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

March 2010

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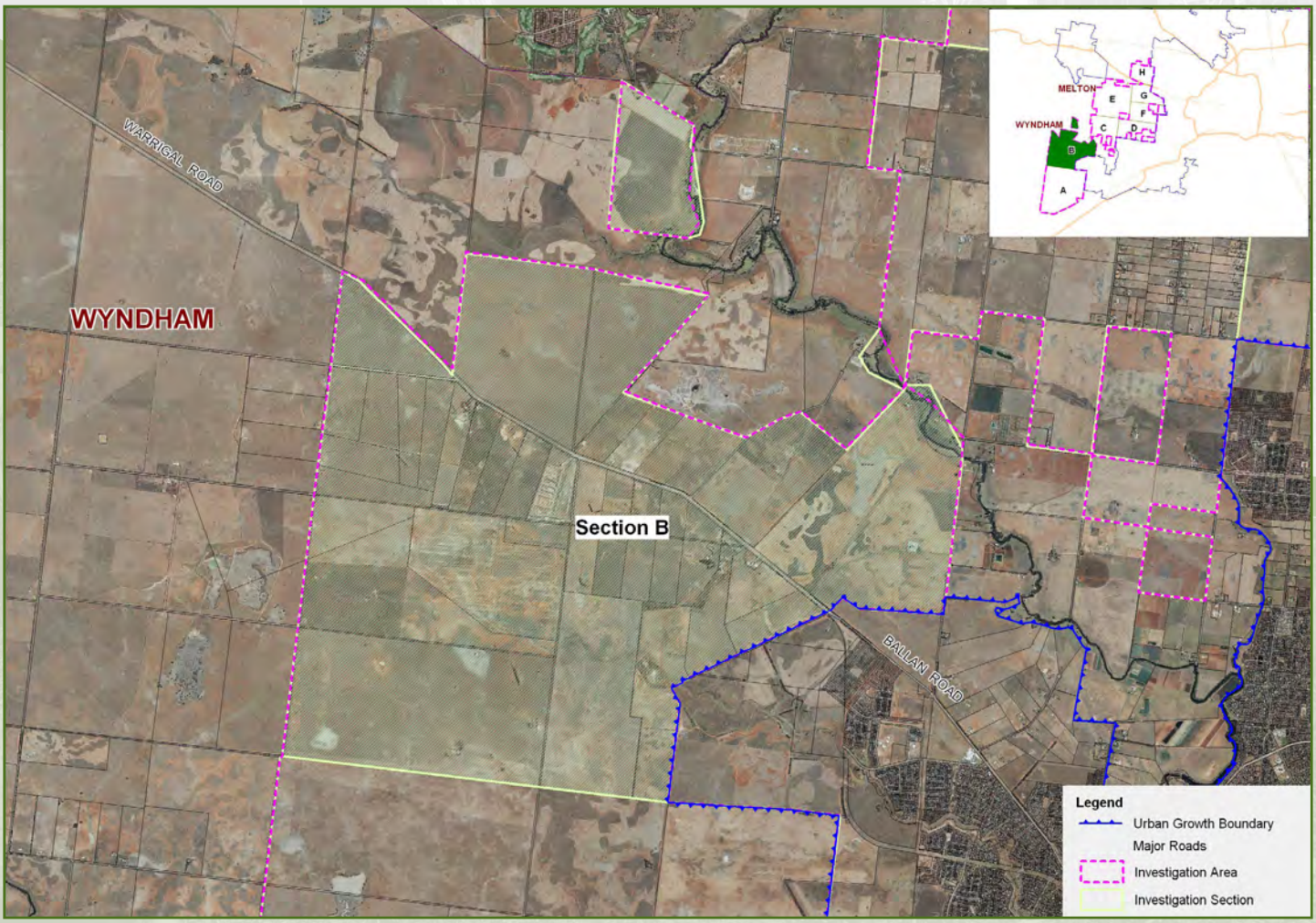

MAP: Melton - Wyndham Investigation Area: Section B

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

Document Title	Biodiversity Assessment Report (Native Vegetation)		
Precinct (Name and Number)	Melton- Wyndham Investigation Area: Section B		
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This document is approved for release	**Organisation**
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	Department of Sustainability and Environment ..... **Director, Ecosystem Services:** **Date:** ..15.. / ..01../ ..10..

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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 Fauna Surveys	N/A
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Final Report completed		November 2009	Matt Dell

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- 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

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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 B (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

Staffs of contractors were trained in field situations in Native Vegetation assessment by DSE using the habitat hectare assessment methodology and 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 Biosis 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 B, which is located in the City of Wyndham and is composed of two distinct areas. The larger area is irregular in shape and bounded to the north by private property and the Werribee River, to the south by Greens Road (Argoona Road), to the west by Edgars Road and to the east by Shanahans Road and private property. The smaller area is bounded to the north by Eynesbury Station, to the east by the Werribee River, to the south by an unnamed tributary of the Werribee River, and to the west by private property (Figure i).

Provision of Access

Section B covers an area of 3780 ha, and of this roughly 1958 ha (51%) of private land within Section B was inspected and subject to a habitat hectare assessment (referred to as the Melton/Wyndham Investigation). The remaining 49% of the area was subject to a reconnaissance level field survey only.

Ecological Vegetation Classes

Prior to European settlement most of Section B 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* (NTGVVP). Despite over two centuries of farming and urban development, the majority of Section B consists of remnant native

vegetation.

Seven EVCs , Low-rainfall Plains Grassland (EVC 132-63), Floodplain Riparian Woodland (EVC 56), Plains Grassy Wetland (EVC 125), Cane Grass Wetland (EVC 291), Stony Knoll Shrubland (EVC 649), Creekline Tussock Grassland (EVC 654) and Plains Woodland (EVC 803) were recorded within Section B during the Melton/Wyndham Investigation.

Significant Species

No nationally significant flora species were recorded during the current assessment. One species, Button Wrinklewort *Rutidosis leptorhynchoides* has been recorded within Section B on the FIS database and another Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* is known to occur in Section B although records are currently not available in the FIS. Two additional nationally significant species, Clover Glycine *Glycine latrobeana* and Large-headed Fireweed *Senecio macrocarpus* are considered to have a high likelihood of occurrence in Section B.

Four flora species of state significance (Buloke *Allocasuarina cunninghamii*, Small Scurf-pea *Cullen parvum*, Rye Beetle-grass *Tripogon loliiformis* and Werribee Blue Box *Eucalyptus* aff. *baueriana* (Werribee)) were recorded within Section B during the current assessment.

One fauna species listed under the EPBC Act, Golden Sun Moth *Synemon plana* (critically endangered) was recorded in Section B during the current assessment. This species was widely distributed in Plains Grassland and is likely to also occur in areas of Degraded Treeless Vegetation.

The AVW has records of Plains-wanderer *Pedionomus torquatus* (vulnerable), Eastern Barred Bandicoot *Perameles gunnii* (endangered), Striped Legless Lizard *Delma impar* (vulnerable) and Growling Grass Frog *Litoria raniformis* (vulnerable) from Section B. Section B has some of the best quality Plains-wanderer habitat to the west of Melbourne. Striped Legless Lizard is likely to be found in areas of Plains Grassland and even areas of grassy Degraded Treeless Vegetation in Section B. Several wetlands within Section B provide potential habitat for Growling Grass Frog and the species is assumed to be present. Despite being recorded from the study area, and the presence of abundant suitable habitat, Eastern Barred Bandicoot is locally extinct and therefore has a negligible likelihood of occurrence in Section B. Australian Painted Snipe *Rostratula australis* (vulnerable) and Grassland Earless Dragon *Tympanocryptis pinguicolla* (endangered) have a high likelihood of occurrence in Section B based on habitat suitablility.

Four flora species of state significance, Buloke *Allocasurina luehmannii*, Small Scurf-pea *Cullen parvum*, Rye Beetle-grass *Tripogon loliiformis* and Werribee Blue Box *Eucalyptus* aff. *baueriana* (Werribee), were recorded within Section B during the current assessment. No other species of state significance, have been previously recorded within Section B on the FIS. Two species, Buloke Mistletoe *Amyema linophylla* subsp. *orientale* and Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra) are considered to have a high likelihood of occurrence based on habitat present within Section B. No fauna species of state significance were recorded within Section B during the current assessment. Two species, Red-chested Button-quail *Turnix pyrrhothorax* and Easten Great Egret *Ardea modesta* have records from Section B in the AVW or BA databases. Section B provides extensive, high quality habitat for both species.

An additional twenty-three 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. Of these species, 11 are considered to have a high likelihood of occurrence based on available habitat within Section B. These species are mostly bird species typically associated with Plains Grassland or wetland habitats. A further three species are considerd to have a medium likelihood of occurrence based on available habitat. The habitat is considered poorly represented or not present for the remaining species, which have a low to negligible likelihood of occurrence in Section B.

Vegetation Quality Assessment (Melton/Wyndham Investigation)

Of the 1958 ha within Section B assessed during the Melton/Wyndham Investigation, a total of **1026.45 ha** of indigenous vegetation (70 patches) were recorded.

The 1026.45 ha of indigenous vegetation present equate to **627.26 habitat hectares**, 599.70 habitat hectares (hha) of *Low-rainfall* Plains Grassland; 0.10 hha of Creekline Tussock Grassland; 0.23 hha of Stony Knoll Shrubland; 6.56 hha of Cane Grass Wetland; 17.27 hha of Plains Grassy Wetland; 0.42 hha of Plains Woodland; 2.97 hha of Floodplain Riparian Woodland.

A total of **30 Very Large Old Trees** and **30 Large Old Trees** were recorded within Creekline Grassy Woodland and Plains Woodland vegetation patches mapped within Section B (Habitas ID# 50242715 - Sites 7A & 13A).

Reconnaissance Survey

Approximately 10 blocks (totalling approximately 1383 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 143.8 hectares (approximately) were identified as *Possible Native Vegetation*. The remaining area (approximately 66 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 B) 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 City of Wyndham Planning Scheme (Clause 52.17). However, it will be possible that some or all of Section B 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 B will be subject to the guidelines provided by Victoria's Native Vegetation Management Framework (Net Gain policy).

Key Areas

Vegetation mapping undertaken during the Melton/Wyndham Investigation identified four Key Ecological Areas (Key Areas) within Section B, totalling approximately 970 ha. These are located throughout Section B, and consist of the majority of sites mapped during the investigation (Figure ii).

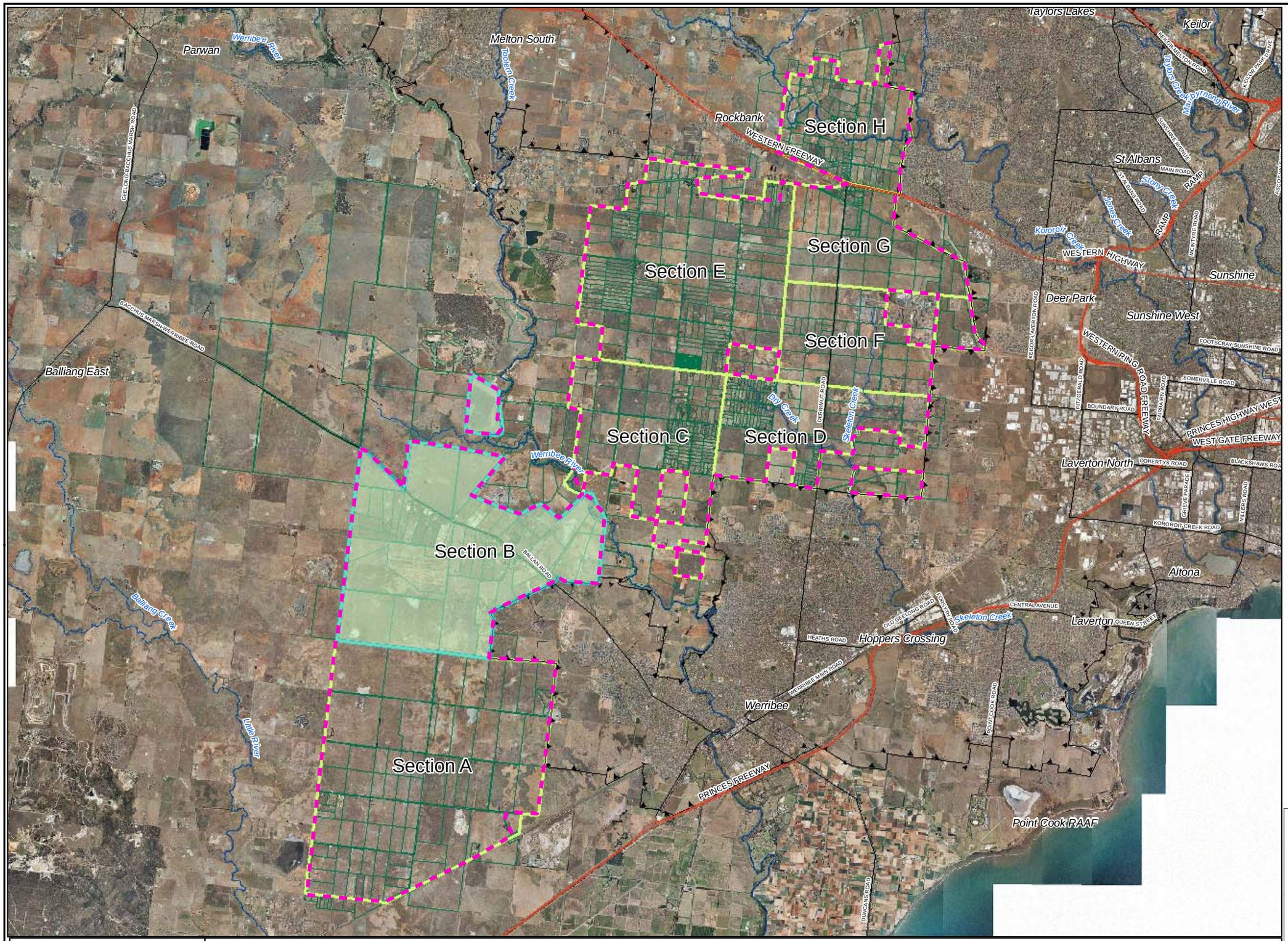
In addition to ecological values such as presence of significant species and listed communities, these Key Areas provide landscape stepping stones between other remnants of Plains Grassland. They contribute to landscape linkages between larger areas of unassessed vegetation in close proximity to assessed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

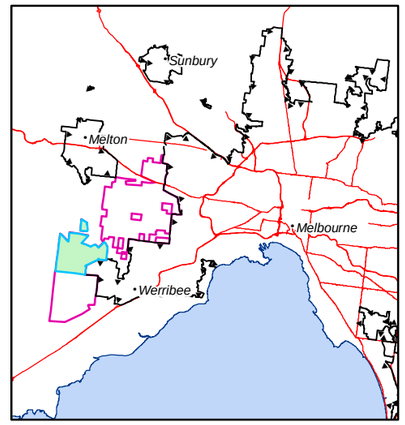
The Key Areas within Section B have been variously modified, however all consist of more than 10 ha of contiguous native vegetation of Very High

conservation significance. Ecological Vegetation Classes present include *Low-rainfall* Plains Grassland, Stony Knoll Shrubland and Plains Grassy Wetland. In addition to ecological values such as presence of significant species and listed communities, these Key Areas when combined with Key Areas in the adjacent Section A the provide some of the best examples of the *Low-rainfall* Plains Grassland Volcanic Plains Landscape in the Melton/Wyndham Investigation Area. There are numerous listed threatened species present in these identified Key Areas and all sites identified provide excellent examples of the critically endangered NTGVVP.

Conclusions

The areas assessed within Section B as part of the Melton/Wyndham Investigation contain a significant area of native vegetation, comprising the vulnerable EVC Cane Grass Wetland (EVC 291) and the endangered EVCs Low-rainfall Plains Grassland (EVC 132-63), Floodplain Riparian Woodland (EVC 56), Plains Grassy Wetland (EVC 125), Stony Knoll Shrubland (EVC 649), Creekline Tussock Grassland (EVC 654) and Plains Woodland (EVC 803), as well as the EPBC Act listed ecological community NTGVVP. Four Key Ecological Areas of Very High conservation significance have been identified within Section B, based on their conservation significance, size, habitat for threatened species and habitat connectivity values. These areas when combined with the Key Areas in Section A and areas of H*ighly Likely Native Vegetation – Grassy* form the largest known area of the EPBC Act listed ecological community NTGVVP remaining. 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 B
- Section boundary
- Urban Growth Boundary
- Melton/Wyndham Investigation Area
- Parcels

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

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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 conservation 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 B (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;
- 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);
- Identifying the limitations of the current assessment.

1.3 Section B

Section B is located at the western side of the broader Melton/Wyndham Investigation Area on the western fringe of Melbourne (Figure 1). Section B covers an area of roughly 3780 ha and is within the Victorian Volcanic Plain bioregion. It is composed of two distinct areas. The larger area is irregular in shape and bounded to the north by private property and the Werribee River, to the south by Greens Road (Argoona Road), to the west by Edgars Road and to the east by Shanahans Road and private property. The smaller area is bounded to the north by Eynesbury Station, to the east by the Werribee River, to the south by an unnamed tributary of the Werribee River, and to the west by private property. Section B is dissected by Lollypop Creek and contains a small section of the Werribee River at the north eastern boundary. Section B contains few constructed roads, but does contain a section of the Ballan Road, which links Werribee with the Geelong-Bacchus Marsh Road.

Section B lies within the rainshadow of the range dominated by The You Yangs. When combined with Section A it contains the best example of the Victorian Volcanic Plain landscape in the Melton/Wyndham Investigation area. This area is very rocky and contains a relatively infertile example of the Plains Grassland community. These areas are most likely to contain a range of native species, even following clearing for cultivation and crop production, due to the inability of perennial pasture species to establish and persist below 400mm of annual precipitation.

The main drainage lines through the region are the Werribee River to the north

and Lollypop Creek in the south. The rocky nature of this region has resulted in low intensity levels of land use and as such numerous species of national and state significance are likely to be found in Section B.

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 distribution (2005) 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 14, 19, 20, 25, 26, 28 November 2008; 2, 4, 10, 11, 12, 15, 18, 29 December 2008 and 9 January 2009 (15 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 B) 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. Where possible, land owners were contacted and permission obtained to inspect each property. Landowner consent was obtained for roughly **1958 ha** (51% of private land) within Section B. These lands were inspected and subject to a habitat hectare assessment.

The vegetation of each property 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 B 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 B) 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 B 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 to 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 NTGVVP, Spiny Rice-flower and Golden Sun Moth (listed as critically endangered), Grassland Earless Dragon and Swift Parrot *Lathamus discolor* (listed as endangered), Striped Legless Lizard, Plains-wanderer, Australian Painted Snipe, Large-fruit Fireweed, River Swamp Wallaby-grass *Amphibromus fluitans* and Growling Grass Frog. 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 A 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.

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 B) 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 B covers an area of approximately 3780 ha. Access was obtained for about 1958 ha and this area was subject to site inspection and a habitat hectare assessment where relevant. The remaining 1822 ha (49% of Section B) 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 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 B is not seen as critical to this assessment. However, a review of literature relating to the GAA investigation areas (including Section B) can be found in Biosis Research (2009).

3.0 RESULTS

3.1 Flora Species

Records within Section B

A total of 186 (110 indigenous and 76 introduced) plant species have been recorded from Section B (Appendix 2, Table A2.1) during the Melton/Wyndham Investigation (current assessment). The FIS contains existing records of 125 (69 indigenous species and 56 introduced) plant species within Section B. Some, but not all of these existing species were recorded during the current assessment. In total, 32 existing indigenous records were not observed during the current assessment; however an additional 87 indigenous species were recorded. One of these additional species Small Scurf-pea is of State significance. Planted species have not been recorded unless they are spreading (naturalised).

3.1.1 Database records

The FIS contains records of a total of 513 plant species (320 indigenous and 193 introduced) from within 5 km of Section B (Appendix 2, Table A2.2). 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 for Maroon Leek-orchid. Habitat is moderately well represented for Curly Sedge and well represented for Large-headed Fireweed (Appendix 2, Table A2.3).

3.2 Ecological Vegetation Classes

A total of 13 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 B as previously supporting Plains Grassland (EVC 132) with small areas of Plains Grassy Wetland (EVC 125) and the Northern extent bordered by Floodplain Riparian Woodland (EVC 56). The DSE 2005 EVC vegetation mapping indicates that main losses of vegetation within the study area have been in the Floodplain Riparian woodland with much of the Plains Grassland remaining intact although modified.

Seven EVCs were recorded within Section B during the Melton/Wyndham Investigation:

- Low-rainfall Plains Grassland (EVC 132-63);
- Floodplain Riparian Woodland (EVC 56)
- Plains Grassy Wetland (EVC 125)
- Cane Grass Wetland (EVC 291)
- Stony Knoll Shrubland (EVC 649)
- Creekline Tussock Grassland (EVC 654)
- Plains Woodland (EVC 803)

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

3.2.1 Low-rainfall Plains Grassland

A total of 972.81 ha (61 patches) of Low-rainfall Plains Grassland was mapped in Section B. When combined with areas mapped as *Highly Likely Native Vegetation – Grassy* and the area of this EVC in Section A and the Western Grasslands Areas, this example of the Low-rainfall Plains Grassland forms part of the largest known contiguous patch of this vegetation type remaining.

The vegetation typically comprises a diverse range of grass species including Plump Spear-grass *Austrostipa aristiglumis,* Spear-grass *Austrostipa scabra*, Common Wallaby-grass *Austrodanthonia caespitose,* Lobed Wallaby-grass *Austrodanthonia auriculata* and Windmill Grass *Chloris truncata*. Other common species include Grassland Wood-sorrel *Oxalis perennans,* Blushing Bindweed *Convolvulus angustissimus,* and Berry Saltbush *Atriplex semibaccata.*

Introduced weed species commonly found within this EVC include Wimmera Rye-grass *Lolium rigidum* and Onion Grass *Romulea rosea* with scattered Bathurst Burr *Xanthium spinosum,* Artichoke Thistle *Cynara cardunculus,* Chilean Needle-grass *Nassella neesiana* and Serrated Tussock *Nassella*

trichotoma.

3.2.2 Floodplain Riparian Woodland

A total of 4.43 hectares (1 patch) of Floodplain Riparian Woodland was mapped in Section B, along the floodplain of the Werribee River. The tallest stratum in this example of the EVC is the eucalypt canopy of River Red-gum *Eucalyptus camaldulensis.* A mid-layer of shrub species includes Wooly Tea-tree *Leptospermum lanigerum*, Blackwood *Acacia melanoxylon*, Black Wattle *Acacia mearnsii* and Sweet Bursaria *Bursaria spinosa*. The ground layer consists of scattered grasses in open spaces. These include species such as Wallaby-grasses *Austrodanthonia* spp., Weeping Grass *Microlaena stipoides* and Common Tussock-grass *Poa labillardierei*.

Common weeds include Blackberry *Rubus fruiticosus spp. agg.*, Spear Thistle *Cirsium vulgare* and Gorse *Ulex europaeus.*

3.2.3 Plains Grassy Wetland

A total of 35.76 ha (11 patches) of Plains Grassy Wetland was mapped in Section B. This EVC occurs on heavy black to grey clays found in swampy drainage lines and seasonally waterlogged wet depressions. These areas typically comprise a mix of scattered grasses, small sedges and forbs with a high proportion of bare ground. Due to dry conditions at the time of survey, comprehensive species lists have not been compiled for this EVC in Section B. Given sufficient rainfall and suitable conditions the vegetation within this EVC will likely represent a high value example of this community.

3.2.4 Cane Grass Wetland

A total of 11.93 ha (1 patches) of Cane Grass Wetland was mapped in Section B. 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 grassy understorey depending on the length and frequency of inundation. Recent drought conditions have left this vegetation type in a structurally modified condition with the tussock nature of the vegetation replaced by a sprawling grassy structure. Drought conditions precluded a comprehensive survey of this EVC within Section B.

3.2.5 Stony Knoll Shrubland

A total of 0.46 ha (3 patches) of Stony Knoll Shrubland was mapped in Section B. Stony Knoll Shrubland within section B typically contains a depleted

shrub layer of scattered Hedge Wattle *Acacia paradoxa*. The ground layer included indigenous grasses such as Common Wheat-grass *Elymus scaber* var. *scaber,* Weeping Grass *Microlaena stipoides* var. *stipoides,* Plump Spear-grass, Spear-grass and Windmill Grass, and scattered herbaceous species such as Kidney-weed *Dichondra repens,* Blushing Bindweed, and Rock Ferns *Cheilanthes* spp.

Typical weeds include Wimmera Rye-grass, Onion Grass, Chilean Needle-grass, Flatweed *Hypochoeris radicata* and Sheep Sorrel *Acetosella vulgaris*.

3.2.6 Creekline Tussock Grassland

A total of 0.21 ha (1 patch) of Creekline Tussock Grassland was mapped within property PFI 20860198 for Section B. The identified patch consisted of a relatively species poor mix of natives, including Common Tussock-grass, Kangaroo Grass *Themeda triandra* and Wingless Blue-bush *Maireana enchylaenoides.*

Weed species present within this patch comprised Artichoke Thistle, Serrated Tussock and Bearded Oat *Avena barbata*.

3.2.7 Plains Woodland

A total of 0.85 ha (1 patch) of Plains Woodland was mapped in Section B during the Melton/Wyndham Investigation. This EVC is extremely restricted in the study area with a single remnant (PFI 50242715 Habitat Zone 7A) remaining in Section B. This remnant is dominated by Buloke with a grassy understorey typical of the surrounding low rainfall Plains Grassland.

Weed species that are generally common include African box-thorn *Lycium ferocissimum,* Common Peppercress *Lepidium africanum* and Serrated Tussock.

3.3 Scattered Trees

Outside patches of native vegetation (previous section), 4 large and 6 medium indigenous canopy trees are present in Section B within the areas assessed as part of the Melton/Wyndham Investigation (Appendix 4, Table A4.2). All are *Allocasuarina* spp., and one individual is recorded as Buloke.

The scattered trees present within Section B are remnants of Plains Woodland. Areas of scattered trees have been mapped as scattered tree polygons (Figure 2). Based on these polygons, there are 1.67 hectares containing scattered trees within Section B.

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 B supports 510.64 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, Wimmera Rye-grass, Squirrel-tail Fescue *Vulpia bromoides* and Buck's-horn Plantain *Plantago coronopus*.

Low quantities and cover of indigenous grasses and other herbs including Common Wallaby-grass, 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 do 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

Approximately 10 blocks (totalling approximately 1383.81 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 Plains Grassland of Very High conservation significance. A further 143.8 hectares (approximately) were identified as *Possible Native Vegetation*. The remaining area (approximately 66 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 B is provided in Appendix 3.

3.6.1 Vegetation in Patches

A total of 70 habitat zones (or indigenous vegetation polygons) were identified within Section B (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, Stony Knoll Shrubland, Creekline Tussock Grassland, Plains Grassy Wetland and Cane Grass Wetland 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 B contains a total of 1026.45 ha of indigenous habitat zones within properties subject to assessment, which comprises **627.26 habitat hectares.** This is comprised of 599.70 habitat hectares (hha) of *Low-rainfall* Plains Grassland; 0.10 hha of Creekline Tussock Grassland; 0.23 hha of Stony Knoll Shrubland; 6.56 hha of Cane Grass Wetland; 17.27 hha of Plains Grassy Wetland; 0.42 hha of Plains Woodland; 2.97 hha of Floodplain Riparian Woodland.

Large Old Trees, as defined by the relevant EVC benchmark, are counted and their density within each vegetation quality zone is calculated. This contributes to the habitat score. A total of **30 Very Large Old Trees** and **30 Large Old Trees** were recorded within Section B (Habitas ID# 50242715 - Sites 7A & 13A).

Conservation significance

The conservation significance of each polygon of native vegetation within Section B is shown in Appendix 4. Section B supports 2.18 ha (0.83 hha) of High conservation significance and 1024.27 ha (626.43 hha) of Very High conservation significance vegetation (Figure 4).

3.6.2 Scattered Trees

As outlined in Section 3.3, a total of 4 large and 6 medium scattered indigenous canopy trees were mapped within Section B (Appendix 4, Table A4.2). Scattered tree polygons and point locations of very large and large old trees 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 the scattered trees present are *Allocasuarina* spp. they provide the Best 50% of habitat for Buloke Mistletoe *Amyema linophylla* subsp. *orientale* and are therefore of Very High conservation significance. The conservation significance of scattered tree polygons is mapped in Figure 4 and directly relates to the conservation significance of scattered trees contained within the polygon.

3.7 Significant Flora Species

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

3.7.1 Nationally Significant Species

No flora species listed under the EPBC Act were recorded in Section B during the current assessment. However, one species, Button Wrinklewort, has been previously recorded in Section B on the FIS. Spiny Rice-flower is known to occur in Section B and although records have not been entered in the FIS this species is known to occur along Ballan Road.

The FIS database contains records of one additional species of national conservation significance from within 5 km of Section B (Appendix 2). This species (Clover Glycine) is considered to have a High likelihood of occurrence in the study area based on the habitat present (Appendix 2).

The DEWHA database predicts the occurrence of, or suitable habitat for three additional species listed under the EPBC Act, Curly Sedge, Maroon Leek-orchid and Large-headed Fireweed. Habitat is poorly represented for Maroon Leek-orchid, which is considered to have a low likelihood of occurrence. Habitat is moderately well represented for Curly Sedge, which has a medium likelihood of occurrence. Large-headed Fireweed is considered to have a high likelihood of occurrence based on available habitat within Section B (Appendix 2).

3.7.2 State Significant Species

Two flora species of state significance listed under the FFG Act, Buloke and Small Scurf-pea were recorded within Section B during the current assessment. There is one existing record of Buloke within Section B on the FIS database. Two additional flora species of State Significance (DSE Advisory List), Rye Beetle-grass *Tripogon loliiformis* and Werribee Blue Box *Eucalyptus* aff. *baueriana* (Werribee) were also identified during the current assessment (Appendix 2).

The FIS database contains records of seven additional species of state conservation significance from the local area (within 5 km). Two of these species

(Buloke Mistletoe *Amyema linophylla* subsp. *orientale* and Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra) are considered to have a high likelihood of occurrence based on habitat present within Section B. The remaining species, Heath Spear-grass *Austrostipa exilis*, Half-bearded Spear-grass *Austrostipa hemipogon*, Austral Tobacco *Nicotiana suaveolens*, Fragrant Saltbush *Rhagodia parabolica* and Melbourne Yellow-gum *Eucalyptus leucoxylon* subsp. *connata*, are considered to have a medium likelihood of occurrence in Section B (Appendix 2).

3.8 Significant Fauna Species

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

3.8.1 Nationally Significant Species

One species listed under the EPBC Act, Golden Sun Moth (critically endangered) was recorded in Section B during the current assessment. This species was widely distributed in Plains Grassland.

The AVW has records of Plains-wanderer (vulnerable), Eastern Barred Bandicoot (endangered), Striped Legless Lizard (vulnerable) and Growling Grass Frog (vulnerable) from Section B. Section B has some of the best quality Plains-wanderer habitat to the west of Melbourne. Striped Legless Lizard is likely to be found in areas of Plains Grassland and even areas of grassy Degraded Treeless Vegetation in Section B. Several wetlands within Section B provide potential habitat for Growling Grass Frog and the species is assumed to be present. Despite being recorded from the study area, and the presence of abundant suitable habitat, Eastern Barred Bandicoot is locally extinct and therefore has a negligible likelihood of occurrence in Section B.

Australian Painted Snipe (vulnerable) and Grassland Earless Dragon (endangered) have a high likelihood of occurrence in Section B based on habitat suitablility.

Eight additional species have been recorded from the local area in the AVW and/or BA database or are predicted to occur on the DEWHA database. These species are considered to have a low 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 B during the current assessment (Appendix 5).

Two species, Red-chested Button-quail and Easten Great Egret have records from Section B in the AVW or BA databases. Section B provides extensive, high quality habitat for both species.

An additional twenty-three 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. Of these species, 11 are considered to have a high likelihood of occurrence based on available habitat within Section B. These species are those typically associated with Plains Grassland or wetland habitats (Appendix 5). A further three species are considerd to have a medium likelihood of occurrence based on available habitat. The habitat is considered poorly represented or not present for the remaining species, which have a low to negligible likelihood of occurrence in Section B.

3.9 Significant Vegetation Communities

Section B contains the EPBC listed ecological community NTGVVP (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). Both Creekline Tussock Grassland and Plains Grassland were mapped during the current assessment within Section B, with the latter EVC being particularly widespread (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 B (Figure 2) is also considered to be the Western (Basalt) Plains Grassland Community.

With the exception of Cane Grass Wetland, which is vulnerable, All EVCs recorded in Section B 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 B, 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 B

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, NTGVVP, 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, no listed species were recorded during the current assessment, however one species, Button Wrinklewort has been previously recorded (one record) within Section B on the FIS (Figure 5) additionally Spiny Rice-flower is known to occur in this Section along Ballan Road. A total of two additional species are considered to have a high likelihood of occurrence: Large-headed Fireweed and Clover Glycine. The presence and extent of any population(s) of these species, including Button Wrinklewort, is uncertain as Section B has not been systematically searched for listed species.

Listed fauna species: In summary, five listed species, Plains-wanderer, Eastern Barred Bandicoot, Striped Legless Lizard, Growling Grass Frog and Golden Sun Moth are all recorded from Section B. Section B is likely to support a very significant population of the latter species and provides very high quality habitat for Plains-wanderer. Although suitable habitat is widespread in Section B, Easten Barred Bandicoot is now locally extinct and thus is not expected to occur in Section B.

Although not recorded, Australian Painted Snipe and Grassland Earless Dragon have a high likelihood of occurring in wetland and native grassland respectively in Section B. There has been no systematic targeted survey for any listed species with Section B 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 low–negligible likelihood of occurrence in Section B 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 listed in Appendix 5 and summarised below:

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

Many of these species are migratory shorebirds and the the wetlands within Section B provide good habitat for some of these species. Sizeable numbers may be present when condidions are favourable.

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. Much of Section B is proposed to be incorporated into a grassland conservation reserve so impacts to a Ramsar Wetland are unlikely.

Implications Section B

All sections of the Melton/Wyndham Investigation Area (including Section B) 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. This strategic assessment has indicated that much (although not all) of Section B is proposed to be incorporated into a grassland conservation reserve, which will be managed to maintaing and improve its biodiversity values, including species and communities listed as threatened under the EPBC Act.

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 B

Much of land in Section B 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 B. This community is mapped as Plains Grassland (EVC 132) on Figure 2.

Areas of Section B 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 B 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
- Blue-billed Duck
- Freckled Duck
- Eastern Great Egret
- Growling Grass Frog
- Striped Legless Lizard
- Golden Sun Moth
- Grassland Earless Dragon
- Maroon Leek-orchid
- Large-headed Fireweed
- Button Wrinklewort
- Small Scurf-pea
- Curly Sedge
- 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 B

It is possible that some or all of Section B 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 B

An assessment of the net gain implications of the above development scenarios is discussed in Section 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 B

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 B

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 B

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 (Wyndham City Council)

An Environmental Significance Overlay Schedule 1 (ESO1) covers the floodplains and wetlands associated with Lollypop Creek and the

Werribee River within Section B (http://www.dse.vic.gov.au/planningschemes/).

Implications for Section B

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

5.0 KEY AREAS

5.1 Key Ecological Areas

Key Areas within Section B 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 four Key Areas within Section B. These are located throughout Section B, and contain the majority of the mapped vegetation.

In addition to ecological values such as presence of significant species and listed communities, these Key Areas (particularly 2 and 3) provide important linkages from the consolidated blocks of native vegetation in the south west corner of Section B (and Section A Key Area 1) to the Werribee River and indigenous vegetation to the north, which is essential for the long term ability of some species to move throughout the landscape.

The following table identifies four Key Areas within Section B (Figure 6):

Key Area #	Habitat ID #	Habitat Zone #	EVC
1	1781038	1A	Low-rainfall PG
	1781039	1A	Low-rainfall PG
	1799816	1A	Low-rainfall PG
	1799817	1A	Low-rainfall PG
	1799817	4A	Stony Knoll Shrubland
	1799817	5A	Stony Knoll Shrubland
	1799818	1A	Low-rainfall PG
	1799818	4A	Low-rainfall PG
	50263498	6A	Low-rainfall PG
	50263498	6B	Low-rainfall PG
	50263642	10A	Plains Grassy Wetland
	50263642	11A	Plains Grassy Wetland
	50263642	12A	Plains Grassy Wetland
	50263642	13A	Plains Grassy Wetland
	50263642	1A	Low-rainfall PG
	50263642	7A	Plains Grassy Wetland
	50263642	8A	Cane Grass Wetland
	202672473	3A	Low-rainfall PG
	202672473	4A	Stony Knoll Shrubland
2	50263490	1A	Low-rainfall PG
	50263490	4A	Low-rainfall PG
	50263511	1A	Low-rainfall PG
	50263511	1B	Low-rainfall PG
	50263511	4A	Low-rainfall PG

Key Area #	Habitat ID #	Habitat Zone #	EVC
	50263537	1A	Low-rainfall PG
	50263538	6A	Low-rainfall PG
2	50263563	1A	Low-rainfall PG
	50263620	5A	Low-rainfall PG
			Floodplain Riparian
3	50242715	13A	Woodland
	50242715	14A	Low-rainfall PG
	50242715	15A	Plains Grassy Wetland
	50242715	16A	Plains Grassy Wetland
	50242715	1A	Low-rainfall PG
	50242715	2A	Low-rainfall PG
	50242715	5A	Low-rainfall PG
	50242715	6A	Low-rainfall PG
	50242715	8A	Low-rainfall PG
	50242721	11A	Low-rainfall PG
	50242721	16A	Plains Grassy Wetland
	50242721	3A	Low-rainfall PG
	50242721	4A	Low-rainfall PG
	50242721	8A	Low-rainfall PG
4	2064137	1A	Low-rainfall PG

Key Area 1 contains 19 habitat zones (totalling approximately 708 ha) containing Plains Grassland. This Key Area is contiguous with surrounding areas of known high value Plains Grassland, including large areas within Section A, mapped grasslands immediately to the west (referred to as the Western Grasslands) and surrounding areas of *Highly Likely Native Vegetation - Grassy*. These areas of *Highly Likely Native Vegetation – Grassy* would certainly meet the Key Area criteria if detailed assessment had been undertaken and although they are not included in the identified Key Ecological Areas are likely to meet the criteria. The grassland throughout Key Area 1 and surrounding grasslands is dominated by a mixture of native grasses including Kangaroo Grass and Spear Grasses with a high diversity of other indigenous herbs including Blue Devil *Eryngium ovinum*, Sheep's Burr *Acaena echinata*, Kidney-weed *Dichondra repens* and Feather Heads *Ptilotus macrocephalus*. Key Area 1 also contains a range of wetland types including Plains Grassy Wetland and an extensive Cane Grass Wetland in the southern most property (Habitas ID#50263642). Key Area 1 is contiguous with areas known to contain the most extensive areas of high conservation value remnant vegetation in the Melton/Wyndham Investigation Area.

Key Area 2 contains nine habitat zones (totalling approximately 100 ha) of *Low-rainfall* Plains Grassland vegetation. This Key Area is contiguous with surrounding areas of *Highly Likely Native Vegetation – Grassy* which are contiguous with Key Area 1. These areas of *Highly Likely Native Vegetation –*

Grassy would certainly meet the Key Area criteria if detailed assessment had been undertaken and although they are not included in the identified Key Areas they are likely to meet the criteria. The grassland throughout Key Area 2 is similar in species composition to Key Area 1, containing a mixture of native grasses including Kangaroo Grass and Spear Grasses with a high diversity of indigenous shrubs and herbs including Black Roly-poly *Sclerolaena muricata*, Variable Glycine *Glycine tabacina*, Native Peppercress *Lepidium pseudohyssopifolium*, Blue Devil, Kidney-weed, Feather Heads and Bluebell *Wahlenbergia* spp.

Key Area 3 supports 14 habitat zones including primary grassland, grassy wetlands and woodland communities (approximately 130 ha). A wide range of species where observed in this Key Area due to the diversity of habitat types and the quality of the remaining remnants. Floodplain Riparian Woodland present in this Key Area consists of an overstorey dominated by Werribee Blue Box and Red Gum. There is a diverse shrub layer with a range of Acacia species present and a diverse ground layer including many indigenous herbs and grasses. The grassland vegetation within this Key Area extends from the Werribee River to Ballan Road and is mainly present on the rocky rises. These rises contain excellent examples of this EVC, which are generally dominated by Kangaroo Grass with a diverse assemblage of native herbs inhabiting the intertussock spaces. There are also dense populations of the nationally threatened Golden Sun Moth present on this property with high number of incidental observations recorded during the vegetation mapping surveys during suitable conditions. Although approximately 50% of this Key Area is composed of Management Zones made up of cropped areas, the quality and extent of remnant vegetation in this area, coupled with its position as a link between the Werribee River and other Key Areas, makes this site highly important to the conservation of the ecological communities and species found in the Melton/Wyndham Investigation Area.

Key Area 4 contains a single habitat zone (approximately 32.5 hectares) of *Low-rainfall* Plains Grassland vegetation. This habitat zone contains a diverse although modified example of this EVC. This site has been subject to herbicide application in the past and as such the majority of the native vegetation persisting is in poor condition. Despite this Key Area 4 contains a range of native shrubs and herbs including Drooping Cassinia *Cassinia arcuata*, Black Cotton-bush *Maireana decalvans*, Blue Devil, Poison Lobelia *Lobelia pratioides*, Kidney-weed, Feather Heads, Variable Plantain *Plantago varia*, Fuzzy New Holland Daisy *Vittadinia cuneata* and Cotton Fireweed *Senecio quadridentatus*. This area is recovering from the previous degrading influences and is likely to contain a range of threatened species. It should be noted that it is adjacent to a large area of remnant vegetation of known high quality to the west, which extends from Ballan Road north almost to the Werribee River, containing significant

ecological values. This wider area would certainly qualify as a Key Area if assessed during the Melton/Wyndham Investigation.

Other areas which are known to contain significant values that were not mapped in the Melton/Wyndham Investigation include the road reserves along Ballan Road (which runs through the centre of Section B). This road reserve contains a range of threatened species including Spiny Rice-flower and Golden Sun Moth and a species rich example of the NTGVVP community.

5.2 Reconnaissance Survey 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 - grassy* have not been previously assessed and no information is available on them. These areas where observed to contain areas which are primarily Kangaroo Grass dominated grassland of Very High conservation significance.

6.0 CONCLUSIONS

The areas assessed within Section B as part of the Melton/Wyndham Investigation contain a significant area of native vegetation, comprised of the endangered EVCs *Low-rainfall* Plains Grassland (972.81 ha), Plains Grassy Wetland (35.76 ha), Stony Knoll Shrubland (0.46 ha), Plains Woodland (0.85 ha), Creekline Tussock Grassland (0.21 ha) Floodplain Riparian Woodland (4.43 ha)and Cane Grass Wetland (11.93 ha). The majority of Plains Grassland within this area is also likely to meet the criteria for the EPBC Act listed ecological community NTGVVP (critically endangered) and the Western (Basalt) Plains Grassland Community listed under the FFG Act. In addition, these area provides valuable habitat for nationally significant species Spiny Rice-flower, Plains-wanderer, Growling Grass Frog, Striped Legless Lizard and Golden Sun Moth. 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 1383 ha (approx.) within Section B were identified as *highly likely native vegetation – grassy* during the reconnaissance surveys.

Of the 1026 ha of native vegetation mapped in Section B during the Melton/Wyndham Investigation, approximately 970 ha have been identified as part of Key Ecological Areas. Four Key Ecological Areas have been identified based on their conservation significance, size, habitat for threatened species and habitat connectivity values. Key Area 1 is contiguous with surrounding areas of known Plains Grassland, including the Western Grasslands Area and areas mapped as *highly likely native vegetation – grassy* which are dominated by Kangaroo Grass. It must be noted that other areas not assessed during the Melton/Wyndham Investigation 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 additional likely Key Areas within the reconnaissance survey sites.

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

FIGURES

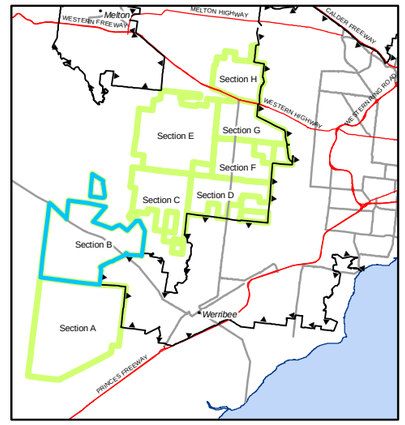


Figure 1: Location of Section B within the Melton/Wyndham Investigation Area.

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

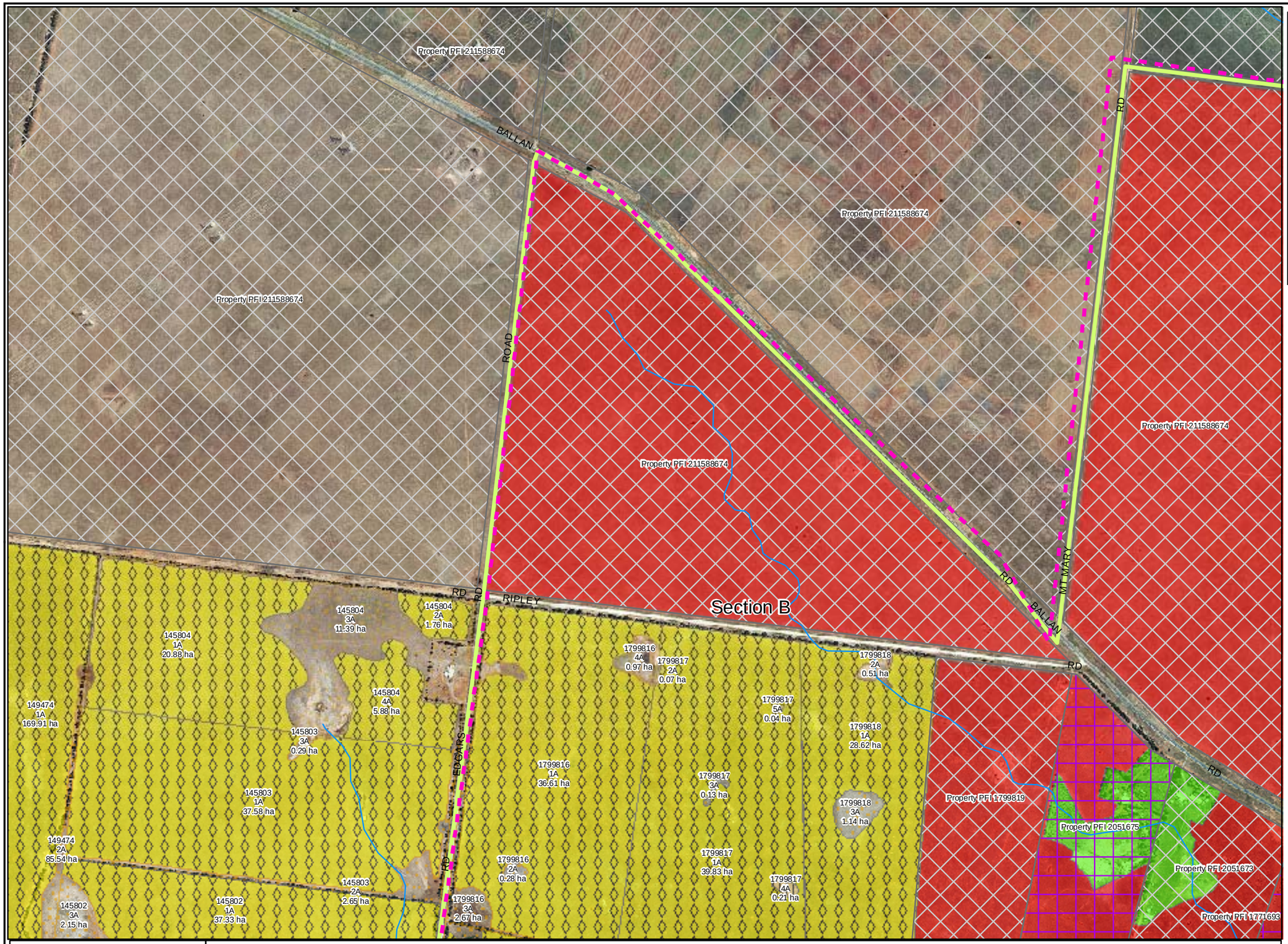
Location: ...7813\Mapping\Section B\7813 Section B Fig 1.mxd

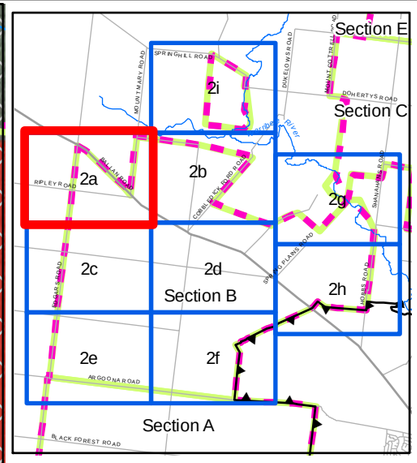
0 0.3 0.6 0.9 1.2
Kilometers

N
W E
S

Legend

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





Legend

EVC

- 125 Plains Grassy Wetland
- 132_63 Low-rainfall Plains Grassland
- 291 Cane Grass Wetland (WVA)
- 56 Floodplain Riparian Woodland
- 649 Stony Knoll Shrubland
- 654 Creekline Tussock Grassland
- 803 Plains Woodland
- 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

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Wollongong, Queanbeyan, Wangaratta

Figure 2a: Native Vegetation, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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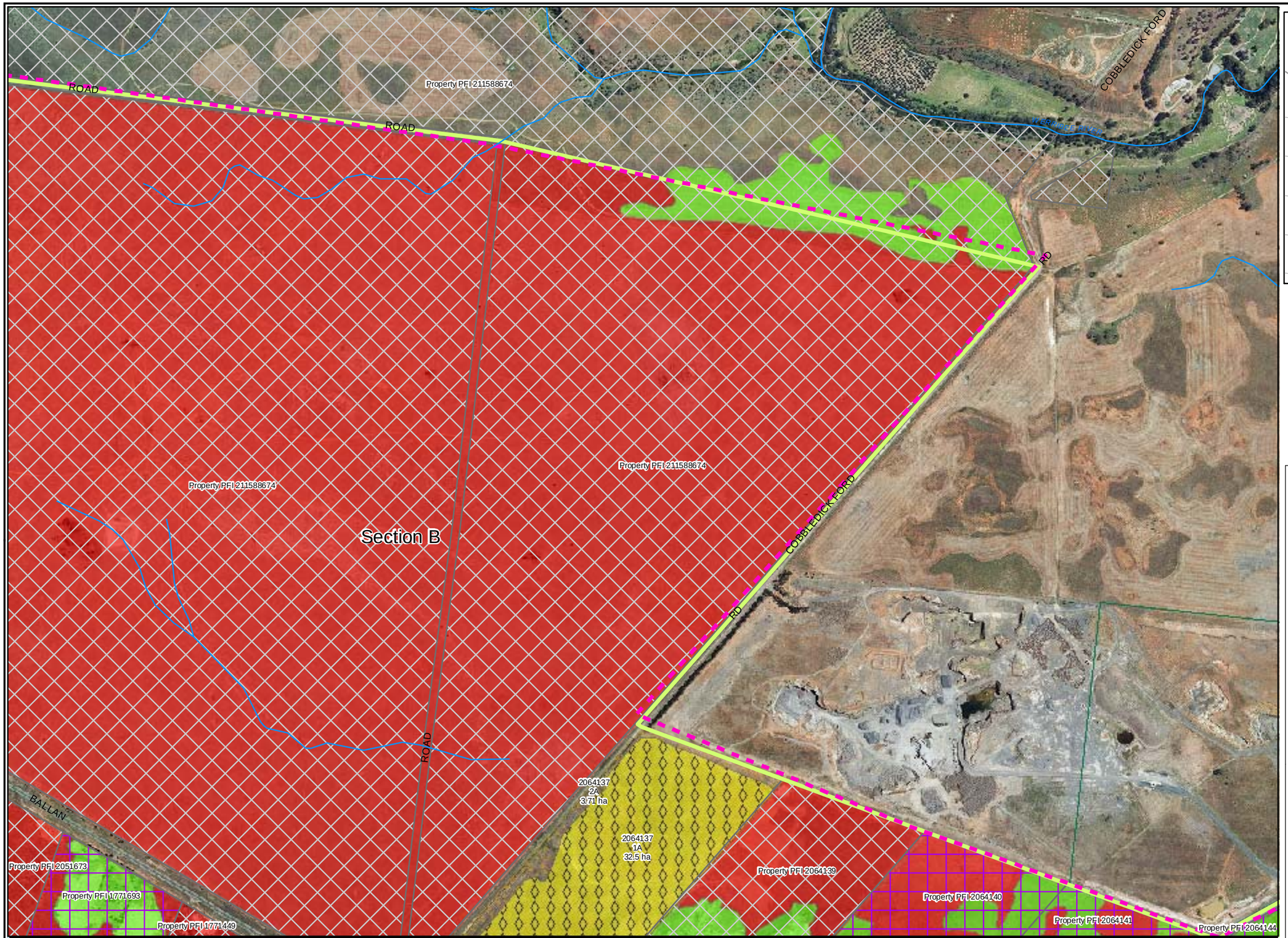
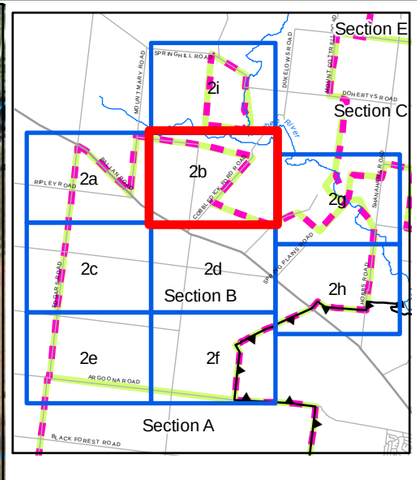
Meters

N W E S





Legend

EVC

- 125 Plains Grassy Wetland
- 132_63 Low-rainfall Plains Grassland
- 291 Cane Grass Wetland (WVA)
- 56 Floodplain Riparian Woodland
- 649 Stony Knoll Shrubland
- 654 Creekline Tussock Grassland
- 803 Plains Woodland
- 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

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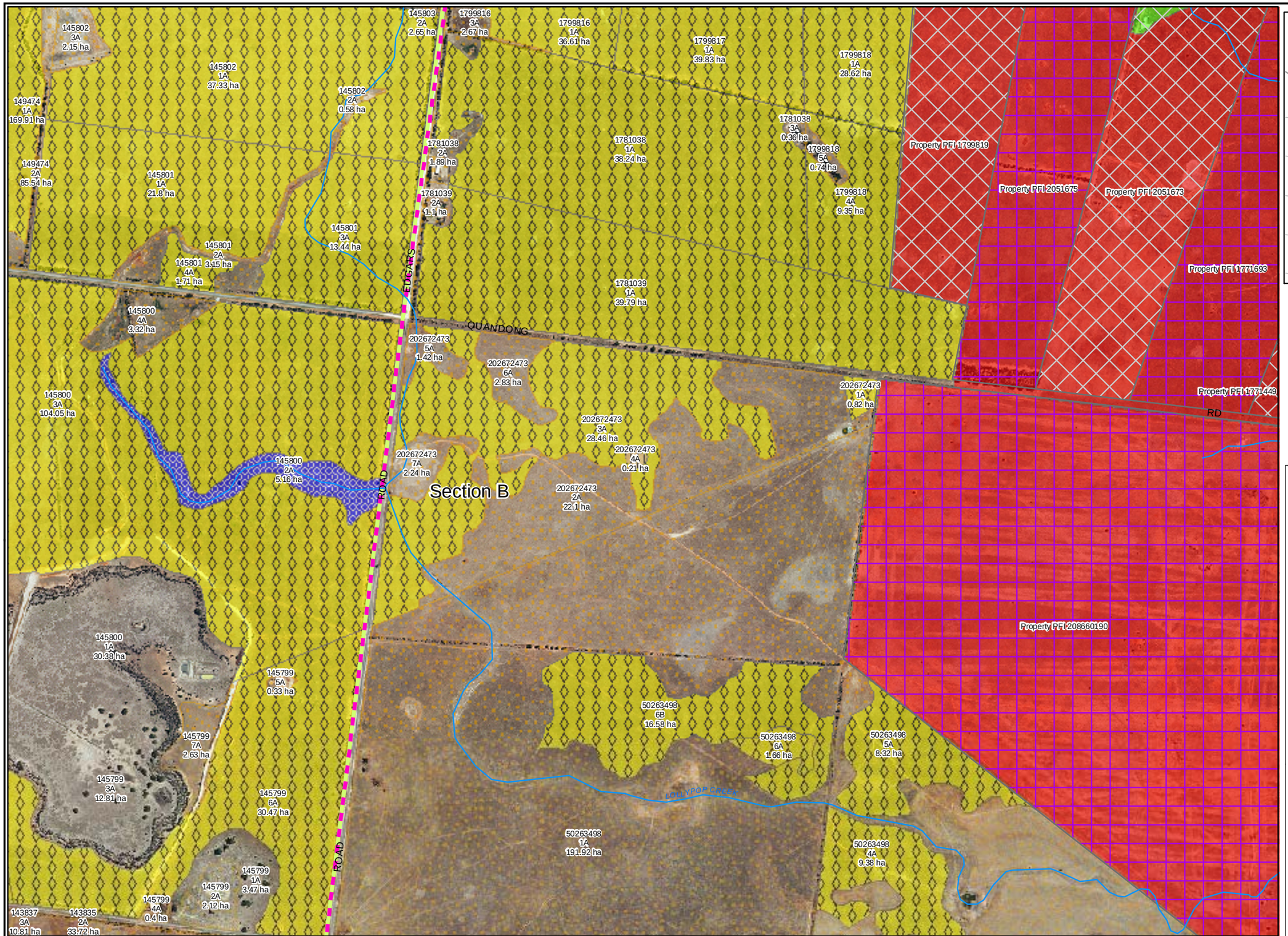
Figure 2b: Native Vegetation, Section B.

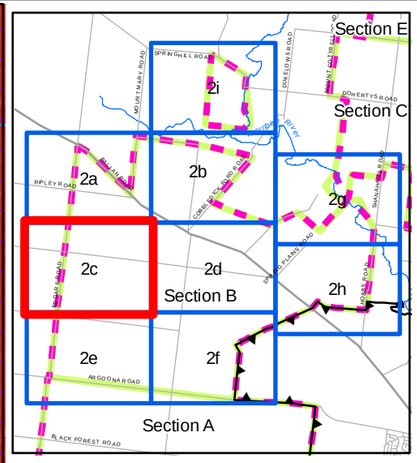
Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
Meters

N W E S





Legend

EVC

- 125 Plains Grassy Wetland
- 132_63 Low-rainfall Plains Grassland
- 291 Cane Grass Wetland (WVA)
- 56 Floodplain Riparian Woodland
- 649 Stony Knoll Shrubland
- 654 Creekline Tussock Grassland
- 803 Plains Woodland
- 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

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Figure 2c: Native Vegetation, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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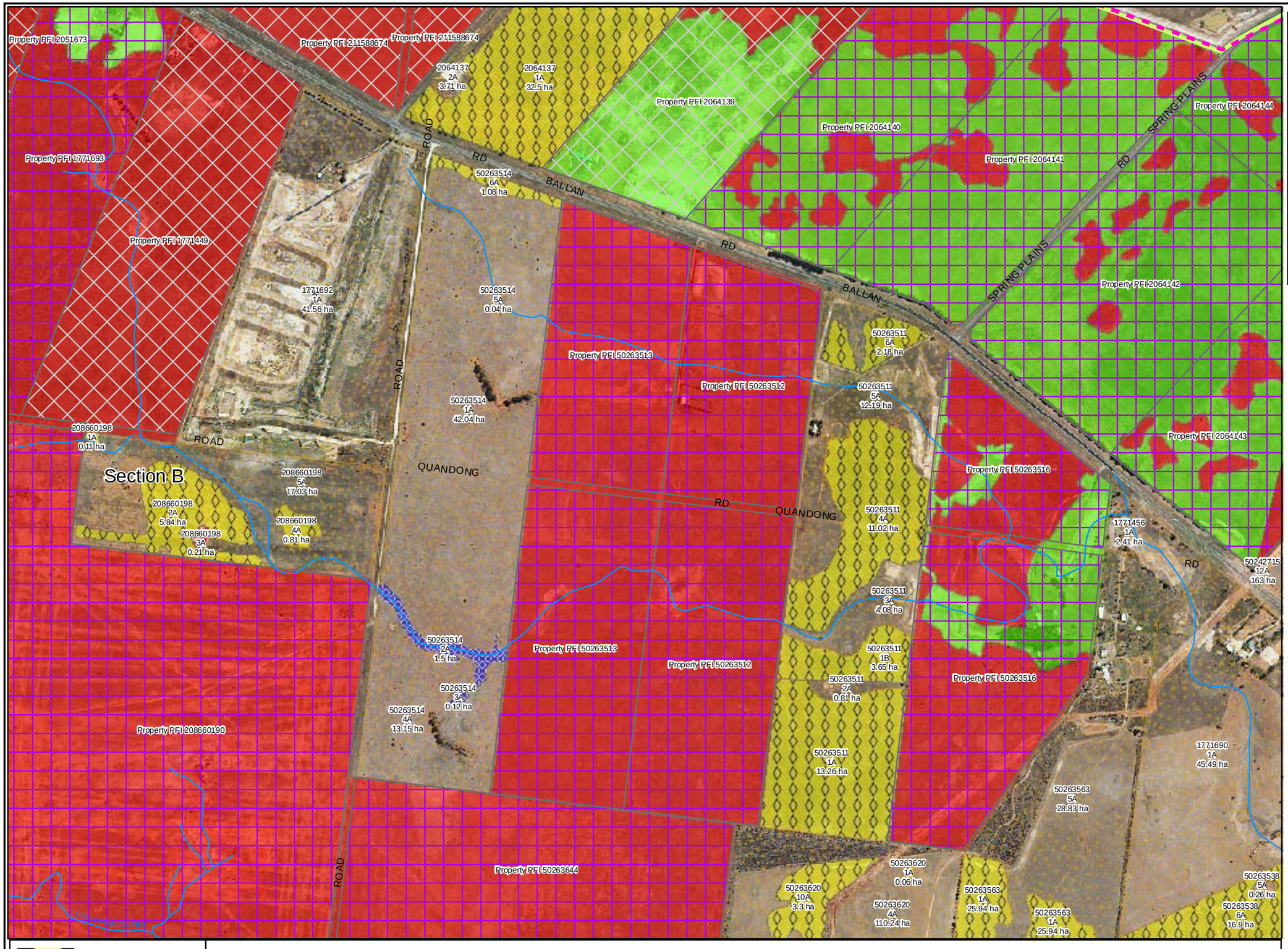

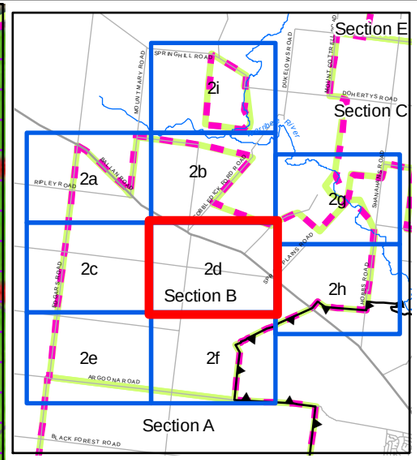

Legend

EVC

- 125 Plains Grassy Wetland
- 132_63 Low-rainfall Plains Grassland
- 291 Cane Grass Wetland (WVA)
- 56 Floodplain Riparian Woodland
- 649 Stony Knoll Shrubland
- 654 Creekline Tussock Grassland
- 803 Plains Woodland
- 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

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Figure 2d: Native Vegetation, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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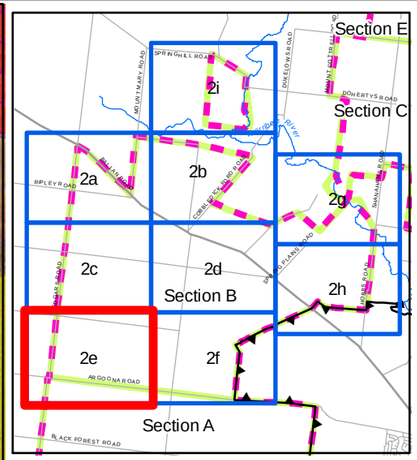

Legend

EVC

- 125 Plains Grassy Wetland
- 132_63 Low-rainfall Plains Grassland
- 291 Cane Grass Wetland (WVA)
- 56 Floodplain Riparian Woodland
- 649 Stony Knoll Shrubland
- 654 Creekline Tussock Grassland
- 803 Plains Woodland
- 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

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Figure 2e: Native Vegetation, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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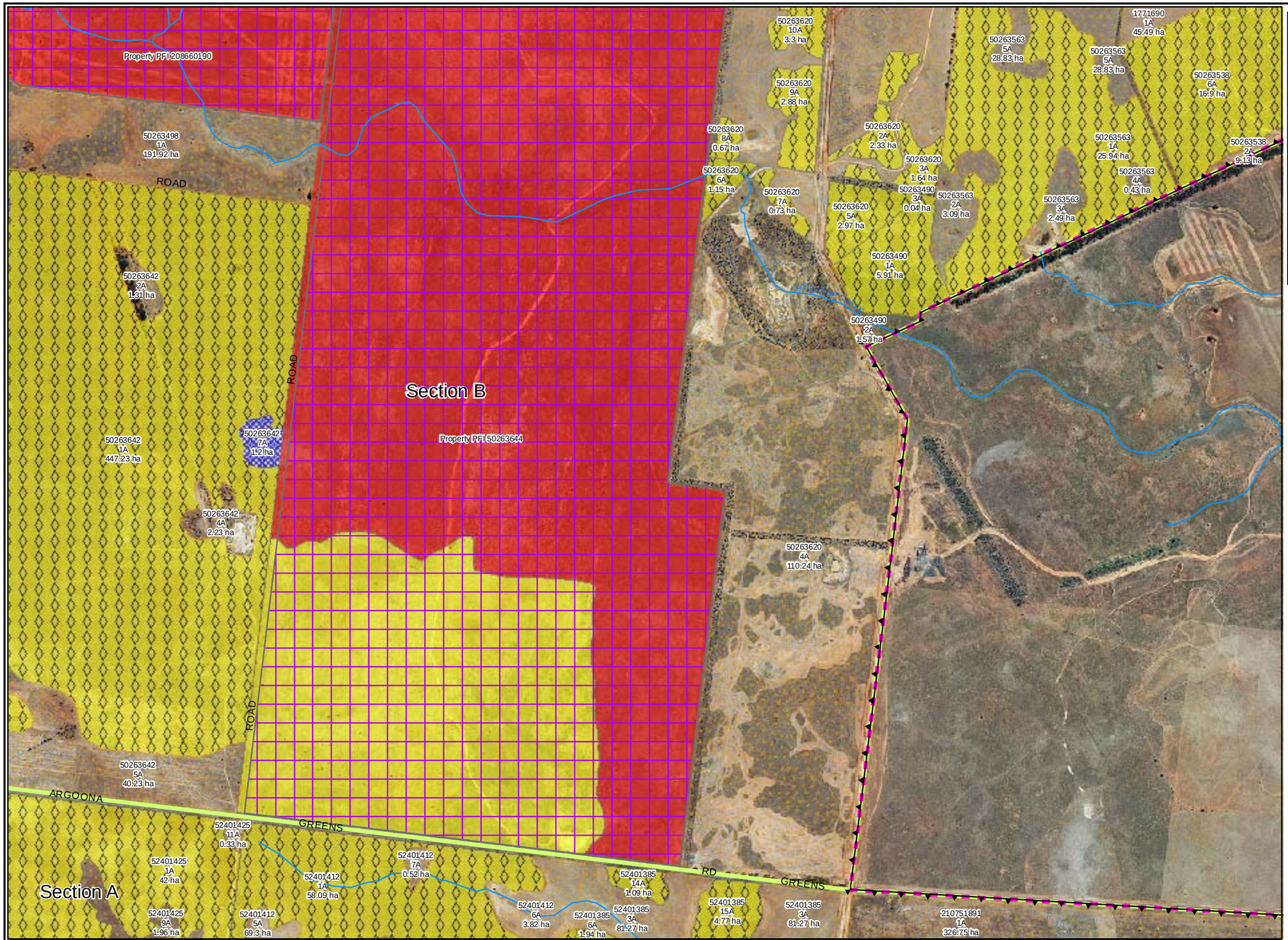

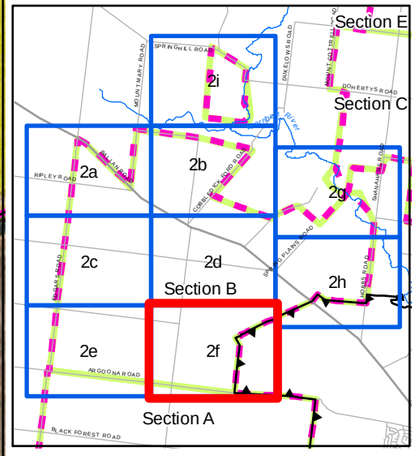

Legend

EVC

- 125 Plains Grassy Wetland
- 132_63 Low-rainfall Plains Grassland
- 291 Cane Grass Wetland (WVA)
- 56 Floodplain Riparian Woodland
- 649 Stony Knoll Shrubland
- 654 Creekline Tussock Grassland
- 803 Plains Woodland
- 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

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Figure 2f : Native Vegetation, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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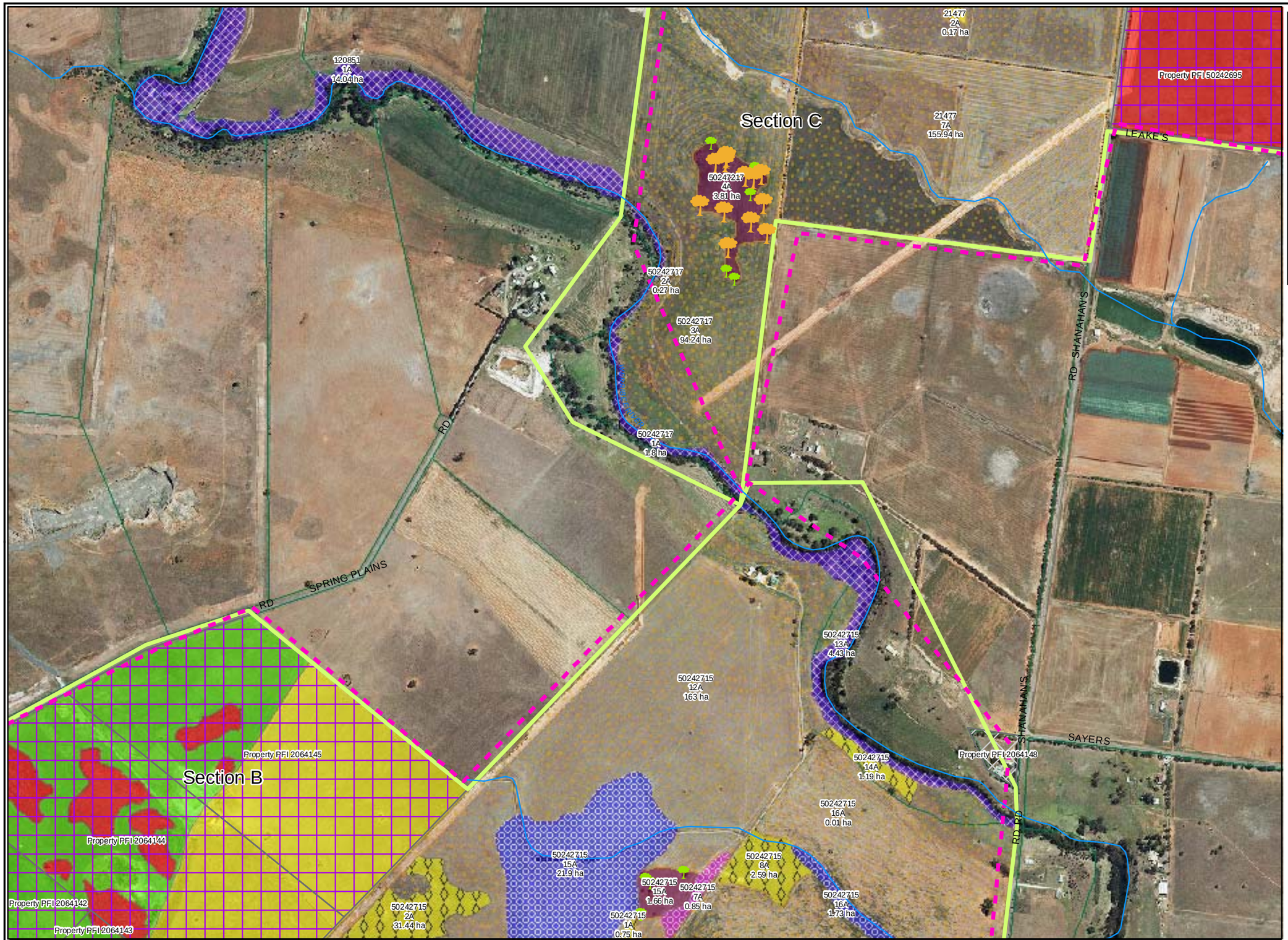

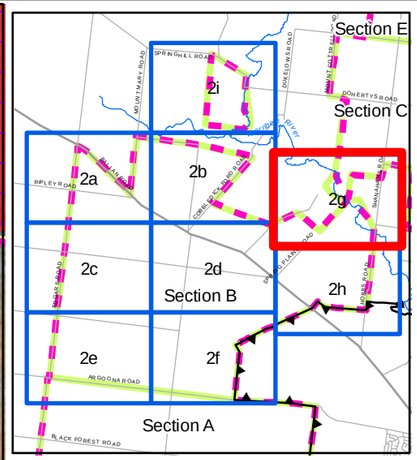

Legend

EVC

- 125 Plains Grassy Wetland
- 132_63 Low-rainfall Plains Grassland
- 291 Cane Grass Wetland (WVA)
- 56 Floodplain Riparian Woodland
- 649 Stony Knoll Shrubland
- 654 Creekline Tussock Grassland
- 803 Plains Woodland
- 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

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Figure 2 g: Native Vegetation, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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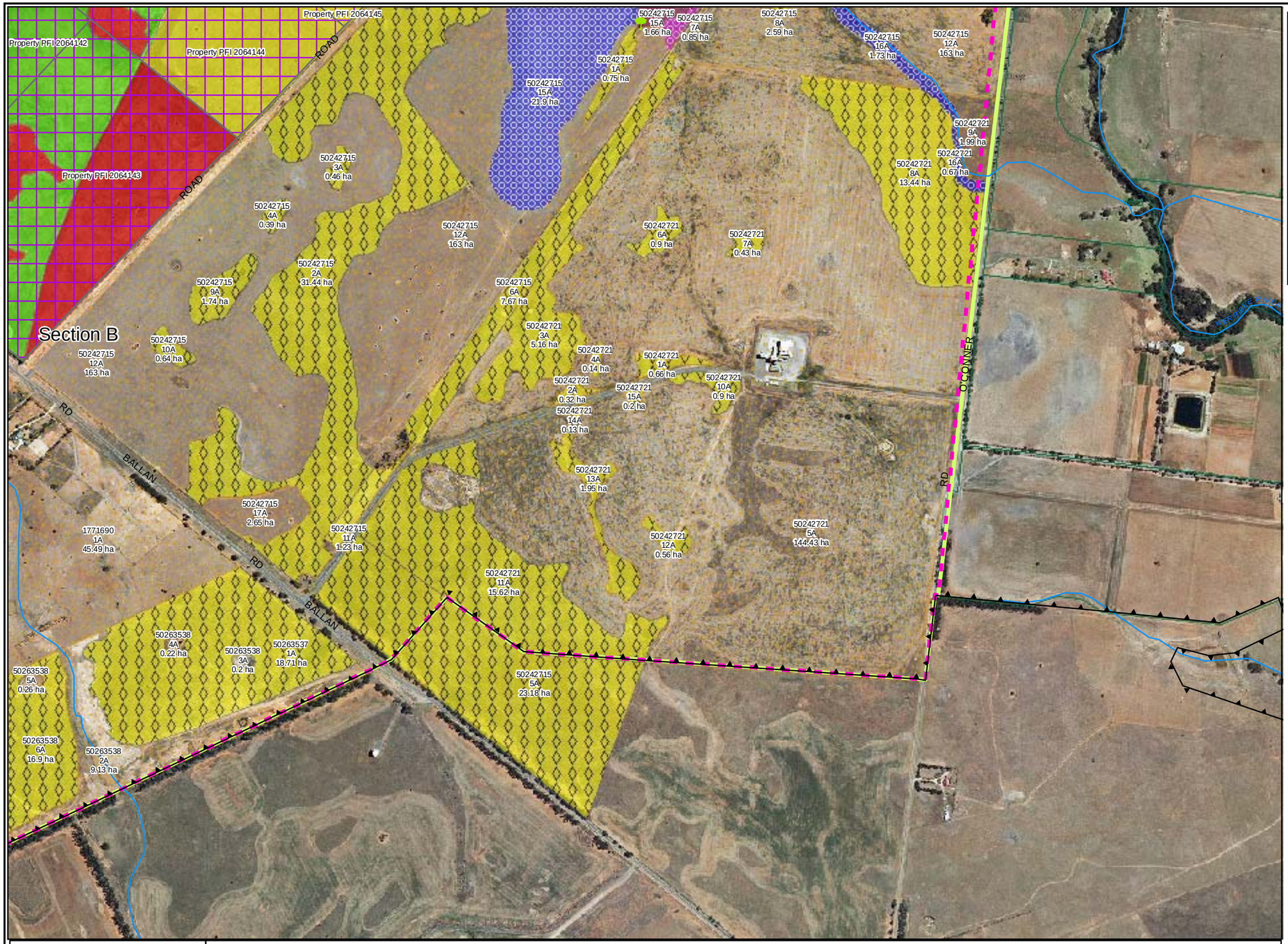

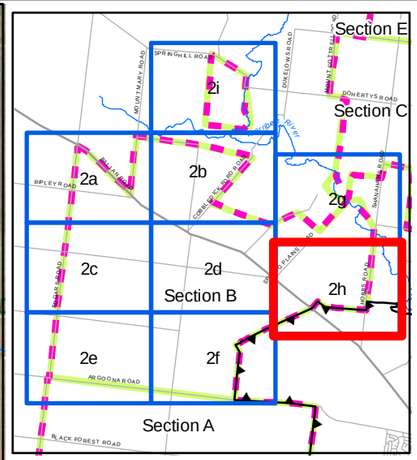

Legend

EVC

- 125 Plains Grassy Wetland
- 132_63 Low-rainfall Plains Grassland
- 291 Cane Grass Wetland (WVA)
- 56 Floodplain Riparian Woodland
- 649 Stony Knoll Shrubland
- 654 Creekline Tussock Grassland
- 803 Plains Woodland
- 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

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Figure 2h: Native Vegetation, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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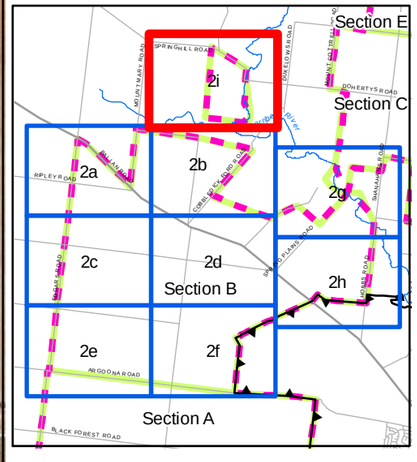

Legend

EVC

- 125 Plains Grassy Wetland
- 132_63 Low-rainfall Plains Grassland
- 291 Cane Grass Wetland (WVA)
- 56 Floodplain Riparian Woodland
- 649 Stony Knoll Shrubland
- 654 Creekline Tussock Grassland
- 803 Plains Woodland
- 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

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Figure 2 i : Native Vegetation, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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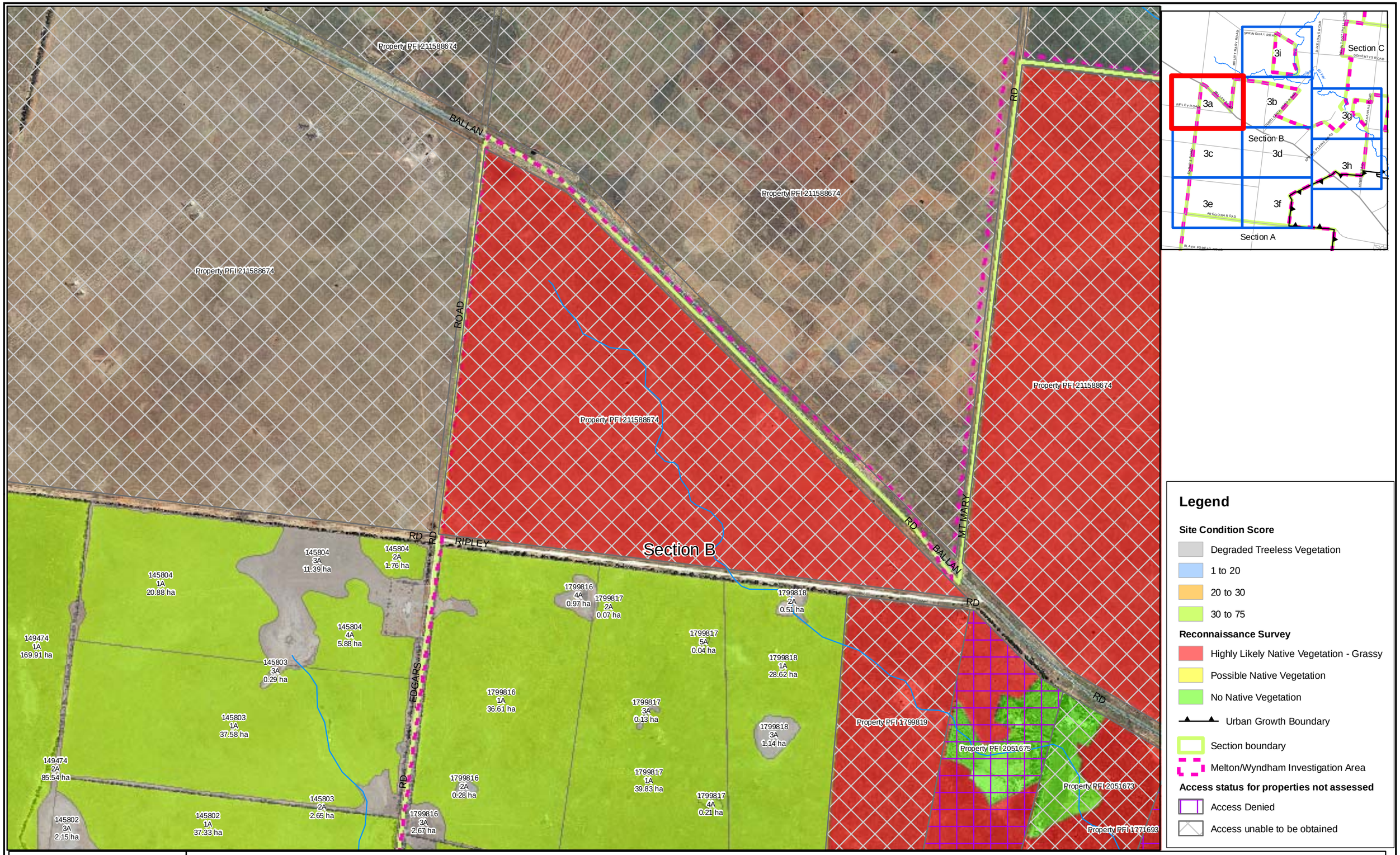

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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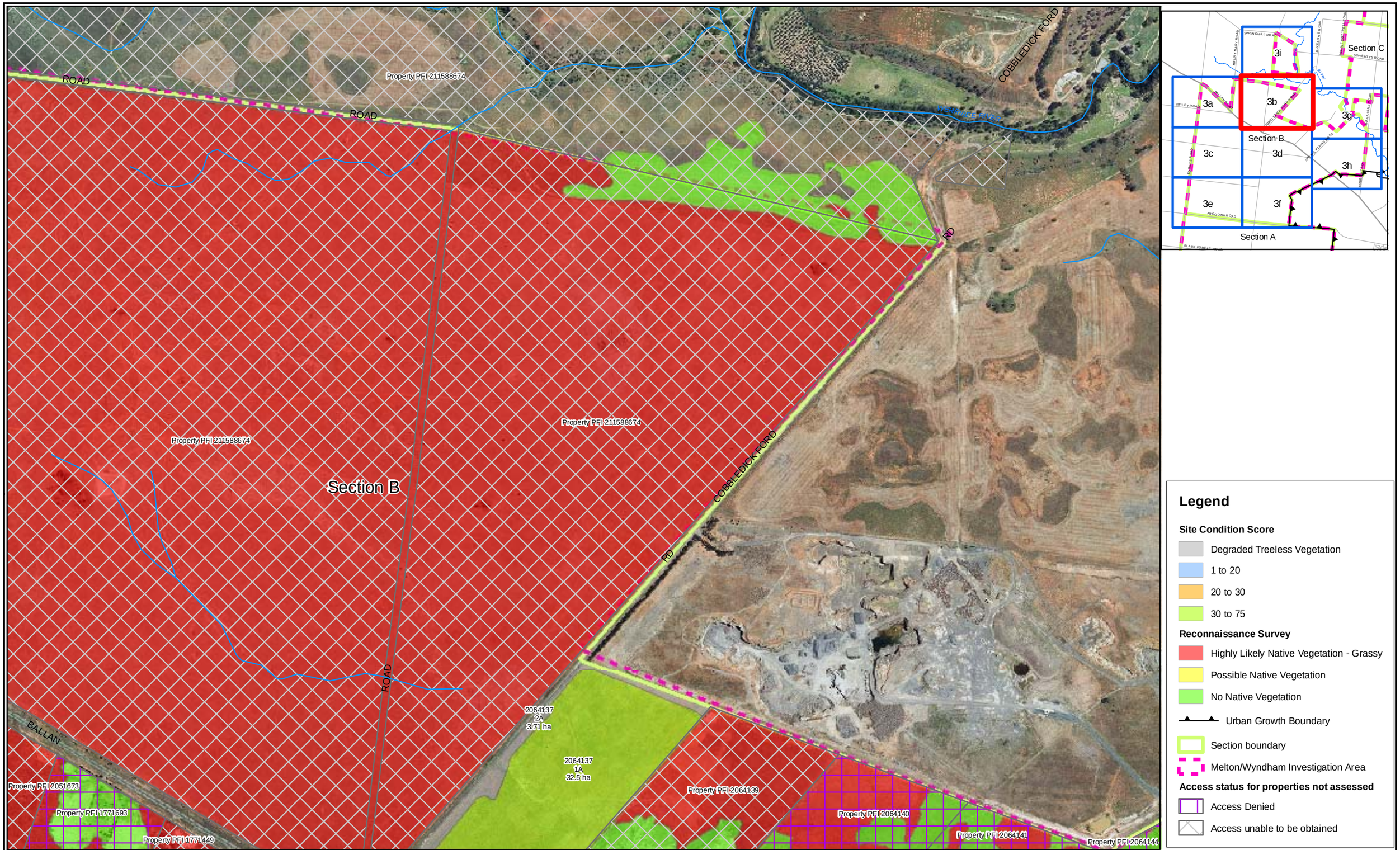

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Figure 3b : Vegetation quality of habitat zones and results of reconnaissance survey, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
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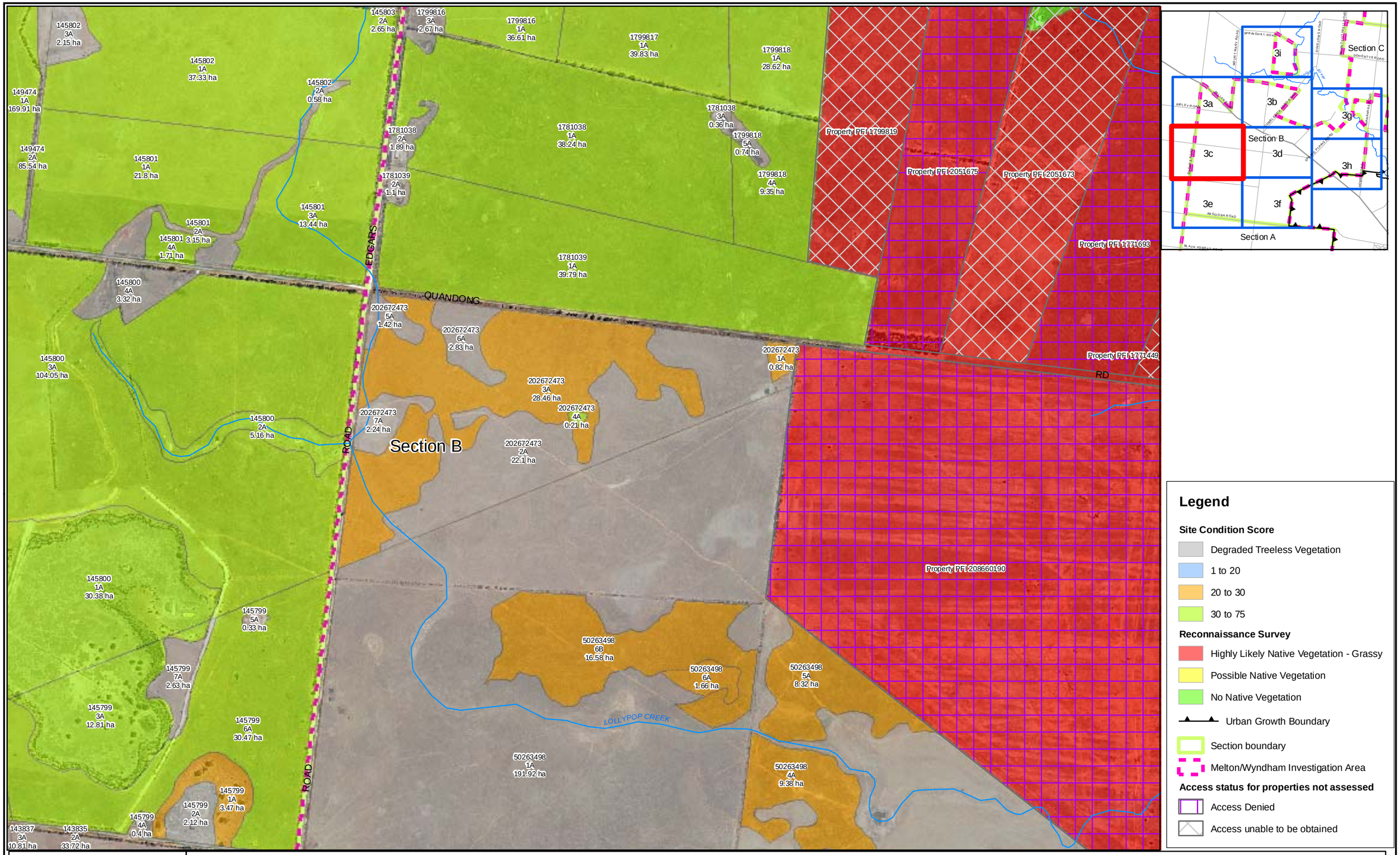

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
Meters

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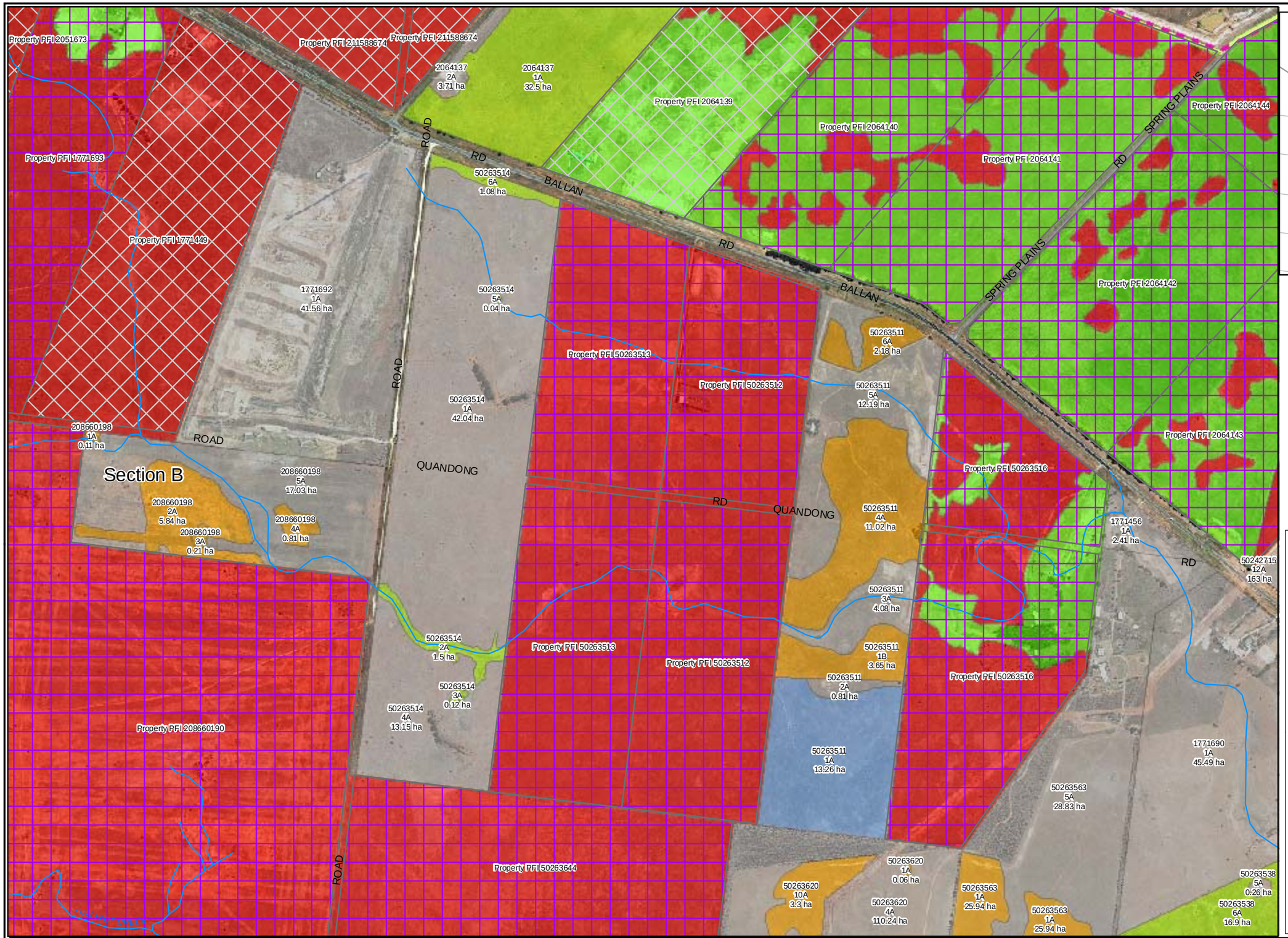

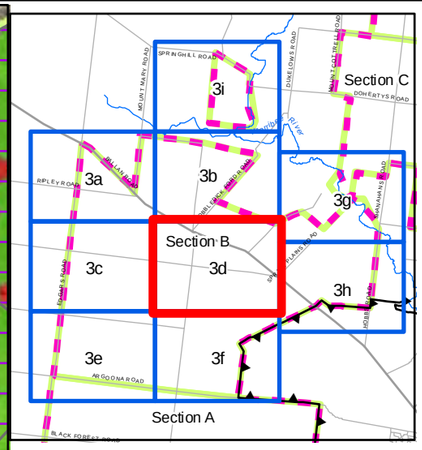

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
Meters

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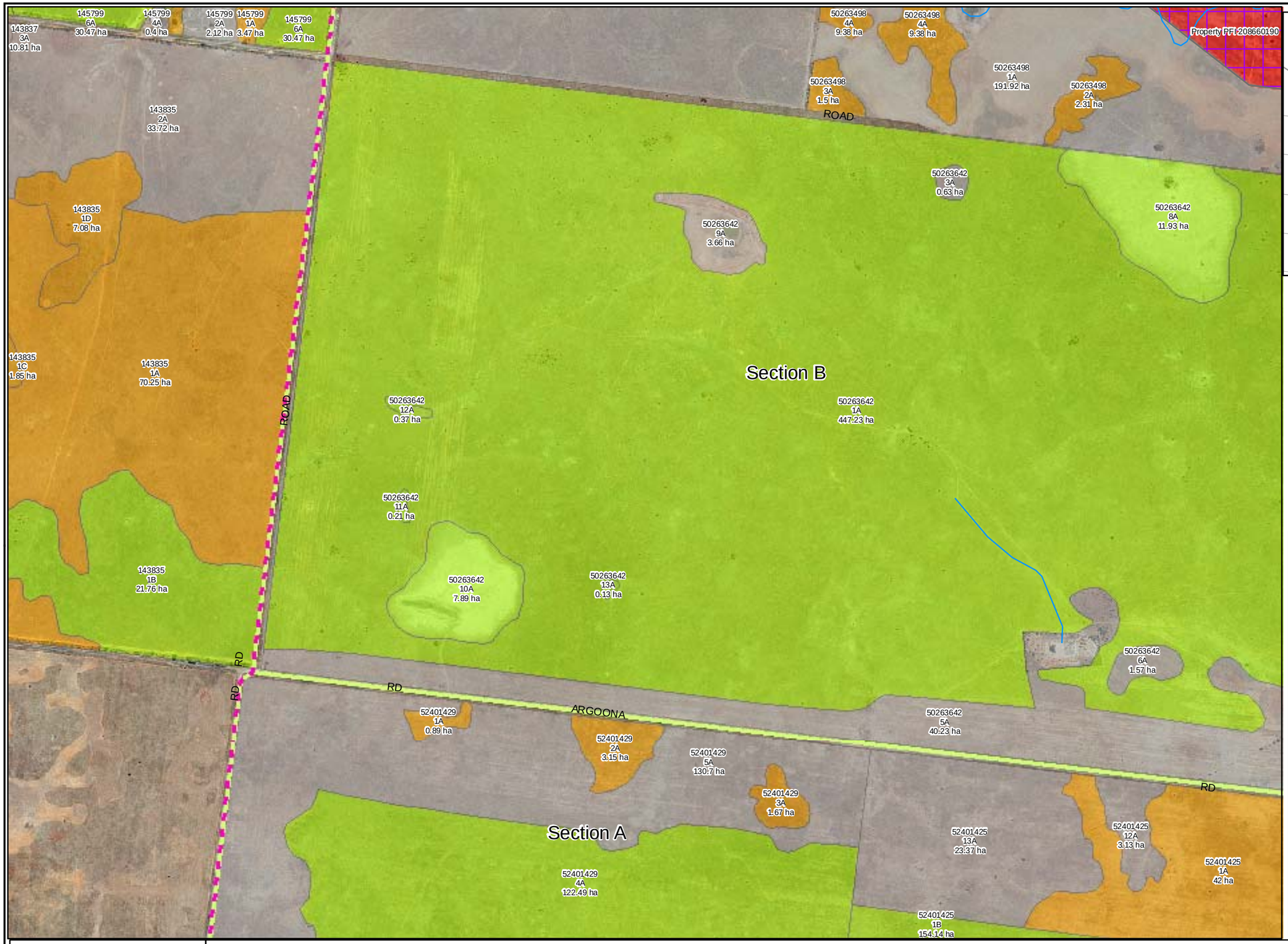

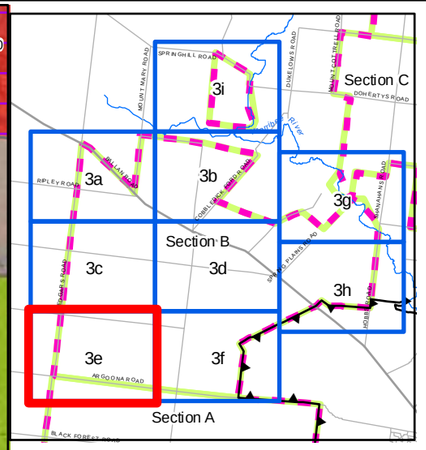

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
Meters

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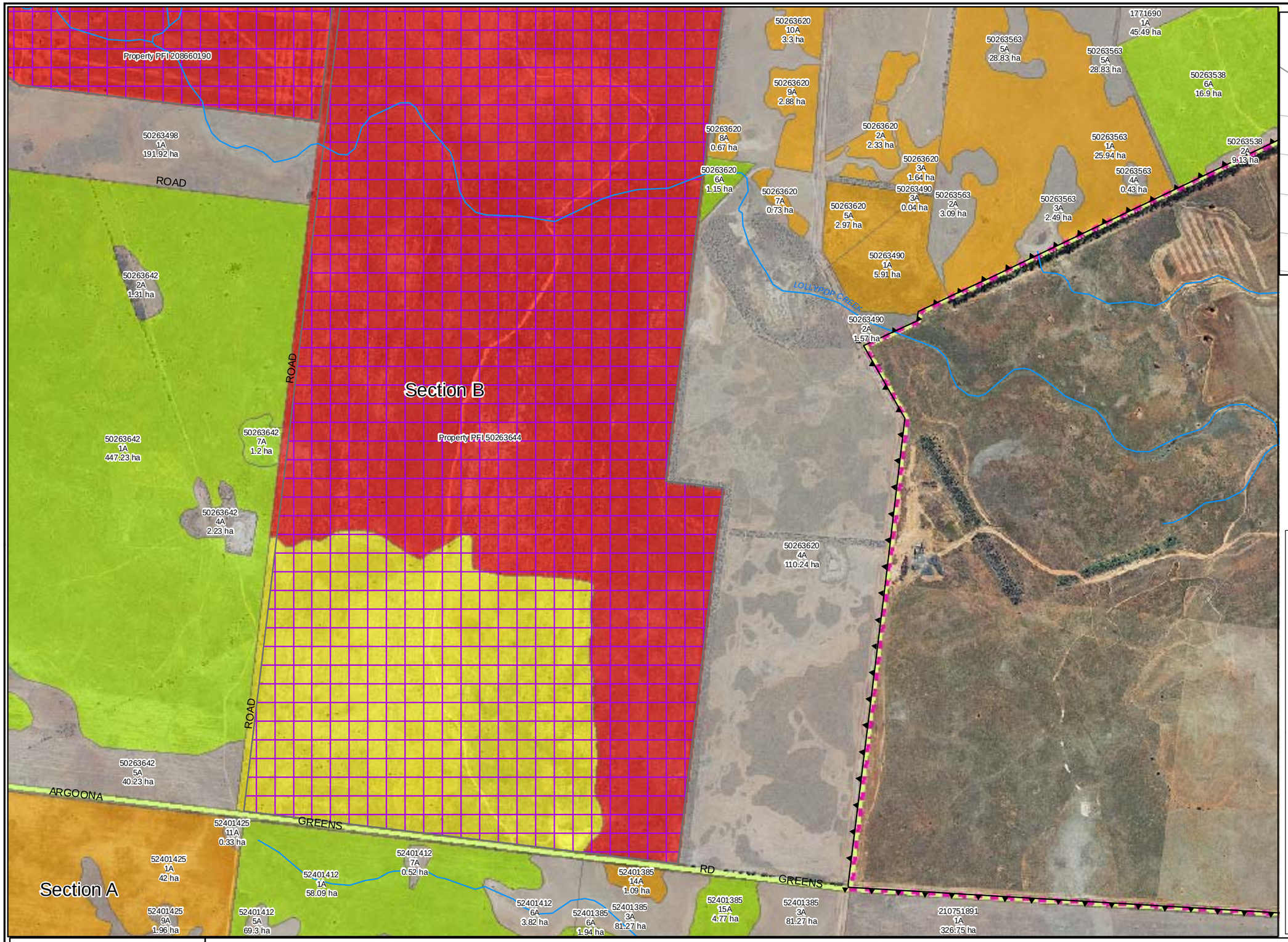

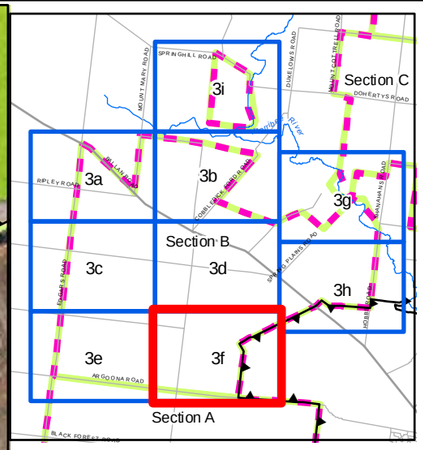

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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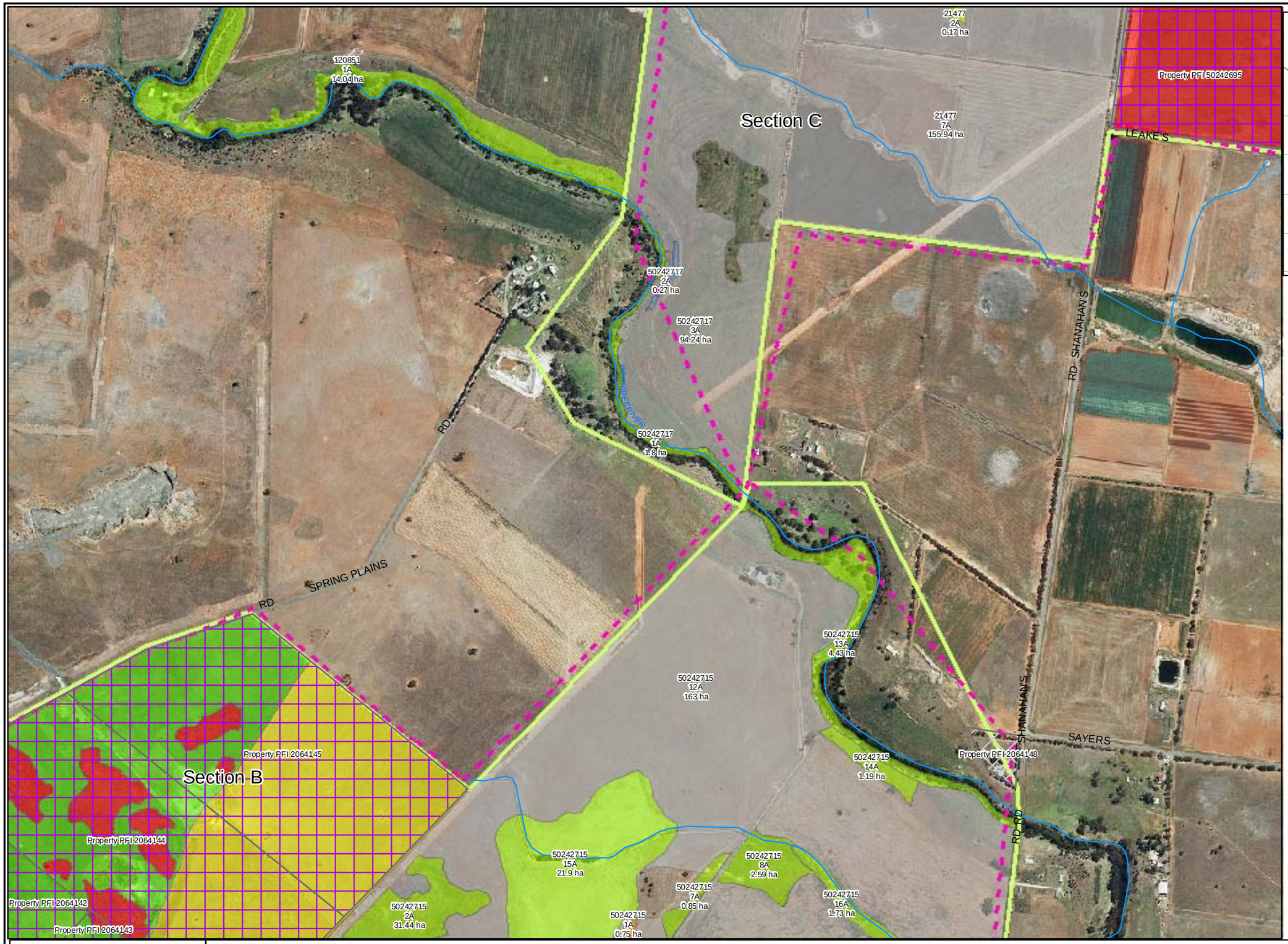

Legend

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

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Figure 3g : Vegetation quality of habitat zones and results of reconnaissance survey, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
Meters

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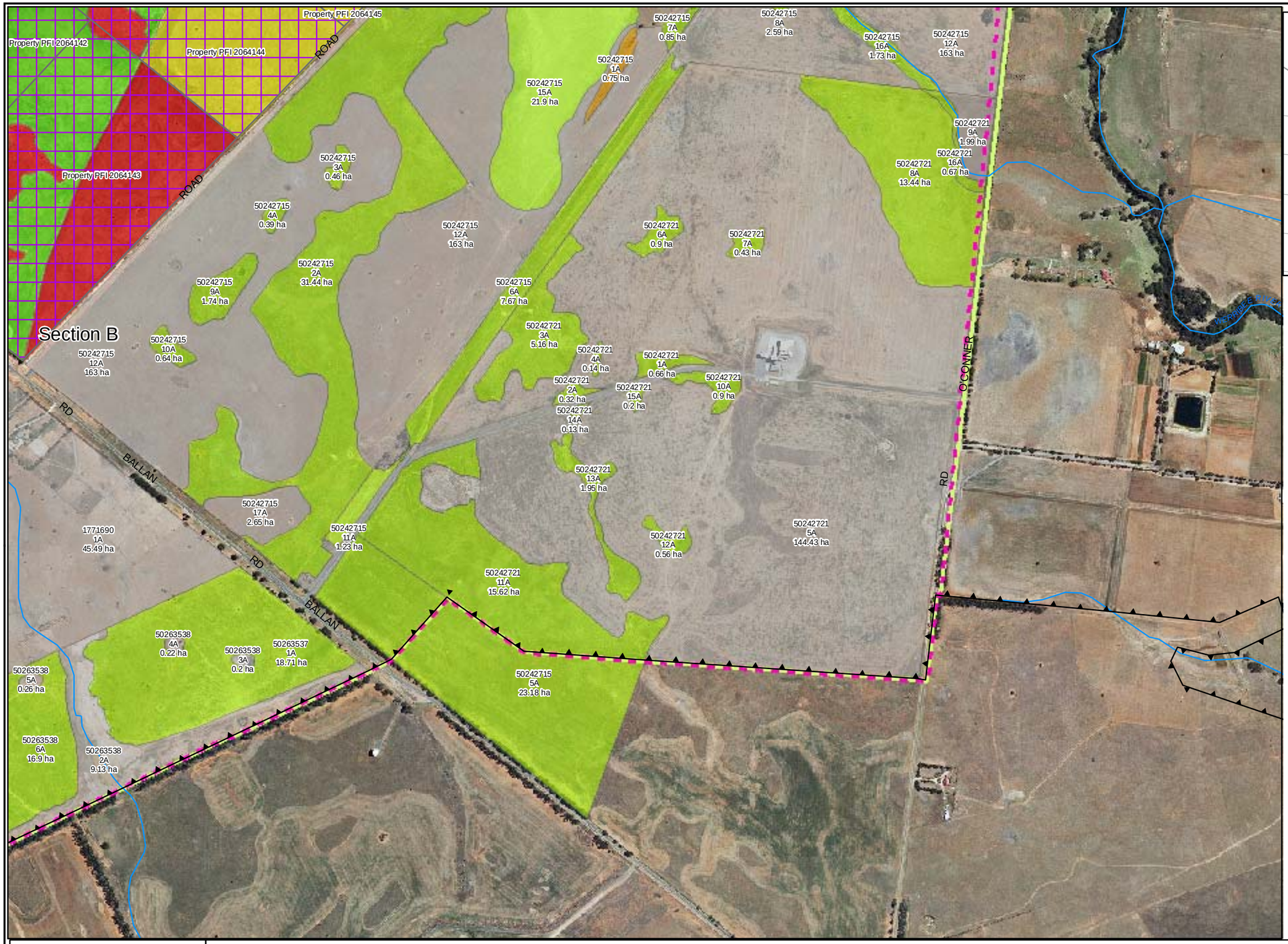

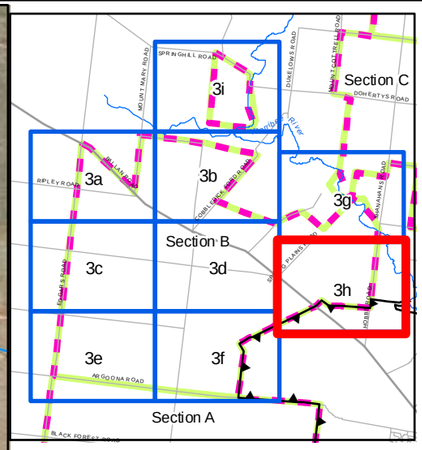

Legend

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

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Figure 3h : Vegetation quality of habitat zones and results of reconnaissance survey, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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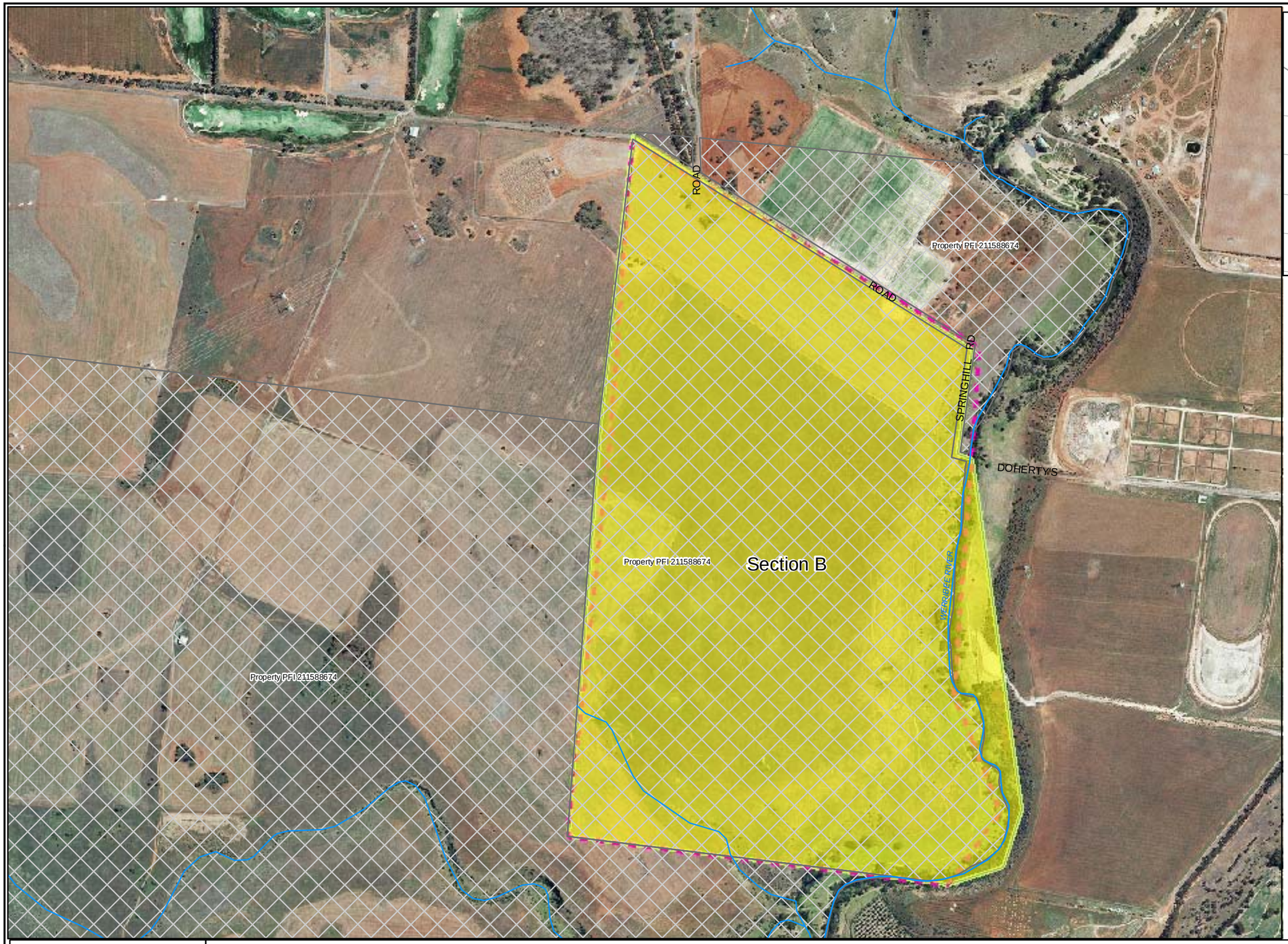

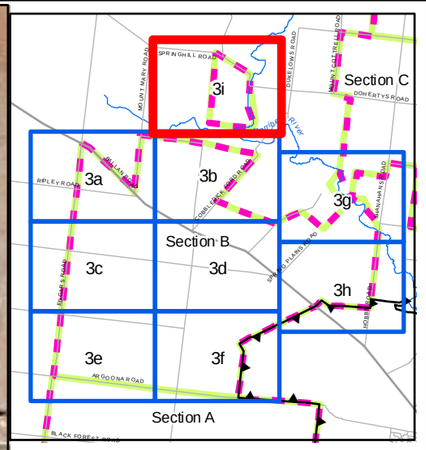

Legend

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

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Figure 3i : Vegetation quality of habitat zones and results of reconnaissance survey, Section B.

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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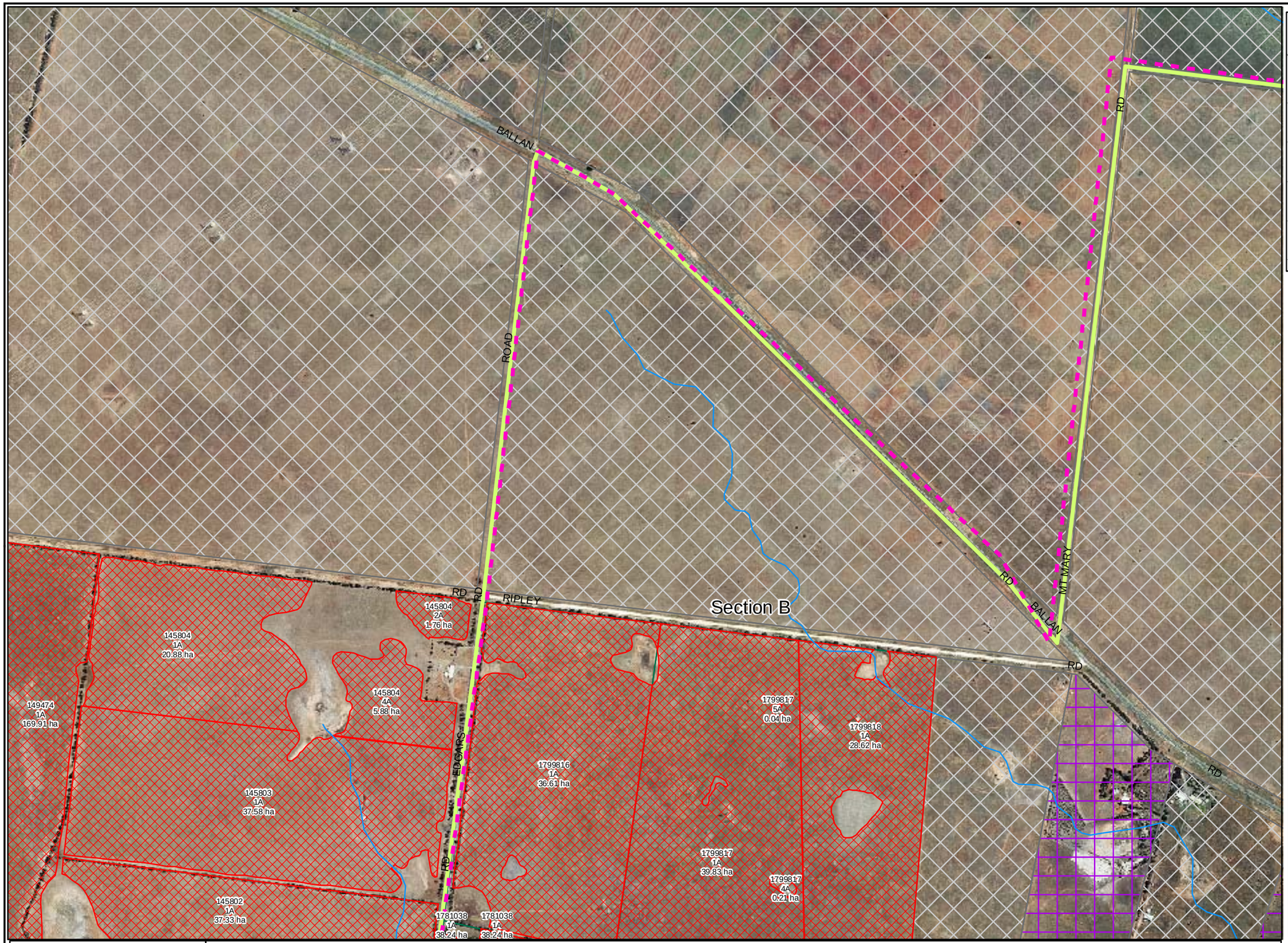

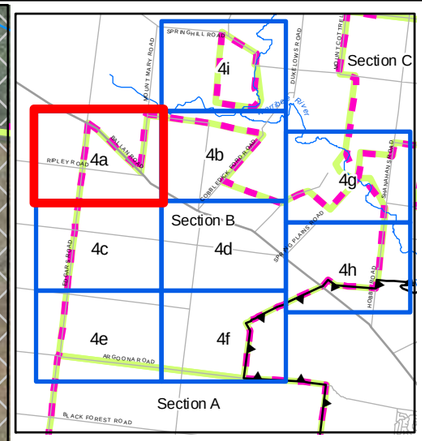

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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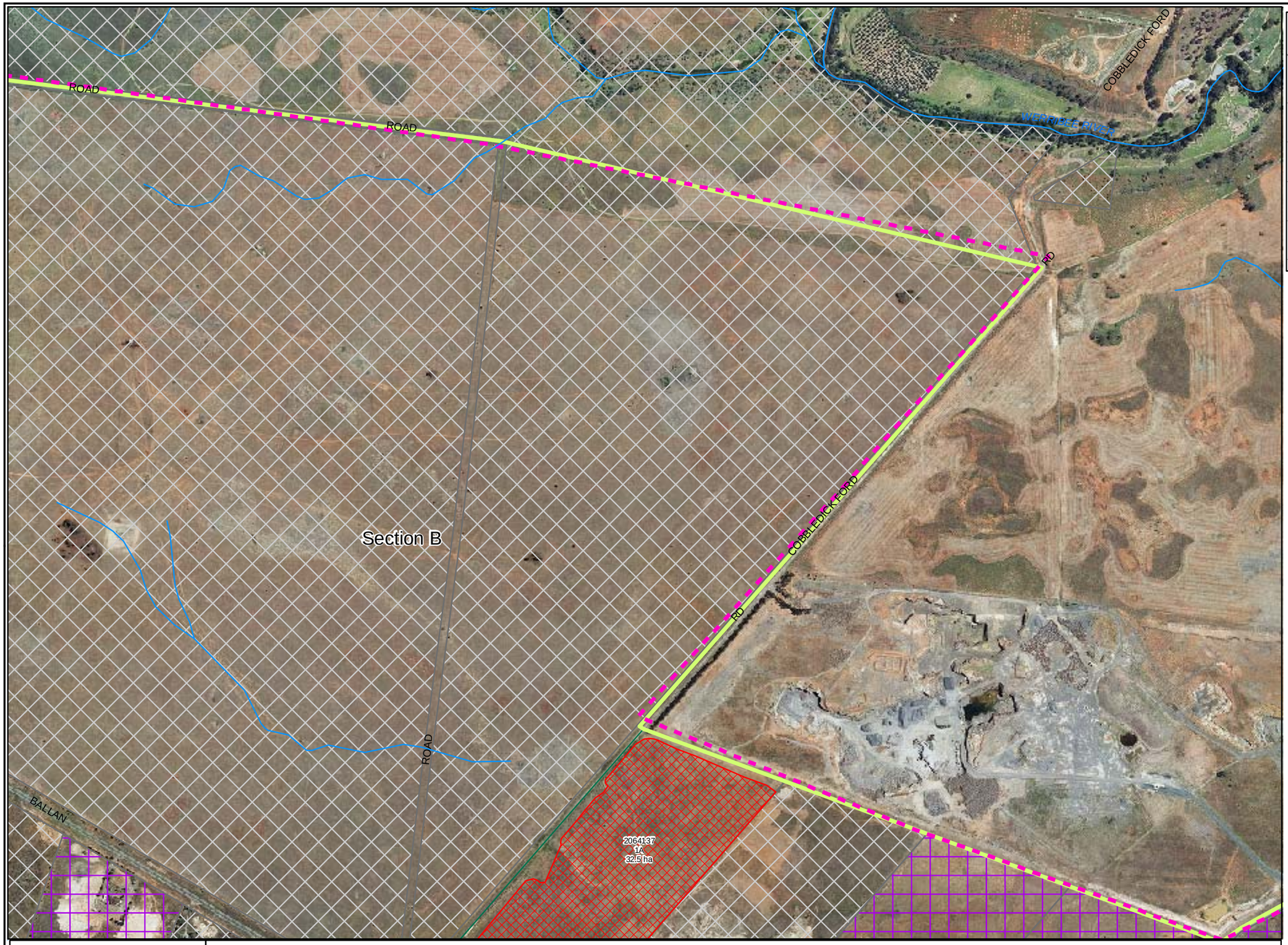

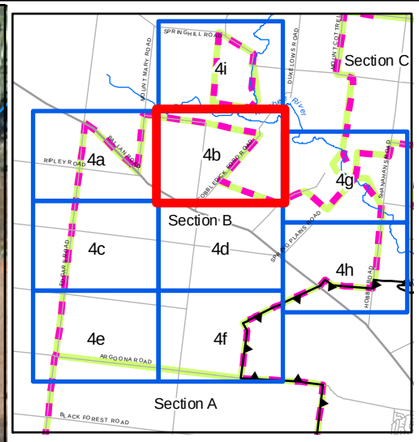

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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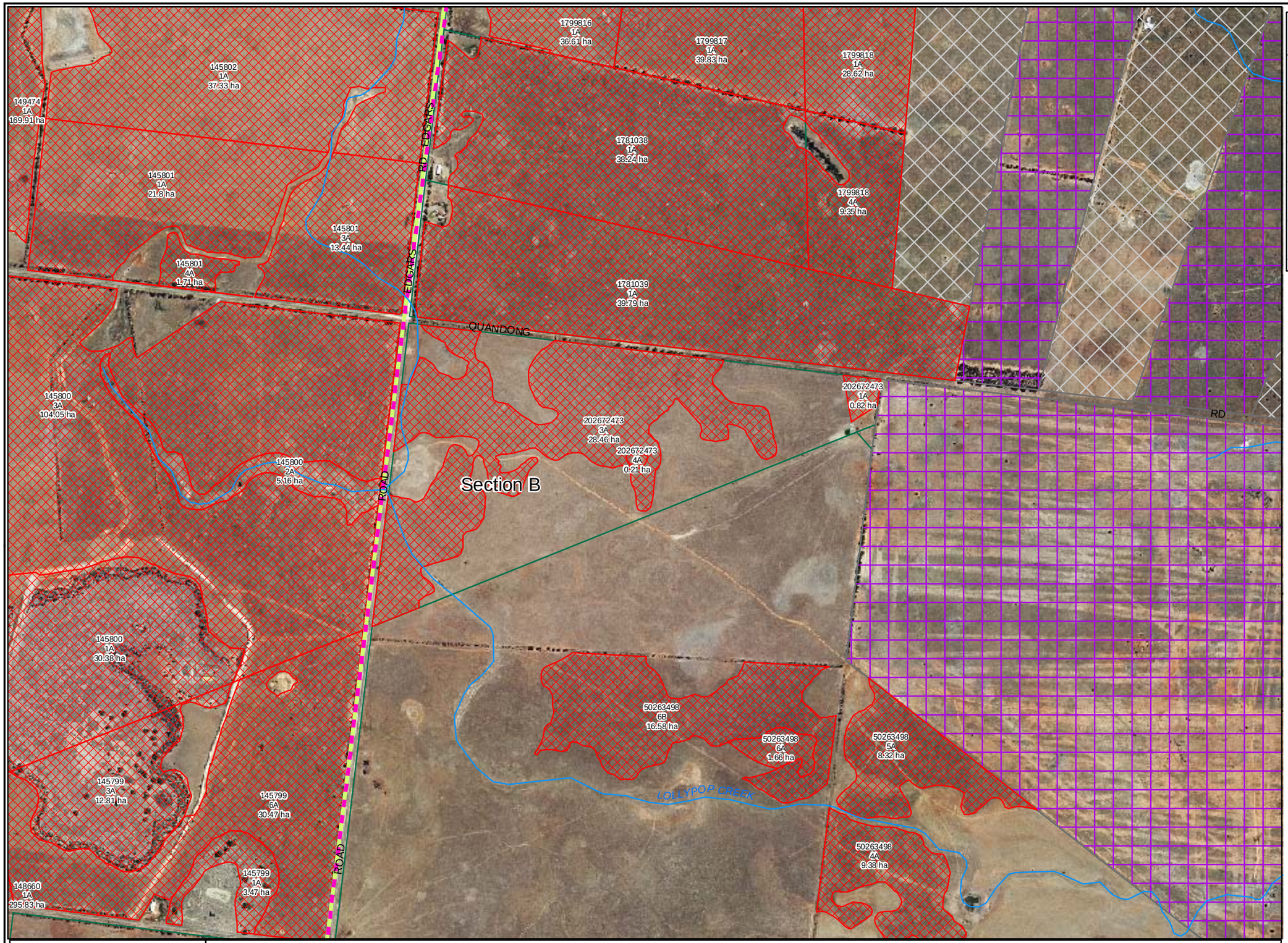

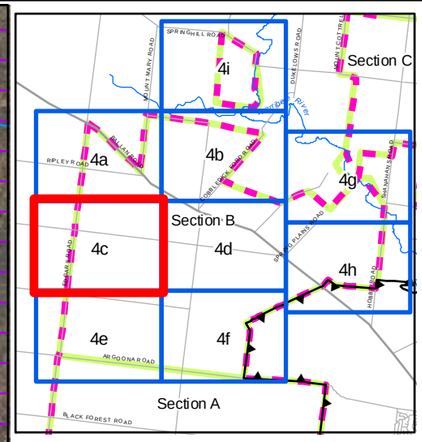

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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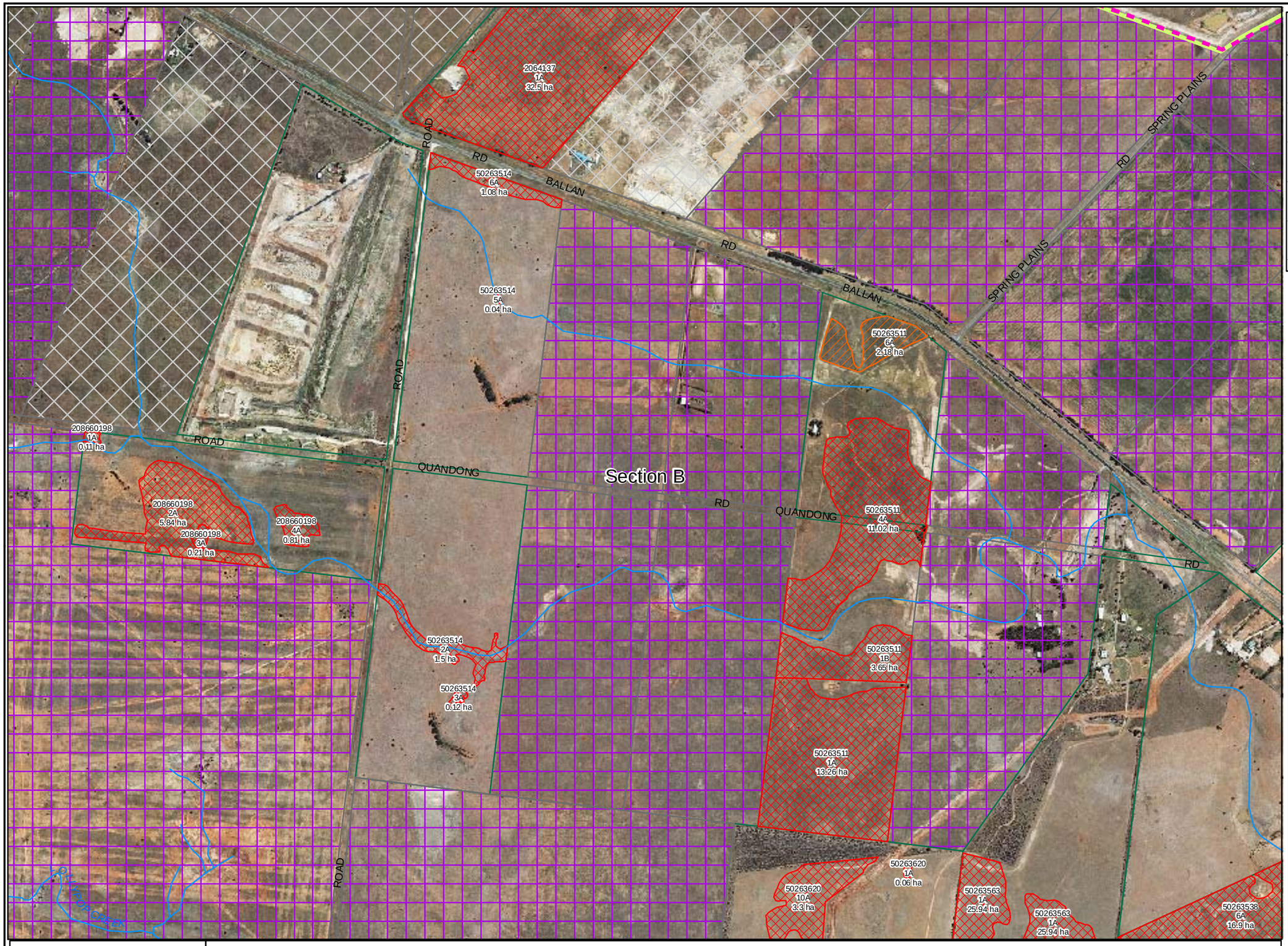

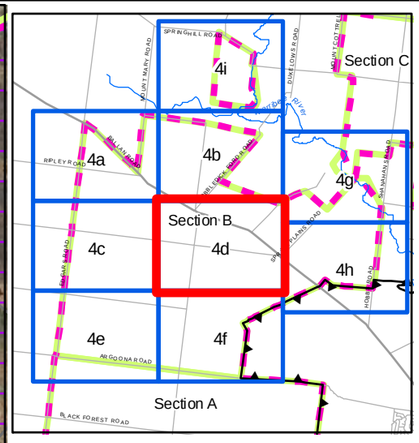

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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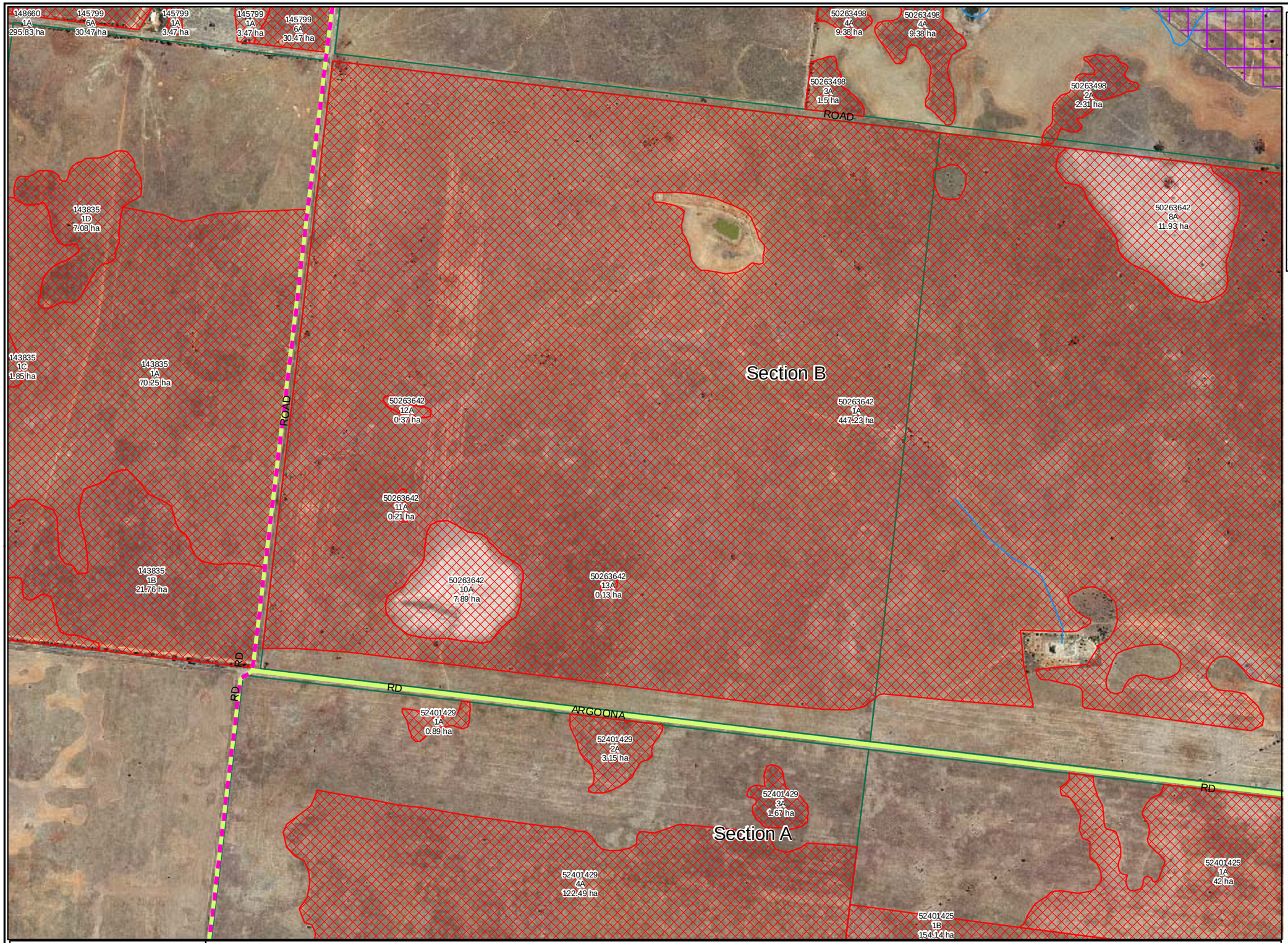

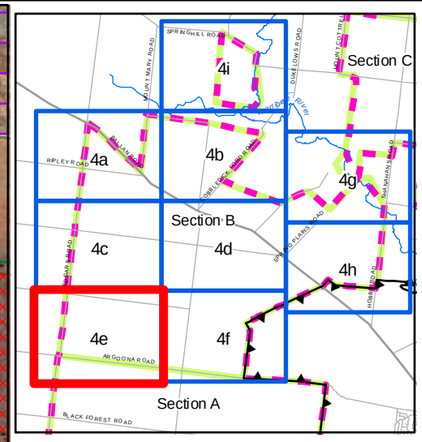

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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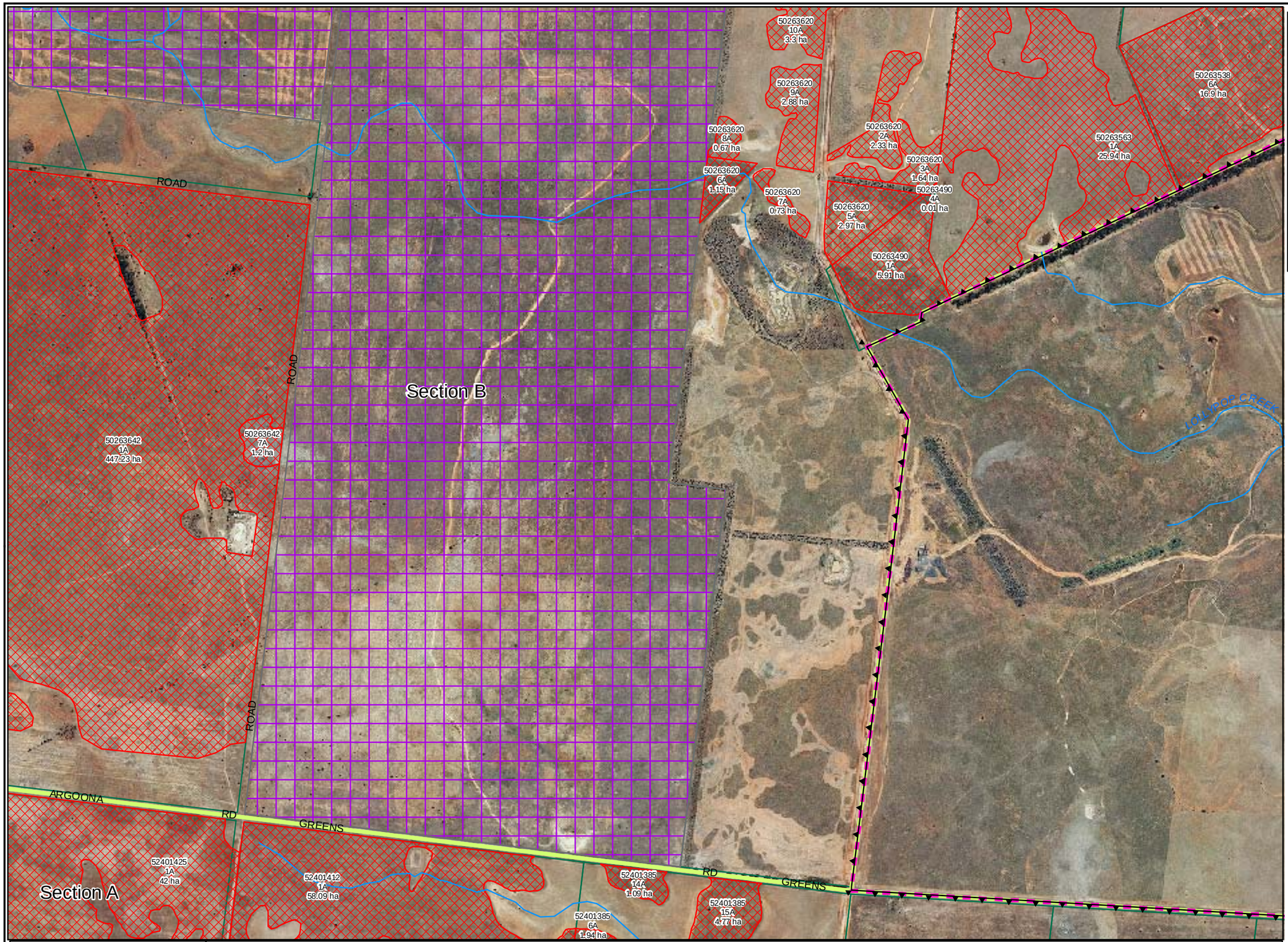

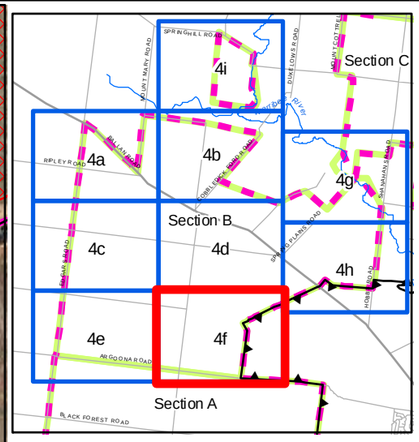

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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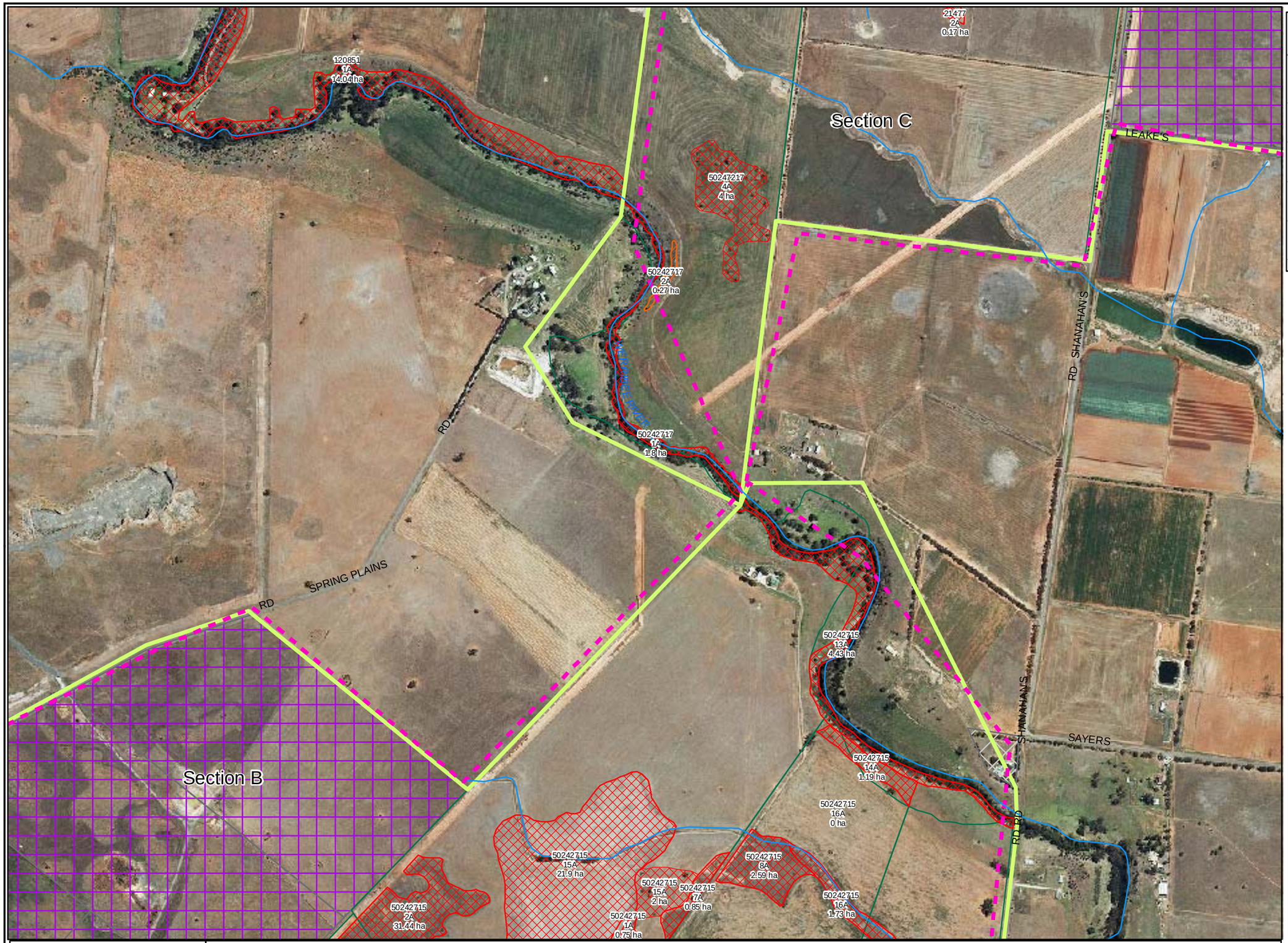

Legend

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

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Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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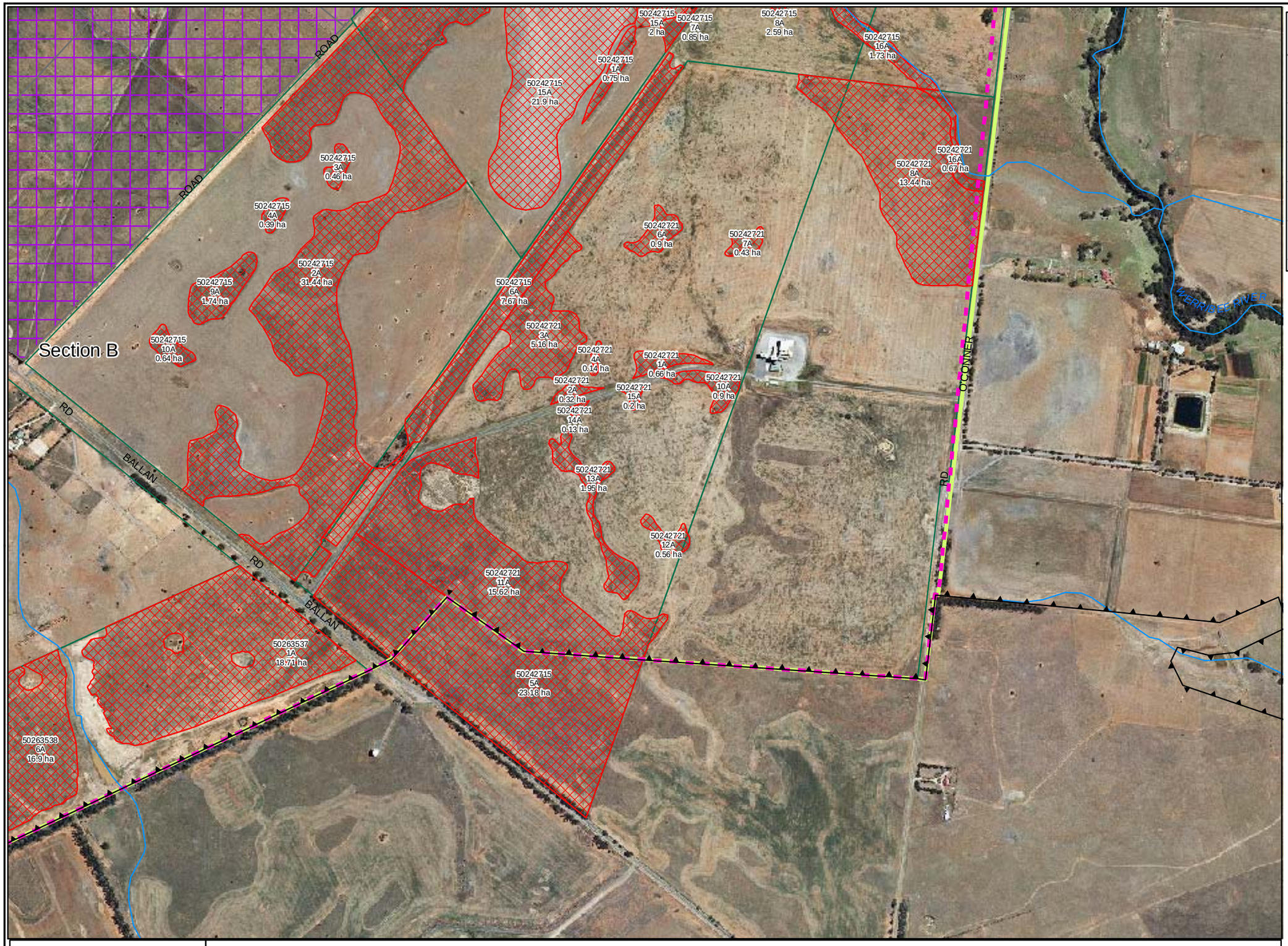

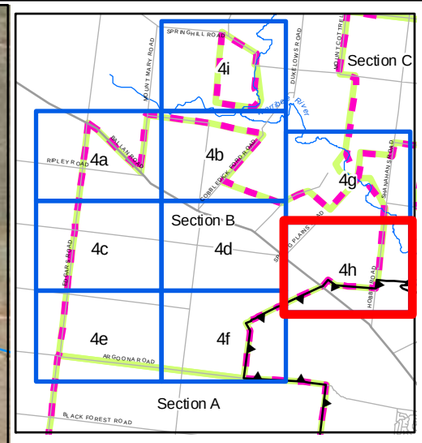

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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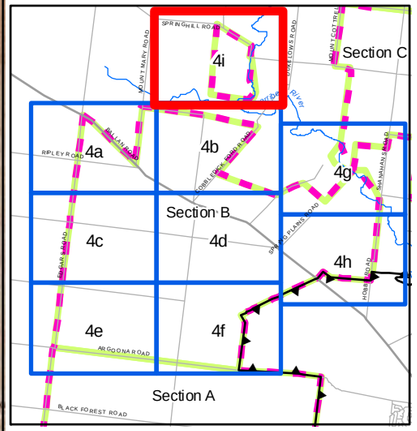

Legend

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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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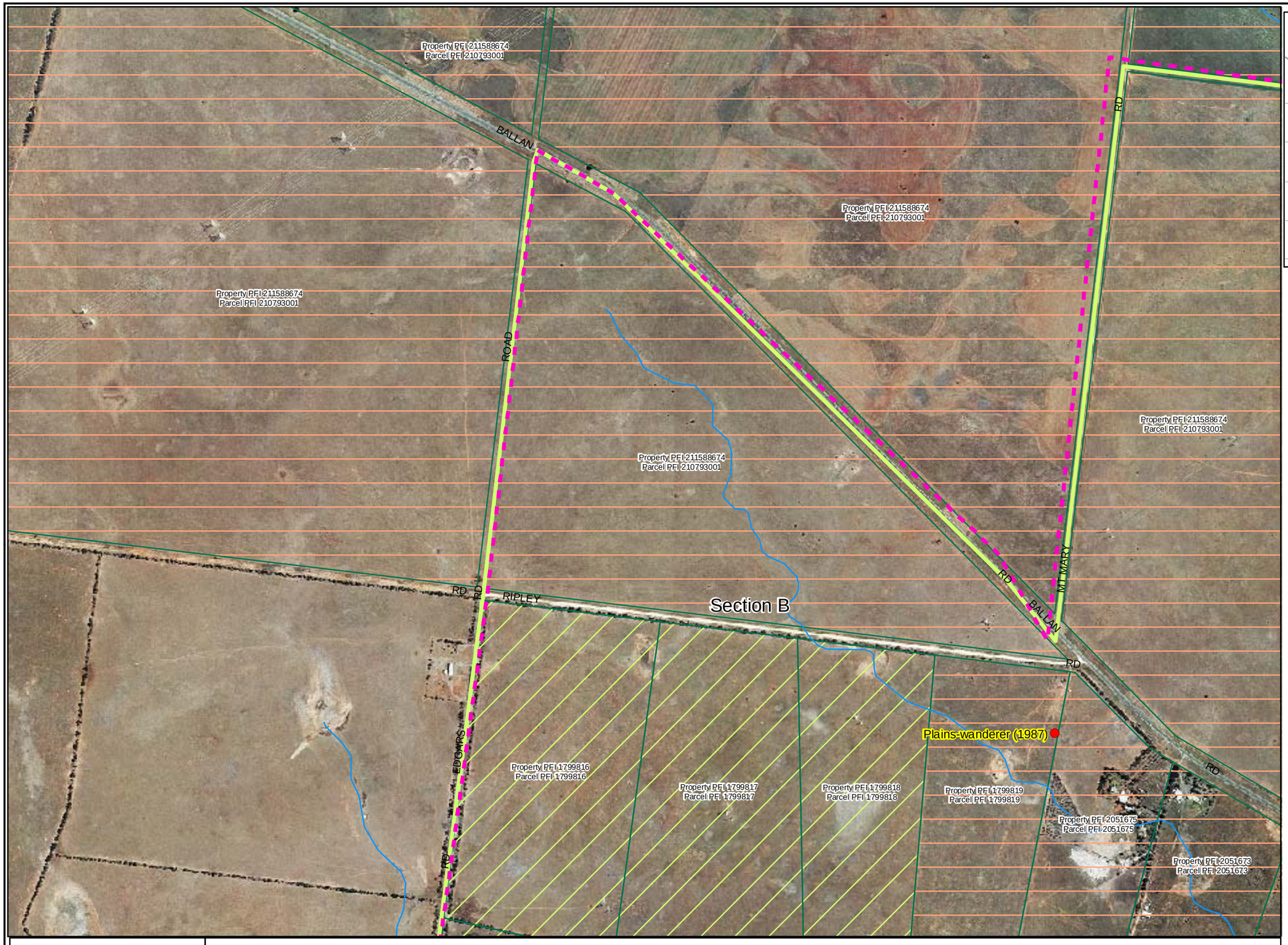

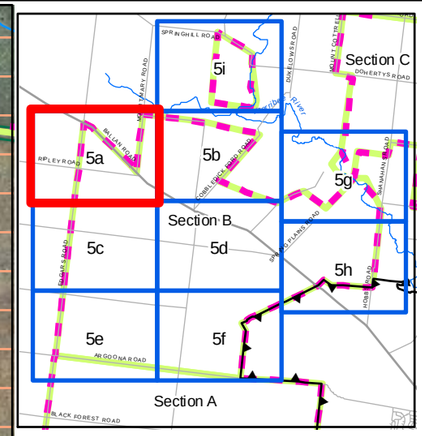

Legend

Flora

Database records

- Nationally significant^
- State significant*

Incidental 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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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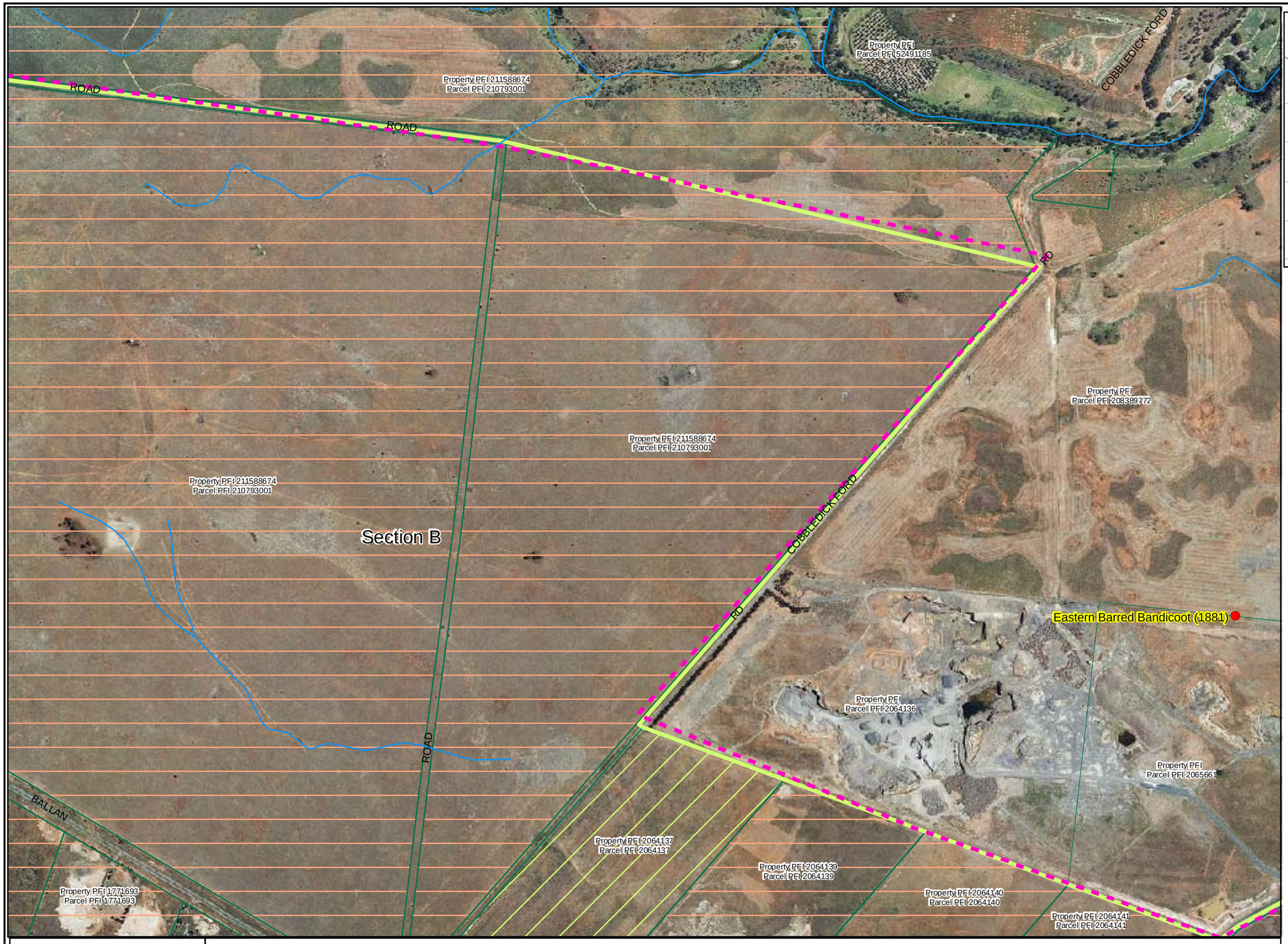

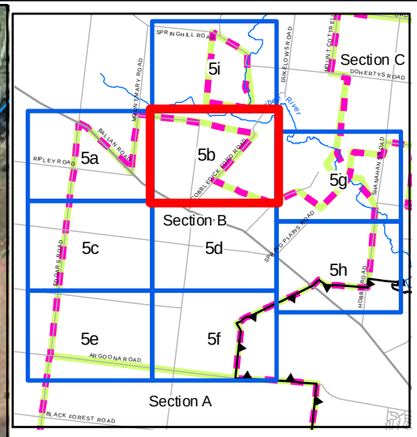

Legend

Flora

Database records

- Nationally significant^
- State significant*

Incidental 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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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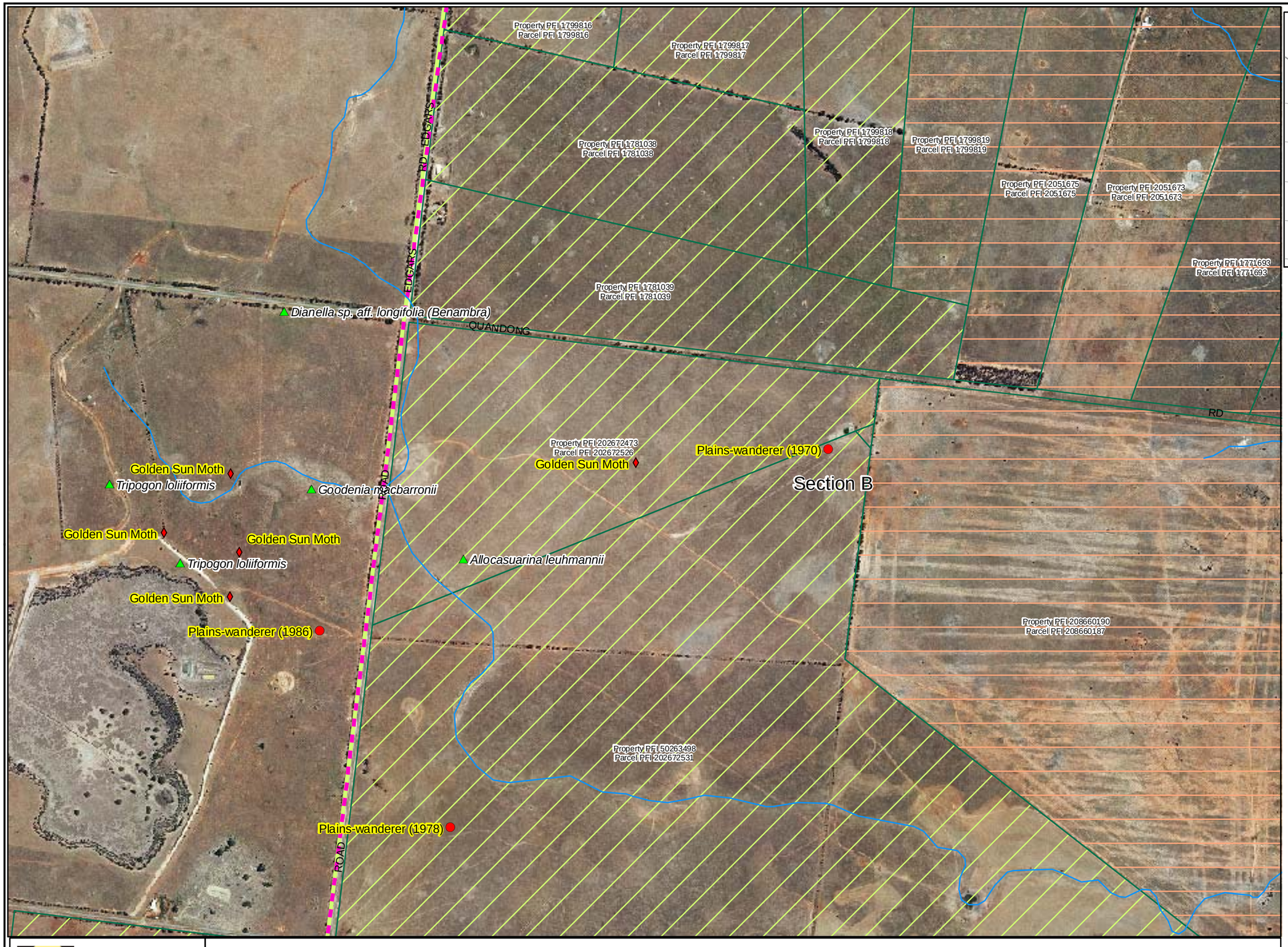

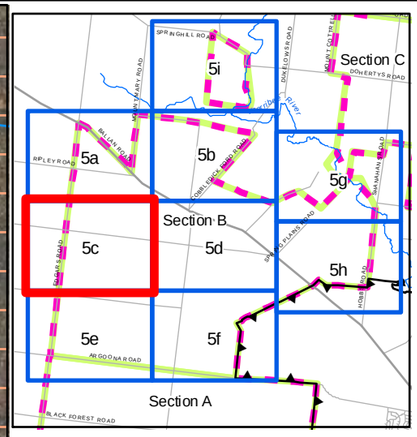

Legend

Flora

Database records

- Nationally significant^
- State significant*

Incidental 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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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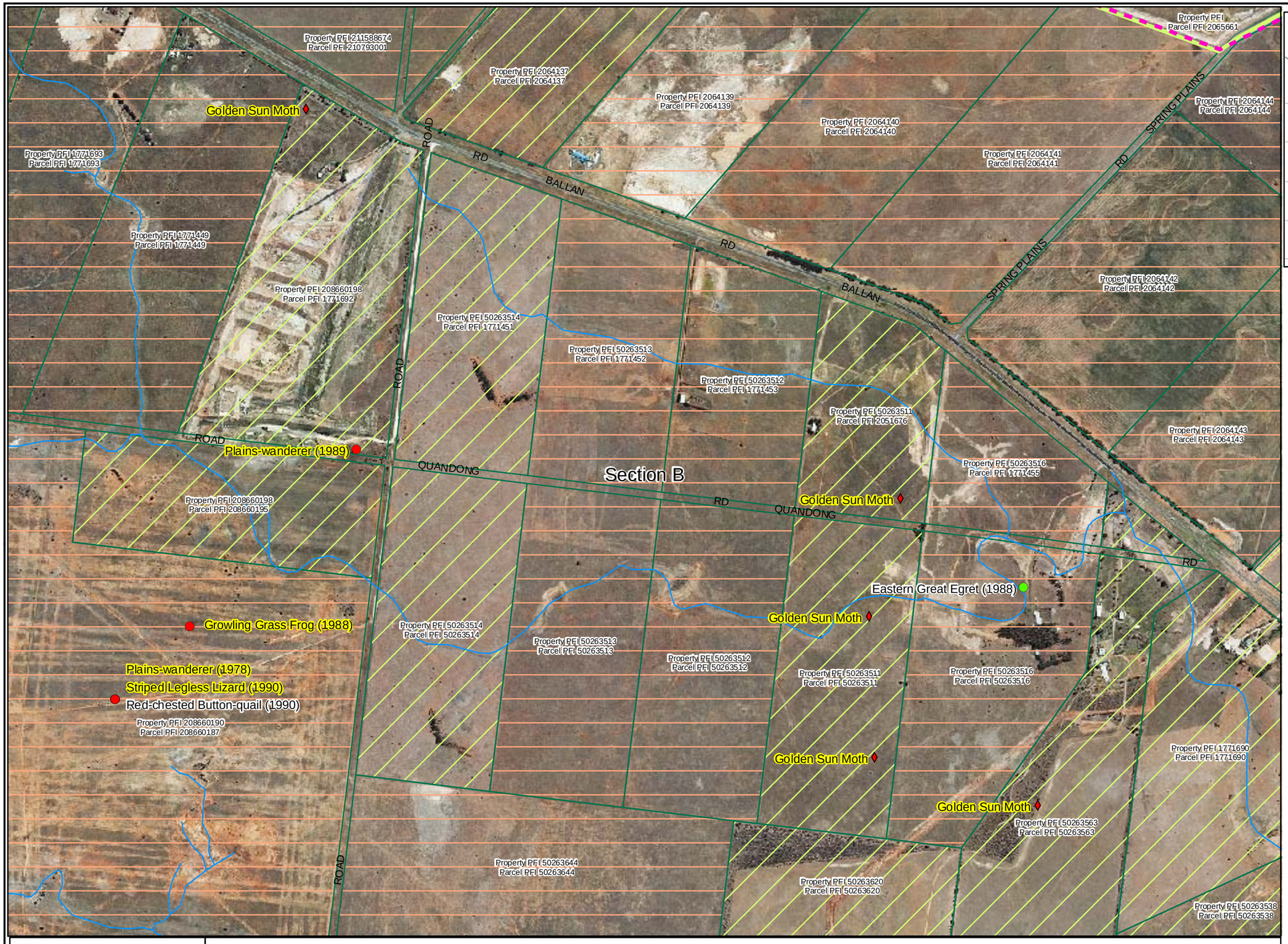

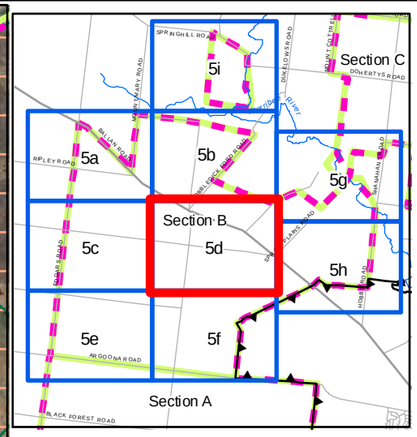

Legend

Flora

Database records

- Nationally significant^
- State significant*

Incidental 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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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Meters

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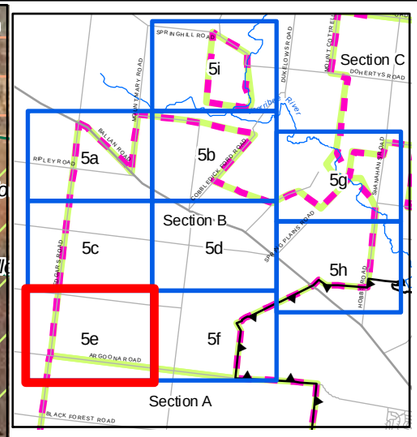

Legend

Flora

Database records

- Nationally significant^
- State significant*

Incidental 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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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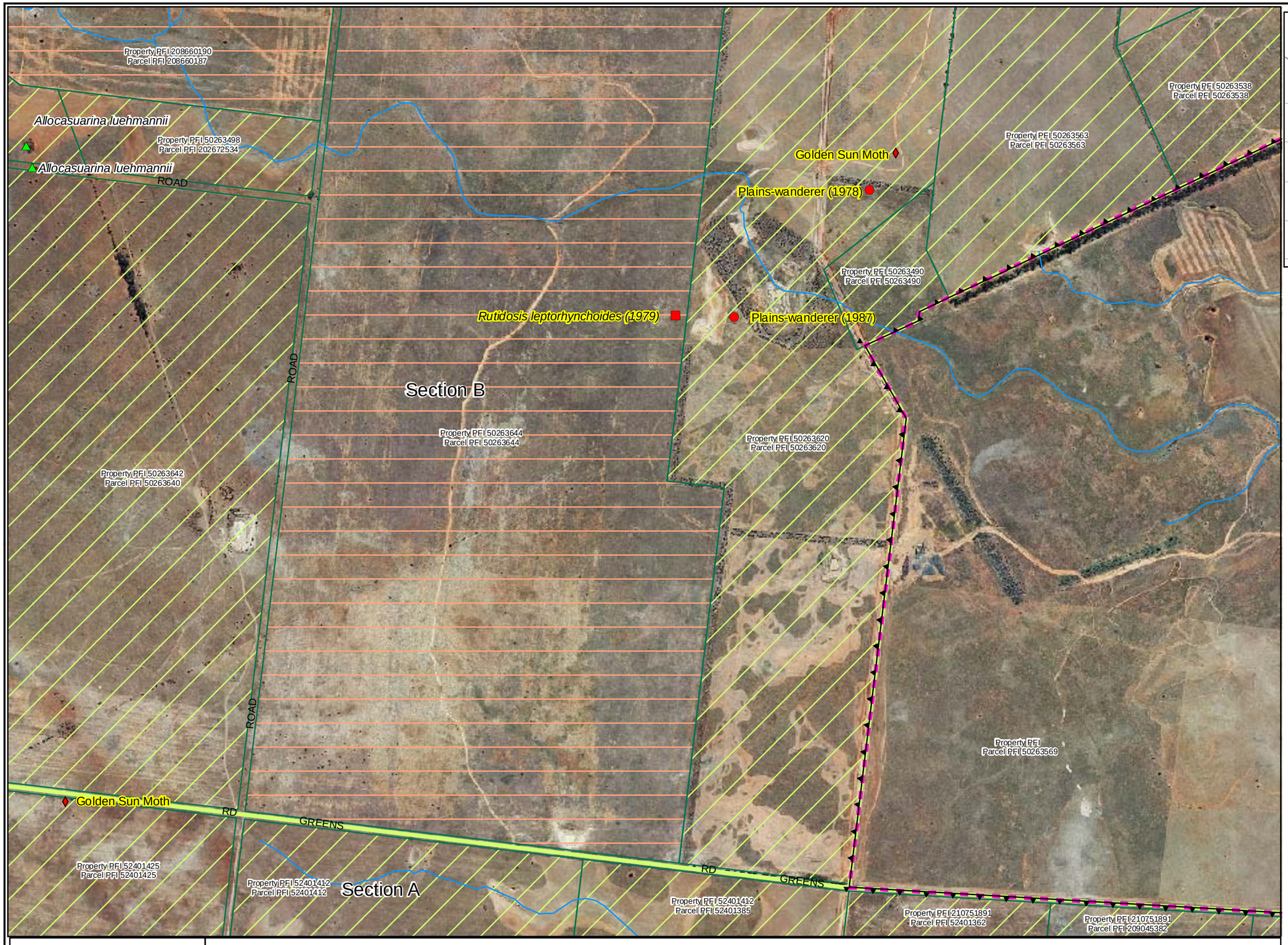

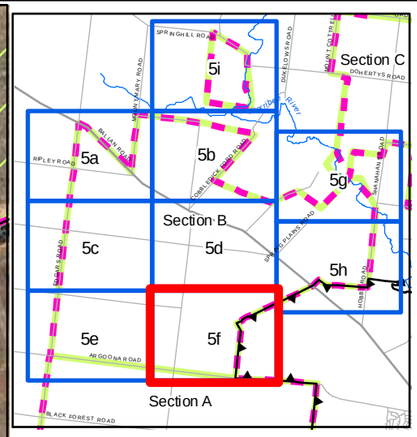

Legend

Flora

Database records

- Nationally significant^
- State significant*

Incidental 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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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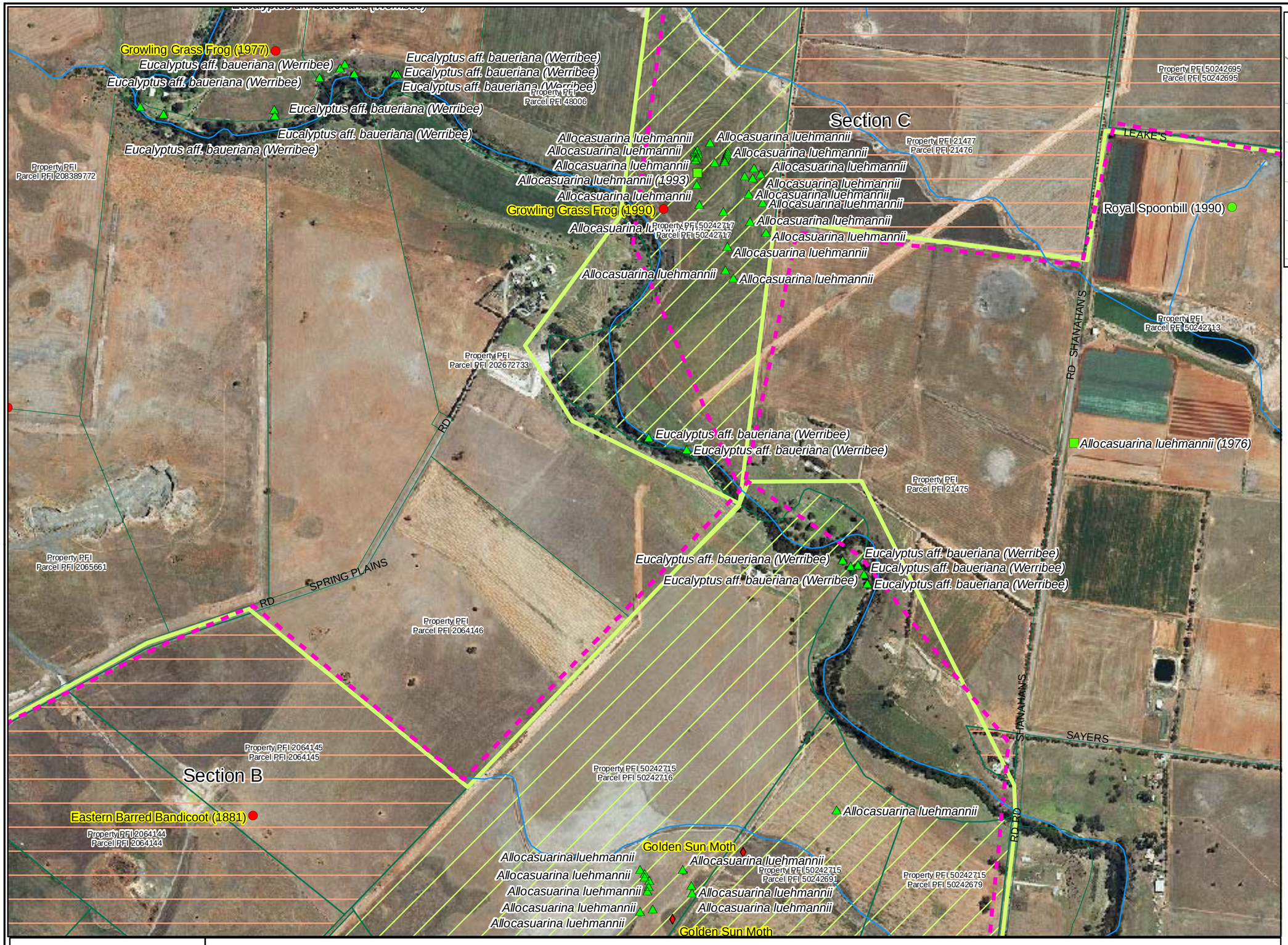
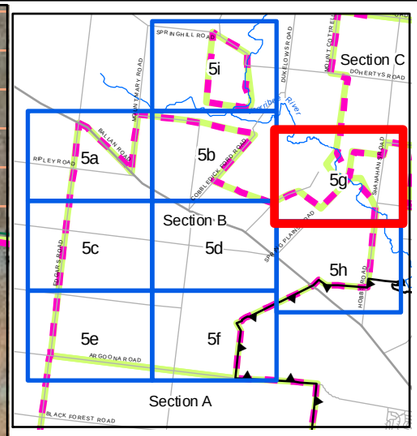
Incidental records collected October 08 to March 09 by Biosis Research Pty. Ltd.

^ Nationally significant species labels highlighted in yellow

* FFG listed and/or DSE VROT Advisory list





Legend

Flora

Database records

- Nationally significant^
- State significant*

Incidental 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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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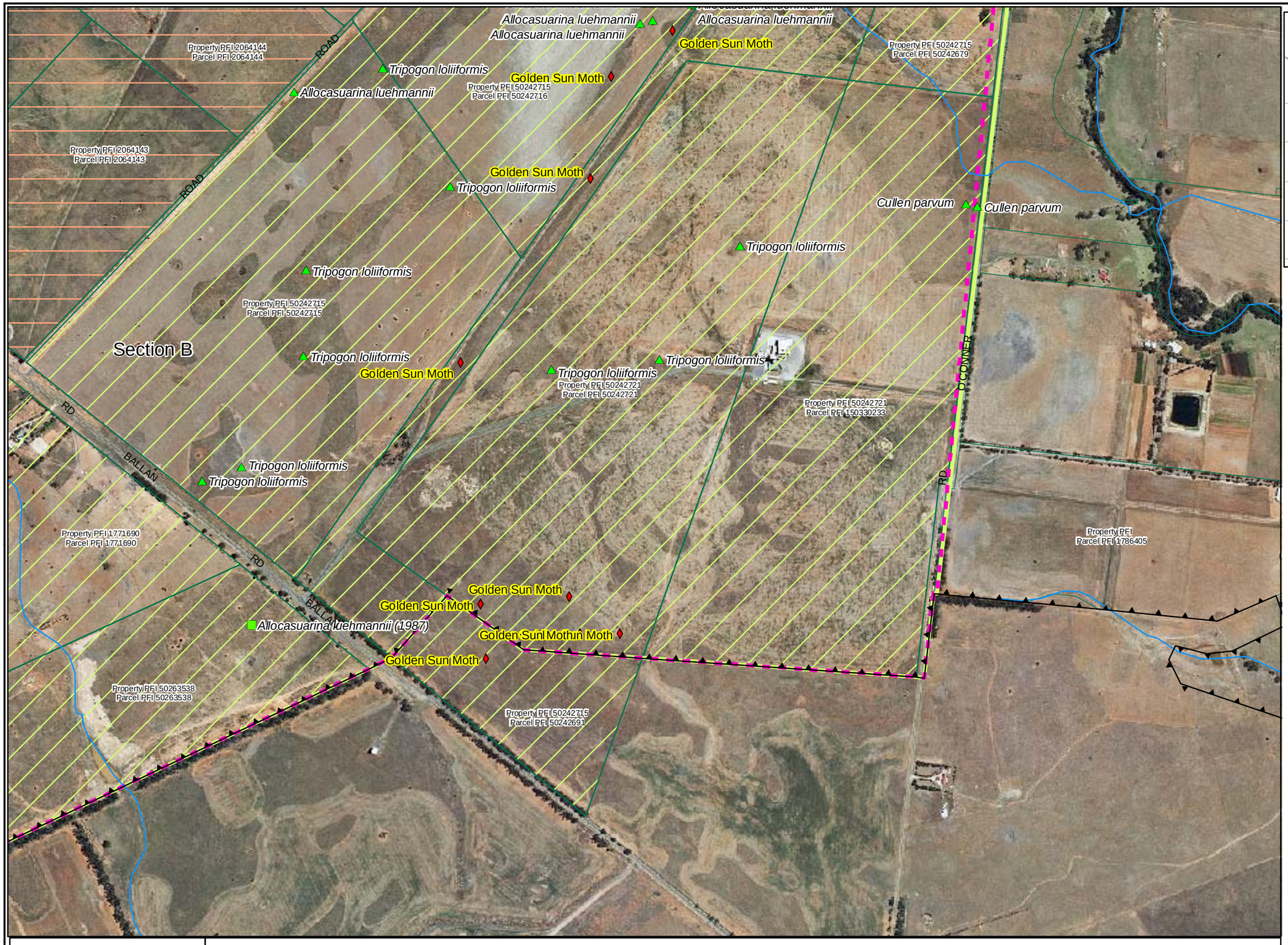

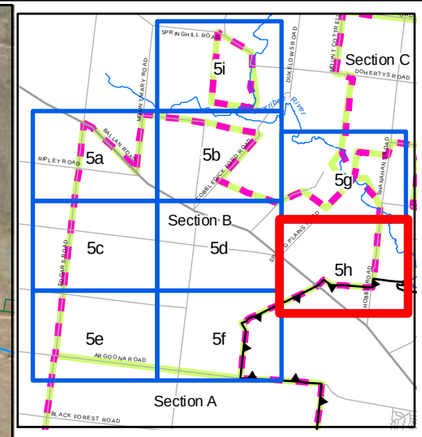

Legend

Flora

Database records

- Nationally significant^
- State significant*

Incidental 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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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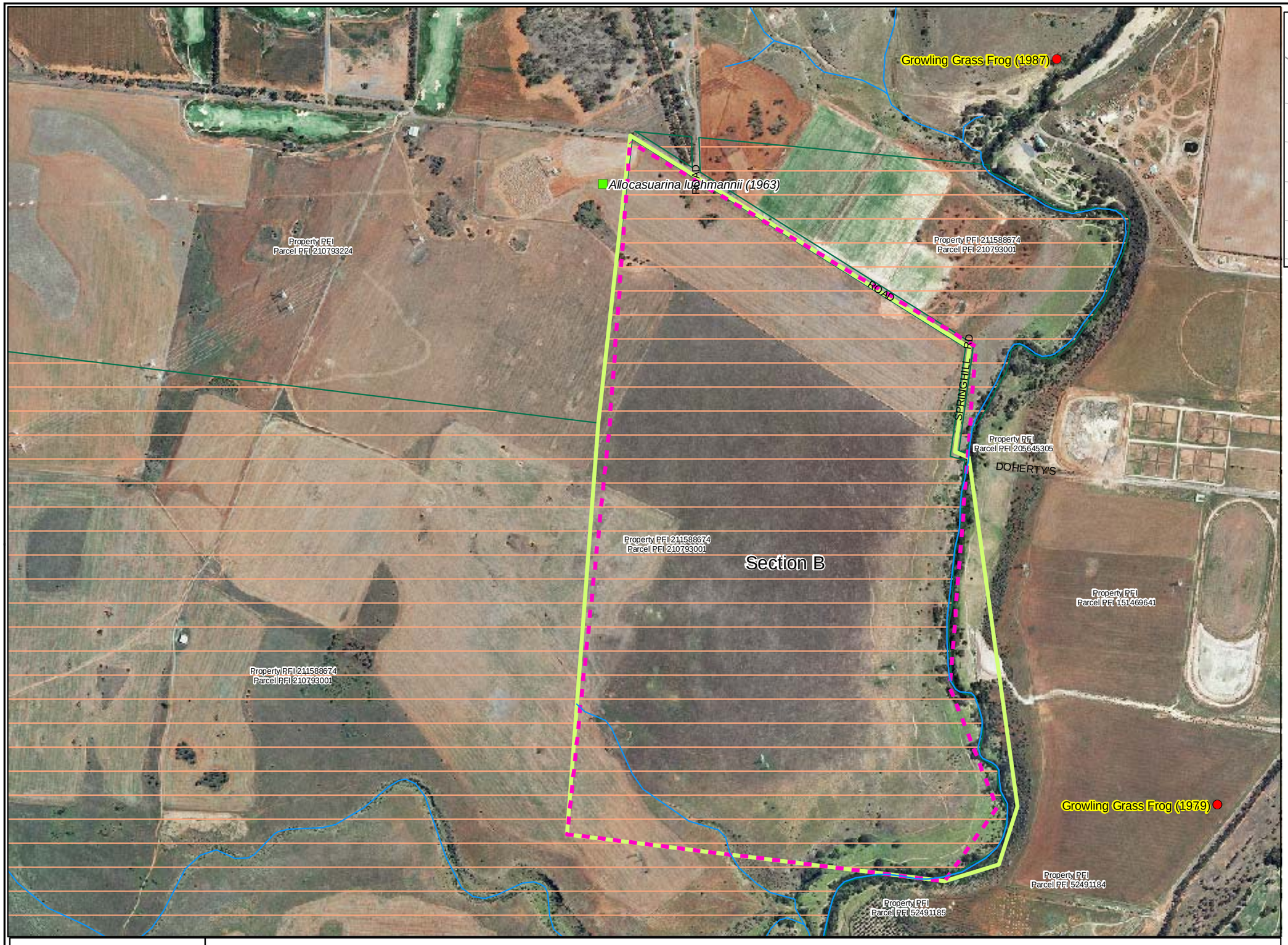

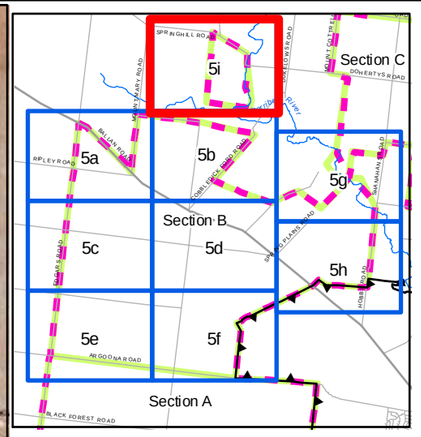

Legend

Flora

Database records

- Nationally significant^
- State significant*

Incidental 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

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

Date: 29 June 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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APPENDICES

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 B Flora results

A.2.1. Flora Results

The table below lists the flora species (110 indigenous species, 76 introduced species) recorded within Section B 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 B during the Melton/Wyndham Investigation

Status	Scientific name	Common name
Indigenous species:		
p	*Acacia mearnsii*	Black Wattle
	Acacia melanoxylon	Blackwood
	Acacia paradoxa	Hedge Wattle
	Acaena echinata	Sheep's Burr
	Acaena novae-zelandiae	Bidgee-widgee
p	***Allocasuarina luehmannii***	**Buloke**
f	***Alternanthera denticulate***	**Lesser Joyweed**
	***Alternanthera* sp. 1 (Plains)**	**Plains Joyweed**
	Asperula conferta	Common Woodruff
	Asperula spp.	Woodruff
	Atriplex semibaccata	Berry Saltbush
	Austrodanthonia auriculata	**Lobed Wallaby-grass**
	Austrodanthonia caespitosa	Common Wallaby-grass
	Austrodanthonia duttoniana	Brown-back Wallaby-grass
	Austrodanthonia eriantha	Hill Wallaby-grass
	Austrodanthonia fulva	**Copper-awned Wallaby-grass**
	Austrodanthonia geniculata	Kneed Wallaby-grass
	Austrodanthonia penicillata	**Weeping Wallaby-grass**

Status	Scientific name	Common name
	Austrodanthonia racemosa var. *racemosa*	Slender Wallaby-grass
	Austrodanthonia setacea	Bristly Wallaby-grass
	Austrostipa aristiglumis	**Plump Spear-grass**
	Austrostipa bigeniculata	Kneed Spear-grass
	Austrostipa blackii	**Crested Spear-grass**
	Austrostipa eremophila	**Desert Spear-grass**
	Austrostipa gibbosa	**Spurred Spear-grass**
	Austrostipa mollis	**Supple Spear-grass**
	Austrostipa scabra	**Rough Spear-grass**
	Austrostipa scabra* subsp. *falcata	**Rough Spear-grass**
	Austrostipa setacea	**Corkscrew Spear-grass**
	Austrostipa stuposa	**Quizzical Spear-grass**
	Bothriochloa macra	**Red-leg Grass**
	Bursaria spinosa subsp. *spinosa*	Sweet Bursaria
	Callistemon sieberi	**River Bottlebrush**
	Carex breviculmis	Common Grass-sedge
	Carex inversa	Knob Sedge
	Carex spp.	Sedge
p	***Cassinia arcuata***	**Drooping Cassinia**
#	*Chamaesyce drummondii*	Flat Spurge
	Cheilanthes distans	**Bristly Cloak-fern**
	Cheilanthes spp.	Rock Fern
	Chloris truncata	Windmill Grass
p	***Chrysocephalum* sp. 1**	**Plains Everlasting**
	Clematis spp.	Clematis
	Convolvulus angustissimus	**Blushing Bindweed**
	Convolvulus spp.	Bindweed
	Crassula decumbens* var. *decumbens	**Spreading Crassula**
	Crassula sieberiana	**Sieber Crassula**
	Crassula spp.	Crassula
listed, e	***Cullen parvum***	**Small Scurf-pea**
#	***Dichanthium sericeum* subsp. *sericeum***	**Silky Blue-grass**
	Dichelachne spp.	Plume Grass
	Dichondra repens	Kidney-weed
	Einadia nutans subsp. *nutans*	Nodding Saltbush
	Eleocharis acuta	Common Spike-sedge
	Eleocharis spp.	Spike Sedge
	Elymus scaber var. *scaber*	Common Wheat-grass
	Enchylaena tomentosa* var. *tomentosa	**Ruby Saltbush**
	Enneapogon nigricans	**Nigger-heads**
	Epilobium spp.	Willow Herb
	Erodium crinitum	**Blue Heron's-bill**
	Erodium spp.	Heron's Bill
	Eryngium ovinum	Blue Devil
e	***Eucalyptus* aff. *baueriana* (Werribee)**	**Werribee Blue Box**
	Eucalyptus camaldulensis	River Red-gum
	Eucalyptus microcarpa	**Grey Box**
	Eucalyptus viminalis	**Manna Gum**
p	*Euchiton* spp.	Cudweed
	Ficinia nodosa	**Knobby Club-sedge**
	Glycine tabacina	**Variable Glycine**
	Goodenia gracilis	**Slender Goodenia**

Status	Scientific name	Common name
	Haloragis spp.	Raspwort
	Hypericum gramineum	Small St John's Wort
	Juncus spp.	Rush
	Juncus subsecundus	Finger Rush
	Lachnagrostis spp.	Blown Grass
	Lepidium pseudohyssopifolium	**Native Peppercress**
	Leptospermum lanigerum	**Woolly Tea-tree**
	Linum spp.	Flax
	Lobelia pratioides	Poison Lobelia
	Lobelia spp.	Lobelia
	Lomandra multiflora* subsp. *multiflora	**Many-flowered Mat-rush**
	Lythrum spp.	Loosestrife
	Maireana decalvans	**Black Cotton-bush**
	Maireana enchylaenoides	**Wingless Bluebush**
	Marsilea spp.	Nardoo
	Melicytus dentatus	**Tree Violet**
	Mentha spp.	Mint
	Microlaena stipoides var. *stipoides*	Weeping Grass
	Myriophyllum spp.	Water-milfoil
	Oxalis exilis	Shady Wood-sorrel
	Oxalis perennans	Grassland Wood-sorrel
	Phragmites australis	Common Reed
	Plantago varia	**Variable Plantain**
	Poa labillardierei	Common Tussock-grass
	Poa spp.	Tussock Grass
p	***Pseudognaphalium luteoalbum***	**Jersey Cudweed**
	Ptilotus macrocephalus	**Feather Heads**
	Ptilotus spathulatus* f. *spathulatus	**Pussy Tails**
	Rumex brownii	Slender Dock
	Rumex dumosus	Wiry Dock
	Schoenus apogon	Common Bog-sedge
	Sclerolaena muricata	**Black Roly-poly**
	Sclerolaena muricata* var. *villosa	**Grey Roly-poly**
p	*Senecio quadridentatus*	Cotton Fireweed
	Themeda triandra	Kangaroo Grass
	Tricoryne spp.	Rush Lily
r	***Tripogon loliiformis***	**Rye Beetle-grass**
p	***Vittadinia cuneata***	**Fuzzy New Holland Daisy**
	Wahlenbergia communis	**Tufted Bluebell**
	Wahlenbergia spp.	Bluebell
Introduced species:		
	Acetosella vulgaris	Sheep Sorrel
	Aira spp.	Hair Grass
	Arctotheca calendula	Cape Weed
	Avena barbata	Bearded Oat
	Brassica spp.	Turnip
	Bromus catharticus	Prairie Grass
	Bromus hordeaceus subsp. *hordeaceus*	Soft Brome
	Bromus spp.	Brome
	Carthamus lanatus	Saffron Thistle
	Chenopodium album	Fat Hen
	Cirsium vulgare	Spear Thistle
	Cynara cardunculus	Artichoke Thistle

Status	Scientific name	Common name
	Cynodon dactylon var. *dactylon*	Couch
	Cyperus congestus	Dense Flat-sedge
	Ecballium elaterium	Squirting Cucumber
	Echium plantagineum	Paterson's Curse
	Erodium botrys	Big Heron's-bill
	Erodium cicutarium	Common Heron's-bill
	Eucalyptus cladocalyx	Sugar Gum
	Foeniculum vulgare	Fennel
	Galenia pubescens var. *pubescens*	Galenia
	Gamochaeta purpurea	Spiked Cudweed
	Hedypnois cretica	Cretan Hedypnois
	Helminthotheca echioides	Ox-tongue
	Hordeum leporinum	Barley-grass
	Hordeum spp.	Barley Grass
	Hypericum spp.	St John's Wort
	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 truncatula	Barrel Medic
	Modiola caroliniana	Red-flower Mallow
	Nassella hyalina	Cane Needle-grass
	Nassella leucotricha	Texas Needle-grass
	Nassella neesiana	Chilean Needle-grass
	Nassella trichotoma	Serrated Tussock
	Onopordum acanthium subsp. *acanthium*	Scotch Thistle
	Opuntia spp.	Prickly Pear
	Paspalum distichum	Water Couch
	Pennisetum clandestinum	Kikuyu
	Pentaschistis airoides subsp. *airoides*	False Hair-grass
	Phalaris spp.	Canary Grass
	Pinus radiata	Radiata Pine
#	*Pittosporum undulatum*	Sweet Pittosporum
	Plantago coronopus	Buck's-horn Plantain
	Plantago lanceolata	Ribwort
	Poa bulbosa	Bulbous Meadow-grass
	Polygonum aviculare	Hogweed
	Romulea minutiflora	Small-flower Onion-grass
	Romulea rosea	Onion Grass
	Rosa rubiginosa	Sweet Briar
	Rubus fruticosus spp. agg.	Blackberry
	Rumex crispus	Curled Dock
	Salix spp.	Willow
	Salvia verbenaca	Wild Sage
	Scolymus hispanicus	Golden Thistle
	Scorzonera laciniata	Scorzonera
	Sisymbrium officinale	Hedge Mustard
	Solanum linnaeanum	Apple of Sodom
	Solanum nigrum	Black Nightshade
	Sonchus asper	Rough Sow-thistle

Status	Scientific name	Common name
	Sonchus oleraceus	Common Sow-thistle
	Taraxacum spp.	Dandelion
	Trifolium repens var. *repens*	White Clover
	Trifolium spp.	Clover
	Trifolium subterraneum	Subterranean Clover
	Ulex europaeus	Gorse
	Verbena spp.	Verbena
	Vulpia bromoides	Squirrel-tail Fescue
	Vulpia spp.	Fescue
	Xanthium spinosum	Bathurst Burr

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

Status	Scientific name	Common name
Indigenous species:		
	Acacia acinacea	Gold-dust Wattle
	Acacia implexa	Lightwood
	Acacia mearnsii	Black Wattle
	Acacia melanoxylon	Blackwood
	Acacia paradoxa	Hedge Wattle
	Acacia pycnantha	Golden Wattle
#	*Acacia retinodes*	Wirilda
	Acacia verniciflua	Varnish Wattle
	Acaena agnipila/ovina complex	Hairy/Australian Sheep's Burr
	Acaena echinata	Sheep's Burr
	Acaena novae-zelandiae	Bidgee-widgee
	Acaena ovina	Australian Sheep's Burr
	Adiantum aethiopicum	Common Maidenhair
listed	*Allocasuarina luehmannii*	Buloke
	Allocasuarina verticillata	Drooping Sheoak
	Alternanthera denticulata	Lesser Joyweed
	Alternanthera sp. 1 (Plains)	Plains 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 conferta	Common Woodruff
	Asperula scoparia	Prickly Woodruff
	Asplenium flabellifolium	Necklace Fern
	Atriplex semibaccata	Berry Saltbush
	Austrodanthonia auriculata	Lobed Wallaby-grass
	Austrodanthonia bipartita	Leafy Wallaby-grass
	Austrodanthonia caespitosa	Common Wallaby-grass
	Austrodanthonia carphoides	Short Wallaby-grass
	Austrodanthonia duttoniana	Brown-back Wallaby-grass
	Austrodanthonia eriantha	Hill Wallaby-grass
	Austrodanthonia fulva	Copper-awned Wallaby-grass
	Austrodanthonia geniculata	Kneed Wallaby-grass
	Austrodanthonia induta	Shiny Wallaby-grass
	Austrodanthonia penicillata	Weeping Wallaby-grass

Status	Scientific name	Common name
	Austrodanthonia pilosa	Velvet Wallaby-grass
	Austrodanthonia racemosa var. *racemosa*	Slender Wallaby-grass
	Austrodanthonia setacea	Bristly Wallaby-grass
	Austrodanthonia setacea var. *setacea*	Bristly Wallaby-grass
	Austrostipa bigeniculata	Kneed Spear-grass
	Austrostipa blackii	Crested Spear-grass
	Austrostipa curticoma	Short-crown Spear-grass
	Austrostipa densiflora	Dense Spear-grass
	Austrostipa elegantissima	Feather Spear-grass
r	*Austrostipa exilis*	Heath Spear-grass
	Austrostipa flavescens	Coast Spear-grass
	Austrostipa gibbosa	Spurred 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 scabra subsp. *falcata*	Rough Spear-grass
	Austrostipa scabra subsp. *scabra*	Rough Spear-grass
	Austrostipa setacea	Corkscrew Spear-grass
	Azolla filiculoides	Pacific Azolla
	Banksia marginata	Silver Banksia
	Barbula calycina	Common Beard-moss
	Barbula crinita	Beard Moss
	Bartramia nothostricta	Apple Moss
	Baumea juncea	Bare Twig-sedge
	Bothriochloa macra	Red-leg Grass
	Brachyscome basaltica var. *gracilis*	Woodland Swamp-daisy
	Brachyscome dentata	Lobe-seed Daisy
	Breutelia affinis	Common Breutelia
	Bulbine bulbosa	Bulbine Lily
	Bursaria spinosa	Sweet Bursaria
	Bursaria spinosa subsp. *spinosa*	Sweet Bursaria
	Calandrinia calyptrata	Pink Purslane
	Callistemon sieberi	River Bottlebrush
	Calocephalus citreus	Lemon Beauty-heads
	Calotis anthemoides	Cut-leaf Burr-daisy
	Calotis scapigera	Tufted Burr-daisy
	Campylopus clavatus	Broody Swan-neck Moss
	Campylopus introflexus	Heath Star Moss
	Carex breviculmis	Common Grass-sedge
	Carex incomitata	Hillside Sedge
	Carex inversa	Knob Sedge
	Carex tereticaulis	Poong'ort
	Cassinia arcuata	Drooping Cassinia
	Cassinia longifolia	Shiny Cassinia
	Centella cordifolia	Centella
	Centipeda cunninghamii	Common Sneezeweed
#	*Chamaesyce drummondii*	Flat Spurge
	Cheilanthes austrotenuifolia	Green Rock-fern
	Cheilanthes distans	Bristly Cloak-fern
	Cheilanthes sieberi subsp. *sieberi*	Narrow Rock-fern
	Chenopodium desertorum	Frosted Goosefoot
	Chenopodium desertorum subsp. *microphyllum*	Small-leaf Goosefoot

Status	Scientific name	Common name
	Chenopodium glaucum	Glaucous Goosefoot
	Chenopodium pumilio	Clammy Goosefoot
	Chloris truncate	Windmill Grass
	Chrysocephalum apiculatum	Common Everlasting
	Chrysocephalum semipapposum	Clustered Everlasting
	Chrysocephalum sp. 1	Plains Everlasting
	Clematis aristata	Mountain Clematis
	Clematis microphylla	Small-leaved Clematis
	Convolvulus angustissimus subsp. *angustissimus*	Blushing Bindweed
	Convolvulus angustissimus subsp. *omnigracilis*	Slender Bindweed
	Convolvulus erubescens spp. agg.	Pink Bindweed
	Convolvulus remotus	Grass Bindweed
	Correa glabra var. *glabra*	Rock Correa
	Craspedia glauca spp. agg.	Common Billy-buttons
	Craspedia paludicola	Swamp Billy-buttons
	Crassula helmsii	Swamp Crassula
	Crassula peduncularis	Purple Crassula
	Crassula sieberiana	Sieber Crassula
	Crassula tetramera	Australian Stonecrop
	Crossidium davidai	Gypsum Moss
e, listed	*Cullen parvum*	Small Scurf-pea
	Cullen spp.	Scurf Pea
	Cymbonotus preissianus	Austral Bear's-ear
	Cynodon dactylon	Couch
	Damasonium minus	Star Fruit
	Daucus glochidiatus	Australian Carrot
	Daviesia leptophylla	Narrow-leaf Bitter-pea
	Desmodium varians	Slender Tick-trefoil
	Deyeuxia spp.	Bent-grass
	Dianella longifolia var. *longifolia* s.l.	Pale Flax-lily
	Dianella revoluta s.l.	Black-anther Flax-lily
v	*Dianella* sp. aff. *longifolia* (Benambra)	Arching Flax-lily
#	*Dichanthium sericeum* subsp. *sericeum*	Silky Blue-grass
	Dichelachne crinita	Long-hair Plume-grass
	Dichondra repens	Kidney-weed
	Dodonaea viscosa subsp. *cuneata*	Wedge-leaf Hop-bush
	Drosera peltata subsp. *peltata*	Pale Sundew
	Einadia nutans subsp. *nutans*	Nodding Saltbush
	Elatine gratioloides	Waterwort
	Eleocharis acuta	Common Spike-sedge
	Eleocharis pusilla	Small Spike-sedge
	Elymus scaber var. *scaber*	Common Wheat-grass
	Enchylaena tomentosa var. *tomentosa*	Ruby Saltbush
	Enneapogon nigricans	Nigger-heads
	Epilobium billardierianum subsp. *cinereum*	Grey Willow-herb
	Epilobium hirtigerum	Hairy Willow-herb
	Eragrostis brownii	Common Love-grass
	Eragrostis infecunda	Southern Cane Grass
	Eremophila deserti	Turkey Bush
	Eriochloa pseudoacrotricha	Early Spring-grass
	Erodium crinitum	Blue Heron's-bill

Status	Scientific name	Common name
	Eryngium ovinum	Blue Devil
	Eryngium vesiculosum	Prickfoot
	Eucalyptus baueriana	Blue Box
	Eucalyptus behriana	Bull Mallee
	Eucalyptus camaldulensis	River Red-gum
#	*Eucalyptus leucoxylon*	Yellow Gum
v	*Eucalyptus leucoxylon* subsp. *connata*	Melbourne Yellow-gum
	Eucalyptus melliodora	Yellow Box
	Eucalyptus microcarpa	Grey Box
	Eucalyptus polyanthemos	Red Box
	Euchiton involucratus	Common Cudweed
	Eutaxia microphylla var. *diffusa*	Spreading Eutaxia
	Eutaxia microphylla var. *microphylla*	Common Eutaxia
	Exocarpos cupressiformis	Cherry Ballart
	Ficinia nodosa	Knobby Club-sedge
	Fissidens megalotis	Curly Pocket-moss
	Fissidens rigidulus	Tall Pocket-moss
	Frullania probosciphora	Chocolate Scalewort
	Galium gaudichaudii	Rough Bedstraw
	Galium migrans	Wandering Bedstraw
	Galium propinquum	Maori Bedstraw
	Geranium retrorsum	Grassland Crane's-bill
	Geranium solanderi s.l.	Austral Crane's-bill
	Geranium sp. *2*	Variable Crane's-bill
	Geranium spp.	Crane's Bill
	Glyceria australis	Australian Sweet-grass
	Glycine clandestina	Twining Glycine
V, listed, v	*Glycine latrobeana*	Clover Glycine
	Glycine tabacina	Variable Glycine
	Gnaphalium spp.	Cudweed
	Goodenia gracilis	Slender Goodenia
	Goodenia pinnatifida	Cut-leaf Goodenia
	Haloragis aspera	Rough Raspwort
	Haloragis heterophylla	Varied Raspwort
	Hedwigia ciliata	Grey Hoar-moss
	Hydrocotyle laxiflora	Stinking Pennywort
	Hypericum gramineum	Small St John's Wort
	Hypoxis spp.	Hypoxis
	Indigofera australis	Austral Indigo
	Ischyrodon lepturus	Golden Silk-moss
	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
	Juncus amabilis	Hollow Rush
	Juncus australis	Austral Rush
	Juncus bufonius	Toad Rush
	Juncus flavidus	Gold Rush
	Juncus holoschoenus	Joint-leaf Rush
	Juncus radula	Hoary Rush
	Juncus sarophorus	Broom Rush
	Juncus semisolidus	Plains Rush
	Juncus subsecundus	Finger Rush

Status	Scientific name	Common name
	Juncus usitatus	Billabong Rush
	Lachnagrostis aemula	Leafy Blown-grass
	Lachnagrostis filiformis	Common Blown-grass
	Lachnagrostis filiformis var. *1*	Common Blown-grass
	Lachnagrostis filiformis var. *2*	Wetland Blown-grass
	Lemna disperma	Common Duckweed
	Leptodontium paradoxum	Tall Beard-moss
	Leptorhynchos squamatus	Scaly Buttons
	Leptospermum lanigerum	Woolly Tea-tree
	Lobelia pratioides	Poison Lobelia
	Lomandra filiformis	Wattle Mat-rush
	Lomandra micrantha	Small-flower Mat-rush
	Lysiana exocarpi	Harlequin Mistletoe
	Lythrum hyssopifolia	Small Loosestrife
	Maireana brevifolia	Short-leaf Bluebush
	Maireana decalvans	Black Cotton-bush
	Maireana enchylaenoides	Wingless Bluebush
	Maireana humillima	Dwarf Bluebush
	Marsilea drummondii	Common Nardoo
#	*Marsilea mutica*	Smooth Nardoo
	Melicytus dentatus	Tree Violet
	Mentha diemenica	Slender Mint
	Mentha satureoides	Creeping mint
	Microlaena stipoides var. *stipoides*	Weeping Grass
	Mimulus repens	Creeping Monkey-flower
	Muehlenbeckia florulenta	Tangled Lignum
	Muellerina eucalyptoides	Creeping Mistletoe
	Myriophyllum crispatum	Upright Water-milfoil
	Myriophyllum muelleri	Hooded Water-milfoil
	Myriophyllum simulans	Amphibious Water-milfoil
	Myrsine howittiana	Mutton-wood
r	*Nicotiana suaveolens*	Austral Tobacco
	Olearia ramulosa	Twiggy Daisy-bush
	Oxalis corniculata	Yellow Wood-sorrel
	Oxalis exilis	Shady Wood-sorrel
	Oxalis perennans	Grassland Wood-sorrel
	Oxalis radicosa	Stout-rooted Wood-sorrel
	Panicum decompositum var. *decompositum*	Native Millet
	Panicum effusum	Hairy Panic
	Panicum spp.	Panic
	Pelargonium australe	Austral Stork's-bill
	Pellaea falcata	Sickle Fern
	Pentapogon quadrifidus var. *quadrifidus*	Five-awned Spear-grass
	Persicaria decipiens	Slender Knotweed
	Persicaria lapathifolia	Pale Knotweed
	Persicaria prostrata	Creeping Knotweed
	Phragmites australis	Common Reed
	Pimelea curviflora	Curved Rice-flower
	Pimelea curviflora var. aff. *subglabrata*	Curved Rice-flower
	Pimelea glauca	Smooth Rice-flower
C, listed, e	*Pimelea spinescens* subsp. *spinescens*	Spiny Rice-flower
	Plantago gaudichaudii	Narrow Plantain
	Plantago varia	Variable Plantain

Status	Scientific name	Common name
	Pleurosorus rutifolius	Blanket Fern
	Poa labillardierei	Common Tussock-grass
	Poa morrisii	Soft Tussock-grass
	Poa poiformis var. *poiformis*	Coast Tussock-grass
	Poa sieberiana var. *hirtella*	Grey Tussock-grass
	Poa sieberiana var. *sieberiana*	Grey Tussock-grass
	Polygonum plebeium	Small Knotweed
	Polytrichum juniperinum	Juniper Haircap
	Potamogeton crispus	Curly Pondweed
	Potamogeton tricarinatus	Floating Pondweed
	Pseudognaphalium luteoalbum	Jersey Cudweed
	Pseudoleskea imbricata	Braid Moss
	Pteridium esculentum	Austral Bracken
	Pterostylis spp.	Greenhood
	Ptilotus macrocephalus	Feather Heads
	Ptilotus spathulatus f. *spathulatus*	Pussy Tails
	Ptychomitrium australe	Pincushion
	Racopilum cuspidigerum var. *convolutaceum*	Common Carpet-moss
	Ranunculus spp.	Buttercup
	Rhagodia candolleana subsp. *candolleana*	Seaberry Saltbush
r	*Rhagodia parabolica*	Fragrant Saltbush
	Rubus parvifolius	Small-leaf Bramble
	Rumex brownii	Slender Dock
	Rumex dumosus	Wiry Dock
	Rumex tenax	Narrow-leaf Dock
E, listed, e	*Rutidosis leptorhynchoides*	Button Wrinklewort
	Salsola tragus subsp. *tragus*	Prickly Saltwort
	Sambucus gaudichaudiana	White Elderberry
	Schistidium apocarpum	Sessile Grimmia
	Schoenus apogon	Common Bog-sedge
	Sclerolaena muricata var. *muricata*	Black Roly-poly
	Sclerolaena muricata var. *villosa*	Grey Roly-poly
	Scutellaria humilis	Dwarf Skullcap
	Sebaea ovata	Yellow Sebaea
	Senecio glomeratus	Annual Fireweed
	Senecio pinnatifolius	Variable Groundsel
	Senecio quadridentatus	Cotton Fireweed
	Sida corrugata	Variable Sida
	Solanum laciniatum	Large Kangaroo Apple
	Solenogyne dominii	Smooth Solenogyne
	Solenogyne gunnii	Hairy Solenogyne
	Sonchus hydrophilus	Native Sow-thistle
	Spergularia media	Coast Sand-spurrey
	Stackhousia monogyna	Creamy Stackhousia
	Stackhousia subterranea	Plains Stackhousia
	Stellaria pungens	Prickly Starwort
	Templetonia stenophylla	Leafy Templetonia
	Tetragonia implexicoma	Bower Spinach
	Teucrium racemosum	Grey Germander
	Thelymitra pauciflora	Slender Sun-orchid
	Themeda triandra	Kangaroo Grass
	Thysanotus patersonii	Twining Fringe-lily
	Tortula antarctica	Screw Moss

Status	Scientific name	Common name
	Tricoryne elatior	Yellow Rush-lily
	Triglochin procera	Water Ribbons
	Triglochin striata	Streaked Arrowgrass
r	*Tripogon loliiformis*	Rye Beetle-grass
	Triptilodiscus pygmaeus	Common Sunray
	Triquetrella papillata	Common Twine-moss
	Urtica incisa	Scrub Nettle
	Velleia paradoxa	Spur Velleia
	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
	Wahlenbergia gracilenta	Annual Bluebell
	Wahlenbergia gracilis	Sprawling Bluebell
	Wahlenbergia luteola	Bronze Bluebell
	Walwhalleya proluta	Rigid Panic
	Weissia controversa	Green-tufted Stubble-moss
Introduced species:		
	Acetosella vulgaris	Sheep Sorrel
	Agrostis capillaris	Brown-top Bent
	Agrostis stolonifera	Creeping Bent
	Aira caryophyllea	Silvery Hair-grass
	Aira cupaniana	Quicksilver Grass
	Aira elegantissima	Delicate Hair-grass
	Allium vineale	Crow Garlic
	Anagallis arvensis	Pimpernel
	Anagallis minima	Chaffweed
	Anthoxanthum odoratum	Sweet Vernal-grass
	Aptenia cordifolia	Heart-leaf Ice-plant
	Arctotheca calendula	Cape Weed
	Aster subulatus	Aster-weed
	Atriplex prostrata	Hastate Orache
	Austrocylindropuntia cylindrica	Cane Cactus
	Avena barbata	Bearded Oat
	Avena fatua	Wild Oat
	Barbarea intermedia	Wintercress
	Berkheya rigida	African Thistle
	Brachypodium distachyon	False Brome
	Brachythecium albicans	Whitish Feather-moss
	Briza maxima	Large Quaking-grass
	Briza minor	Lesser Quaking-grass
	Bromus catharticus	Prairie Grass
	Bromus diandrus	Great Brome
	Bromus hordeaceus subsp. *hordeaceus*	Soft Brome
	Bromus lanceolatus	Mediterranean Brome
	Bromus madritensis	Madrid Brome
	Bromus rubens	Red Brome
	Callitriche stagnalis	Common Water-starwort
	Carduus pycnocephalus	Slender Thistle
	Carthamus lanatus	Saffron Thistle
	Catapodium rigidum	Fern Grass
	Centaurium erythraea	Common Centaury
	Centaurium tenuiflorum	Slender Centaury

Status	Scientific name	Common name
	Chenopodium album	Fat Hen
	Chenopodium murale	Sowbane
	Chondrilla juncea	Skeleton Weed
	Cicendia filiformis	Slender Cicendia
	Cicendia quadrangularis	Square Cicendia
	Cirsium vulgare	Spear Thistle
	Citrullus spp.	Wild Melon
	Convolvulus arvensis	Common Bindweed
	Conyza spp.	Fleabane
	Cotula coronopifolia	Water Buttons
	Cucumis myriocarpus subsp. *leptodermis*	Paddy Melon
	Cupressus sempervirens	Italian Cypress
	Cuscuta epithymum	Common Dodder
	Cynara cardunculus	Artichoke Thistle
	Cynodon dactylon var. *dactylon*	Couch
	Cynosurus echinatus	Rough Dog's-tail
	Cyperus eragrostis	Drain Flat-sedge
	Dactylis glomerata	Cocksfoot
	Diplotaxis tenuifolia	Sand Rocket
	Dipogon lignosus	Common Dipogon
	Echium plantagineum	Paterson's Curse
	Ehrharta erecta var. *erecta*	Panic Veldt-grass
	Ehrharta longiflora	Annual Veldt-grass
	Eleusine indica	Goose-grass
	Eleusine tristachya	American Crows-foot Grass
	Elodea canadensis	Canadian Pondweed
	Eragrostis curvula	African Love-grass
	Erodium botrys	Big Heron's-bill
	Erodium cicutarium	Common Heron's-bill
	Eucalyptus cladocalyx	Sugar Gum
	Euphorbia lathyris	Caper Spurge
	Foeniculum vulgare	Fennel
	Fumaria muralis subsp. *muralis*	Wall Fumitory
	Galenia pubescens var. *pubescens*	Galenia
	Genista monspessulana	Montpellier Broom
	Geranium dissectum	Cut-leaf Crane's-bill
	Glyceria declinata	Manna Grass
	Hainardia cylindrica	Common Barb-grass
	Heliotropium europaeum	Common Heliotrope
	Helminthotheca echioides	Ox-tongue
	Hirschfeldia incana	Buchan Weed
	Holcus lanatus	Yorkshire Fog
	Hordeum leporinum	Barley-grass
	Hordeum marinum	Sea Barley-grass
	Hordeum murinum	Barley-grass
	Hypochoeris glabra	Smooth Cat's-ear
	Hypochoeris radicata	Flatweed
	Isolepis hystrix	Awned Club-sedge
	Isolepis levynsiana	Tiny Flat-sedge
	Juncus acutus subsp. *acutus*	Spiny Rush
	Juncus capitatus	Capitate Rush
	Lactuca saligna	Willow-leaf Lettuce
	Lagurus ovatus	Hare's-tail Grass
	Leontodon taraxacoides subsp.	Hairy Hawkbit

Status	Scientific name	Common name
	taraxacoides	
	Lepidium africanum	Common Peppercress
	Lepidium didymum	Lesser Swine-cress
	Lepidium draba	Hoary Cress
	Lilaea scilloides	Lilaea
	Logfia gallica	French Cudweed
	Lolium perenne	Perennial Rye-grass
	Lolium rigidum	Wimmera Rye-grass
	Lolium temulentum	Darnel
	Lotus angustissimus	Slender Bird's-foot Trefoil
	Lycium ferocissimum	African Box-thorn
	Maclura pomifera	Osage Orange
	Malva nicaeensis	Mallow of Nice
	Malva parviflora	Small-flower Mallow
	Marrubium vulgare	Horehound
	Medicago minima	Little Medic
	Medicago polymorpha	Burr Medic
	Medicago spp.	Medic
r, #	*Melaleuca armillaris* subsp. *armillaris*	Giant Honey-myrtle
	Melilotus indicus	Sweet Melilot
	Modiola caroliniana	Red-flower Mallow
	Moraea setifolia	Thread Iris
	Myoporum insulare	Common Boobialla
	Nassella hyalina	Cane Needle-grass
	Nassella neesiana	Chilean Needle-grass
	Nassella trichotoma	Serrated Tussock
	Opuntia aurantiaca	Tiger Pear
	Opuntia monacantha	Drooping Prickly-pear
	Parapholis incurva	Coast Barb-grass
	Paronychia franciscana	Chile Nailwort
	Paspalum dilatatum	Paspalum
	Paspalum distichum	Water Couch
	Pennisetum clandestinum	Kikuyu
	Pentaschistis airoides subsp. *airoides*	False Hair-grass
	Petrorhagia dubia	Velvety Pink
	Petrorhagia nanteuilii	Childling Pink
	Phalaris aquatica	Toowoomba Canary-grass
	Phalaris minor	Lesser Canary-grass
	Phalaris paradoxa	Paradoxical Canary-grass
	Phytolacca octandra	Red-ink Weed
	Pinus radiate	Radiata Pine
	Pinus radiata var. *binata*	Two-leaved Radiata Pine
	Pittosporum undulatum	Sweet Pittosporum
	Plantago coronopus subsp. *coronopus*	Buck's-horn Plantain
	Plantago lanceolata	Ribwort
	Plantago major	Greater Plantain
	Poa bulbosa	Bulbous Meadow-grass
	Polycarpon tetraphyllum	Four-leaved Allseed
	Polygonum arenastrum	Wireweed
	Polygonum aviculare	Hogweed
	Polypogon monspeliensis	Annual Beard-grass
	Raphanus raphanistrum	Wild Radish
	Rapistrum rugosum	Giant Mustard
	Reseda lutea	Cut-leaf Mignonette

Status	Scientific name	Common name
	Romulea minutiflora	Small-flower Onion-grass
	Romulea rosea var. *australis*	Common Onion-grass
	Rosa rubiginosa	Sweet Briar
	Rostraria cristata	Annual Cat's-tail
	Rubus fruticosus spp. agg.	Blackberry
	Rumex conglomeratus	Clustered Dock
	Rumex crispus	Curled Dock
	Rumex pulcher subsp. *pulcher*	Fiddle Dock
	Sagina maritima	Sea Pearlwort
	Salix alba	White Willow
	Salvia verbenaca	Wild Sage
	Salvia verbenaca var. *verbenaca*	Wild Sage
	Schinus molle	Pepper Tree
	Scolymus hispanicus	Golden Thistle
	Scorzonera laciniata	Scorzonera
	Setaria parviflora	Slender Pigeon Grass
	Silybum marianum	Variegated Thistle
	Solanum linnaeanum	Apple of Sodom
	Solanum nigrum	Black Nightshade
	Solanum pseudocapsicum	Madeira Winter-cherry
	Soliva sessilis	Jo Jo
	Sonchus asper	Rough Sow-thistle
	Sonchus oleraceus	Common Sow-thistle
	Sonchus tenerrimus	Clammy Sow-thistle
	Sporobolus africanus	Rat-tail Grass
	Stellaria media	Chickweed
	Tradescantia fluminensis	Wandering Jew
	Tribolium acutiflorum	Desmazeria
	Trifolium angustifolium var. *angustifolium*	Narrow-leaf Clover
	Trifolium arvense var. *arvense*	Hare's-foot Clover
	Trifolium campestre var. *campestre*	Hop Clover
	Trifolium dubium	Suckling Clover
	Trifolium fragiferum var. *fragiferum*	Strawberry 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
	Triglochin multifructa	Northern Water-ribbons
	Ulex europaeus	Gorse
	Urtica urens	Small Nettle
	Verbascum thapsus subsp. *thapsus*	Great Mullein
	Veronica persica	Persian Speedwell
	Vinca major	Blue Periwinkle
	Vulpia bromoides	Squirrel-tail Fescue
	Vulpia muralis	Wall Fescue
	Vulpia myuros f. *megalura*	Fox-tail Fescue
	Vulpia myuros f. *myuros*	Rat's-tail Fescue
	Xanthium spinosum	Bathurst Burr

A2.2 Significant flora species

Table A2.3 Flora of national or state significance recorded or predicted to occur within Section B 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						
Senecio macrocarpus	Large-headed Fireweed	V	e	DEWHA	listed	High
Carex tasmanica	Curly Sedge	V	v	DEWHA	listed	Medium
Glycine latrobeana	Clover Glycine	V	v	FIS/DEWHA	listed	High
Prasophyllum frenchii	Maroon Leek-orchid	E	e	DEWHA	listed	Low
Rutidosis leptorhynchoides	Button Wrinklewort	E	e	FIS/DEWHA	listed	Recorded
Pimelea spinescens subsp. *spinescens*	Spiny Rice-flower	C	e	FIS/DEWHA		High
State Significance						
Allocasuarina luehmannii	Buloke			FIS	listed	Recorded
Cullen parvum	Small Scurf-pea		e	FIS	listed	Recorded
Austrostipa exilis	Heath Spear-grass		r	FIS		Medium
Austrostipa hemipogon	Half-bearded Spear-grass		r	FIS		Medium
Nicotiana suaveolens	Austral Tobacco		r	FIS		Medium
Rhagodia parabolica	Fragrant Saltbush		r	FIS		Medium
Tripogon loliiformis	Rye Beetle-grass		r	FIS		Recorded
Amyema linophylla subsp. *orientale*	Buloke Mistletoe		v	FIS		High
Eucalyptus leucoxylon subsp. *connata*	Melbourne Yellow-gum		v	FIS		Medium

Eucalyptus aff. *baueriana* (Werribee)	Werribee Blue Box	e	Current survey	Recorded
Dianella sp. aff. *longifolia (*Benambra)	Arching Flax-lily	v, K	FIS	High

APPENDIX 3

EVC Benchmarks

Department of Sustainability and Environment

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

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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)

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Cirsium vulgare*	Spear Thistle	high	high
MH	*Leontodon taraxacoides ssp. taraxacoides*	Hairy Hawkbit	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
MTG	*Briza minor*	Lesser Quaking-grass	high	low
MTG	*Romulea rosea*	Onion Grass	high	low
TTG	*Cyperus tenellus*	Tiny Flat-sedge	high	low

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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

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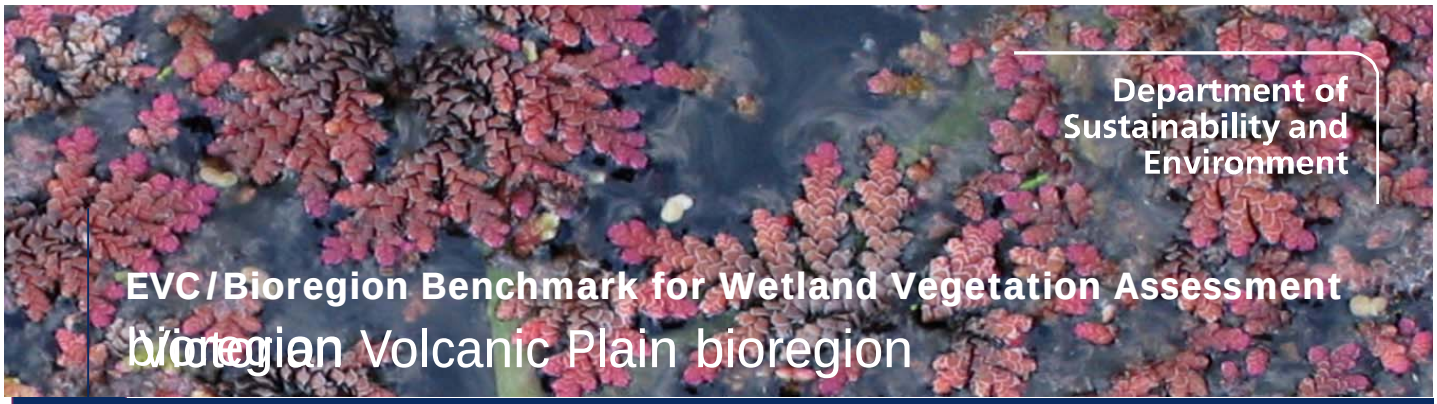

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Wetland Vegetation Assessment

Victorian Volcanic Plain bioregion

EVC 291: Cane Grass Wetland

Description:

Species-poor vegetation dominated by Southern Cane Grass occurring in association with seasonal wetlands of low rainfall plains areas, typically on extremely heavy, grey clay soils. Scattered in drier plains areas in the west and north of the State.

Indicator species (some or all of these species should be present)

Scientific name	Common name	Comments
Eragrostis infecunda	Southern Cane-grass	variously with e.g. *Eleocharis acuta, Potamogeton tricarinatus* s.l., *Lachnagrostis filiformis* var. 1.

Notes on indicator species

Species-poor.

Conditions when the EVC should not be assessed

None recognised, but may underscore following protracted drought conditions.

1. CRITICAL LIFEFORM GROUPINGS

Conditions when specific critical lifeform groupings should not be assessed

Representation of groups (other than Cane grass) required on verges only.

General comments on assessing critical lifeform groupings

None.

Critical lifeform groupings and threshold values for determining if lifeform is substantially modified

Critical lifeform	No. spp.	% Cover	Comments
Cane grass	1	5	
Herbs, aquatic	2		or medium sedges.
Medium to small herbs, semi-aquatic	5	10	on verges.

2. WEEDS

High threat weed species

Scientific name	Common name	Comments
Alisma lanceolata	Water Plantain	
Hordeum spp.	Barley Grass	on verges
Lilaea scilloides	Lilaea	
Phalaris aquatica	Toowoomba Canary-grass	on verges

Conditions where weeds are considered to have a negligible impact

None recognised.

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3. INDICATORS OF ALTERED PROCESSES

None recognised.

4. VEGETATION STRUCTURE AND HEALTH

Structural dominant	Benchmark cover
Southern Cane-grass *Eragrostis infecunda*	10%

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EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 649: Stony Knoll Shrubland

Description:
Stony Knoll Shrubland is a shrubland to 3 m tall or low non-eucalypt woodland to 8 m tall with a grassy understorey. It occurs on low stony rises on basalt flows. The soils are fertile and well drained but shallow with out cropping rock, causing severe summer dryness.

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

Canopy Cover[+]:

%cover	Character Species	Common Name
15%	*Allocasuarina verticillata*	Drooping Sheoak
	Bursaria spinosa	Sweet Bursaria

Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	3	10%	MS
Prostrate Shrub	1	1%	PS
Large Herb	2	1%	LH
Medium Herb	11	10%	MH
Small or Prostrate Herb	4	5%	SH
Medium to Small Tufted Graminoid	10	25%	MTG
Tiny Tufted Graminoid	2	5%	TTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Ground Fern	2	5%	GF
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C
Total understorey projective foliage cover		**85%**	

LF Code	Species typical of at least part of EVC range	Common Name
MS	*Hymenanthera dentata* s.l.	Tree Violet
MS	*Acacia paradoxa*	Hedge Wattle
PS	*Kennedia prostrata*	Running Postman
LH	*Senecio quadridentatus*	Cotton Fireweed
LH	*Senecio glomeratus*	Annual Fireweed
MH	*Oxalis perennans*	Grassland Wood-sorrel
MH	*Rumex brownii*	Slender Dock
MH	*Hypericum gramineum*	Small St John's Wort
MH	*Acaena ovina*	Australian Sheep's Burr
SH	*Dichondra repens*	Kidneyweed
SH	*Hydrocotyle laxiflora*	Stinking Pennywort
SH	*Crassula sieberiana*	Sieber Crassula
MTG	*Themeda triandra*	Kangaroo Grass
MTG	*Poa sieberiana*	Grey Tussock-grass
MTG	*Austrodanthonia caespitosa*	Common Wallaby-grass
MTG	*Austrodanthonia setacea*	Bristly Wallaby-grass
TTG	*Carex breviculmis*	Short-stem Sedge
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass
GF	*Pteridium esculentum*	Austral Bracken
GF	*Adiantum aethiopicum*	Common Maidenhair
SC	*Convolvulus erubescens* spp. agg.	Pink Bindweed

Recruitment:
Continuous

Organic Litter:
20 % cover

Logs+:
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	low
LH	*Lactuca serriola*	Prickly Lettuce	high	low
LH	*Sisymbrium officinale*	Hedge Mustard	high	low
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	low
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	low	low

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EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 654: Creekline Tussock Grassland

Description:
Creekline Tussock Grassland occurs along low gradient ephemeral and intermittent drainage lines across the volcanic plains. Soils are generally fertile heavy dark clays. Exposed basalt rocks can be common. Dominated by a dense sward of Common Tussock-grass *Poa labillardierei* primarily with small herbs and typically mat-forming grasses in the inter-tussock spaces. This EVC often includes small areas of sedgeland and/or wetland.

Life forms:

Life form	#Spp	%Cover	LF code
Large Herb	4	5%	LH
Medium Herb	8	10%	MH
Small or Prostrate Herb	11	10%	SH
Large Tufted Graminoid	3	40%	LTG
Medium to Small Tufted Graminoid	10	10%	MTG
Medium to Tiny Non-tufted Graminoid	4	10%	MNG
Bryophytes/Lichens	na	20%	BL

LF Code	Species typical of at least part of EVC range	Common Name
LH	*Senecio quadridentatus*	Cottony Fireweed
LH	*Senecio tenuiflorus*	Narrow-leaf Groundesl
LH	*Craspedia glauca* spp. agg.	Common Billy-buttons
MH	*Calocephalus lacteus*	Milky Beaty-heads
LH	*Brachyscome basaltica* var. *gracilis*	Woodland Swamp-daisy
MH	*Microseris* sp. 1	Yam Daisy
MH	*Haloragis heterophylla*	Varied Raspwort
SH	*Dichondra repens*	Kidneyweed
SH	*Hydrocotyle sibthorpioides*	Shining Pennywort
SH	*Lobelia pratioides*	Poison Lobelia
SH	*Crassula helmsii*	Swamp Crassula
LTG	*Poa labillardierei*	Common Tussock-grass
LTG	*Carex tereticaulis*	Rush Sedge
LTG	*Juncus kraussii* ssp. *australiensis*	Sea Rush
MTG	*Austrodanthonia duttoniana*	Brown-back Wallaby-grass
MTG	*Austrodanthonia caespitosa*	Common Wallaby-grass
MTG	*Lachnagrostis filiformis*	Common Blown-grass
MTG	*Juncus planifolius*	Broad-leaf Rush
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass
MNG	*Distichlis distichophylla*	Australian Salt Grass
MNG	*Hemarthria uncinata* var. *uncinata*	Mat Grass
MNG	*Eleocharis acuta*	Common Spike-sedge

Recruitment:
Episodic – fire/grazing – desirable period of disturbance is every 10 years

Organic Litter:
10% Cover

EVC 654: Creekline Tussock Grassland - Victorian Volcanic Plain bioregion

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Rumex crispus*	Curled Dock	high	low
MH	*Lotus suaveolens*	Hairy Bird's-foot Trefoil	high	high
MH	*Leontodon taraxacoides* ssp. *taraxacoides*	Hairy Hawkbit	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
MTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
MTG	*Anthoxanthum odoratum*	Sweet Vernal-grass	high	high
MNG	*Paspalum distichum*	Water Couch	high	high
MNG	*Agrostis capillaris*	Brown-top Bent	high	high

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EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 803: Plains Woodland (*syn.* EVC 55 *Riverina* Plains Grassy Woodland)

Description:
Grassy or sedgy woodland to 15 m tall with large inter-tussock spaces potentially supporting a range of annual or geophytic herbs adapted to low summer rainfall, with low overall biomass. Mostly occurs on terrain of low relief in areas receiving <600 mm rainfall per annum. Fertile, sometimes seasonally waterlogged, mostly silty, loamy or clay topsoils, with heavy subsoils, derived largely from former Quaternary swamp deposits.

Large trees:

Species	DBH(cm)	#/ha
Eucalyptus spp.	70 cm	15 / ha
Allocasuarina luehmannii	40 cm	

Tree Canopy Cover:

%cover	Character Species	Common Name
15%	*Eucalyptus microcarpa*	Grey Box
	Allocasuarina luehmannii	Buloke
	Eucalyptus melliodora	Yellow Box
	Eucalyptus leucoxylon	Yellow Gum

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	2	5%	MS
Small Shrub	2	5%	SS
Prostrate Shrub	1	1%	PS
Large Herb	1	1%	LH
Medium Herb	20	20%	MH
Small or Prostrate Herb	4	10%	SH
Large Tufted Graminoid	1	1%	LTG
Large Non-tufted Graminoid	1	1%	LNG
Medium to Small Tufted Graminoid	16	45%	MTG
Medium to Tiny Non-tufted Graminoid	3	5%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C

Recruitment:
Continuous

Organic Litter:
10 % cover

Logs:
10 m/0.1 ha.

EVC 803: Plains Woodland (*syn.* EVC 55 *Riverina* Plains Grassy Woodland) - Victorian Volcanic Plain bioregion

LF Code	Species typical of at least part of EVC range	Common Name
MS	*Acacia pycnantha*	Golden Wattle
MS	*Acacia acinacea s.l.*	Gold-dust Wattle
SS	*Eutaxia microphylla* var. *microphylla*	Common Eutaxia
PS	*Astroloma humifusum*	Cranberry Heath
LH	*Senecio quadridentatus*	Cotton Fireweed
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	*Daucus glochidiatus*	Austral Carrot
SH	*Goodenia pinnatifida*	Cut-leaf Goodenia
LTG	*Austrostipa bigeniculata*	Kneed Spear-grass
MTG	*Austrostipa scabra*	Rough Spear-grass
MTG	*Austrodanthonia setacea*	Bristly Wallaby-grass
MTG	*Dianella revoluta* s.s.	Black-anther Flax-lily
MTG	*Austrodanthonia caespitosa*	Common Wallaby-grass
MNG	*Wurmbea dioica*	Common Early Nancy
TTG	*Centrolepis strigosa* ssp. *strigosa*	Hairy Centrolepis
TTG	*Centrolepis aristata*	Pointed Centrolepis
EP	*Amyema miquelii*	Box Mistletoe
SC	*Thysanotus patersonii*	Twining Fringe-lily
SC	*Convolvulus erubescens* spp. agg.	Pink Bindweed

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Trifolium angustifolium* var. *angustifolium*	Narrow-leaf Clover	high	low
MH	*Hypochoeris glabra*	Smooth Cat's-ear	high	low
MH	*Arctotheca calendula*	Cape Weed	high	low
MH	*Petrorhagia velutina*	Velvety Pink	high	low
MH	*Trifolium dubium*	Suckling Clover	high	low
MH	*Anagallis arvensis*	Pimpernel	high	low
SH	*Trifolium glomeratum*	Cluster Clover	high	low
LNG	*Avena fatua*	Wild Oat	high	low
MTG	*Romulea rosea*	Onion Grass	high	low
MTG	*Briza minor*	Lesser Quaking-grass	high	low
MTG	*Briza maxima*	Large Quaking-grass	high	low
MTG	*Lolium rigidum*	Wimmera Rye-grass	high	low
MTG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low
MNG	*Vulpia myuros*	Rat's-tail Fescue	high	low
MNG	*Juncus capitatus*	Capitate Rush	high	low
MNG	*Bromus rubens*	Red Brome	high	low

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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)	L-r P G	Low-rainfall Plains Grassland
	CGWet (WVA)	Cane Grass Wetland (Wetland Vegetation Assessment)
	SKS	Stony Knoll Shrubland
	CTG	Creekline Tussock Grassland
	PGWet	Plains Grassy Wetland
	FRW	Floodplain Riparian Woodland
	PW	Plains Woodland
Conservation Status	E	Endangered
	V	Vulnerable
Conservation Significance (CS)	VH	Very High
	H	High
Key Areas & Management Zones	MZ	Management Zones

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

Table A4.1 Section B 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	Reason for Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Areas & Management Zones	Very High CS Offset Prescription (excl. Key Areas & Mgt Zones)	High CS Offset Prescription (excl. Key Areas & Mgt Zones)	Location on Figures
1771456	1	A	DT	2.41													0.00										d
1771690	1	A	DT	45.49													0.00										d
1771692	1	A	DT	41.56													0.00										d
1781038	1	A	RP	38.24	L-r P G	E	n/a	n/a	4	15	3	4	n/a	1.36	35	15	50	19.26	VH	HS>40	2	38.52		Yes	0.00		c
1781038	2	A	DT	1.89													0.00							MZ			c
1781038	3	A	DT	0.36													0.00							MZ			c
1781039	1	A	RP	39.79	L-r P G	E	n/a	n/a	4	15	3	4	n/a	1.36	35	15	50	20.04	VH	HS>40	2	40.08		Yes	0.00		c

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	Reason for Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Areas & Management Zones	Very High CS Offset Prescription (excl. Key Areas & Mgt Zones)	High CS Offset Prescription (excl. Key Areas & Mgt Zones)	Location on Figures
1781039	2	A	DT	1.10														0.00						MZ			c
1799816	1	A	RP	36.61	L-r P G	E	n/a	n/a	6	15	6	4	n/a	1.36	42	10	52	19.10	VH	HS>40	2	38.19		Yes			a
1799816	2	A	DT	0.28														0.00						MZ			a
1799816	3	A	DT	2.67														0.00						MZ			a
1799816	4	A	DT	0.97														0.00						MZ			a
1799817	1	A	RP	39.83	L-r P G	E	n/a	n/a	6	15	3	0	n/a	1.36	33	15	48	18.98	VH	HS>40	2	37.95		Yes	0.00		a
1799817	2	A	DT	0.07														0.00						MZ			a
1799817	3	A	DT	0.13														0.00						MZ			a
1799817	4	A	RP	0.21	SKS	E	n/a	n/a	9	15	5	2	n/a	1.36	35	15	50	0.11	VH	HS>40	2	0.21		Yes	0.00		a
1799817	5	A	RP	0.04	SKS	E	n/a	n/a	9	15	5	2	n/a	1.36	35	15	50	0.02	VH	HS>40	2	0.04		Yes			a
1799818	1	A	RP	28.62	L-r P G	E	n/a	n/a	6	15	3	4	n/a	1.36	38	15	53	15.19	VH	HS>40	2	30.38		Yes	0.00		a
1799818	2	A	DT	0.51														0.00						MZ			a
1799818	3	A	DT	1.14														0.00						MZ			a
1799818	4	A	RP	9.35	L-r P G	E	n/a	n/a	4	15	3	4	n/a	1.36	35	15	50	4.71	VH	HS>40	2	9.42		Yes	0.00		c
1799818	5	A	DT	0.74														0.00						MZ			c
202672473	1	A	RP	0.82	L-r P G	E	n/a	n/a	9	5	3	4	n/a	1.36	29	15	44	0.36	VH	HS>40	2	0.71		MZ	0.00		c
202672473	2	A	DT	22.10														0.00						MZ			c
202672473	3	A	RP	28.46	L-r P G	E	n/a	n/a	6	5	3	4	n/a	1.36	24	15	39	11.24	VH	GSM Likely	2	22.47		Yes	0.00		c
202672473	4	A	RP	0.21	SKS	E	n/a	n/a	7	15	5	4	n/a	1.36	35	15	50	0.11	VH	HS>40	2	0.21		Yes	0.00		c
202672473	5	A	DT	1.42														0.00						MZ			c
202672473	6	A	DT	2.83														0.00						MZ			c
202672473	7	A	DT	2.24														0.00						MZ			c
2064137	1	A	RP	32.50	L-r P G	E	n/a	n/a	9	15	6	2	n/a	1.36	44	15	59	19.02	VH	HS>40	2	38.04		Yes	0.00		b
2064137	2	A	DT	3.71														0.00						MZ			b
208660198	1	A	RP	0.11	L-r P G	E	n/a	n/a	9	5	3	3	n/a	1.36	27	20	47	0.05	VH	HS>40	2	0.10			0.10		d
208660198	2	A	RP	5.84	L-r P G	E	n/a	n/a	9	5	3	3	n/a	1.36	27	20	47	2.76	VH	HS>40	2	5.51			5.51		d
208660198	3	A	RP	0.21	CTG	E	n/a	n/a	9	5	3	4	n/a	1.36	29	20	49	0.10	VH	HS>40	2	0.20			0.20		d
208660198	4	A	RP	0.81	L-r P G	E	n/a	n/a	9	5	3	3	n/a	1.36	27	20	47	0.38	VH	HS>40	2	0.76			0.76		d
20866019	5	A	DT	17.03														0.00									d

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	Reason for Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Areas & Management Zones	Very High CS Offset Prescription (excl. Key Areas & Mgt Zones)	High CS Offset Prescription (excl. Key Areas & Mgt Zones)	Location on Figures
8																											
50242715	1	A	RP	0.75	L-r P G	E	n/a	n/a	9	5	3	5	n/a	1.36	30	15	45	0.34	VH	HS>40	2	0.67		MZ	0.00		h
50242715	2	A	RP	31.44	L-r P G	E	n/a	n/a	9	15	10	5	n/a	1.36	53	10	63	19.82	VH	HS>40	2	39.64		Yes	0.00		h
50242715	3	A	RP	0.46	L-r P G	E	n/a	n/a	9	15	3	5	n/a	1.36	44	10	54	0.25	VH	HS>40	2	0.49		MZ	0.00		h
50242715	4	A	RP	0.39	L-r P G	E	n/a	n/a	9	15	3	5	n/a	1.36	44	10	54	0.21	VH	HS>40	2	0.42		MZ	0.00		h
50242715	5	A	RP	23.18	L-r P G	E	n/a	n/a	6	15	10	5	n/a	1.36	49	15	64	14.83	VH	HS>40	2	29.65		Yes	0.00		h
50242715	6	A	RP	7.67	L-r P G	E	n/a	n/a	9	5	6	5	n/a	1.36	34	15	49	3.76	VH	HS>40	2	7.52		Yes	0.00		h
50242715	7	A	RP	0.85	PW	E	5	0	9	15	0	5	0	1.00	34	15	49	0.42	VH	HS>40	2	0.83		MZ	0.00		g
50242715	8	A	RP	2.59	L-r P G	E	n/a	n/a	9	15	10	5	n/a	1.36	53	5	58	1.50	VH	HS>40	2	3.01		Yes	0.00		g
50242715	9	A	RP	1.74	L-r P G	E	n/a	n/a	9	15	3	5	n/a	1.36	44	10	54	0.93	VH	HS>40	2	1.86			1.86		h
50242715	10	A	RP	0.64	L-r P G	E	n/a	n/a	9	15	3	5	n/a	1.36	44	10	54	0.34	VH	HS>40	2	0.69			0.69		h
50242715	11	A	DT	1.23														0.00						MZ			h
50242715	12	A	DT	163.00														0.00						Part MZ			h
50242715	13	A	RP	4.43	FRW	E	10	3	7	20	10	3	4	1.00	57	10	67	2.97	VH	HS>40	2	5.94		Yes	0.00		g
50242715	14	A	RP	1.19	L-r P G	E	n/a	n/a	9	15	6	5	n/a	1.36	48	10	58	0.69	VH	HS>40	2	1.37		Yes	0.00		g
50242715	15	A	RP	21.90	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	10	45	9.86	VH	HS>40	2	19.71		Yes	0.00		g
50242715	16	A	RP	1.73	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	10	45	0.78	VH	HS>40	2	1.56		Yes	0.00		g
50242715	17	A	DT	2.65														0.00						MZ			h
50242721	1	A	RP	0.66	L-r P G	E	n/a	n/a	9	15	6	5	n/a	1.36	48	15	63	0.41	VH	HS>40	2	0.83			0.83		h
50242721	2	A	RP	0.32	L-r P G	E	n/a	n/a	9	15	6	5	n/a	1.36	48	15	63	0.20	VH	HS>40	2	0.40		MZ	0.00		h
50242721	3	A	RP	5.16	L-r P G	E	n/a	n/a	9	15	10	5	n/a	1.36	53	15	68	3.51	VH	HS>40	2	7.02		Yes	0.00		h
50242721	4	A	RP	0.14	L-r P G	E	n/a	n/a	9	15	10	5	n/a	1.36	53	15	68	0.10	VH	HS>40	2	0.19		Yes	0.00		h
50242721	5	A	DT	144.43														0.00						Part MZ			h
50242721	6	A	RP	0.90	L-r P G	E	n/a	n/a	7	15	6	5	n/a	1.36	45	15	60	0.54	VH	HS>40	2	1.08			1.08		h
50242721	7	A	RP	0.43	L-r P G	E	n/a	n/a	4	15	6	5	n/a	1.36	41	15	56	0.24	VH	HS>40	2	0.48			0.48		h
50242721	8	A	RP	13.44	L-r P G	E	n/a	n/a	9	15	6	5	n/a	1.36	48	15	63	8.41	VH	HS>40	2	16.83		Yes	0.00		h
50242721	9	A	DT	1.99														0.00						MZ			h
50242721	10	A	RP	0.90	L-r P G	E	n/a	n/a	4	15	3	5	n/a	1.36	37	15	52	0.47	VH	HS>40	2	0.93			0.93		h
50242721	11	A	RP	15.62	L-r P G	E	n/a	n/a	9	15	6	5	n/a	1.36	48	15	63	9.78	VH	HS>40	2	19.56		Yes	0.00		h
50242721	12	A	RP	0.56	L-r P G	E	n/a	n/a	7	15	3	5	n/a	1.36	41	15	56	0.31	VH	HS>40	2	0.62			0.62		h
50242721	13	A	RP	1.95	L-r P G	E	n/a	n/a	7	15	3	5	n/a	1.36	41	15	56	1.09	VH	HS>40	2	2.18		MZ	0.00		h
50242721	14	A	RP	0.13	L-r P G	E	n/a	n/a	7	15	3	5	n/a	1.36	41	15	56	0.07	VH	HS>40	2	0.15		MZ	0.00		h
50242721	15	A	RP	0.20	L-r P G	E	n/a	n/a	7	15	3	5	n/a	1.36	41	15	56	0.11	VH	HS>40	2	0.22			0.22		h
50242721	16	A	RP	0.67	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	15	50	0.34	VH	HS>40	2	0.67		Yes	0.00		h

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	Reason for Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Areas & Management Zones	Very High CS Offset Prescription (excl. Key Areas & Mgt Zones)	High CS Offset Prescription (excl. Key Areas & Mgt Zones)	Location on Figures
50263490	1	A	RP	5.91	L-r P G	E	n/a	n/a	11	5	3	3	n/a	1.36	30	20	50	2.95	VH	HS>40	2	5.90		Yes	0.00		f
50263490	2	A	DT	1.57														0.00						MZ			f
50263490	3	A	DT	0.04														0.00						MZ			f
50263490	4	A	RP	0.01	L-r P G	E	n/a	n/a	9	5	3	4	n/a	1.36	29	20	49	0.00	VH	HS>40	2	0.01		Yes	0.00		f
50263498	1	A	DT	191.92														0.00						Part MZ			c
50263498	2	A	RP	2.31	L-r P G	E	n/a	n/a	6	5	3	4	n/a	1.36	24	20	44	1.03	VH	HS>40	2	2.05			2.05		e
50263498	3	A	RP	1.50	L-r P G	E	n/a	n/a	6	5	3	2	n/a	1.36	22	20	42	0.63	VH	HS>40	2	1.25			1.25		e
50263498	4	A	RP	9.38	L-r P G	E	n/a	n/a	6	5	3	2	n/a	1.36	22	20	42	3.92	VH	HS>40	2	7.83			7.83		c
50263498	5	A	RP	8.32	L-r P G	E	n/a	n/a	6	5	3	2	n/a	1.36	22	20	42	3.47	VH	HS>40	2	6.95			6.95		c
50263498	6	A	RP	1.66	L-r P G	E	n/a	n/a	4	5	3	4	n/a	1.36	22	20	42	0.69	VH	HS>40	2	1.39		Yes	0.00		c
50263498	6	B	RP	16.58	L-r P G	E	n/a	n/a	6	5	3	4	n/a	1.36	24	20	44	7.37	VH	HS>40	2	14.75		Yes	0.00		c
50263511	1	A	RP	13.26	L-r P G	E	n/a	n/a	7	5	0	2	n/a	1.36	19	20	39	5.18	VH	VROT species GSM	2	10.35		Yes	0.00		d
50263511	1	B	RP	3.65	L-r P G	E	n/a	n/a	7	5	3	2	n/a	1.36	23	20	43	1.57	VH	HS>40	2	3.15		Yes	0.00		d
50263511	2	A	DT	0.81														0.00						MZ			d
50263511	3	A	DT	4.08														0.00						MZ			d
50263511	4	A	RP	11.02	L-r P G	E	n/a	n/a	7	5	3	2	n/a	1.36	23	20	43	4.75	VH	HS>40	2	9.50		Yes	0.00		d
50263511	5	A	DT	12.19														0.00						MZ			d
50263511	6	A	RP	2.18	L-r P G	E	n/a	n/a	7	5	3	2	n/a	1.36	23	15	38	0.83	H		1.5		1.25	MZ		0.00	d
50263514	1	A	DT	42.04														0.00									d
50263514	2	A	RP	1.50	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	20	55	0.83	VH	HS>40	2	1.65			1.65		d
50263514	3	A	RP	0.12	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	20	55	0.07	VH	HS>40	2	0.13			0.13		d
50263514	4	A	DT	13.15														0.00									d
50263514	5	A	RP	0.04	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	15	50	0.02	VH	HS>40	2	0.04			0.04		d
50263514	6	A	RP	1.08	L-r P G	E	n/a	n/a	9	5	6	5	n/a	1.36	34	15	49	0.53	VH	HS>40	2	1.06			1.06		d
50263537	1	A	RP	18.71	L-r P G	E	n/a	n/a	6	15	10	5	n/a	1.36	49	10	59	11.03	VH	HS>40	2	22.06		Yes	0.00		h
50263538	2	A	DT	9.13														0.00						MZ			h
50263538	3	A	DT	0.20														0.00						MZ			h
50263538	4	A	DT	0.22														0.00						MZ			h
50263538	5	A	DT	0.26														0.00						MZ			h
50263538	6	A	RP	16.90	L-r P G	E	n/a	n/a	6	15	10	5	n/a	1.36	49	15	64	10.81	VH	HS>40	2	21.62		Yes	0.00		f
50263563	1	A	RP	25.94	L-r P G	E	n/a	n/a	6	5	3	4	n/a	1.36	24	20	44	11.54	VH	HS>40	2	23.08		Yes	0.00		f
50263563	2	A	DT	3.09														0.00						MZ			f
50263563	3	A	DT	2.49														0.00						MZ			f

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	Reason for Significance	Net Outcome Ratio	Very High CS Offset Prescription (Total)	High CS Offset Prescription (Total)	Key Areas & Management Zones	Very High CS Offset Prescription (excl. Key Areas & Mgt Zones)	High CS Offset Prescription (excl. Key Areas & Mgt Zones)	Location on Figures
50263563	4	A	DT	0.43														0.00						MZ			f
50263563	5	A	DT	28.83														0.00						Part MZ			d
50263620	1	A	RP	0.06	L-r P G	E	n/a	n/a	9	5	3	4	n/a	1.36	29	20	49	0.03	VH	HS>40	2	0.06		MZ	0.00		d
50263620	2	A	RP	2.33	L-r P G	E	n/a	n/a	9	5	3	4	n/a	1.36	29	20	49	1.13	VH	HS>40	2	2.26		MZ	0.00		f
50263620	3	A	RP	1.64	L-r P G	E	n/a	n/a	9	5	3	4	n/a	1.36	29	20	49	0.80	VH	HS>40	2	1.59		Yes	0.00		f
50263620	4	A	DT	110.24														0.00						Part MZ			f
50263620	5	A	RP	2.97	L-r P G	E	n/a	n/a	11	5	3	3	n/a	1.36	30	20	50	1.48	VH	HS>40	2	2.97		Yes	0.00		f
50263620	6	A	RP	1.15	L-r P G	E	n/a	n/a	9	15	0	3	n/a	1.36	37	20	57	0.65	VH	HS>40	2	1.30		Part MZ	0.00		f
50263620	7	A	RP	0.73	L-r P G	E	n/a	n/a	9	5	3	4	n/a	1.36	29	20	49	0.35	VH	HS>40	2	0.71		MZ	0.00		f
50263620	8	A	RP	0.67	L-r P G	E	n/a	n/a	9	5	3	4	n/a	1.36	29	20	49	0.33	VH	HS>40	2	0.65		MZ	0.00		f
50263620	9	A	RP	2.88	L-r P G	E	n/a	n/a	9	5	3	4	n/a	1.36	29	20	49	1.40	VH	HS>40	2	2.80		MZ	0.00		f
50263620	10	A	RP	3.30	L-r P G	E	n/a	n/a	9	5	3	4	n/a	1.36	29	20	49	1.60	VH	HS>40	2	3.20		MZ	0.00		d
50263642	1	A	RP	447.23	L-r P G	E	n/a	n/a	9	15	10	5	n/a	1.36	53	20	73	326.66	VH	HS>40	2	653.31		Yes	0.00		e
50263642	2	A	DT	1.31														0.00						MZ			f
50263642	3	A	DT	0.63														0.00						MZ			e
50263642	4	A	DT	2.23														0.00						MZ			f
50263642	5	A	DT	40.23														0.00						MZ			e
50263642	6	A	DT	1.57														0.00						MZ			e
50263642	7	A	RP	1.20	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	20	55	0.66	VH	HS>40	2	1.32		Yes	0.00		f
50263642	8	A	RP	11.93	CG Wet (WVA)	V	n/a	n/a	7	10	6	3	n/a	1.36	35	20	55	6.56	VH	HS>50	2	13.12		Yes	0.00		e
50263642	9	A	DT	3.66														0.00						MZ			e
50263642	10	A	RP	7.89	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	20	55	4.34	VH	HS>40	2	8.68		Yes	0.00		e
50263642	11	A	RP	0.21	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	20	55	0.12	VH	HS>40	2	0.23		Yes	0.00		e
50263642	12	A	RP	0.37	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	20	55	0.20	VH	HS>40	2	0.41		Yes	0.00		e
50263642	13	A	RP	0.13	PG Wet	E	n/a	n/a	7	10	6	3	n/a	1.36	35	20	55	0.07	VH	HS>40	2	0.14		Yes	0.00		e
TOTAL				**1958.72**														**627.26**				**1252.85**	**1.25**		**34.27**	**0.00**	

A4.2 Scattered Tree Assessment

Table A4.2 Section B 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 B is entirely contained within the Victorian Volcanic Plain Bioregion.

															Protect and Recruit Method					
Habitas ID #	**Site**	**Zone**	**Area (Ha)**	**EVC**	**Conservation Status***	**VL Allocasuarina sp**	**L Allocasuarina sp**	**M Allocasuarina sp**	**S Allocasuarina sp**	**VL Eucalyptus sp.**	**L Eucalyptus sp.**	**M Eucalyptus sp.**	**S Eucalyptus sp.**	**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**
50242715	15	A	1.66	PW	E	0	4	5	0	0	0	0	0	VH	Best 50% for *Amyema linophylla* subsp. *orientale*	0	32	20	n/a	260	1460
50242715	16	A	0.01	PW	E	0	0	1	0	0	0	0	0	VH	Best 50% for *Amyema linophylla* subsp. *orientale*	0	0	4	n/a	20	100
Total			**1.67**			**0**	**4**	**6**	**0**	**0**	**0**	**0**	**0**			**0**	**32**	**24**		**280**	**1560**

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 Section B of the Melton/Wyndham Investigation 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)

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	DSE	FFG	Likelihood of Occurrence
National Significance						
Pedionomus torquatus	Plains-wanderer	1989	VU	CR	L	Recorded (AVW)
Rostratula australis	Australian Painted Snipe	#/1987	VU	CR	L	High
Lathamus discolor	Swift Parrot	2002/#	EN	EN	L	Low
Anthochaera phrygia	Regent Honeyeater	#	EN	CR	L	Negligible
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	DSE	FFG	Likelihood of Occurrence
						Recorded (AVW) but now locally extinct
Perameles gunnii	Eastern Barred Bandicoot	1982	EN	CR	L	
Pteropus poliocephalus	Grey-headed Flying-fox	2002/#	VU	VU	L	Low
Pseudomys fumeus	Smoky Mouse	#	EN	CR	L	Negligible
Delma impar	Striped Legless Lizard	1990/#	VU	EN	L	Recorded (AVW)
Tympanocryptis pinguicolla	Grassland Earless Dragon	#	EN	CR	L	High
Litoria raniformis	Growling Grass Frog	1993/#	VU	EN	L	Recorded (AVW)
Prototroctes maraena	Australian Grayling	#	VU	VU	L	Negligible
Galaxiella pusilla	Dwarf Galaxias	#	VU	VU	L	Negligible
						Recorded (current
Synemon plana	Golden Sun Moth	#	CR	EN	L	assessment)
State Significance						
						Recorded
Turnix pyrrhothorax	Red-chested Button-quail	2008		VU	L	(AVW)
Porzana pusilla	Baillon's Crake	1990		VU	L	High
Tringa glareola	Wood Sandpiper	1988		VU		High
Grus rubicunda	Brolga	1989		VU	L	High
Platalea regia	Royal Spoonbill	2004		VU		High
						Recorded
Ardea modesta	Eastern Great Egret	2004/#		VU	L	(AVW)
Ixobrychus minutus	Little Bittern	1990		EN	L	Medium
Botaurus poiciloptilus	Australasian Bittern	1990		EN	L	High
Anas rhynchotis	Australasian Shoveler	2004		VU		High
Stictonetta naevosa	Freckled Duck	1988		EN	L	High
Aythya australis	Hardhead	2004		VU		High
Oxyura australis	Blue-billed Duck	2004		EN	L	High
Biziura lobata	Musk Duck	2004		VU		High
Accipiter novaehollandiae	Grey Goshawk	2006		VU	L	Low
Haliaeetus leucogaster	White-bellied Sea-Eagle	2003/#		VU	L	Low
Falco subniger	Black Falcon	1989		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	Negligible
Pomatostomus temporalis	Grey-crowned Babbler	1987		EN	L	Negligible
Pyrrholaemus sagittatus	Speckled Warbler	2007		VU	L	Low
Stagonopleura guttata	Diamond Firetail	2006		VU	L	Medium
Pseudophryne bibronii	Brown Toadlet	1990		EN	L	Medium

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