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

March 2010

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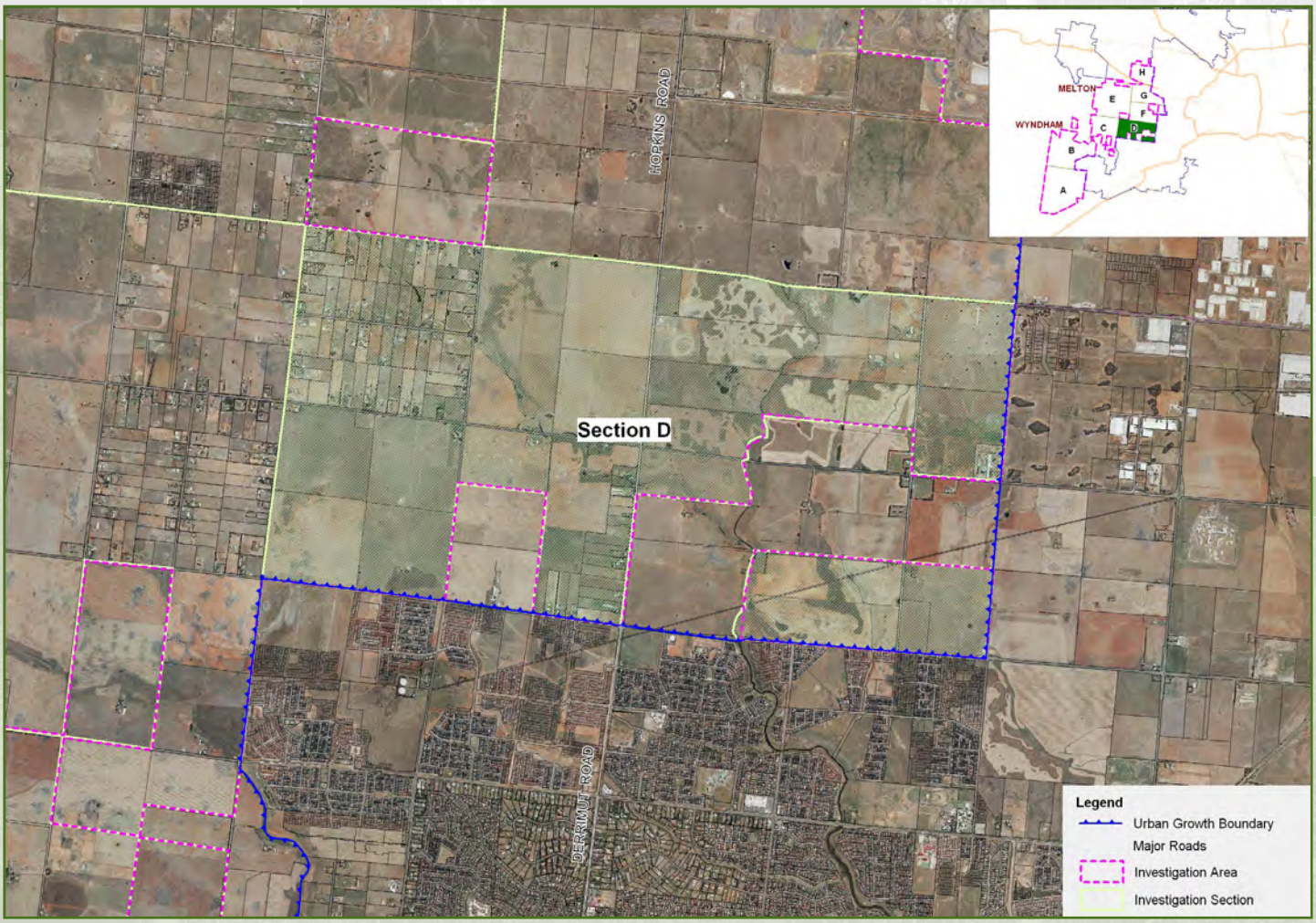

MAP: Melton - Wyndham Investigation Area: Section D

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

Document Title	Biodiversity Assessment Report (Native Vegetation)		
Precinct (Name and Number)	Melton - Wyndham Investigation Area: Section D		
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Survey Period	**Start**	October 2008	Matt Dell
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Vegetation Assessment Surveys completed in accordance with DSE's Vegetation Quality Assessment Manual Version 1.3 (2004)		January 2009	Matt Dell
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- Steve Dunn
- Ken King

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- Sheri Burmeister
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ABBREVIATIONS

AVW	Atlas of Victorian Wildlife
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 – April, 2003 version
IUCN	International Union for the Conservation of Nature
NRE	Department of Natural Resources & Environment (now DSE)

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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 D (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 throughout 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 Bioisis Research Pty. Ltd

EXECUTIVE SUMMARY

Biosis Research was commissioned by the Growth Areas Authority (GAA) to map and assess native vegetation within the Melton/Wyndham Investigation Area west of Melbourne (Figure i). The field assessments were undertaken between October and March on all properties within the Melton/Wyndham Investigation Area where owner permission to access the lands was 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 sections based on likely future development precincts. This report covers Section D, which is located in the Melton Shire and is bound to the north by Boundary Road, to the south by Leakes Road, to the west by Davis Road and to the east by Christies Road (Figure i).

Access

Section D covers an area of about 1,677 ha, and of this roughly 927 ha or 55% of private land within Section D was inspected and subject to a habitat hectare assessment by the Melton/Wyndham Investigation. The remaining 45% of the area was subject to a reconnaissance level field survey only.

Ecological Vegetation Classes

Prior to European settlement most of Section D 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, remnants of native vegetation are present within Section D.

Four EVCs comprising Plains Grassland, Stony Knoll Shrubland, Brackish Wetland and Plains Grassy Wetland, were recorded within Section D during the

Melton/ Wyndham Investigation.

Significant Species

No nationally significant flora species were recorded during the current assessment however one species, Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens*, is recorded within Section D on the FIS. The FIS database contains records of five additional species of national conservation significance from within 5 km of the study area. An additional species, Matted Flax-lily *Dianella amoena* is known from the Truganina Cemetery. This species was not identified during the database searches, however is considered to have a High likelihood of occurrence based on habitat within Section D. The DEWHA database predicts the occurrence of, or suitable habitat for three additional plant species listed under the EPBC Act.

One flora species of state significance, Arching Flax-lily *Dianella* sp. aff *longifolia* (Benambra), was recorded within Section D during the current assessment. Another species, Small Scurf-pea *Cullen parvum*, has existing FIS from this area. The FIS database contains records of 13 additional species of state conservation significance from the local area (within 5 km).

One fauna species listed under the EPBC Act, Striped Legless Lizard *Delma impar* (vulnerable), was recorded in Section D during the current assessment. The AVW also has a record of Plains-wanderer *Pedionomus torquatus* (vulnerable) from Section D.

Eleven fauna species of national significance have been recorded from the local area in the AVW and/or BA database or are predicted to occur on the DEWHA database. Of these, Golden Sun Moth *Synemon plana* (critically endangered) is considered to have a High likelihood of occurrence within Section D.

Thirteen additional 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.

Vegetation Quality Assessment (Melton/Wyndham Investigation)

Of the 927 ha within Section D assessed during the Melton/Wyndham Investigation, a total of 154.55 ha of indigenous vegetation (77 patches) were recorded.

This vegetation equates to 49.75 habitat ha (hha) of Low-rainfall Plains Grassland, 0.40 hha of Heavier Soils Plains Grassland, 0.66 hha of Stony Knoll Shrubland, 0.05 hha of Plains Sedgy Wetland, 0.11 hha of Brackish Wetland and 0.91 hha of Plains Grassy Wetland. Therefore, a total of **51.89 hha** are present

within the 927 ha assessed during the Melton/Wyndham investigation.

Reconnaissance Survey

Three broad areas (about 390 ha) were identified as *Highly Likely Native Vegetation – Grassy* during the reconnaissance survey. Much of these areas were observed to support Plains Grassland dominated by Kangaroo Grass and are likely to be mainly primary grassland of Very High conservation significance (VHCS). An additional 46.34 ha were identified as *Possible Native Vegetation* and 267.84 ha, likely to support less than 25% indigenous vegetation projective foliage cover (excluding bare ground), were mapped as *No Native Vegetation.*

Government legislation and policy

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

A planning permit to remove native vegetation would typically be required under the Melton Shire Planning Scheme (Clause 52.17). However, it will be possible that some or all of Section D 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 D will be subject to the guidelines provided by Victoria's Native Vegetation Management Framework (Net Gain policy).

Key Ecological Areas

Vegetation mapping in accessible properties from Section D identified two Key Areas. Both areas are in the western half of Section D, between Boundary Road and Doherty's Road with one area on either side of Tarneit Road (Figure ii).

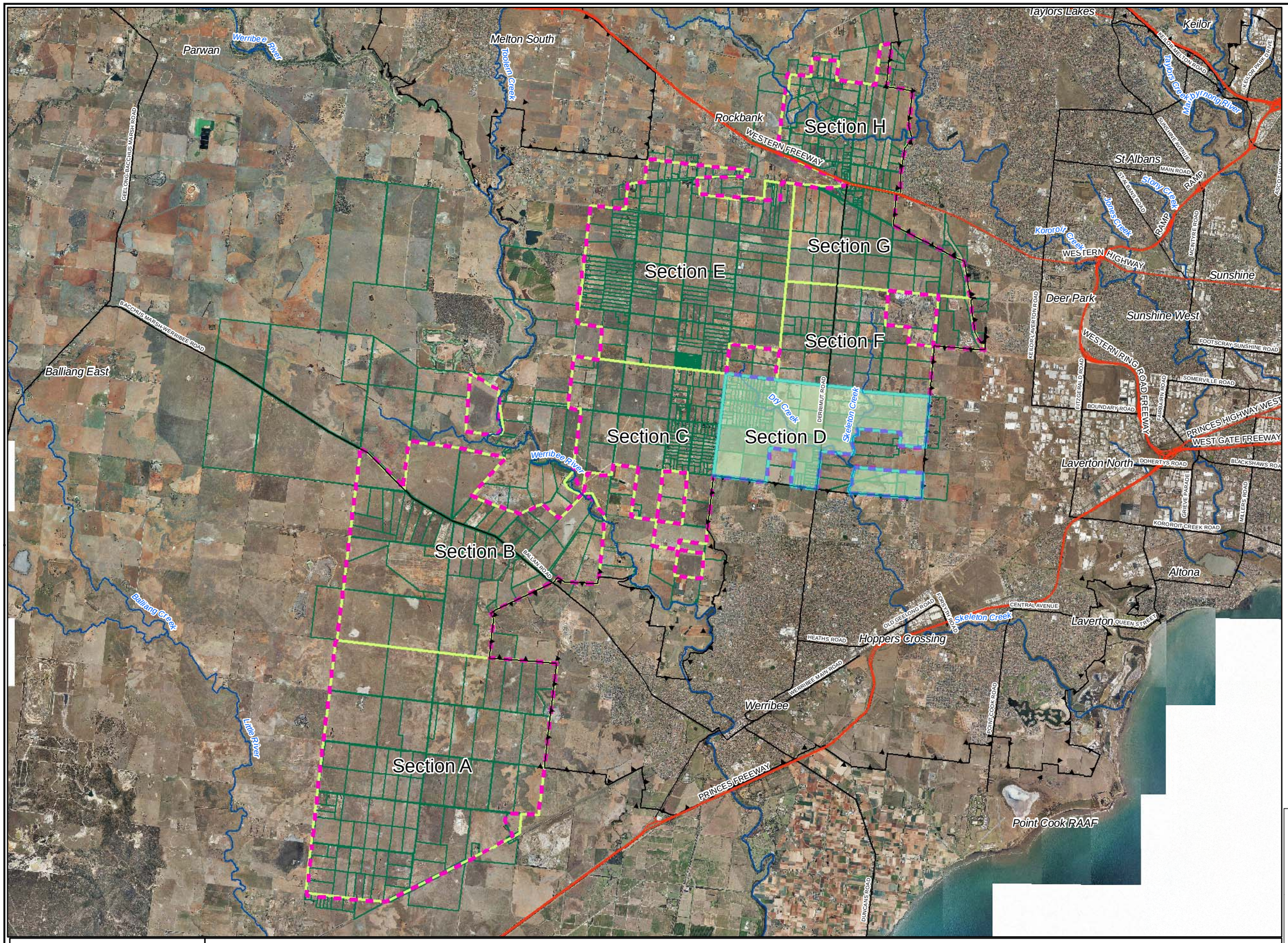
Over and above the ecological values within these Key Areas, they also provide landscape stepping stones between other remnants of Plains Grassland. They contribute to the landscape linkages between larger areas of unassessed

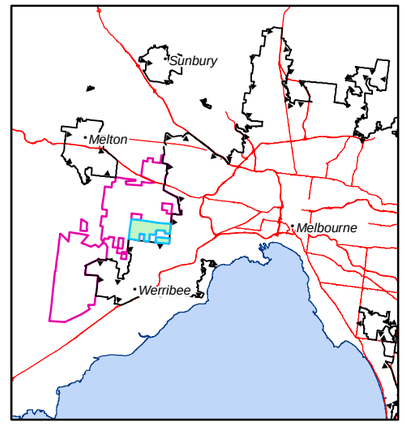
vegetation in close proximity which are considered likely to support additional areas of Plains Grassland.

The Key Areas within Section D have been variously modified, however all consist of more than 10 ha of contiguous native vegetation of Very High conservation significance. Both are dominated by Low-rainfall Plains Grassland. Small Scurf-pea is the only significant species recorded within these Key Areas.

Conclusions

Section D contains a significant area of native vegetation comprised of four endangered EVCs which includes the listed ecological community *Natural Temperate Grassland of the Victorian Volcanic Plain*. Two Key Ecological Areas of VHCS have been identified within Section D, based on their conservation significance, size, habitat for threatened species and habitat connectivity values. 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 D
- Urban Growth Boundary
- Melton/Wyndham Investigation Area
- Section boundary
- Parcels

Figure i: Location of Section D 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 retention priority.

The current report aims to provide a more detailed analysis of the results obtained through the vegetation mapping undertaken by Biosis Research in the Melton/Wyndham Investigation area. To assist in analysis and presentation of the data, the GAA have split the Melton/Wyndham Investigation area into eight key sections based on likely future precinct areas. As such, the results of the vegetation mapping assessment are documented in eight stand-alone reports, each covering a different section of this broader area (Figure 1). This report focuses on one of these sections: Section D (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;
- Present the habitat hectare and large old tree data collected and calculate the offset prescriptions associated with any permitted clearing;
- 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);
- Identifying the limitations of the current assessment.

1.3 Section D

Section D is centrally located within the broader Melton/Wyndham Investigation Area which is on the western fringe of Melbourne (Figure 1). Section D covers an area of 1,677.49 ha and is within the Victorian Volcanic Plain Bioregion. It is bounded to the north by Boundary Road, to the south by Leakes Road, to the west by Davis Road and to the east by Christies Road. It includes sections of Derrimut Road, Tarneit Road and Dohertys Road. It also includes reaches of Skelton Creek and Dry Creek.

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

2.0 METHODS

2.1 Taxonomy

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

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

2.2 Literature and Database Review

Information in the FIS and AVW databases was reviewed and a search of the Birds Australia database (1998–2008) was undertaken. The Department of the Environment, Water, Heritage and the Arts (DEWHA) online database for the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act Protected Matters Search Tool, hereafter referred to as the DEWHA database) was searched. The current 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 7, 9, 14, 22, 23, 28, 29, 31 October 2008; 5, 6, 7, 17, 20, 21, 24, 25, 27, 28 November 2008; 4, 15 December; 13, 16, 22, 23, 27 January 2009 (25 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 D) was determined by field inspection. Access details for private property within these areas were provided by the GAA. Where possible land owners were contacted and permission obtained to inspect each property. Initially no inspections were conducted without land owner approval and roughly **862 ha** of land were inspected in this manner. However, where access was denied, right to forced access was obtained in some instances and about **65 ha** were accessed in this manner. In total, therefore, roughly **927 ha** (55% of private land within Section D) 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 Victoria's Native Vegetation Management Framework (NRE 2002 – the Framework). 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 D were not accessed during the Melton/Wyndham Investigation because of lack of available access, namely due to withheld permission to access private property by landowners or incorrect/no available contact details for remaining properties. 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 Section D was carried out over three days in May 2009, with the aim of filling 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 was 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 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 D) 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 have at least High conservation significance. Any patches with a Habitat Score of 40/100 or more are 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 (NRE 2002: Appendix 3). Where a patch of native vegetation was not already defined as being of 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.

2.8 Defining Key Areas

The future proposed land use within Section D 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;
- soil disturbance; and
- landscape level changes to water supply, movement and quality.

A number of aspects were considered when considering 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 and threatened species, should have access to a network of suitable environments connected through a series of habitat corridors. Designation of Key Areas based on these concepts will minimise the risks of extinction during extreme environmental conditions such as fire and drought, or in association with future climate change.

The Victorian Volcanic Plain supports nationally significant values such as Natural Temperate Grasslands, Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* and Golden Sun Moth *Synemon plana* (all listed as critically endangered), Grassland Earless Dragon *Tympanocryptis pinguicolla* and Swift Parrot *Lathamus discolor* (listed as endangered), Striped Legless Lizard *Delma impar*, Plains-wanderer *Pedionomus torquatus*, Australian Painted Snipe *Rostratula australis*, Large-fruit Fireweed *Senecio macrocarpus*, River Swamp Wallaby-grass *Amphibromus fluitans* and Growling Grass Frog *Litoria raniformis* (listed as vulnerable). 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 inspection and habitat hectare assessments as part of the original Melton/Wyndham Investigation. Areas within Section D where a site inspection was not conducted due to access restrictions 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. This data will provide some indication of likely Key Areas within the reconnaissance

survey sites.

2.9 Limitations

The following limitations apply to the current assessment:

1. Section D covers an area of almost 1700 ha. Access was obtained for about 927 ha and this area was subject to site inspection and a habitat hectare assessment where relevant. The remaining 750 ha (45% of Section D) was primarily subject to a reconnaissance level assessment using existing information, aerial photo interpretation and limited ground truthing. Ground truthing was restricted to viewing areas from public access points (primarily roads). A full assessment of the ecological values of these areas was not conducted. However, this assessment can be used to identify sites that require further field assessment to satisfy environmental legislation and policy requirements.
2. The classification of native vegetation within sections of the Melton/Wyndham Investigation Area as *highly likely, possible* or *no native vegetation* is in relation to 'native vegetation' as per the definition of a remnant patch or scattered trees by DSE (2007a). It does not imply that sites mapped as having no native vegetation contain no scattered indigenous species, rather, that any native vegetation present is likely to be below the thresholds for assessment as a patch of native vegetation as prescribed under the Framework (NRE 2002).
3. The Melton/Wyndham Investigation Area was assessed using current DSE standards (DSE 2004). However, defining remnants (patches) of the EVC Plains Grassland using the Native Vegetation Framework (DSE 2007) does not necessarily correlate with the definition of the EPBC Act listed community *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP). While the two definitions for this community generally correspond well, there are instances where grassy vegetation does not qualify as a patch of Plains Grassland, but does meet the condition thresholds for NTGVVP. While the listing of NTGVVP indicates its intent to protect the better quality examples of this community, the definition provided by EPBC Act Policy Statement 3.8 is very broad. Therefore, some areas of Degraded Treeless Vegetation within the Melton/Wyndham Investigation Area may qualify as the EPBC Act listed community. These unmapped areas of grassland were generally of lower quality examples of this community resulting from the recolonisation of cultivated sites.
4. It is important to note that significant species, both flora and fauna, can occur in areas that are not considered to support patches of native vegetation. Examples of such species include the nationally significant Golden Sun Moth, Striped Legless Lizard, Growling Grass Frog and Spiny Rice-

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

5. Additional limitations are as follows:

    - The assessment includes only vascular flora (ferns, conifers, flowering plants) and terrestrial vertebrate fauna (birds, mammals, reptiles, frogs), with the exception of Golden Sun Moth, which was recorded when observed. Non-vascular flora (e.g. mosses, liverworts) were not sampled although their presence is noted as part of the cover of native species in the definition of a patch.
    - Note that this assessment did not include any formal fauna survey and the significance assessments provided rely on incidental observations of significant fauna and existing database records. Subsequent fauna assessments could increase the conservation significance of areas not already rated to be of Very High conservation significance.
    - The presence of threatened flora and fauna were noted where they were encountered. However, such observations are likely to underestimate the distribution of these species, many of which are cryptic or only seasonally visible. Seasonal targeted surveys for threatened flora 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 D is not seen as critical to this assessment. However, a review of literature relating to the GAA investigation areas (including Section D) can be found in Biosis Research (2009).

3.0 RESULTS

3.1 Flora Species

3.1.1 Records within Section D

A total of 138 (69 indigenous and 69 introduced) plant species have been recorded from Section D (Appendix 2, Table A2.1) during the Melton/Wyndham Investigation (current assessment). The FIS contains existing records of 135 (68 indigenous species and 67 introduced) plant species within Section D. Some, but not all of these existing species were recorded during the current assessment. In total, 24 existing indigenous records were not observed during the current assessment; however an additional 30 indigenous species were recorded. Planted species have not been recorded unless they are spreading (naturalised).

3.1.2 Database records

The FIS contains records of a total of 564 flora species (338 indigenous and 226 introduced) from within 5 km of the study area (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*, Clover Glycine *Glycine latrobeana* and Maroon Leek-orchid *Prasophyllum frenchii*) within 5 km of the study area. Some of these species may occur in Section D (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 D as previously supporting Plains Grassland (EVC 132) with two relatively small areas of Plains Grassy Wetland (EVC 125) near the intersection of Kenning Road and Davis Road, and Tarneit Road and Leakes Road. The DSE 2005 EVC vegetation mapping indicates that substantial sections of the study area have been cleared but areas of Plains Grassland remain, as does the wetland at the southern end of Tarneit Road (this wetland was not accessed during the Melton/Wyndham investigation).

Section D contains a productive example of low rainfall Victorian Volcanic Plain vegetation. The region is characterised by less rocky plains with an associated increase in fertility. This has resulted in an historical increase in the utilisation of this section for cereal crop production and as a result the vegetation that remains is generally highly fragmented. However patches of native vegetation present are generally of reasonable quality and there is a high potential for the federally listed species Matted Flax-lily *Dianella amoena,* Button Wrinklewort *Rutidosis leptorhynchoides* and Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* to occur in this section.

Five EVCs were recorded within Section D during the Melton/Wyndham Investigation:

- Low-rainfall Plains Grassland;
- Heavier-soils Plains Grassland;
- Stony Knoll Shrubland;
- Plains Grassy Wetland; and
- Brackish Wetland.

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

3.2.1 Low-rainfall Plains Grassland

A total of 148.41 ha (in 63 patches) of Low-rainfall Plains Grassland was mapped in Section D. This EVC is present on cracking basalt soils in areas that receive less than 500 mm annual rainfall. The vegetation present commonly includes grass species such as Kangaroo-grass *Themedea triandra*, Kneed Spear-grass *Austrodanthonia bigeniculata*, Rough Spear-grass *Austrostipa scabra*, Rigid Panic *Walwhalleya proluta* and Brown-back Wallaby-grass *Austrodanthonia duttoniana*. Other species present include Grassland Wood-sorrel *Oxalis perennans*, Lemon Beauty-heads *Calocephalus citreus*, Wingless Blue-bush *Maireana enchylaenoides* and Berry Saltbush *Atriplex semibaccata*.

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

infestations of Chilean Needle-grass *Nassella neesiana* and Serrated Tussock *Nassella trichotoma*.

3.2.2 Heavier-soils Plains Grassland

A total of 1.1 ha (in two patches) of Heavier-soils Plains Grassland was mapped in Section D. This community of Plains Grassland differs from the Low-rainfall variety in that it occurs in areas that receive more than 500 mm annual rainfall. It typically lacks small and prostrate shrubs but is richer in herbaceous species. The vegetation commonly includes grasses such as Kangaroo-grass *Themeda triandra* Spear-grasses *Austrostipa* sp. and Wallaby-grasses *Austrodanthonia* spp. Common herb species present include Grassland Wood-sorrel *Oxalis perennans*, Lemon Beauty-heads *Calocephalus citreus*, and Crane's Bill *Geranium* spp.

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

3.2.3 Stony Knoll Shrubland

A total of 2.29 ha (in six patches) of Stony Knoll Shrubland was mapped in Section D. Stony Knoll Shrubland within Section D typically contains a depleted shrub layer of scattered Tree Violet *Melicytus dentatus*. The ground layer includes indigenous grasses and herbaceous species such as Kangaroo Grass, Weeping Grass *Microlaena stipoides*, Slender Wallaby-grass *Austrodanthonia racemosa*, Spear Grass, Wattle Mat-rush *Lomandra filiformis* and Kidney-weed *Dichondra repens*.

Typical weeds include African Box-thorn *Lycium ferocissimum*, Horehound *Marrubium vulgare*, Patterson's Curse *Echium plantagineum* and Rat-tail Grass *Sporobolus africanus*.

3.2.4 Brackish Wetland

A total of 0.36 ha (in two patches) of Brackish Wetland was mapped in Section D along Skeleton Creek. Brackish Wetland is characterised by herbs including sedges that are generally indicative of saline conditions. The patches within Section D were highly modified, with the small indigenous herbs including Streaked Arrow-grass *Triglochin striata* and Salt Sand-spurrey *Spergularia marina* dominating the vegetation cover.

Weed species include Borrer's Salt-marsh grass *Puccinellia fasciculata* and Sea Barley-grass *Hordeum marinum*.

3.2.5 Plains Grassy Wetland

A total of 2.14 ha (in three patches) of Plains Grassy Wetland was mapped in Section D during the Melton/Wyndham Investigation. This EVC occurs on the heavy black to gray clays found in swampy drainage lines and seasonally waterlogged wet depressions surrounded by Plains Grassland.

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

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

3.3 Scattered Trees

No scattered indigenous Large Old Trees (LOTs) were recorded within Section D and therefore this component of the vegetation assessment protocol is not considered further by this report.

Further survey of areas not accessed as part of the Melton/Wyndham investigation may reveal the presence of scattered LOTs. If present, they should be considered in line with the requirements of the Native Vegetation Framework (NRE 2002).

3.4 Degraded Treeless Vegetation

Degraded Treeless Vegetation is composed of highly disturbed agricultural and residential 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.

A total of 594.78 ha of Degraded Treeless Vegetation was mapped in Section D. These areas generally contain large amounts of bare ground with the vegetation dominated by a mix of introduced annual grasses and herbs. Common species present include Spear Thistle *Cirsium vulgare,* Artichoke Thistle *Cynara cardunculus,* Wimmera Rye-grass *Lolium rigidum,* Squirrel-tail Fescue *Vulpia bromoides* and Buck's-horn Plantain *Plantago coronopus.*

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

3.5 Vegetation Quality Assessment

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

3.5.1 Vegetation in Patches

A total of 77 habitat zones (or indigenous vegetation polygons) were identified within accessible areas of Section D (Figure 2). Assessment criteria, scores and the overall habitat scores, are presented in Appendix 4. Site condition scores, giving an overview of vegetation quality, are mapped in Figure 3.

Because all the EVCs recorded 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).

A total of 154.55 ha of indigenous habitat zones were mapped within accessible areas of Section D, which comprises **51.89 habitat ha (hha).**

No LOTs were recorded in patches of native vegetation within Section D.

Conservation significance

The conservation significance of each polygon of native vegetation within Section D is shown in Appendix 4. Section D supports 41.87 ha (17.74 hha) of Very High conservation significance and 112.68 ha (34.15 hha) of High conservation significance vegetation (Figure 4).

3.5.2 Scattered Trees

The areas assessed within Section D do not support any scattered indigenous LOTs and therefore this component of the vegetation assessment protocol is not considered further by this report.

3.6 Reconnaissance Level Survey

Three broad areas (totalling approximately 389 ha) were identified as *Highly Likely Native Vegetation – Grassy* during the reconnaissance survey of Section D (Figure 2). Much 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. Of the remaining areas within Section D only subject to a reconnaissance level survey, 46.34 ha were identified as *Possible Native Vegetation* and 267.84 ha considered likely to support less than 25% indigenous vegetation projective foliage cover (excluding bare ground) were mapped as *No Native Vegetation* and are likely to be areas of Degraded Treeless Vegetation.

3.7 Significant Flora Species

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

3.7.1 Nationally Significant Species

No flora species listed under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) were recorded in Section D during the current assessment however one species, Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens*, is recorded within Section D on the FIS.

The FIS database contains records of five additional species of national conservation significance from within 5 km of the study area (Appendix 2). None of these species were recorded during the current assessment or in the study area on the FIS. However, four of these species (River Swamp Wallaby-grass *Amphibromus fluitans*, Small Golden-moths *Diuris basaltica*, Button Wrinklewort *Rutidosis leptorhynchoides* and Large-headed Fireweed *Senecio macrocarpus*) are considered to have a High likelihood of occurrence in the study area based on the habitat present. An additional species, Matted Flax-lily *Dianella amoena* is known from the Truganina Cemetery. This species was not identified during the database searches, however is considered to have a High likelihood of occurrence based on habitat within Section D. The remaining species is considered to have a Medium likelihood of occurrence (Appendix 2).

The DEWHA database predicts the occurrence of, or suitable habitat for three additional species listed under the EPBC Act, Curly Sedge *Carex tasmanica*, Clover Glycine *Glycine latrobeana* and Maroon Leek-orchid *Prasophyllum frenchii*. There is no suitable habitat, or habitat is poorly represented for these species within Section D (Appendix 2).

3.7.2 State Significant Species

No flora species of state significance listed under the *Flora and Fauna Guarantee Act 1988* (FFG Act) were recorded within Section D during the current assessment however one species, Small Scurf-pea *Cullen parvum*, has been recorded in Section D on the FIS. One additional flora species of State Significance (DSE Advisory List), Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra) was identified during the current assessment (Appendix 2).

The FIS database contains records of 13 additional species of state conservation significance from the local area (within 5 km). Of these species, 12 are considered to have a High likelihood of occurrence based on habitat present within Section D as follows: Buloke *Allocasuarina luehmannii*, Plump Swamp Wallaby-grass *Amphibromus pithogastrus*, Heath Spear-grass *Austrostipa exilis*, Small Milkwort *Comesperma polygaloides*, Tough Scurf-pea *Cullen tenax*, Golden Cowslips *Diuris behrii*, Swamp Diuris *Diuris palustris*, Proud Diuris *Diuris* X *fastidiosa*, Austral Crane's-bill *Geranium solanderi*, Pale Swamp Everlasting *Helichrysum* aff. *rutidolepis* (Lowland Swamps), Basalt Podolepis *Podolepis* sp. 1 and Rye Beetle-grass *Tripogon loliiformis* (Appendix 2).

Some of these species, specifically the orchids Small Golden Moths, Golden Cowslips, Swamp Diuris and Proud Diuris have no recent or very few records (in total) in the vicinity of the study area on the FIS. However because these species require specific conditions to emerge and are visible for only short periods of time the likelihood of occurrence within Section D is still considered to be High.

Suitable habitat is considered poorly represented for the remaining species, Floodplain Fireweed *Senecio campylocarpus*.

3.8 Significant Fauna Species

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

3.8.1 Nationally Significant Species

One fauna species listed under the EPBC Act, Striped Legless Lizard *Delma impar* (vulnerable), was recorded in Section D during the current assessment (Figure 5). The AVW also records Plains-wanderer *Pedionomus torquatus* (vulnerable) from Section D.

Eleven fauna species of national significance have been recorded from the local area in the AVW and/or BA database or are predicted to occur on the DEWHA database. Of these species, Golden Sun Moth *Synemon plana* (critically endangered) is considered to have a high likelihood of occurrence within

Section D. Remnant Plains Grassland and to a lesser extent grassy Degraded Treeless Vegetation have the potential to support this species.

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

3.8.2 State Significant Species

No fauna species of state significance listed under the FFG Act, were recorded within Section D during the current assessment and there are no AVW or BA database records of any state significant species in Section D. However, Red-chested Button Quail *Turnix pyrrhothorax* and Black Falcon *Falco subniger* are considered to have a high likelihood of occurrence in Section D based on habitat suitability.

Thirteen additional species of state conservation significance are recorded from the local area in the AVW and/or BA database or are predicted to occur on the DEWHA database. Two of these species, Eastern Great Egret *Ardea modesta* (FFG-listed and Baillon's Crake *Porzana pusilla* (FFG-listed) are considered to have a Medium likelihood of occurrence based on available habitat within Section D: (Appendix 5). The habitat is considered poorly represented or not present for the remaining species which have a low likelihood of occurrence in Section D.

3.9 Significant Vegetation Communities

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

The Western (Basalt) Plains Grassland Community is listed under the FFG Act. 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 D (Figure 2) is also considered to be the FFG Act listed Western (Basalt) Plains Grassland Community.

All EVCs recorded in Section D are endangered within 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 D, 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 D

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

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

These are summarised below.

Listed threatened species and/or ecological communities

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

Listed flora species: Flora species listed under the Act are discussed in Section 3.6 and listed in Appendix 2. In summary, no listed species were recorded in Section D during the current assessment, however one species, Spiny Rice-flower, has been recorded within Section D on the FIS (Figure 5). There is also suitable habitat within Section D for five additional species, River Swamp Wallaby-grass, Matted Flax-lily, Small Golden Moths, Button Wrinklewort and Large-headed Fireweed. The presence and extent of any population(s) of these species, including Spiny Rice-flower, is uncertain as no areas have been systematically searched.

Listed fauna species: Fauna species listed under the Act are discussed in Section 3.7 and listed in Appendix 5. In summary two listed species, Plains-wanderer and Striped Legless Lizard, have been recorded within Section D (Figure 4) and another, Golden Sun Moth, is considered likely to present. Other nationally significant fauna species listed on various databases are considered to have a medium–negligible likelihood of occurrence in Section D based on available habitat. There has been no systematic targeted survey for any listed species with Section D so the size and extent of populations of these species is not known.

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:

- No species have been recorded within Section D by the AVW and/or BA database.
- Fourteen species are recorded from the local area (AVW and/or BA database).
- Eight additional species are predicted to occur, or their habitat is predicted to occur, within 5 km of the study area (DEWHA database).

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

Wetlands of International Importance (Ramsar sites)

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

Implications Section D

All sections of the Melton/Wyndham Investigation Area (including Section D) 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. The result of this strategic assessment has yet to be determined.

4.2 State

4.2.1 Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* (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 D

Much of land in Section D 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 D. This community is mapped as either *Heavier-soils* or *Low-rainfall* Plains Grassland on Figure 2.

Areas of Section D 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 D 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
- Striped Legless Lizard
- Golden Sun Moth
- Grasslands Earless Dragon
- Fragrant Leek-orchid
- Large-fruit Groundsel
- Button Wrinklewort
- Plump Swamp Wallaby-grass
- Small Milkwort
- Small Scurf-pea
- 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 D

It is possible that some or all of Section D 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 D

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

4.2.4 Wildlife Act 1975 and associated Regulations

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

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

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

Implications for Section D

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 and 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 D

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 D

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

4.3 Local

4.3.1 Local Government Planning Scheme (City of Wyndham)

There is an Environmental Significance Overlay covering the land below the break of slope leading down to both Skeleton Creek and Dry Creek (http://www.dse.vic.gov.au/planningschemes/).

Implications for Section D

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

5.0 KEY ECOLOGICAL AREAS

5.1 Key Ecological Areas

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

Vegetation mapping in accessible properties from Section D identified two Key Areas. Both areas are in the western half of Section D, between Boundary Road and Doherty's Road with one area on either side of Tarneit Road. East of Tarneit Road the Key Area is within property/parcel PFI 50242710, while to the west it includes native vegetation within 5 properties/parcels with the following PFI: 1779668, 1779669, 1779670, 1789087 and 1805061.

In general, the areas of Section D assessed support a relatively low proportion (about 25%) of remnant native vegetation and much of this is in poor condition. However the two Key Areas identified also provide landscape stepping stones between larger remnants of Plains Grassland to their north and south and also contribute to the landscape linkages between larger areas of unassessed vegetation in close proximity which is considered likely to support broader areas of this endangered EVC.

The Key Area to the east of Tarneit Road (property/parcel PFI 50242710) is an uncultivated rocky rise which includes a reach of the channel of Dry Creek. The vegetation is variously dominated by a range of indigenous grasses including Kangaroo Grass, Wallaby-grasses and Spear-grasses and generally with a relatively high cover of high threat grassy weeds such as Serrated Tussock. However a range of herbs persist including Crane's Bill *Geranium* spp., Sheep's Burr *Acaena echinata*, Lemon Beauty-heads *Calocephalus citreus*, Bluebell *Wahlenbergia* spp., Blue Devil *Eryngium ovinum*, Plantain *Plantago* spp. and the endangered Small Scurf-pea *Cullen parvum*.

The Key Area west of Tarneit Road supports little in the way of rocky outcrops and may largely consist of relatively species poor secondary grassland although it still supports some values suggesting it may not have been frequently cultivated. It is typically dominated by Wallaby-grasses and Spear-grasses although it also supports scatted patches of Kangaroo Grass and Rigid Panic *Walwhalleya proluta*. The prevalence of Brown-back Wallaby-grass *Austrodanthonia duttoniana* suggests it may be seasonally wetter than grasslands more typically dominated by Kangaroo Grass. Other non-grass species recorded at this site include Black Cotton-bush *Maireana decalvans*, Plantain *Plantago* spp., Grassland Wood-sorrel *Oxalis perennans*, Bindweed *Convolvulus* spp., Wingless Blue-bush *Maireana enchylaenoides* and the endangered Small Scurf-pea.

No Key Areas <10 ha in size have been identified within Section D.

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 will provide some indication of likely Key Areas within the reconnaissance survey sites.

Three broad areas likely to support Plains Grassland, all of which are significantly larger than the Key Areas identified above, were identified by the reconnaissance survey. This includes large areas of grassland to the south of Doherty's Road and to the west of Tarneit Road, south of Boundary Road between Woods Road and Derrimut Road (dissected by Skeleton Creek) and north of Leakes Road and east of Woods Road. These areas were observed to support broad areas of Plains Grassland dominated by Kangaroo Grass and are likely to be of Very High conservation significance (VHCS). The aerial photography also suggests that each of these patches of native vegetation is in excess of 50 ha in extent with the Tarneit road area likely to be greater than 100 ha.

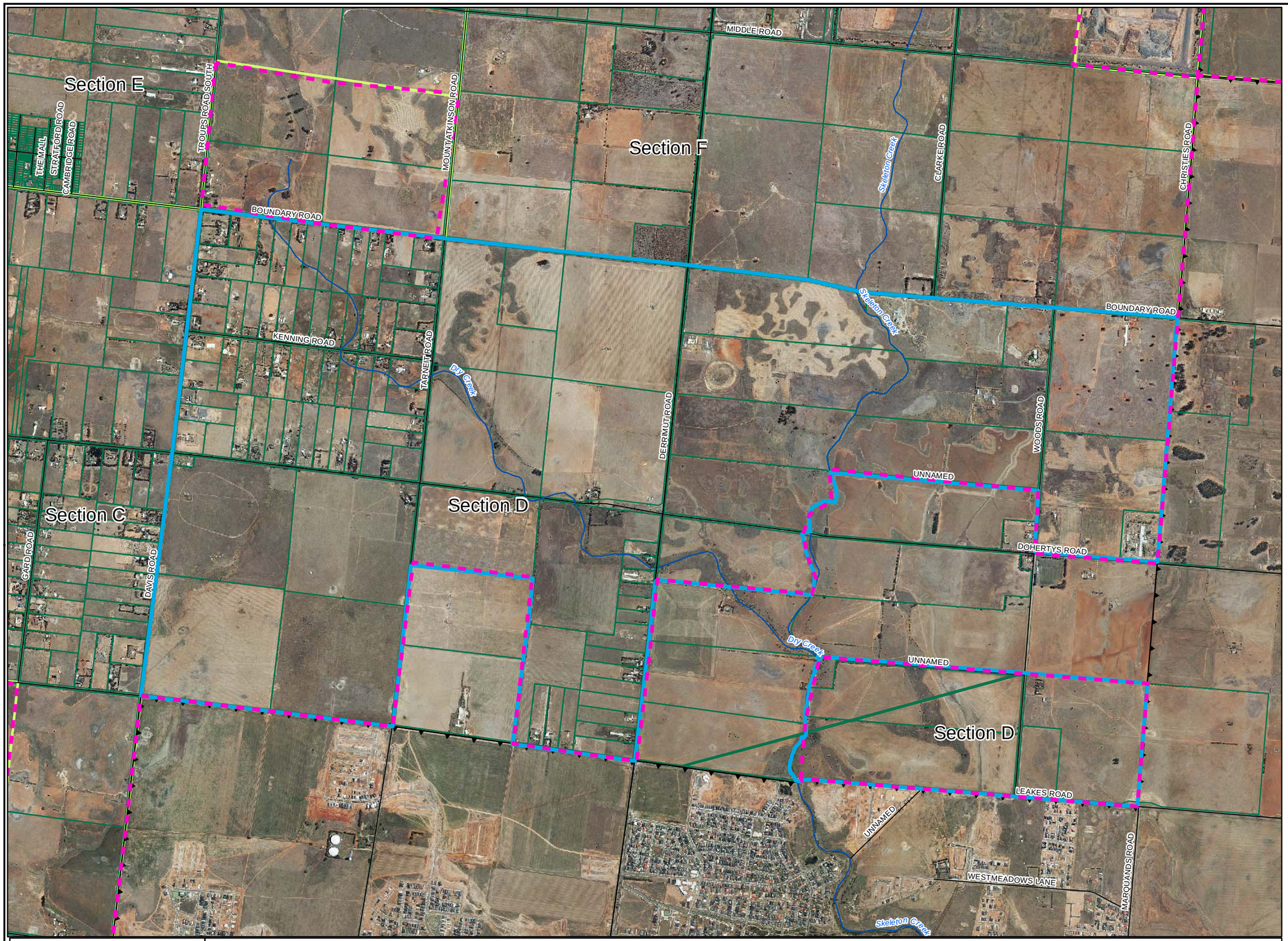
6.0 CONCLUSION

The areas assessed within Section D as part of the Melton/Wyndham Investigation contain a significant area of native vegetation, comprised of the endangered EVCs Plains Grassland (331.39 ha) and Plains Grassy Wetland (4.83 ha). The majority of Plains Grassland within this area is also likely to meet the criteria for the EPBC Act listed ecological community *Natural Temperate Grassland of the Victorian Volcanic Plain* (critically endangered) and the Western (Basalt) Plains Grassland Community listed under the FFG Act. In addition, the area provides valuable habitat for nationally significant species Spiny Rice-flower, Golden Sun Moth, Plains-wanderer and Striped Legless Lizard (all of which have been previously recorded in Section D). 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 170 ha (approx.) within Section D were identified as *highly likely native vegetation – grassy* during the reconnaissance surveys.

Of the 154.55 ha of native vegetation mapped in Section D during the Melton/Wyndham Investigation, approximately 28 ha have been identified as part of the two Key Ecological Areas identified. These Key Areas have been determined based on their conservation significance, size, habitat for threatened species and habitat connectivity values. It must be noted that some 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 will provide some indication of likely Key Areas within the reconnaissance survey sites.

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

FIGURES



Legend

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

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

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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Kilometers

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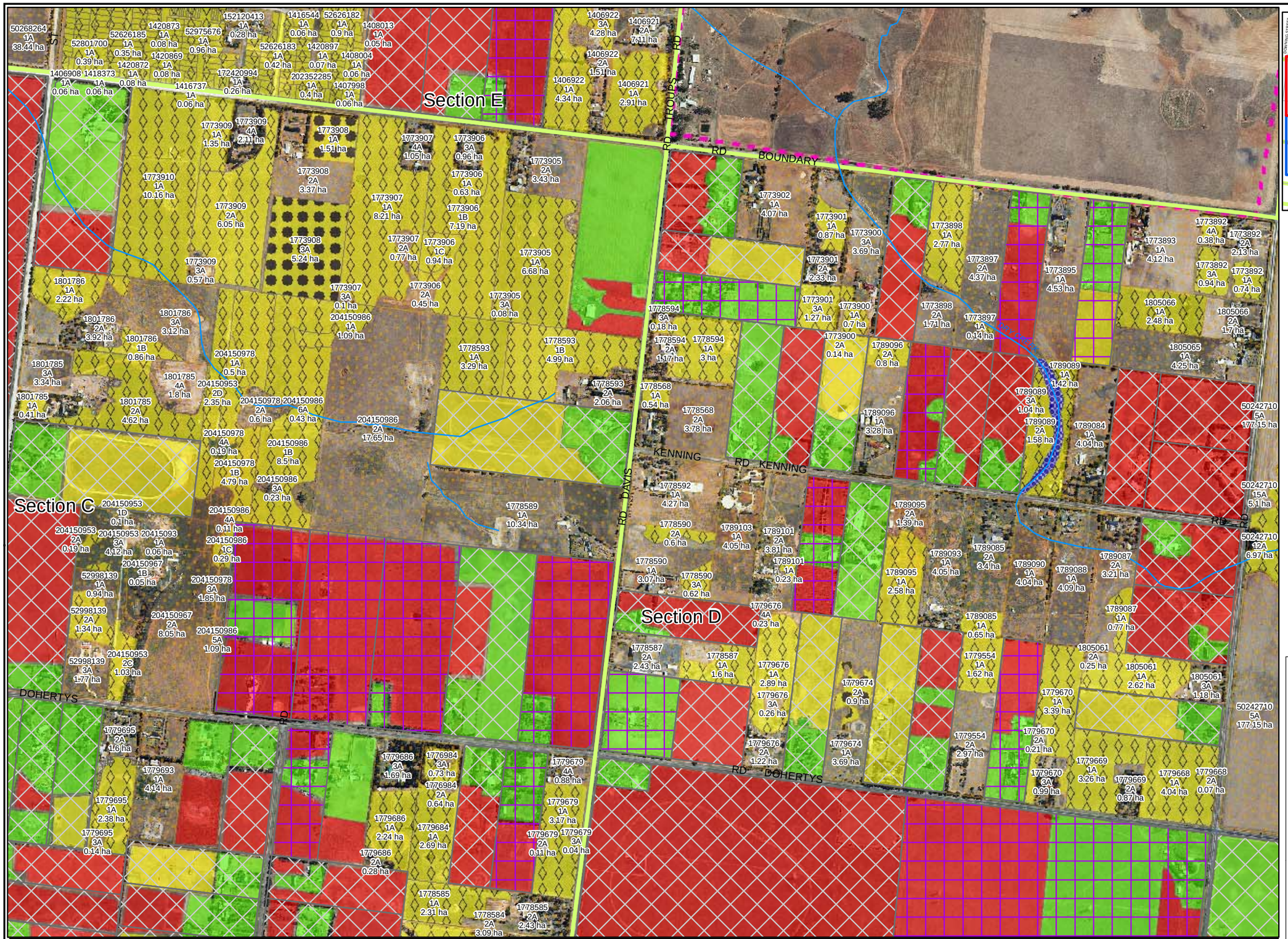

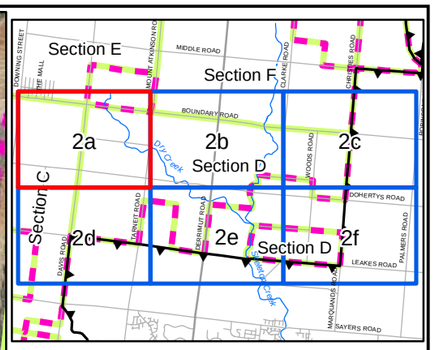

Legend

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 656 Brackish Wetland
- Degraded Treeless Vegetation

Reconnaissance Survey

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

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Figure 2a: Native Vegetation within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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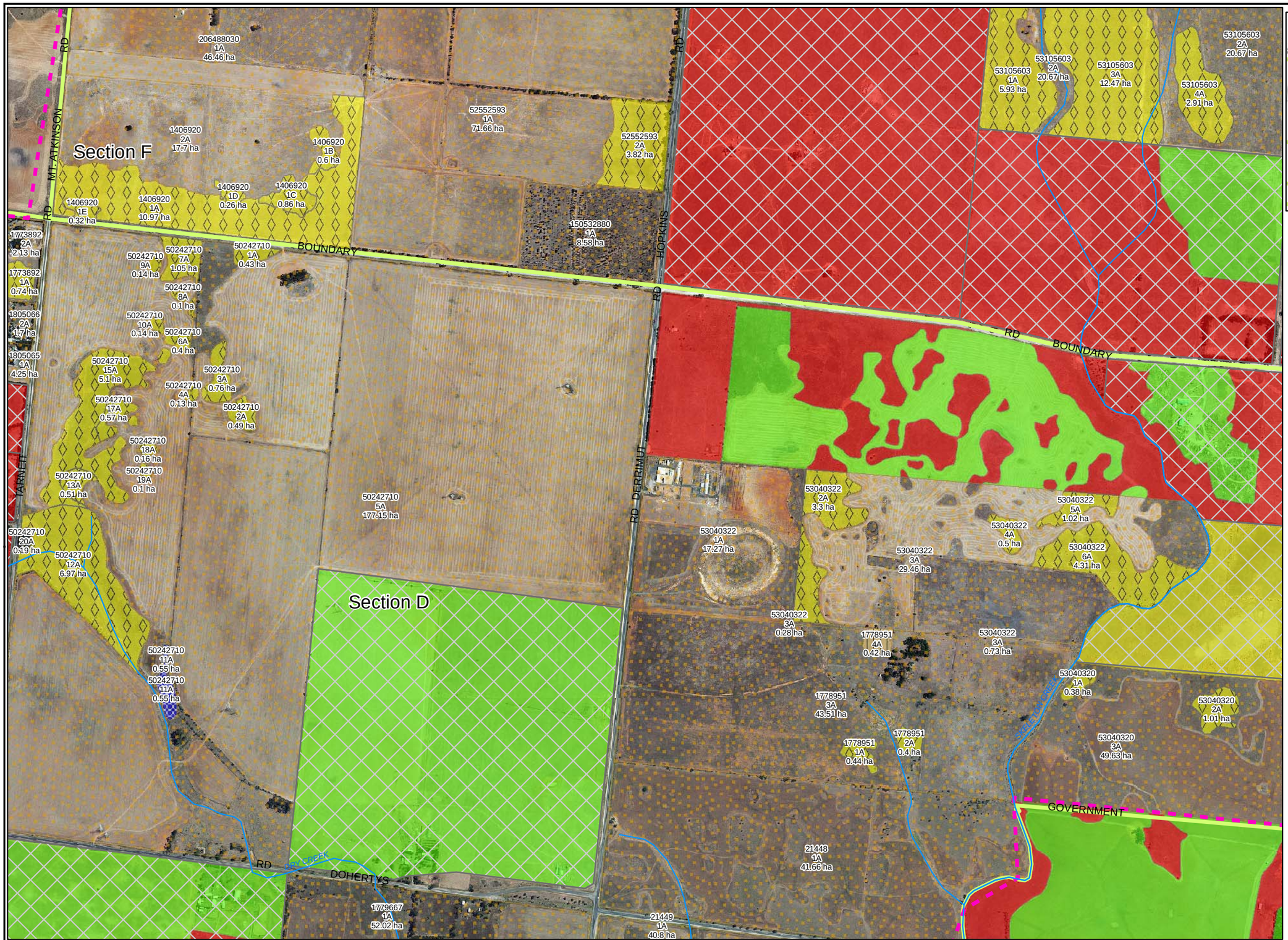

Legend

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 656 Brackish Wetland
- Degraded Treeless Vegetation

Reconnaissance Survey

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

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Figure 2b: Native Vegetation within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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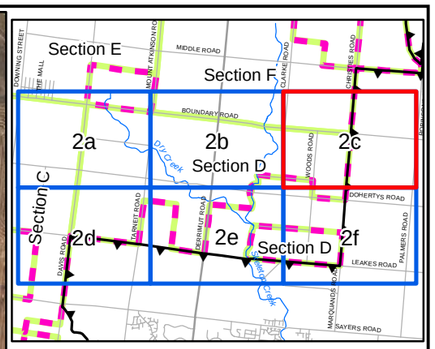

Legend

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 656 Brackish Wetland
- Degraded Treeless Vegetation

Reconnaissance Survey

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

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Figure 2c: Native Vegetation within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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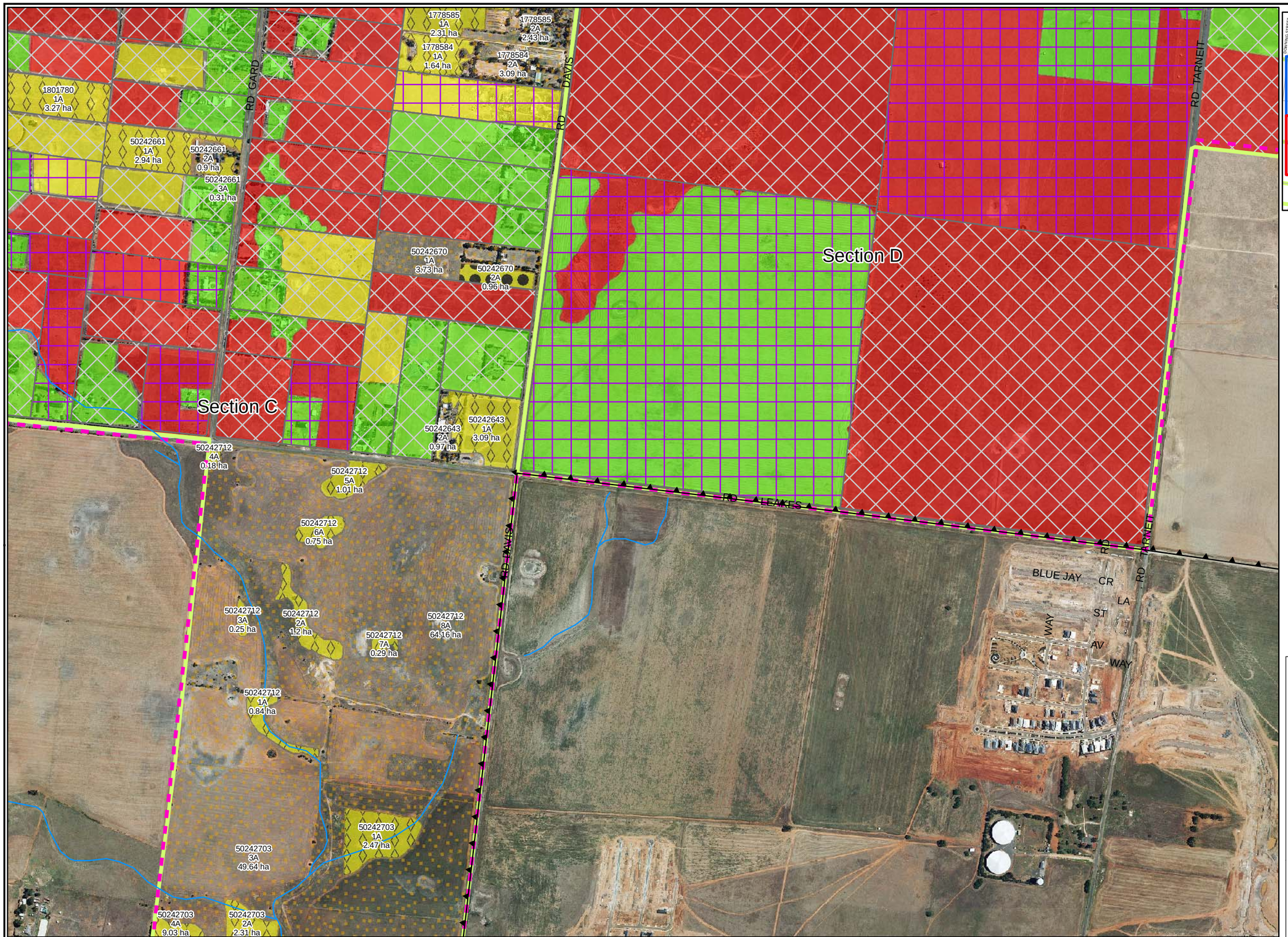

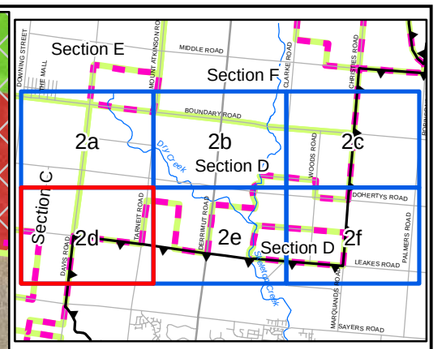

Legend

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 656 Brackish Wetland
- Degraded Treeless Vegetation

Reconnaissance Survey

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

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Figure 2d: Native Vegetation within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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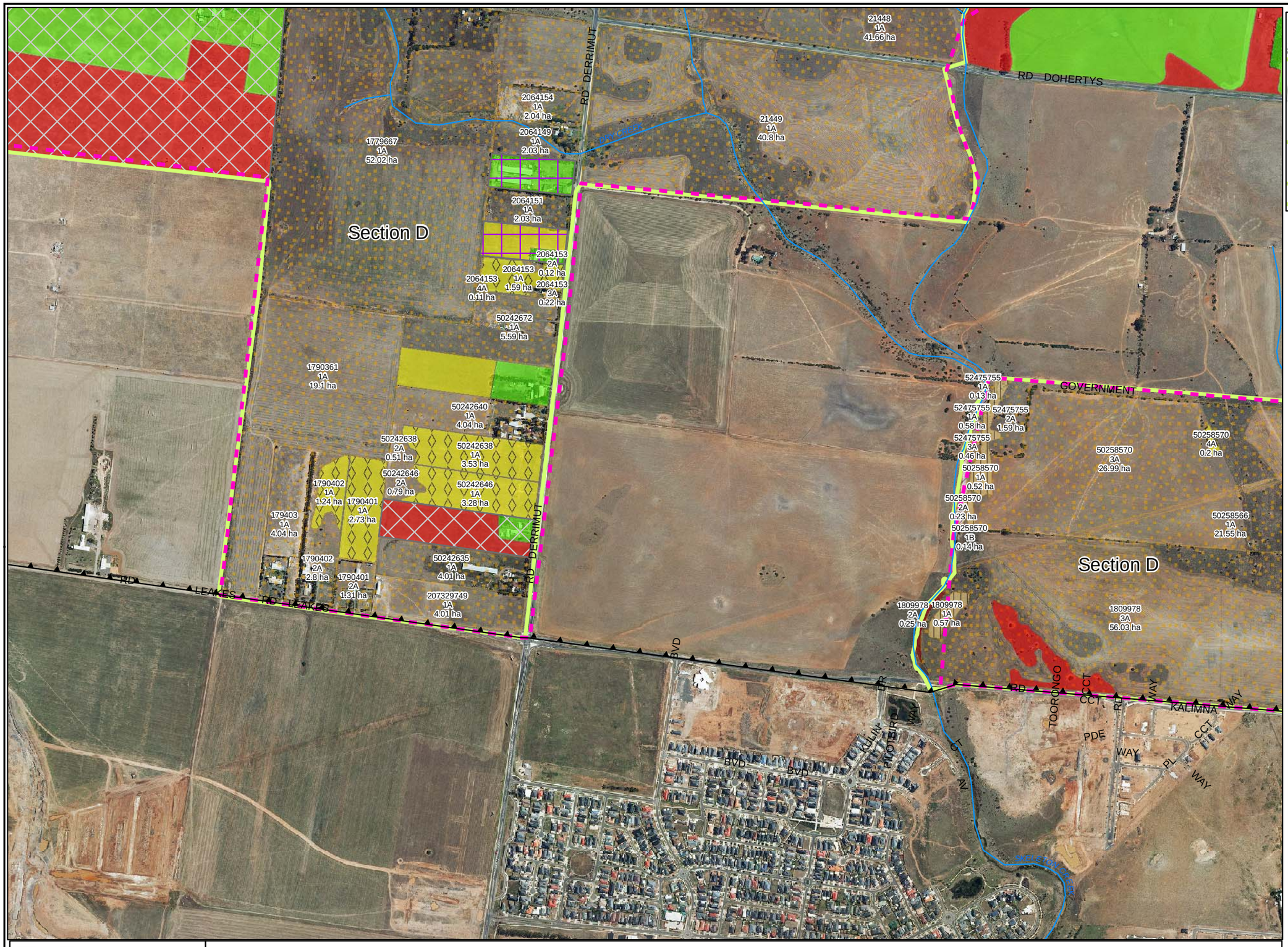

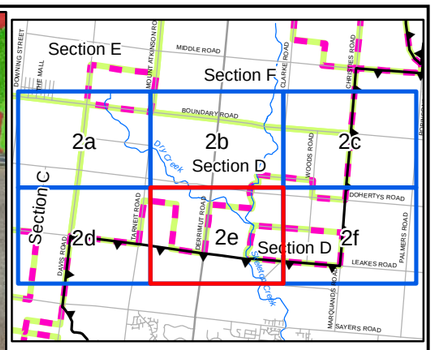

Legend

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 656 Brackish Wetland
- Degraded Treeless Vegetation

Reconnaissance Survey

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

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Figure 2e: Native Vegetation within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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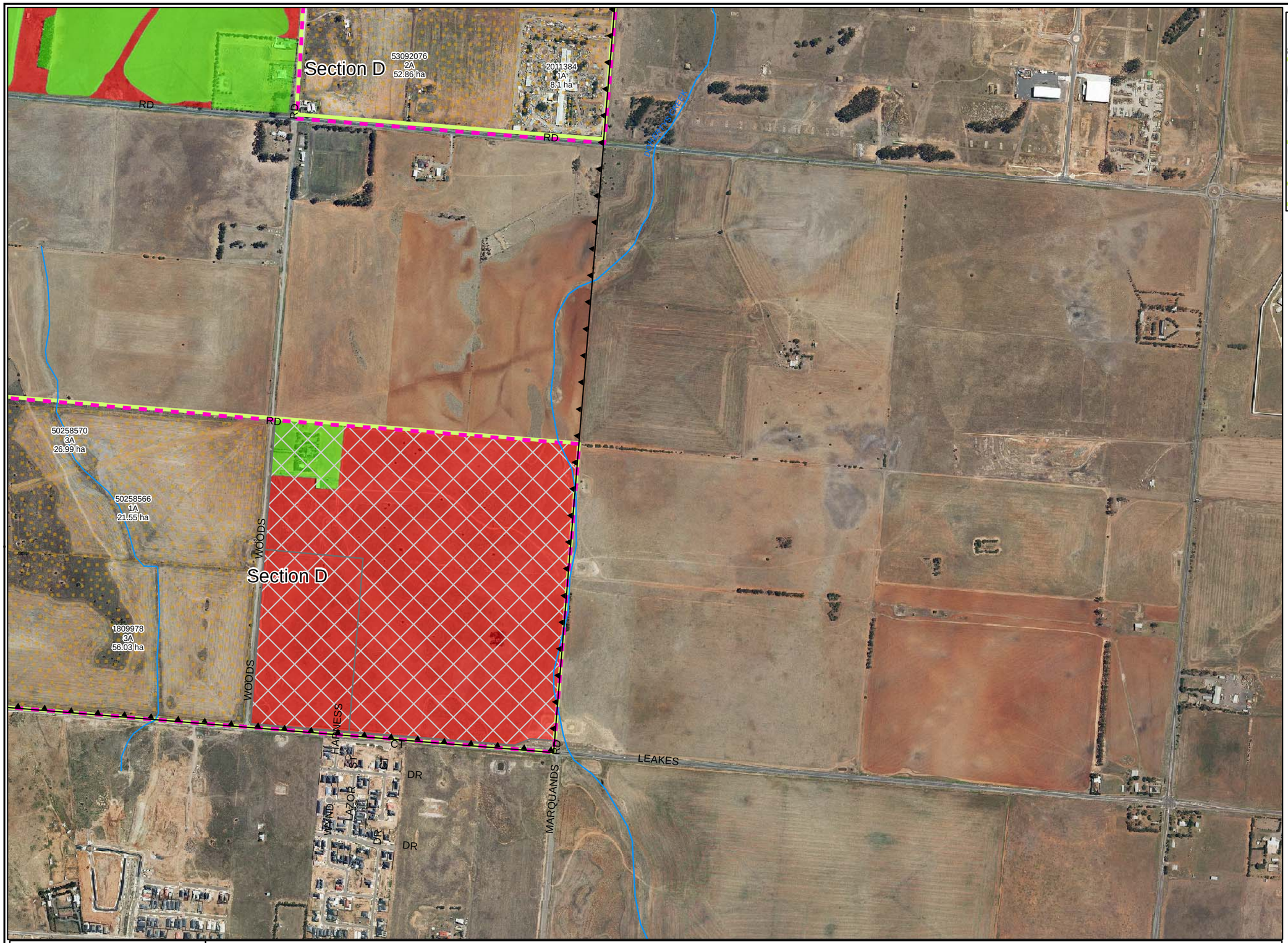

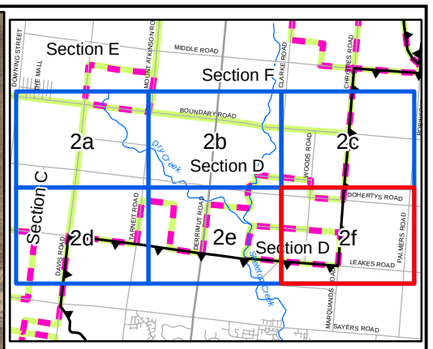

Legend

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 656 Brackish Wetland
- Degraded Treeless Vegetation

Reconnaissance Survey

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

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Figure 2f: Native Vegetation within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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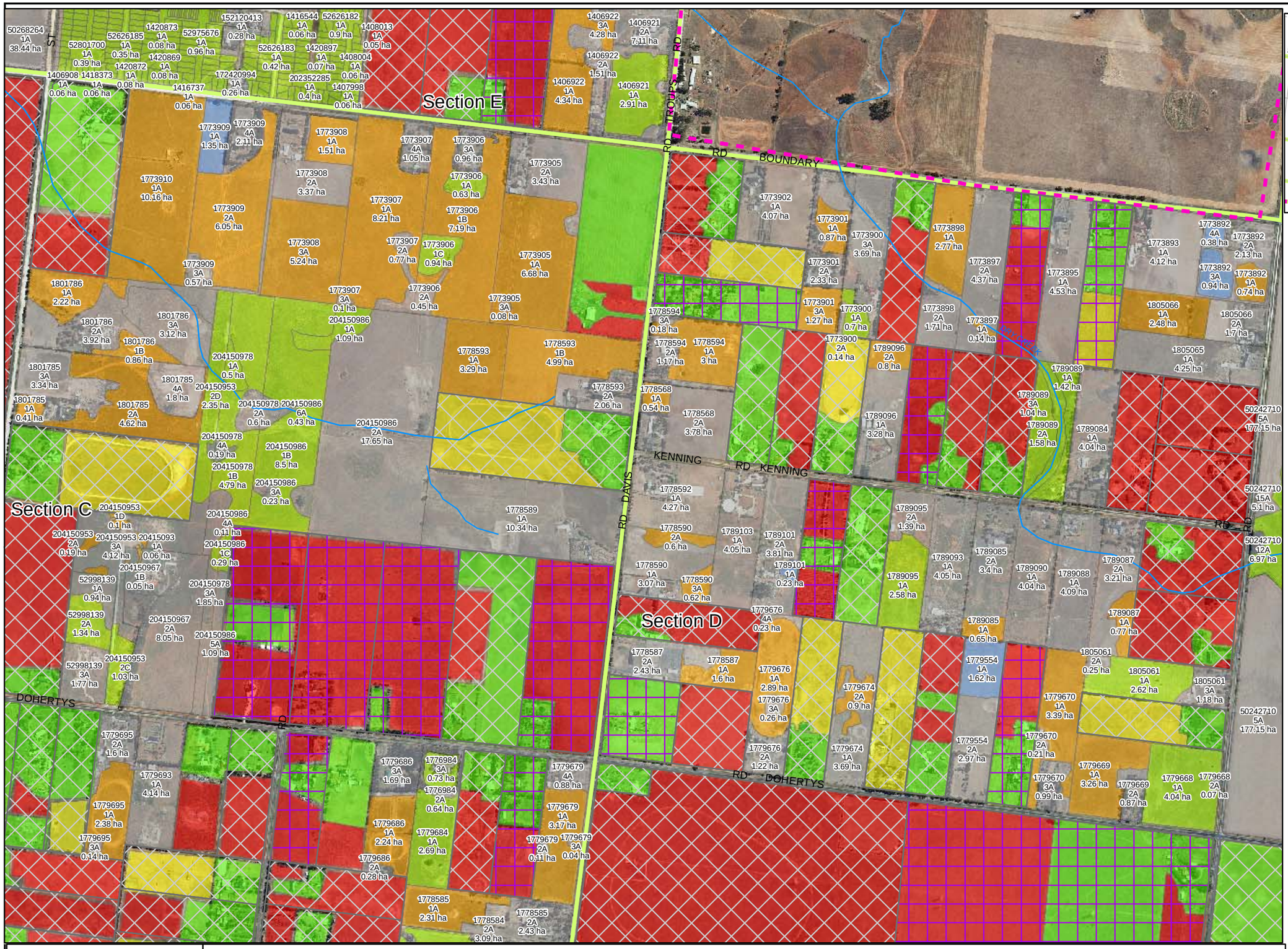

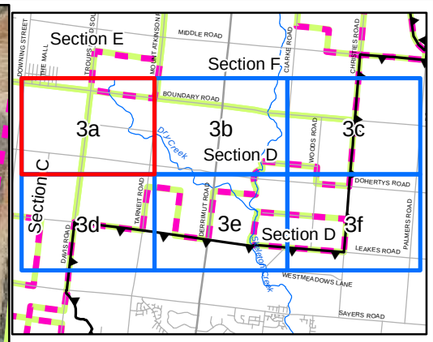

Legend

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 within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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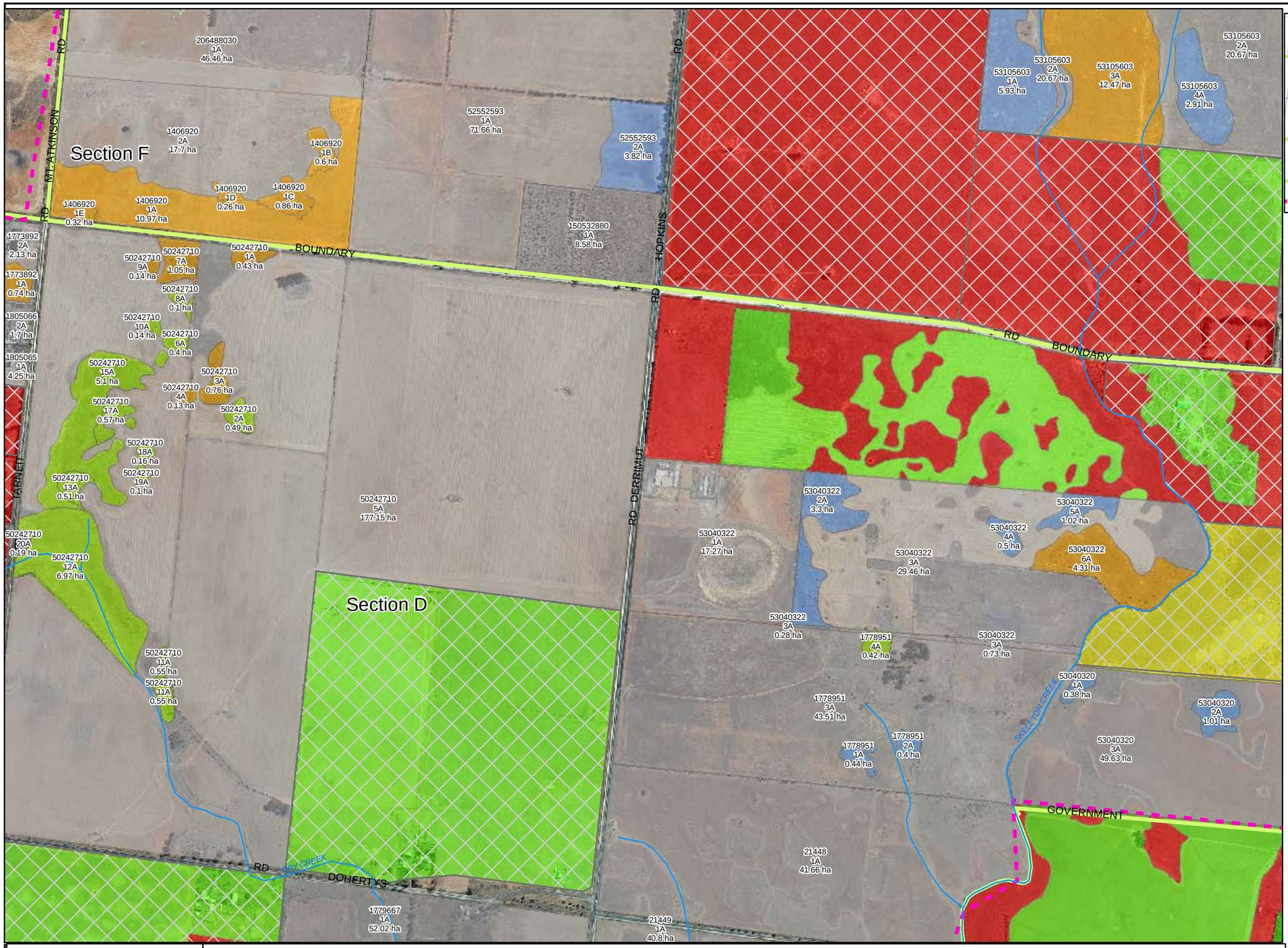

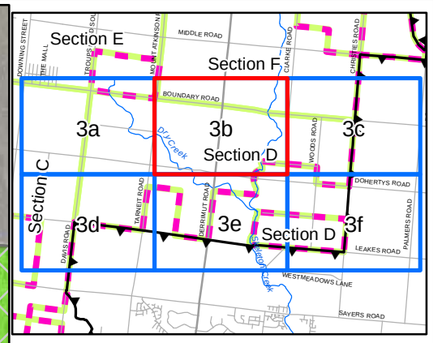

Legend

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 3b: Vegetation quality of habitat zones within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
Meters

N W E S

Legend

Site Condition Score

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

Reconnaissance Survey

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

Access status for properties not assessed

- Access Denied
- Access unable to be obtained

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Figure 3c: Vegetation quality of habitat zones within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
Meters

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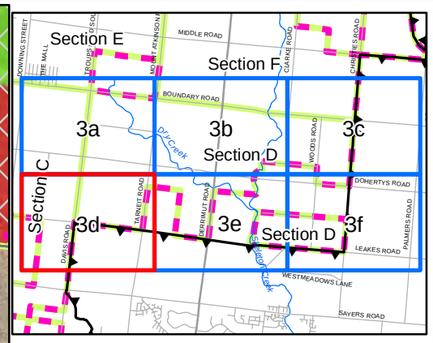

Legend

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 within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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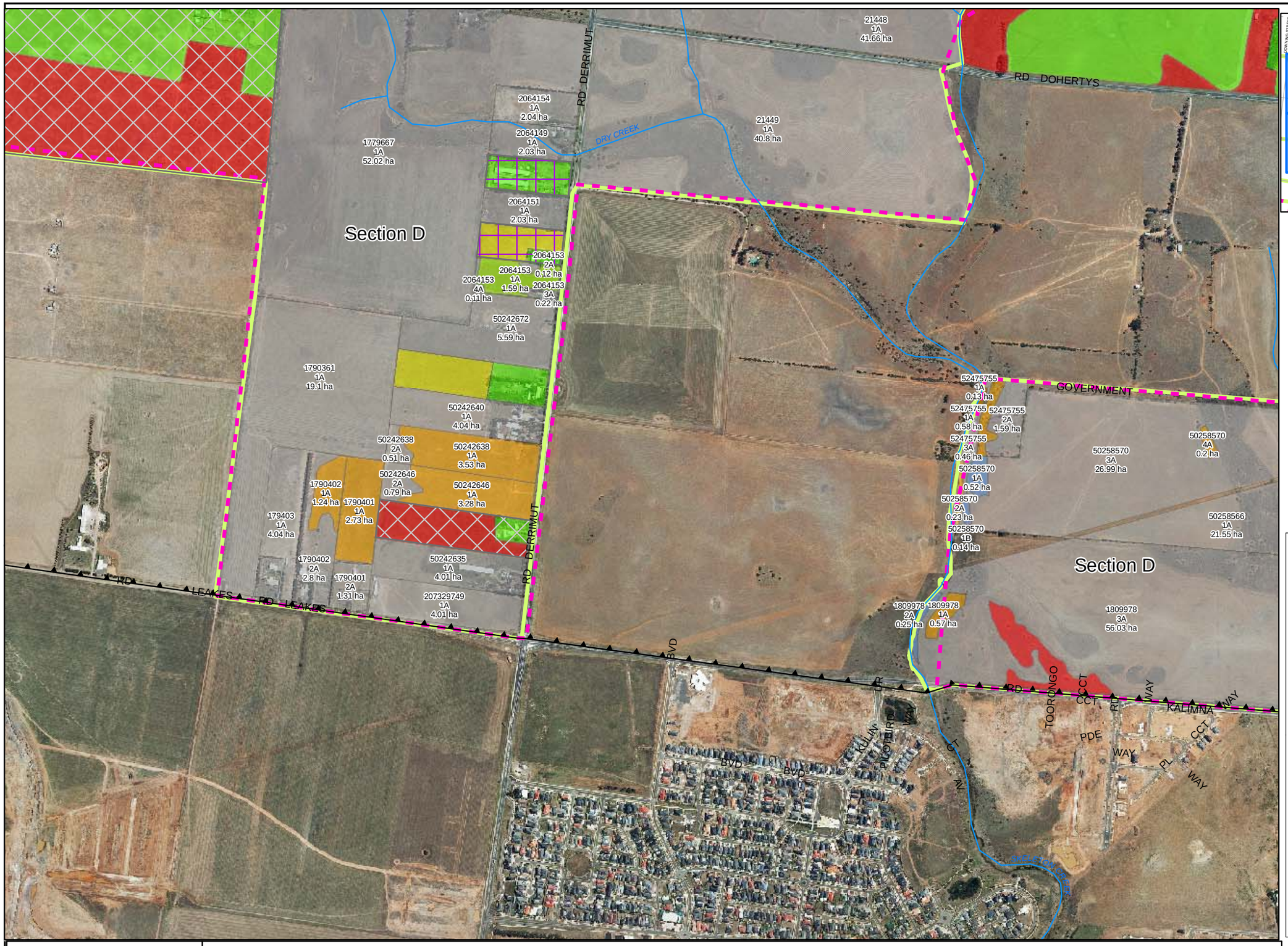

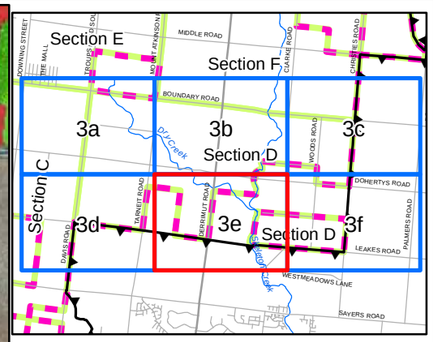

Legend

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 3e: Vegetation quality of habitat zones within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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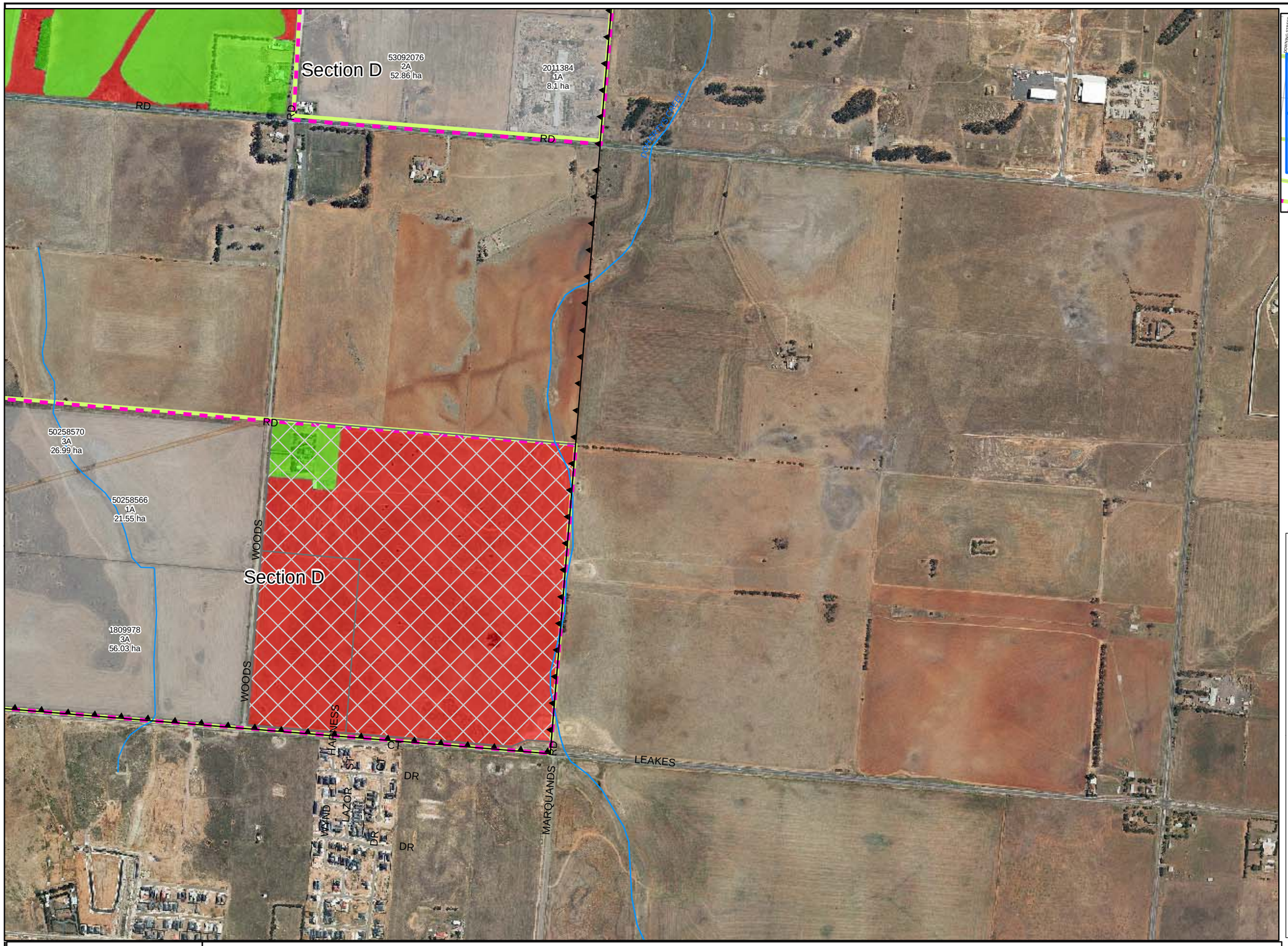

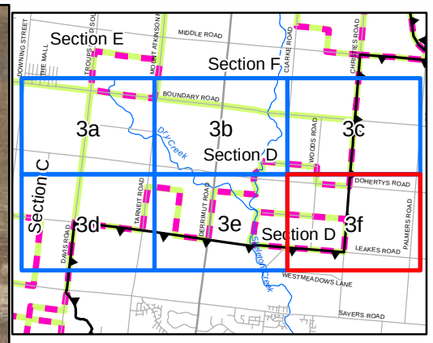

Legend

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 3f: Vegetation quality of habitat zones within the study area, Section D.

Date: 26 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
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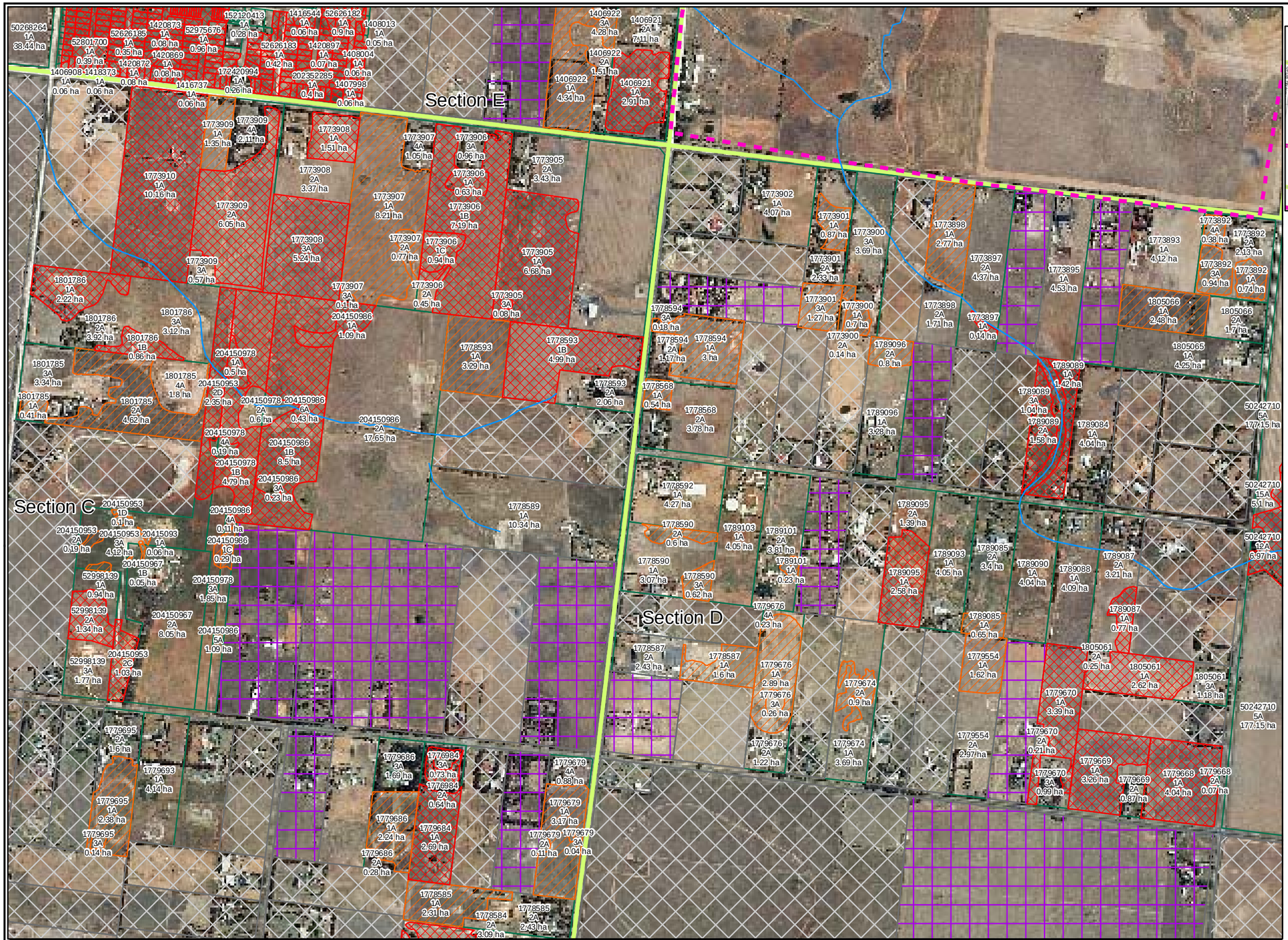

Legend

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

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Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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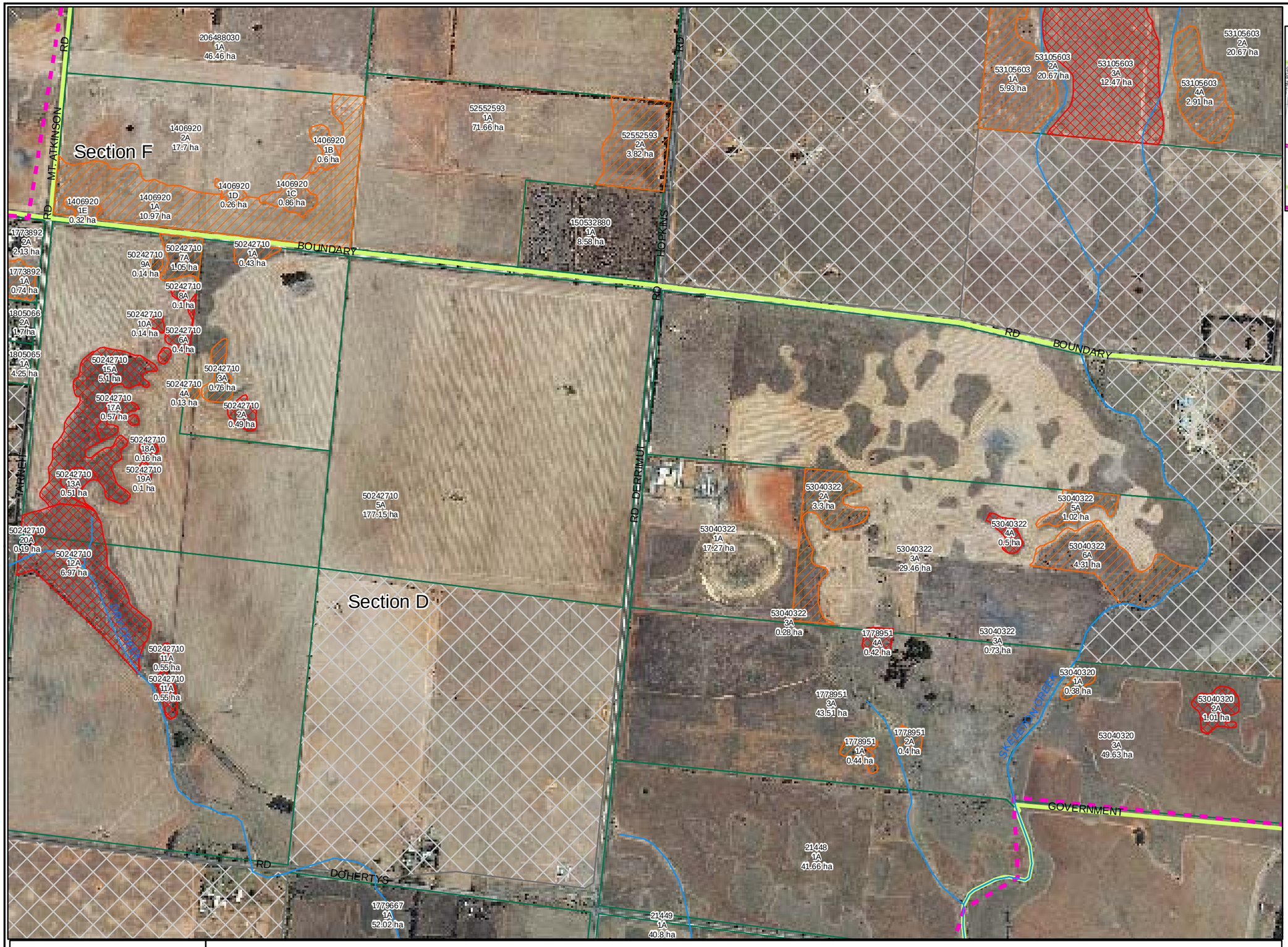

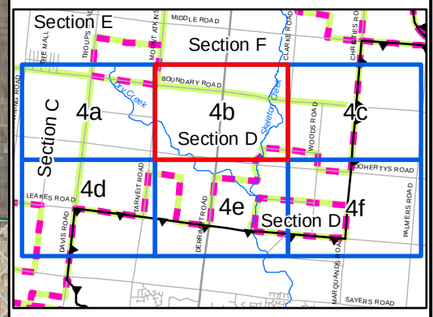

Legend

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

Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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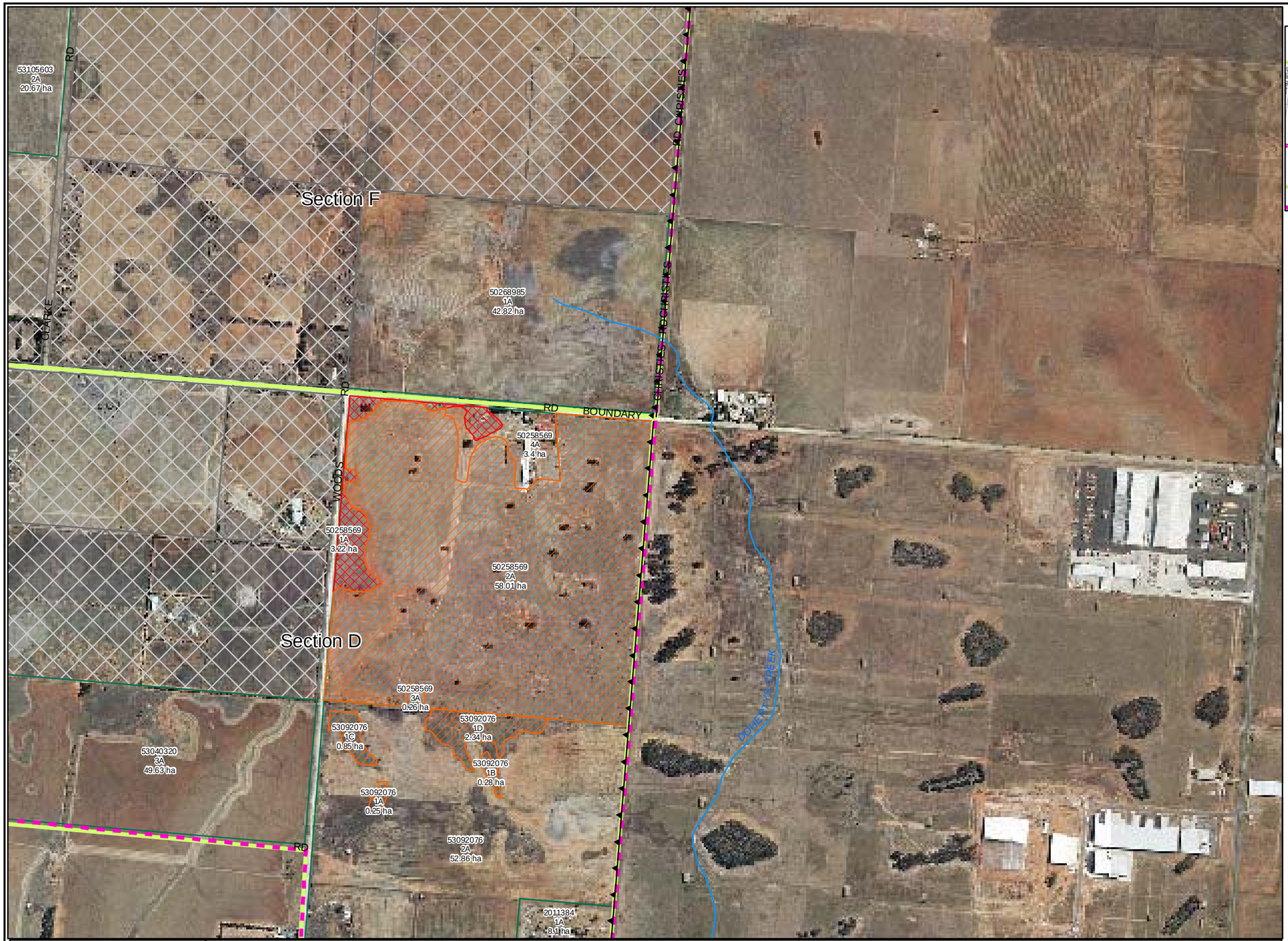

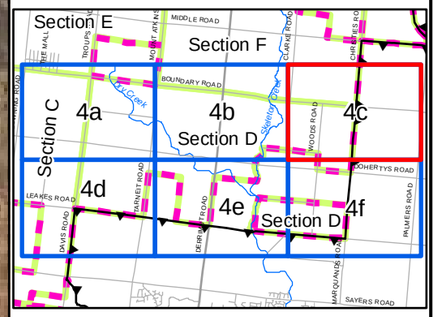

Legend

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 D.

Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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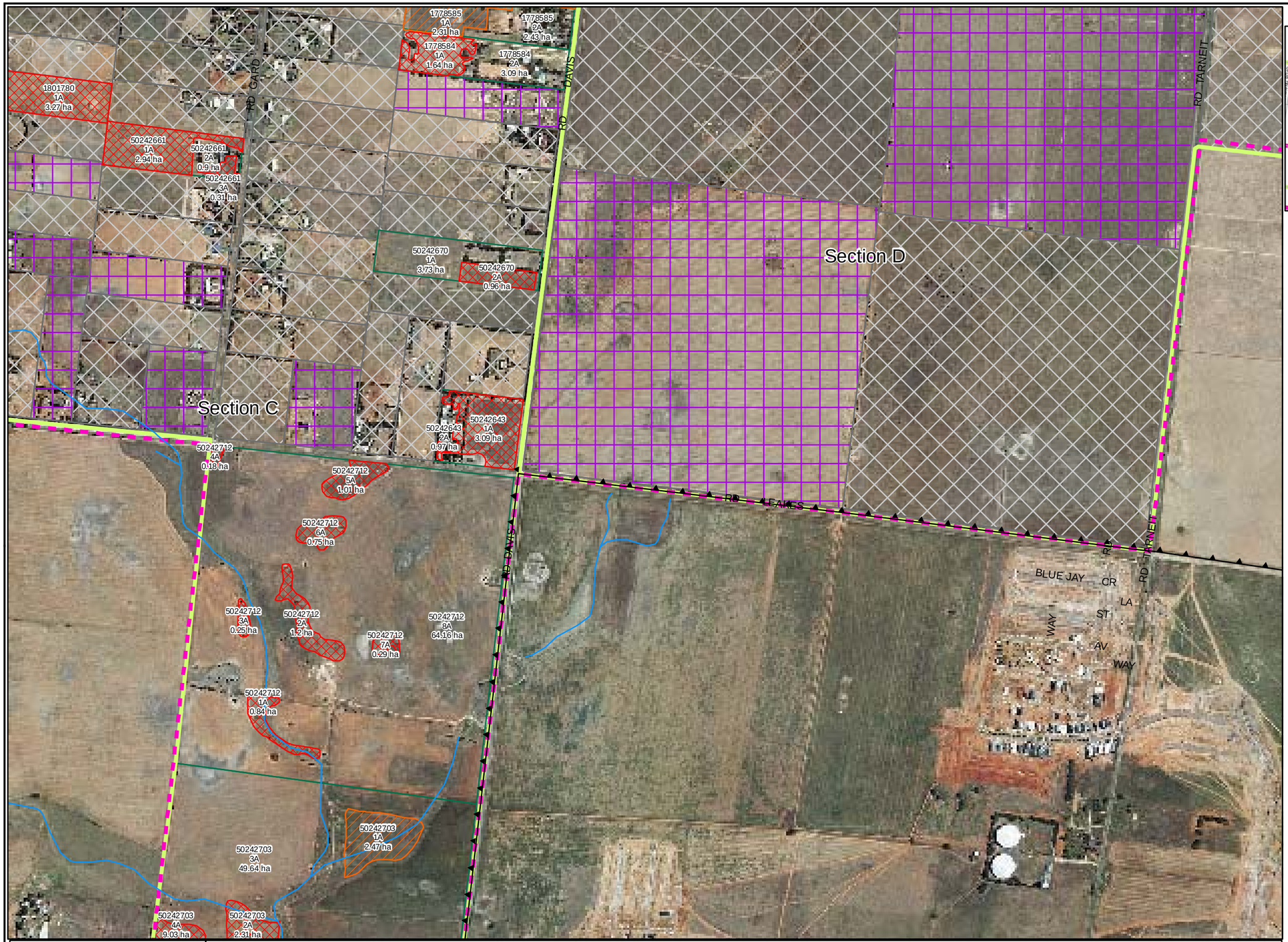

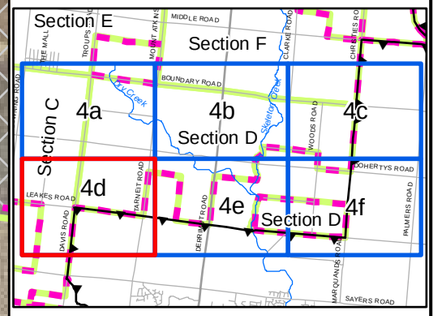

Legend

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

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Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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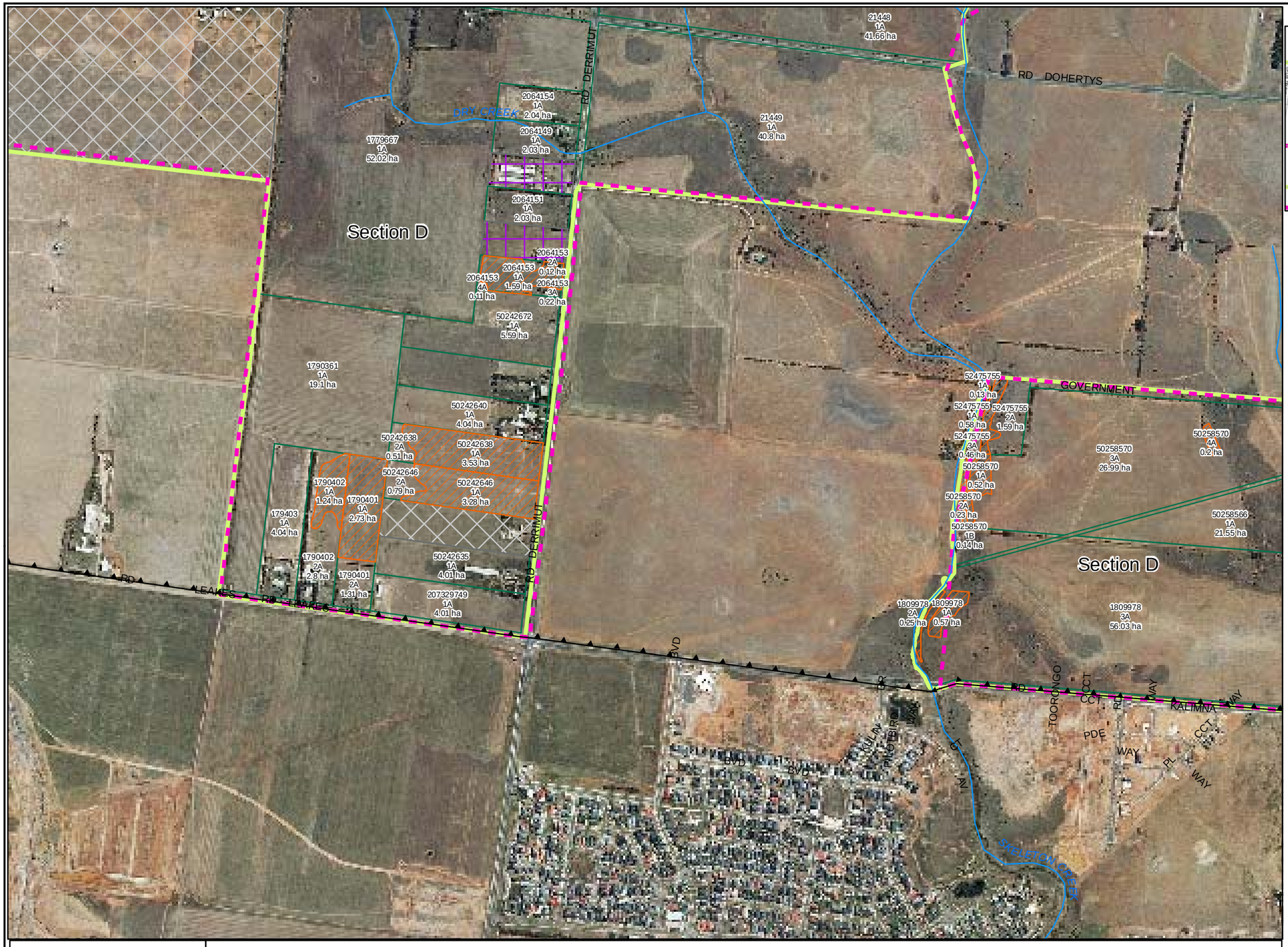

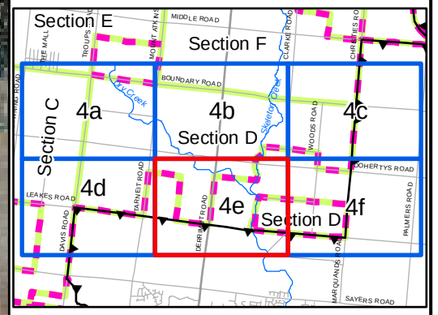

Legend

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 D.

Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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Meters

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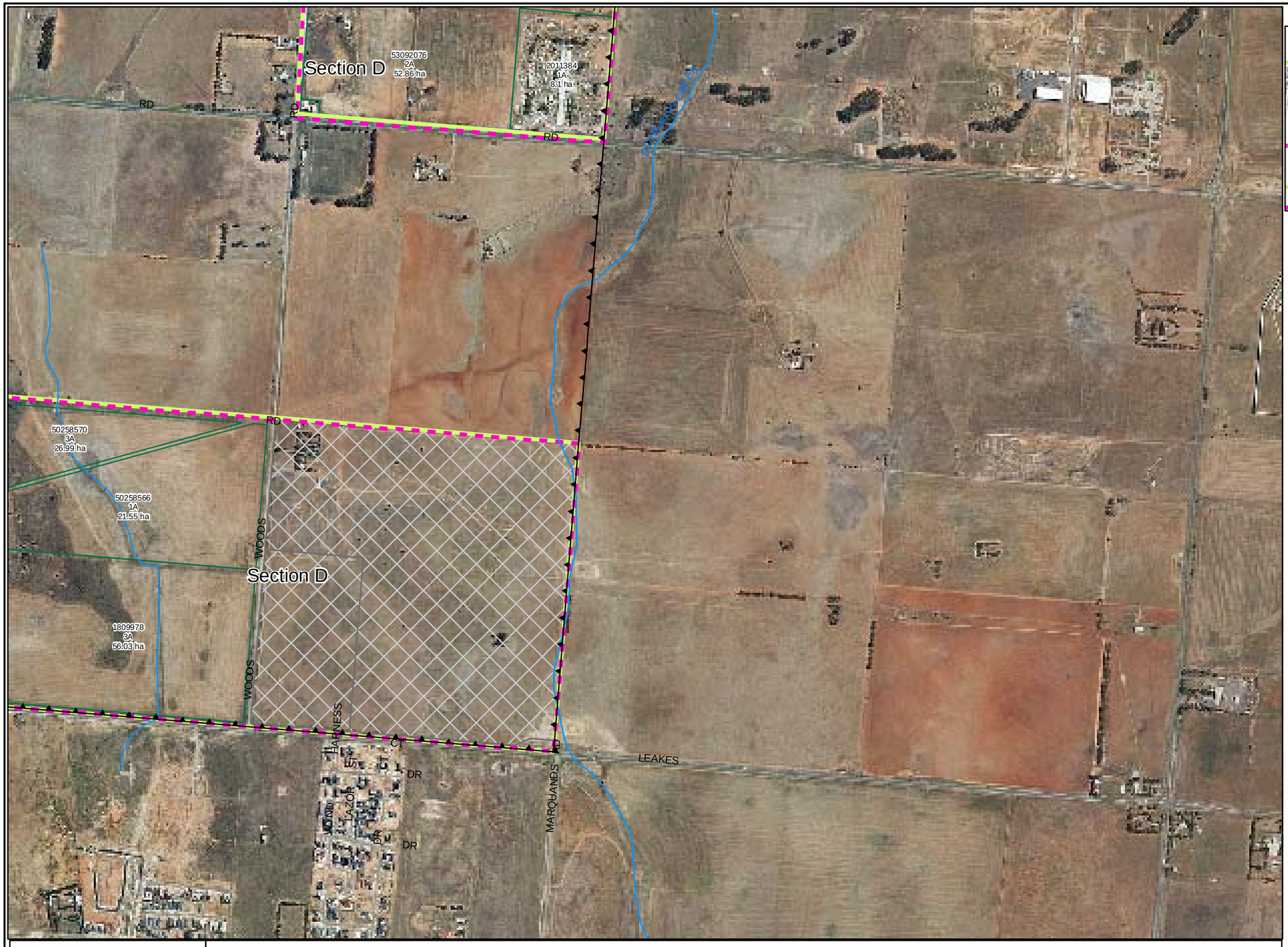

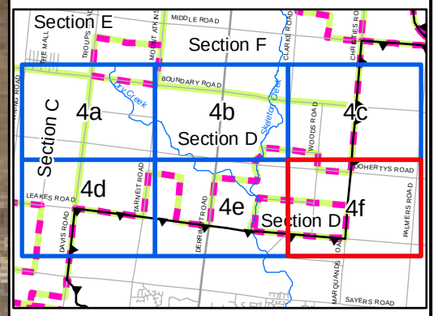

Legend

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 D.

Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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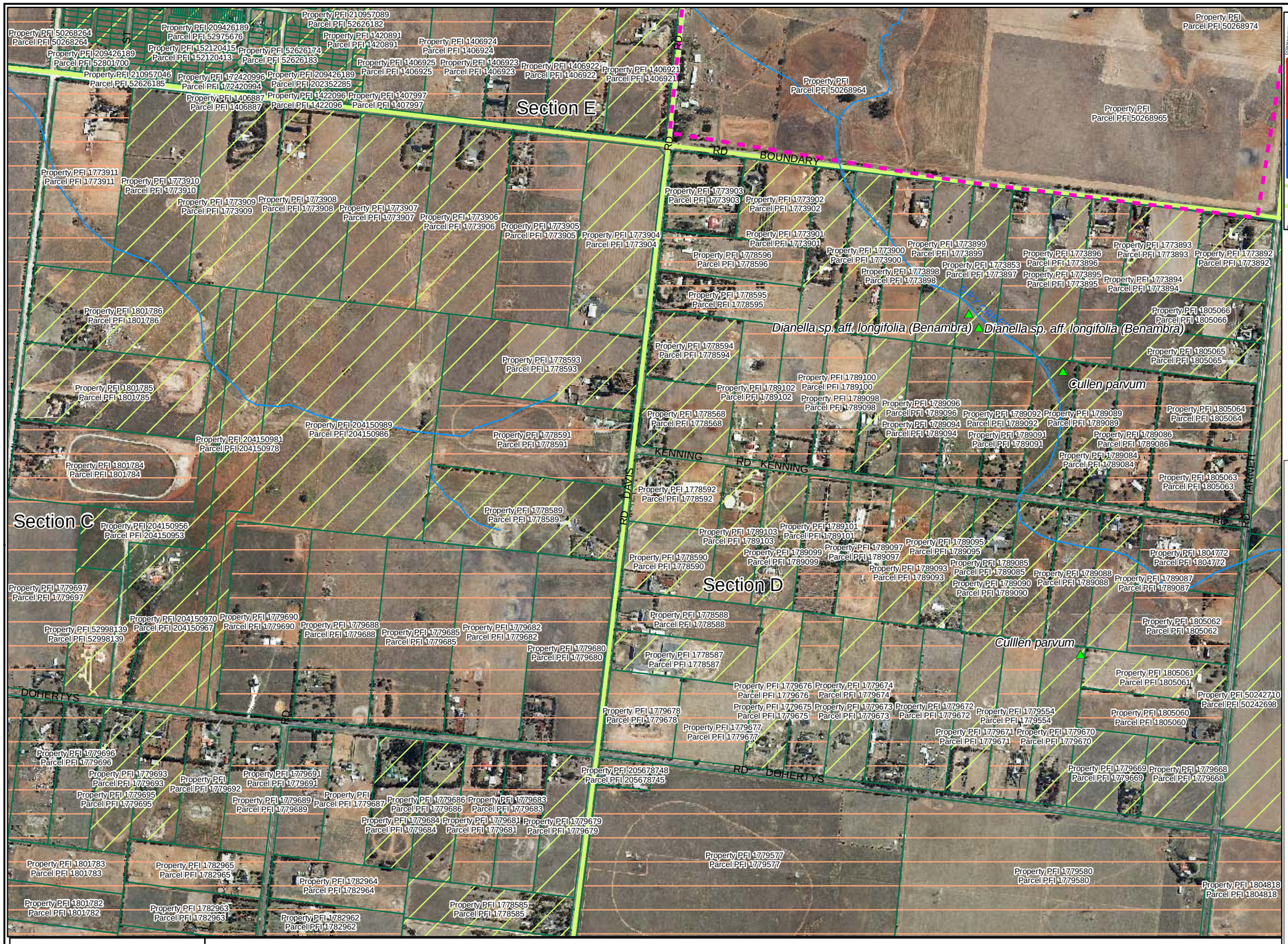

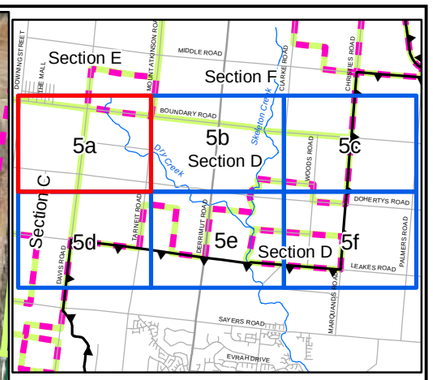

Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- **Nationally significant^**
- **Urban Growth Boundary**
- **Melton/Wyndham Investigation Area**
- **Section boundary**

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 D.

Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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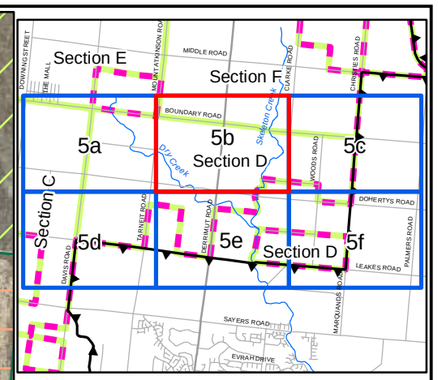

Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- **Nationally significant^**
- **Urban Growth Boundary**
- **Melton/Wyndham Investigation Area**
- **Section boundary**

Parcels

Assessment status

- **Assessed**
- **Not assessed**

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

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Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

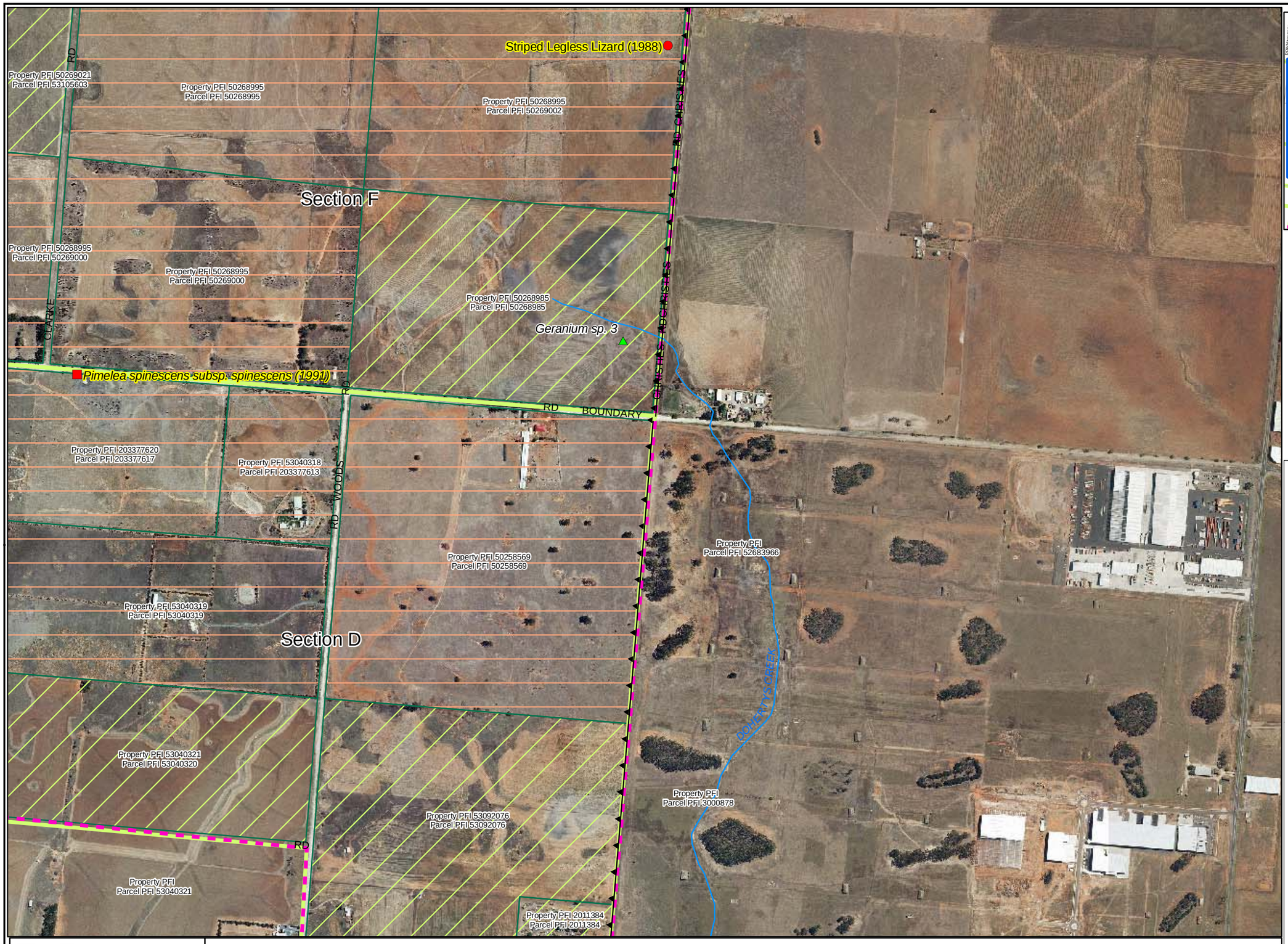
0 50100 200 300 400 500
Meters

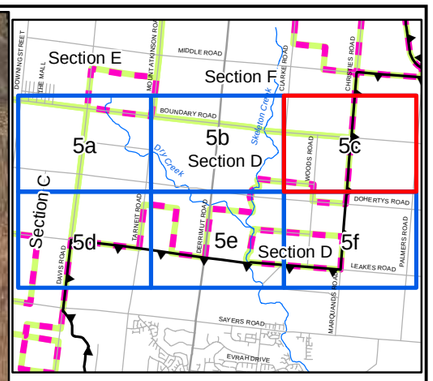
N W E S

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

^ Nationally significant species labels highlighted in yellow

* FFG listed and/or DSE VROT Advisory list





Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- **Nationally significant^**
- **Urban Growth Boundary**
- **Melton/Wyndham Investigation Area**
- **Section boundary**

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 D.

Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
Meters

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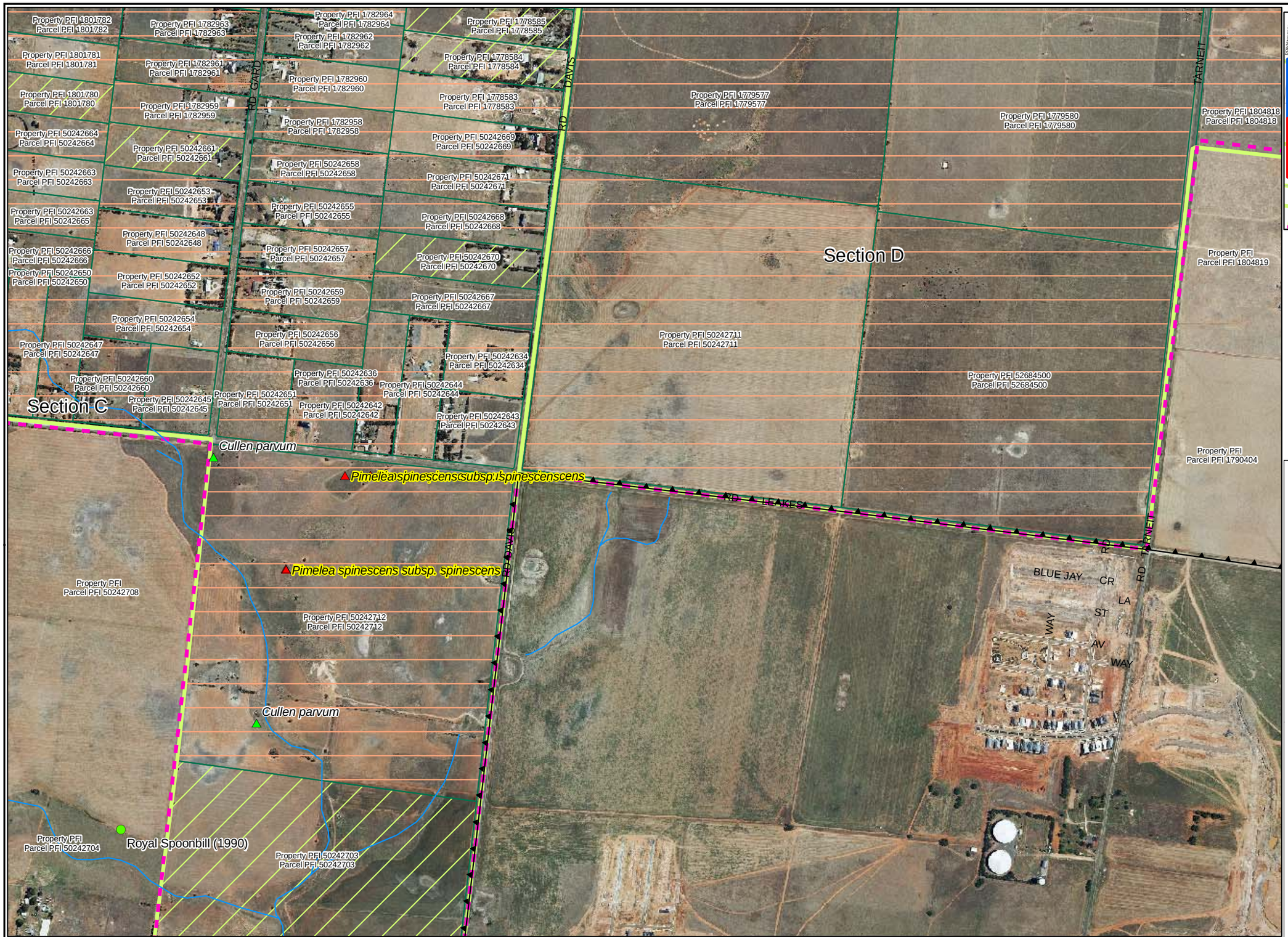

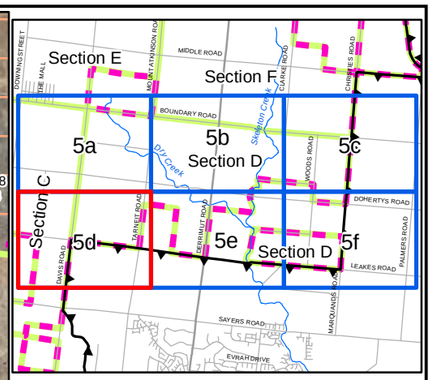

Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- Nationally significant^
- Urban Growth Boundary
- Melton/Wyndham Investigation Area
- Section boundary

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

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

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Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

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Meters

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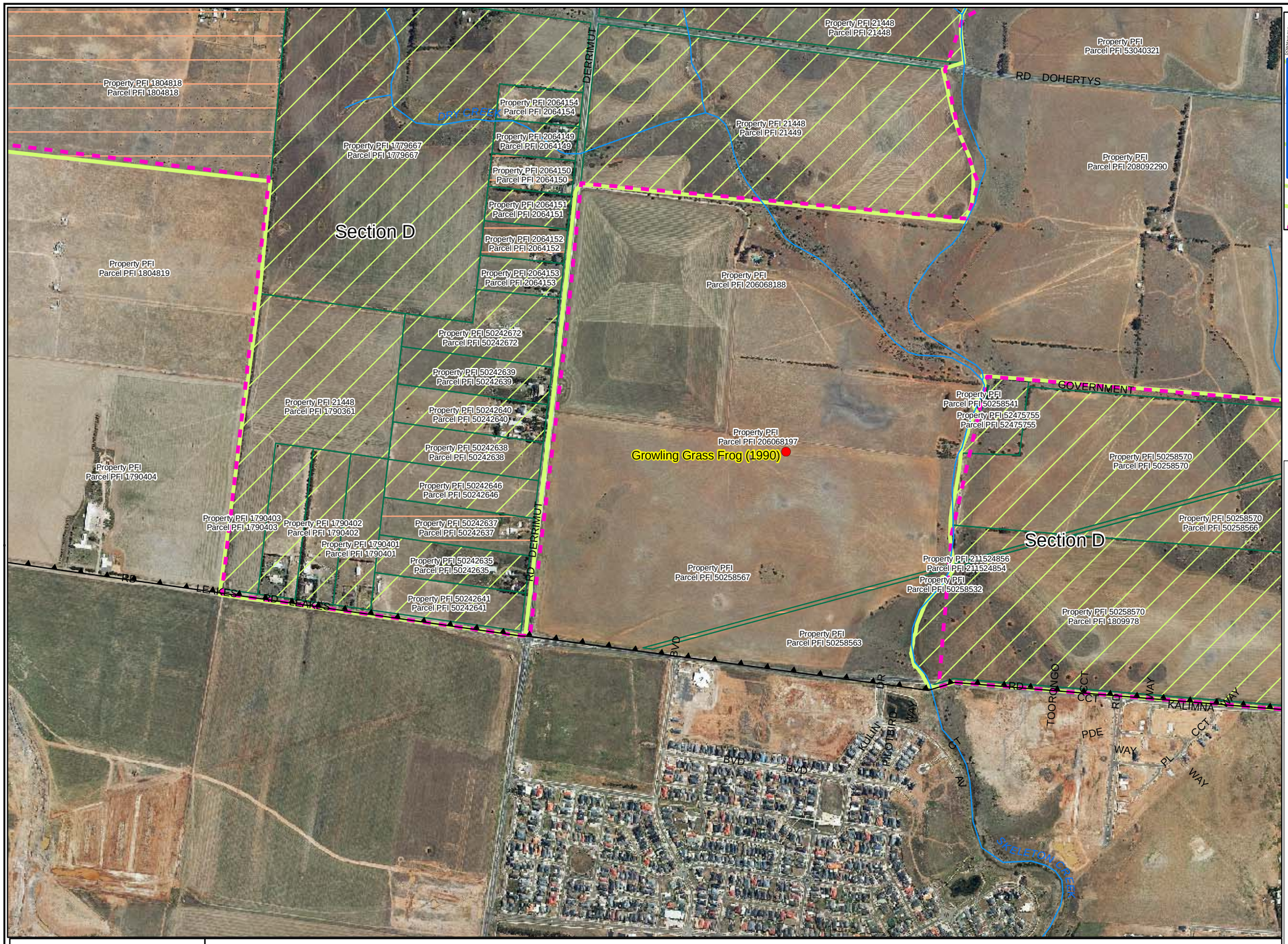

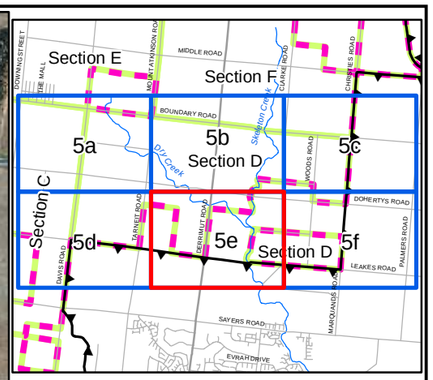

Legend

Incidental records

Nationally significant^

State Significant*

Flora

Database records

Nationally significant^

State significant*

Fauna

Database records

Nationally significant^

State significant*

Incidental records

Nationally significant^

Urban Growth Boundary

Melton/Wyndham Investigation Area

Section boundary

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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Wollongong, Queanbeyan, Wangaratta

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

Date: 25 May 2009
Checked by: NHF
Drawn by: SKM
File number: 7813

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

0 50100 200 300 400 500
Meters

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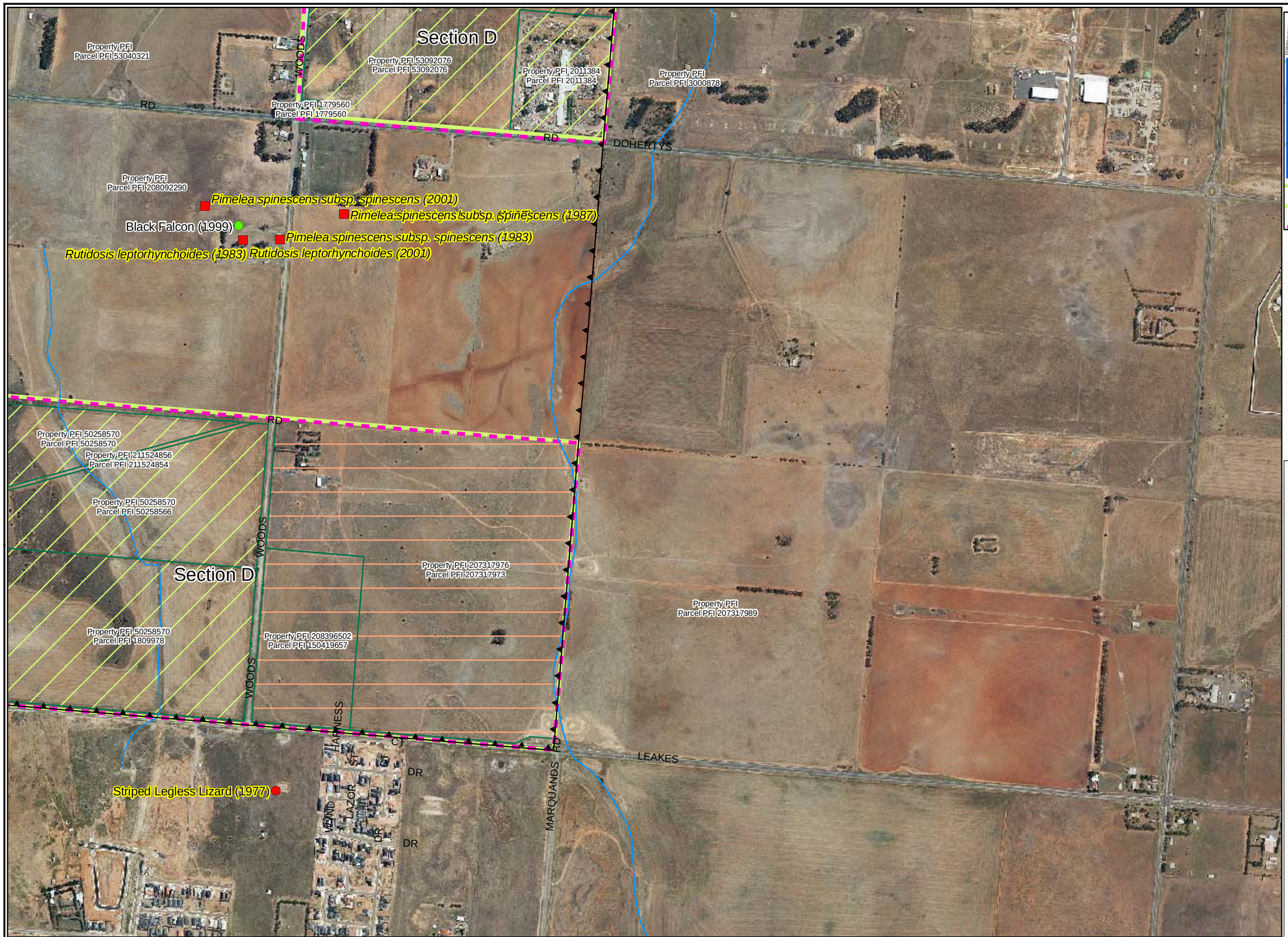

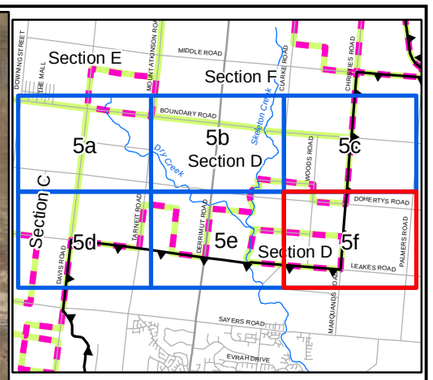

Legend

Incidental records

- Nationally significant^
- State Significant*

Flora

Database records

- Nationally significant^
- State significant*

Fauna

Database records

- Nationally significant^
- State significant*

Incidental records

- **Nationally significant^**
- **Urban Growth Boundary**
- **Melton/Wyndham Investigation Area**
- **Section boundary**

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

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

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Date: 25 May 2009
Checked by: NHF
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File number: 7813

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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 hectares 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 D Flora results

A.2.1. Flora Results

Flora species (69 indigenous species, 69 introduced species) recorded within Section D 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 FFG Act (Note: all species part of the Western (Basalt) Plains Grassland Community are also protected in addition to those shown here)

Species of regional significance recorded during the Melton/Wyndham Investigation (25) 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 D during the Melton/Wyndham Investigation

Status	Scientific name	Common name
Indigenous species:		
	Acacia paradoxa	Hedge Wattle
p	*Acacia pycnantha*	Golden Wattle
	Acaena echinata	Sheep's Burr
	Asperula conferta	Common Woodruff
	Atriplex semibaccata	Berry Saltbush
	Atriplex spp.	Saltbush
	Austrodanthonia auriculata	**Lobed Wallaby-grass**
	Austrodanthonia caespitosa	Common Wallaby-grass
	Austrodanthonia carphoides	**Short Wallaby-grass**
	Austrodanthonia duttoniana	Brown-back Wallaby-grass
	Austrodanthonia fulva	**Copper-awned Wallaby-grass**
	Austrodanthonia geniculata	Kneed Wallaby-grass
	Austrodanthonia setacea	Bristly Wallaby-grass
	Austrostipa aristiglumis	**Plump Spear-grass**
	Austrostipa gibbosa	**Spurred Spear-grass**
	Austrostipa nodosa	**Knotty Spear-grass**
	Austrostipa scabra	**Rough Spear-grass**

Status	Scientific name	Common name
	Austrostipa setacea	**Corkscrew Spear-grass**
	Bolboschoenus spp.	Club Sedge
	Bothriochloa macra	**Red-leg Grass**
p	*Calocephalus citreus*	Lemon Beauty-heads
	Carex spp.	Sedge
p	***Cassinia arcuata***	**Drooping Cassinia**
	Chamaesyce drummondii	Flat Spurge
	Chloris truncata	Windmill Grass
p	*Chrysocephalum* spp.	Everlasting
	Convolvulus angustissimus	Blushing Bindweed
	Convolvulus erubescens spp. agg.	Pink Bindweed
	Convolvulus remotus	Grass Bindweed
	Crassula decumbens var. *decumbens*	Spreading Crassula
	Crassula sieberiana s.s.	Sieber Crassula
listed, e	***Cullen parvum***	**Small Scurf-pea**
e	*Cullen* spp.	Scurf Pea
v	***Dianella* sp. aff. *longifolia* (Benambra)**	**Arching Flax-lily**
	Dichondra repens	Kidney-weed
	Einadia nutans subsp. *nutans*	Nodding Saltbush
	Eleocharis spp.	Spike Sedge
	Enchylaena tomentosa var. tomentosa	Ruby Saltbush
	Erodium crinitum	**Blue Heron's-bill**
	Eryngium ovinum	Blue Devil
p	*Euchiton* spp.	Cudweed
	***Geranium retrorsum* s.s.**	**Grassland Crane's-bill**
	Geranium spp.	Crane's Bill
	Haloragis heterophylla	Varied Raspwort
	Isolepis spp.	Club Sedge
	Juncus spp.	Rush
	Lomandra filiformis	Wattle Mat-rush
	Lomandra nana	**Dwarf Mat-rush**
	Lythrum hyssopifolia	Small Loosestrife
	Maireana decalvans	Black Cotton-bush
	Maireana enchylaenoides	**Wingless Bluebush**
	Marsilea drummondii	**Common Nardoo**
	Melicytus dentatus	Tree Violet
	Mentha spp.	Mint
	Muehlenbeckia florulenta	**Lignum**
	Oxalis perennans	Grassland Wood-sorrel
	Panicum decompositum* var. *decompositum	**Native Millet**
	Pelargonium australe	**Austral Stork's-bill**
	Plantago spp.	Plantain
	Plantago varia	**Variable Plantain**
	Poa spp.	Tussock Grass
p	*Pseudognaphalium luteoalbum*	Jersey Cudweed
	Ptilotus macrocephalus	**Feather Heads**
	Rumex brownii	Slender Dock
	Rumex dumosus	Wiry Dock
	Sclerolaena muricata	**Black Roly-poly**
p	*Senecio quadridentatus*	Cotton Fireweed
p	*Senecio* spp.	Groundsel
	***Stackhousia* spp.**	**Stackhousia**

Status	Scientific name	Common name
	Themeda triandra	Kangaroo Grass
	Triglochin spp.	Water Ribbons
	Wahlenbergia spp.	Bluebell
	Walwhalleya proluta	Rigid Panic
Introduced species:		
	Aira elegantissima	Delicate Hair-grass
	Anagallis arvensis	Pimpernel
	Arctotheca calendula	Cape Weed
	Avena barbata	Bearded Oat
	Avena fatua	Wild Oat
	Brassica rapa	White Turnip
	Bromus diandrus	Great Brome
	Bromus hordeaceus subsp. *hordeaceus*	Soft Brome
	Cirsium vulgare	Spear Thistle
	Cotula coronopifolia	Water Buttons
	Cynara cardunculus	Artichoke Thistle
	Cynodon dactylon var. *dactylon*	Couch
	Cyperus eragrostis	Drain Flat-sedge
	Dactylis glomerata	Cocksfoot
	Ecballium elaterium	Squirting Cucumber
	Ehrharta longiflora	Annual Veldt-grass
	Erodium botrys	Big Heron's-bill
	Foeniculum vulgare	Fennel
	Galenia pubescens var. *pubescens*	Galenia
	Galium aparine	Cleavers
	Galium murale	Small Goosegrass
	Helminthotheca echioides	Ox-tongue
	Hordeum leporinum	Barley-grass
	Hordeum vulgare s.s.	Barley
	Hypochoeris glabra	Smooth Cat's-ear
	Hypochoeris radicata	Flatweed
	Leontodon taraxacoides subsp. *taraxacoides*	Hairy Hawkbit
	Lepidium africanum	Common Peppercress
	Lepidium draba	Hoary Cress
	Lolium perenne	Perennial Rye-grass
	Lolium rigidum	Wimmera Rye-grass
	Lycium ferocissimum	African Box-thorn
	Malva spp.	Mallow
	Marrubium vulgare	Horehound
	Medicago spp.	Medic
	Modiola caroliniana	Red-flower Mallow
	Nassella leucotricha	Texas Needle-grass
	Nassella neesiana	Chilean Needle-grass
	Nassella trichotoma	Serrated Tussock
	Onopordum acanthium subsp. *acanthium*	Scotch Thistle
	Opuntia spp.	Prickly Pear
	Oxalis pes-caprae	Soursob
	Paspalum dilatatum	Paspalum
	Pentaschistis airoides subsp. *airoides*	False Hair-grass
	Phalaris aquatica	Toowoomba Canary-grass
	Plantago coronopus	Buck's-horn Plantain
	Plantago lanceolata	Ribwort
	Poa annua	Annual Meadow-grass

Status	Scientific name	Common name
	Poa bulbosa	Bulbous Meadow-grass
	Polygonum aviculare s.s.	Hogweed
	Raphanus raphanistrum	Wild Radish
	Romulea minutiflora	Small-flower Onion-grass
	Romulea rosea	Onion Grass
	Rosa rubiginosa	Sweet Briar
	Rubus fruticosus spp. agg.	Blackberry
	Rumex crispus	Curled Dock
	Rumex spp. (naturalised)	Dock (naturalised)
	Scolymus hispanicus	Golden Thistle
	Solanum linnaeanum	Apple of Sodom
	Sonchus asper s.s.	Rough Sow-thistle
	Sonchus oleraceus	Common Sow-thistle
	Spergularia spp.	Sand Spurrey
	Trifolium arvense var. *arvense*	Hare's-foot Clover
	Trifolium campestre var. *campestre*	Hop Clover
	Trifolium fragiferum var. *fragiferum*	Strawberry Clover
	Trifolium subterraneum	Subterranean Clover
	Ulex europaeus	Gorse
	Vicia spp.	Vetch
	Vulpia bromoides	Squirrel-tail Fescue
	Xanthium spinosum	Bathurst Burr

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

Status	Scientific Name	Common Name
Indigenous species:		
	Acacia mearnsii	Black Wattle
	Acacia melanoxylon	Blackwood
	Acacia paradoxa	Hedge Wattle
	Acacia pycnantha	Golden Wattle
	Acaena echinata	Sheep's Burr
	Acaena novae-zelandiae	Bidgee-widgee
	Acaena ovina	Australian Sheep's Burr
	Alisma plantago-aquatica	Water Plantain
listed	*Allocasuarina luehmannii*	Buloke
	Allocasuarina verticillata	Drooping Sheoak
	Alternanthera denticulata	Lesser Joyweed
	Alternanthera sp. 1 (Plains)	Plains Joyweed
V	*Amphibromus fluitans*	River Swamp Wallaby-grass
	Amphibromus neesii	Southern Swamp Wallaby-grass
	Amphibromus nervosus	Common Swamp Wallaby-grass
listed, e	*Amphibromus pithogastrus*	Plump Swamp Wallaby-grass
	Aphelia pumilio	Dwarf Aphelia
	Arthropodium minus	Small Vanilla-lily
	Arthropodium spp.	Vanilla Lily
	Asperula conferta	Common Woodruff
	Asperula scoparia	Prickly Woodruff
	Atriplex semibaccata	Berry Saltbush
	Austrodanthonia auriculata	Lobed Wallaby-grass
	Austrodanthonia bipartita s.s.	Leafy Wallaby-grass
	Austrodanthonia caespitosa	Common Wallaby-grass

Status	Scientific Name	Common Name
	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 laevis	Smooth Wallaby-grass
	Austrodanthonia penicillata	Weeping Wallaby-grass
	Austrodanthonia pilosa	Velvet Wallaby-grass
	Austrodanthonia racemosa var. *racemosa*	Slender Wallaby-grass
	Austrodanthonia setacea	Bristly Wallaby-grass
	Austrostipa aristiglumis	Plump Spear-grass
	Austrostipa bigeniculata	Kneed Spear-grass
	Austrostipa blackii	Crested Spear-grass
	Austrostipa curticoma	Short-crown Spear-grass
r	*Austrostipa exilis*	Heath Spear-grass
	Austrostipa flavescens	Coast Spear-grass
	Austrostipa gibbosa	Spurred Spear-grass
	Austrostipa nodosa	Knotty Spear-grass
	Austrostipa oligostachya	Fine-head Spear-grass
	Austrostipa rudis	Veined Spear-grass
	Austrostipa scabra subsp. *falcata*	Rough Spear-grass
	Austrostipa scabra subsp. *scabra*	Rough Spear-grass
	Austrostipa semibarbata	Fibrous Spear-grass
	Austrostipa setacea	Corkscrew Spear-grass
	Austrostipa stuposa	Quizzical Spear-grass
	Azolla filiculoides	Pacific Azolla
	Bolboschoenus caldwellii	Salt Club-sedge
	Bothriochloa macra	Red-leg Grass
	Brachyscome basaltica var. *gracilis*	Woodland Swamp-daisy
	Brachyscome dentata	Lobe-seed Daisy
	Bursaria spinosa	Sweet Bursaria
	Caesia calliantha	Blue Grass-lily
	Callitriche spp.	Water Starwort
	Callitris spp.	Cypress-pine
	Calocephalus citreus	Lemon Beauty-heads
	Calocephalus lacteus	Milky Beauty-heads
	Calotis anthemoides	Cut-leaf Burr-daisy
	Calotis scabiosifolia var. *scabiosifolia*	Rough Burr-daisy
	Calotis scapigera	Tufted Burr-daisy
	Carex appressa	Tall Sedge
	Carex bichenoviana	Plains Sedge
	Carex breviculmis	Common Grass-sedge
	Carex gaudichaudiana	Fen Sedge
	Carex inversa	Knob Sedge
	Carex tereticaulis	Poong'ort
	Cassinia arcuata	Drooping Cassinia
	Centipeda cunninghamii	Common Sneezeweed
	Chamaesyce drummondii	Flat Spurge
	Cheilanthes austrotenuifolia	Green Rock-fern
	Cheilanthes sieberi subsp. *sieberi*	Narrow Rock-fern
	Chenopodium desertorum subsp. *microphyllum*	Small-leaf Goosefoot
	Chenopodium glaucum	Glaucous Goosefoot

Status	Scientific Name	Common Name
	Chenopodium pumilio	Clammy Goosefoot
	Chloris truncata	Windmill Grass
	Chrysocephalum apiculatum	Common Everlasting
	Chrysocephalum sp. 1	Plains Everlasting
listed, v	*Comesperma polygaloides*	Small Milkwort
	Convolvulus angustissimus	Blushing Bindweed
	Convolvulus angustissimus subsp. *angustissimus*	Blushing Bindweed
	Convolvulus angustissimus subsp. *omnigracilis*	Slender Bindweed
	Convolvulus erubescens spp. agg.	Pink Bindweed
	Convolvulus remotus	Grass Bindweed
	Cotula australis	Common Cotula
	Craspedia glauca spp. agg.	Common Billy-buttons
	Craspedia paludicola	Swamp Billy-buttons
	Crassula closiana	Stalked Crassula
	Crassula decumbens var. *decumbens*	Spreading Crassula
	Crassula helmsii	Swamp Crassula
	Crassula peduncularis	Purple Crassula
	Crassula sieberiana	Sieber Crassula
	Crassula tetramera	Australian Stonecrop
listed, e	*Cullen parvum*	Small Scurf-pea
listed, e	*Cullen tenax*	Tough Scurf-pea
	Cymbonotus preissianus	Austral Bear's-ear
	Cyperus gunnii subsp. *gunnii*	Flecked Flat-sedge
	Cyperus lhotskyanus	Creeping Flat-sedge
	Damasonium minus	Star Fruit
	Daucus glochidiatus	Australian Carrot
	Desmodium gunnii	Southern Tick-trefoil
	Desmodium varians	Slender Tick-trefoil
	Deyeuxia quadriseta	Reed Bent-grass
	Dianella brevicaulis	Small-flower Flax-lily
	Dianella longifolia var. *longifolia* s.l.	Pale Flax-lily
	Dianella revoluta var. *revoluta* s.l.	Black-anther Flax-lily
v	*Dianella* sp. aff. *longifolia* (Benambra)	Arching Flax-lily
	Dichelachne crinita	Long-hair Plume-grass
	Dichelachne sciurea spp. agg.	Short-hair Plume-grass
	Dichondra repens	Kidney-weed
	Dillwynia cinerascens	Grey Parrot-pea
	Distichlis distichophylla	Australian Salt-grass
E, listed, v	*Diuris basaltica*	Small Golden Moths
v	*Diuris behrii*	Golden Cowslips
listed, v	*Diuris palustris*	Swamp Diuris
	Diuris pardina	Leopard Orchid
e	*Diuris* X *fastidiosa*	Proud Diuris
	Drosera peltata subsp. *auriculata*	Tall Sundew
	Drosera peltata subsp. *peltata*	Pale Sundew
	Einadia hastata	Saloop
	Einadia nutans subsp. *nutans*	Nodding Saltbush
	Elatine gratioloides	Waterwort
	Eleocharis acuta	Common Spike-sedge
	Eleocharis macbarronii	Grey Spike-sedge
	Eleocharis pallens	Pale Spike-sedge
	Eleocharis pusilla	Small Spike-sedge
	Eleocharis sphacelata	Tall Spike-sedge

Status	Scientific Name	Common Name
	Elymus scaber var. *scaber*	Common Wheat-grass
	Enchylaena tomentosa var. *tomentosa*	Ruby Saltbush
	Epilobium billardierianum subsp. *billardierianum*	Smooth Willow-herb
	Epilobium billardierianum subsp. *cinereum*	Grey Willow-herb
	Epilobium billardierianum subsp. *intermedium*	Variable Willow-herb
	Epilobium hirtigerum	Hairy Willow-herb
	Eragrostis brownii	Common Love-grass
	Eragrostis infecunda	Southern Cane-grass
	Eragrostis parviflora	Weeping Love-grass
	Erodium crinitum	Blue Heron's-bill
	Eryngium ovinum	Blue Devil
	Eryngium vesiculosum	Prickfoot
	Eucalyptus camaldulensis	River Red-gum
	Eucalyptus microcarpa	Grey Box
	Euchiton collinus	Creeping Cudweed
	Euchiton involucratus	Star Cudweed
	Euchiton sphaericus	Annual Cudweed
	Eutaxia microphylla var. *diffusa*	Spreading Eutaxia
	Eutaxia microphylla var. *microphylla*	Common Eutaxia
	Ficinia nodosa	Knobby Club-sedge
	Geranium retrorsum	Grassland Crane's-bill
v	*Geranium solanderi* var. *solanderi*	Austral Crane's-bill
	Geranium sp. 2	Variable Crane's-bill
	Geranium sp. 5	Naked Crane's-bill
	Glyceria spp.	Sweet Grass
	Glycine clandestina	Twining Glycine
	Glycine tabacina	Variable Glycine
	Gnaphalium spp.	Cudweed
	Gonocarpus tetragynus	Common Raspwort
	Goodenia gracilis	Slender Goodenia
	Goodenia heteromera	Spreading Goodenia
	Goodenia humilis	Swamp Goodenia
	Goodenia pinnatifida	Cut-leaf Goodenia
	Haloragis aspera	Rough Raspwort
	Haloragis heterophylla	Varied Raspwort
v	*Helichrysum* aff. *rutidolepis* (Lowland Swamps)	Pale Swamp Everlasting
	Heliotropium spp.	Heliotrope
	Hyalosperma demissum	Moss Sunray
	Hydrocotyle sibthorpioides	Shining Pennywort
	Hypericum gramineum	Small St John's Wort
	Hypoxis glabella var. *glabella*	Tiny Star
	Hypoxis vaginata	Yellow Star
	Isoetes muelleri	Rock Quillwort
	Isoetopsis graminifolia	Grass Cushion
	Isolepis cernua var. *cernua*	Nodding Club-sedge
	Isolepis cernua var. *platycarpa*	Broad-fruit Club-sedge
	Isolepis hookeriana	Grassy Club-sedge
	Isolepis marginata	Little Club-sedge
	Isolepis victoriensis	Victorian Club-sedge
	Isotoma fluviatilis subsp. *australis*	Swamp Isotome
	Juncus amabilis	Hollow Rush
	Juncus australis	Austral Rush

Status	Scientific Name	Common Name
	Juncus bufonius	Toad Rush
	Juncus filicaulis	Thread Rush
	Juncus flavidus	Gold Rush
	Juncus gregiflorus	Green Rush
	Juncus holoschoenus	Joint-leaf Rush
	Juncus homalocaulis	Wiry Rush
	Juncus kraussii subsp. *australiensis*	Sea Rush
	Juncus pallidus	Pale Rush
	Juncus pauciflorus	Loose-flower Rush
	Juncus procerus	Tall Rush
	Juncus radula	Hoary Rush
	Juncus sarophorus	Broom Rush
	Juncus semisolidus	Plains Rush
	Juncus subsecundus	Finger Rush
	Kennedia prostrata	Running Postman
	Lachnagrostis aemula	Leafy Blown-grass
	Lachnagrostis filiformis var. 1	Common Blown-grass
	Lachnagrostis filiformis var. 2	Wetland Blown-grass
	Lagenophora huegelii	Coarse Bottle-daisy
	Lemna disperma	Common Duckweed
	Leptorhynchos squamatus subsp. *squamatus*	Scaly Buttons
	Leptorhynchos tenuifolius	Wiry Buttons
	Levenhookia dubia	Hairy Stylewort
	Lilaeopsis polyantha	Australian Lilaeopsis
	Limosella australis	Austral Mudwort
	Linum marginale	Native Flax
	Lobelia irrigua	Salt Pratia
	Lobelia pedunculata s.l.	Matted Pratia
	Lobelia pratioides	Poison Lobelia
	Lomandra filiformis	Wattle Mat-rush
	Lomandra micrantha s.l.	Small-flower Mat-rush
	Lomandra nana	Dwarf Mat-rush
	Ludwigia peploides subsp. *montevidensis*	Clove-strip
	Lythrum hyssopifolia	Small Loosestrife
	Lythrum salicaria	Purple Loosestrife
	Maireana brevifolia	Short-leaf Bluebush
	Maireana decalvans	Black Cotton-bush
	Maireana enchylaenoides	Wingless Bluebush
	Malva preissiana s.l.	Australian Hollyhock
	Marsilea costulifera	Narrow-leaf Nardoo
	Marsilea drummondii	Common Nardoo
	Marsilea hirsuta	Short-fruit Nardoo
	Melaleuca lanceolata subsp. *lanceolata*	Moonah
	Melicytus dentatus	Tree Violet
	Mentha diemenica	Slender Mint
	Mentha satureoides	Creeping mint
	Microlaena stipoides var. *stipoides*	Weeping Grass
	Microseris scapigera spp. agg.	Yam Daisy
	Microtis parviflora	Slender Onion-orchid
	Microtis unifolia	Common Onion-orchid
	Minuria leptophylla	Minnie Daisy
	Muehlenbeckia florulenta	Tangled Lignum
	Myriocephalus rhizocephalus	Woolly-heads

Status	Scientific Name	Common Name
	Myriophyllum crispatum	Upright Water-milfoil
	Myriophyllum simulans	Amphibious Water-milfoil
	Notodanthonia semiannularis	Wetland Wallaby-grass
	Ottelia ovalifolia subsp. *ovalifolia*	Swamp Lily
	Oxalis exilis	Shady Wood-sorrel
	Oxalis perennans	Grassland Wood-sorrel
	Oxalis radicosa	Stout-rooted Wood-sorrel
	Ozothamnus obcordatus	Grey Everlasting
	Panicum decompositum var. *decompositum*	Native Millet
	Panicum effusum	Hairy Panic
	Pelargonium rodneyanum	Magenta Stork's-bill
	Pentapogon quadrifidus var. *quadrifidus*	Five-awned Spear-grass
	Persicaria decipiens	Slender Knotweed
	Persicaria prostrata	Creeping Knotweed
	Phragmites australis	Common Reed
	Picris angustifolia	Native Picris
	Pilularia novae-hollandiae	Austral Pillwort
	Pimelea axiflora	Bootlace Bush
	Pimelea curviflora var. 1	Curved Rice-flower
	Pimelea flava	Yellow Rice-flower
	Pimelea glauca	Smooth Rice-flower
	Pimelea humilis	Common Rice-flower
	Pimelea linifolia	Slender Rice-flower
	Pimelea octophylla	Woolly Rice-flower
C, e	*Pimelea spinescens subsp. spinescens*	Spiny Rice-flower
	Plantago gaudichaudii	Narrow Plantain
	Plantago varia	Variable Plantain
	Poa labillardierei var. labillardierei	Common Tussock-grass
	Poa rodwayi	Velvet Tussock-grass
	Poa sieberiana var. *hirtella*	Grey Tussock-grass
	Poa sieberiana var. *sieberiana*	Grey Tussock-grass
	Podolepis jaceoides	Showy Podolepis
e	*Podolepis* sp. 1	Basalt Podolepis
	Portulaca oleracea	Common Purslane
	Potamogeton cheesemanii	Red Pondweed
	Potamogeton pectinatus	Fennel Pondweed
	Potamogeton tricarinatus	Floating Pondweed
E, listed, e	*Prasophyllum suaveolens*	Fragrant Leek-orchid
	Pseudognaphalium luteoalbum	Jersey Cudweed
	Pteridium esculentum	Austral Bracken
	Pterostylis spp.	Greenhood
	Ptilotus macrocephalus	Feather Heads
	Ptilotus spathulatus f. spathulatus	Pussy Tails
	Puccinellia stricta var. *stricta*	Australian Saltmarsh-grass
	Pycnosorus chrysanthes	Golden Billy-buttons
	Ranunculus amphitrichus	Small River Buttercup
	Rhagodia candolleana subsp. *candolleana*	Seaberry Saltbush
	Rhodanthe anthemoides	Chamomile Sunray
	Rumex bidens	Mud Dock
	Rumex brownii	Slender Dock
	Rumex dumosus	Wiry Dock
	Rumex tenax	Narrow-leaf Dock
E, listed, e	*Rutidosis leptorhynchoides*	Button Wrinklewort

Status	Scientific Name	Common Name
	Samolus repens	Creeping Brookweed
	Sarcocornia quinqueflora subsp. *quinqueflora*	Beaded Glasswort
	Schoenoplectus tabernaemontani	River Club-sedge
	Schoenus apogon	Common Bog-sedge
	Schoenus tesquorum	Soft Bog-sedge
	Sclerolaena muricata var. *muricata*	Black Roly-poly
	Sclerolaena muricata var. *villosa*	Grey Roly-poly
	Sebaea ovata	Yellow Sebaea
r	*Senecio campylocarpus*	Floodplain Fireweed
	Senecio glomeratus	Annual Fireweed
V, listed, e	*Senecio macrocarpus*	Large-headed Fireweed
	Senecio pinnatifolius	Variable Groundsel
	Senecio quadridentatus	Cotton Fireweed
	Siloxerus multiflorus	Small Wrinklewort
	Solanum aviculare	Kangaroo Apple
	Solenogyne dominii	Smooth Solenogyne
	Solenogyne gunnii	Hairy Solenogyne
	Spergularia marina	Salt Sand-spurrey
	Spergularia media	Coast Sand-spurrey
	Spergularia sp. 3	Salt Sea-spurrey
	Stackhousia monogyna	Creamy Stackhousia
	Stackhousia subterranea	Plains Stackhousia
	Suaeda australis	Austral Seablite
	Tetragonia implexicoma	Bower Spinach
	Thelymitra arenaria	Forest Sun-orchid
	Thelymitra exigua	Short Sun-orchid
	Thelymitra pauciflora s.l.	Slender Sun-orchid
	Themeda triandra	Kangaroo Grass
	Thysanotus patersonii	Twining Fringe-lily
	Tricoryne elatior	Yellow Rush-lily
	Triglochin procera	Common Water-ribbons
	Triglochin striata	Streaked Arrowgrass
r	*Tripogon loliiformis*	Rye Beetle-grass
	Triptilodiscus pygmaeus	Common Sunray
	Trithuria submersa	Trithuria
	Typha domingensis	Narrow-leaf Cumbungi
	Typha orientalis	Broad-leaf Cumbungi
	Utricularia australis	Yellow Bladderwort
	Utricularia dichotoma s.l.	Fairies' Aprons
	Velleia paradoxa	Spur Velleia
	Veronica gracilis	Slender Speedwell
	Viola hederacea sensu Entwisle (1996)	Ivy-leaf Violet
	Vittadinia cervicularis	Annual New Holland Daisy
	Vittadinia cuneata var. cuneata	Fuzzy New Holland Daisy
	Vittadinia dissecta s.l.	Dissected New Holland Daisy
	Vittadinia gracilis	Woolly New Holland Daisy
	Vittadinia muelleri	Narrow-leaf New Holland Daisy
	Wahlenbergia communis	Tufted Bluebell
	Wahlenbergia gracilenta	Hairy Annual-bluebell
	Wahlenbergia gracilis	Sprawling Bluebell
	Wahlenbergia graniticola	Granite Bluebell
	Wahlenbergia luteola	Bronze Bluebell
	Wahlenbergia multicaulis	Branching Bluebell

Status	Scientific Name	Common Name
	Walwhalleya proluta	Rigid Panic
	Wilsonia rotundifolia	Round-leaf Wilsonia
	Wolffia australiana	Tiny Duckweed
	Wurmbea dioica	Common Early Nancy
	Xerochrysum viscosum	Shiny Everlasting
Introduced species:		
#	*Acacia longifolia*	Sallow Wattle
	Acacia saligna	Golden Wreath Wattle
	Acetosella vulgaris	Sheep Sorrel
	Agrostis capillaris var. *capillaris*	Brown-top Bent
	Aira caryophyllea	Silvery Hair-grass
	Aira cupaniana	Quicksilver Grass
	Aira elegantissima	Delicate Hair-grass
	Aira praecox	Early Hair-grass
	Alisma lanceolata	Water Plantain
	Allium triquetrum	Angled Onion
	Allium vineale	Crow Garlic
	Amaranthus albus	Stiff Tumbleweed
	Amaranthus muricatus	Rough-fruit Amaranth
	Anagallis arvensis	Pimpernel
	Anagallis minima	Chaffweed
	Anthoxanthum odoratum	Sweet Vernal-grass
	Aptenia cordifolia	Heart-leaf Ice-plant
	Arctotheca calendula	Cape Weed
	Asparagus asparagoides	Bridal Creeper
	Asphodelus fistulosus	Onion Weed
	Aster subulatus	Aster-weed
	Atriplex prostrata	Hastate Orache
	Avena barbata	Bearded Oat
	Avena fatua	Wild Oat
	Avena sativa	Oat
	Avena sterilis	Sterile Oat
	Avena sterilis subsp. *ludoviciana*	Sterile Oat
	Barbarea intermedia	Wintercress
	Berkheya rigida	African Thistle
	Beta vulgaris	Beet
	Beta vulgaris subsp. *maritima*	Wild Beet
	Brassica fruticulosa	Twiggy Turnip
	Brassica rapa	White Turnip
	Brassica tournefortii	Mediterranean Turnip
	Brassica X *juncea*	Indian Mustard
	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 racemosus subsp. *commutatus*	Meadow Brome
	Bromus rubens	Red Brome
	Cakile edentula	American Sea Rocket
	Calicotome spinosa	Spiny Broom
	Callitriche stagnalis	Common Water-starwort

Status	Scientific Name	Common Name
	Carduus pycnocephalus	Slender Thistle
	Carduus tenuiflorus	Winged Slender-thistle
	Carthamus lanatus	Saffron Thistle
	Catapodium rigidum	Fern Grass
	Centaurium erythraea	Common Centaury
	Centaurium tenuiflorum	Slender Centaury
	Cerastium balearicum	Balearic Mouse-ear Chickweed
	Cerastium glomeratum	Sticky Mouse-ear Chickweed
	Chenopodium album	Fat Hen
	Chenopodium murale	Sowbane
	Cicendia filiformis	Slender Cicendia
	Cicendia quadrangularis	Square Cicendia
	Cirsium arvense	Perennial Thistle
	Cirsium vulgare	Spear Thistle
	Conium maculatum	Hemlock
	Convolvulus arvensis	Common Bindweed
	Conyza bonariensis	Flaxleaf Fleabane
	Conyza sumatrensis	Tall Fleabane
	Coprosma repens	Mirror Bush
	Cortaderia selloana	Pampas Grass
	Cotula bipinnata	Ferny Cotula
	Cotula coronopifolia	Water Buttons
	Crassula natans var. *minus*	Water Crassula
	Cucumis myriocarpus subsp. *leptodermis*	Paddy Melon
	Cupressus spp.	Cypress
	Cuscuta epithymum	Common Dodder
	Cuscuta planiflora	Small-seed Alfalfa-dodder
	Cynara cardunculus	Artichoke Thistle
	Cynodon dactylon var. *dactylon*	Couch
	Cynosurus echinatus	Rough Dog's-tail
	Cyperus congestus	Dense Flat-sedge
	Cyperus eragrostis	Drain Flat-sedge
	Dactylis glomerata	Cocksfoot
	Diplotaxis muralis	Wall Rocket
	Diplotaxis tenuifolia	Sand Rocket
	Dipsacus fullonum subsp. *fullonum*	Wild Teasel
	Dittrichia graveolens	Stinkwort
	Ecballium elaterium	Squirting Cucumber
	Echinochloa crus-galli	Barnyard Grass
	Echinochloa esculenta	Japanese Millet
	Echium plantagineum	Paterson's Curse
	Echium vulgare	Viper's Bugloss
#	*Eclipta platyglossa*	Yellow Twin-heads
	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
	Erodium botrys	Big Heron's-bill
	Erodium cicutarium	Common Heron's-bill
	Erodium malacoides	Oval Heron's-bill
	Erodium moschatum	Musky Heron's-bill
	Eucalyptus cladocalyx	Sugar Gum

Status	Scientific Name	Common Name
	Euphorbia peplus	Petty Spurge
	Festuca arundinacea	Tall Fescue
	Foeniculum vulgare	Fennel
	Fraxinus angustifolia	Desert Ash
	Fumaria bastardii	Bastard's Fumitory
	Fumaria muralis subsp. *muralis*	Wall Fumitory
	Galenia pubescens var. *pubescens*	Galenia
	Galium aparine	Cleavers
	Galium murale	Small Goosegrass
	Gamochaeta calviceps	Silky Cudweed
	Gamochaeta purpurea	Spiked Cudweed
	Gastridium phleoides	Nit-grass
	Gazania linearis	Gazania
	Genista linifolia	Flax-leaf Broom
	Genista monspessulana	Montpellier Broom
	Geranium dissectum	Cut-leaf Crane's-bill
	Geranium molle var. *molle*	Dove's Foot
	Gladiolus spp.	Gladiolus
	Glaucium flavum	Yellow Horned-poppy
	Hainardia cylindrica	Common Barb-grass
	Hedypnois cretica	Cretan Hedypnois
	Helianthus annuus	Common Sunflower
	Helminthotheca echioides	Ox-tongue
	Hieracium spp.	Hawkweed
	Hirschfeldia incana	Buchan Weed
	Holcus lanatus	Yorkshire Fog
	Hordeum hystrix	Mediterranean Barley-grass
	Hordeum leporinum	Barley-grass
	Hordeum marinum	Sea Barley-grass
	Hypericum perforatum subsp. *veronense*	St John's Wort
	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 articulatus	Jointed Rush
	Juncus capitatus	Capitate Rush
	Kickxia elatine	Hairy Toadflax
	Kickxia elatine subsp. *crinita*	Twining Toadflax
	Lactuca saligna	Willow-leaf Lettuce
	Lactuca serriola	Prickly Lettuce
	Lagunaria patersonia subsp. *patersonia*	Pyramid Tree
	Lagurus ovatus	Hare's-tail Grass
	Leontodon taraxacoides subsp. *taraxacoides*	Hairy Hawkbit
	Lepidium africanum	Common Peppercress
	Lepidium draba	Hoary Cress
	Leucanthemum vulgare	Ox-eye Daisy
	Lilaea scilloides	Lilaea
	Linaria pelisseriana	Pelisser's Toad-flax
	Linum trigynum	French Flax
	Linum usitatissimum	Flax
	Lobelia erinus	Bedding Lobelia
	Lolium loliaceum	Stiff Rye-grass

Status	Scientific Name	Common Name
	Lolium perenne	Perennial Rye-grass
	Lolium rigidum	Wimmera Rye-grass
	Lolium temulentum	Darnel
	Lotus angustissimus	Slender Bird's-foot Trefoil
	Lotus corniculatus	Bird's-foot Trefoil
	Lycium ferocissimum	African Box-thorn
	Malus pumila	Apple
	Malva nicaeensis	Mallow of Nice
	Malva parviflora	Small-flower Mallow
	Marrubium vulgare	Horehound
	Medicago arabica	Spotted Medic
	Medicago minima	Little Medic
	Medicago polymorpha	Burr Medic
	Medicago truncatula	Barrel Medic
#	*Melaleuca armillaris* subsp. *armillaris*	Giant Honey-myrtle
	Melilotus indicus	Sweet Melilot
	Mentha pulegium	Pennyroyal
	Modiola caroliniana	Red-flower Mallow
	Moenchia erecta	Erect Chickweed
	Molineriella minuta	Small Hair-grass
	Moraea miniata	Two-leaf Cape-tulip
	Moraea setifolia	Thread Iris
	Nassella hyalina	Cane Needle-grass
	Nassella leucotricha	Texas Needle-grass
	Nassella neesiana	Chilean Needle-grass
	Nassella trichotoma	Serrated Tussock
	Nasturtium officinale	Watercress
	Olea europaea	Olive
	Opuntia stricta	Common Prickly-pear
	Oxalis corniculata	Creeping Wood-sorrel
	Oxalis pes-caprae	Soursob
	Oxalis purpurea	Large-flower Wood-sorrel
	Parapholis strigosa	Slender Barb-grass
	Parentucellia latifolia	Red Bartsia
	Paspalum dilatatum	Paspalum
	Paspalum distichum	Water Couch
	Pennisetum clandestinum	Kikuyu
	Pentaschistis airoides subsp. *airoides*	False Hair-grass
	Petrorhagia dubia	Velvety Pink
	Phalaris aquatica	Toowoomba Canary-grass
	Phalaris minor	Lesser Canary-grass
	Phalaris paradoxa	Paradoxical Canary-grass
	Phleum pratense	Timothy Grass
	Physalis viscosa	Sticky Ground-cherry
	Phytolacca octandra	Red-ink Weed
	Pinus radiata	Radiata Pine
	Piptatherum miliaceum	Rice Millet
#	*Pittosporum undulatum*	Sweet Pittosporum
	Plantago coronopus subsp. *coronopus*	Buck's-horn Plantain
	Plantago lanceolata	Ribwort
	Plantago major	Greater Plantain
	Plantago myosurus subsp. *myosurus*	Mouse Plantain
	Poa annua	Annual Meadow-grass

Status	Scientific Name	Common Name
	Polycarpon tetraphyllum	Four-leaved Allseed
	Polygala monspeliaca	Annual Milkwort
	Polygonum arenastrum	Wireweed
	Polygonum aviculare	Hogweed
	Polypogon monspeliensis	Annual Beard-grass
	Prunus cerasifera	Cherry Plum
	Prunus persica	Peach
	Ranunculus muricatus	Sharp Buttercup
	Raphanus raphanistrum	Wild Radish
	Rapistrum rugosum	Giant Mustard
	Reseda lutea	Cut-leaf Mignonette
	Ricinus communis	Castor Oil Plant
	Romulea minutiflora	Small-flower Onion-grass
	Romulea rosea var. *australis*	Common Onion-grass
	Rorippa palustris	Marsh Yellow-cress
	Rosa rubiginosa	Sweet Briar
	Rostraria cristata	Annual Cat's-tail
	Rubus fruticosus spp. agg.	Blackberry
	Rumex conglomeratus	Clustered Dock
	Rumex crispus	Curled Dock
	Rumex obtusifolius subsp. *obtusifolius*	Broad-leaf Dock
	Rumex pulcher subsp. *pulcher*	Fiddle Dock
	Sagina maritima	Sea Pearlwort
	Salvia verbenaca var. *verbenaca*	Wild Sage
	Schinus molle	Pepper Tree
	Scolymus hispanicus	Golden Thistle
	Scorzonera laciniata	Scorzonera
	Setaria parviflora	Slender Pigeon Grass
	Setaria pumila subsp. *pumila*	Pale Pigeon-grass
	Sherardia arvensis	Field Madder
	Silene gallica	French Catchfly
	Silybum marianum	Variegated Thistle
	Sisymbrium irio	London Rocket
	Sisymbrium officinale	Hedge Mustard
	Solanum linnaeanum	Apple of Sodom
	Solanum nigrum	Black Nightshade
	Soliva sessilis	Jo Jo
	Sonchus asper subsp. *asper*	Rough Sow-thistle
	Sonchus asper subsp. *glaucescens*	Blue Sow-thistle
	Sonchus oleraceus	Common Sow-thistle
	Spergularia rubra s.l.	Red Sand-spurrey
	Sporobolus africanus	Rat-tail Grass
	Stachys arvensis	Stagger Weed
	Stellaria media	Chickweed
	Stenotaphrum secundatum	Buffalo Grass
	Taraxacum officinale spp. agg.	Garden Dandelion
	Tolpis barbata	Yellow Hawkweed
	Tragopogon porrifolius	Salsify
	Tribolium acutiflorum	Crested Desmazeria
	Tribolium obliterum	Desmazeria
	Trifolium angustifolium var. *angustifolium*	Narrow-leaf Clover
	Trifolium arvense var. *arvense*	Hare's-foot Clover
	Trifolium campestre var. *campestre*	Hop Clover

Status	Scientific Name	Common Name
	Trifolium dubium	Suckling Clover
	Trifolium fragiferum var. *fragiferum*	Strawberry Clover
	Trifolium glomeratum	Cluster Clover
	Trifolium ornithopodioides	Birdsfoot Clover
	Trifolium pratense	Red Clover
	Trifolium repens var. *repens*	White Clover
	Trifolium striatum	Knotted Clover
	Trifolium subterraneum	Subterranean Clover
	Trifolium tomentosum var. *tomentosum*	Woolly Clover
	Triticum aestivum	Wheat
	Ulex europaeus	Gorse
	Ulmus aff. *procera*	Common Elm
	Ulmus spp.	Elm
	Urtica urens	Small Nettle
	Vellereophyton dealbatum	White Cudweed
	Verbascum thapsus subsp. *thapsus*	Great Mullein
	Vicia sativa	Common Vetch
	Vicia tetrasperma	Slender Vetch
	Vulpia bromoides	Squirrel-tail Fescue
	Vulpia muralis	Wall Fescue
	Vulpia 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 D 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	Likelihood of Occurrence
National Significance						
Amphibromus fluitans	River Swamp Wallaby-grass	V		FIS/DEWHA		High
Carex tasmanica	Curly Sedge	V	v	DEWHA	listed	Low
Dianella amoena	Matted Flax-lily	E	e	Prior knowledge		High
Diuris basaltica	Small Golden Moths	E	v	FIS/DEWHA	listed	High
Glycine latrobeana	Clover Glycine	V	v	DEWHA	listed	Medium
Pimelea spinescens subsp. *spinescens*	Spiny Rice-flower	C	e	FIS/DEWHA		Recorded (FIS)
Prasophyllum frenchii	Maroon Leek-orchid	E	e	DEWHA	listed	Negligible
Prasophyllum suaveolens	Fragrant Leek-orchid	E	e	FIS	listed	Medium
Rutidosis leptorhynchoides	Button Wrinklewort	E	e	FIS/DEWHA	listed	High
Senecio macrocarpus	Large-headed Fireweed	V	e	FIS/DEWHA	listed	High
State Significance						
Allocasuarina luehmannii	Buloke			FIS	listed	High
Amphibromus pithogastrus	Plump Swamp Wallaby-grass		e	FIS	listed	High

Scientific name	Common name	Aust. status	Vic. status	Source of record	FFG	Likelihood of Occurrence
Austrostipa exilis	Heath Spear-grass		r	FIS		High
Comesperma polygaloides	Small Milkwort		v	FIS	listed	High
Cullen parvum	Small Scurf-pea		e	FIS	listed	Recorded (FIS & current assessment)
Cullen tenax	Tough Scurf-pea		e	FIS	listed	High
Dianella sp. aff. *longifolia* (Benambra)	Arching Flax-lily		v	FIS		Recorded (current assessment)
Diuris behrii	Golden Cowslips		v	FIS		High
Diuris palustris	Swamp Diuris		v	FIS	listed	High
Diuris X *fastidiosa*	Proud Diuris		e	FIS		High
Geranium solanderi var. *solanderi*	Austral Crane's-bill		v	FIS		High
Helichrysum aff. *rutidolepis* (Lowland Swamps)	Pale Swamp Everlasting		v	FIS		High
Podolepis sp. 1	Basalt Podolepis		e	FIS		High
Senecio campylocarpus	Floodplain Fireweed		r	FIS		Medium
Tripogon loliiformis	Rye Beetle-grass		R	FIS		High

APPENDIX 3

EVC Benchmarks

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_61: *Heavier-soils* Plains Grassland

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

Life Forms:

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

* Note: treat as one life form in this EVC

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

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

Organic Litter:
10% cover

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

Weediness:

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

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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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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 647: Plains Sedgy Wetland

Description:
Occurs in seasonally wet depressions on volcanic and sedimentary plains, typically associated with fertile, silty, peaty or heavy clay paludal soils. Primarily sedgy-herbaceous vegetation, sometimes with scattered or fringing eucalypts or tea-tree/paperbark shrubs in higher rainfall areas. A range of aquatic herbs can be present, and species-richness is mostly relatively low to moderate, but higher towards drier margins.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	2	5%	LH
Medium Herb	5	40%	MH
Small or Prostrate Herb	5	10%	SH
Large Tufted Graminoid	2	5%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	4	25%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG

LF Code		Species typical of at least part of EVC range	Common Name
LH		*Epilobium billardierianum*	Variable Willow-herb
MH		*Potamogeton tricarinatus s.l.*	Floating Pondweed
MH		*Myriophyllum simulans*	Amphibious Water-milfoil
MH		*Stellaria angustifolia*	Swamp Starwort
MH		*Lilaeopsis polyantha*	Australian Lilaeopsis
SH		*Neopaxia australasica*	White Purslane
SH		*Lobelia pratioides*	Poison Lobelia
SH	v	*Helichrysum aff. rutidolepis (Lowland Swamps)*	Pale Swamp Everlasting
SH		*Eryngium vesiculosum*	Prickfoot
LTG		*Carex tereticaulis*	Hollow Sedge
MTG	k	*Lachnagrostis filiformis (perennial variety)*	Wetland Blown-grass
MTG		*Lachnagrostis filiformis*	Common Blown-grass
MTG		*Glyceria australis*	Australian Sweet-grass
MNG		*Eleocharis acuta*	Common Spike-sedge
MNG	v	*Amphibromus sinuatus*	Wavy Swamp Wallaby-grass

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

Organic Litter:
10% cover

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

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MTG	*Juncus bulbosus*	Bulbous Rush	high	high

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 656: Brackish Wetland

Description:
Treeless EVC dominated by sedges and herbs that are generally indicative of saline conditions. True halophytic species such as samphires, if present, only occur with very low cover. Occurs in estuaries and along poorly defined drainage lines or associated with shorelines of brackish lakes.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	1	5%	LH
Medium Herb	3	15%	MH
Small or Prostrate Herb	3	10%	SH
Large Tufted Graminoid	1	10%	LTG
Large Non-tufted Graminoid	2	10%	LNG
Medium to Small Tufted Graminoid	2	5%	MTG
Medium to Tiny Non-tufted Graminoid	3	15%	MNG
Scrambler or Climber	1	1%	SC
Soil Crust	na	10%	S/C
Total understorey projective foliage cover		**80%**	

LF Code	Species typical of at least part of EVC range	Common Name
LH	*Persicaria decipiens*	Slender Knotweed
LH	*Epilobium billardierianum* ssp. *billardierianum*	Smooth Willow-herb
MH	*Sarcocornia quinqueflora*	Beaded Glasswort
MH	*Samolus repens*	Creeping Brookweed
MH	*Suaeda australis*	Austral Seablite
SH	*Selliera radicans*	Shiny Swamp-mat
SH	*Crassula helmsii*	Swamp Crassula
SH	*Mimulus repens*	Creeping Monkey-flower
LTG	*Gahnia filum*	Chaffy Saw-sedge
LNG	*Juncus kraussii* ssp. *australiensis*	Sea Rush
LNG	*Phragmites australis*	Common Reed
MTG	*Poa poiformis*	Coast Tussock-grass
MTG	*Lachnagrostis filiformis*	Common Blown-grass
MNG	*Bolboschoenus caldwellii*	Salt Club-sedge
MNG	*Distichlis distichophylla*	Australian Salt-grass
MNG	*Schoenoplectus pungens*	Sharp Club-sedge
MNG	*Triglochin striatum*	Streaked Arrowgrass
SC	*Calystegia sepium*	Large Bindweed

Recruitment:
Episodic/Flood: desirable period of disturbance is every five years

Organic Litter:
10% cover

Weediness:
There are no consistent weeds in this EVC.

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
- PG Wet Plains Grassy Wetland
- H-sPG Heavier-soils Plains Grassland
- SKS Stony Knoll Shrubland
- PSW Plains Sedgy Wetland
- BW Brackish Wetland

Conservation Status — E Endangered

Conservation Significance (CS)
- VH Very High
- H High

Key Areas & Management Zones — MZ Management Zones

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

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

Habitas ID#	Site	Zone	Vegetation Category	Area	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 & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
50242710	11	A	RP	0.55	PGWet	E	n/a	n/a	7	10	6	3	0	1.36	35.00	10	45	0.25	VH	HS>40	2	0.50			0.50	0.00	B
1773898	1	A	RP	2.77	L-rPG	E	n/a	n/a	4	5	3	4	0	1.36	21.76	10	32	0.88	H		1.5		1.32		0.00	1.32	A
1773898	2	A	DT	1.71														0.00				0.00	0.00		0.00	0.00	A
1778568	1	A	RP	0.54	L-rPG	E	n/a	n/a	4	5	6	4	0	1.36	25.84	5	31	0.17	H		1.5		0.25		0.00	0.25	A
1778568	2	A	DT	3.78														0.00				0.00	0.00		0.00	0.00	A
1789089	1	A	RP	1.42	L-rPG	E	n/a	n/a	7	15	6	4	0	1.36	43.52	5	49	0.69	VH	HS>40	2	1.38			1.38	0.00	A
1789089	2	A	RP	1.58	L-rPG	E	n/a	n/a	7	15	6	4	0	1.36	43.52	5	49	0.77	VH	HS>40	2	1.53			1.53	0.00	A
1789089	3	A	RP	1.04	PGWet	E	n/a	n/a	7	10	6	3	0	1.36	35.00	5	40	0.42	VH	HS>40	2	0.83			0.83	0.00	A

Habitas ID#	Site	Zone	Vegetation Category	Area	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 & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
1789093	1	A	DT	4.05													0.00				0.00	0.00		0.00	0.00	A
1773895	1	A	DT	4.53													0.00				0.00	0.00		0.00	0.00	A
1779668	1	A	RP	4.04	L-rPG	E	n/a	n/a	6	15	3	2	0	1.36	35.36	5	40	1.63	VH	HS>40	2	3.26		Yes	0.00	0.00	A
1779668	2	A	DT	0.07													0.00				0.00	0.00	MZ	0.00	0.00	A
1789084	1	A	DT	4.04													0.00				0.00	0.00		0.00	0.00	A
1778590	1	A	DT	3.07													0.00				0.00	0.00		0.00	0.00	A
1778590	2	A	RP	0.60	L-rPG	E	n/a	n/a	6	5	6	4	0	1.36	28.56	0	29	0.17	H		1.5		0.26		0.00	0.26	A
1778590	3	A	RP	0.62	L-rPG	E	n/a	n/a	6	5	6	4	0	1.36	28.56	0	29	0.18	H		1.5		0.27		0.00	0.27	A
1789096	1	A	DT	3.28													0.00				0.00	0.00		0.00	0.00	A
1789096	2	A	RP	0.80	L-rPG	E	n/a	n/a	9	5	3	4	0	1.36	28.56	5	34	0.27	H		1.5		0.40		0.00	0.40	A
1778592	1	A	DT	4.27													0.00				0.00	0.00		0.00	0.00	A
1773892	1	A	RP	0.74	L-rPG	E	n/a	n/a	6	5	6	4	0	1.00	21.00	5	26	0.19	H		1.5		0.29		0.00	0.29	A
1773892	2	A	DT	2.13													0.00				0.00	0.00		0.00	0.00	A
1773892	3	A	RP	0.94	L-rPG	E	n/a	n/a	6	5	3	4	0	1.00	18.00	5	23	0.22	H		1.5		0.32		0.00	0.32	A
1773892	4	A	RP	0.38	L-rPG	E	n/a	n/a	6	5	3	4	0	1.00	18.00	5	23	0.09	H		1.5		0.13		0.00	0.13	A
1779670	1	A	RP	3.39	L-rPG	E	n/a	n/a	9	5	3	5	0	1.00	22.00	5	27	0.92	VH	Cullen	2	1.83		Yes	0.00	0.00	A
1779670	2	A	DT	0.21													0.00				0.00	0.00	MZ	0.00	0.00	A
1779670	3	A	DT	0.99													0.00				0.00	0.00	MZ	0.00	0.00	A
1805066	1	A	RP	2.48	L-rPG	E	n/a	n/a	7	5	0	3	0	1.36	20.40	5	25	0.63	H		1.5		0.94		0.00	0.94	A
1805066	2	A	DT	1.70													0.00				0.00	0.00		0.00	0.00	A
1779676	1	A	RP	2.89	L-rPG	E	n/a	n/a	9	5	3	5	0	1.36	29.92	5	35	1.01	H		1.5		1.51		0.00	1.51	A
1779676	2	A	DT	1.22													0.00				0.00	0.00		0.00	0.00	A
1779676	3	A	DT	0.26													0.00				0.00	0.00		0.00	0.00	A
1779676	4	A	DT	0.23													0.00				0.00	0.00		0.00	0.00	A
1773901	1	A	RP	0.87	L-rPG	E	n/a	n/a	7	5	6	4	0	1.36	29.92	0	30	0.26	H		1.5		0.39		0.00	0.39	A
1773901	2	A	DT	2.33													0.00				0.00	0.00		0.00	0.00	A
1773901	3	A	RP	1.27	L-rPG	E	n/a	n/a	7	5	3	4	0	1.36	25.84	5	31	0.39	H		1.5		0.59		0.00	0.59	A
1779554	1	A	RP	1.62	L-rPG	E	n/a	n/a	2	5	3	2	0	1.36	16.32	5	21	0.35	H		1.5		0.52		0.00	0.52	A
1779554	2	A	DT	2.97													0.00				0.00	0.00		0.00	0.00	A
1789085	1	A	RP	0.65	L-rPG	E	n/a	n/a	4	5	6	4	0	1.36	25.84	0	26	0.17	H		1.5		0.25		0.00	0.25	A
1789085	2	A	DT	3.40													0.00				0.00	0.00		0.00	0.00	A
1789101	1	A	RP	0.23	L-rPG	E	n/a	n/a	4	5	3	2	0	1.36	19.04	5	24	0.06	H		1.5		0.08		0.00	0.08	A
1789101	2	A	DT	3.81													0.00				0.00	0.00		0.00	0.00	A
1789087	1	A	RP	0.77	L-rPG	E	n/a	n/a	9	5	3	5	0	1.36	29.92	5	35	0.27	VH	Cullen	2	0.54		Yes	0.00	0.00	A

Habitas ID#	Site	Zone	Vegetation Category	Area	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 & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
1789087	2	A	DT	3.21														0.00				0.00	0.00		0.00	0.00	A
1773893	1	A	DT	4.12														0.00				0.00	0.00		0.00	0.00	A
1778594	1	A	RP	3.00	L-rPG	E	n/a	n/a	6	5	6	4	0	1.00	21.00	0	21	0.63	H		1.5		0.95		0.00	0.95	A
1778594	2	A	DT	1.17														0.00				0.00	0.00		0.00	0.00	A
1778594	3	A	DT	0.18														0.00				0.00	0.00		0.00	0.00	A
1779669	1	A	RP	3.26	L-rPG	E	n/a	n/a	9	5	3	3	0	1.00	20.00	5	25	0.82	VH	Cullen	2	1.63		Yes	0.00	0.00	A
1779669	2	A	DT	0.87														0.00				0.00	0.00	MZ	0.00	0.00	A
1805065	1	A	DT	4.25			0											0.00				0.00	0.00		0.00	0.00	A
1789095	1	A	RP	2.58	L-rPG	E	n/a	n/a	15	5	3	5	0	1.36	38.08	10	48	1.24	VH	HS>40	2	2.48			2.48	0.00	A
1789095	2	A	DT	1.39														0.00				0.00	0.00		0.00	0.00	A
1778587	1	A	RP	1.60	L-rPG	E	n/a	n/a	9	5	0	5	0	1.36	25.84	5	31	0.49	H		1.5		0.74		0.00	0.74	A
1778587	2	A	DT	2.43														0.00				0.00	0.00		0.00	0.00	A
179403	1	A	DT	4.04														0.00				0.00	0.00		0.00	0.00	
1790402	1	A	RP	1.24	L-rPG	E	n/a	n/a	6	5	6	5	0	1.00	22.00	10	32	0.40	H		1.5		0.60		0.00	0.60	
1790402	2	A	DT	2.80														0.00				0.00	0.00		0.00	0.00	
207329749	1	A	DT	4.01														0.00				0.00	0.00		0.00	0.00	E
50242672	1	A	DT	5.59														0.00				0.00	0.00		0.00	0.00	
1790401	1	A	RP	2.73	L-rPG	E	n/a	n/a	6	5	6	5	0	1.00	22.00	10	32	0.87	H		1.5		1.31		0.00	1.31	E
1790401	2	A	DT	1.31														0.00				0.00	0.00		0.00	0.00	E
53040322	1	A	DT	17.27														0.00				0.00	0.00		0.00	0.00	
53040322	2	A	RP	3.30	L-rPG	E	n/a	n/a	6	5	3	4	0	1.00	18.00	15	33	1.09	H		1.5		1.63		0.00	1.63	
53040322	3	A	DT	29.46														0.00				0.00	0.00		0.00	0.00	
53040322	3	A	DT	0.28														0.00				0.00	0.00		0.00	0.00	
53040322	3	A	DT	0.73														0.00				0.00	0.00		0.00	0.00	
53040322	4	A	RP	0.06	SKS	E	n/a	n/a	6	15	10	5	0	1.00	36.00	15	51	0.03	VH	HS>40	2	0.06			0.06	0.00	
53040322	4	A	RP	0.50	L-rPG	E	n/a	n/a	6	5	3	4	0	1.00	18.00	15	33	0.17	VH	Delma	2	0.33			0.33	0.00	
53040322	5	A	RP	1.02	L-rPG	E	n/a	n/a	6	5	3	4	0	1.00	18.00	15	33	0.34	H		1.5		0.50		0.00	0.50	
53040322	6	A	RP	4.31	L-rPG	E	n/a	n/a	9	5	3	4	0	1.00	21.00	15	36	1.55	H		1.5		2.33		0.00	2.33	
1778951	1	A	RP	0.44	L-rPG	E	n/a	n/a	9	5	3	2	0	1.00	19.00	15	34	0.15	H		1.5		0.22		0.00	0.22	
1778951	2	A	RP	0.40	L-rPG	E	n/a	n/a	4	5	0	2	0	1.00	11.00	15	26	0.10	H		1.5		0.16		0.00	0.16	
1778951	3	A	DT	43.51														0.00				0.00	0.00		0.00	0.00	
1778951	4	A	RP	0.42	SKS	E	n/a	n/a	6	15	10	5	0	1.00	36.00	15	51	0.21	VH	HS>40	2	0.43			0.43	0.00	
53092076	1	A	RP	0.25	L-rPG	E	n/a	n/a	4	5	3	4	0	1.00	16.00	15	31	0.08	H		1.5		0.12		0.00	0.12	
53092076	1	B	RP	0.28	L-rPG	E	n/a	n/a	4	5	3	4	0	1.00	16.00	15	31	0.09	H		1.5		0.13		0.00	0.13	

Habitas ID#	Site	Zone	Vegetation Category	Area	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 & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
53092076	1	C	RP	0.85	L-rPG	E	n/a	n/a	4	5	3	4	0	1.00	16.00	15	31	0.26	H		1.5		0.40		0.00	0.40	
53092076	1	D	RP	2.34	L-rPG	E	n/a	n/a	4	5	3	4	0	1.00	16.00	15	31	0.73	H		1.5		1.09		0.00	1.09	
53092076	2	A	DT	52.86														0.00				0.00	0.00		0.00	0.00	
2064151	1	A	DT	2.03														0.00				0.00	0.00		0.00	0.00	
2011384	1	A	DT	8.10														0.00				0.00	0.00		0.00	0.00	
50258570	1	A	RP	0.52	SKS	E	n/a	n/a	7	5	0	2	0	1.00	14.00	5	19	0.10	H		1.5		0.15		0.00	0.15	
50258570	1	B	RP	0.14	SKS	E	n/a	n/a	7	5	0	2	0	1.00	14.00	5	19	0.03	H		1.5		0.04		0.00	0.04	
50258570	2	A	RP	0.23	BW	E	n/a	n/a	7	5	6	4	0	1.00	22.00	10	32	0.07	H		1.5		0.11		0.00	0.11	
50258570	3	A	DT	26.99														0.00				0.00	0.00		0.00	0.00	
50258570	4	A	RP	0.20	H-sPG	E	n/a	n/a	9	5	3	4	0	1.00	21.00	10	31	0.06	H		1.5		0.09		0.00	0.09	
52475755	1	A	RP	0.13	BW	E	n/a	n/a	11	5	1	5	0	1.00	22.00	5	27	0.04	H		1.5		0.05		0.00	0.05	
1809978	1	A	RP	0.57	SKS	E	n/a	n/a	9	10	0	4	0	1.00	23.00	5	28	0.16	H		1.5		0.24		0.00	0.24	
1809978	2	A	RP	0.25	PSW	E	n/a	n/a	2	10	0	2	0	1.00	14.00	5	19	0.05	H		1.5		0.07		0.00	0.07	
1809978	3	A	DT	56.03														0.00				0.00	0.00		0.00	0.00	
50258566	1	A	DT	21.55														0.00				0.00	0.00		0.00	0.00	
52475755	1	A	RP	0.58	SKS	E	n/a	n/a	4	15	0	2	0	1.00	21.00	5	26	0.15	H		1.5		0.23		0.00	0.23	
52475755	2	A	DT	1.59														0.00				0.00	0.00		0.00	0.00	
52475755	3	A	DT	0.46														0.00				0.00	0.00		0.00	0.00	
1789088	1	A	DT	4.09														0.00				0.00	0.00		0.00	0.00	
1789090	1	A	DT	4.04														0.00				0.00	0.00		0.00	0.00	
1773902	1	A	DT	4.07														0.00				0.00	0.00		0.00	0.00	
1773897	1	A	RP	0.14	L-rPG	E	n/a	n/a	0	10	3	4	0	1.36	23.12	15	38	0.05	VH	Dian. lo.BE	2	0.11			0.11	0.00	
1773897	2	A	DT	4.37														0.00				0.00	0.00		0.00	0.00	
1805061	1	A	RP	2.62	L-rPG	E	n/a	n/a	9	5	6	5	0	1.36	34.00	5	39	1.02	VH	Cullen	2	2.04		Yes	0.00	0.00	
1805061	2	A	DT	0.25														0.00				0.00	0.00	MZ	0.00	0.00	
1805061	3	A	DT	1.18														0.00				0.00	0.00		0.00	0.00	
2064153	1	A	RP	1.59	L-rPG	E	n/a	n/a	6	10	3	5	0	1.36	32.64	5	38	0.60	H		1.5		0.90		0.00	0.90	
2064153	2	A	DT	0.12														0.00				0.00	0.00		0.00	0.00	
2064153	3	A	DT	0.22														0.00				0.00	0.00		0.00	0.00	
2064153	4	A	DT	0.11														0.00				0.00	0.00		0.00	0.00	
50242640	1	A	DT	4.04														0.00				0.00	0.00		0.00	0.00	
1779667	1	A	DT	52.02														0.00				0.00	0.00		0.00	0.00	
21449	1	A	DT	40.80														0.00				0.00	0.00		0.00	0.00	
21448	1	A	DT	41.66														0.00				0.00	0.00		0.00	0.00	

Habitas ID#	Site	Zone	Vegetation Category	Area	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 & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
1790361	1	A	DT	19.10													0.00				0.00	0.00		0.00	0.00	
1779674	1	A	DT	3.69													0.00				0.00	0.00		0.00	0.00	
1779674	2	A	RP	0.90	H-sPG	E	n/a	n/a	9	5	1	5	0	1.36	27.20	10	37	0.33	H		1.5		0.50		0.00	0.50	
53040320	1	A	RP	0.38	L-rPG	E	n/a	n/a	2	5	3	4	0	1.36	19.04	15	34	0.13	H		1.5		0.19		0.00	0.19	
53040320	2	A	RP	1.01	L-rPG	E	n/a	n/a	0	5	3	4	0	1.36	16.32	15	31	0.32	VH	Cullen	2	0.63			0.63	0.00	
53040320	3	A	DT	49.63														0.00				0.00	0.00		0.00	0.00	
50242638	1	A	RP	3.53	L-rPG	E	n/a	n/a	9	5	3	5	0	1.36	29.92	10	40	1.41	H		1.5		2.11		0.00	2.11	
50242638	2	A	DT	0.51														0.00				0.00	0.00		0.00	0.00	
50242646	1	A	RP	3.28	L-rPG	E	n/a	n/a	9	5	3	5	0	1.36	29.92	10	40	1.31	H		1.5		1.96		0.00	1.96	
50242646	2	A	DT	0.79														0.00				0.00	0.00		0.00	0.00	
50242635	1	A	DT	4.01														0.00				0.00	0.00		0.00	0.00	
2064154	1	A	DT	2.04														0.00				0.00	0.00		0.00	0.00	
2064149	1	A	DT	2.03														0.00				0.00	0.00		0.00	0.00	
1789103	1	A	DT	4.05														0.00				0.00	0.00		0.00	0.00	
1773900	1	A	RP	0.70	L-rPG	E	n/a	n/a	9	5	6	5	0	1.36	34.00	5	39	0.27	H		1.5		0.41		0.00	0.41	
1773900	2	A	DT	0.14														0.00				0.00	0.00		0.00	0.00	
1773900	3	A	DT	3.69														0.00				0.00	0.00		0.00	0.00	
50242710	1	A	RP	0.43	L-rPG	E	n/a	n/a	4	5	3	4	0	1.36	21.76	10	32	0.14	H		1.5		0.20		0.00	0.20	
50242710	2	A	RP	0.49	L-rPG	E	n/a	n/a	11	5	3	5	0	1.36	32.64	10	43	0.21	VH	HS>40	2	0.42			0.42	0.00	
50242710	3	A	RP	0.76	L-rPG	E	n/a	n/a	4	5	3	4	0	1.36	21.76	10	32	0.24	H		1.5		0.36		0.00	0.36	
50242710	4	A	RP	0.13	L-rPG	E	n/a	n/a	4	5	3	4	0	1.36	21.76	10	32	0.04	H		1.5		0.06		0.00	0.06	
50242710	5	A	DT	177.15														0.00				0.00	0.00	PartMZ	0.00	0.00	
50242710	6	A	RP	0.40	L-rPG	E	n/a	n/a	7	15	6	4	0	1.36	43.52	10	54	0.21	VH	HS>40	2	0.43			0.43	0.00	
50242710	7	A	RP	1.05	L-rPG	E	n/a	n/a	4	5	3	4	0	1.36	21.76	10	32	0.33	H		1.5		0.50		0.00	0.50	
50242710	8	A	RP	0.10	L-rPG	E	n/a	n/a	4	15	3	4	0	1.36	35.36	10	45	0.05	VH	HS>40	2	0.09			0.09	0.00	
50242710	9	A	RP	0.14	L-rPG	E	n/a	n/a	4	5	3	4	0	1.36	21.76	10	32	0.04	H		1.5		0.07		0.00	0.07	
50242710	10	A	RP	0.14	L-rPG	E	n/a	n/a	11	5	3	5	0	1.36	32.64	10	43	0.06	VH	HS>40	2	0.12			0.12	0.00	
50242710	11	A	RP	0.55	PGWet	E	n/a	n/a	0	0	0	0	0	1.36	35.00	10	45	0.25	VH	HS>40	2	0.50			0.50	0.00	
50242710	12	A	RP	6.97	L-rPG	E	n/a	n/a	4	15	6	4	0	1.36	39.44	10	49	3.45	VH	HS>40	2	6.89		Yes	0.00	0.00	
50242710	13	A	RP	0.51	L-rPG	E	n/a	n/a	11	5	3	5	0	1.36	32.64	10	43	0.22	VH	HS>40	2	0.43		Yes	0.00	0.00	
50242710	14	A	RP	0.07	L-rPG	E	n/a	n/a	7	15	6	4	0	1.36	43.52	10	54	0.04	VH	HS>40	2	0.07		MZ	0.00	0.00	
50242710	15	A	RP	5.10	L-rPG	E	n/a	n/a	4	15	3	4	0	1.36	35.36	10	45	2.31	VH	HS>40	2	4.63		Yes	0.00	0.00	
50242710	16	A	RP	0.11	L-rPG	E	n/a	n/a	7	15	6	4	0	1.36	43.52	10	54	0.06	VH	HS>40	2	0.12			0.12	0.00	
50242710	17	A	RP	0.57	L-rPG	E	n/a	n/a	11	5	3	5	0	1.36	32.64	10	43	0.24	VH	HS>40	2	0.49		Yes	0.00	0.00	

Habitas ID#	Site	Zone	Vegetation Category	Area	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 & MZs)	High CS Offset Prescription (excl. Key Areas & MZs)	Location on Figures
50242710	18	A	RP	0.16	L-rPG	E	n/a	n/a	7	15	6	4	0	1.36	43.52	10	54	0.09	VH	HS>40	2	0.17		MZ	0.00	0.00	
50242710	19	A	RP	0.10	L-rPG	E	n/a	n/a	7	15	6	4	0	1.36	43.52	10	54	0.05	VH	HS>40	2	0.11		MZ	0.00	0.00	
50242710	20	A	DT	0.19														0.00				0.00	0.00	MZ	0.00	0.00	
50258569	1	A	RP	3.22	L-rPG	E	n/a	n/a	9	15	3	5	0	1.36	43.52	10	54	1.72	VH	HS>40	2	3.45			3.45	0.00	
50258569	2	A	RP	58.01	L-rPG	E	n/a	n/a	4	5	3	2	0	1.36	19.04	10	29	16.85	H		1.5		25.27		0.00	25.27	
50258569	3	A	DT	0.26														0.00				0.00	0.00		0.00	0.00	
50258569	4	A	DT	3.40														0.00				0.00	0.00		0.00	0.00	
TOTAL				**926.48**														**51.89**				**35.49**	**51.22**		**13.39**	**51.22**	

APPENDIX 5

Significant Fauna Results

A5.2 Significant fauna species

Table A5.2. Fauna of national or state significance recorded, or predicted to occur, within the local area

Source: DSE Atlas of Victorian Wildlife 2007 Version, BA database (1998–30.03.09), 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
CD conservation dependent
NT near threatened
DD data deficient (insufficient known)
R rare or insufficient known
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 Act	DSE 2007	FFG Act	Likelihood of occurrence
National Significance						
Plains-wanderer	*Pedionomus torquatus*	2004	VU	CR	L	Recorded (AVW)
Australian Painted Snipe	*Rostratula australis*	#	VU	CR	L	Low
Swift Parrot	*Lathamus discolor*	#	EN	EN	L	Low
Regent Honeyeater	*Anthochaera phrygia*	#	EN	CR	L	Low

Scientific name	Common name	Last record	EPBC Act	DSE 2007	FFG Act	Likelihood of occurrence
Spot-tailed Quoll	*Dasyurus maculatus*	#	EN	EN	L	Negligible
Southern Brown Bandicoot	*Isoodon obesulus obesulus*	#	EN	NT		Negligible
Grey-headed Flying-fox	*Pteropus poliocephalus*	#	VU	VU	L	Low
Smoky Mouse	*Pseudomys fumeus*	#	EN	CR	L	Negligible
Striped Legless Lizard	*Delma impar*	2004/#	VU	EN	L	Recorded (present assessment)
Grassland Earless Dragon	*Tympanocryptis pinguicolla*	#	EN	CR	L	Medium
Growling Grass Frog	*Litoria raniformis*	2006/#	VU	EN	L	High
Australian Grayling	*Prototroctes maraena*	#	VU	VU	L	Negligible
Dwarf Galaxias	*Galaxiella pusilla*	#	VU	VU	L	Negligible
Golden Sun Moth	*Synemon plana*	#	CR	EN	L	High
State Significance						
Red-chested Button-quail	*Turnix pyrrhothorax*	2004		VU	L	High
Baillon's Crake	*Porzana pusilla*	1990		VU	L	Medium
Fairy Tern	*Sternula nereis*	1988		EN	L	Low
Terek Sandpiper	*Xenus cinereus*	1986		EN	L	Low
Great Knot	*Calidris tenuirostris*	1982		EN	L	Low
Royal Spoonbill	*Platalea regia*	1990		VU		Low
Little Egret	*Egretta garzetta*	2000		EN	L	Low
Intermediate Egret	*Ardea intermedia*	1990		CR	L	Low
Eastern Great Egret	*Ardea modesta*	2000/#		VU	L	Medium
Australasian Bittern	*Botaurus poiciloptilus*	1990		EN	L	Low
Australasian Shoveler	*Anas rhynchotis*	1990		VU		Low
Hardhead	*Aythya australis*	2001		VU		Low
Blue-billed Duck	*Oxyura australis*	1970		EN	L	Low
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	#		VU	L	Low
Black Falcon	*Falco subniger*	2003		VU		High

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