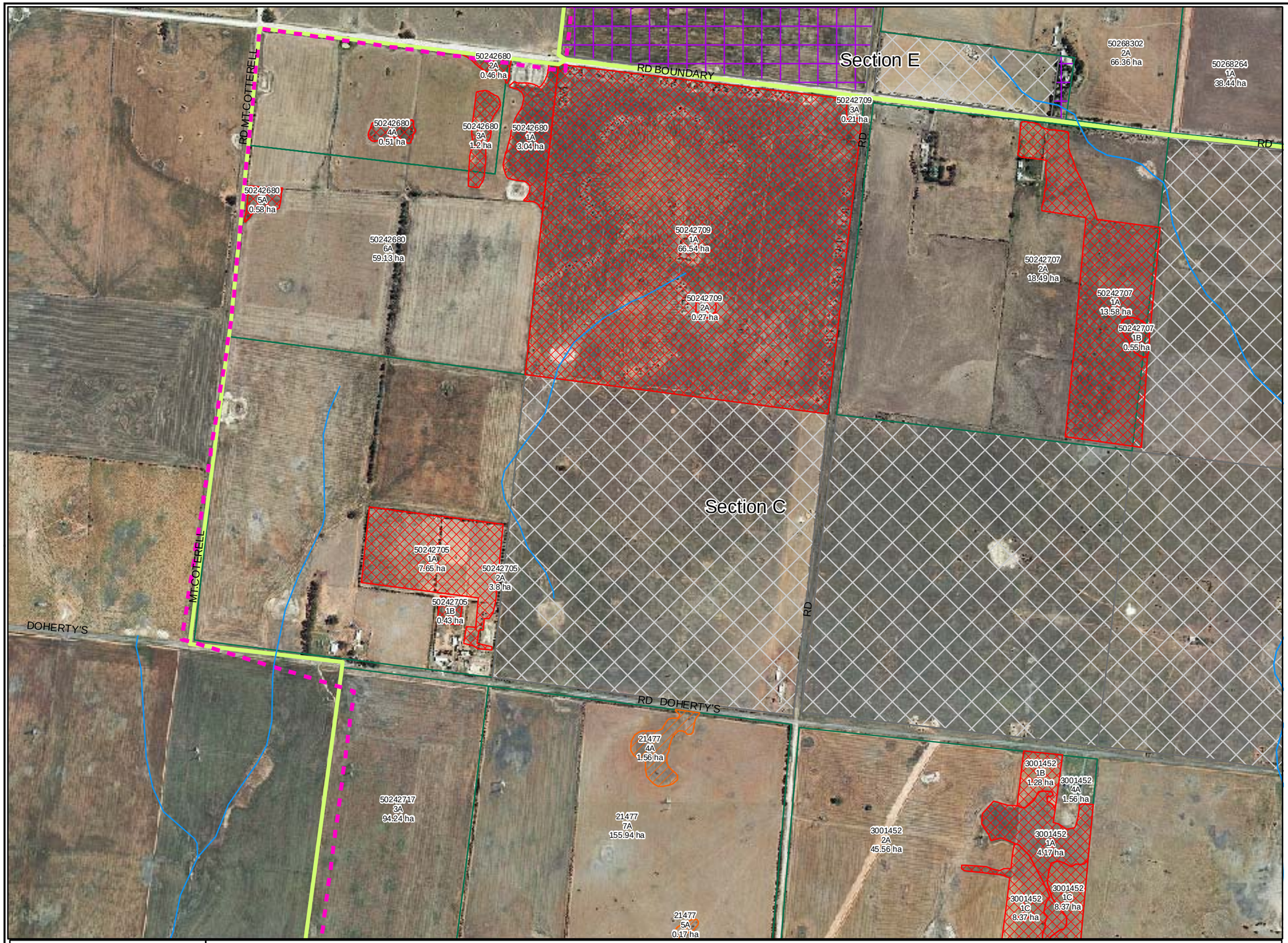
Figure 3f : Vegetation quality of habitat zones and results of reconnaissance survey, Section C.

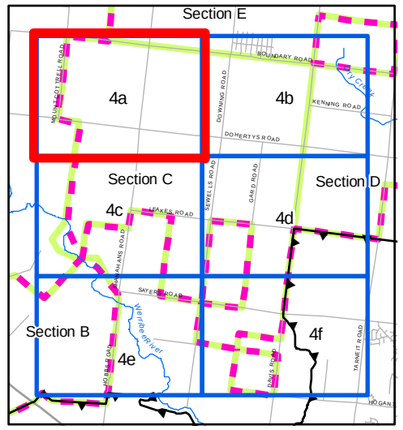
Date: 18 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 3.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Conservation Significance

- Very High
- High
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained
- Access obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

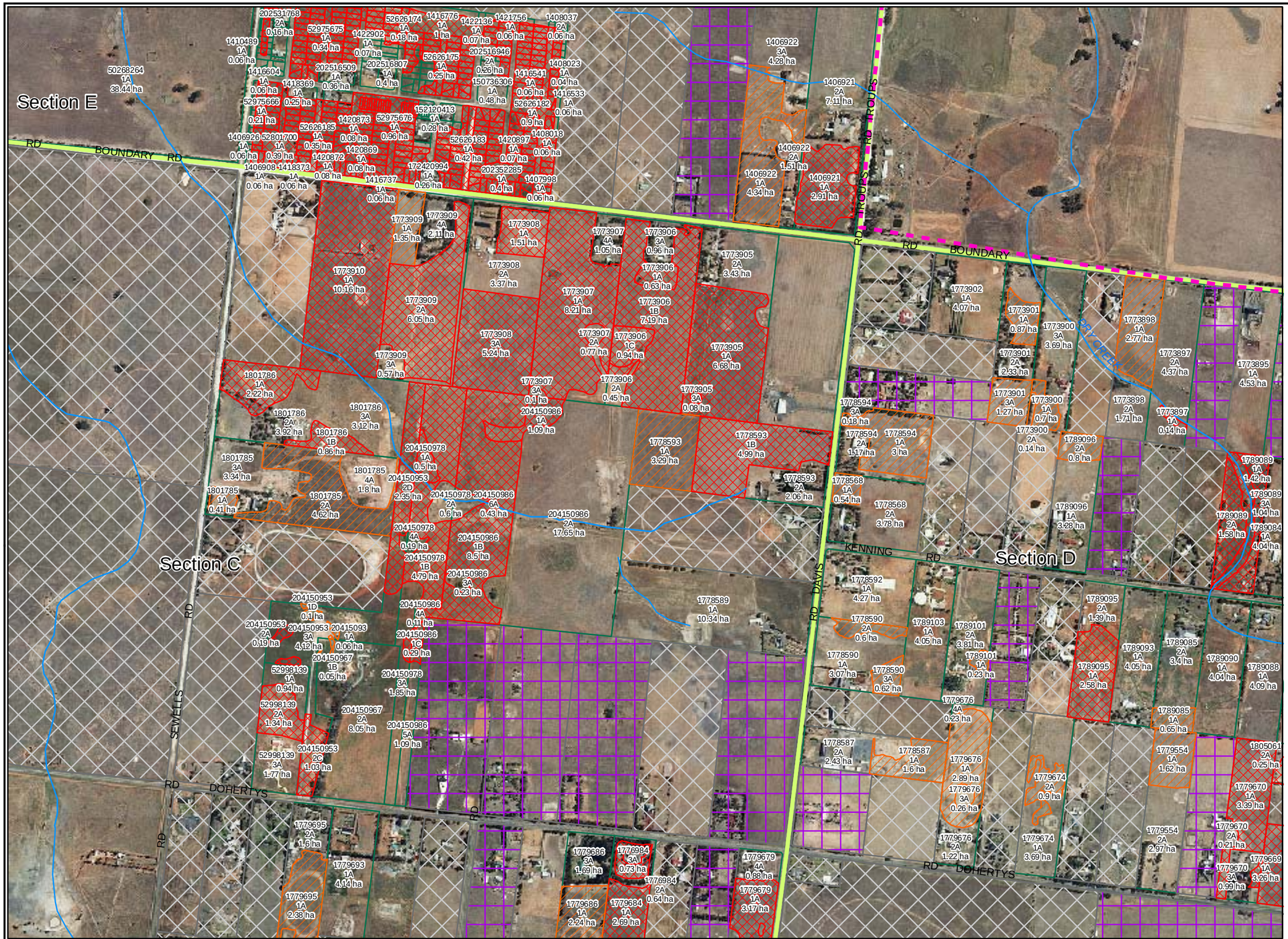
Figure 4a: Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Section C.

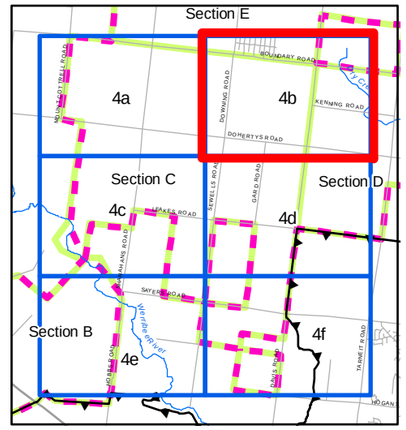
Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 4.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Conservation Significance

- Very High
- High
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained
- Access obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

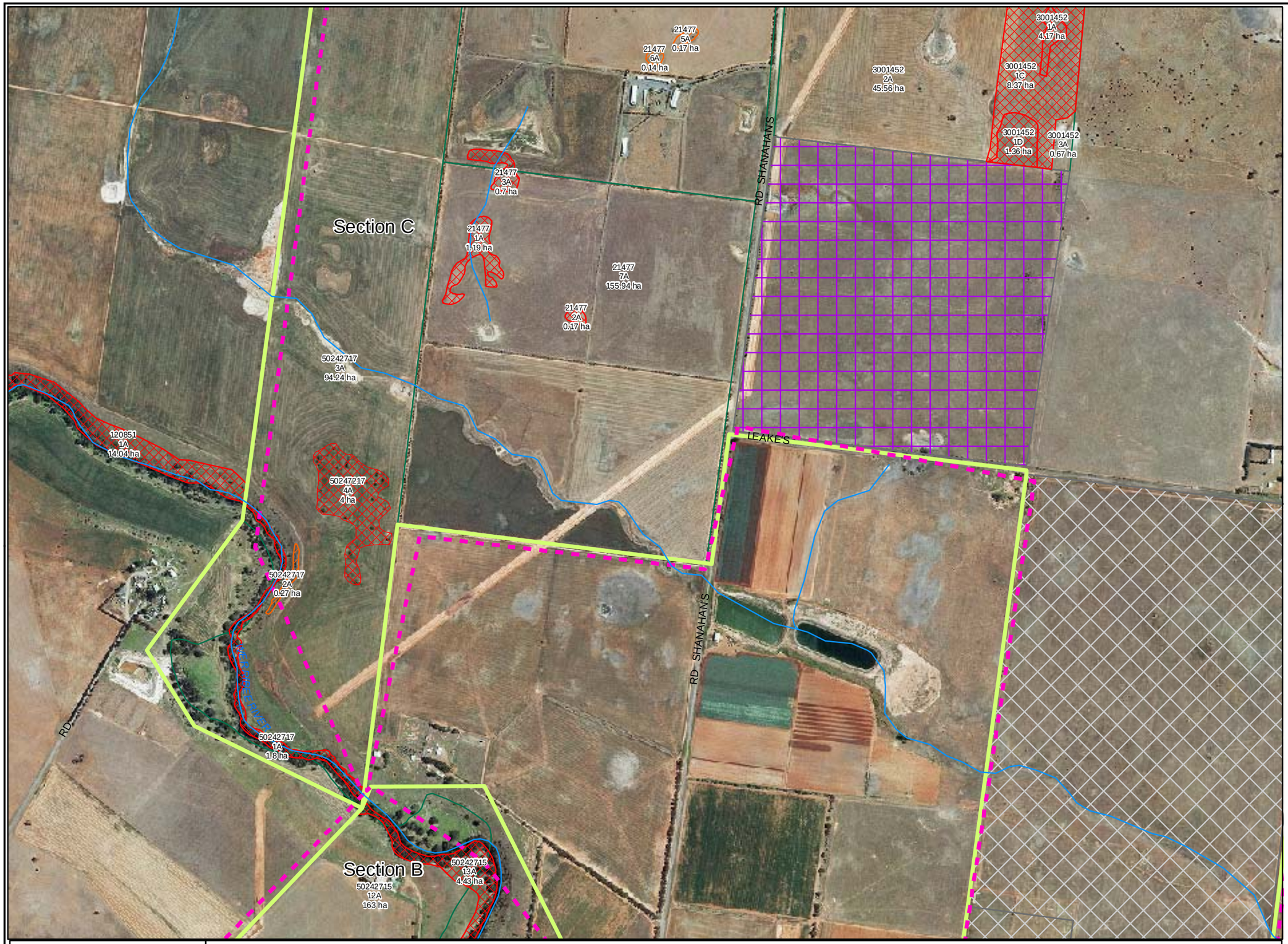
Figure 4 b: Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Section C.

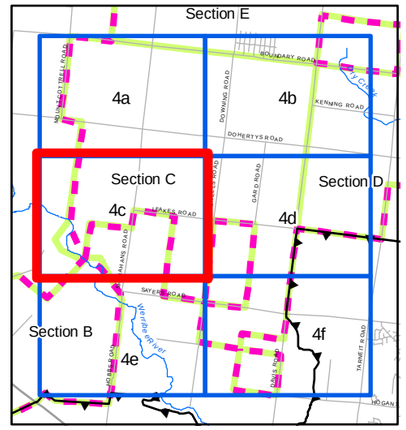
Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 4.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Conservation Significance

- Very High
- High
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained
- Access obtained

Figure 4c: Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Section C.

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

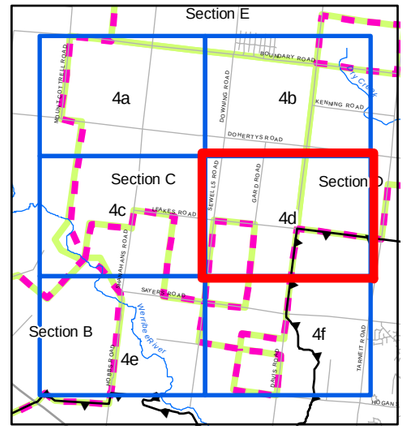
Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 4.mxd

0 50100 200 300 400 500
Meters

N
W E
S



Legend

Conservation Significance

- Very High
- High
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained
- Access obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

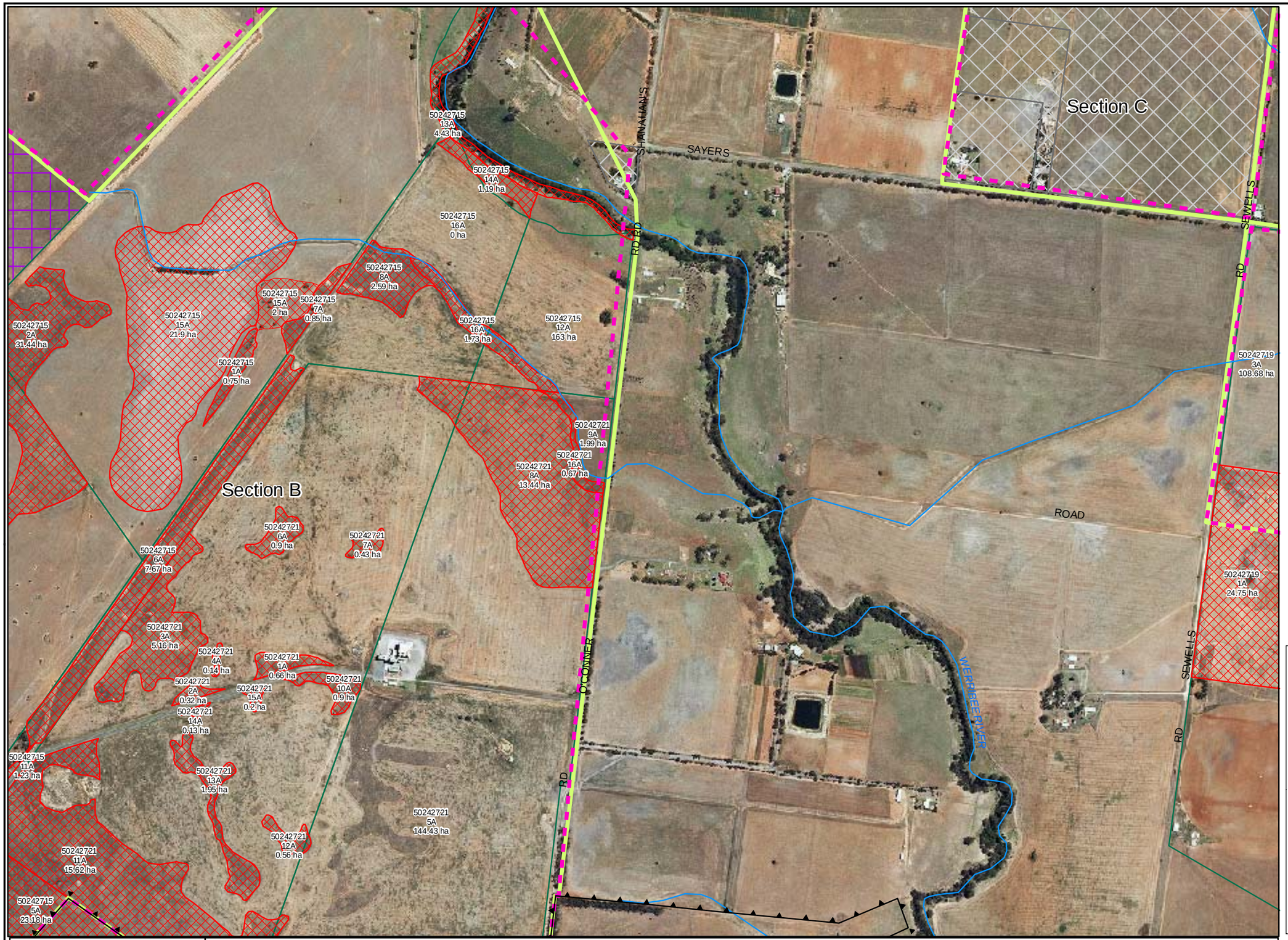
Figure 4 d: Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Section C.

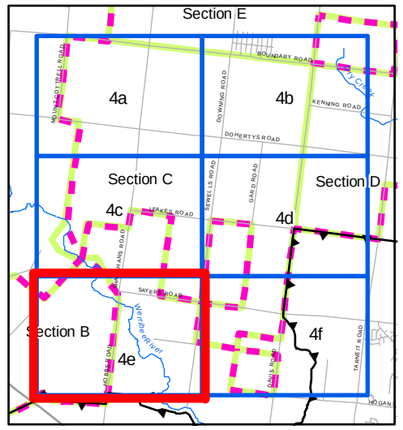
Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 4.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Conservation Significance

- Very High
- High
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained
- Access obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

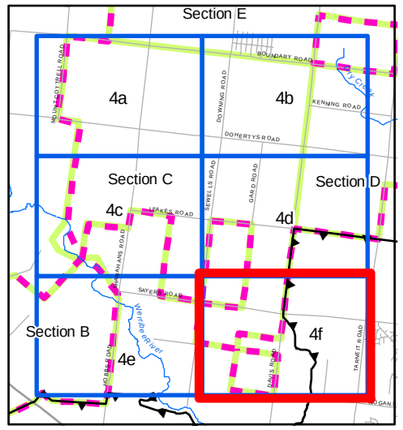
Figure 4e: Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Section C.

Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 4.mxd

0 50100 200 300 400 500
Meters

N W E S



Legend

Conservation Significance

- Very High
- High
- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Access status for properties not assessed

- Access Denied
- Access unable to be obtained
- Access obtained

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

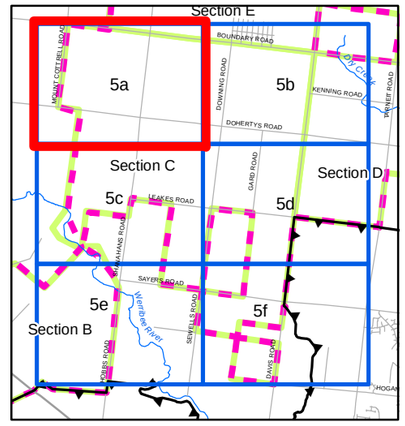
Figure 4 f : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Section C.

Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section C\7813 Section C Fig 4.mxd

0 50100 200 300 400 500
Meters

N W E S



Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- Nationally significant^

- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Parcels

Assessment status

- Assessed
- Not assessed

Incidental records collected October 08 to March 09 by Biosis Research Pty. Ltd.

^ Nationally significant species labels highlighted in yellow

* FFG listed and/or DSE VROT Advisory list

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

Figure 5a: National and State Significant and DSE Advisory list (VROT) flora and fauna species locations, Section C.

Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section H\7813 Section H Fig 5.mxd

0 50100 200 300 400 500
Meters

N W E S

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

Figure 5 b: National and State Significant and DSE Advisory list (VROT) flora and fauna species locations, Section C.

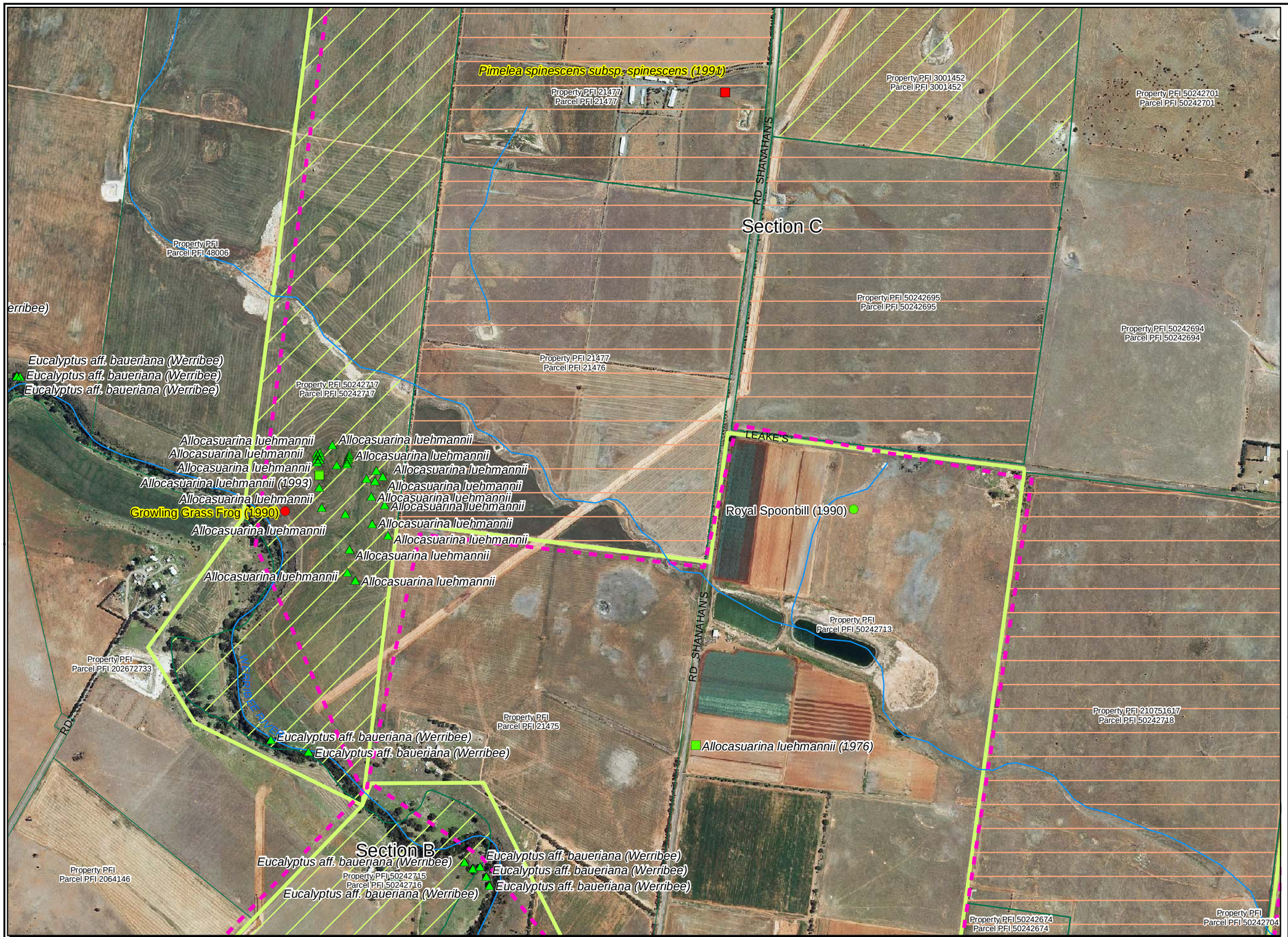
Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

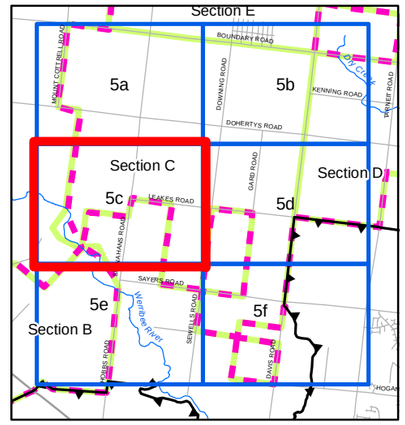
Location: ...7813\Mapping\Section H\7813 Section H Fig 5.mxd

Incidental records collected October 08 to March 09 by Biosis Research Pty. Ltd.

^ Nationally significant species labels highlighted in yellow

* FFG listed and/or DSE VROT Advisory list





Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- Nationally significant^

- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Parcels

Assessment status

- Assessed
- Not assessed

Incidental records collected October 08 to March 09 by Biosis Research Pty. Ltd.

^ Nationally significant species labels highlighted in yellow

* FFG listed and/or DSE VROT Advisory list

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

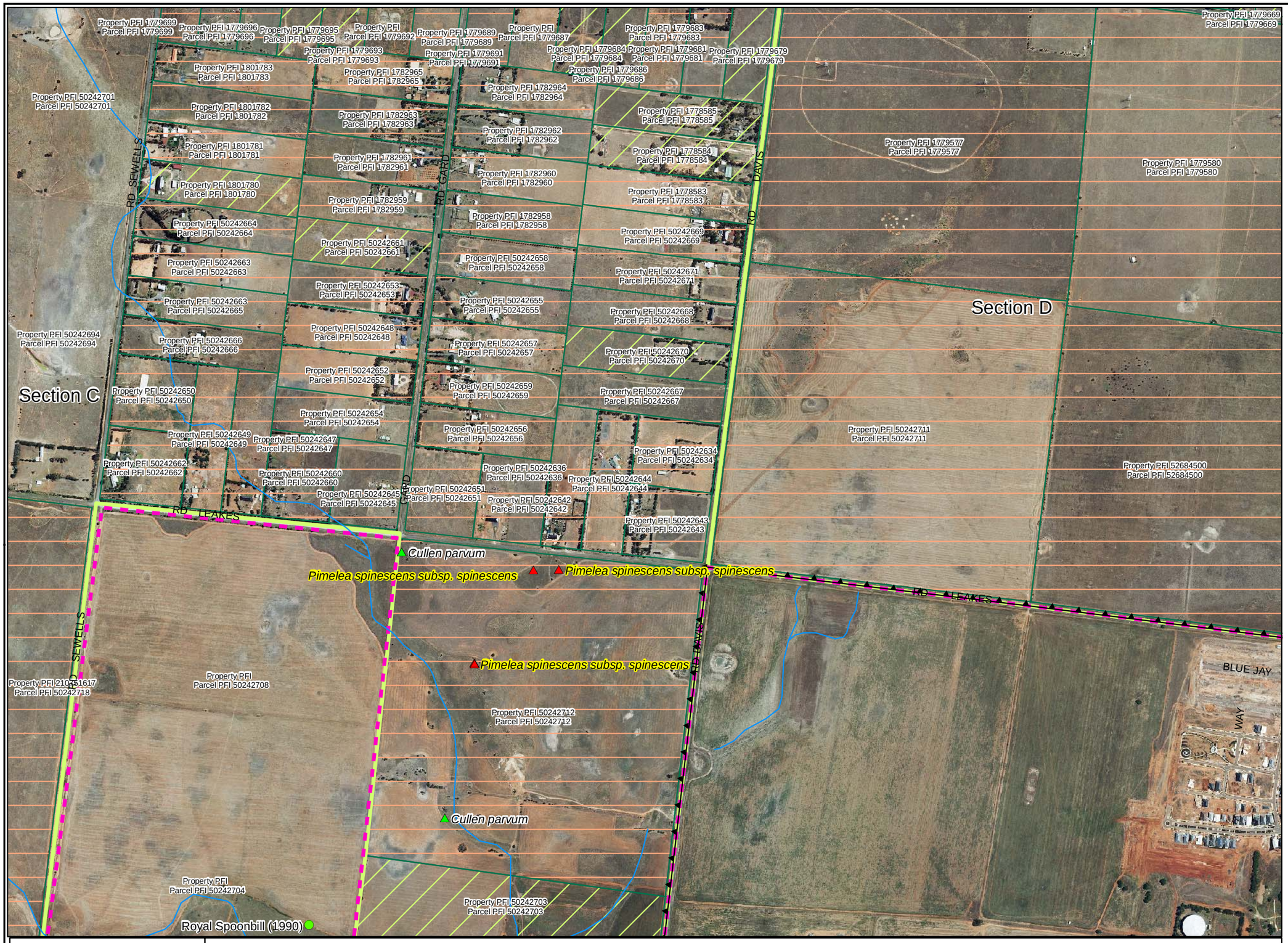
Figure 5 c: National and State Significant and DSE Advisory list (VROT) flora and fauna species locations, Section C.

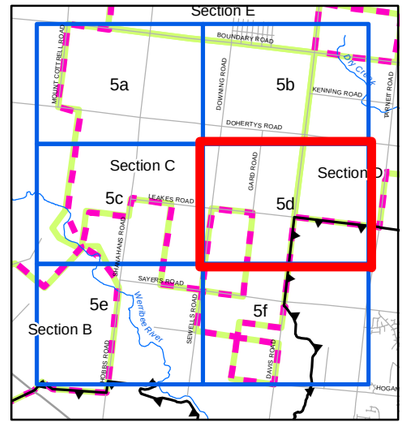
Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section H\7813 Section H Fig 5.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- Nationally significant^

- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Parcels

Assessment status

- Assessed
- Not assessed

Incidental records collected October 08 to March 09 by Biosis Research Pty. Ltd.

^ Nationally significant species labels highlighted in yellow

* FFG listed and/or DSE VROT Advisory list

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

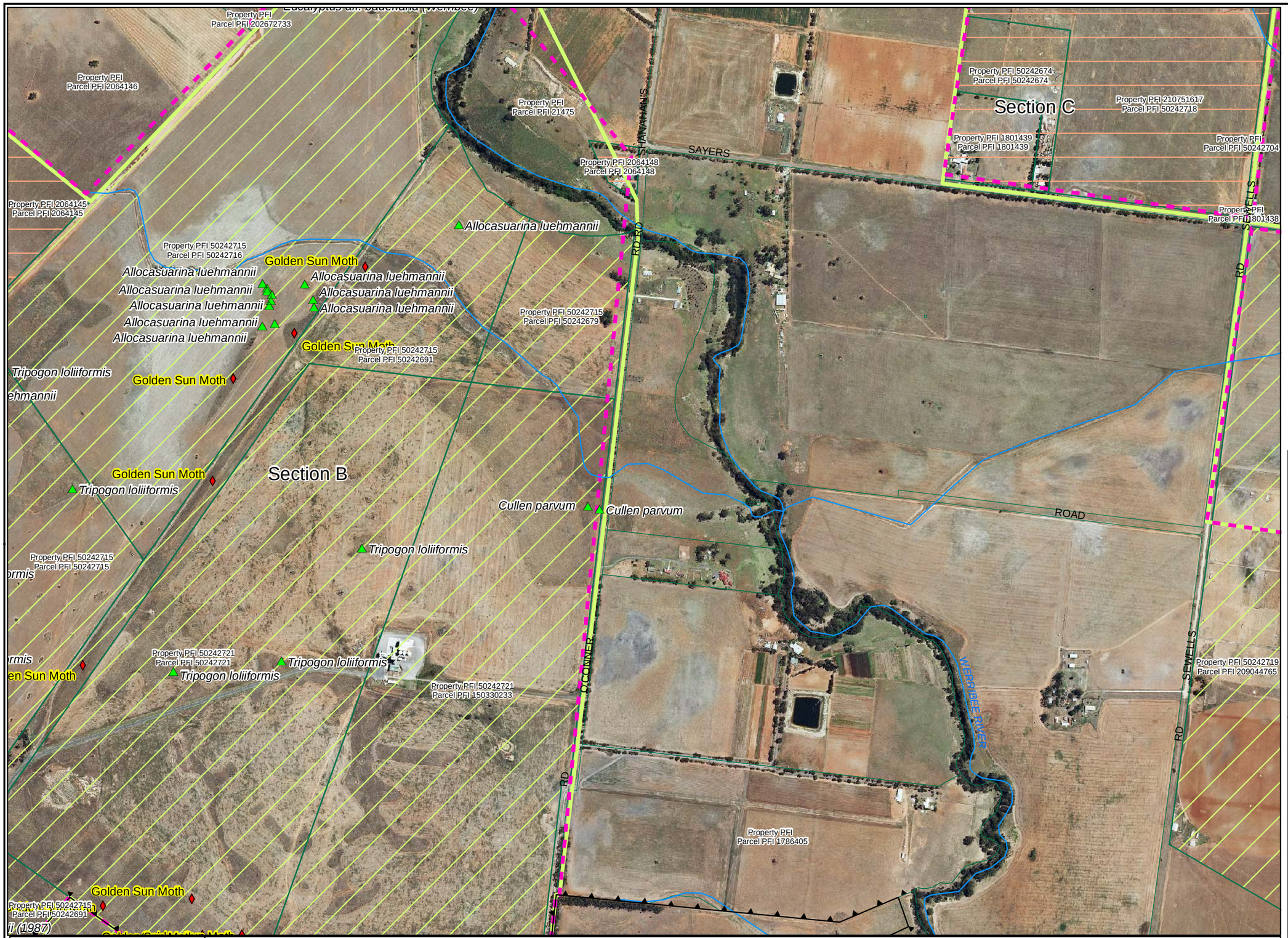
Figure 5 d: National and State Significant and DSE Advisory list (VROT) flora and fauna species locations, Section C.

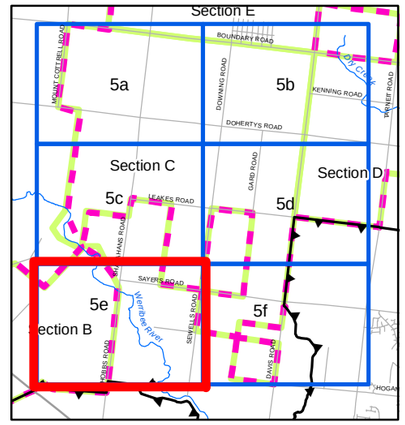
Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section H\7813 Section H Fig 5.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- Nationally significant^

- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Parcels

Assessment status

- Assessed
- Not assessed

Incidental records collected October 08 to March 09 by Biosis Research Pty. Ltd.

^ Nationally significant species labels highlighted in yellow

* FFG listed and/or DSE VROT Advisory list

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

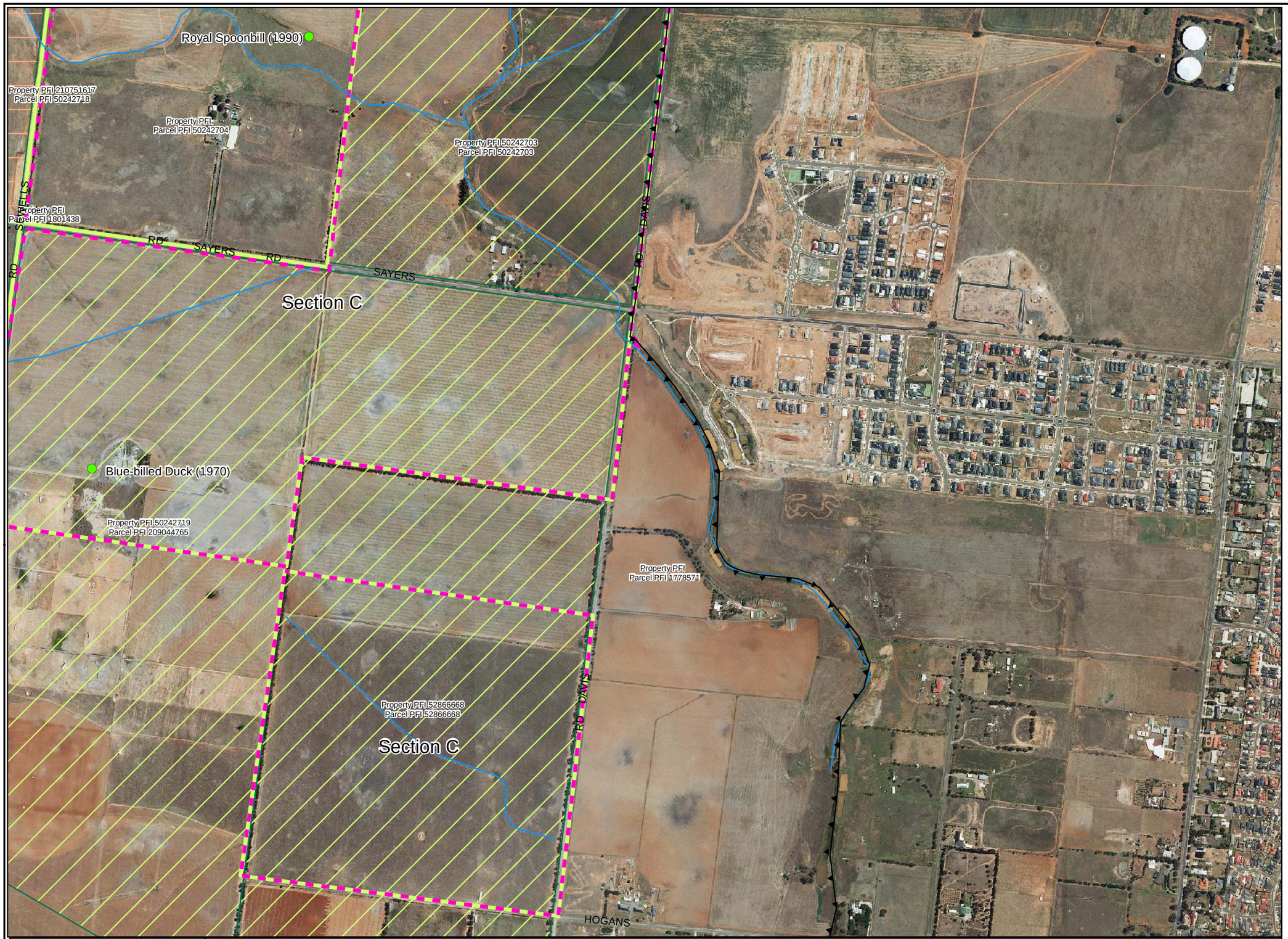
Figure 5e: National and State Significant and DSE Advisory list (VROT) flora and fauna species locations, Section C.

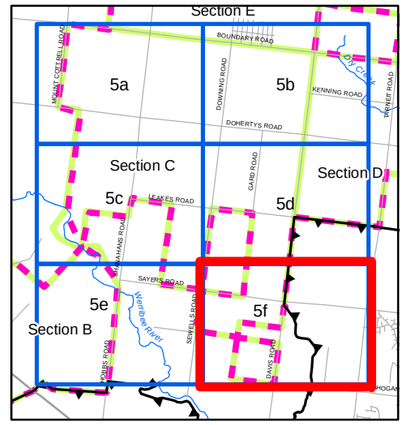
Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section H\7813 Section H Fig 5.mxd

0 50100 200 300 400 500
Meters

N W E S





Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- Nationally significant^

- Urban Growth Boundary
- Section boundary
- Melton/Wyndham Investigation Area

Parcels

Assessment status

- Assessed
- Not assessed

Incidental records collected October 08 to March 09 by Biosis Research Pty. Ltd.

^ Nationally significant species labels highlighted in yellow

* FFG listed and/or DSE VROT Advisory list

Biosis Research Pty. Ltd.
38 Bertie Street
(PO Box 489)
Port Melbourne
VICTORIA 3207

Offices also in:
Ballarat, Sydney,
Wollongong, Queanbeyan, Wangaratta

Figure 5 f : National and State Significant and DSE Advisory list (VROT) flora and fauna species locations, Section C.

Date: 19 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

Location: ...7813\Mapping\Section H\7813 Section H Fig 5.mxd

0 50100 200 300 400 500
Meters

N W E S

APPENDIX 1

DSE Vegetation Assessment Methodology

A1.1 Habitat hectares

Habitat hectares are calculated where at least 25 % of the understorey cover is native or a group (i.e. at least 3) of trees where the tree canopy cover is at least 20% (DSE 2007). Such sites are termed 'patches' of native vegetation.

Each vegetation patch has one or more habitat quality zones. Each habitat zone consists of one ecological vegetation class (EVC) and has uniform quality within limits.

The assessment process compares the vegetation of the habitat zone against a DSE 'benchmark' description of the EVC, using methods described in the DSE assessment manual (DSE 2004). A habitat score for the habitat zone is calculated by this method.

Each habitat zone has a habitat score of between 0 and 100, with extensive intact vegetation having a theoretical score of 100. Habitat score is calculated using ten components: large trees, tree canopy cover, understorey, weediness, recruitment, organic litter, logs, patch size, neighbourhood context and distance to core area. In naturally treeless vegetation, or vegetation that can exist in different structural forms, the score is standardised to account for the absence of some or all 'woody' criteria.

The habitat hectare value of a habitat zone is given by its habitat score (expressed as a decimal between 0 and 1) multiplied by its land area in hectares. For example, 4 ha of vegetation with a habitat score of 50 contain 2.0 habitat hectares.

Habitat hectares are used to measure losses arising from clearing, and also gains obtained through protection measures and active management of existing vegetation.

A1.2 Indigenous canopy trees

The following information on indigenous canopy trees does not apply if the subject land contains only treeless vegetation types.

Large Old Trees within patches

'Large Old Trees' within native vegetation patches are subject to offset requirements, as outlined in the Native Vegetation Management Framework (NRE 2002: Table 6, p 55). Trees smaller than benchmark size within patches are not included in this assessment, as they are addressed in the habitat hectare analysis.

Scattered trees outside patches

Trees over predominantly introduced understoreys are offset through tree protection/ replacement ratios.

Trees in areas where less than 25 % of the understorey cover is native are assessed as 'scattered old trees'. Trees are offset by the protection of other old trees and/or recruitment of new trees.

For land parcels (usually a title boundary) where tree density is greater than eight per hectare, the offset ratios are outlined in the Native Vegetation Management Framework (NRE 2002, p 55). For areas where tree density is less, the offset ratios are specified in the Regional Native Vegetation Plan. Offsets for small trees are also included in the Native Vegetation Plan.

APPENDIX 2

Section C Flora results

A.2.1. Flora Results

The table below lists the flora species (98 indigenous species, 69 introduced species) recorded within Section C of the Melton/Wyndham Investigation Area during the current assessment.

Significance of species (Source: DSE Flora Information System)

Australian status:

- CE Listed under EPBC Act as critically endangered
- E Listed under EPBC Act as endangered
- V Listed under EPBC Act as vulnerable
- R Rare (Briggs & Leigh 1996)

Victorian status (DSE Flora Information System, 2007 Version):

- e Endangered
- v Vulnerable
- r Rare
- listed Listed as threatened under the Flora and Fauna Guarantee Act 1988
- p Protected species under the Flora and Fauna Guarantee Act 1988 (Note: all species part of the Western (Basalt) Plains Grassland Community are also protected in addition to those species shown in Table A2.1)

Species of regional significance recorded during the Melton/Wyndham Investigation (**50**) are highlighted in **bold.** These species are those recorded in less than 5% of sites (quadrats/defined area lists) from the Victorian Volcanic Plain Bioregion in the DSE Flora Information System unless there is reason to believe they are undersampled in the available data.

All indigenous species have at least local significance

Table A2.1 Flora recorded within Section C during the Melton/Wyndham Investigation

Status	Scientific name	Common name
Indigenous species:		
	Acacia implexa	Lightwood
P	*Acacia mearnsii*	Black Wattle
	Acacia melanoxylon	Blackwood
	Acacia paradoxa	Hedge Wattle
	Acaena echinata	Sheep's Burr
	Acaena novae-zelandiae	Bidgee-widgee
	Alisma plantago-aquatica	**Water Plantain**
k	***Alternanthera* sp. 1 (Plains)**	**Plains Joyweed**
	Arthropodium spp.	Vanilla Lily
	Asperula conferta	Common Woodruff
r, R	*Asperula wimmerana*	Wimmera Woodruff
	Atriplex leptocarpa	Slender-fruit Saltbush
	Atriplex semibaccata	Berry Saltbush
	Austrodanthonia auriculata	**Lobed Wallaby-grass**
	Austrodanthonia caespitosa	Common Wallaby-grass
	Austrodanthonia carphoides	**Short Wallaby-grass**
	Austrodanthonia duttoniana	Brown-back Wallaby-grass
	Austrodanthonia eriantha	Hill Wallaby-grass

Status	Scientific name	Common name
	Austrodanthonia geniculata	Kneed Wallaby-grass
	Austrodanthonia racemosa var. *racemosa*	Slender Wallaby-grass
	Austrodanthonia setacea	Bristly Wallaby-grass
	Austrostipa aristiglumis	**Plump Spear-grass**
	Austrostipa bigeniculata	Kneed Spear-grass
	Austrostipa curticoma	Short-crown Spear-grass
	Austrostipa gibbosa	**Spurred Spear-grass**
	Austrostipa scabra	**Rough Spear-grass**
	Austrostipa setacea	**Corkscrew Spear-grass**
	Austrostipa stuposa	**Quizzical Spear-grass**
	Bursaria spinosa subsp. *spinosa*	Sweet Bursaria
	Callistemon spp.	Bottlebrush
p	*Calocephalus citreus*	Lemon Beauty-heads
p	***Calotis scapigera***	**Tufted Burr-daisy**
	Carex breviculmis	Common Grass-sedge
p	***Cassinia arcuata***	**Drooping Cassinia**
#	***Chamaesyce drummondii***	**Flat Spurge**
	Chenopodium pumilio	**Clammy Goosefoot**
	Chloris truncata	Windmill Grass
p	*Chrysocephalum* sp. 1	Plains Everlasting
	Convolvulus angustissimus* subsp. *angustissimus	**Blushing Bindweed**
k	***Convolvulus angustissimus* subsp. *omnigracilis***	**Slender Bindweed**
	Convolvulus erubescens spp. agg.	Pink Bindweed
	Convolvulus remotus	**Grass Bindweed**
p	*Cotula* spp.	Cotula
	Crassula decumbens* var. *decumbens	**Spreading Crassula**
	Crassula helmsii	**Swamp Crassula**
	***Crassula sieberiana* s.s.**	**Sieber Crassula**
listed, e	***Cullen parvum***	**Small Scurf-pea**
	Cyperus spp.	Flat Sedge
	Desmodium spp.	Tick Trefoil
	***Dianella revoluta* var. *revoluta* s.l.**	**Black-anther Flax-lily**
#	***Dichanthium sericeum* subsp. *sericeum***	**Silky Blue-grass**
	Dichondra repens	Kidney-weed
	Einadia nutans subsp. *nutans*	Nodding Saltbush
k	***Eleocharis pallens***	**Pale Spike-sedge**
	Eleocharis spp.	Spike Sedge
	Elymus scaber var. *scaber*	Common Wheat-grass
	Enchylaena tomentosa* var. *tomentosa	**Ruby Saltbush**
	Enneapogon nigricans	**Nigger-heads**
	Erodium crinitum	**Blue Heron's-bill**
	Eryngium ovinum	Blue Devil
	Eucalyptus baueriana	**Blue Box**
	Eucalyptus camaldulensis	River Red-gum
p	*Euchiton* spp.	Cudweed
	Ficinia nodosa	**Knobby Club-sedge**
	Glyceria australis	**Australian Sweet-grass**
	Goodenia pinnatifida	**Cut-leaf Goodenia**
k	*Haloragis glauca* f. *glauca*	Bluish Raspwort
	Isolepis spp.	Club Sedge
	Juncus kraussii* subsp. *australiensis	**Sea Rush**
	Juncus spp.	Rush

Status	Scientific name	Common name
	Lepidium spp.	Peppercress
	Leptospermum myrsinoides	**Heath Tea-tree**
	Lomandra effusa	Scented Mat-rush
	Lomandra filiformis	Wattle Mat-rush
	Lythrum hyssopifolia	Small Loosestrife
	Maireana decalvans	**Black Cotton-bush**
	Maireana enchylaenoides	**Wingless Bluebush**
	Melicytus dentatus	**Tree Violet**
	Microlaena stipoides var. *stipoides*	Weeping Grass
	Muehlenbeckia florulenta	**Tangled Lignum**
	Oxalis exilis	Shady Wood-sorrel
	Oxalis perennans	Grassland Wood-sorrel
	Panicum spp.	Panic
	Pelargonium australe	**Austral Stork's-bill**
	Phragmites australis	Common Reed
	Pimelea curviflora	**Curved Rice-flower**
C, e	***Pimelea spinescens* subsp. *spinescens***	**Spiny Rice-flower**
	Plantago gaudichaudii	Narrow Plantain
	Plantago varia	**Variable Plantain**
	Poa labillardierei* var. *labillardierei	**Common Tussock-grass**
	Poa spp.	Tussock Grass
	Polygonum spp.	Hogweed
	Portulaca oleracea	**Common Purslane**
p	***Pseudognaphalium luteoalbum***	**Jersey Cudweed**
	Ptilotus macrocephalus	**Feather Heads**
	Rumex brownii	Slender Dock
	Rumex dumosus	Wiry Dock
	Sclerolaena muricata	**Black Roly-poly**
	Sclerolaena muricata* var. *villosa	**Grey Roly-poly**
	Stylidium armeria	Triggerplant
	Themeda triandra	Kangaroo Grass
	Tricoryne elatior	Yellow Rush-lily
	Typha spp.	Bulrush
	Walwhalleya proluta	Rigid Panic
Introduced species:		
	Acacia spp.	Wattle
	Acetosella vulgaris	Sheep Sorrel
	Aira spp.	Hair Grass
	Anagallis arvensis	Pimpernel
	Arctotheca calendula	Cape Weed
	Asphodelus fistulosus	Onion Weed
	Aster subulatus	Aster-weed
	Avena barbata	Bearded Oat
	Avena fatua	Wild Oat
	Brassica spp.	Turnip
	Briza maxima	Large Quaking-grass
	Bromus catharticus	Prairie Grass
	Bromus diandrus	Great Brome
	Bromus hordeaceus subsp. *hordeaceus*	Soft Brome
	Cirsium vulgare	Spear Thistle
	Cynara cardunculus	Artichoke Thistle
	Cynodon dactylon var. *dactylon*	Couch
	Cyperus eragrostis	Drain Flat-sedge

Status	Scientific name	Common name
	Dactylis glomerata	Cocksfoot
	Dipsacus fullonum subsp. *fullonum*	Wild Teasel
	Ecballium elaterium	Squirting Cucumber
	Ehrharta erecta var. *erecta*	Panic Veldt-grass
	Ehrharta longiflora	Annual Veldt-grass
	Erodium botrys	Big Heron's-bill
	Erodium cicutarium	Common Heron's-bill
	Foeniculum vulgare	Fennel
	Fumaria spp.	Fumitory
	Galenia pubescens var. *pubescens*	Galenia
	Gazania spp.	Gazania
	Helminthotheca echioides	Ox-tongue
	Hordeum spp.	Barley Grass
	Hypochoeris radicata	Flatweed
	Leontodon taraxacoides subsp. *taraxacoides*	Hairy Hawkbit
	Lepidium africanum	Common Peppercress
	Lolium perenne	Perennial Rye-grass
	Lolium rigidum	Wimmera Rye-grass
	Lycium ferocissimum	African Box-thorn
	Malva spp.	Mallow
	Marrubium vulgare	Horehound
	Medicago spp.	Medic
	Nassella neesiana	Chilean Needle-grass
	Nassella trichotoma	Serrated Tussock
	Onopordum acanthium subsp. *acanthium*	Scotch Thistle
	Opuntia spp.	Prickly Pear
	Oxalis spp. (naturalised)	Wood Sorrel
	Parapholis spp.	Barb Grass
	Paspalum dilatatum	Paspalum
	Phalaris aquatica	Toowoomba Canary-grass
	Phytolacca octandra	Red-ink Weed
#	*Pittosporum undulatum*	Sweet Pittosporum
	Plantago coronopus	Buck's-horn Plantain
	Plantago lanceolata	Ribwort
	Polygonum aviculare s.s.	Hogweed
	Romulea rosea	Onion Grass
	Rosa spp.	Rose
	Rubus fruticosus spp. agg.	Blackberry
	Rumex spp. (naturalised)	Dock (naturalised)
	Salix spp.	Willow
	Salvia verbenaca	Wild Sage
	Silybum marianum	Variegated Thistle
	Solanum linnaeanum	Apple of Sodom
	Sonchus asper s.s.	Rough Sow-thistle
	Sonchus oleraceus	Common Sow-thistle
	Trifolium arvense var. *arvense*	Hare's-foot Clover
	Trifolium fragiferum var. *fragiferum*	Strawberry Clover
	Trifolium spp.	Clover
	Trifolium subterraneum	Subterranean Clover
	Ulex europaeus	Gorse
	Urtica spp.	Nettle
	Verbascum spp.	Mullein
	Verbascum thapsus subsp. *thapsus*	Great Mullein
	Vulpia bromoides	Squirrel-tail Fescue

Status	Scientific name	Common name
	Vulpia spp.	Fescue
	Xanthium spinosum	Bathurst Burr

Table A2.2 Additional flora records within a 5km buffer zone of Section C (Source: Flora Information System 2007)

Status	Scientific Name	Common Name
p	*Acacia acinacea*	Gold-dust Wattle
#, p	*Acacia longifolia* subsp. *longifolia*	Sallow Wattle
p	*Acacia pycnantha*	Golden Wattle
	Acacia verniciflua	Varnish Wattle
	Acaena ovina	Australian Sheep's Burr
	Actites megalocarpa	Dune Thistle
	Adiantum aethiopicum	Common Maidenhair
listed	*Allocasuarina luehmannii*	Buloke
	Allocasuarina verticillata	Drooping Sheoak
	Alternanthera denticulata	Lesser Joyweed
	Amphibromus nervosus	Common Swamp Wallaby-grass
v	*Amyema linophylla* subsp. *orientale*	Buloke Mistletoe
	Amyema miquelii	Box Mistletoe
	Amyema pendula	Drooping Mistletoe
	Aphelia pumilio	Dwarf Aphelia
	Arthropodium minus	Small Vanilla-lily
	Asperula scoparia	Prickly Woodruff
	Asplenium flabellifolium	Necklace Fern
r	*Atriplex paludosa* subsp. *paludosa*	Marsh Saltbush
	Austrodanthonia bipartita	Leafy Wallaby-grass
	Austrodanthonia fulva	Copper-awned Wallaby-grass
	Austrodanthonia induta	Shiny Wallaby-grass
	Austrodanthonia penicillata	Weeping Wallaby-grass
	Austrodanthonia pilosa	Velvet Wallaby-grass
	Austrostipa blackii	Crested Spear-grass
	Austrostipa densiflora	Dense Spear-grass
	Austrostipa elegantissima	Feather Spear-grass
r	*Austrostipa exilis*	Heath Spear-grass
	Austrostipa flavescens	Coast Spear-grass
r	*Austrostipa hemipogon*	Half-bearded Spear-grass
	Austrostipa mollis	Supple Spear-grass
	Austrostipa nodosa	Knotty Spear-grass
	Austrostipa oligostachya	Fine-head Spear-grass
	Austrostipa rudis	Veined Spear-grass
p	*Austrostipa semibarbata*	Fibrous Spear-grass
	Bolboschoenus caldwellii	Salt Club-sedge
	Bothriochloa macra	Red-leg Grass
p	*Brachyscome basaltica* var. *gracilis*	Woodland Swamp-daisy
p	*Brachyscome dentata*	Lobe-seed Daisy
p	*Brachyscome* spp.	Daisy
	Bursaria spinosa	Sweet Bursaria
	Caesia calliantha	Blue Grass-lily
	Calandrinia calyptrata	Pink Purslane
	Callistemon sieberi	River Bottlebrush
p	*Calotis anthemoides*	Cut-leaf Burr-daisy
	Carex bichenoviana	Plains Sedge
	Carex incomitata	Hillside Sedge
	Carex inversa	Knob Sedge
	Carex tereticaulis	Poong'ort
p	*Cassinia longifolia*	Shiny Cassinia
p	*Centipeda cunninghamii*	Common Sneezeweed

Status	Scientific Name	Common Name
p	*Cheilanthes austrotenuifolia*	Green Rock-fern
	Cheilanthes distans	Bristly Cloak-fern
	Cheilanthes sieberi subsp. *sieberi*	Narrow Rock-fern
	Chenopodium desertorum subsp. *microphyllum*	Small-leaf Goosefoot
p	*Chrysocephalum apiculatum*	Common Everlasting
p	*Chrysocephalum semipapposum*	Clustered Everlasting
	Clematis aristata	Mountain Clematis
	Clematis microphylla	Small-leaved Clematis
p	*Correa glabra* var. *glabra*	Rock Correa
	Craspedia glauca spp. agg.	Common Billy-buttons
	Crassula closiana	Stalked Crassula
	Crassula peduncularis	Purple Crassula
	Crassula tetramera	Australian Stonecrop
	Cymbonotus preissianus	Austral Bear's-ear
	Cymbopogon spp.	Lemon Grass
	Cyperus lhotskyanus	Creeping Flat-sedge
	Damasonium minus	Star Fruit
	Daucus glochidiatus	Australian Carrot
	Daviesia leptophylla	Narrow-leaf Bitter-pea
	Dianella admixta	Black-anther Flax-lily
	Dianella longifolia var. *grandis*	Glaucous Flax-lily
	Dianella longifolia var. *longifolia*	Pale Flax-lily
v, K	*Dianella* sp. aff. *longifolia* (Benambra)	Arching Flax-lily
	Dichelachne crinita	Long-hair Plume-grass
p	*Dillwynia cinerascens*	Grey Parrot-pea
	Disphyma crassifolium subsp. *clavellatum*	Rounded Noon-flower
	Dodonaea viscosa subsp. *cuneata*	Wedge-leaf Hop-bush
	Drosera peltata subsp. *peltata*	Pale Sundew
	Elatine gratioloides	Waterwort
	Eleocharis acuta	Common Spike-sedge
	Eleocharis pusilla	Small Spike-sedge
	Epilobium billardierianum subsp. *cinereum*	Grey Willow-herb
	Epilobium hirtigerum	Hairy Willow-herb
p	*Eragrostis brownii*	Common Love-grass
p	*Eremophila deserti*	Turkey Bush
	Eryngium vesiculosum	Prickfoot
	Eucalyptus behriana	Bull Mallee
#	*Eucalyptus botryoides*	Southern Mahogany
	Eucalyptus melliodora	Yellow Box
	Eucalyptus microcarpa	Grey Box
	Eucalyptus polyanthemos subsp. *vestita*	Red Box
	Euchiton collinus	Clustered/Creeping Cudweed
	Euchiton involucratus	Common Cudweed
	Euchiton sphaericus	Annual Cudweed
	Eutaxia microphylla var. *diffusa*	Spreading Eutaxia
	Eutaxia microphylla var. *microphylla*	Common Eutaxia
	Exocarpos cupressiformis	Cherry Ballart
	Galium gaudichaudii	Rough Bedstraw
	Galium migrans	Wandering Bedstraw
	Galium propinquum	Maori Bedstraw
	Geranium retrorsum.	Grassland Crane's-bill
	Geranium solanderi	Austral Crane's-bill
	Geranium sp. 5	Naked Crane's-bill
	Geranium spp.	Crane's Bill

Status	Scientific Name	Common Name
	Glycine clandestina	Twining Glycine
listed, V, v	*Glycine latrobeana*	Clover Glycine
	Glycine tabacina	Variable Glycine
	Goodenia gracilis	Slender Goodenia
	Haloragis heterophylla	Varied Raspwort
	Heliotropium europaeum	Common Heliotrope
	Hemichroa pentandra	Trailing Hemichroa
	Hydrocotyle laxiflora	Stinking Pennywort
	Hydrocotyle sibthorpioides	Shining Pennywort
	Hypericum gramineum	Small St John's Wort
	Indigofera australis	Austral Indigo
	Isolepis cernua var. *cernua*	Nodding Club-sedge
	Isolepis cernua var. *platycarpa*	Broad-fruit Club-sedge
	Isolepis hookeriana	Grassy Club-sedge
	Isolepis inundata	Swamp Club-sedge
	Isolepis victoriensis	Victorian Club-sedge
p	*Juncus amabilis*	Hollow Rush
	Juncus australis	Austral Rush
p	*Juncus bufonius*	Toad Rush
	Juncus flavidus	Gold Rush
	Juncus holoschoenus	Joint-leaf Rush
	Juncus homalocaulis	Wiry Rush
	Juncus pallidus	Pale Rush
	Juncus radula	Hoary Rush
	Juncus sarophorus	Broom Rush
	Juncus subsecundus	Finger Rush
	Juncus usitatus	Billabong Rush
	Kennedia prostrata	Running Postman
	Lachnagrostis aemula	Leafy Blown-grass
	Lachnagrostis filiformis	Common Blown-grass
	Lagenophora huegelii	Coarse Bottle-daisy
	Leptorhynchos squamatus	Scaly Buttons
	Leptospermum lanigerum	Woolly Tea-tree
	Limosella australis	Austral Mudwort
	Lobelia pratioides	Poison Lobelia
	Lomandra micrantha	Small-flower Mat-rush
	Lysiana exocarpi	Harlequin Mistletoe
	Maireana brevifolia	Short-leaf Bluebush
	Maireana humillima	Dwarf Bluebush
	Malva preissiana	Australian Hollyhock
	Marsilea drummondii	Common Nardoo
	Marsilea hirsuta	Short-fruit Nardoo
#, r	*Melaleuca armillaris* subsp. *armillaris*	Giant Honey-myrtle
	Mentha diemenica	Slender Mint
	Mentha satureoides	Creeping mint
	Mimulus repens	Creeping Monkey-flower
	Muellerina eucalyptoides	Creeping Mistletoe
#	*Myoporum insulare*	Common Boobialla
	Myriophyllum crispatum	Upright Water-milfoil
	Myriophyllum simulans	Amphibious Water-milfoil
	Myrsine howittiana	Mutton-wood
r	*Nicotiana suaveolens*	Austral Tobacco
	Ottelia ovalifolia subsp. *ovalifolia*	Swamp Lily
	Ozothamnus obcordatus	Grey Everlasting

Status	Scientific Name	Common Name
	Panicum decompositum var. *decompositum*	Native Millet
	Panicum effusum	Hairy Panic
	Pellaea falcata	Sickle Fern
	Pentapogon quadrifidus var. *quadrifidus*	Five-awned Spear-grass
	Persicaria decipiens	Slender Knotweed
p	*Persicaria prostrata*	Creeping Knotweed
p	*Pimelea glauca*	Smooth Rice-flower
#	*Pittosporum undulatum*	Sweet Pittosporum
	Pleurosorus rutifolius	Blanket Fern
	Poa labillardierei	Common Tussock-grass
	Potamogeton cheesemanii	Red Pondweed
	Potamogeton crispus	Curly Pondweed
	Potamogeton ochreatus	Blunt Pondweed
	Potamogeton pectinatus	Fennel Pondweed
	Potamogeton tricarinatus	Floating Pondweed
	Pteridium esculentum	Austral Bracken
	Pterostylis spp.	Greenhood
p	*Ptilotus spathulatus* f. *spathulatus*	Pussy Tails
p	*Puccinellia stricta*	Australian Saltmarsh-grass
	Rhagodia candolleana subsp. *candolleana*	Seaberry Saltbush
r, p	*Rhagodia parabolica*	Fragrant Saltbush
p	*Rubus parvifolius*	Small-leaf Bramble
listed, E, e	*Rutidosis leptorhynchoides*	Button Wrinklewort
	Salsola tragus subsp. *tragus*	Prickly Saltwort
	Sambucus gaudichaudiana	White Elderberry
	Samolus repens	Creeping Brookweed
p	*Sarcocornia blackiana*	Thick-head Glasswort
	Sarcocornia quinqueflora	Beaded Glasswort
	Schoenus apogon	Common Bog-sedge
k	*Sclerolaena muricata* var. *muricata*	Black Roly-poly
	Sebaea ovata	Yellow Sebaea
p	*Senecio glomeratus*	Annual Fireweed
p	*Senecio pinnatifolius*	Variable Groundsel
p	*Senecio quadridentatus*	Cotton Fireweed
	Sida corrugata	Variable Sida
	Solanum laciniatum	Large Kangaroo Apple
p	*Solenogyne dominii*	Smooth Solenogyne
p	*Solenogyne gunnii*	Hairy Solenogyne
p	*Spergularia marina*	Salt Sand-spurrey
p	*Spergularia media* .	Coast Sand-spurrey
p	*Stackhousia monogyna*	Creamy Stackhousia
	Stellaria pungens	Prickly Starwort
	Suaeda australis	Austral Seablite
	Templetonia stenophylla	Leafy Templetonia
	Tetragonia implexicoma	Bower Spinach
	Teucrium racemosum	Grey Germander
	Thelymitra pauciflora.	Slender Sun-orchid
	Thysanotus patersonii	Twining Fringe-lily
	Triglochin procera	Common Water-ribbons
	Triglochin striata	Streaked Arrowgrass
	Triptilodiscus pygmaeus	Common Sunray
p	*Typha orientalis*	Broad-leaf Cumbungi
	Urtica incisa	Scrub Nettle
p	*Velleia paradoxa*	Spur Velleia

Status	Scientific Name	Common Name
p	*Veronica gracilis*	Slender Speedwell
	Vittadinia cervicularis var. *subcervicularis*	Annual New Holland Daisy
	Vittadinia cuneata	Fuzzy New Holland Daisy
	Vittadinia gracilis	Woolly New Holland Daisy
	Wahlenbergia communis	Tufted Bluebell
p	*Wahlenbergia gracilenta*	Annual Bluebell
p	*Wahlenbergia gracilis*	Sprawling Bluebell
p	*Wahlenbergia luteola*	Bronze Bluebell
	Wahlenbergia multicaulis	Branching Bluebell
	Weissia controversa	Green-tufted Stubble-moss
	Xerochrysum viscosum	Shiny Everlasting
Introduced species:		
	Acacia saligna	Golden Wreath Wattle
	Agrostis capillaris	Brown-top Bent
	Aira caryophyllea	Silvery Hair-grass
	Aira cupaniana	Quicksilver Grass
	Aira elegantissima	Delicate Hair-grass
	Allium vineale	Crow Garlic
	Amaranthus albus	Stiff Tumbleweed
	Amaranthus muricatus	Rough-fruit Amaranth
	Anagallis minima	Chaffweed
	Aptenia cordifolia	Heart-leaf Ice-plant
	Arundo donax	Giant Reed
	Aster subulatus	Aster-weed
	Atriplex prostrata	Hastate Orache
	Austrocylindropuntia cylindrica	Cane Cactus
	Avena sativa	Oat
	Avena sterilis	Sterile Oat
	Barbarea intermedia	Wintercress
	Berkheya rigida	African Thistle
	Brachypodium distachyon	False Brome
	Brachythecium albicans	Whitish Feather-moss
	Brassica fruticulosa	Twiggy Turnip
	Brassica tournefortii	Mediterranean Turnip
	Brassica X *juncea*	Indian Mustard
	Briza minor	Lesser Quaking-grass
	Bromus lanceolatus	Mediterranean Brome
	Bromus madritensis	Madrid Brome
	Bromus rubens	Red Brome
	Carduus pycnocephalus	Slender Thistle
	Carthamus lanatus	Saffron Thistle
	Catapodium rigidum	Fern Grass
	Centaurium tenuiflorum	Slender Centaury
	Cerastium balearicum	Balearic Mouse-ear Chickweed
	Chamaecytisus palmensis	Tree Lucerne
	Chenopodium album	Fat Hen
	Chenopodium murale	Sowbane
	Chloris gayana	Rhodes Grass
	Cicendia filiformis	Slender Cicendia
	Cicendia quadrangularis	Square Cicendia
	Convolvulus arvensis	Common Bindweed
	Conyza bonariensis	Flaxleaf Fleabane
	Conyza sumatrensis	Tall Fleabane
	Coprosma repens	Mirror Bush

Status	Scientific Name	Common Name
	Cotoneaster glaucophyllus var. *serotinus*	Large-leaf Cotoneaster
	Cotoneaster pannosus	Velvet Cotoneaster
	Cotula bipinnata	Ferny Cotula
	Cotula coronopifolia	Water Buttons
	Crassula natans var. *minus*	Water Crassula
	Cupressus sempervirens	Italian Cypress
	Cuscuta epithymum	Common Dodder
	Cynosurus echinatus	Rough Dog's-tail
	Daucus carota	Carrot
	Delairea odorata	Cape Ivy
	Diplotaxis tenuifolia	Sand Rocket
	Dittrichia graveolens	Stinkwort
	Echinochloa crus-galli	Barnyard Grass
	Echium plantagineum	Paterson's Curse
	Eleusine indica	Goose-grass
	Eleusine tristachya	American Crows-foot Grass
	Elodea canadensis	Canadian Pondweed
	Eragrostis cilianensis	Stink Grass
	Eragrostis mexicana	Mexican Love-grass
	Erodium malacoides	Oval Heron's-bill
	Eucalyptus cladocalyx	Sugar Gum
	Euphorbia lathyris	Caper Spurge
	Euphorbia peplus	Petty Spurge
	Fraxinus angustifolia	Desert Ash
	Fumaria bastardii	Bastard's Fumitory
	Fumaria muralis subsp. *muralis*	Wall Fumitory
	Gamochaeta purpurea s.s.	Spiked Cudweed
	Genista monspessulana	Montpellier Broom
	Geranium dissectum	Cut-leaf Crane's-bill
	Hainardia cylindrica	Common Barb-grass
	Hedera helix	English Ivy
	Hedypnois cretica	Cretan Hedypnois
	Hieracium spp.	Hawkweed
	Hirschfeldia incana	Buchan Weed
	Holcus lanatus	Yorkshire Fog
	Hordeum leporinum	Barley-grass
	Hordeum marinum	Sea Barley-grass
	Hypericum perforatum subsp. *veronense*	St John's Wort
	Hypochoeris glabra	Smooth Cat's-ear
	Isolepis hystrix	Awned Club-sedge
	Isolepis levynsiana	Tiny Flat-sedge
	Juncus capitatus	Capitate Rush
	Lactuca serriola	Prickly Lettuce
	Lagurus ovatus	Hare's-tail Grass
	Lepidium didymum	Lesser Swine-cress
	Lepidium draba	Hoary Cress
	Lilaea scilloides	Lilaea
	Logfia gallica	French Cudweed
	Lolium perenne	Perennial Rye-grass
	Lolium temulentum	Darnel
	Lotus angustissimus	Slender Bird's-foot Trefoil
	Maclura pomifera	Osage Orange
	Malva nicaeensis	Mallow of Nice
	Malva parviflora	Small-flower Mallow

Status	Scientific Name	Common Name
	Medicago minima	Little Medic
	Medicago polymorpha	Burr Medic
	Medicago sativa subsp. *sativa*	Lucerne
	Mentha pulegium	Pennyroyal
	Modiola caroliniana	Red-flower Mallow
	Moenchia erecta	Erect Chickweed
	Moraea setifolia	Thread Iris
	Nassella hyalina	Cane Needle-grass
	Nassella leucotricha	Texas Needle-grass
	Nicotiana glauca	Tree Tobacco
	Opuntia cardiosperma	Riverina Pear
	Opuntia ficus-indica	Indian Fig
	Opuntia monacantha	Drooping Prickly-pear
	Opuntia puberula	Blind Prickly-pear
	Opuntia stricta	Common Prickly-pear
	Oxalis corniculata s.s.	Creeping Wood-sorrel
	Oxalis pes-caprae	Soursob
	Panicum hillmanii	Witch Panic
	Parapholis incurva	Coast Barb-grass
	Paronychia franciscana	Chile Nailwort
	Paspalum distichum	Water Couch
	Pennisetum clandestinum	Kikuyu
	Pentaschistis airoides subsp. *airoides*	False Hair-grass
	Petrorhagia dubia	Velvety Pink
	Petrorhagia nanteuilii	Childling Pink
	Phalaris minor	Lesser Canary-grass
	Phalaris paradoxa	Paradoxical Canary-grass
	Physalis viscosa	Sticky Ground-cherry
	Pinus radiata	Radiata Pine
	Pinus radiata var. *binata*	Two-leaved Radiata Pine
	Piptatherum miliaceum	Rice Millet
	Plantago major	Greater Plantain
	Poa annua	Annual Meadow-grass
	Polycarpon tetraphyllum	Four-leaved Allseed
	Polypogon monspeliensis	Annual Beard-grass
	Prunus cerasifera	Cherry Plum
	Prunus persica	Peach
	Raphanus raphanistrum	Wild Radish
	Rapistrum rugosum	Giant Mustard
	Reseda lutea	Cut-leaf Mignonette
	Romulea minutiflora	Small-flower Onion-grass
	Rostraria cristata	Annual Cat's-tail
	Rumex conglomeratus	Clustered Dock
	Rumex crispus	Curled Dock
	Rumex pulcher subsp. *pulcher*	Fiddle Dock
	Sagina maritima	Sea Pearlwort
	Salix alba	White Willow
	Schinus molle	Pepper Tree
	Scolymus hispanicus	Golden Thistle
	Scorzonera laciniata	Scorzonera
	Scorzonera laciniata var. *laciniata*	Scorzonera
	Setaria parviflora	Slender Pigeon Grass
	Setaria spp. (naturalised)	Pigeon Grass
	Solanum nigrum	Black Nightshade

Status	Scientific Name	Common Name
	Solanum pseudocapsicum	Madeira Winter-cherry
	Soliva sessilis	Jo Jo
	Sporobolus africanus	Rat-tail Grass
	Stachys arvensis	Stagger Weed
	Stellaria media	Chickweed
	Taraxacum officinale spp. agg.	Garden Dandelion
	Tradescantia fluminensis	Wandering Jew
	Tragopogon porrifolius	Salsify
	Tribolium acutiflorum	Crested Desmazeria
	Tribolium obliterum	Desmazeria
	Trifolium angustifolium var. *angustifolium*	Narrow-leaf Clover
	Trifolium campestre var. *campestre*	Hop Clover
	Trifolium dubium	Suckling Clover
	Trifolium glomeratum	Cluster Clover
	Trifolium hirtum	Hairy Clover
	Trifolium pratense	Red Clover
	Trifolium repens var. *repens*	White Clover
	Trifolium striatum	Knotted Clover
	Trifolium subterraneum	Subterranean Clover
	Trifolium tomentosum var. *tomentosum*	Woolly Clover
	Triticum aestivum	Wheat
	Veronica persica	Persian Speedwell
	Vicia sativa	Common Vetch
	Vinca major	Blue Periwinkle
	Vulpia muralis	Wall Fescue
	Vulpia myuros f. *megalura*	Fox-tail Fescue
	Vulpia myuros f. *myuros*	Rat's-tail Fescue

A2.2 Significant flora species

Table A2.3 Flora of national or state significance recorded or predicted to occur within Section C of the Melton/Wyndham Investigation Area

Australian status:

- CE Listed under EPBC Act as critically endangered
- E Listed under EPBC Act as endangered
- V Listed under EPBC Act as vulnerable
- R Rare (Walsh & Stajsic 2007)

Victorian status (DSE Flora Information System, 2007 Version):

- e Endangered
- v Vulnerable
- r Rare
- f Listed as threatened under FFG Act

Source of record:

- FIS: Recorded within 5 km of centre of study area, DSE Flora Information System
- DEWHA: Predicted to occur in local area, EPBC Act Protected Matters Search Tool

Likelihood scale:

	No habitat present	Habitat poorly represented	Habitat moderately well represented	Habitat well represented
No records from bioregion (terrestrial) or neighbouring basin (aquatic)	Negligible	Negligible	Low	Medium
Records from bioregion (terrestrial) or basin/neighbouring basin (aquatic)	Negligible	Low	Medium	High
Records from within 5 km (terrestrial) or from catchment (aquatic)	Negligible	Medium	High	High

Scientific name	Common name	Aust. status	Vic. status	Source of record	FFG	Occurrence in study area
National Significance						
Carex tasmanica	Curly Sedge	V	v	DEWHA FIS/DEWH	listed	Low
Glycine latrobeana	Clover Glycine	V	v	A FIS/DEWH	listed	Low
Pimelea spinescens subsp. *spinescens*	Spiny Rice-flower	C	e	A		Recorded
Prasophyllum frenchii	Maroon Leek-orchid	E	e	DEWHA FIS/DEWH	listed	Medium
Rutidosis leptorhynchoides	Button Wrinklewort	E	e	A	listed	High
Senecio macrocarpus	Large-headed Fireweed	V	e	DEWHA	listed	High
State Significance						
Allocasuarina luehmannii	Buloke			FIS	listed	Recorded
Amyema linophylla subsp. *orientale*	Buloke Mistletoe		v	FIS		High
Atriplex paludosa subsp. *paludosa*	Marsh Saltbush		r	FIS		Low
Austrostipa exilis	Heath Spear-grass		r	FIS		High
Austrostipa hemipogon	Half-bearded Spear-grass		r	FIS		High
Cullen parvum	Small Scurf-pea		e	FIS	listed	High
Dianella sp. aff. *longifolia* (Benambra)	Arching Flax-lily		v, K	FIS		High
Nicotiana suaveolens	Austral Tobacco		r	FIS		High
Rhagodia parabolica	Fragrant Saltbush		r	FIS		High

APPENDIX 3

EVC Benchmarks

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 132_61: *Heavier-soils* Plains Grassland

Description:
Treeless vegetation mostly less than 1 m tall dominated by largely graminoid and herb life forms. Occupies fertile cracking basalt soils prone to seasonal waterlogging in areas receiving at least 500 mm annual rainfall.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	2	5%	LH
Medium Herb	12	20%	MH
Small or Prostrate Herb	4	5%	SH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	13	40%	MTG
Medium to Tiny Non-tufted Graminoid	4	5%	MNG
Bryophytes/Lichens and Soil Crust*	na	20%	BL

* Note: treat as one life form in this EVC

LF Code	Species typical of at least part of EVC range	Common Name
SS	*Pimelea humilis*	Common Rice-flower
LH	*Rumex dumosus*	Wiry Dock
MH	*Calocephalus citreus*	Lemon Beauty-heads
MH	*Acaena echinata*	Sheep's Burr
MH	*Leptorhynchos squamatus*	Scaly Buttons
MH	*Eryngium ovinum*	Blue Devil
SH	*Solenogyne dominii*	Smooth Solenogyne
SH	*Lobelia pratioides*	Poison Lobelia
LTG	*Austrostipa bigeniculata*	Kneed Spear-grass
LTG	*Dichelachne crinita*	Long-hair Plume-grass
MTG	*Themeda triandra*	Kangaroo Grass
MTG	*Austrodanthonia caespitosa*	Common Wallaby-grass
MTG	*Elymus scaber* var. *scaber*	Common Wheat-grass
MTG	*Schoenus apogon*	Common Bog-sedge
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass
MNG	*Thelymitra pauciflora* s.l.	Slender Sun-orchid
MNG	*Microtis unifolia*	Common Onion-orchid
SC	*Convolvulus erubescens*	Pink Bindweed

Recruitment:
Episodic/Fire or Grazing. Desirable period between disturbances is 5 years.

Organic Litter:
10% cover

Victoria The Place To Be

EVC 132_61: *Heavier-soils* Plains Grassland - Victorian Volcanic Plain bioregion

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Plantago lanceolata*	Ribwort	high	low
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Leontodon taraxacoides* ssp. *taraxacoides*	Hairy Hawkbit	high	low
MH	*Trifolium subterraneum*	Subterranean Clover	high	low
MH	*Plantago coronopus*	Buck's-horn Plantain	high	low
MH	*Trifolium striatum*	Knotted Clover	high	low
MH	*Trifolium dubium*	Suckling Clover	high	low
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
MTG	*Romulea rosea*	Onion Grass	high	low
MTG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low
MTG	*Briza minor*	Lesser Quaking-grass	high	low
MTG	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome	high	low
MTG	*Briza maxima*	Large Quaking-grass	high	low
MTG	*Lolium rigidum*	Wimmera Rye-grass	high	low
MTG	*Lolium perenne*	Perennial Rye-grass	high	low
MTG	*Nassella neesiana*	Chilean Needle-grass	high	high
MNG	*Cynosurus echinatus*	Rough Dog's-tail	high	low
MNG	*Juncus capitatus*	Capitate Rush	high	low

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

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 132_63: *Low-rainfall* Plains Grassland

Description:
Treeless vegetation mostly < 1 m tall dominated by largely graminoid and herb life forms. Occupies cracking basalt soils prone to seasonal waterlogging in areas receiving < 500 mm annual rainfall.

Life forms:

Life form	#Spp	%Cover	LF code
Small Shrub*	1	5%	SS
Prostrate Shrub	1	5%	PS
Large Herb*	2	5%	LH
Medium Herb	8	20%	MH
Small or Prostrate Herb*	3	10%	SH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	10	30%	MTG
Medium to Tiny Non-tufted Graminoid*	2	5%	MNG
Bryophytes/Lichens and Soil Crust**	na	20%	BL

* Largely seasonal life form
** Note: treat as one life form in this EVC

LF Code	Species typical of at least part of EVC range	Common Name
SS	*Pimelea curviflora* s.s.	Curved Rice-flower
PS	*Atriplex semibaccata*	Berry Saltbush
LH	*Ptilotus macrocephalus*	Feather-heads
MH	*Acaena echinata*	Sheep's Burr
MH	*Plantago gaudichaudii*	Narrow Plantain
MH	*Maireana enchylaenoides*	Wingless Bluebush
MH	*Calocephalus citreus*	Lemon Beauty-heads
SH	*Solenogyne dominii*	Smooth Solenogyne
SH	*Oxalis perennans*	Grassland Wood-sorrel
SH	*Chamaesyce drummondii*	Flat Spurge
SH	*Goodenia pinnatifida*	Cut-leaf Goodenia
LTG	*Austrostipa bigeniculata*	Kneed Spear-grass
MTG	*Austrostipa scabra*	Rough Spear-grass
MTG	*Austrostipa nodosa*	Knotty Spear-grass
MTG	*Whalleya proluta*	Rigid Panic
MTG	*Austrodanthonia duttoniana*	Brown-back Wallaby-grass
TTG	*Centrolepis strigosa* ssp. *strigosa*	Hairy Centrolepis
TTG	*Centrolepis aristata*	Pointed Centrolepis
SC	*Convolvulus erubescens* spp. agg.	Pink Bindweed

Recruitment:
Episodic/Fire or Grazing. Desirable period between disturbances is 5 years.

Organic Litter:
10% cover

EVC 132_63: *Low-rainfall* Plains Grassland - Victorian Volcanic Plain bioregion

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Plantago lanceolata*	Ribwort	high	low
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Leontodon taraxacoides* ssp. *taraxacoides*	Hairy Hawkbit	high	low
MH	*Trifolium subterraneum*	Subterranean Clover	high	low
MH	*Plantago coronopus*	Buck's-horn Plantain	high	low
MH	*Trifolium striatum*	Knotted Clover	high	low
MH	*Trifolium dubium*	Suckling Clover	high	low
MTG	*Romulea rosea*	Onion Grass	high	low
MTG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low
MTG	*Briza minor*	Lesser Quaking-grass	high	low
MTG	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome	high	low
MTG	*Briza maxima*	Large Quaking-grass	high	low
MTG	*Lolium rigidum*	Wimmera Rye-grass	high	low
MTG	*Lolium perenne*	Perennial Rye-grass	high	low
MTG	*Nassella neesiana*	Chilean Needle-grass	high	high
MNG	*Cynosurus echinatus*	Rough Dog's-tail	high	low
MNG	*Juncus capitatus*	Capitate Rush	high	low

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

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 104: Lignum Swamp

Description:
Shrubland to 3 m tall or open woodland to 15 m tall, with an understorey that can be rich in herbaceous species. Occurs on inundation-prone heavy grey soils in depressions or floodways in low rainfall areas.

[+] woodland only components (ignore when assessing treeless areas and standardise final score as appropriate)

Large trees[+]:

Species	DBH(cm)	# / ha
Eucalyptus spp.	80 cm	5

Tree Canopy Cover[+]:

%cover	Character Species	Common Name
10%	*Eucalyptus camaldulensis*	River Red Gum

Life forms:

Life form	#Spp	%Cover	LF code
Immatrure Canopy Tree[+]		5%	IT
Medium Shrub	1	20%	MS
Large Herb	2	5%	LH
Medium Herb	3	15%	MH
Small or Prostrate Herb	3	10%	SH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	6	20%	MTG
Medium to Tiny Non-tufted Graminoid	3	10%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C

LF Code	Species typical of at least part of EVC range	Common Name
MS	*Muehlenbeckia florulenta*	Lignum
LH	*Brachyscome basaltica* var. *gracilis*	Woodland Swamp-daisy
LH	*Rumex brownii*	Slender Dock
MH	*Marsilea drummondii*	Common Nardoo
MH	*Alternanthera denticulata* s.l.	Lesser Joyweed
MH	*Myriophyllum muelleri*	Hooded Water-milfoil
SH	*Eryngium vesiculosum*	Prickfoot
SH	*Lobelia pratioides*	Poison Lobelia
SH	*Lobelia concolor*	Poison Pratia
LTG	*Amphibromus nervosus*	Common Swamp Wallaby-grass
MTG	*Lachnagrostis filiformis*	Common Blown-grass
MTG	*Juncus subsecundus*	Finger Rush
MTG	*Austrodanthonia duttoniana*	Brown-back Wallaby-grass
MNG	*Eleocharis acuta*	Common Spike-sedge
MNG	*Eleocharis pusilla*	Small Spike-sedge

Recruitment:
Episodic/Flood - Desirable period between disturbances is 10 years.

Organic Litter:
10 % cover

Logs[+]:
5 m/0.1 ha.

Victoria The Place To Be

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	*Lycium ferocissimum*	African Box-thorn	high	high
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
LH	*Helminthotheca echioides*	Ox-tongue	high	high
LH	*Cynara cardunculus*	Spanish Artichoke	high	high
LH	*Sonchus asper* s.l.	Rough Sow-thistle	high	low
LH	*Aster subulatus*	Aster-weed	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Cerastium glomeratum* s.l.	Common Mouse-ear Chickweed	high	low
MTG	*Nassella trichotoma*	Serrated Tussock	high	high
MTG	*Lolium rigidum*	Wimmera Rye-grass	high	low
MTG	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome	high	low
MTG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low

Published by the Victorian Government Department of Sustainability and Environment October 2005

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 895: Escarpment Shrubland

Description:

Occurs on rocky escarpments in steep valleys or gorges, associated with limestone or basalt. Sites have moderate to high fertility, are well-drained but subject to regular summer drought due to shallow soils. Eucalypt woodland to 15 m tall or non-eucalypt shrubland to 8 m tall, with occasional eucalypts; lichen-covered rock outcrops are common.

[+] eucalypt woodland only components (ignore when assessing shrubland areas and standardise site condition score as required)

Large trees[+]:

Species	DBH(cm)	# / ha
Eucalyptus spp.	70 cm	15 / ha

Tree Canopy Cover:

% cover	Character Species	Common Name
15%	*Acacia implexa*	Lightwood
	Allocasuarina verticillata	Drooping Sheoak
	Acacia mearnsii	Black Wattle
	Bursaria spinosa	Sweet Bursaria
	Eucalyptus viminalis ssp. viminalis	Manna Gum

Understorey:

Life form	# Spp	% Cover	LF code
Immature Canopy Tree[+]		5%	IT
Understorey Tree or Large Shrub[+]	3	10%	T
Medium Shrub	3	10%	MS
Small Shrub	2	5%	SS
Large Herb	3	5%	LH
Medium Herb	4	10%	MH
Small or Prostrate Herb	5	5%	SH
Large Tufted Graminoid	1	5%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	9	25%	MTG
Medium to Tiny Non-tufted Graminoid	3	5%	MNG
Ground Fern	1	5%	GF
Scrambler or Climber	1	5%	SC
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C

LF Code		Species typical of at least part of EVC range	Common Name
MS	r	*Rhagodia parabolica*	Fragrant Saltbush
MS		*Hymenanthera dentata* s.l.	Tree Violet
SS		*Enchylaena tomentosa* var. *tomentosa*	Ruby Saltbush
LH		*Wahlenbergia communis* s.l.	Tufted Bluebell
MH		*Oxalis perennans*	Grassland Wood-sorrel
MH		*Maireana enchylaenoides*	Wingless Bluebush
MH		*Einadia nutans* ssp. *nutans*	Nodding Saltbush
SH		*Chamaesyce drummondii*	Flat Spurge
SH		*Dichondra repens*	Kidney-weed
LTG		*Austrostipa bigeniculata*	Kneed Spear-grass
MTG		*Austrodanthonia racemosa* var. *racemosa*	Stiped Wallaby-grass
MTG		*Austrodanthonia setacea*	Bristly Wallaby-grass
MNG		*Panicum effusum*	Hairy Panic
GF		*Cheilanthes distans*	Bristly Cloak-fern
SC		*Clematis microphylla*	Small-leaved Clematis
SC		*Convolvulus erubescens* spp. agg.	Pink Bindweed

Victoria The Place To Be

EVC 895: Escarpment Shrubland - Victorian Volcanic Plain bioregion

Recruitment:
Continuous

Organic Litter:
20 % cover

Logs:
15 m/0.1 ha+.
5 m/0.1 ha. (note: large log class does not apply)

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	*Schinus molle*	Pepper Tree	high	high
MS	*Lycium ferocissimum*	African Box-thorn	high	high
MS	*Genista monspessulana*	Montpellier Broom	high	high
SS	*Marrubium vulgare*	Horehound	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
LH	*Helminthotheca echioides*	Ox-tongue	high	high
LH	*Lactuca serriola*	Prickly Lettuce	high	low
LH	*Sisymbrium officinale*	Hedge Mustard	high	high
LH	*Sonchus asper* s.l.	Rough Sow-thistle	high	low
LH	*Verbascum thapsus* ssp. *thapsus*	Great Mullein	high	high
LH	*Echium plantagineum*	Paterson's Curse	high	high
LH	*Centaurium tenuiflorum*	Slender Centaury	high	low
LH	*Foeniculum vulgare*	Fennel	high	high
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Trifolium arvense* var. *arvense*	Hare's-foot Clover	high	low
MH	*Trifolium subterraneum*	Subterranean Clover	high	low
MH	*Trifolium campestre* var. *campestre*	Hop Clover	high	low
MH	*Trifolium angustifolium* var. *angustifolium*	Narrow-leaf Clover	high	low
MH	*Lotus suaveolens*	Hairy Bird's-foot Trefoil	high	low
MH	*Cerastium glomeratum* s.l.	Common Mouse-ear Chickweed	high	low
SH	*Medicago polymorpha*	Burr Medic	high	low
SH	*Trifolium glomeratum*	Cluster Clover	high	low
SH	*Modiola caroliniana*	Red-flower Mallow	high	low
SH	*Aptenia cordifolia*	Heart-leaf Ice-plant	high	high
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
LNG	*Avena fatua*	Wild Oat	high	low
MTG	*Nassella trichotoma*	Serrated Tussock	high	high
MTG	*Ehrharta longiflora*	Annual Veldt-grass	high	low
MTG	*Briza maxima*	Large Quaking-grass	high	low
MTG	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome	high	low
MTG	*Sporobolus africanus*	Rat-tail Grass	high	high
MTG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low
MTG	*Romulea rosea*	Onion Grass	high	low
MTG	*Pentaschistis airoides* ssp. *airoides*	False Hair-grass	high	low
MTG	*Lolium perenne*	Perennial Rye-grass	high	high
MTG	*Dactylis glomerata*	Cocksfoot	high	high
MTG	*Vulpia myuros*	Rat's-tail Fescue	high	low
MTG	*Bromus rubens*	Red Brome	high	low
MTG	*Avena barbata*	Bearded Oat	high	low
MTG	*Aira caryophyllea*	Silvery Hair-grass	high	low
SC	*Vicia sativa* ssp. *sativa*	Common Vetch	high	low

Published by the Victorian Government Department of Sustainability and Environment January 2005

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 56: Floodplain Riparian Woodland

Description:
An open eucalypt woodland to 20 m tall over a medium to tall shrub layer with a ground layer consisting of amphibious and aquatic herbs and sedges. Occurs along the banks and floodplains of the larger meandering rivers and major creeks, often in conjunction with one or more floodplain wetland communities. Elevation and rainfall are relatively low and soils are fertile alluviums subject to periodic flooding and inundation.

Large trees:

Species	DBH(cm)	#/ha
Eucalyptus spp.	80 cm	15 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
20%	*Eucalyptus camaldulensis*	River Red-gum
	Eucalyptus ovata	Swamp Gum

Life Forms:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	1	5%	T
Medium Shrub	3	15%	MS
Large Herb	2	5%	LH
Medium Herb	4	10%	MH
Small or Prostrate Herb	3	10%	SH
Large Tufted Graminoid	3	15%	LTG
Large Non-tufted Graminoid	1	10%	LNG
Medium to Small Tufted Graminoid	5	15%	MTG
Medium to Tiny Non-tufted Graminoid	3	10%	MNG
Scrambler or Climber	1	5%	SC
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
T	*Acacia melanoxylon*	Blackwood
MS	*Bursaria spinosa ssp. spinosa*	Sweet Bursaria
MS	*Acacia pycnantha*	Golden Wattle
MS	*Myoporum sp. 1*	Sticky Boobialla
LH	*Senecio glomeratus*	Annual Fireweed
MH	*Rumex brownii*	Slender Dock
SH	*Dichondra repens*	Kidney-weed
SH	*Crassula helmsii*	Swamp Crassula
SH	*Selliera radicans*	Shiny Swamp-mat
SH	*Hydrocotyle sibthorpioides*	Shining Pennywort
LTG	*Lomandra longifolia*	Spiny-headed Mat-rush
LTG	*Gahnia filum*	Chaffy Saw-sedge
LTG	*Poa labillardierei*	Common Tussock-grass
LTG	*Juncus kraussii ssp. australiensis*	Sea Rush
LNG	*Phragmites australis*	Common Reed
MTG	*Lachnagrostis filiformis*	Common Blown-grass
MTG	*Austrodanthonia penicillata*	Slender Wallaby-grass
MTG	*Dianella revoluta s.l.*	Black-anther Flax-lily
MTG	*Bulbine bulbosa*	Bulbine Lily
MNG	*Triglochin striatum*	Streaked Arrowgrass
MNG	*Schoenus nitens*	Shiny Bog-sedge
MNG	*Distichlis distichophylla*	Australian Salt-grass
EP	*Muellerina eucalyptoides*	Creeping Mistletoe
SC	*Cassytha melantha*	Coarse Dodder-laurel
SC	*Calystegia sepium*	Large Bindweed

Recruitment:
Episodic/Flood. Desirable period between disturbances is 5 years.

Organic Litter:
40 % cover

Logs:
30 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	*Rosa rubiginosa*	Sweet Briar	high	high
LH	*Rumex conglomeratus*	Clustered Dock	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
LH	*Rumex crispus*	Curled Dock	high	high
LH	*Helminthotheca echioides*	Ox-tongue	high	low
LH	*Aster subulatus*	Aster-weed	high	low
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Sonchus asper s.l.*	Rough Sow-thistle	high	low
LH	*Plantago lanceolata*	Ribwort	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Plantago major*	Greater Plantain	high	low
MH	*Brassica fruticulosa*	Twiggy Turnip	high	high
MH	*Atriplex prostrata*	Hastate Orache	high	high
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
MTG	*Cyperus eragrostis*	Drain Flat-sedge	high	high
MTG	*Bromus catharticus*	Prairie Grass	high	low
MTG	*Lolium perenne*	Perennial Rye-grass	high	high
MNG	*Paspalum distichum*	Water Couch	high	high

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

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 125: Plains Grassy Wetland

Description:
This EVC is usually treeless, but in some instances can include sparse River Red Gum *Eucalyptus camaldulensis* or Swamp Gum *Eucalyptus ovata*. A sparse shrub component may also be present. The characteristic ground cover is dominated by grasses and small sedges and herbs. The vegetation is typically species-rich on the outer verges but is usually species-poor in the wetter central areas.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	5	5%	LH
Medium Herb	6	10%	MH
Small or Prostrate Herb	3	10%	SH
Large Tufted Graminoid	3	15%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	8	30%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
LH	*Epilobium billardierianum*	Variable Willow-herb
LH	*Villarsia reniformis*	Running Marsh-flower
LH	*Epilobium billardierianum ssp. cinereum*	Grey Willow-herb
MH	*Potamogeton tricarinatus s.l.*	Floating Pondweed
MH	*Lilaeopsis polyantha*	Australian Lilaeopsis
MH	*Utricularia dichotoma s.l.*	Fairies' Aprons
SH	*Eryngium vesiculosum*	Prickfoot
SH	*Neopaxia australasica*	White Purslane
SH	*Lobelia pratioides*	Poison Lobelia
LTG	*Juncus flavidus*	Gold Rush
LTG	*Deyeuxia quadriseta*	Reed Bent-grass
LTG	*Amphibromus nervosus*	Common Swamp Wallaby-grass
LTG	*Poa labillardierei*	Common Tussock-grass
MTG	*Triglochin procerum s.l.*	Water Ribbons
MTG	*Glyceria australis*	Australian Sweet-grass
MTG	*Juncus holoschoenus*	Joint-leaf Rush
MTG	*Austrodanthonia duttoniana*	Brown-back Wallaby-grass
MNG	*Eleocharis acuta*	Common Spike-sedge
MNG	*Eleocharis pusilla*	Small Spike-sedge

Recruitment:
Episodic/Flood. Desirable period between disturbances is 5 years.

Organic Litter:
20% cover

Logs:
5 m/0.1 ha.(where trees are overhanging the wetland)

Victoria The Place To Be

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 125: Plains Grassy Wetland

Description:
This EVC is usually treeless, but in some instances can include sparse River Red Gum *Eucalyptus camaldulensis* or Swamp Gum *Eucalyptus ovata*. A sparse shrub component may also be present. The characteristic ground cover is dominated by grasses and small sedges and herbs. The vegetation is typically species-rich on the outer verges but is usually species-poor in the wetter central areas.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	5	5%	LH
Medium Herb	6	10%	MH
Small or Prostrate Herb	3	10%	SH
Large Tufted Graminoid	3	15%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	8	30%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
LH	*Epilobium billardierianum*	Variable Willow-herb
LH	*Villarsia reniformis*	Running Marsh-flower
LH	*Epilobium billardierianum ssp. cinereum*	Grey Willow-herb
MH	*Potamogeton tricarinatus s.l.*	Floating Pondweed
MH	*Lilaeopsis polyantha*	Australian Lilaeopsis
MH	*Utricularia dichotoma s.l.*	Fairies' Aprons
SH	*Eryngium vesiculosum*	Prickfoot
SH	*Neopaxia australasica*	White Purslane
SH	*Lobelia pratioides*	Poison Lobelia
LTG	*Juncus flavidus*	Gold Rush
LTG	*Deyeuxia quadriseta*	Reed Bent-grass
LTG	*Amphibromus nervosus*	Common Swamp Wallaby-grass
LTG	*Poa labillardierei*	Common Tussock-grass
MTG	*Triglochin procerum s.l.*	Water Ribbons
MTG	*Glyceria australis*	Australian Sweet-grass
MTG	*Juncus holoschoenus*	Joint-leaf Rush
MTG	*Austrodanthonia duttoniana*	Brown-back Wallaby-grass
MNG	*Eleocharis acuta*	Common Spike-sedge
MNG	*Eleocharis pusilla*	Small Spike-sedge

Recruitment:
Episodic/Flood. Desirable period between disturbances is 5 years.

Organic Litter:
20% cover

Logs:
5 m/0.1 ha.(where trees are overhanging the wetland)

Victoria The Place To Be

APPENDIX 4

Results Summary Tables

A4.1 Vegetation Quality Assessment

Notes to Table:

Habitas ID #	Parcel PFI or Property PFI	
Vegetation Category	DT	Degraded Treeless Vegetation
	RP	Remnant Patch
Ecological Vegetation Class (EVC)	H-s PG	Heavier-soils Plains Grassland
	FRW	Floodplain Riparian Woodland
	PGWet	Plains Grassy Wetland
	LS	Lignum Swamp
	L-r P G	Low-rainfall Plains Grassland
	ES	Escarpment Shrubland
Conservation Status	E	Endangered
Conservation Significance (CS)	VH	Very High
	H	High
Key Areas & Management Zones	MZ	Management Zones

*Section C is entirely contained within the Victorian Volcanic Plain Bioregion.

^ Presence of significant species was not a factor in increasing conservation significance of patches in Section C. All patches of Very High conservation significance are endangered EVCs in the Victorian Volcanic Plain Bioregion with a habitat score >40.

Table A4.1 Section C Habitat Hectare assessment results from the Melton/Wyndham Investigation Area assessment (undertaken by Biosis Research Pty. Ltd. October 2008 - March 2009)

Habitas ID #	Site	Zone	Vegetation Category	Area (ha)	EVC	Conservation Status*	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Standardiser	Site condition	Landscape Context	Habitat Score (/100)	Habitat Hectares	Conservation Significance	Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Area & Management Zones	Very High CS Offset Prescription (excl. Key Areas & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
21477	4	A	RP	1.56	L-r PG	E	0	0	6	5	3	4	0	1.36	24.48	15	39.48	0.62	H		1.5		0.92	Yes		0.92	
3001452	1	A	RP	4.17	L-r PG	E	0	0	9	15	6	5	0	1.36	47.60	15	62.60	2.61	VH	HS above 40	2.0	5.22		Yes -pt MZ			
3001452	2	A	DT	45.56			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
3001452	1	B	RP	1.28	L-r PG	E	0	0	7	15	6	5	0	1.36	44.88	10	54.88	0.70	VH	HS above 40	2.0	1.40		Yes			
3001452	4	A	DT	1.56			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
50242680	5	A	RP	0.58	L-r PG	E	0	0	6	15	3	2	0	1.36	35.36	10	45.36	0.26	VH	HS above 40	2.0	0.53			0.53		
50242680	4	A	RP	0.51	L-r PG	E	0	0	6	15	6	2	0	1.36	39.44	15	54.44	0.28	VH	HS above 40	2.0	0.56			0.56		
50242680	3	A	RP	1.20	L-r PG	E	0	0	6	15	6	2	0	1.36	39.44	15	54.44	0.65	VH	HS above 40	2.0	1.31		Yes - MZ			
50242680	1	A	RP	3.04	L-r PG	E	0	0	6	15	6	2	0	1.36	39.44	15	54.44	1.65	VH	HS above 40	2.0	3.31		Yes			

Habitas ID #	Site	Zone	Vegetation Category	Area (ha)	EVC	Conservation Status*	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Standardiser	Site condition	Landscape Context	Habitat Score (/100)	Habitat Hectares	Conservation Significance	Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Area & Management Zones	Very High CS Offset Prescription (excl. Key Areas & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
50242680	2	A	RP	0.46	L-r PG	E	0	0	6	15	6	2	0	1.36	39.44	15	54.44	0.25	VH	HS above 40	2.0	0.50		Yes - MZ			
50242680	6	A	DT	59.13			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes -pt MZ			
50242705	1	A	RP	7.65	L-r PG	E	0	0	11	15	3	5	0	1.36	46.24	15	61.24	4.68	VH	HS above 40	2.0	9.37			9.37		
50242705	1	B	RP	0.43	L-r PG	E	0	0	11	15	0	3	0	1.36	39.44	15	54.44	0.23	VH	HS above 40	2.0	0.47			0.47		
50242705	2	A	DT	3.80			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
50242707	1	A	RP	13.58	L-r PG	E	0	0	2	15	3	4	0	1.36	32.64	15	47.64	6.47	VH	HS above 40	2.0	12.94		Yes			
50242707	1	B	RP	0.55	L-r PG	E	0	0	9	5	3	5	0	1.36	29.92	15	44.92	0.25	VH	HS above 40	2.0	0.49		Yes			
50242707	2	A	DT	18.49			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes -pt MZ			
50242709	3	A	DT	0.21			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
50242709	1	A	RP	66.54	L-r PG	E	0	0	9	15	6	5	0	1.36	47.60	15	62.60	41.65	VH	HS above 40	2.0	83.31		Yes			
50242709	2	A	RP	0.27	PGWet	E	0	0	7	10	6	3	0	1.36	35.00	15	50.00	0.14	VH	HS above 40	2.0	0.27		Yes			
1773905	2	A	DT	3.43			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes -pt MZ			
1773905	3	A	DT	0.08			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1773905	1	A	RP	6.68	L-r PG	E	0	0	9	5	3	5	0	1.36	29.92	15	44.92	3.00	VH	HS above 40	2.0	6.00		Yes			
1773906	1	B	RP	7.19	L-r PG	E	0	0	7	5	10	5	0	1.36	36.72	15	51.72	3.72	VH	HS above 40	2.0	7.44		Yes			
1773906	1	C	RP	0.94	L-r PG	E	0	0	7	15	10	5	0	1.36	50.32	15	65.32	0.61	VH	HS above 40	2.0	1.23		Yes			
1773906	2	A	DT	0.45			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1773906	3	A	DT	0.96			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1773906	1	A	RP	0.63	L-r PG	E	0	0	7	15	10	5	0	1.36	50.32	15	65.32	0.41	VH	HS above 40	2.0	0.82		Yes			
1773907	4	A	DT	1.05			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1773907	1	A	RP	8.21	L-r PG	E	0	0	6	5	6	4	0	1.36	28.56	15	43.56	3.58	VH	HS above 40	2.0	7.15		Yes - MZ			
1773907	2	A	DT	0.77			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1773907	3	A	DT	0.10			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1773908	1	A	RP	1.51	H-s PG	E	0	0	11	5	1	5	0	1.36	29.92	15	44.92	0.68	VH	HS above 40	2.0	1.36		Yes - MZ			
1773908	2	A	DT	3.37			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1773908	3	A	RP	5.24	H-s PG	E	0	0	9	5	3	3	0	1.36	27.20	15	42.20	2.21	VH	HS above 40	2.0	4.42		Yes			
1773909	1	A	RP	1.35	L-r PG	E	0	0	0	5	6	5	0	1.36	21.76	5	26.76	0.36	H		1.5		0.54	Yes - MZ			
1773909	4	A	DT	2.11			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1773909	3	A	DT	0.57			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1773909	2	A	RP	6.05	L-r PG	E	0	0	9	5	6	5	0	1.36	34.00	15	49.00	2.96	VH	HS above 40	2.0	5.93		Yes			
1773910	1	A	RP	10.16	L-r PG	E	0	0	9	5	3	3	0	1.36	27.20	15	42.20	4.29	VH	HS above 40	2.0	8.58		Yes			
1776984	2	A	RP	0.64	L-r PG	E	0	0	11	15	0	5	0	1.36	42.16	15	57.16	0.37	VH	HS above 40	2.0	0.73		Yes - MZ			
1776984	3	A	DT	0.73			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1778589	1	A	DT	10.34			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
1778593	1	A	RP	3.29	L-r PG	E	0	0	6	5	3	2	0	1.36	21.76	15	36.76	1.21	H		1.5		1.81	Yes - MZ			
1778593	1	B	RP	4.99	L-r PG	E	0	0	9	5	3	5	0	1.36	29.92	15	44.92	2.24	VH	HS above 40	2.0	4.48		Yes			
1778593	2	A	DT	2.06			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
1779679	4	A	DT	0.88			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes -pt MZ			
1779686	3	A	DT	1.69			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
1779693	1	A	DT	4.14			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
1779695	2	A	DT	1.60			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
1779695	1	A	RP	2.38	L-r PG	E	0	0	9	5	6	4	0	1.36	32.64	5	37.64	0.90	H		1.5		1.34			1.34	

Habitas ID #	Site	Zone	Vegetation Category	Area (ha)	EVC	Conservation Status*	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Standardiser	Site condition	Landscape Context	Habitat Score (/100)	Habitat Hectares	Conservation Significance	Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Area & Management Zones	Very High CS Offset Prescription (excl. Key Areas & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
1801785	3	A	DT	3.34			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
1801785	1	A	RP	0.41	L-r PG	E	0	0	11	5	1	4	0	1.36	28.56	5	33.56	0.14	H		1.5		0.21			0.21	
1801785	4	A	DT	1.80			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
1801785	2	A	RP	4.62	L-r PG	E	0	0	4	5	3	4	0	1.36	21.76	10	31.76	1.47	H		1.5		2.20			2.20	
1801786	1	A	RP	2.22	L-r PG	E	0	0	7	15	3	4	0	1.36	39.44	15	54.44	1.21	VH	HS above 40	2.0	2.42		Yes			
1801786	2	A	DT	3.92			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes -pt MZ			
1801786	3	A	DT	3.12			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1801786	1	B	RP	0.86	L-r PG	E	0	0	7	15	3	4	0	1.36	39.44	15	54.44	0.47	VH	HS above 40	2.0	0.94		Yes -pt MZ			
20415093	1	A	RP	0.06	ES	E	0	0	4	15	3	2	0	1.15	27.60	5	32.60	0.02	H		1.5		0.03			0.03	
52998139	1	A	DT	0.94			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
52998139	2	A	RP	1.34	L-r PG	E	0	0	7	10	6	5	0	1.36	38.08	15	53.08	0.71	VH	HS above 40	2.0	1.42			1.42		
52998139	3	A	DT	1.77			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
204150953	2	A	RP	0.19	L-r PG	E	0	0	7	10	3	4	0	1.36	32.64	10	42.64	0.08	VH	HS above 40	2.0	0.16			0.16		
204150953	4	A	DT	0.08			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
204150953	1	E	RP	0.02	ES	E	0	0	4	15	3	3	0	1.15	28.75	5	33.75	0.01	H		1.5		0.01			0.01	
204150953	1	B	RP	0.01	ES	E	0	0	4	15	3	3	0	1.15	28.75	5	33.75	0.00	H		1.5		0.01			0.01	
204150953	3	A	DT	4.12			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes -pt MZ			
204150953	2	B	RP	0.11	L-r PG	E	0	0	7	15	3	4	0	1.36	39.44	10	49.44	0.05	VH	HS above 40	2.0	0.11			0.11		
204150953	2	D	RP	2.35	L-r PG	E	0	0	7	15	6	5	0	1.36	44.88	10	54.88	1.29	VH	HS above 40	2.0	2.58		Yes			
204150953	1	D	RP	0.10	ES	E	0	0	4	15	3	3	0	1.15	28.75	5	33.75	0.03	H		1.5		0.05			0.05	
204150953	2	C	RP	1.03	L-r PG	E	0	0	7	15	3	5	0	1.36	40.80	15	55.80	0.57	VH	HS above 40	2.0	1.15			1.15		
204150967	1	B	RP	0.05	ES	E	0	0	4	15	3	3	0	1.15	28.75	5	33.75	0.02	H		1.5		0.03			0.03	
204150967	2	A	DT	8.05			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
204150967	1	C	RP	0.01	ES	E	0	0	4	15	3	3	0	1.15	28.75	5	33.75	0.00	H		1.5		0.01			0.01	
204150978	1	B	RP	4.79	L-r PG	E	0	0	7	15	6	5	0	1.36	44.88	10	54.88	2.63	VH	HS above 40	2.0	5.26		Yes			
204150978	1	C	RP	0.15	L-r PG	E	0	0	7	15	6	5	0	1.36	44.88	5	49.88	0.07	VH	HS above 40	2.0	0.15			0.15		
204150978	3	A	DT	1.85			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes –pt MZ			
204150978	4	A	DT	0.19			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
204150978	1	A	RP	0.50	L-r PG	E	0	0	11	15	3	5	0	1.36	46.24	10	56.24	0.28	VH	HS above 40	2.0	0.56		Yes			
204150978	2	A	DT	0.60			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
204150986	3	A	DT	0.23			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
204150986	1	C	RP	0.29	L-r PG	E	0	0	7	15	6	5	0	1.36	44.88	5	49.88	0.14	VH	HS above 40	2.0	0.29			0.29		
204150986	2	A	DT	17.65			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes -pt MZ			
204150986	6	A	DT	0.43			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
204150986	5	A	DT	1.09			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
204150986	1	A	RP	1.09	L-r PG	E	0	0	7	15	6	5	0	1.36	44.88	10	54.88	0.60	VH	HS above 40	2.0	1.20		Yes			
204150986	1	B	RP	8.50	L-r PG	E	0	0	7	15	6	5	0	1.36	44.88	10	54.88	4.66	VH	HS above 40	2.0	9.33		Yes			
204150986	4	A	DT	0.11			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
21477	3	A	RP	0.70	L-r PG	E	0	0	11	5	6	5	0	1.36	36.72	10	46.72	0.33	VH	HS above 40	2.0	0.65			0.65		
21477	1	A	RP	1.19	L-r PG	E	0	0	11	5	6	5	0	1.36	36.72	10	46.72	0.56	VH	HS above 40	2.0	1.11			1.11		
21477	2	A	RP	0.17	L-r PG	E	0	0	11	5	6	5	0	1.36	36.72	10	46.72	0.08	VH	HS above 40	2.0	0.16			0.16		
21477	7	A	DT	155.94			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						

Habitas ID #	Site	Zone	Vegetation Category	Area (ha)	EVC	Conservation Status*	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Standardiser	Site condition	Landscape Context	Habitat Score (/100)	Habitat Hectares	Conservation Significance	Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Area & Management Zones	Very High CS Offset Prescription (excl. Key Areas & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
21477	6	A	RP	0.14	L-r PG	E	0	0	6	5	3	4	0	1.36	24.48	5	29.48	0.04	H		1.5		0.06			0.06	
21477	5	A	RP	0.17	L-r PG	E	0	0	6	5	3	4	0	1.36	24.48	5	29.48	0.05	H		1.5		0.08			0.08	
3001452	1	C	RP	8.37	L-r PG	E	0	0	7	15	6	5	0	1.36	44.88	10	54.88	4.59	VH	HS above 40	2.0	9.19		Yes			
3001452	1	D	RP	1.36	L-r PG	E	0	0	9	15	6	5	0	1.36	47.60	10	57.60	0.78	VH	HS above 40	2.0	1.57		Yes			
3001452	3	A	DT	0.67			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
50242717	3	A	DT	94.24			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
50242717	1	A	RP	1.80	FRW	E	8	3	4	15	10	5	3	1.00	48.00	5	53.00	0.95	VH	HS above 40	2.0	1.91		Yes			
50242717	2	A	RP	0.27	ES	E	0	0	0	5	3	2	0	1.15	11.50	5	16.50	0.04	H		1.5		0.07			0.07	
1778584	1	A	RP	1.64	L-r PG	E	0	0	11	5	6	5	0	1.36	36.72	15	51.72	0.85	VH	HS above 40	2.0	1.70		Yes - MZ			
1778584	2	A	DT	3.09			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes -pt MZ			
1778585	1	A	RP	2.31	L-r PG	E	0	0	9	5	3	3	0	1.36	27.20	10	37.20	0.86	H		1.5		1.29	Yes - MZ			
1778585	2	A	DT	2.43			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes -pt MZ			
1779679	1	A	RP	3.17	L-r PG	E	0	0	6	15	3	4	0	1.36	38.08	10	48.08	1.52	VH	HS above 40	2.0	3.05		Yes - MZ			
1779679	2	A	DT	0.11			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1779679	3	A	DT	0.04			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0			Yes - MZ			
1779684	1	A	RP	2.69	L-r PG	E	0	0	7	15	6	3	0	1.36	42.16	15	57.16	1.54	VH	HS above 40	2.0	3.08		Yes - MZ			
1779686	2	A	DT	0.28			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
1779686	1	A	RP	2.24	L-r PG	E	0	0	6	5	3	5	0	1.36	25.84	10	35.84	0.80	H		1.5		1.20			1.20	
1779695	3	A	DT	0.14			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
1801780	1	A	RP	3.27	L-r PG	E	0	0	9	5	6	5	0	1.36	34.00	15	49.00	1.60	VH	HS above 40	2.0	3.20			3.20		
1801780	2	A	DT	1.14			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
50242643	2	A	DT	0.97			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
50242643	1	A	RP	3.09	L-r PG	E	0	0	11	15	3	2	0	1.36	42.16	5	47.16	1.46	VH	HS above 40	2.0	2.91			2.91		
50242661	1	A	RP	2.94	L-r PG	E	0	0	7	5	3	4	0	1.36	25.84	15	40.84	1.20	VH	HS above 40	2.0	2.40			2.40		
50242661	3	A	RP	0.31	L-r PG	E	0	0	7	5	3	4	0	1.36	25.84	15	40.84	0.13	VH	HS above 40	2.0	0.25			0.25		
50242661	2	A	DT	0.90			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
50242670	2	A	RP	0.96	H-s PG	E	0	0	7	5	3	5	0	1.36	27.20	15	42.20	0.41	VH	HS above 40	2.0	0.81			0.81		
50242670	1	A	DT	3.73			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
50242712	8	A	DT	64.16			0	0	0	0	0	0	0	1.36	0.00	0	0.00	0.00	L		0.0						
50242712	4	A	RP	0.18	L-r PG	E	0	0	7	15	10	3	0	1.36	47.60	15	62.60	0.11	VH	HS above 40	2.0	0.23			0.23		
50242712	1	A	RP	0.84	L-r PG	E	0	0	7	5	10	2	0	1.36	32.64	15	47.64	0.40	VH	HS above 40	2.0	0.80			0.80		
50242712	5	A	RP	1.01	L-r PG	E	0	0	7	10	10	3	0	1.36	40.80	15	55.80	0.56	VH	HS above 40	2.0	1.13			1.13		
50242712	7	A	RP	0.29	L-r PG	E	0	0	7	15	10	3	0	1.36	47.60	15	62.60	0.18	VH	HS above 40	2.0	0.36			0.36		
50242712	2	A	RP	1.20	L-r PG	E	0	0	7	10	10	3	0	1.36	40.80	15	55.80	0.67	VH	HS above 40	2.0	1.34			1.34		
50242712	3	A	RP	0.25	L-r PG	E	0	0	7	10	10	3	0	1.36	40.80	15	55.80	0.14	VH	HS above 40	2.0	0.28			0.28		
50242712	6	A	RP	0.75	L-r PG	E	0	0	7	10	10	3	0	1.36	40.80	15	55.80	0.42	VH	HS above 40	2.0	0.84			0.84		
50242703	1	A	RP	2.47	L-r PG	E	0	0	6	5	3	2	0	1.36	21.76	15	36.76	0.91	H		1.5		1.36			1.36	
50242703	2	A	RP	2.31	L-r PG	E	0	0	9	5	6	4	0	1.36	32.64	15	47.64	1.10	VH	HS above 40	2.0	2.20			2.20		
50242703	3	A	DT	49.64			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
50242703	4	A	RP	9.03	L-r PG	E	0	0	11	5	0	5	0	1.36	28.56	15	43.56	3.93	VH	HS above 40	2.0	7.87			7.87		
50242719	6	A	RP	0.14	PGWet	E	0	0	7	10	6	3	0	1.36	35.00	5	40.00	0.06	VH	HS above 40	2.0	0.11		Yes			
50242719	5	A	RP	3.30	LS	E	0	0	7	10	6	3	0	1.36	35.00	15	50.00	1.65	VH	HS above 40	2.0	3.30		Yes			

Habitas ID #	Site	Zone	Vegetation Category	Area (ha)	EVC	Conservation Status*	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Standardiser	Site condition	Landscape Context	Habitat Score (/100)	Habitat Hectares	Conservation Significance	Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Area & Management Zones	Very High CS Offset Prescription (excl. Key Areas & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
50242719	2	A	RP	0.08	L-r PG	E	0	0	4	5	3	4	0	1.36	21.76	15	36.76	0.03	H		1.5		0.04			0.04	
50242719	3	A	DT	108.68			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
50242719	1	A	RP	24.75	L-r PG	E	0	0	7	15	3	3	0	1.36	38.08	15	53.08	13.14	VH	HS above 40	2.0	26.27		Yes			
50242719	4	A	RP	0.15	PGWet	E	0	0	7	10	6	3	0	1.36	35.00	15	50.00	0.08	VH	HS above 40	2.0	0.15			0.15		
52866668	1	A	DT	161.57			0	0	0	0	0	0	0	0.00	0.00	0	0.00	0.00	L		0.0						
Totals				**1133.42**																		**270.24**	**11.26**		**40.90**	**7.61**	

A4.2Scattered Tree Assessment

Table A4.2: Section C scattered Tree assessment results from the Melton/Wyndham Investigation Area assessment (undertaken by Biosis Research Pty. Ltd. October 2008 - March 2009)

Notes to Table:

Habitas ID # Parcel PFI or Property PFI

Ecological Vegetation Class (EVC)	PW	Plains Woodland
Conservation Status	E	Endangered
Conservation Significance (CS)	VH	Very High
Scattered Tree Size Classes	VL	Very Large
	L	Large
	M	Medium
	S	Small

*Section C is entirely contained within the Victorian Volcanic Plain Bioregion.

											Protect and Recruit Method						
Habitas ID #	**Site**	**Zone**	**Area (Ha)**	**EVC**	**Conservation Status***	**VLOT.**	**LOT**	**MOT**	**Small**	**Conservation Significance**	**Reason for Significance**	**Protect VL Old Trees (#)**	**Protect L Old Trees (#)**	**Protect M Old Trees (#)**	**Protect S Trees (#)**	**Recruit New Plants**	**Recruit Only**	**Location on Figures**
50247217	4	A	4.03	PW	E	13	6	8	1	VH	*Allocasuarina luehmannii* (Best 50% for Buloke Mistletoe)	130	48	32	NA	1050	6820	
50247212	11	A	0.02	PW	E	0	0	1	0	VH	Eucalyptus leucoxylon (Best 50% for Swift Parrot)			4	NA	20	100	
50247212	10	A	0.02	PW	E	0	1	0	0	VH	*Allocasuarina luehmannii* (Best 50% for Buloke Mistletoe)		8		NA	40	240	
50247212	9	A	0.07	PW	E	0	1	0	0	VH	*Allocasuarina luehmannii* (Best 50% for Buloke Mistletoe)		8		NA	40	240	
Total												**130**	**64**	**36**	**NA**	**1050**	**7,400**	

APPENDIX 5

Significant Fauna Results

A5.1 Significant fauna species

Table A5.1. Fauna of national or state significance recorded, or predicted to occur, within the local area

Source: DSE Atlas of Victorian Wildlife 2007 Version, BA database (1998–14.05.09), DEWHA database (14.05.09)

- AVW data search encompassed a 5 km radius (fish removed)
- DEWHA and BA data search encompassed a 5 km radius

- **Status of species:**

CR critically endangered
EN endangered
VU vulnerable
L listed under Flora and Fauna Guarantee Act

Sources used to derive species status:
EPBC *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
DSE Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2007b)
FFG *Flora and Fauna Guarantee Act 1988* (Vic.)

# denotes species predicted to occur or with habitat predicted to occur in the local area (DEWHA database)

* denotes species not recorded or predicted to occur in biological databases but study area is within species range and contains suitable habitat

Likelihood scale:

	No habitat present	Habitat poorly represented	Habitat moderately well represented	Habitat well represented
No records from bioregion (terrestrial) or neighbouring basin (aquatic)	Negligible	Negligible	Low	Medium
Records from bioregion (terrestrial) or basin/neighbouring basin (aquatic)	Negligible	Low	Medium	High
Records from within 5 km (terrestrial) or from catchment (aquatic)	Negligible	Medium	High	High

Scientific Name	Common Name	Last record	EPBC Act	DSE 2007	FFG Act	Occurrence in study area
National Significance						
Pedionomus torquatus	Plains-wanderer	1989	VU	CR	L	High
Rostratula australis	Australian Painted Snipe	#	VU	CR	L	Low
Lathamus discolor	Swift Parrot	1998/#	EN	EN	L	Low
Anthochaera phrygia	Regent Honeyeater	#	EN	CR	L	Low
Dasyurus maculatus	Spot-tailed Quoll	#	EN	EN	L	Negligible
Isoodon obesulus obesulus	Southern Brown Bandicoot	#/1881	EN	NT		Negligible

Scientific Name	Common Name	Last record	EPBC Act	DSE 2007	FFG Act	Occurrence in study area
Perameles gunnii	Eastern Barred Bandicoot	1982	EN	CR	L	Negligible
Pteropus poliocephalus	Grey-headed Flying-fox	#	VU	VU	L	Medium
Pseudomys fumeus	Smoky Mouse	#	EN	CR	L	Negligible
Delma impar	Striped Legless Lizard	1990/#	VU	EN	L	High
Tympanocryptis pinguicolla	Grassland Earless Dragon	#	EN	CR	L	Medium
Litoria raniformis	Growling Grass Frog	1990/#	VU	EN	L	Recorded (AVW)
Prototroctes maraena	Australian Grayling	#	VU	VU	L	Low
Galaxiella pusilla	Dwarf Galaxias	#	VU	VU	L	Low
Nannoperca obscura	Yarra Pygmy Perch	*	VU	NT	L	Medium (Werribee River)
Synemon plana	Golden Sun Moth	#	CR	EN	L	High
State Significance						
Turnix pyrrhothorax	Red-chested Button-quail	2004		VU	L	High
Actitis hypoleucos	Common Sandpiper	1990		VU		Low
Grus rubicunda	Brolga	1989		VU	L	Low
Platalea regia	Royal Spoonbill	1990		VU		Low
Ardea modesta	Eastern Great Egret	1990/#		VU	L	Medium
Anas rhynchotis	Australasian Shoveler	2006		VU		Medium
Stictonetta naevosa	Freckled Duck	1991		EN	L	Medium
Aythya australis	Hardhead	1999		VU		Medium
Oxyura australis	Blue-billed Duck	2007		EN	L	Recorded (AVW)
Biziura lobata	Musk Duck	2009		VU		Medium
Accipiter novaehollandiae	Grey Goshawk	2006		VU	L	Medium
Haliaeetus leucogaster	White-bellied Sea-Eagle	2006/#		VU	L	Medium
Falco subniger	Black Falcon	2009		VU		High
Ninox connivens	Barking Owl	1986		EN	L	Low
Tyto novaehollandiae	Masked Owl	1989		EN	L	Low
Lophocroa leadbeateri	Major Mitchell's Cockatoo	2004		VU	L	Negligible
Melanodryas cucullata	Hooded Robin	1988		NT	L	Low
Oreoica gutturalis	Crested Bellbird	1988		NT	L	Low
Pomatostomus temporalis	Grey-crowned Babbler	1987		EN	L	Negligible
Pyrrholaemus sagittatus	Speckled Warbler	2004		VU	L	Low
Stagonopleura guttata	Diamond Firetail	2006		VU	L	Medium
Pseudophryne bibronii	Brown Toadlet	1990		EN	L	Medium

REFERENCES

Baker-Gabb D.J., Benshemesh J.S. & Maher P.N. (1990). *A Revision of the Distribution, Status and Management of the Plains-wanderer* Pedionomus torquatus. Emu **90**(3) 161 - 168

Beardsell, C., 1991. *Sites of faunal significance in the western region of Melbourne (inland of the Princes Freeway),* Department of Conservation and Environment, Victoria.

Cogger, H.G., Cameron, E.E., Sadlier, R.A. & Eggler, P. 1993. *The Action Plan for Australian* Reptiles. Australia Nature Conservation Agency, Canberra.

DEH 2006. *EPBC Act Policy Statement 1.1 Significant Impact Guidelines: matters of National Environmental Significance*. Department of Environment and Heritage, Australian Government, Canberra.

DSE 2004. *Native Vegetation: Sustaining a living landscape. Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method. Version 1.3.* Department of Sustainability and Environment, Melbourne.

DSE 2005. Biosites Maps and Reports, Port Phillip Region (CD). Department of Sustainability and Environment, Melbourne.

DSE 2007a. Native Vegetation - Guide for assessment of referred planning permit applications. Victorian Government, Department of Sustainability and Environment, East Melbourne.

DSE 2007b. *Advisory List of the Threatened Vertebrate Fauna in Victoria - 2007,* Department of Sustainability and Environment, Melbourne.

Duncan, A., Baker, G.B. & Montgomery, N. 1999. *The Action Plan for Australian Bats.* Environment Australia, Canberra.

Garnett, S. & Crowley, G. 2000. *The Action Plan for Australian Birds.* Environment Australia, Canberra.

Lee, A. 1995. *Action Plan for Australian Rodents.* Australian Nature Conservation Agency, Canberra.

Maxwell, S., Burbidge, A. & Morris, K. 1996. *Action Plan for Australian Marsupials and Monotremes.* IUCN Species Survival Commission.

NRE 2002. *Victoria's Native Vegetation Management: A Framework for Action.* Department of Natural Resources & Environment, Victoria.

PPWCMA 2006. Port Phillip and Westernport Native Vegetation Plan. Port Phillip and Westernport Catchment Management Authority, Frankston, Victoria.

Tyler, M. J. 1997. The Action Plan for Australian Frogs. Environment Australia, Canberra.

Wager, R. & Jackson, P. 1993. *The Action Plan for Australian Freshwater Fishes*. Environment Australia. Canberra, Australia.

Walsh, N.G. & Stajsic, V. 2007. *A Census of the Vascular Plants of Victoria*. Eighth edition, Royal Botanic Gardens Melbourne.

ISBN 978-1-921747-33-5

www.gaa.vic.gov.au