BIOSIS
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Assessment of the Growth Areas Authority Investigation Area in Melbourne's West

Contract Area 81: Dohertys Road East

Biodiversity

October 2010

Part 1: Prepared by the Growth Areas Authority

Part 2: Prepared by Biosis Research Pty. Ltd.

Natural & Cultural Heritage Consultants 38 Bertie Street (PO Box 489) Port Melbourne Victoria 3207

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Report to the Growth Areas Authority

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22 October 2010

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Growth Areas Authority

- Bill Vasiliadis
- Ken King
- Lyndal McDonald

Department of Sustainability and Environment

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

Biosis Research

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- Catherine Costello for review of draft report.
- Catherine Clowes and Vanessa Westcott for comments on the draft.

Others

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- Peter Wlodarczyk for advice regarding rare and threatened flora localities.

ABBREVIATIONS

AVW	Atlas of Victorian Wildlife
BA	Birds Australia
DEWHA	Department of Environment, Water, Heritage and the Arts
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, 2009 version
IUCN	International Union for the Conservation of Nature
NRE	Department of Natural Resources & Environment (now DSE)
VQAM	Vegetation Quality Assessment Manual
DTV	Degraded Treeless Vegetation
NNV	Non-native Vegetation

CONTENTS

BIODIVERSITY REPORT OVERVIEW

This Biodiversity 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 possible future preparation of Precinct Structure Plans and Native Vegetation Precinct Plans for this area.

The assessment surveys were conducted by Biosis Research between September 2009 and March 2010. 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 Section 2.5 of this report.

PART 1
Synopsis by the Growth Area Authority

FORWARD

Project Purpose

The role of the Growth Areas Authority (GAA) is to plan for the new suburbs on the periphery of metropolitan Melbourne, to improve planning process and achieve better outcomes for new communities.

The GAA has undertaken detailed scale flora and fauna assessment and mapping to determine biodiversity values within Melbourne's growth areas. This is an essential input into the planning process and informs the environmental outcomes that can be achieved from the process. Assessment and mapping of biodiversity values, as part of Melbourne's planning, has never been undertaken on this scale before.

The project provides biodiversity information which is needed to carry out the detailed planning for future urban precincts. Importantly, this information (which includes determination of 'habitat hectares' of native vegetation in each precinct) will enable the application of the *Victorian Native Vegetation Management Framework* principles of 'avoid, minimise and offset' and the achievement of 'net gain' outcomes.

Planning of new precincts in Melbourne must also meet National objectives for the conservation of matters of National Environmental Significance as described by the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999. The biodiversity reports prepared by the GAA are an important tool in Victoria meeting its obligations under Commonwealth legislation and achieving these national environmental objectives.

The purpose of the GAA Biodiversity Assessment and Mapping Project is to:

- Undertake detailed field surveys of native vegetation and targeted flora and fauna species and to assess and map the ecological significance of these.
- Prepare Biodiversity Reports (covering native vegetation and flora and fauna habitat) 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,
- Assist the long term planning of Melbourne's growth areas, including working with infrastructure authorities to ensure their requirements are met over the next 30–50 years;

The project has been undertaken over two consecutive years covering a total of 43,577 hectares, using prescribed survey techniques to map native vegetation, and targeted flora and fauna species. Experienced botanists and zoologists have been contracted by the GAA to undertake field surveys according to standards established by the GAA and the Victorian Department of Sustainability and Environment (DSE).

The total areas surveyed during the first year of the project (2008/2009) was 32,899 hectares of which 6,070 hectares was inside the Urban Growth Boundary; 20,320 hectares was within investigation areas (proposed Urban Growth Boundary); and 6,509 hectares of western grassland areas - resulting in the production and publication of 13 Biodiversity Reports.

The second year of the project (2009/2010) assessed and mapped an additional area of 10,678 hectares of land proposed for future urban development and will result in the preparation of a further 20 Biodiversity Reports.

Biodiversity Reports

These Biodiversity Reports will inform the preparation of precinct structure plans in areas designated for future urban development. In particular, the reports provide data about the quality, type, extent and significance of native vegetation and flora and fauna habitat within each planning precinct. Additionally, the Reports provide data used for preparation of Native Vegetation Precinct Plans and, in some cases, for preparation of Conservation Management Plans.

This process enables the planners and other professionals working on the precinct plan to understand the ecological value of habitat existing within the precinct and to make decisions about the future urban structure and provision of infrastructure within the precinct using the principles contained in *Victoria's Native Vegetation Management Framework* of 'avoid, minimise and offset'.

The State Government's goal for conserving native vegetation in Victoria is 'to achieve a reversal, across the entire landscape, of the long-term decline in the extent and quality of native vegetation, leading to a Net Gain'. The assessment and mapping of Victoria's biodiversity values make a significant contribution to the State Government's goal in the context of planning for Melbourne's growth areas.

Streamlining Initiative

Detailed assessment and mapping of biodiversity prior to precinct planning is an initiative developed by the GAA to improve and streamline the planning process. It is an innovative approach to structure planning practice and improves both planning and environmental outcomes in Victoria by the following:

- The assessments are carried out early in the planning cycle so that they can inform design and decision making.
- The field work is undertaken at the correct time of the year according to ecological standards and according to survey techniques established and agreed by GAA and DSE.
- Multiple field surveys are conducted concurrently by qualified practitioners, which is a more efficient method of collecting the biodiversity data.
- Economies of scale are achieved by contractors covering large land areas (at the precinct scale), reducing the cost and time required.
- The resulting Biodiversity Reports provide all stakeholders with consistent and reliable information about flora, fauna and habitat values within the precinct to enable better decision making and environmental outcomes to be achieved.
- GAA carrying out this work reduces the burden on local governments and land owners and provides greater certainty for urban development and biodiversity outcomes.

As a streamlining initiative, the project follows GAA principles of carrying out the necessary background research competently and early in the process. By the GAA establishing the survey and reporting standards required up front and by doing the research early in the process, it avoids others having to repeat or rectify the research later in the process. Repeat surveys and inadequate quality of surveys has often occurred in the past and the GAA seeks to avoid this occurring in current planning work.

New Standards of Practice

The GAA Biodiversity Mapping and Assessment Project establishes new standards in the integration of biodiversity conservation in the planning of new suburbs in growth areas by:

- Determining up front with the Department of Sustainability and Environment the prescribed survey techniques to be used by contractors working in the field.
- Establishing up front with the Department of Sustainability and Environment which targeted surveys (for which species of flora and

fauna) are required in each precinct according to known or likely habitat.

- Agreements between GAA and DSE mean that a more strategic approach has been taken to surveys for specific species – using either an 'assumed' presence model (e.g. Striped Legless Lizard) and a sub-regional survey approach(for Southern Brown Bandicoot, Growling Grass Frog and Golden Sun Moth).

- Use of hand-held GPS field mapping devices and a common approach to map presentation to provide consistent and quality mapping standards to be achieved.

- All contractors, while being experienced and qualified scientists, were required to undergo three days of compulsory training in habitat hectare assessment techniques and a competency check (managed by DSE) and field based quality checks of their work.

The GAA flora and fauna mapping and assessment project was undertaken in close association with the Department of Sustainability and Environment (DSE) which is the regulator for biodiversity protection and conservation in Victoria. This collaborative and proactive approach by the GAA to work with the DSE has added significant value to the quality and reliability of the project outcomes. The data collected by the project adds to the protection, management and restoration of the environment through the precinct planning process.

The Biodiversity Reports prepared for each planning precinct are a key input into the detailed planning for the precinct. They support the preparation of key documents such as:

- The Biodiversity Plan (setting out the key biodiversity issues and implications) included within the Precinct Structure Plan.

- Native Vegetation Precinct Plan (setting out the native vegetation to be retained, removed and offset within the precinct).

- A Conservation Management Plan if required (which sets out the management prescriptions for matters of national environmental significance).

Collaboration by GAA with the Victorian Department of Sustainability and Environment (DSE) throughout the project has enabled the development of a robust methodology and a biodiversity template for the production of reports.

Quality of Professional Work and Final Product

The GAA approach has established appropriate standards at the outset of the project and ensured that the work is done to meet these standards, to avoid re-work and future delays. Measures have been put in place throughout this project to ensure quality standards are met and reflected in the final reports. These can be summarised as follows:

- A project governance structure has been used by the project from start to finish involving both the GAA (undertaking the project) and DSE (the regulator for biodiversity matters under Victorian legislation) in establishing the project scope and standards to be achieved.
- A project scope was prepared and reflected within the Tender specification used by the GAA to ensure that contractors who were selected by the GAA had the experience and skill required to carry out the project and meet the required quality standards.
- Contractors working on the project were required to undertake 3 days of compulsory training and to meet a competency check.
- Contractors were required to submit monthly reports of the data collected to GAA and DSE to enable checking of data and mapping integrity. This quality check provided confidence in the information collected and rectification of any deficiencies prior to acceptance of the results.
- Biodiversity Reports which explain and interpret the data collected in the field were prepared by qualified ecologists and are designed to enable planners, engineers, designers and others to understand the information and use it in practical applications.
- Quality assurance of draft reports by another qualified ecological consultant has been used to ensure work is accurate and consistent in meeting project standards. The quality assurance process provides a streamlined approach to checking and amending reports before they are finalised and accepted by GAA and DSE.

PART 2

Biodiversity Assessment and Mapping

Completed by Biosis Research Pty. Ltd.

EXECUTIVE SUMMARY

Introduction

Biosis Research Pty. Ltd. was commissioned by the Growth Areas Authority (GAA) to identify biodiversity values within Contract Area 81 of the Melton Investigation Area west of Melbourne (Figure i). The field assessments including targeted searches for threatened flora and fauna were undertaken between September 2009 and January 2010 on accessible properties within Contract
Area 81.

Contract Area 81 is located within Melton Shire and is bounded to the north by Boundary Road, to the south by Leakes Road, to the west by Derrimut Road and to the east by Woods Road. It includes a section of Skeleton Creek and Dry Creek (Figure i).

Methods

Field assessment and mapping methods follow GAA (2009) and the Biodiversity Assessment Template for 2009–2011 Biodiversity Mapping Projects.

In summary:

- All vegetation within accessible land was mapped as either native vegetation, degraded treeless vegetation or non-native vegetation. Native vegetation quality was scored in accordance with DSE (2004).
- The study area was searched for scattered trees so that any found could be identified and mapped according to size classes.
- Potential habitat for a number of rare or threatened species, known to or likely to occur within the precinct, were searched using a range of survey methods appropriate for each.

- General flora and fauna surveys were undertaken within each property.

This biodiversity assessment does not include targeted surveys of Growling Grass Frog or Golden Sun Moth as they are being undertaken in the Sub Regional Surveys required under the Strategic Assessment. Striped Legless Lizard was also not surveyed as this species is assumed to be present in Plains Grassland and other suitable habitats within the study area.

Results

Access

Contract Area 81 covers 1075 ha and, of this, approximately 738.2 ha (70.49% including 30 parcels) of privately owned land was accessed during the current assessment. Roadsides and some government-owned land was also assessed (Figure ii). Additional areas were not surveyed as either contact with the landowner was not possible (four parcels, 157.67 ha), no contact details were available (seven parcels, 91.9 ha), there was no vegetation to survey (one parcel, 8.1 ha), or access was denied (two parcels, 51.33 ha).

Ecological Vegetation Classes

Six Ecological Vegetation Classes (EVCs) were mapped within Contract Area 81 during the current assessment (Figure iii).

- Plains Grassland,
- Plains Grassy Wetland,
- Plains Sedgy Wetland,
- Brackish Wetland,
- Aquatic Herbland, and
- Stony Knoll Shrubland

Significant Species and Communities

Two nationally significant flora species (Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* and Button Wrinklewort *Rutidosis leptorhynchoides*) was recorded during the current assessment. The Flora Information System (FIS) database contains records of six additional species of national conservation significance from within 5 km of the study area. The DEWHA database predicts the occurrence of, or suitable habitat for one additional plant species listed under the EPBC Act.

A total of 13 nationally threatened flora species and 27 state rare or threatened flora species are known to occur within 5 km of Contract Area 81 or were recorded during the current investigation (Table 2).

Records of 11 of the nationally threatened species were sourced from the FIS or DEWHA databases and the remaining two species were identified in a DSE review of likely species to occupy Contract Area 81.

During the current investigation, two of the 13 species of national significance (Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* and Button Wrinklewort *Rutidosis leptorhynchoides*) were recorded (Figure A3a–i). Five nationally significant species not recorded during the current investigation are considered to have a high likelihood of occurrence in the study area based on the habitat present; River Swamp Wallaby-grass *Amphibromus fluitans*, Matted Flax-lily *Dianella amoena*, Small Golden Moths *Diuris basaltica*, Fragrant Leek-orchid *Prasophyllum suaveolens* and Large-headed Fireweed *Senecio macrocarpus* (Table 2).

Six species of state significance (Plains Joyweed *Alternanthera* sp. 1 (Plains), Small Scurf-pea *Cullen parvum*, Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra), Slender Tick-trefoil *Desmodium varians*, Pale Spike-sedge *Eleocharis pallens* and Pale-flower Crane's-bill *Geranium* sp. 3) were recorded during the current assessment (Appendix 2, Table A2.1, Figure A3a–i). Small Scurf-pea is also listed as threatened under the *Flora and Fauna Guarantee Act* 1988.

The FIS database and DSE review revealed 20 additional species of state conservation significance from within 5 km of Contract Area 81 (Table 2).

Thirteen fauna species of national significance have been recorded from the local area in the AVW and/or Birds Australia (BA) database or are predicted to occur on the DEWHA database.

Fifteen additional fauna species of state conservation significance were recorded from the local area in the AVW and/or BA databases; or are predicted to occur on the DEWHA database or by Biosis Research.

The *Environment Protection and Conservation* (EPBC) *Act* 1999 listed ecological community Natural Temperate Grassland of the Victorian Volcanic Plain and the *Flora and Fauna Guarantee* (FFG) *Act* 1988 listed community Western (Basalt) Plains Grassland were recorded.

Vegetation Quality Assessment (Melton/Wyndham Investigation)

Of the 738.2 ha (30 parcels) assessed within Contract Area 81, a total of 217.87 ha of indigenous vegetation (104 patches) were recorded.

This vegetation equates to 75.18 hha of Heavier Soils Plains Grassland, 1.74 hha of Plains Grassy Wetland, 0.14 hha of Plains Sedgy Wetland, 0.07 hha, 0.02 hha of Aquatic Herbland, 0.20 hha of Brackish Wetland and 0.95 hha of Stony Knoll Shrubland. Therefore, a total of **78.22 hha** are present within the area assessed.

Government legislation and policy

Some parts of Contract Area 81 support matters of National Environmental Significance (NES) which would trigger the EPBC Act. In the event of an action which may impact upon those matters of NES, approval is required under the Act. A Strategic Impact Assessment Report (SIAR) was compiled to provide a strategic assessment of the impacts arising from the Program *Delivering Melbourne's Newest Sustainable Communities* (DSE 2009b). Within the SIAR are prescriptions for EPBC Act-listed species and communities identified for the Program. These prescriptions will be used to determine if clearing is permitted under the SIAR.

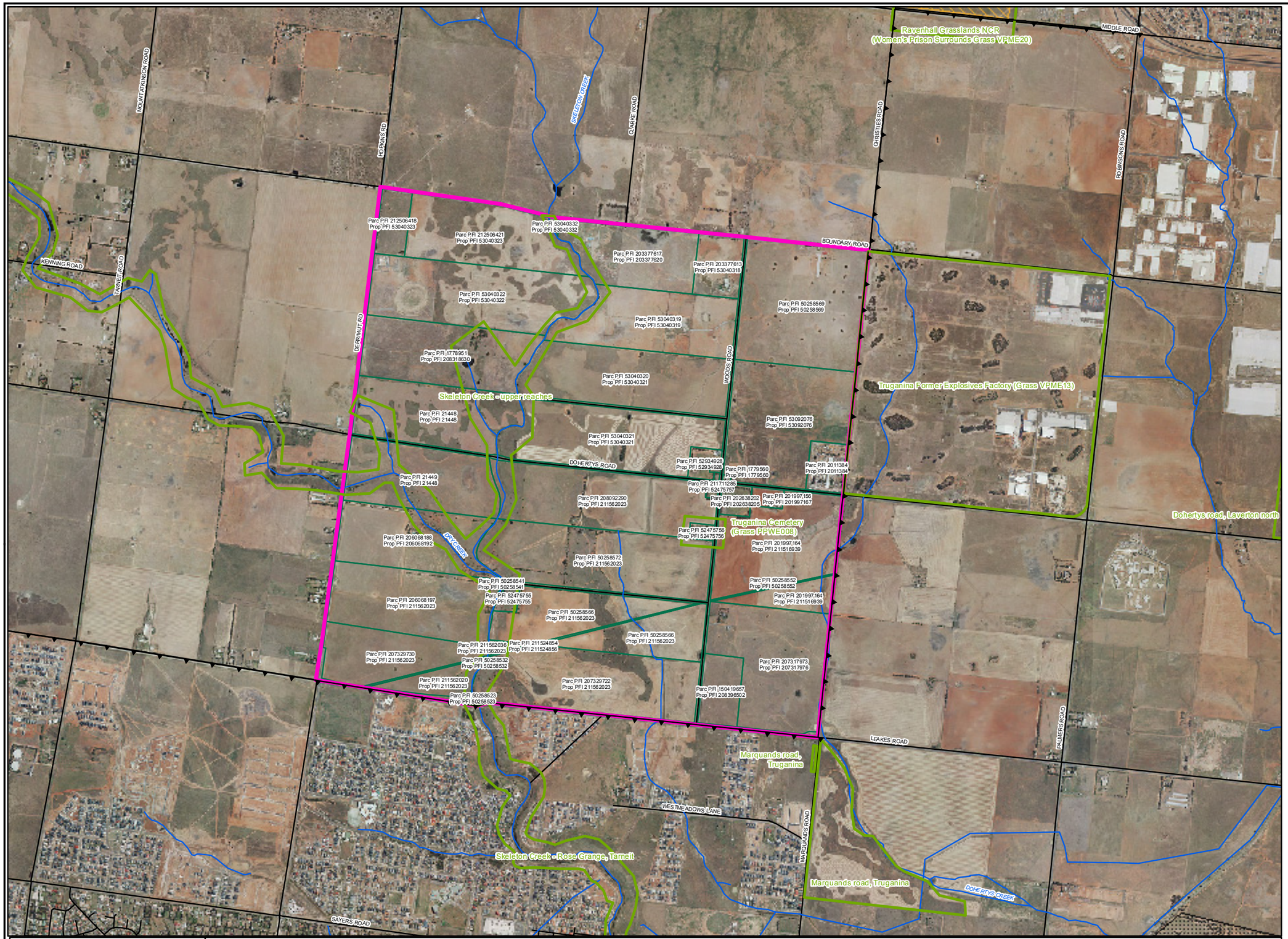
A planning permit to remove native vegetation would typically be required under the Melton Shire Planning Scheme (Clause 52.17). However, it is possible that some or all of Contract Area 81 will be subject to a Native Vegetation Precinct Plan (NVPP) (Clause 52.16) which would negate the need for a permit 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 FFG Act to remove protected flora from public land within Contract Area 81.

Potential losses of native vegetation associated with any development of Contract Area 81 will be subject to the guidelines provided by Victoria's Native Vegetation Management Framework (the Framework) and Delivering Melbourne's Newest Sustainable Communities: Strategic Impact Assessment Report for the EPBC Act 1999.

Conclusions

Contract Area 81 contains a significant area of native vegetation comprised of six endangered EVCs as well as the EPBC Act-listed ecological community Natural Temperate Grassland of the Victorian Volcanic Plain and the FFG Act-listed community Western (Basalt) Plains Grassland. Contract Areas of Very High and High conservation significance have been identified within Contract Area 81, based on their conservation significance, size, habitat for threatened species and habitat connectivity values. Identification of these areas provides opportunities for the precinct planning process to consider and implement the three-step process of avoid, minimise and offset as set out in the Framework.



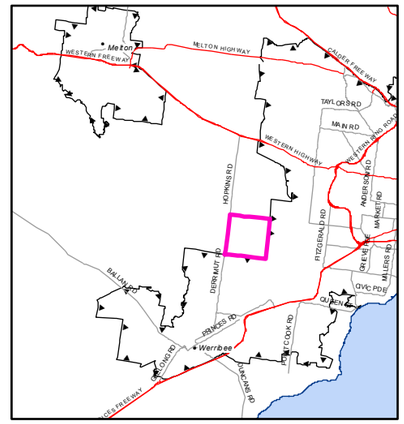


Figure i

Legend

- Urban Growth Boundary
- Biosites
- Contract Area 81
- Parcel boundary

Public Land

- Nature Conservation Reserve
- Crown Land reserved

Figure i: Overview of Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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Kilometers
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Parc PFI 212506421
42.7 ha

Parc PFI 53040332
0.46 ha

Parc PFI 203377617
32.83 ha

Parc PFI 203377613
12.19 ha

Parc PFI 53040322
57.29 ha

Parc PFI 53040319
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Parc PFI 50258569
64.84 ha

Parc PFI 1778951
44.73 ha

Parc PFI 53040320
51.36 ha

Parc PFI 21448
41.63 ha

Parc PFI 53040321
52.66 ha

Parc PFI 53092076
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Parc PFI 52934928
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8.1 ha

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Parc PFI 201997156
2.66 ha

Parc PFI 206068188
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Parc PFI 52475756
1.63 ha

Parc PFI 201997164
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Parc PFI 50258572
60.09 ha

Parc PFI 50258552
0.84 ha

Parc PFI 206068197
46.6 ha

Parc PFI 52475755
2.62 ha

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55.45 ha

Parc PFI 50258566
49.63 ha

Parc PFI 211562036
1.52 ha

Parc PFI 211524854
2.26 ha

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49.63 ha

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28.47 ha

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52.75 ha

Parc PFI 211562020
9.56 ha

Parc PFI 207329722
56.53 ha

Parc PFI 150419657
11.98 ha

Parc PFI 50258523
0.01 ha

RD HOPKINS
CLARKE RD
RD BOUNDARY
RD DERRIMUT
RD
GOVERNMENT RD
RD DOHERTYS
DOHERTYS
DRY CREEK
SKELETON CREEK
RD WOODS
DOHERTYS CREEK
LEAKES RD
SUNSET VIEWS
TWILIGHT
DUSKY
LEDA
INGOT
FLORA
BOULDER
AUTUMN FIELDS
BVD BADEN POWELL
EQUINOX
SEASONS
SUMMER
MANNA GUM
SAYERS RD
THOMAS CARR
MORRIS
ST LUKES
MEWS
JOHN
TALLIVER
HARNESS
WYNDLE
SADDLE
LAZOR
CIRCUIT
GOULD WALK
DOUBELL
KEATS
LANE
PLACE
PINNACLE
EMPIRE
JUNO
HENLEY

Legend

Contract Area

Access Status

- Yes (30 parcels, 738.21 ha, 70.49%)
- Tried to contact (4 parcels, 157.67 ha, 15.06%)
- No vegetation to survey (1 parcel, 8.1 ha, 0.77%)
- No number (7 parcels, 91.9 ha, 8.78%)
- Denied (2 parcels, 51.33 ha, 4.9%)

See Figure A2 in the appendices for more detailed maps, including dates of targeted surveys and property identifiers.

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Figure ii: Property Access Status,
Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Date: 7 October 2010
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Meters

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Legend

Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 653 Aquatic Herbland
- 656 Brackish Wetland
- Degraded treeless vegetation
- EPBC listed Natural Temperate Grassland of the Victorian Volcanic Plain
- Non Native Vegetation
- Contract Area
- Parcels
- Not Accessed

See appendix Figure A4 for more detail, including habitat zone and parcel identifiers

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Figure iii: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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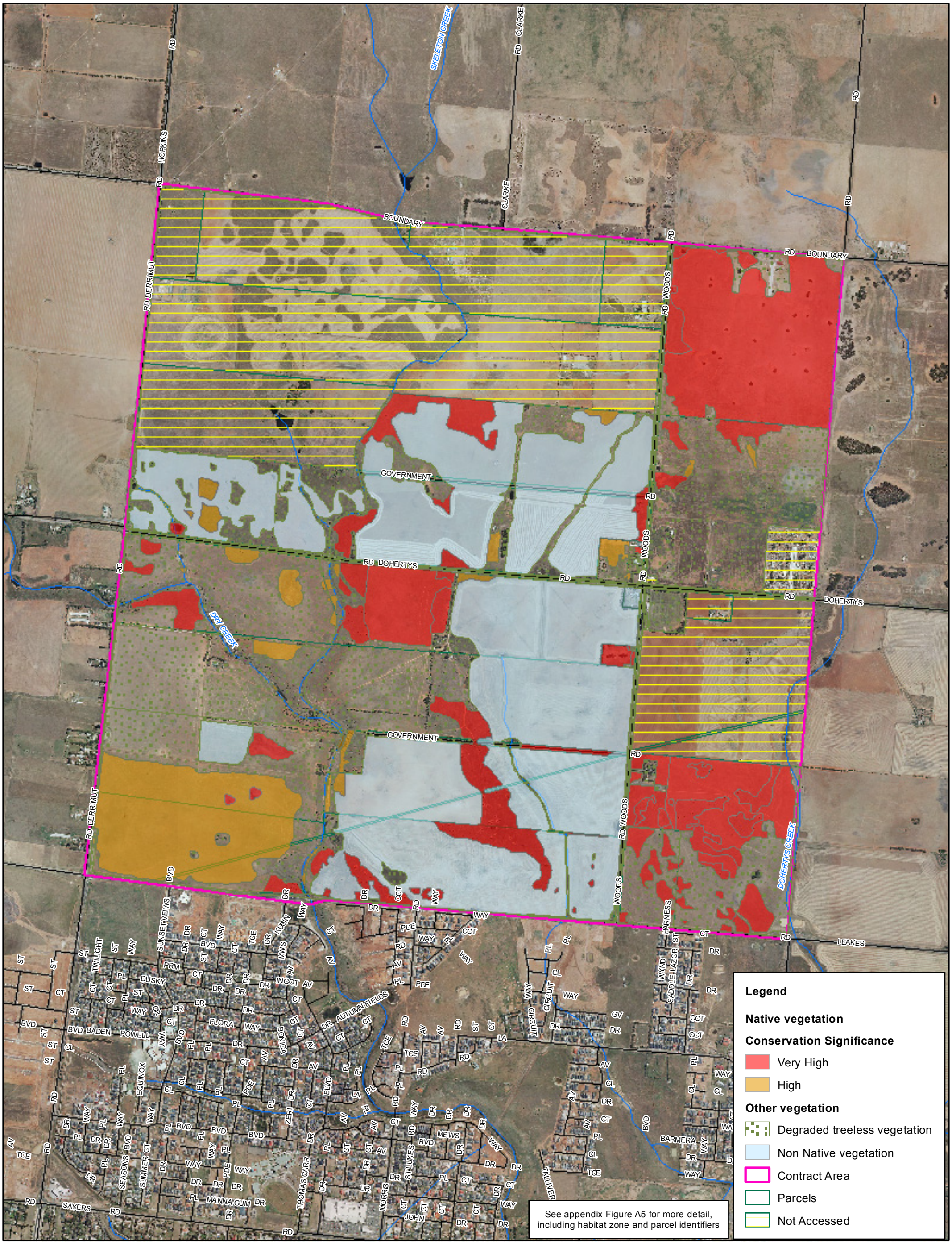

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Figure iv: Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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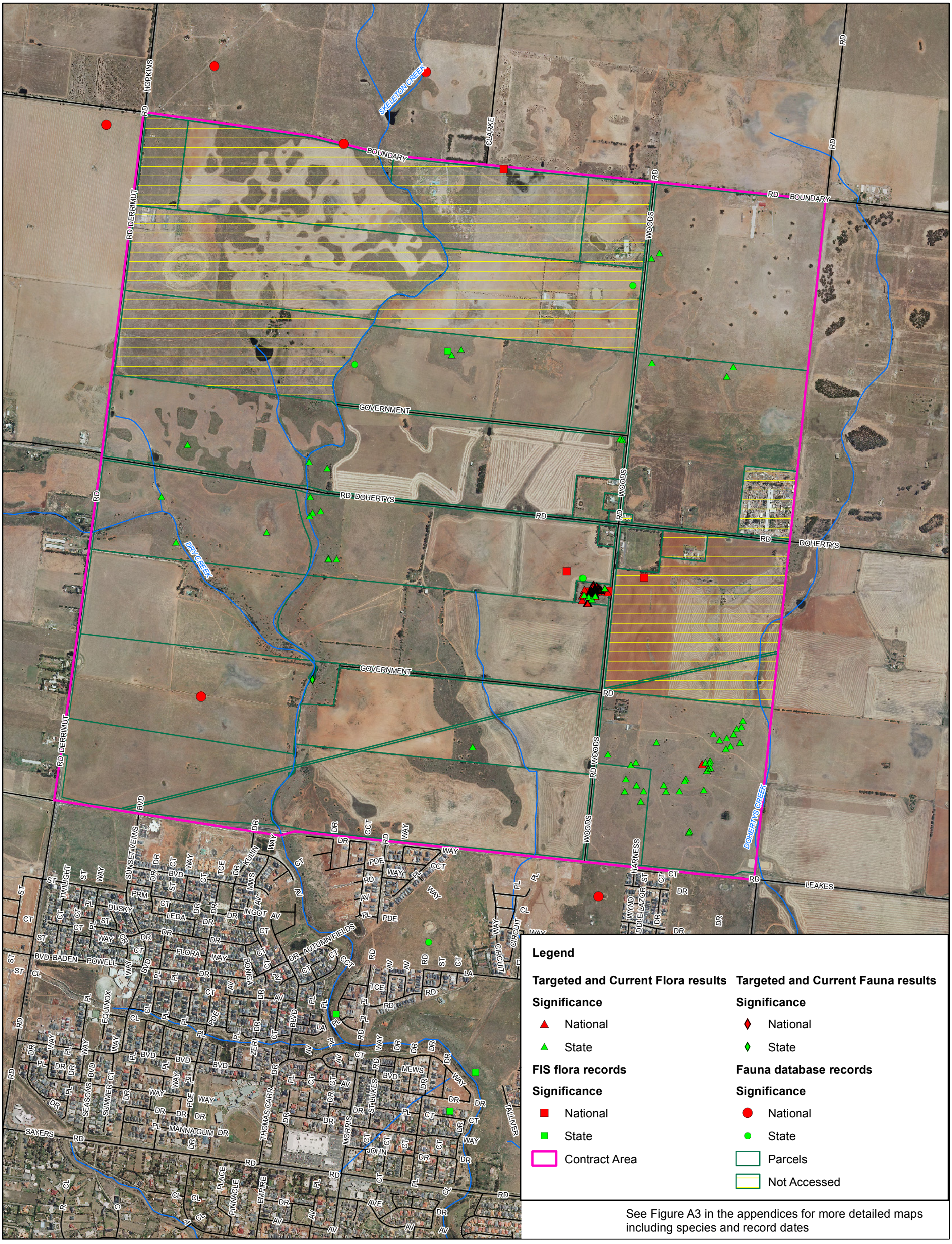

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Figure v: National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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RD BOUNDARY
HOPKINS RD
CLARKE
CHRISTIES RD
DOHERTYS CREEK
BOUNDARY
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BVD
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CCT
RD
WAY
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WAY
WOODS
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CT
RD
LEAKES
SKELETON CREEK
SAYERS RD
PLACE
RD
ASHLEY
AVE
TALLIVER
BINDOWAN
BINDOWAN
WYNARKA
RD
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See appendix Figure A6 for more detail

Legend

Plains Wanderer
Habitat Potential
- High

Growling Grass Frog
Habitat Potential
- High
- Low

Golden Sun Moth
Habitat Potential
- High
- Low

Striped Legless Lizard
Habitat Potential
- High
- Low

Contract Area

Fauna Habitat
- Grassland - rocky
- Grassland - not rocky
- Pasture/crop - rocky
- Pasture/crop - not rocky
- Escarpment shrubland
- Planted Vegetation
- Buildings
- Roads
- Rock piles
- Rock walls
- Shrubland
- Standing dead tree/hollow bearing stag
- Wetland/Drainage line
- Parcels
- Not Accessed

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Figure vi: Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Date: 30 October 2010
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1.0 INTRODUCTION

1.1 Project Background

Biosis Research Pty. Ltd. was commissioned by the Growth Areas Authority (GAA) to identify biodiversity values within Contract Area 81of the Melton/Wyndham Investigation Area west of Melbourne (Figure 1). The purpose of this assessment was to identify biodiversity values to further inform the precinct structure planning process for Contract Area 81 which are designated for future urban development.

Previous investigations

In March 2009, Biosis Research (2009a) produced the *Background Technical Report 2c: Biodiversity; Assessment of the Investigation Area in Melbourne's West*. This report covered two main areas:

- the Melton Desktop Area (east of Melton, west of Sydenham, south of Mount Kororoit and north of Mount Atkinson); and
- the Vegetation Assessment Areas (the Melton/Wyndham Investigation Area (Figure 1) and an additional area to the west).

Biosis Research (2009a) referred to these areas collectively as the GAA Investigation Area. The report assessed biodiversity constraints in the GAA Investigation Area and provided broad-scale recommendations for areas of retention priority.

In November 2009, Biosis Research (2009b-i) produced the *Assessment of the Growth Areas Authority Investigation Areas in Melbourne's West*. This report was split into eight stand-alone reports based on key sections (Sections A–H), identified by the GAA as possible future precinct areas within the Melton/Wyndham Investigation Area (Biosis Research 2009b–i). Each report provides detailed analyses of results obtained through the vegetation mapping undertaken by Biosis Research for each section and are available on the GAA website.

The current report aims to provide a more detailed analysis of the results. To assist in analysis and presentation of the data, the GAA have split the Melton/Wyndham Investigation Area into nine key areas based on likely future precinct areas, with two of these (Contract Area 70 and 81) being investigated by Biosis Research. As such, the results of the vegetation mapping assessment and targeted species searches for Contract Area 70 and Contract Area 81 are documented in two stand-alone reports. This report focuses on one of these areas; Contract Area 81.

1.2 Objectives

The objectives of the study are to:

- Identify, assess, and map all flora, fauna, and habitat and record the location and level of conservation significance of all significant flora, fauna and vegetation communities within Contract Area 81;
- Collect data at sufficient detail and standard that enables a Precinct structure Plan and Native Vegetation Precinct Plan to be developed;
- Provide advice on likely works or management measures that may reduce adverse impacts of the development on species known or likely to occur in the precinct; and
- Ensure that development of the precinct is able to comply with Government legislative and policy requirements on the protection of indigenous fauna and flora species and communities.

These objectives will be achieved by:

- Mapping Ecological Vegetation Classes (EVCs) and provided data regarding the quality of vegetation within assessment zones;
- Undertaking searches for significant species and mapping the likely habitat and locations of any recorded occurrences;
- Assigning a conservation significance to all patches of native vegetation and providing habitat hectare calculations as per the Native Vegetation Framework (NRE 2002) and Vegetation Quality Assessment Manual (VQAM) (DSE 2004);
- Providing a consolidated species list of flora and fauna recorded during the mapping project and augmenting these with database records of threatened flora and fauna species provided by database searches within each area;
- Mapping any areas of *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) listed communities; and
- Identifying the limitations of the current assessment.

1.3 Study Site

Contract Area 81 is located on the western fringe of Melbourne (Figure 1) and includes the suburb Truganina. Contract Area 81 covers 1075 ha (44 parcels) 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 Derrimut Road and to the east by Woods Road. It includes a section of Skeleton Creek and Dry Creek.

The majority of land within and surrounding Contract Area 81 is privately owned with agricultural activities in the form of cropping and/or grazing livestock.

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

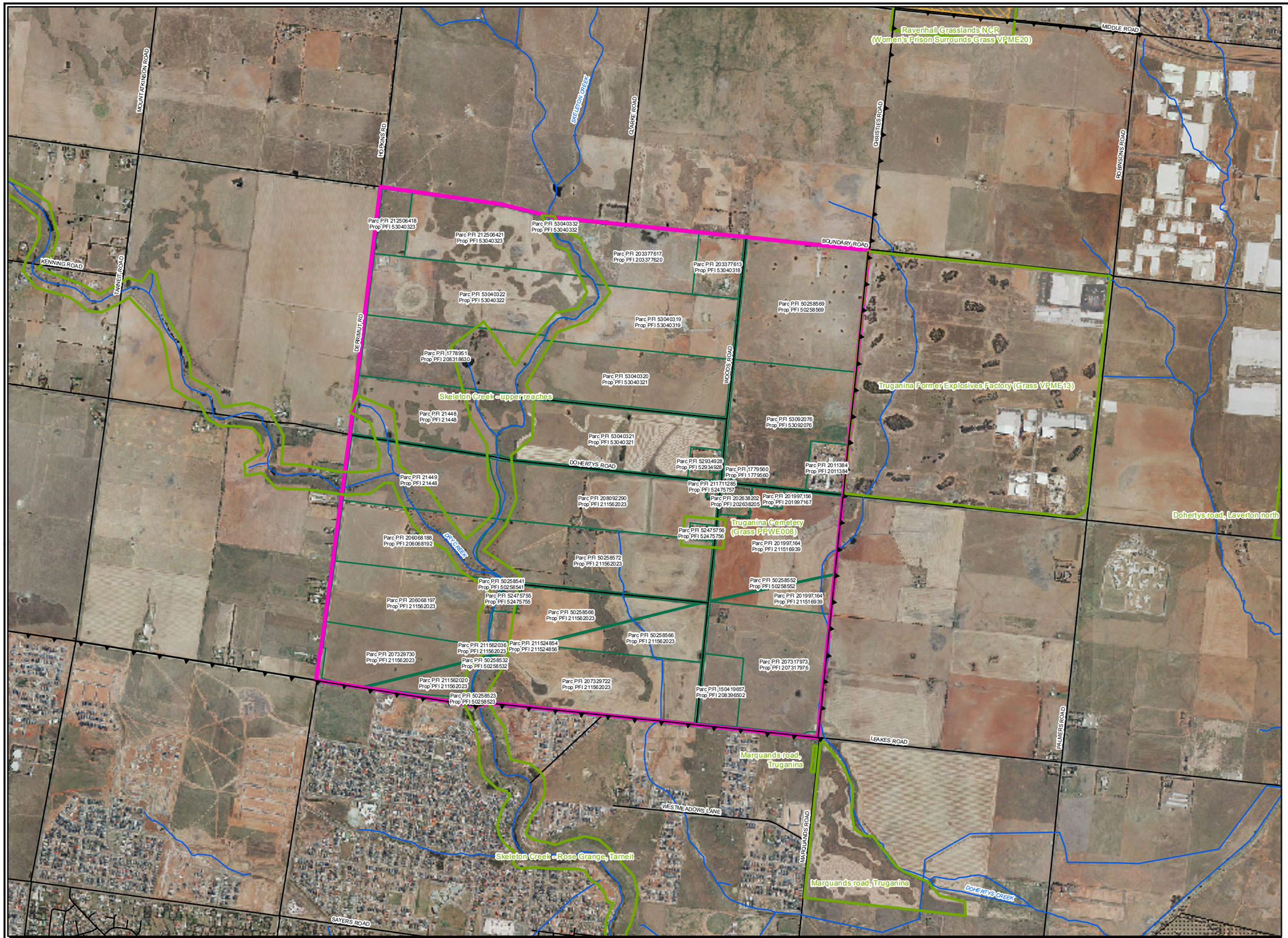
The contract area lies within a landscape which is well documented for its association with a number of matters of national significance. It occurs within the range of the EPBC Act listed ecological communities Natural Temperate Grassland of the Victorian Volcanic Plain and Grassy Eucalypt Woodland of the Victorian Volcanic Plain. In addition, there are several threatened species listed under the EPBC Act which have historical records from the contract area, or are otherwise predicted to occur within the contract area. These are discussed in detail under Section 3.

The contract area includes two biosites; Truganina Cemetery (3607) and Skeleton Creek upper reaches (4616) which have national and state significance respectively. Truganina Cemetery is well documented as a significant remnant of Plains Grassland that supports the EPBC Act listed grassland community, FFG Act grassland community and four rare or threatened flora species. Skeleton Creek is a tributary to coastal wetlands and provides resources for aquatic species within the contract area. Three other biosites of local and regional significance lie within 10 km of the contract area.

Contract Area 81 is within Whyndam City Council. The majority of the contract area is zoned Urban Growth Zone and is not subject to any planning overlays (http://www.dse.vic.gov.au/planningschemes/). The exceptions are the Truganina Cemetery (Public Use Zone), the alignment of Skeleton Creek (Rural Conservation Zone) and a parcel of land at the corner of Dohertys and Woods Road (Public Park and Recreation Zone). Truganina Cemetery is subject to Whyndam's Environmental Significance Overlay (schedule 3) and Vegetation Protection Overlay (Schedule 1). Skeleton Creek is subject to Whyndam's Environmental Significance Overlay (Schedule 1 and 2). The overlays affecting the cemetery have been put in place to recognise and protect the grassland vegetation and the significant species which occupy the site. The overlays affecting Skeleton Creek have been put in place to recognise and protect

biodiversity values and other services provided by the creek, as well as the vegetation and habitat that are associated with it.

Contract Area 81 is adjacent to GAA Contract Areas 37 and 80. Both these areas share similar values including the presence of Plains Grassland and the associated EPBC and FFG Act listed ecological communities. Such vegetation provides habitat for significant species recorded in Contract Area 81 during the current assessment.



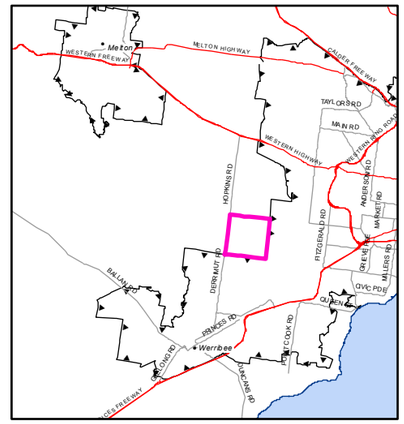


Figure 1

Legend

- Urban Growth Boundary
- Biosites
- Contract Area 81
- Parcel boundary

Public Land

- Nature Conservation Reserve
- Crown Land reserved

Figure 1: Overview of Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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2.0 METHODS

2.1 Terminology

Common and scientific names for flora and fauna follow the Flora Information System (FIS 2009 version) and the Atlas of Victorian Wildlife (AVW 2009 version) which are curated by the Department of Sustainability and Environment (DSE). The conservation status of species was determined from their listing in DSE advisory lists (DSE 2005, 2007, 2009) or their listing under the EPBC Act.

Classification and naming of native vegetation mapping units for planning purposes in Victoria follows a typology developed by DSE in which EVCs are the primary level of classification. An EVC contains one or more plant communities and represents a grouping of broadly similar environments (www.dse.vic.gov.au).

State FFG Act and national EPBC Act listed ecological communities are classified and named by DSE and the Department of Environment, Water, Heritage and the Arts (DEWHA) respectively (www.dse.vic.gov.au, http://www.environment.gov.au/biodiversity/threatened/index.html).

2.2 Literature and Database Review

Data were obtained and reviewed from the FIS (2009), AVW (2009) and Birds Australia database (1998–2008) were obtained and reviewed for Contract Area 81. These data included historical records within 5 km of the contract area.

The DSE's biosistes data was searches for details of biosistes occurring within and adjacent to the contract area.

The DEWHA online database for the EPBC Act Protected Matters Search Tool, (hereafter referred to as the DEWHA database) was searched to include an area within 5 km of the contract area. This search produced details of Matters of National Environmental Significance including threatened species known or predicted to occur within the search area.

The modelled 2005 distribution and 1750 EVCs (DSE mapping of native vegetation present at these dates) within the contract area and their bioregional conservation status was reviewed using Biodiversity Interactive Maps (www.dse.vic.gov.au). Other relevant spatial data on Biodiversity Interactive Maps was reviewed as well as aerial photography for the contract area and topographic maps.

Two of the eight stand alone reports written by Biosis Research for the Growth

Areas Authority in November 2009 that are relevant to Contract Area 81 were reviewed (Biosis Research 2009d,e). Mapped habitat and locations of threatened flora and fauna species were reviewed and where relevant included in the current assessment. Other Biosis Research reports relevant to the contract area region were reviewed during the assessment process. .

Sub-regional survey reports for Golden Sun Moth (Biosis Research 2010a) and Growling Grass Frog (Ecology Australia 2010) were reviewed to assist with interpreting the distribution of these species within the contract area.

Specialist ornithologist Dr David Baker-Gabb was consulted in Sep–Oct 2009 regarding the suitability of grassland areas within the contract area for the threatened bird species Plains Wanderer *Pedionomus torquatus*. The advice provided was used in prioritising subsequent targeted searches. Botanist Peter Wlodarczyk was consulted regarding the likely presence of rare or threatened plant species within the contract area. This information was used in refining search efforts for particular species.

2.3 Field Survey Techniques

Field assessments were undertaken by up to six botanists on 11, 16, 17, 18, 21–23, 28 September; 5–9, 15–16, 30 October 2009; 15, 18 January 2010 (18 days). General fauna surveys and associated habitat assessments were conducted by up to two zoologists on 18, 21–23, 25 September 2009; 9, 19 October 2009; 6 November 2009; 6, 13, 20 January 2010, 2, 3, 8, 9, 11 February (15 days). Some additional days within this period were spent undertaking other field tasks required for planning and quality assurance of data being collected in the field.

All surveys were undertaken during the day excluding targeted searches for Plains Wanderer which were undertaken during the night. Bird census surveys were undertaken at dawn and dusk.

Bureau of Meteorology data from Laverton RAAF weather station for the survey dates are provided in Table 1.

Table 1. Bureau of Meteorology climate data for Laverton RAAF weather station (2009–2010).

Date	Maximum temperature (ºC)	Rainfall (mm)	3 pm relative humidity (%)
11 September	22.1	0	34
16 September	24.5	0	27
17 September	18.9	0	95
18 September	17.3	10.6	54
21 September	17.1	0	55
22 September	19.8	23.2	56
23 September	18.8	0	52
28 September	14.5	0.6	61
5 October	16.1	0	70
6 October	13.2	1.2	68
7 October	14.5	8.6	55
8 October	15.3	0.2	51
9 October	16.4	0	51
15 October	15.6	0.8	62
16 October	17.7	1.2	61
18 October	17.6	0	51
19 October	20.6	0	55
21 October	17.7	0	56
22 October	18.4	0	54
23 October	17.7	0	47
25 October	16.6	0	51
30 October	28.2	0.4	53
6 November	22	0	52
6 January	22	0	51
13 January	22.6	0.6	41
15 January	25.2	0	50
18 January	20.2	0.2	69
20 January	30.0	0	39
2 February	34.8	0	27
3 February	33.3	0	29
8 February	33.1	0	38
9 February	31	0	50
11 February	31.2	0.4	44

Access details for private property within the contract area was provided by the GAA. Only properties where contact was successful and permission was granted by the property owner were assessed for this investigation. In total, **738.2 ha** of private land (70.49% of contract area over 30 parcels) within Contract Area 81 were inspected and the following surveys were undertaken. Land unable to be accessed was not assessed during the surveys.

2.3.1 General flora survey

General flora surveys were undertaken on all accessible land to produce a census of vascular plants for each property within the contract area. Vascular plants include all flowering plants, conifers, ferns and fern allies. Where some material could not be fully identified in the field, specimens were collected and examined in the laboratory to verify or check determinations made in the field. Keys and descriptions in Walsh and Entwisle (1994, 1996, 1999) were used in verifying the identification of samples unless more up-to-date published taxonomy was available.

Eleven significant flora species were targeted during the general flora surveys. These were Small Scurf-pea *Cullen parvum,* Small Golden Moths *Diuris basaltica,* Plump Swamp Wallaby-grass *Amphibromus pithogastrus,* Basalt Sun-orchid *Thelymitra basaltica,* Basalt Podolepis *Podolepis* sp. 1, Small Milkwort *Comesperma polygaloides,* Narrow Plantain *Plantago gaudichaudiana,* Slender Tick-trefoil *Desmodium varians,* Austral Toad-flax *Thesium australe,* Basalt Peppercress *Lepidium hyssopifolium and* Swamp Fireweed *Senecio psilocarpus.*

A list of vascular plants for each property was submitted to the FIS database (1 February 2010).

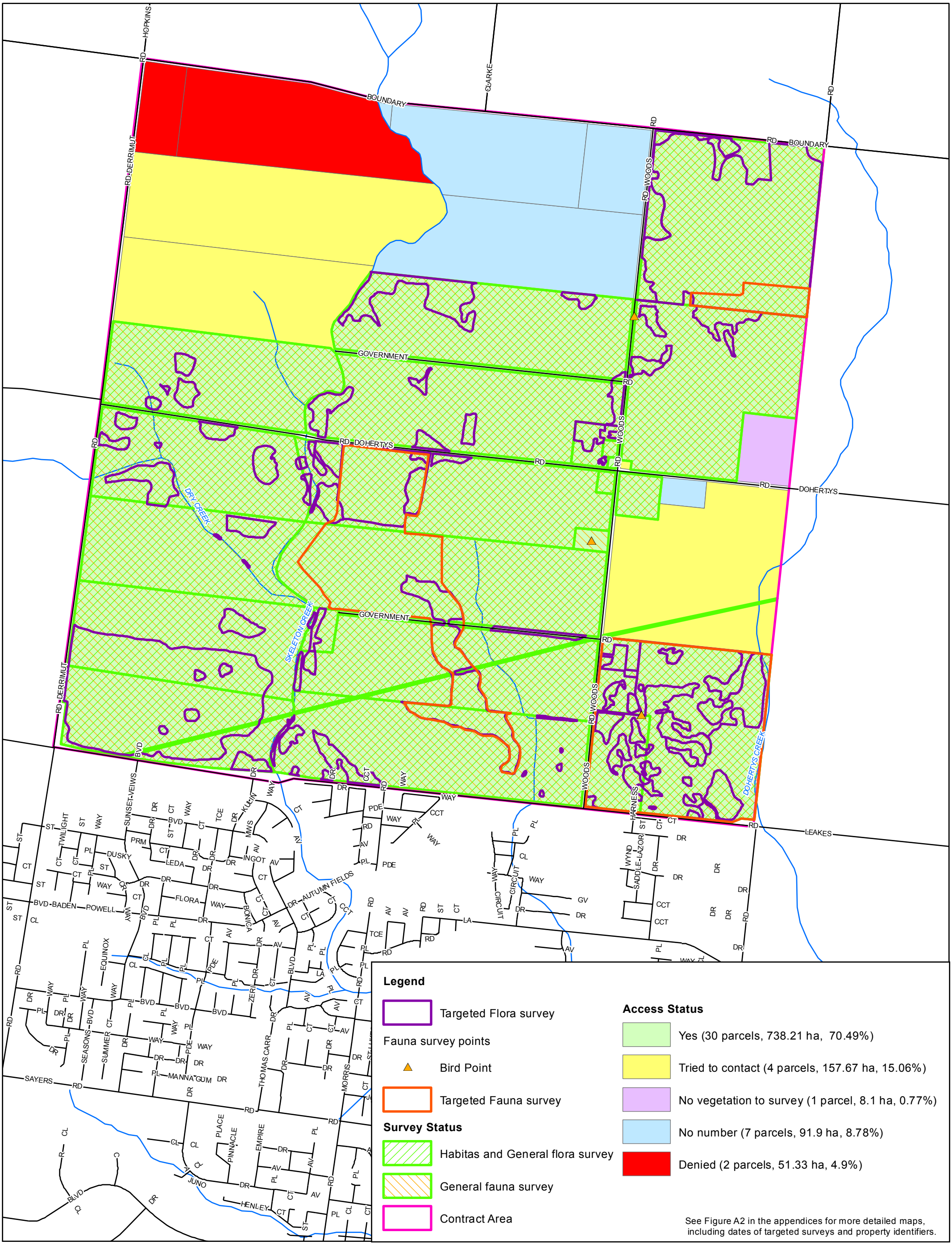

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Figure 2: Property Survey and Access Status, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Date: 7 October 2010
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2.3.2 Listed ecological communities

The vegetation of each property within Contract Area 81 was inspected to determine if the EPBC Act listed community Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVPP) or the FFG Act listed community Western (Basalt) Plains Grassland was present. These communities were mapped where present.

2.3.3 Native vegetation (habitat hectare assessments)

The vegetation of each property within Contract Area 81 was inspected by vehicle and on foot by up to two teams of two botanists between September 2009 and January 2010. 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) or where canopy tree cover of a group of three or more trees exceeds 20% of the site (see Appendix 1).

For each patch identified, a habitat hectare assessment was conducted and habitat score calculated (DSE 2004). A summary of this method is provided in Appendix 1. In instances where previous data collected by Biosis Research (2009d) were available, mapped EVCs and threatened species locations were confirmed and reviewed where applicable.

Photographs were taken of EVC, listed ecological communities and other points of interest.

All areas that did not meet the definition criteria of a patch of native vegetation, but which contained at least one native flora species were mapped as Degraded Treeless Vegetation (DTV). 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). All areas that did not meet the 25% threshold and did not contain any native understorey vegetation were mapped as Non-native Vegetation (NNV).

The contract area was surveyed for indigenous canopy trees so that they could be identified and quantified within patches of native vegetation according to size class (Very Large Old Trees 1.25 x benchmark size, Large Old Trees 1 x benchmark size, Medium Old Trees 0.75 x benchmark size and Small Trees <0.75 x benchmark size) and also so that their locations could be mapped outside

of patches.

DSE have stipulated that consultants should utilise the Landscape Context Modelling Data layer (NV2005_QUAL_CSDL DSE 2008) provided in the Biodiversity Interactive Map 3.0 (http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim) 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 "*This dataset is intended for use at landscape scale. Site-based decisions will require field verification*". 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.

2.3.4 General fauna survey

All accessible land within the contract area was investigated on foot and by vehicle to determine the types and qualities of habitat(s) present within each property. General fauna surveys were then undertaken within these habitat types to produce a census of vertebrate fauna species for each property within the contract area. All vertebrate species of fauna observed during the assessments by means of direct observation, searching under rocks and logs, examination of tracks and scats and identifying calls were recorded. Particular attention was given to searching for significant species and their habitats. Fauna species were recorded with a view to characterising the values of the site and were not intended to provide a comprehensive survey of all fauna that has potential to utilise the site over time.

In addition to general data collection described above, separate surveys were undertaken which focused on data collection for different animal groups.

To target small terrestrial mammals, reptiles and amphibians, active-searching was undertaken in all habitat types in a random manner throughout the contract area, resulting in at least 30 minutes of survey effort for each habitat type. These surveys targeted areas containing potential refuge habitat, including rocky outcrops, areas of grassland with loose surface rock, dams, creeklines, escarpments, low-lying areas prone to inundation, fallen timber and human debris (e.g. sheet metal, wooden fence palings). Random active-searches were carried out during the general fauna surveys across a variety of weather conditions and at varying times throughout the day.

Additional bird census surveys were conducted in the early morning and late afternoon at three different habitat types within Contract Area 81 on 2–3 February 2010, resulting in a total of twelve, 20-minute bird census surveys

within the study area. Bird census surveys were conducted to ensure that any species active only during the early morning or late afternoon were recorded.

Targeted survey for arboreal mammals and bats was not undertaken within the contract area due to lack of suitable habitat.

2.3.5 Targeted surveys for flora and fauna

Information on any populations of rare or threatened species (DSE 2005, DSE 2007b, DSE 2009) observed during a property site inspection was recorded during field assessments.

Flora

Two seasonal targeted surveys were conducted within Contract Area 81 for designated threatened flora species. These were: Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens,* Button Wrinklewort *Rutidosis leptorhynchoides,* Matted Flax-lily *Dianella amoena,* River Swamp Wallaby-grass *Amphibromus fluitans,* Tough Scurf-pea *Cullen tenax,* Large-fruit Fireweed *Senecio macrocarpus* and Clover Glycine *Glycine latrobeana.* The locations of search areas are shown in Figure 2.

Surveys were conducted in seasons regarded as ideal for identifying the range of species within this contract area. The first targeted survey was conducted in spring (Sep–Oct) and the second in summer (Dec–Jan). Spiny Rice-Flower targeted surveys were undertaken in early September while plants still had sufficient flowering material to aid locating individuals. Data collected included a GPS waypoint, estimated distribution and estimated population size.

Suitable habitat for most threatened flora species generally consists of higher quality areas of remnant native vegetation. As such, these areas were prioritised for searches so that areas determined as higher quality representative habitat for each target species was systematically surveyed. Each search area was surveyed by a minimum of two botanists walking in parallel transect lines 10 m apart. Using this method, approximately 10 ha of habitat was searched per day (each 7.5–8.5 hours). Properties were prioritised according to vegetation quality and accessibility. Searches were not undertaken during poor weather conditions (heavy rain or high temperature).

Any incidental records of additional threatened flora species identified in the targeted surveys were recorded as described above.

Fauna

The only fauna species identified for targeted searches in this assessment was

Plains-wanderer. Targeted surveys for Growling Grass Frog and Golden Sun Moth are being undertaken as part of separate sub-regional surveys as required under the Strategic Impact Assessment. Targeted surveys for Striped Legless Lizard are not required under the Strategic Impact Assessment, as the species has been assumed to be present in areas of suitable grassland habitat.

Potential habitat was mapped for key significant species including Growling Grass Frog *Litoria raniformis*, Striped Legless Lizard *Delma impar*, Golden Sun Moth *Synemon plana* and Plains-wanderer. Potential habitat for key significant species was determined using expert opinion following an inspection of all accessible habitats within the precinct. It should be noted that this method is different to the approach used for mapping potential habitat in the Sub-regional Strategy for Growling Grass Frog and Golden Sun Moth, and that the associated mapping will vary as such between the two different assessments. Habitat for threatened fauna species that are wide-ranging and highly mobile (e.g. Grey-headed Flying-fox and Black Falcon) has been identified and described within this report. However, has not been included in mapping of potential threatened fauna habitat.

Targeted survey for Plains-wanderer was conducted within suitable habitat located in the study area on 13, 20 January 2010 and 8, 9, 11 February 2010. Suitable habitat was identified during a prior site visit with David Baker-Gabb (expert and author of many peer-reviewed scientific publications on the species). Habitat was defined using the Plains-wanderer Habitat Management Guide (NPWS 2002). Surveys were carried out under suitable conditions (no moon, calm wind) and involved spotlighting along transects through areas of potentially suitable habitat. Transects were spaced at approximately 15 m and were conducted in teams of two zoologists from a slow-moving vehicle where rock cover permitted. Transects in rocky areas that could not be driven were carried out on foot. Hand-held spotlights were systematically swept back and forth over grassland habitat up to 8 m in front and either side of the observer in order to increase the likelihood of detecting any animal movements.

2.3.6 Mapping

Mapping data were collected using a portable computer connected to a standard Global Positioning System (GPS) and databased for mapping with the software HabitAs developed by DSE. In addition, other GPS data were collected and field maps / aerial photographs were annotated.

Waypoints were collected for all individual rare or threatened species or defined area groups of rare or threatened species.

In conjunction with all areas of native vegetation being considered in line with the DSE requirements for this project, a minimum patch size of at least 5 m diameter was used to map all remnant vegetation, Degraded Treeless Vegetation and Non-native Vegetation. Mapping data collected are displayed at a scale of 1:10 000.

2.4 Determination of Conservation Significance

2.4.1 Remnant patch and tree significance under the Framework

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, coupled with the bioregional conservation status (endangered, vulnerable, rare or depleted) of the EVC. As all EVCs within Contract Area 81 are rated as endangered, all patches of native vegetation within the contract area are of at least High conservation significance. Any patches with a Habitat Score of 0.4 or more have Very High conservation significance.

The Department of Sustainability and Environment have stipulated that consultants should utilise the Landscape Context Modelling Data layer (NV2005_QUAL_CSDL DSE 2008) provided in the Biodiversity Interactive Map 3.0 (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 (and 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.

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

2.4.2 Species and communities

The common language meaning of significance is 'importance; consequence' (Macquarie Dictionary). While the general meaning of this is clear, the term is further defined in ecological significance assessment. Significance of a species or community is determined relative to the scale at which it is considered. The sources used to categorise significance of species and communities in this report are given below:

- A taxon or community has national significance when it is listed as threatened (critically endangered, endangered, vulnerable or conservation dependent) under the EPBC Act 1999.
- A taxon has national significance when it is listed as rare in Australia (R) in A Census of the Vascular Plants of Victoria (Walsh & Stajsic 2008).
- A taxon or community has state significance when it is listed as threatened under the FFG Act 1988.
- A taxon or community has state significance when it is listed as threatened (critically endangered, endangered or vulnerable) or near threatened, rare, data deficient or poorly known in Victoria on a DSE Advisory List (DSE 2005, 2007a).
- A taxon or community also has national or state significance when it is considered to be threatened at that level by Biosis Research using IUCN criteria (IUCN 2001).
- Biosis Research considers flora species to have significance at the bioregional level when they are recorded from less than 5% of sites within the Flora Information System.

2.5 Limitations

The following limitations apply to the current assessment:

1. Contract Area 81 covers an area of 1075 ha. Access was permitted to 738.2 ha and this area was surveyed. Of this area, 212.49 ha were also subject to targeted survey for threatened flora and fauna species. The remaining 336.8

ha (31.3% of Contract Area 81) has not been mapped or surveyed as access was not possible.

2. Vegetation condition in Contract Area 81 was assessed using current DSE standards (DSE 2004). However, the definition of remnant patches of Plains Grassland EVC 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, under the condition thresholds for NTGVVP it may be possible for a patch of Plains Grassland not to qualify as a patch of NTGVVP.
3. Significant species, both flora and fauna, can occur in areas that do not meet the DSE definition of remnant 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 and degraded treeless vegetation may still contain biodiversity values. Targeted searches generally did not cover areas of non-native vegetation or degraded treeless vegetation as survey effort was focused on areas that were more likely to contain threatened species, and so that a more accurate determination of conservation significance for patches of native vegetation could be made.
4. Additional limitations are as follows:
    - The assessment includes only vascular flora (flowering plants, ferns, conifers) 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.
    - The presence of threatened flora and fauna were noted where they were encountered or were identified through targeted threatened species surveys. However, such observations are still likely to underestimate the population sizes or distribution of these species, many of which are cryptic or only seasonally visible. Furthermore, due to the size of the study area, 10 m transects were used instead of 5 m transects which may reduce the likelihood of detecting individuals of the target species.
    - The assessment does not cover aquatic species.
    - The assessment was conducted over a range of seasonal conditions which included both optimal and sub-optimal times for survey. In addition, agricultural areas are often heavily grazed making detection

and/or identification of certain species, and estimation of life form cover difficult, particularly when dealing with temperate grasslands.

- 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 ±15 m but generally ±2–5 m) 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.
- 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 were not included in the database version available at the time of species searches for this report.
- The presence or absence of significant native vegetation described in other reports is often dated 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 Contract Area 81 is not seen as critical to this assessment. However, a review of literature relating to the GAA investigation areas (including Contract Area 81) can be found in Biosis Research (2009a).

3.0 RESULTS

3.1 General flora survey

3.1.1 Flora species recorded

A total of 238 plant taxa (137 indigenous and 101 introduced) were recorded from Contract Area 81 during the current assessment (Appendix 2, Table A2.1). The FIS contains records of 795 plant taxa (463 indigenous and 332 introduced) from the defined search area comprising the study area and a 5 km buffer (Appendix 2, Table A2.2).

A map showing the extent of general flora surveys is shown in Figure 2.

3.1.2 Rare and threatened flora species

A total of 13 nationally threatened flora species and 27 state rare or threatened flora species are known to occur within 5 km of Contract Area 81 or where recorded during the current investigation (Table 2).

3.1.2.1 Nationally Significant Species

Records of 11 of the nationally threatened species were sourced from the FIS or DEWHA database and the remaining two species were identified in a DSE review of likely species to occupy Contract Area 81.

During the current investigation, two of the 13 species of national significance (Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* and Button Wrinklewort *Rutidosis leptorhynchoides*) were recorded (Figure A2a–i). Five nationally significant species not recorded during the current investigation are considered to have a high likelihood of occurrence in the study area based on the habitat present; River Swamp Wallaby-grass *Amphibromus fluitans*, Matted Flax-lily *Dianella amoena*, Small Golden Moths *Diuris basaltica*, Fragrant Leek-orchid *Prasophyllum suaveolens* and Large-headed Fireweed *Senecio macrocarpus* (Table 2).

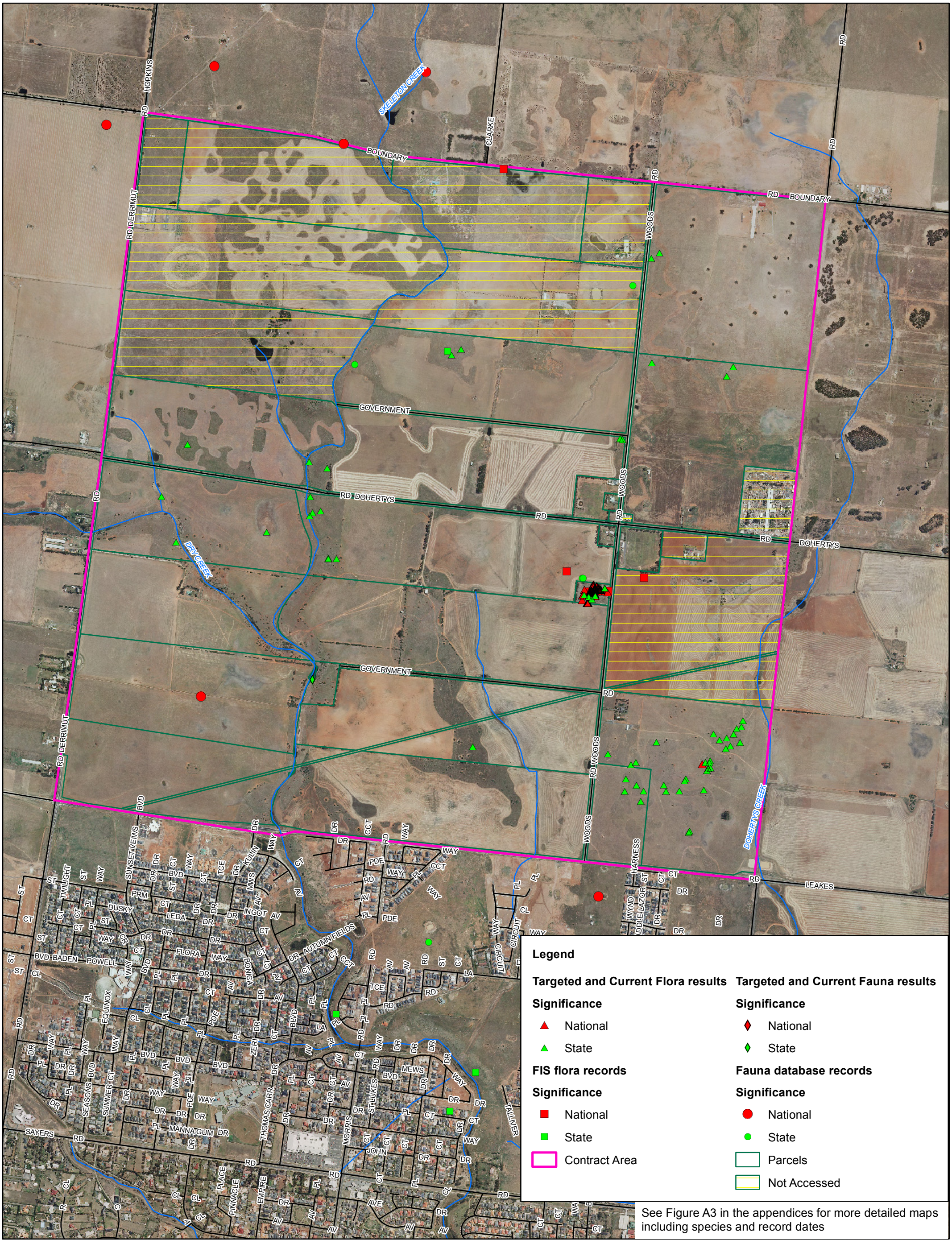
3.1.2.2 State Significant Species

Six species of state significance (Plains Joyweed *Alternanthera* sp. 1 (Plains), Small Scurf-pea *Cullen parvum*, Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra), Slender Tick-trefoil *Desmodium varians*, Pale Spike-sedge *Eleocharis pallens* and Pale-flower Crane's-bill *Geranium* sp. 3) were recorded during the current assessment (Appendix 2, Table A2.1, Figure A3a–i).

Small Scurf-pea is also listed as threatened under the *Flora and Fauna Guarantee Act* 1988.

The FIS database and DSE review revealed 20 additional species of state conservation significance from within 5 km of Contract Area 81 (Table 2).

Some of these species (e.g. Swamp Diuris) have no recent or very few records 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 Contract Area 81 is still considered to be at least medium for most species.



See Figure A3 in the appendices for more detailed maps including species and record dates

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Figure 3: National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059
Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig 3 Sig species CA81.mxd

0 100 200 400 600 800 1,000
Meters
1: 16,000 at A3

N W E S
VicGrid(94)

Table 2. Rare or threatened flora species occurring or predicted to occur within 5 km of the contract area.

Likelihood scale:

Likelihood of occurrence	Potential criteria
Recorded	• Species recorded on site during current or previous assessment • Aquatic species recorded from connected waterbodies in close proximity to the site during current or previous assessment.
High	• Sufficient good quality habitat is present on site • Sufficient good quality habitat is present in connected waterbodies in close proximity to the site. • Site is within species natural distributional range (if known). • Species has been recorded within 5 km or from the relevant catchment/basin since 1980.
Medium	• Records of terrestrial species within 5 km of the site or of aquatic species in the relevant basin/neighbouring basin but habitat limited in its capacity to support the species due to extent, quality, or isolation.
Low	• No records within 5 km of the site or for aquatic species, the relevant basin/neighbouring basin, since 1980. • Substantial loss of habitat since any previous record(s).
Negligible	• Habitat not present on site • Habitat for aquatic species not present in connected waterbodies in close proximity to the site. • Habitat present but sufficient targeted survey has been conducted at an optimal time of year and species wasn't recorded.

National significance – CE (critically endangered), EN (endangered), VU (vulnerable), R (rare), K (poorly known). State significance – e (endangered), v (vulnerable), r (rare), k (poorly known), L (*Flora and Fauna Guarantee Act* listed), P (*Flora and Fauna Guarantee Act* protected) * from review data only, refer to Figure 3 for records from the current assessment. ** Rationale for likelihood of occurrence is largely based on the amount and quality of habitat present within the contract area. DSE review species are those identified following a DSE desktop review of species likely to occupy the contract area but not already revealed in other database searches.

Table 2. Rare or threatened flora species occurring or predicted to occur within 5 km of the contract area.

Lifeform	Scientific Name	Family Name	Common Name	Conservation status			Regional significance	Database	Other sources	Total number of documented records*	Likelihood of occurrence**	Habitat
				EPBC	DSE	FFG						
	Nationally significant											
Graminoid	*Amphibromus fluitans*	Poaceae	River Swamp Wallaby-grass	VU			✓	DEWHA / FIS		2	High	Grassy Wetland, riparian vegetation
Graminoid	*Carex tasmanica*	Cyperaceae	Curly Sedge	VU	v	L	✓	DEWHA / FIS		0	Medium	Grassy wetland, riparian vegetation
Graminoid	*Dianella amoena*	Hemerocallidaceae	Matted Flax-lily	EN	e	L	✓	DEWHA		0	High	Grassland / Grassy Woodland
Graminoid	*Diuris basaltica*	Orchidaceae	Small Golden Moths	EN	v	L	✓	DEWHA / FIS		2	High	Grassland / Grassy Woodland
Forb	*Glycine latrobeana*	Fabaceae	Clover Glycine	VU	v	L	✓	DEWHA / FIS		0	Medium	Grassland / Grassy Woodland
Forb	*Lepidium hyssopifolium*	Brassicaceae	Basalt Peppercress	E	e	L	✓	DEWHA		0	Low	Grassland / Grassy Woodland
Shrub	*Pimelea spinescens* subsp. *spinescens*	Thymeleaceae	Spiny Rice-flower	CE	e			DEWHA / FIS		36	Recorded	Grassland / Grassy Woodland
Forb	*Prasophyllum frenchii*	Orchidaceae	Maroon Leek-orchid	EN	e	L	✓	DEWHA / FIS		0	Medium	Grassland / Grassy Woodland
Forb	*Prasophyllum suaveolens*	Orchidaceae	Fragrant Leek-orchid	EN	e	L	✓	FIS		1	High	Grassland / Grassy Woodland
Forb	*Rutidosis leptorhynchoides*	Orchidaceae	Button Wrinklewort	EN	e	L	✓	DEWHA / FIS		5	Recorded	Grassland / Grassy Woodland
Forb	*Senecio macrocarpus*	Asteraceae	Large-headed Fireweed	VU	e	L, P	✓	DEWHA / FIS		7	High	Grassland / Grassy Woodland
Forb	*Senecio psilocarpus*	Asteraceae	Swamp Fireweed	VU	v	P	✓		DSE review	0	Medium	Grassland / Grassy Woodland
Forb	*Thesium australe*	Santalaceae	Austal Toad-flax	VU	v	L	✓		DSE review	0	Medium	Grassland / Grassy Woodland
	State significant											
Forb	*Alternanthera* sp. 1 (Plains)	Amaranthaceae	Plains Joyweed		k		✓	FIS		13	Recorded	Grassland / Grassy Woodland
Graminoid	*Amphibromus pithogastrus*	Poaceae	Plump Swamp Wallaby-grass		e	L	✓	FIS		3	High	Grassland / Grassy Woodland
Forb	*Asperula wimmerana*	Rubiaceae	Wimmera Woodruff		r		✓	FIS		1	High	Grassland / Grassy Woodland
Graminoid	*Austrostipa exilis*	Poaceae	Heath Spear-grass		r		✓	FIS		1	High	Grassland / Grassy Woodland
Forb	*Comesperma polygaloides*	Polygalaceae	Small Milkwort		v	L	✓	FIS		4	Medium	Grassland / Grassy Woodland
Scrambler	*Convolvulus angustissimus* subsp. *omnigracilis*	Convolvulaceae	Slender Bindweed		k			FIS		2	High	Grassland / Grassy Woodland

Table 2. Rare or threatened flora species occurring or predicted to occur within 5 km of the contract area.

Lifeform	Scientific Name	Family Name	Common Name	Conservation status			Regional significance	Database	Other sources	Total number of documented records*	Likelihood of occurrence**	Habitat
				EPBC	DSE	FFG						
Forb	*Cullen parvum*	Fabaceae	Small Scurf-pea		e	L	✓	FIS		9	Recorded	Grassland / Grassy Woodland
Forb	*Cullen tenax*	Fabaceae	Tough Scurf-pea		e		✓	FIS		5	High	Grassland / Grassy Woodland
Forb	*Desmodium varians*	Fabaceae	Slender Tick-trefoil		k		✓	FIS		1	Recorded	Grassland / Grassy Woodland
Graminoid	*Dianella* sp. aff. *longifolia* (Benambra)	Hemerocallidaceae	Arching Flax-lily		v		✓	FIS		5	Recorded	Grassland / Grassy Woodland
Graminoid	*Diuris behrii*	Orchidaceae	Golden Cowslips		v		✓	FIS		1	Medium	Grassland / Grassy Woodland
Graminoid	*Diuris palustris*	Orchidaceae	Swamp Diuris		v	L	✓	FIS		1	Medium	Grassland / Grassy Woodland
Graminoid	*Diuris* X *fastidiosa*	Orchidaceae	Proud Diuris		e		✓	FIS		2	High	Grassland / Grassy Woodland
Graminoid	*Eleocharis macbarronii*	Cyperaceae	Grey Spike-sedge		k		✓	FIS		3	High	Grassland / Grassy Woodland
Graminoid	*Eleocharis pallens*	Cyperaceae	Pale Spike-sedge		k		✓			2	Recorded	Grassy Wetland
Forb	*Geranium solanderi* var. *solanderi* s.s.	Geranicaceae	Austral Crane's-bill		v		✓	FIS		3	High	Grassland / Grassy Woodland
Forb	*Geranium* sp. 3	Geraniaceae	Pale-flower Cranes'-bill		r					0	Recorded	Grassland / Grassy Woodland
Forb	*Goodenia macbarronii*	Goodeniaceae	Narrow Goodenia		v		✓	FIS		1	Medium	Grassland / Grassy Woodland
Forb	*Haloragis glauca* f. *glauca*	Haloragaceae	Bluish Raspwort		k		✓	FIS		1	High	Grassland / Grassy Woodland
Forb	*Helichrysum* aff. *rutidolepis* (Lowland Swamps)	Asteraceae	Pale Swamp Everlasting		v	P		FIS		10	High	Grassy Wetland / Gilgai
Graminoid	*Lachnagrostis filiformis* var. 2	Poaceae	Wetland Blown-grass		k			FIS		3	High	Wetland, Grassy Wetland
Forb	*Podolepis* sp. 1	Asteraceae	Basalt Podolepis		e	P	✓		DSE review	2	High	Grassland / Grassy Woodland
Shrub	*Rhagodia parabolica*	Chenopodiaceae	Fragrant Saltbush		r		✓	FIS		2	High	Grassland / Grassy Woodland
Shrub	*Sclerolaena muricata* var. *semiglabra*	Chenopodiaceae	Dark Roly-poly		k		✓	FIS		1	Medium	Grassland / Grassy Woodland
Forb	*Senecio campylocarpus*	Asteraceae	Floodplain Fireweed		r	P	✓	FIS		1	Medium	Grassland / Grassy Woodland
Forb	*Thelymitra exigua*	Orchidaceae	Short Sun-orchid		r		✓	FIS		1	Medium	Grassland / Grassy Woodland
Graminoid	*Tripogon loliiformis*	Poaceae	Rye Beetle-grass		r			FIS		11	High	Grassland / Grassy Woodland

3.1.3 Best or remaining 50% of habitat for rare or threatened flora species

The habitats within Contract Area 81 generally comprise undulating grassland consisting of a mosaic of exotic pasture or crop and native grassland. The native grassland varies in condition and contains a mix of native and introduced herbs. Native grassland vegetation commonly contains sub-surface rocks where soil disturbance and grazing has been reduced. Some rock outcrop or escarpment areas occur which may have a higher cover of native shrub species.

Table 3 describes the general habitat requirements of rare or threatened species recorded during this investigation or species which are considered to have at least a medium likelihood of occurrence within the contract area (Table 2). The presence of best or remaining 50% of habitat for these species within the bioregion was determined for Contract Area 81 (Table 4). Table 4 provides detail of whether native vegetation zones delineated for assessing native vegetation condition (see Table 7) constitute the best 50% or remaining 50% of habitat for relevant rare or threatened species (in Table 2) within the Victorian Volcanic Plain bioregion; in sense of the Native Vegetation Framework.

Table 3. Description of broad habitat requirements for rare or threatened flora species occurring or predicted to occur within Contract Area 81**.**

Species	Likelihood of occurrence	Description
River Swamp Wallaby-grass *Amphibromus fluitans* (EPBC listed – nationally significant)	High	River Swamp Wallaby-grass is an aquatic species which occupies waterways and seasonally inundated vegetation such as Plains Grassy Wetland. Areas of Plains Grassy Wetland or related EVC within Contract Area 81 are potential habitat for this species. This species was not recorded within Contract Area 81 although it was recorded in 2001 approximately 4km east of Rockbank.
Curly Sedge *Carex tasmanica* (EPBC listed – nationally significant)	Medium	Curly Sedge is a small to medium size grass-like species which typically grows in seasonally damp grassland or grassy woodland (Carter 2010). This species may be found in such vegetation types within Contract Area 81, including drainage lines associated with Skeleton Creek, although it was not recorded during the current assessment.
Matted Flax-lily *Dianella amoena* (EPBC listed – nationally significant)	High	Matted Flax-lily is a spreading graminoid which occupies a range of grassy vegetation types. It is a perennial species with leaves that may die back over summer. There are few records of this species west of Melbourne. One record of this species from 2004 occurs near the centre of the precinct.

Species	Likelihood of occurrence	Description
Small Golden Moths *Diuris basaltica* (EPBC listed – nationally significant)	High	This orchid is endemic to Melbourne's west where it occurs in Plains Grassland dominated by tussock-forming perennial grasses (including Kangaroo Grass); often with embedded surface basalt (Backhouse & Lester 2009). Like most other terrestrial orchid species in Victoria, this species is summer deciduous. Its underground tuberoids may persist for several seasons but not produce leaves or flowers in the absence of suitable conditions. The largest known population occurs on private land at Rockbank (Backhouse and Lester 2009). Suitable habitat within Contract Area 81 was searched although this species was not recorded.
Clover Glycine *Glycine latrobeana* (EPBC listed – nationally significant)	Medium	Clover Glycine is a small herb. It occupies Kangaroo Grass dominated grassland and grassy woodland throughout western Victoria as well as a number of other vegetation type elsewhere (Carter and Sutter 2010). Higher quality grassland within Contract Area 81 may be suitable habitat for this species although it was not recorded during the current assessment.
Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* (EPBC listed – nationally significant)	Recorded	This subspecies is a small shrub which typically occupies Plains Grassland between Keilor and Dunkeld in the state's west. It is able to occupy grassland in varying condition although it does not persist with ongoing soil disturbance such as ploughing. Areas where this species are more abundant include Plains Grassland with a moderate diversity of other native species and some open spaces between grass tussocks. However, this subspecies has also been observed in grassland dominated by introduced perennial grasses provided that other conditions allow it to persist. Within Contract Area 81, most plants were found in high quality Plains Grassland within the Truganina Cemetery. One plant was located on private property in the south east corner of the contract area.
Maroon Leek-orchid *Prasophyllum frenchii* (EPBC listed – nationally significant)	Medium	Maroon Leek-orchid is a small to medium size herb which, like most other terrestrial orchid species in Victoria, is summer deciduous. It occupies a range of habitats types including grassland vegetation. It has not been recorded within 10 km of the contract area. The nearest record is near Meredith to the west. There is a medium likelihood that this species would occur within the contract area.
Fragrant Leek-orchid *Prasophyllum suaveolens* (EPBC listed –nationally significant)	High	Fragrant Leek-orchid is a small to medium size herb which, like most other terrestrial orchid species in Victoria, is summer deciduous. It typically occupies grassland vegetation with heavy clay soils (Jeanes and Backhouse 2006). The nearest record of this species is in grassland at Laverton to the southeast of the contract area. There is some potential habitat for this species within the contract area although it was not found during the current assessment.
Button Wrinklewort *Rutidosis leptorhynchoides* (EPBC listed – nationally significant)	Recorded	Button Wrinklewort occupies some higher quality Plains Grassland and Grassy Woodland in Western Victoria and is quite scarce in the Melbourne region. Some Plains Grassland within the contract area appear to be structurally suitable for this species but lacks the appropriate fire regime (DSE 2003) which is likely to be required for broader scale maintenance of this species' habitat requirements. All individuals of this species were recorded within Truganina Cemetery. The population is well documented and subject to monitoring by Council. It is possible that this species may occupy high quality grassland within the contract area although it was not found elsewhere during the current assessment.

Species	Likelihood of occurrence	Description
Large-headed Fireweed *Senecio macrocarpus* (EPBC listed – nationally significant)	High	This species grows on heavy soil in vegetation including grassland, shrubland and woodland but is typically associated with grassland in western Melbourne (DSE 2009). It is sensitive to inappropriate fire regimes and may persist in relatively long unburnt grassland. There are several areas of grassland within Contract Area 81 that may be suitable habitat for this species although it was not recorded during the current assessment.
Swamp Fireweed *Senecio psilocarpus* (EPBC listed – nationally significant)	Medium	This species is a medium size herb which grows in seasonally inundated grassy vegetation. Areas of Plains Grassy Wetland or related EVC within Contract Area 81 are potential habitat for this species. There are no historical records of this species form within 10 km of Contract Area 81. It was not recorded during the current assessment.
Austral Toadflax *Thesium australe* (EPBC listed – nationally significant)	Medium	This small herb typically grows in damp grassland and woodland (Walsh and Entwisle 1999). There are very few historical records of this species in the western basalt plain. Some grassland areas which are suitably damp in winter / spring within Contract Area 81 may provide habitat for this species. It was not recorded during the current assessment.
Plains Joyweed *Alternanthera* sp. 1 (Plains) (Advisory list – state significant)	Recorded	This species is scattered throughout grassland in Melbourne's west where it is often associated with moist soils; although it has been observed (e.g. around Melton) in drier rocky situations. It was recorded in Plains Grassy Wetland within the contract area.
Plump Swamp Wallaby-grass *Amphibromus pithogastrus* (Advisory listed – state significant)	High	This medium to tall grass typically grows in seasonally damp depression in grassland or grassy wetland (Ashton and Morcom 2004). This species was recorded in 2004 along Skeleton Creek, within approximately 1 km to the south of the contract area. There is potential habitat for this species along Skeleton Creek within the contract area and in Plains Grassy Wetland and related EVC although it was not recorded during the current assessment.
Wimmera Woodruff *Asperula wimmerana* (Advisory listed – state significant)	High	This small herb has only recently been recognised as naturally occurring in grassland in outer western Melbourne, and is otherwise known from the mallee. It appears to prefer drier sites such as rocky knolls and drier examples of Plains Grassland. Despite not being found within the contract area during the current assessment, it may potentially occur in areas of remnant grassland. It has been found recently within the vicinity of the contract area and other populations within the area may have been overlooked due to similarities with the more common *Asperula conferta*.
Heath Spear-grass *Austrostipa exilis* **Rye Beetle-grass** *Tripogon loliiformis*	High	Heath Spear-grass and Rye Beetle-grass occur predominantly in drier Plains Grassland and grassy woodlands (Walsh and Entwisle 1994) although they are ecologically quite different. Either of these grass taxa may be found in Plains Grassland patches within the contract area and have been given high likelihood of occurrence accordingly.
Small Milkwort *Comesperma polygaloides* (Advisory listed – state significant)	Medium	In western Melbourne, Small Milkwort grows in Kangaroo Grass dominated grassland where is occurs in localised patches (McIntyre et al. 2004). Plains Grassland such as that found at Truganina Cemetery provides suitable habitat for this species although it was not recorded during the current assessment.

Species	Likelihood of occurrence	Description
Slender Bindweed *Convolvulus angustissimus* subsp. *omnigracilis* (Advisory list – state significant)	High	This taxon has been recorded throughout the western plains of Melbourne and is typically associated with Plains Grassland. There is some likelihood that it occurs within Plains Grassland within the contract area although its presence was not confirmed during the present assessment. The species *Convolvulus angustissimus* was recorded during the current assessment which may represent the listed subspecies however; there was a lack of suitable material for determination at the time of the survey.
Small Scurf-pea *Cullen parvum* (Advisory listed – state significant)	Recorded	Small Scurf-pea is a small herb which typically occupies Plains Grassland. Several plants of this species were recorded during the current assessment along parts of Skeleton Creek and in some areas of Plains Grassland. It occupies three separate properties and may be found in suitable Plains Grassland patches elsewhere following a change in conditions e.g. fire.
Tough Scurf-pea *Cullen tenax* (Advisory listed – state significant)	High	Tough Scurf-pea is a medium size herb which typically occupies Plains Grassland, but may also be found in a number of other EVCs locally. This species was not recorded within Contract Area 81 during the current assessment. There is potential for it to be found in Plains Grassland patches following a change in conditions e.g. fire.
Slender Tick-trefoil *Desmodium varians* (Advisory list – state significant)	Recorded	Slender Tick-trefoil grows in a broad range of vegetation types. There are several records of this species scattered in Melbourne's western plains. This species was recorded in the west of the contract area during the current assessment
Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra) (Advisory listed – state significant)	Recorded	This species is scattered in grassland and woodland of varying condition within broader western Melbourne area and within the contract area. It occurs in several locations within the contract area including the Truganina Cemetery and some other Plains Grassland patches scattered throughout. Any remnant grassland within the contract area is habitat for this species. It is conspicuous and readily visible most times of the year.
Golden Cowslips *Diuris behrii* (Advisory listed – state significant)	Medium	Golden Cowslips is a small to medium size herb which, like most other terrestrial orchid species in Victoria, is summer deciduous. It typically occupies grassland, grassy woodland and Box Ironbark Forest (Jeanes and Backhouse 2006) and has also been observed in Plains Grassy Wetland vegetation around Melbourne. There is some potential grassland and grassy wetland habitat for this species within the contract area although it was not recorded during the current assessment.
Swamp Diuris *Diuris palustris* (Advisory listed – state significant)	Medium	Swamp Diuris is a small to medium size herb which, like most other terrestrial orchid species in Victoria, is summer deciduous. Amongst grassland vegetation, it typically occupies swampy depressions (Jeanes and Backhouse 2006). The nearest record of this species is in grassland at Laverton to the southeast of the contract area. There is some potential habitat for this species within the contract area although it was not found during the current assessment.

Species	Likelihood of occurrence	Description
Proud Diuris *Diuris* X *fastidiosa* (Advisory listed – state significant)	High	Proud Diuris is a small to medium size herb which, like most other terrestrial orchid species in Victoria, is summer deciduous. This taxon is a naturally occurring hybrid which typically grows in basalt grassland and some woodland vegetation types (Backhouse and Jeanes 1995). The nearest record of this species is in grassland at Laverton to the southeast of the contract area. There is some potential habitat for this species within the contract area although it was not found during the current assessment.
Grey Spike-sedge *Eleocharis macbarronii* (Advisory listed – state significant)	High	Grey Spike-rush is a medium size grass-like herb which spread by rhizomes. It typically occupies wetland vegetation including Plains Grassy Wetland EVC. There is some potential habitat for this species within the contract area although it was not recorded during the current assessment.
Pale Spike-sedge *Eleocharis pallens* (Advisory list – state significant)	Recorded	This medium herb grows in seasonally inundated areas such as Plains Grassy Wetland patches and dies back during drier periods. It was recorded during the current assessment in at least one site along Skeleton Creek.
Pale-flower Crane's-bill *Geranium* sp. 3 (Advisory listed – state significant)	Recorded	This species is a medium herb which is found in damp grassy vegetation (Smith 1999). Given the relatively recent taxonomic revisions in this plant group, it is difficult to speculate further about the specific habitat requirements of each on the western basalt plain. As such, it is assumed that any grassland or grassy woodland is suitable habitat for these species within the contract area (where hydrology is not a limiting factor). It was recorded during the current assessment at Truganina Cemetery, as well as private land in the south east and north east of the contract area.
Austral Crane's-bill *Geranium solanderi* var. *solanderi* (Advisory listed – state significant)	High	This species is a medium herb which is typically found in sheltered sites in grassy woodland and along drainage lines (Smith 1999). Given the relatively recent taxonomic revisions in this plant group, it is difficult to speculate further about the specific habitat requirements of each on the western basalt plain. As such, it is assumed that any grassland or grassy woodland is suitable habitat for these species within the contract area (where hydrology is not a limiting factor). I
Narrow Goodenia *Goodenia macbarronii* (Advisory list – state significant)	Medium	Narrow Goodenia is a small forb which is similar in appearance to some other species of Goodenia found on the volcanic plain. The validity of the records associated with western Melbourne is uncertain. The nearest record is within 5 km to the north of the contract area. It was not recorded during the current assessment.
Bluish Raspwort *Haloragis glauca* f. *glauca* (Advisory list – state significant)	High	There are scattered historical records of this taxon within the vicinity of the contract area. It typically grows in Plains Grassland and is predominantly found in Victoria in the northern plains (Murray Mallee and Victorian Riverina). It was not recorded within the contract area during the present assessment.
Pale Swamp Everlasting *Helichrysum* aff. *rutidolepis* (Lowland Swamps) (Advisory list – state significant)	High	This medium herb typically occupies seasonally inundated areas including wet depressions in Plains Grassland or Plains Grassy Wetland patches. There is some potential habitat for this species within the contract area although it was not recorded during the present assessment.

Species	Likelihood of occurrence	Description
Wetland Blown-grass *Lachnagrostis filiformis* var. 1 (Advisory list – state significant)	High	This grass generally has an annual life cycle and typically occupies wetland vegetation. Areas of Plains Grassy Wetland or parts of the Skeleton Creek corridor are potential habitat for this taxon. It was not recorded during the current assessment by has a high likelihood of presence.
Basalt Podolepis *Podolepis* sp. 1 (Advisory listed – state significant)	High	Basalt Podolepis is a medium to large herb which grows in a range of grasslands and grassy woodlands. There are several areas of suitable grassland habitat within the contract area for this species although it was not recorded during the present assessment. The majority of records for western Melbourne are located near Laverton, about 15 km to the southeast of the contract area.
Fragrant Saltbush *Rhagodia parabolica* (Advisory list – state significant)	High	Fragrant Saltbush is a medium size shrub which is scattered in plains and escarpment grassland, shrubland and woodland. There are 2009 records of this species within 5 km of the contract area. There is potential for this species to be found in native vegetation within the contract area although it was not recorded during the current assessment.
Dark Roly-poly *Sclerolaena muricata* var. *semiglabra* (Advisory list – state significant)	Medium	This variety occupies grassland vegetation but is very uncommon west of Melbourne. This taxon was not recorded during the present assessment.
Floodplain Fireweed *Senecio campylocarpus* (Advisory list – state significant)	Medium	This medium herb occupies damp sites. The closest known records to the contract area are in grassland vegetation at Laverton. It was not recorded during the current assessment.
Short Sun-orchid *Thelymitra exigua* (Advisory listed – state significant)	Medium	Short Sun-orchid is a small size herb which, like most other terrestrial orchid species in Victoria, is summer deciduous. It typically occupies grassland and grassy woodland vegetation (Jeanes and Backhouse 2006). The nearest record of this species is in grassland at Laverton to the southeast of the contract area. There is some potential habitat for this species within the contract area although it was not found during the current assessment.

Table 4. Determination of best or remaining 50% of habitat for a rare or threatened plant species within the bioregion.
Letters under each species are decision pathways in Table 2 of DSE (2007). NFC – No further consideration. Rem. – remaining 50% of habitat within the bioregion, BEST – best 50% of habitat within the bioregion.

Property PFI	Site Identifier	Zone	Habitat Zone	EVC description	Spiny Rice-flower		Button Wrinklewort		Matted Flax-lily		River Swamp Wallaby-grass		Tough Scurf-pea		Large-headed fireweed		Clover Glycine		Small Scurf-pea		Small Golden Moths		Swollen Swamp Wallaby Grass		Basalt Sun Orchid		Basalt Podolepis		Small Milkwort	
21448	1	A	1	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	2	A	2	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	4	A	3	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
21448	5	A	4	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	6	A	5	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ABEF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	7	A	6	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	8	A	7	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	9	A	8	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	13	A	9	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
21448	18	A	10	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	19	A	11	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ABEF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	20	A	12	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
50258532	1	A	13	Plains Sedgy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
50258541	1	A	14	Brackish Wetland	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA
50258569	1	A	15	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
50258569	2	A	16	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
52475755	1	A	17	Stony Knoll Shrubland	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
52475756	3	A	18	Plains Grassland Heavier Soils	ABC	Best	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
52475756	3	B	19	Plains Grassland Heavier Soils	ABC	Best	ABEF	Best	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
52934928	1	A	20	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
52934928	2	A	21	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
52934928	3	A	22	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	1	A	23	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	3	A	24	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	5	A	25	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	8	A	26	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ABEF	Best	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	12	A	27	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	13	A	28	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ABEF	Best	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	14	A	29	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	1	A	30	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	1	B	31	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	4	A	32	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	5	A	33	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	6	A	34	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
206068192	1	A	35	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
206068192	3	A	36	Aquatic Herbland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
206068192	4	A	37	Plains Sedgy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
207317976	1	A	38	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	B	39	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	C	40	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	D	41	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	E	42	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	F	43	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	G	44	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	H	45	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	I	46	Plains Grassland Heavier Soils	ABC	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	J	47	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	K	48	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	L	49	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	M	50	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	2	A	51	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	3	A	52	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	3	B	53	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	4	A	54	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	5	A	55	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	6	A	56	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	7	A	57	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	8	A	58	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	10	A	59	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	1	A	60	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	2	A	61	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	3	A	62	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	4	A	63	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	5	A	64	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	6	A	65	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	7	A	66	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	8	A	67	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	A	68	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	B	69	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	C	70	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ABEF	Best	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	D	71	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ABEF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	E	72	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	F	73	Stony Knoll Shrubland	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ABEF	Best	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	G	74	Plains Sedgy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
211562023	4	A	75	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	5	A	76	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	8	A	77	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
211562023	9	A	78	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
211562023	10	A	79	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
211562023	12	A	80	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	14	A	81	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	15	A	82	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	17	A	83	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	18	A	84	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	19	A	85	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	20	A	86	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	22	A	87	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	23	A	88	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	24	A	89	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	25	A	90	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	27	A	91	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	28	A	92	Plains Sedgy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA
211562023	29	A	93	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	30	A	94	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	31	A	95	Stony Knoll Shrubland	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	32	A	96	Brackish Wetland	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA
211562023	33	A	97	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	34	A	98	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
R207317976	3	A	99	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
R208396502	2	A	100	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
R208396502	3	A	101	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
R211562023	2	A	102	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
R211562023	4	A	103	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.
R211562023	6	A	104	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.

Table 4 cont. Determination of best or remaining 50% of habitat for a rare or threatened plant species within the bioregion. Letters under each species are decision pathways in Table 2 of DSE (2007). NFC – No further consideration. Rem. – remaining 50% of habitat within the bioregion, BEST – best 50% of habitat within the bioregion.

Property PFI	Site Identifier	Zone	Habitat Zone	EVC description	Slender Tick-trefoil		Austral Toadflax		Basalt Peppercress		Swamp Fireweed		Arching Flax-lily		Pale-flower Crane's-bill		Rye beetle-grass		Plains Joyweed		Pale Spike-sedge		Wimmera Woodruff		Curly Sedge		Maroon Leek-orchid		Heath Spear-grass	
21448	1	A	1	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
21448	2	A	2	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
21448	4	A	3	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ABEF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA
21448	5	A	4	Plains Grassland Heavier Soils	ABEF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
21448	6	A	5	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
21448	7	A	6	Plains Grassland Heavier Soils	ABEF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
21448	8	A	7	Plains Grassland Heavier Soils	ABEF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
21448	9	A	8	Plains Grassland Heavier Soils	ABEF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
21448	13	A	9	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA
21448	18	A	10	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
21448	19	A	11	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
21448	20	A	12	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
50258532	1	A	13	Plains Sedgy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA
50258541	1	A	14	Brackish Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	AD	NA	AD	NA
50258569	1	A	15	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ABEF	Best	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
50258569	2	A	16	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
52475755	1	A	17	Stony Knoll Shrubland	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.
52475756	3	A	18	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
52475756	3	B	19	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ABEF	Best	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
52934928	1	A	20	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
52934928	2	A	21	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
52934928	3	A	22	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53040321	1	A	23	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53040321	3	A	24	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53040321	5	A	25	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53040321	8	A	26	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53040321	12	A	27	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53040321	13	A	28	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53040321	14	A	29	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53092076	1	A	30	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53092076	1	B	31	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53092076	4	A	32	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53092076	5	A	33	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
53092076	6	A	34	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
206068192	1	A	35	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
206068192	3	A	36	Aquatic Herbland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	AD	NA
206068192	4	A	37	Plains Sedgy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA
207317976	1	A	38	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	B	39	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	C	40	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	D	41	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	E	42	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	F	43	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	G	44	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	H	45	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	I	46	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	J	47	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	K	48	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ABEF	Best	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	L	49	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	1	M	50	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	2	A	51	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	3	A	52	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	3	B	53	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	4	A	54	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	5	A	55	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	6	A	56	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	7	A	57	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	8	A	58	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
207317976	10	A	59	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
208396502	1	A	60	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
208396502	2	A	61	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
208396502	3	A	62	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
208396502	4	A	63	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
208396502	5	A	64	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
208396502	6	A	65	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
208396502	7	A	66	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
208396502	8	A	67	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	1	A	68	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	1	B	69	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	1	C	70	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	1	D	71	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	1	E	72	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	1	F	73	Stony Knoll Shrubland	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.
211562023	1	G	74	Plains Sedgy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA
211562023	4	A	75	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	5	A	76	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	8	A	77	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA
211562023	9	A	78	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA
211562023	10	A	79	Plains Grassy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA
211562023	12	A	80	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ABEF	Best	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	14	A	81	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	15	A	82	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	17	A	83	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	18	A	84	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	19	A	85	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	20	A	86	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	22	A	87	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	23	A	88	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	24	A	89	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	25	A	90	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	27	A	91	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	28	A	92	Plains Sedgy Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA
211562023	29	A	93	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	30	A	94	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	31	A	95	Stony Knoll Shrubland	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.
211562023	32	A	96	Brackish Wetland	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	AD	NA	AD	NA
211562023	33	A	97	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
211562023	34	A	98	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
R207317976	3	A	99	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
R208396502	2	A	100	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
R208396502	3	A	101	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
R211562023	2	A	102	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
R211562023	4	A	103	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.
R211562023	6	A	104	Plains Grassland Heavier Soils	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.

Table 4 cont. Determination of best or remaining 50% of habitat for a rare or threatened plant species within the bioregion. Letters under each species are decision pathways inTable 2 of DSE (2007). NFC – No further consideration. Rem. – remaining 50% of habitat within the bioregion, BEST – best 50% of habitat within the bioregion.

Property PFI	Site Identifier	Zone	Habitat Zone	Half-bearded Spear-grass		Frosted Goosefoot		Slender Bindweed		Bell-flower Hyacinth-orchid		Proud Diuris		Austral Crane's-bill		Bluish Raspwort		Native Peppercress		Basalt Tussock-grass		Brackish Plains Buttercup		Fragrant Saltbush		Black Roly-poly		Dark Roly-poly		Matted Flax-lily	
21448	1	A	1	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	2	A	2	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	4	A	3	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.
21448	5	A	4	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	6	A	5	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	7	A	6	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	8	A	7	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	9	A	8	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	13	A	9	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.
21448	18	A	10	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	19	A	11	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
21448	20	A	12	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
50258532	1	A	13	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.
50258541	1	A	14	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA
50258569	1	A	15	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
50258569	2	A	16	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
52475755	1	A	17	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
52475756	3	A	18	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
52475756	3	B	19	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
52934928	1	A	20	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
52934928	2	A	21	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
52934928	3	A	22	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	1	A	23	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	3	A	24	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	5	A	25	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	8	A	26	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	12	A	27	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	13	A	28	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53040321	14	A	29	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	1	A	30	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	1	B	31	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	4	A	32	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	5	A	33	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
53092076	6	A	34	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
206068192	1	A	35	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
206068192	3	A	36	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	AD	NA
206068192	4	A	37	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.
207317976	1	A	38	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	B	39	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	C	40	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	D	41	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	E	42	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	F	43	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	G	44	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	H	45	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	I	46	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	J	47	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	K	48	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	L	49	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	1	M	50	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	2	A	51	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	3	A	52	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	3	B	53	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	4	A	54	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	5	A	55	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	6	A	56	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	7	A	57	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	8	A	58	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
207317976	10	A	59	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	1	A	60	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	2	A	61	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	3	A	62	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	4	A	63	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	5	A	64	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	6	A	65	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
208396502	7	A	66	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
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211562023	1	A	68	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	B	69	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	C	70	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	D	71	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	E	72	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	F	73	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	1	G	74	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.
211562023	4	A	75	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	5	A	76	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	8	A	77	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.
211562023	9	A	78	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.
211562023	10	A	79	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.
211562023	12	A	80	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	14	A	81	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	15	A	82	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	17	A	83	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	18	A	84	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	19	A	85	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	20	A	86	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	22	A	87	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	23	A	88	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	24	A	89	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	25	A	90	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	27	A	91	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	28	A	92	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	ADF	Rem.	AD	NA	AD	NA	AD	NA	ADF	Rem.
211562023	29	A	93	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	30	A	94	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	31	A	95	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	32	A	96	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA	AD	NA
211562023	33	A	97	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
211562023	34	A	98	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
R207317976	3	A	99	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
R208396502	2	A	100	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
R208396502	3	A	101	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
R211562023	2	A	102	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
R211562023	4	A	103	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.
R211562023	6	A	104	ADF	Rem.	AD	NA	ADF	Rem.	AD	NA	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NA	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.

3.1.4 Vegetation

3.1.4.1 Ecological Vegetation Classes

Six EVCs were recorded within Contract Area 81.

- Heavier-soils Plains Grassland (EVC 132_61)
- Stony Knoll Shrubland (EVC 649)
- Aquatic Herbland (EVC 653)
- Plains Grassy Wetland (EVC 125)
- Plains Sedgy Wetland (EVC 647)
- Brackish Wetland (EVC 656)

All of the above EVCs are endangered within the Victorian Volcanic Plain bioregion, due to their reduction in area of occupancy since 1750 (www.dse.vic.gov.au).

DSE mapping of pre-1750 EVCs (at a 1:25,000 scale) indicates all of Contract Area 81 as previously supporting Plains Grassland. The DSE 2005 EVC vegetation mapping indicates that approximately 65% of the native vegetation has been cleared since 1750.

During the current assessment, 104 zones (habitat zones) containing the above EVCs were mapped. The boundaries of these zones were defined according to Table 1 of DSE (2004) which provides thresholds for determining zones based on differences within each site condition component of a habitat hectares assessment.

The following general descriptions for the six EVCs recorded in Contract Area 81 are based on data collected during the current assessment.

Plains Grassland

A total of **210.08 ha** of Plains Grassland was mapped in Contract Area 81 (Figure A7a–b). Typical grass species present included Kangaroo-grass *Themeda triandra*, Rigid Panic *Walwhalleya proluta*, spear-grasses *Austrostipa* spp. and wallaby-grasses *Austrodanthonia* spp. Shrubs are typically sparse in this EVC and the floristic composition is determined largely by annual rainfall and localised hydrology. Common herb or shrub species present included Berry Saltbush *Atriplex semibaccata*, Wingless Blue-bush *Maireana enchylaenoides*, Grassland Wood-sorrel *Oxalis perennans*, Varied Raspwort *Haloragis heterophylla*, Blushing Bindweed *Convolvulus angustissimus*, Lemon Beauty-heads *Calocephalus citreus*, crane's-bills *Geranium* spp., Tufted Bluebell *Wahlenbergia communis* and Arching Flax-lily *Dianella* sp. aff. *longifolia*

(Benambra).

An above average condition patch of this EVC occured near the centre of the study area (Truganina Cemetery). This patch included a greater diversity of native forbs compared with other examples in the contract area. It also had a higher species diversity (at a local scale) that is closer to that which would be expected for this EVC prior to European settlement.

Typical weeds present included Onion Grass *Romulea rosea*, fescues *Vulpia* spp., Wimmera Rye-grass *Lolium rigidum*, Cat's Ear *Hypochoeris radicata*, Buck's-horn Plantain *Plantago coronopus*, Artichoke Thistle *Cynara cardunculus* and heron's-bills *Erodium* spp. In some areas, the introduced grasses Chilean Needle-grass *Nassella neesiana* and Serrated Tussock *Nassella trichotoma* were dominant.

Stony Knoll Shrubland

A total of **2.75 ha** of Stony Knoll Shrubland was mapped in Contract Area 81. Stony Knoll Shrubland typically contains a depleted shrub layer of scattered Tree Violet *Melicytus dentatus* and patches of this EVC were distinguished from DSE Plains Grassland EVC largely on this basis. The ground layer included indigenous grasses and herbaceous species such as Kangaroo Grass, Weeping Grass *Microlaena stipoides*, Slender Wallaby-grass *Austrodanthonia racemosa*, spear grasses, Wattle Mat-rush *Lomandra filiformis* and Kidney-weed *Dichondra repens*.

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

Aquatic Herbland

A total of **0.04 ha** of Aquatic Herbland was mapped in Contract Area 81. At the time of the current assessment, this EVC was dry and many of the expected plant species would have been dormant and therefore not visible. In early spring and following suitable rainfall, this EVC would comprise shallow water with the dominant sedges including Poong'ort *Carex tereticaulis* and spike sedges *Eleocharis* spp. Other likely species include Jersey Cudweed *Pseudognaphalium luteoalbum*, Common Water-ribbons *Triglochin procera*, water-milfoil *Myriophyllum* sp., Common Sneezeweed *Centipeda cunninghamii* and Small Loosestrife *Lythrum hyssopifolia*.

Common weed species present included Sweet Briar *Rosa rubiginosa*, Toowoomba Canary-grass *Phalaris aquatica*, Annual Beard-grass *Polypogon monspeliensis*, Spiny Rush *Juncus acutus* and Drain Flat-sedge *Cyperus*

eragrostis.

Plains Grassy Wetland and **Plains Sedgy Wetland**

A total of **4.01ha** of Plains Grassy Wetland and **0.43 ha** of Plains Sedgy Wetland was mapped in Contract Area 81. These EVCs are floristically similar and both occupy sites which are seasonally inundated except that the latter tends to retain surface water more readily. Both EVCs typically comprise a suite of herbaceous plants and are dominated by graminoids. Common native species present included spike-sedges *Eleocharis* spp., rushes *Juncus* spp., Poong'ort, Water milfoil, Small Loosestrife *Lythrum hyssopifolia*, Common Nardoo *Marsilea drummondii* and Kangaroo Grass.

Typical weed species included Toowoomba Canary Grass, Onion Grass, Serrated Tussock and Cape Weed *Arctotheca calendula*.

Brackish Wetland

A total of **0.56 ha** of Brackish Wetland were mapped within Contract Area 81. This EVC is structurally and floristically similar to Plains Grassy Wetland and Plains Sedge Wetland but includes a suite of species which are influenced by saline conditions. While this EVC within the contract area was not particularly species rich, it included the native species Salt Club-sedge *Bolboschoenus caldwellii*, Small Loosestrife, sedges *Carex* spp., Windmill Grass *Chloris truncata* and the weeds Drain Flat-sedge and Annual Beard-grass.

Other vegetation mapping units

Degraded Treeless Vegetation (Figure A7c, A7e) is composed of highly disturbed agricultural and residential land consisting of predominantly introduced vegetation. By definition, it does not include vegetation where indigenous trees are present. It may consist of areas used for cereal crop production or sown pastures for grazing and as such is dominated by typical crop weed species, disturbance species and pasture grasses. Degraded Treeless Vegetation may also comprise sites which have a sufficient cover of native species to qualify as a patch of native vegetation, although the native species are those that are unlikely to have originally dominated the site.

A total of 156.1 ha of Degraded Treeless Vegetation was mapped in Contract Area 81. These areas generally contain large areas of bare ground with the vegetation dominated by a mix of introduced herbs including annual grasses. Common species present include Spear Thistle, Artichoke Thistle, Wimmera Rye-grass *Lolium rigidum*, Squirrel-tail Fescue *Vulpia bromoides*, Buck's-horn Plantain *Plantago coronopus* and Oat *Avena* spp.

A low cover of indigenous herbs including Common Wallaby-grass, Bristly Wallaby-grass, Brown-back Wallaby-grass, Grassland Wood-sorrel, Slender Dock and Berry Saltbush are often present within this vegetation, however do not meet the definition threshold as a patch of native vegetation under the Native Vegetation Framework (NRE 2002).

Where areas of vegetation did not include any indigenous species, the vegetation was mapped as Non-native Vegetation (110.1 ha) (Figure A7e).

3.1.4.2 Protected plant communities

The Australian Government Policy Statement 3.8 states that the listed ecological community NTGVVP (critically endangered) 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 Contract Area 81. However Plains Grassland (and the EPBC-listed ecological community) is present within Contract Area 81.

The vast majority of Plains Grassland mapped during the current assessment meets the definition criteria for the listed community. Areas which were not mapped as remnant native vegetation have been subject to land management practices which prevent the persistence of this community. As such, the boundaries of Plains Grassland the EPBC Act listed community are more or less the same although it is acknowledged that the EPBC Act listed community may exist where Plains Grassland does not (i.e. where less than 25% of the combined vegetation cover comprises native species). Patches of the listed community that meet the ecological criteria but are <0.05 ha within a patch of native vegetation <1 ha or are <0.5 ha within a patch of native vegetation >1 ha do not qualify as the ecological community. Typically land management practices such as repeated ploughing results in a low cover of native perennial grass species and a proportionally high cover of introduced perennial grass species or introduced broadleaf species.

All Plains Grassland patches meet the definition criteria for the FFG Act listed community Western (Basalt) Plains Grassland. 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 Contract Area 81 (Figure 2) is also considered to be the FFG Act-listed Western (Basalt) Plains Grassland Community.

All EVCs recorded in Contract Area 81 are considered by DSE to be endangered within the Victorian Volcanic Plain bioregion.

3.1.4.3 Geographic context of native vegetation

The native vegetation within the contract area has an influence on the vegetation outside of the contract area. In a landscape context, the extant native vegetation provides a source and sink for species reproductive propagules and genetic material which, with availability of suitable habitat, is the basis for the ongoing persistence of populations.

Many species populations within the contract area will be connected in some way with those outside of the contract area (e.g. breeding between colonies, adjoining territories and complex population structures). Furthermore, some native vegetation and fauna habitats are contiguous with the same types on adjoining land. For example, to the south of the contract area lies an area described by the Truganina South Precinct Structure Plan. This area includes 80 ha of Plains Grassland, the EPBC Natural Temperate Grassland of the Victorian Volcanic Plain, populations of Golden Sun Moth and a population of Spiny Rice-flower (GAA 2010). The Strategic Impact Assessment Report for Melbourne's growth areas (DSE 2009c) provides details of significant biodiversity values including native vegetation, listed ecological communities and threatened species which occur within and adjacent to Contract Area 81.

Remnant native vegetation within the contract area provides habitat for a suite of native species. The majority of these species were not the subject of surveys undertaken for the current assessment but are vital for maintaining ecological processes which exist. They include fungi, lichens, non-vascular plants (mosses, liverworts and hornworts) and invertebrate animals. These species in addition to those recorded during the current assessment have evolved in conditions typically provided by intact native vegetation with a natural soil structure.

The contract area contains one nationally significant Biosite (Truganina Cemetery – 3607) and one state significant biosite (Skeleton Creek, upper reaches – 4616). Although small in area, Truganina Cemetery contains one of the more intact examples of Plains Grassland within the Melbourne area. It is the closest examples of pre-European vegetation within the contract area and, with it's nationally and state threatened flora species, it is highly valuable for its biological significance.

DSE Interactive Mapping (www.dse.vic.gov.au) shows approximately 40% of the surrounding area within 10 km of the contract area as occupied by remnant native vegetation, the majority of which is Plains Grassland. This area includes significant Plains Grassland patches including Mt Cottrell as well as the Biosites

Skeleton Creek-Rose Grange Tarneit (6626), Skeleton Creek, lower reaches (7008) and Marquands Road Truganina (6538).

The waterways Skeleton Creek and Dry Creek, which run through the contract area, supply water to estuarine lakes, saltmarsh and related habitats at Altona Bay.

In a regional and state context, the native vegetation present is significant as it:

- Provides habitat for a large number of state or nationally rare or threatened species;
- Includes at least six plant taxa of state significance;
- Includes at least two nationally threatened plant taxa – Button Wrinklewort *Rutidosis leptorhynchoides* and Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens*;
- Provides habitat for plant communities which are nationally threatened;
- Includes one nationally significant Biosite (Truganina Cemetery) and one state significant Biosite (Skeleton Creek, upper reaches); and
- Contains habitat corridors such as Skeleton Creek and Dry Creek which assist the movement of species at the landscape level.

Legend

Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 653 Aquatic Herbland
- 656 Brackish Wetland
- Degraded treeless vegetation
- EPBC listed Natural Temperate Grassland of the Victorian Volcanic Plain
- Non Native Vegetation
- Contract Area
- Parcels
- Not Accessed

See appendix Figure A4 for more detail, including habitat zone and parcel identifiers

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Figure 4: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Date: 11 July 2011
Checked by: MDD
Drawn by: SKM/KVC
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Updated Data Disk for GAA\10497-V8059\Mapping\Biodiversity Reports\CA81\8059 Fig 4 EVCs CA81.mxd

0 100 200 400 600 800 1,000
Meters

1: 16,000 at A3

VicGrid(94)

3.2 Habitat Hectare assessment

The benchmark for each EVC recorded within Contract Area 81 is provided in Appendix 3.

3.2.1 Scattered Trees

The areas assessed within Contract Area 81 contained no scattered indigenous trees. Some canopy trees are shown on the aerial photograph in Figures A4a–i although these are non-indigenous trees, most of which have been planted for stock shelter or ornamental reasons.

3.2.2 Vegetation in Patches

A total of 104 habitat zones (or native vegetation polygons) were identified within accessible areas of Contract Area 81 (Table 5). The extent, quality and conservation significance of these habitat zones is provided in Table 7. There were no remnant trees recorded within any of the patches.

Table 5. Remnant patches of native vegetation within Contract Area 81.

Habitat Zone	Area of Zone	EVC	Habitat Score	Cons. Status	Conservation Significance	Number of small trees	Number of medium old trees	Number of large old trees	Number of very large old trees
1	0.21	PGhs	0.33	E	High	0	0	0	0
2	0.08	PGhs	0.38	E	High	0	0	0	0
3	1.66	PGwet	0.35	E	High	0	0	0	0
4	1.04	PGhs	0.38	E	High	0	0	0	0
5	0.05	PGhs	0.38	E	High	0	0	0	0
6	0.6	PGhs	0.50	E	Very High	0	0	0	0
7	0.64	PGhs	0.45	E	Very High	0	0	0	0
8	3.21	PGhs	0.60	E	Very High	0	0	0	0
9	0.33	PGwet	0.71	E	Very High	0	0	0	0
10	0.76	PGhs	0.35	E	High	0	0	0	0
11	1.04	PGhs	0.35	E	High	0	0	0	0
12	0.07	PGhs	0.35	E	High	0	0	0	0
13	0.03	PSWet	0.34	E	High	0	0	0	0
14	0.13	BW	0.35	E	High	0	0	0	0
15	3.22	PGhs	0.54	E	Very High	0	0	0	0
16	56.69	PGhs	0.29	E	Very High	0	0	0	0
17	0.58	SKS	0.34	E	High	0	0	0	0
18	0.2	PGhs	0.44	E	Very High	0	0	0	0
19	1.34	PGhs	0.69	E	Very High	0	0	0	0
20	0.14	PGhs	0.30	E	Very High	0	0	0	0
21	1.36	PGhs	0.27	E	High	0	0	0	0
22	0.08	PGhs	0.32	E	High	0	0	0	0
23	1.21	PGhs	0.53	E	Very High	0	0	0	0
24	0.67	PGhs	0.29	E	High	0	0	0	0
25	0.74	PGhs	0.29	E	High	0	0	0	0

Habitat Zone	Area of Zone	EVC	Habitat Score	Cons. Status	Conservation Significance	Number of small trees	Number of medium old trees	Number of large old trees	Number of very large old trees
low26	2.07	PGhs	0.56	E	Very High	0	0	0	0
27	0.74	PGhs	0.42	E	Very High	0	0	0	0
28	6.92	PGhs	0.59	E	Very High	0	0	0	0
29	0.41	PGhs	0.49	E	Very High	0	0	0	0
30	0.25	PGhs	0.37	E	High	0	0	0	0
31	0.91	PGhs	0.45	E	Very High	0	0	0	0
32	0.28	PGhs	0.37	E	High	0	0	0	0
33	0.85	PGhs	0.37	E	Very High	0	0	0	0
34	2.34	PGhs	0.37	E	Very High	0	0	0	0
35	1.59	PGhs	0.27	E	High	0	0	0	0
36	0.04	AH	0.40	E	Very High	0	0	0	0
37	0.03	PSWet	0.20	E	High	0	0	0	0
38	1.48	PGhs	0.47	E	Very High	0	0	0	0
39	0.55	PGhs	0.49	E	Very High	0	0	0	0
40	0.38	PGhs	0.54	E	Very High	0	0	0	0
41	0.06	PGhs	0.54	E	Very High	0	0	0	0
42	2.04	PGhs	0.54	E	Very High	0	0	0	0
43	0.43	PGhs	0.54	E	Very High	0	0	0	0
44	2.93	PGhs	0.47	E	Very High	0	0	0	0
45	16.16	PGhs	0.40	E	Very High	0	0	0	0
46	1.05	PGhs	0.63	E	Very High	0	0	0	0
47	1.64	PGhs	0.63	E	Very High	0	0	0	0
48	1.71	PGhs	0.63	E	Very High	0	0	0	0
49	0.49	PGhs	0.36	E	Very High	0	0	0	0
50	1.03	PGhs	0.40	E	Very High	0	0	0	0
51	2.4	PGhs	0.40	E	Very High	0	0	0	0
52	0.46	PGhs	0.58	E	Very High	0	0	0	0
53	0.37	PGhs	0.44	E	Very High	0	0	0	0
54	0.13	PGhs	0.63	E	Very High	0	0	0	0
55	0.16	PGhs	0.47	E	Very High	0	0	0	0
56	0.03	PGhs	0.34	E	Very High	0	0	0	0
57	0.29	PGhs	0.63	E	Very High	0	0	0	0
58	0.36	PGhs	0.63	E	Very High	0	0	0	0
59	0.07	PGhs	0.36	E	Very High	0	0	0	0
60	0.47	PGhs	0.34	E	Very High	0	0	0	0
61	0.21	PGhs	0.34	E	Very High	0	0	0	0
62	0.06	PGhs	0.34	E	Very High	0	0	0	0
63	0.01	PGhs	0.34	E	Very High	0	0	0	0
64	0.81	PGhs	0.49	E	Very High	0	0	0	0
65	0.2	PGhs	0.44	E	Very High	0	0	0	0
66	0.95	PGhs	0.52	E	Very High	0	0	0	0
67	1.07	PGhs	0.33	E	Very High	0	0	0	0
68	1.95	PGhs	0.27	E	Very High	0	0	0	0
69	11.8	PGhs	0.29	E	Very High	0	0	0	0
70	1.44	PGhs	0.49	E	Very High	0	0	0	0
71	0.17	PGhs	0.38	E	Very High	0	0	0	0
72	0.3	PGhs	0.49	E	Very High	0	0	0	0
73	1.68	SKS	0.38	E	Very High	0	0	0	0
74	0.09	PSWet	0.30	E	Very High	0	0	0	0
75	0.54	PGhs	0.16	E	Very High	0	0	0	0
76	46.21	PGhs	0.25	E	High	0	0	0	0
77	0.18	PGwet	0.45	E	Very High	0	0	0	0
78	0.25	PGwet	0.45	E	Very High	0	0	0	0
79	1.59	PGwet	0.45	E	Very High	0	0	0	0
80	13.49	PGhs	0.47	E	Very High	0	0	0	0

Habitat Zone	Area of Zone	EVC	Habitat Score	Cons. Status	Conservation Significance	Number of small trees	Number of medium old trees	Number of large old trees	Number of very large old trees
81	0.94	PGhs	0.42	E	Very High	0	0	0	0
82	0.14	PGhs	0.42	E	Very High	0	0	0	0
83	0.02	PGhs	0.42	E	Very High	0	0	0	0
84	0.06	PGhs	0.42	E	Very High	0	0	0	0
85	0.04	PGhs	0.42	E	Very High	0	0	0	0
86	0.03	PGhs	0.47	E	Very High	0	0	0	0
87	0.4	PGhs	0.42	E	Very High	0	0	0	0
88	0.11	PGhs	0.42	E	Very High	0	0	0	0
89	2.13	PGhs	0.42	E	Very High	0	0	0	0
90	0.12	PGhs	0.42	E	Very High	0	0	0	0
91	0.17	PGhs	0.42	E	Very High	0	0	0	0
92	0.28	PSWet	0.34	E	High	0	0	0	0
93	0.77	PGhs	0.42	E	Very High	0	0	0	0
94	1.06	PGhs	0.42	E	Very High	0	0	0	0
95	0.49	SKS	0.24	E	High	0	0	0	0
96	0.43	BW	0.35	E	High	0	0	0	0
97	0.15	PGhs	0.38	E	High	0	0	0	0
98	0.15	PGhs	0.38	E	High	0	0	0	0
99	0.04	PGhs	0.22	E	High	0	0	0	0
100	0.01	PGhs	0.22	E	High	0	0	0	0
101	0.02	PGhs	0.22	E	High	0	0	0	0
102	0.02	PGhs	0.42	E	Very High	0	0	0	0
103	0.03	PGhs	0.27	E	High	0	0	0	0
104	0.06	PGhs	0.26	E	High	0	0	0	0

PGhs - Plains Grassland heavier soils, SKS - Stony Knoll Shrubland,
BW - Brackish Wetland, PSWet - Plains Sedgy Wetland, PGWet - Plains Grassy Wetland, AH - Aquatic Herbland
E - endangered within the bioregion.

For EVCs that are naturally treeless, the site condition scores were standardised (as appropriate) to maintain the relative weighting of site condition and landscape scores (DSE 2004).

A total of **217.87 hectares** (**159.35 ha** of very high conservation significance and **58.52 ha** of high conservation significance) of native vegetation in habitat zones were mapped within accessible areas of Contract Area 81, which comprises **78.22 habitat hectares (hha)** (Table 6).

Conservation significance

The conservation significance of each polygon of native vegetation within Contract Area 81 is shown in Table 7. Contract Area 81 supports **62.51 hha** of Very High conservation significance and **15.71 hha** of High conservation significance vegetation
(Figure 5).

Table 6. Summary of areas and habitat hectares for each EVC within the contract area.

	Plains Grassland heavier soils			**Brackish Wetland**		
	ha	habha	target	ha	habha	target
VH	155.19	60.68	121.36	0.00	0.00	0.00
H	54.89	14.51	21.76	0.56	0.20	0.29
	210.08	**75.18**	**143.11**	**0.56**	**0.20**	**0.29**

	Plains Grassy Wetland			**Plains Sedgy Wetland**		
	ha	habha	target	ha	habha	target
VH	2.35	1.15	2.30	0.09	0.03	0.05
H	1.66	0.59	0.88	0.34	0.11	0.17
	4.01	**1.74**	**3.18**	**0.43**	**0.14**	**0.22**

	Stony Knoll Shrubland			**Aquatic Herbland**		
	ha	habha	target	ha	habha	target
VH	1.68	0.64	1.28	0.04	0.02	0.03
H	1.07	0.31	0.47	0.00	0.00	0.00
	2.75	**0.95**	**1.75**	**0.04**	**0.02**	**0.03**

VH – Very High conservation significance, H – High conservation significance.
ha – hectares. hha habitat hectares.

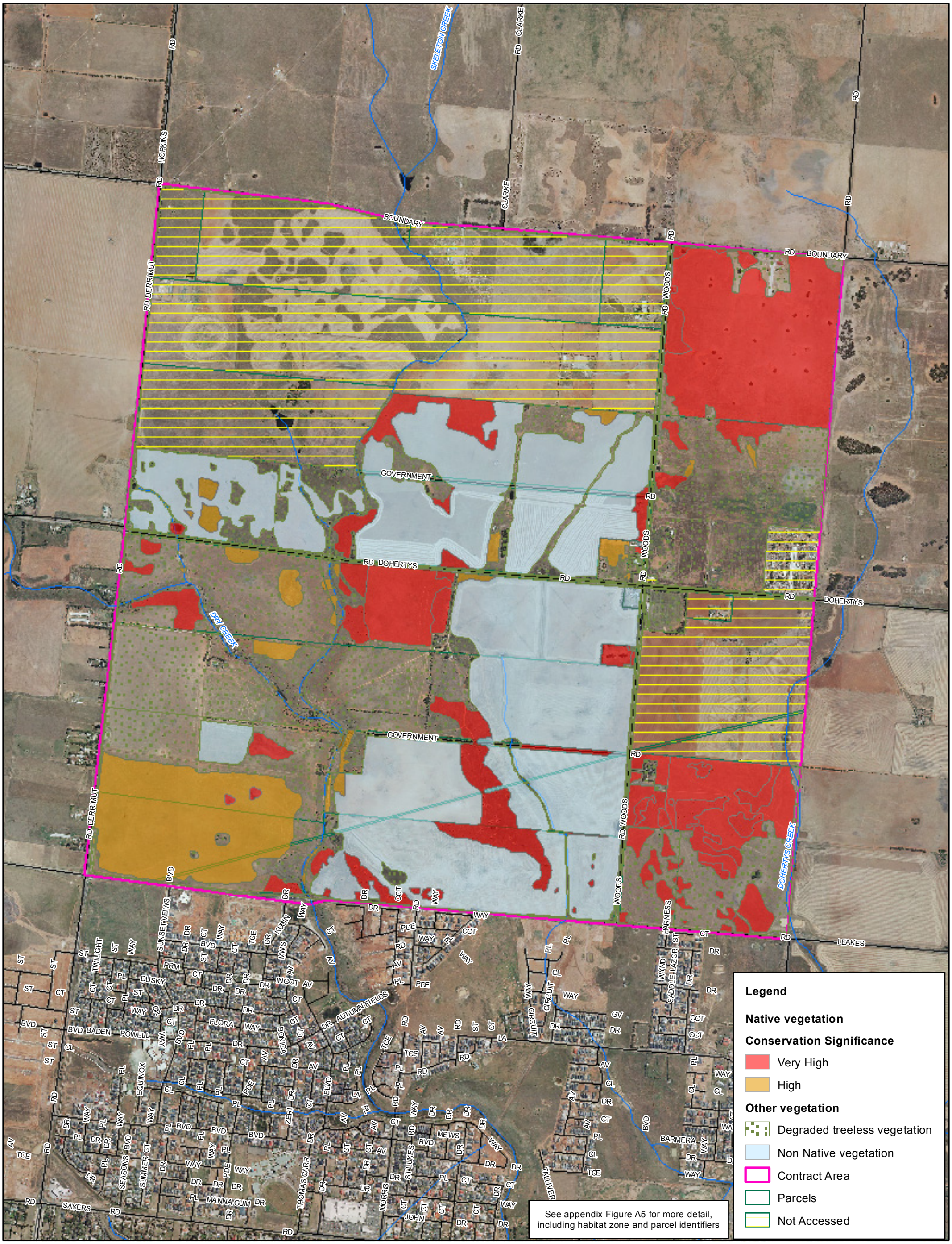

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Figure 5: Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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Checked by: MDD
Drawn by: SKM
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0 100 200 400 600 800 1,000
Meters
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VicGrid(94)

Table 7: Quantification and significance of habitat zones of native vegetation.

Habitat Zone			1	2	3	4	5	6	7	8	9	10	11	12	13
Map Reference			4d	4d	4d	4d	4d	4d	4d	4d	4d	4d	4d	4d	4g
Property PFI			21448	21448	21448	21448	21448	21448	21448	21448	21448	21448	21448	21448	50258532
Site ID			1	2	4	5	6	7	8	9	13	18	19	20	1
Zone ID			A	A	A	A	A	A	A	A	A	A	A	A	A
EVC name (initials)			PGhs	PGhs	PGwet	PGhs	PGhs	PGhs	PGhs	PGhs	PGwet	PGhs	PGhs	PGhs	PSWet
EVC number			132	132	125	132	132	132	132	132	125	132	132	132	125
Conservation Status			E	E	E	E	E	E	E	E	E	E	E	E	E
Total area of habitat zone (ha)			0.21	0.08	1.66	1.04	0.05	0.6	0.64	3.21	0.33	0.76	1.04	0.07	0.03
		Max. score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site condition	Large Trees	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Tree Canopy Cover	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Lack of Weeds	15	0	0	0	0	0	4	4	4	7	0	0	0	0
	Understorey	25	10	10	15	10	10	15	15	15	10	5	5	5	15
	Recruitment	10	3	3	0	3	3	3	3	10	6	6	6	6	6
	Organic Litter	5	0	4	0	4	4	4	0	4	3	4	4	4	0
	Logs	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total Score	75	13	17	15	17	17	26	22	33	45	15	15	15	21
Standardiser			1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Site Condition			17.68	23.12	20.40	23.12	23.12	35.36	29.92	44.88	61.20	20.40	20.40	20.40	28.56
Landscape Context		25	15	15	15	15	15	15	15	15	10	15	15	15	5
Habitat Score		100	33	38	35	38	38	50	45	60	71	35	35	35	34
Habitat Points (# / 100)		0.##	0.33	0.38	0.35	0.38	0.38	0.50	0.45	0.60	0.71	0.35	0.35	0.35	0.34
Habitat Hectares		(#.##)	0.07	0.03	0.59	0.40	0.02	0.30	0.29	1.92	0.23	0.27	0.37	0.02	0.01
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
Cons sign	Cons status x hab score		High	High	High	High	High	Very High	Very High	Very High	Very High	High	High	High	High
	Threatened species rating		High	HIgh	High	HIgh	High	HIgh	High	High	High	High	High	High	High
	Other site attribute		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Overall conservation significance		High	High	High	High	High	Very High	Very High	Very High	Very High	High	High	High	High
	Net Outcome Ratio		1.5	1.5	1.5	1.5	1.5	2	2	2	2	1.5	1.5	1.5	1.5
Habitat Hecates (Net Gain target)			0.10	0.05	0.88	0.59	0.03	0.60	0.57	3.84	0.47	0.40	0.55	0.04	0.02

Table 7 cont. Quantification and significance of habitat zones of native vegetation.

Habitat Zone			14	15	16	17	18	19	20	21	22	23	24	25	26
Map Reference			4g	4b	4b	4g	4e	4e	4e	4e	4e	4a	4a	4a	4a
Property PFI			5025854 1	5025856 9	5025856 9	5247575 5	5247575 6	5247575 6	5293492 8	5293492 8	5293492 8	5304032 1	5304032 1	5304032 1	5304032 1
Site ID			1	1	2	1	3	3	1	2	3	1	3	5	8
Zone ID			A	A	A	A	A	B	A	A	A	A	A	A	A
EVC name (initials)			BW	PGhs	PGhs	SKS	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs
EVC number			656	132	132	649	132	132	132	132	132	132	132	132	132
Conservation Status			E	E	E	E	E	E	E	E	E	E	E	E	E
Total area of habitat zone (ha)			0.13	3.22	56.69	0.58	0.2	1.34	0.14	1.36	0.08	1.21	0.67	0.74	2.07
		Max. score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site condition	Large Trees	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Tree Canopy Cover	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Lack of Weeds	15	11	9	4	4	4	7	6	4	4	9	0	0	4
	Understorey	25	5	15	5	15	15	25	10	5	5	15	15	10	15
	Recruitment	10	1	3	3	0	6	10	6	6	6	6	3	3	6
	Organic Litter	5	5	5	2	2	4	5	0	5	5	5	0	5	5
	Logs	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total Score	75	22	32	14	21	29	47	22	20	20	35	18	18	30
Standardiser			1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Site Condition			29.92	43.52	19.04	28.56	39.44	63.92	29.92	27.20	27.20	47.60	24.48	24.48	40.80
Landscape Context		25	5	10	10	5	5	5	0	0	5	5	5	5	15
Habitat Score		100	35	54	29	34	44	69	30	27	32	53	29	29	56
Habitat Points (# / 100)		0.##	0.35	0.54	0.29	0.34	0.44	0.69	0.30	0.27	0.32	0.53	0.29	0.29	0.56
Habitat Hectares		(#.##)	0.05	1.72	16.46	0.19	0.09	0.92	0.04	0.37	0.03	0.64	0.20	0.22	1.16
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
Cons sign	Cons status x hab score		High	Very High	High	High	Very High	Very High	High	High	High	Very High	High	High	Very High
	Threatened species rating		High	Very High	Very High	High	Very High	Very High	Very High	High	High	Very High	High	High	Very High
	Other site attribute		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Overall conservation significance		High	Very High	Very High	High	Very High	Very High	Very High	High	High	Very High	High	High	Very High
	Net Outcome Ratio		1.5	2	2	1.5	2	2	2	1.5	1.5	2	1.5	1.5	2
Habitat Hecates (Net Gain target)			0.07	3.45	32.93	0.29	0.18	1.85	0.08	0.55	0.04	1.27	0.30	0.33	2.31

Table 7 cont. Quantification and significance of habitat zones of native vegetation.

Habitat Zone			27	28	29	30	31	32	33	34	35	36	37	38	39
Map Reference			4a	4a	4a	4e	4e	4f	4e	4f	4d	4d	4d	4h	4h
Property PFI			53040321	53040321	53040321	53092076	53092076	53092076	53092076	53092076	206068192	206068192	206068192	207317976	207317976
Site ID			12	13	14	1	1	4	5	6	1	3	4	1	1
Zone ID			A	A	A	A	B	A	A	A	A	A	A	A	B
EVC name (initials)			PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	AH	PSWet	PGhs	PGhs
EVC number			132	132	132	132	132	132	132	132	132	653	647	132	132
Conservation Status			E	E	E	E	E	E	E	E	E	E	E	E	E
Total area of habitat zone (ha)			0.74	6.92	0.41	0.25	0.91	0.28	0.85	2.34	1.59	0.04	0.03	1.48	0.55
		Max. score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site condition	Large Trees	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Tree Canopy Cover	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Lack of Weeds	15	6	6	6	4	0	4	4	4	9	7	0	6	9
	Understorey	25	10	15	15	5	15	5	5	5	5	10	5	10	5
	Recruitment	10	6	6	6	3	3	3	3	3	3	6	3	6	10
	Organic Litter	5	5	5	5	4	4	4	4	4	3	3	3	5	5
	Logs	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total Score	75	27	32	32	16	22	16	16	16	20	26	11	27	29
Standardiser			1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Site Condition			36.72	43.52	43.52	21.76	29.92	21.76	21.76	21.76	27.20	35.36	14.96	36.72	39.44
Landscape Context		25	5	15	5	15	15	15	15	15	0	5	5	10	10
Habitat Score		100	42	59	49	37	45	37	37	37	27	40	20	47	49
Habitat Points (# / 100)		0.##	0.42	0.59	0.49	0.37	0.45	0.37	0.37	0.37	0.27	0.40	0.20	0.47	0.49
Habitat Hectares		(#.#)	0.31	4.05	0.20	0.09	0.41	0.10	0.31	0.86	0.43	0.02	0.01	0.69	0.27
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
Cons sign	Cons status x hab score		Very High	Very High	Very High	High	Very High	High	High	High	High	Very High	High	Very High	Very High
	Threatened species rating		High	Very High	High	High	High	High	Very High	Very High	High	High	High	Very High	Very High
	Other site attribute		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Overall conservation significance		Very High	Very High	Very High	High	Very High	High	Very High	Very High	High	Very High	High	Very High	Very High
	Net Outcome Ratio		2	2	2	1.5	2	1.5	2	2	1.5	2	1.5	2	2
Habitat Hecates (Net Gain target)			0.62	8.10	0.40	0.14	0.82	0.15	0.62	1.72	0.65	0.03	0.01	1.38	0.54

Table 7 cont: Quantification and significance of habitat zones of native vegetation.

Habitat Zone			40	41	42	43	44	45	46	47	48	49	50	51	52
Map Reference			4h	4h	4i	4i	4h	4i	4i	4i	4i	4i	4i	4f	4d
Property PFI			20731797 6	20731797 6	20731797 6	20731797 6	20731797 6	20731797 6	20731797 6	20731797 6	20731797 6	20731797 6	20731797 6	20731797 6	20731797 6
Site ID			1	1	1	1	1	1	1	1	1	1	1	2	3
Zone ID			C	D	E	F	G	H	I	J	K	L	M	A	A
EVC name (initials)			PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs
EVC number			132	132	132	132	132	132	132	132	132	132	132	132	132
Conservation Status			E	E	E	E	E	E	E	E	E	E	E	E	E
Total area of habitat zone (ha)			0.38	0.06	2.04	0.43	2.93	16.16	1.05	1.64	1.71	0.49	1.03	2.4	0.46
		Max. score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site condition	Large Trees	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Tree Canopy Cover	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Lack of Weeds	15	6	6	6	6	6	6	9	9	9	6	6	6	9
	Understorey	25	15	15	15	15	10	5	15	15	15	5	5	5	15
	Recruitment	10	6	6	6	6	6	6	10	10	10	3	6	6	6
	Organic Litter	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Logs	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total Score	75	32	32	32	32	27	22	39	39	39	19	22	22	35
Standardiser			1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Site Condition			43.52	43.52	43.52	43.52	36.72	29.92	53.04	53.04	53.04	25.84	29.92	29.92	47.60
Landscape Context		25	10	10	10	10	10	10	10	10	10	10	10	10	10
Habitat Score		100	54	54	54	54	47	40	63	63	63	36	40	40	58
Habitat Points (# / 100)		0.##	0.54	0.54	0.54	0.54	0.47	0.40	0.63	0.63	0.63	0.36	0.40	0.40	0.58
Habitat Hectares		(#.#)	0.20	0.03	1.09	0.23	1.37	6.45	0.66	1.03	1.08	0.18	0.41	0.96	0.26
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
Cons sign	Cons status x hab score		Very High	Very High	Very High	Very High	Very High	High	Very High	Very High	Very High	High	High	High	Very High
	Threatened species rating		Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High
	Other site attribute		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Overall conservation significance		Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High
	Net Outcome Ratio		2	2	2	2	2	2	2	2	2	2	2	2	2
Habitat Hecates (Net Gain target)			0.41	0.06	2.18	0.46	2.74	12.90	1.32	2.07	2.16	0.35	0.82	1.92	0.53

Table 7 cont: Quantification and significance of habitat zones of native vegetation.

Habitat Zone			53	54	55	56	57	58	59	60	61	62	63	64	65
Map Reference			4i	4i	4i	4i	4i	4i	4i	4h	4h	4h	4h	4h	4h
Property PFI			2073179 7	2073179 7	2073179 7	2073179 7	2073179 7	2073179 7	2073179 7	2083965 2	2083965 2	2083965 2	2083965 2	2083965 2	2083965 2
Site ID			3	4	5	6	7	8	10	1	2	3	4	5	6
Zone ID			B	A	A	A	A	A	A	A	A	A	A	A	A
EVC name (initials)			PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs
EVC number			132	132	132	132	132	132	132	132	132	132	132	132	132
Conservation Status			E	E	E	E	E	E	E	E	E	E	E	E	E
Total area of habitat zone (ha)			0.37	0.13	0.16	0.03	0.29	0.36	0.07	0.47	0.21	0.06	0.01	0.81	0.2
		Max. score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site condition	Large Trees	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Tree Canopy Cover	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Lack of Weeds	15	9	9	6	6	9	9	6	6	6	6	6	6	6
	Understorey	25	5	15	10	10	15	15	5	5	5	5	5	15	15
	Recruitment	10	6	10	6	0	10	10	3	3	3	3	3	3	3
	Organic Litter	5	5	5	5	5	5	5	5	4	4	4	4	5	5
	Logs	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total Score	75	25	39	27	21	39	39	19	18	18	18	18	29	29
Standardiser			1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Site Condition			34.00	53.04	36.72	28.56	53.04	53.04	25.84	24.48	24.48	24.48	24.48	39.44	39.44
Landscape Context		25	10	10	10	5	10	10	10	10	10	10	10	10	5
Habitat Score		100	44	63	47	34	63	63	36	34	34	34	34	49	44
Habitat Points (# / 100)		0.##	0.44	0.63	0.47	0.34	0.63	0.63	0.36	0.34	0.34	0.34	0.34	0.49	0.44
Habitat Hectares		(#.#)	0.16	0.08	0.07	0.01	0.18	0.23	0.03	0.16	0.07	0.02	0.00	0.40	0.09
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
Cons sign	Cons status x hab score		Very High	Very High	Very High	High	Very High	Very High	High	High	High	High	High	Very High	Very High
	Threatened species rating		Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High
	Other site attribute		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Overall conservation significance		Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High
	Net Outcome Ratio		2	2	2	2	2	2	2	2	2	2	2	2	2
Habitat Hecates (Net Gain target)			0.33	0.16	0.15	0.02	0.37	0.45	0.05	0.32	0.14	0.04	0.01	0.80	0.18

Table 7 cont: Quantification and significance of habitat zones of native vegetation.

Habitat Zone			66	67	68	69	70	71	72	73	74	75	76	77	78
Map Reference			4h	4h	4e	4e	4d	4d	4d	4d	4d	4e	4g	4g	4g
Property PFI			2083965 02	2083965 02	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23
Site ID			7	8	1	1	1	1	1	1	1	4	5	8	9
Zone ID			A	A	A	B	C	D	E	F	G	A	A	A	A
EVC name (initials)			PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	SKS	PSWet	PGhs	PGhs	PGwet	PGwet
EVC number			132	132	132	132	132	132	132	649	647	132	132	125	125
Conservation Status			E	E	E	E	E	E	E	E	E	E	E	E	E
Total area of habitat zone (ha)			0.95	1.07	1.95	11.8	1.44	0.17	0.3	1.68	0.09	0.54	46.21	0.18	0.25
		Max. score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site condition	Large Trees	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Tree Canopy Cover	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Lack of Weeds	15	6	2	4	4	4	0	4	4	0	4	0	7	7
	Understorey	25	15	5	5	10	10	10	10	10	5	5	5	10	10
	Recruitment	10	6	6	3	3	6	3	6	6	3	3	6	6	6
	Organic Litter	5	4	4	4	4	5	4	5	3	3	0	4	3	3
	Logs	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total Score	75	31	17	16	21	25	17	25	23	11	12	15	26	26
Standardiser			1.36	1.36	1.36	1.36	1.36	1.36	1.36	1	1.36	1.36	1.36	1.36	1.36
Site Condition			42.16	23.12	21.76	28.56	34.00	23.12	34.00	23.00	14.96	16.32	20.40	35.36	35.36
Landscape Context		25	10	10	5	0	15	15	15	15	15	0	5	10	10
Habitat Score		100	52	33	27	29	49	38	49	38	30	16	25	45	45
Habitat Points (# / 100)		0.##	0.52	0.33	0.27	0.29	0.49	0.38	0.49	0.38	0.30	0.16	0.25	0.45	0.45
Habitat Hectares		(#.#)	0.50	0.35	0.52	3.37	0.71	0.06	0.15	0.64	0.03	0.09	11.74	0.08	0.11
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
Cons sign	Cons status x hab score		Very High	High	High	High	Very High	High	Very High	High	High	High	High	Very High	Very High
	Threatened species rating		Very High	Very High	Very High	Very High	Very High	High	High	Very High	Very High	Very High	High	High	High
	Other site attribute		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Overall conservation significance		Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	High	Very High	Very High
	Net Outcome Ratio		2	2	2	2	2	2	2	2	2	2	1.5	2	2
Habitat Hecates (Net Gain target)			0.99	0.71	1.04	6.74	1.41	0.13	0.29	1.28	0.05	0.18	17.61	0.16	0.23

Table 7 cont: Quantification and significance of habitat zones of native vegetation.

Habitat Zone			79	80	81	82	83	84	85	86	87	88	89	90	91
Map Reference			4g	4h	4h	4h	4h	4h	4h	4h	4h	4h	4h	4g	4h
Property PFI			2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23
Site ID			10	12	14	15	17	18	19	20	22	23	24	25	27
Zone ID			A	A	A	A	A	A	A	A	A	A	A	A	A
EVC name (initials)			PGwet	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs
EVC number			125	132	132	132	132	132	132	132	132	132	132	132	132
Conservation Status			E	E	E	E	E	E	E	E	E	E	E	E	E
Total area of habitat zone (ha)			1.59	13.49	0.94	0.14	0.02	0.06	0.04	0.03	0.4	0.11	2.13	0.12	0.17
		Max. score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site condition	Large Trees	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Tree Canopy Cover	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Lack of Weeds	15	7	4	4	4	4	4	4	4	4	4	4	4	4
	Understorey	25	10	15	15	15	15	15	15	15	15	15	15	15	15
	Recruitment	10	6	3	3	3	3	3	3	3	3	3	3	3	3
	Organic Litter	5	3	5	5	5	5	5	5	5	5	5	5	5	5
	Logs	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total Score	75	26	27	27	27	27	27	27	27	27	27	27	27	27
Standardiser			1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Site Condition			35.36	36.72	36.72	36.72	36.72	36.72	36.72	36.72	36.72	36.72	36.72	36.72	36.72
Landscape Context		25	10	10	5	5	5	5	5	10	5	5	5	5	5
Habitat Score		100	45	47	42	42	42	42	42	47	42	42	42	42	42
Habitat Points (# / 100)		0.##	0.45	0.47	0.42	0.42	0.42	0.42	0.42	0.47	0.42	0.42	0.42	0.42	0.42
Habitat Hectares		(#.##)	0.72	6.30	0.39	0.06	0.01	0.03	0.02	0.01	0.17	0.05	0.89	0.05	0.07
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
Cons sign	Cons status x hab score		Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High
	Threatened species rating		High	Very High	Very High	Very High	High	High	High	High	High	High	High	High	High
	Other site attribute		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Overall conservation significance		Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High
	Net Outcome Ratio		2	2	2	2	2	2	2	2	2	2	2	2	2
Habitat Hecates (Net Gain target)			1.44	12.61	0.78	0.12	0.02	0.05	0.03	0.03	0.33	0.09	1.78	0.10	0.14

Table 7 cont: Quantification and significance of habitat zones of native vegetation.

Habitat Zone			92	93	94	95	96	97	98	99	100	101	102	103	104
Map Reference			4g	4g	4g	4g	4g	4d	4d	4i	4h	4h	4e	4e	4g
Property PFI			2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	2115620 23	R2073179 76	R2083965 02	R2083965 02	R2115620 23	R2115620 23	R2115620 23
Site ID			28	29	30	31	32	33	34	3	2	3	2	4	6
Zone ID			A	A	A	A	A	A	A	A	A	A	A	A	A
EVC name (initials)			PSWet	PGhs	PGhs	SKS	BW	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs	PGhs
EVC number			125	132	132	649	656	132	132	132	132	132	132	132	132
Conservation Status			E	E	E	E	E	E	E	E	E	E	E	E	E
Total area of habitat zone (ha)			0.28	0.77	1.06	0.49	0.43	0.15	0.15	0.04	0.01	0.02	0.02	0.03	0.06
		Max. score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site condition	Large Trees	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Tree Canopy Cover	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Lack of Weeds	15	0	4	4	7	11	0	0	4	4	4	4	4	4
	Understorey	25	15	15	15	5	5	10	10	5	5	5	15	5	5
	Recruitment	10	6	3	3	0	1	3	3	3	3	3	6	3	6
	Organic Litter	5	0	5	5	2	5	4	4	4	4	4	2	4	4
	Logs	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total Score	75	21	27	27	14	22	17	17	16	16	16	27	16	19
Standardiser			1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Site Condition			28.56	36.72	36.72	19.04	29.92	23.12	23.12	21.76	21.76	21.76	36.72	21.76	25.84
Landscape Context		25	5	5	5	5	5	15	15	0	0	0	5	5	0
Habitat Score		100	34	42	42	24	35	38	38	22	22	22	42	27	26
Habitat Points (# / 100)		0.##	0.34	0.42	0.42	0.24	0.35	0.38	0.38	0.22	0.22	0.22	0.42	0.27	0.26
Habitat Hectares		(#.#)	0.09	0.32	0.44	0.12	0.15	0.06	0.06	0.01	0.00	0.00	0.01	0.01	0.02
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
Cons sign	Cons status x hab score		High	Very High	Very High	High	High	High	High	High	High	High	Very High	High	High
	Threatened species rating		High	High	High	High	High	High	High	High	High	High	High	High	High
	Other site attribute		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Overall conservation significance		High	Very High	Very High	High	High	High	High	High	High	High	Very High	High	High
	Net Outcome Ratio		1.5	2	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2	1.5	1.5
Habitat Hecates (Net Gain target)			0.14	0.64	0.88	0.18	0.23	0.09	0.09	0.01	0.00	0.01	0.02	0.01	0.02

3.3 Targeted Flora Survey

The locations of all significant flora species records (including database records) within Contract Area 81 are shown on Figure A3a–i (Appendix 5).

A total of 212.49 ha of land within Contract Area 81 was searched for targeted flora species. Seven flora species were selected as priority species (by DSE) to be surveyed using targeted search methods described in Section 2.3.4. These were:

- Spiny Rice-flower, *Pimelea spinescens* subsp. *spinescens*
- Button Wrinklewort, *Rutidosis leptorhynchoides*
- Matted Flax-lily, *Dianella amoena*
- River Swamp Wallaby-grass, *Amphibromus fluitans*
- Tough Scurf-pea, *Cullen tenax*
- Large-fruit Fireweed, *Senecio macrocarpus*
- Clover Glycine, *Glycine latrobeana*

Additional significant species recorded within the contract area were identified (by DSE) to target during general flora surveys. These were:

- Small Scurf-pea *Cullen parvum*
- Small Golden Moths *Diuris basaltica*
- Plump Swamp Wallaby-grass *Amphibromus pithogastrus*
- Basalt Podolepis *Podolepis* sp. 1
- Small Milkwort *Comesperma polygaloides*
- Narrow Plantain *Plantago gaudichaudiana*
- Slender Tick-trefoil *Desmodium varians*
- Austral Toad-flax *Thesium australe*
- Basalt Peppercress *Lepidium hyssopifolium*
- Swamp Fireweed *Senecio psilocarpus*

Two of the species subject to targeted searches, Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* and Button Wrinklewort *Rutidosis leptorhynchoides* were recorded during targeted searches. While none of the other species were recorded, six additional plant species classified as rare or threatened in Victoria (DSE 2005) were recorded including two from the list of addition species to target during general flora surveys; (Plains Joyweed *Alternanthera* sp. 1 (Plains), Small Scurf-pea *Cullen parvum*, Slender Tick-trefoil *Desmodium varians*, Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra), Pale Spike-sedge *Eleocharis pallens* and Pale-flower Crane's-bill *Geranium* sp. 3 (Table A2.1).

3.4 Fauna

3.4.1 Fauna habitats

Fauna habitats that occur within the study area can be characterised according to vegetation communities and other natural and artificial features such as wetlands, rock walls etc. Fauna habitats vary in size and quality throughout the study area. Fauna habitats identified within Contract Area 81 are shown in Figure A6a–i and described in detail below.

Wetlands

Wetlands within the study area include numerous farm dams, two creeklines, several minor drainage lines, and low-lying areas prone to inundation. During the present assessment many of the waterbodies were either dry or contained very little water due to extended drought and below average rainfall throughout the study area. All waterbodies within the study area at the time of assessment were generally in poor condition and contained little to no aquatic and fringing vegetation due to grazing pressure.

The lower reaches of Dry Creek run from the western boundary of Contract Area 81 and confluence with Skeleton Creek (Figure A7d), which runs north to south through the study area. Both creeks were dry at the time of assessment, however, there were a small number of deep pools located along the southern sections of both creeklines that contained water. These deep pools are also referred to as the Skeleton Creek Waterholes (Barlow 1989). Both creeklines provide habitat for a number of bird and frog species. Eastern Great Egret *Ardea modesta* (state significant) and Little Pied Cormorant *Microcarbo melanoleucos* were observed at a deep pool within the southern section of Skeleton Creek. Frog species observed or heard calling from within Skeleton Creek during the current assessment include Spotted Marsh Frog *Limnodynastes tasmaniensis*, Southern Bullfrog *Limnodynastes dumerilii* and Common Froglet *Crinia signifera*. Welcome Swallows *Hirundo neoxena* and insectivorous microbats may forage for aerial insects over some of the larger pools along these creeklines.

Farm dams within the study area in their present state provide habitat for a small number of common waterbirds, frogs and a water source for Eastern Grey Kangaroos *Macropus giganteus*. Several common waterbirds including Pacific Black Duck *Anas superciliosa*, Masked Lapwing *Vanellus miles* and Black-fronted Dotterel *Elseyornis melanops* were observed in and around dams within the study area. Bird species that require a greater cover of fringing vegetation (e.g. Australasian Bittern *Botaurus poiciloptilus*) are unlikely to use waterbodies

within the study area in their present condition due to the lack of suitable habitat. The nationally significant Growling Grass Frog has previously been recorded within the contract area and a population of the species occurs downstream of the site within Skeleton Creek. Potential habitat for Growling Grass Frog exists within Skeleton Creek and Dry Creek within the contract area.

Plains grassland

Plains grassland habitat is characterised by native perennial tussock grasses and herbs growing within inter-tussock spaces. Trees and woody shrubs are typically absent. Plains grassland habitat within the study area was defined as either being rocky or non rocky. Rocky plains grassland habitat contained a combination of loose surface rock, embedded rock and/or stony rises while rocks were either absent or physically removed from non rocky plains grassland habitat. Plains grassland habitat within the study area is largely confined to rocky areas that have remained unploughed. The quality of these areas varies considerably and depends largely on past and current land-use practices in adjacent areas (e.g. grazing intensity).

Plains grassland provides habitat for a diverse range of terrestrial fauna, many of which are of national and state significance. There are a number of common bird species that forage within plains grassland habitat, such as Australasian Pipit *Anthus novaeseelandiae*, Stubble Quail *Coturnix pectoralis*, and Willie-wagtail *Rhipidura leucophrys*. Raptors also forage over these open plains grassland areas, with several species observed during the present assessment including Wedge-tailed Eagle *Aquila audax* and Brown Falcon *Falco berigora*. Dense tussocks and rocky areas provide suitable habitat for a number of reptiles including Common Blue-tongue Lizard *Tiliqua scincoides*, Little Whip-Snake *Suta flagellum*, and the nationally significant Striped Legless Lizard. Areas supporting a relatively high density of Wallaby-grass *Austrodanthonia* spp. provide suitable habitat for the nationally threatened Golden Sun Moth. The nationally threatened Plains-wanderer, Grassland Earless Dragon *Tympanocryptis pinguicolla* and state near threatened Fat-tailed Dunnart *Sminthopsis crassicaudata* all typically occupy native grasslands that support a sparse to very sparse vegetation cover. Plains grassland habitat may also be used by Growling Grass Frog as they are capable of moving significant distances between waterbodies.

Exotic pasture or cropland

This habitat type is characterised by exotic pasture grasses, weeds and agricultural crops such as wheat. As a result of past land-use practices, exotic pasture and cropland makes up a large proportion of the study area. Due to its

highly disturbed and modified nature, this habitat type contains few resources for fauna and consequently species diversity is generally poor in these areas.

Open-country ground-foraging species such as Australian Magpie *Gymnorhina tibicen,* Little Raven *Corvus mellori,* European Skylark *Alauda arvensis* and Galah *Eolophus roseicapilla* are common in these areas and were recorded throughout the study area during the current assessment. Birds of prey, swallows and martins will also forage above these areas. Due to the lack of suitable cover, exotic pasture and cropland generally provides poor habitat for reptiles, frogs and native small mammals

Shrubland and escarpment shrubland

Shrubland habitat within the study area largely consists of invasive woody shrubs such as Box-thorn and Sweet Briar, and several indigenous shrubs such as Tree Violet and Hedge Wattle. While being a significant environmental weed, box-thorn shrubland within the study area provides shelter and foraging resources for a suite of small bird species. Bird species observed in this habitat type during the present assessment included Superb Fairy-wren *Malurus cyaneus,* Yellow-rumped Thornbill *Acanthiza chrysorrhoa,* Zebra Finch *Taeniopygia guttata* and Grey Fantail *Rhipidura albiscarpa.* Shrublands harbour a number of exotic fauna species including House Sparrow *Passer domesticus*, European Goldfinch *Carduelis carduelis,* European Rabbit *Oryctolagus cuniculus* and Red Fox *Vulpes vulpes*.

Escarpment shrubland habitat is located within the study area along the lower section of Dry Creek. In addition to the species listed above, escarpment shrubland contains habitat for reptiles and frogs that are likely to use the steep rocky escarpments. Reptiles including Cunningham Skinks *Egernia cunninghami* are likely to utilise resources within these areas for foraging and shelter.

Standing dead tree

A small number of standing dead trees exist within Contract Area 81. Some of these trees could potentially contain hollows, which could be utilised by hollow-nesting fauna within the study area. Some of the fauna species recorded during the present assessment that are known to utilise tree hollows include Galah, Eastern Rosella *Platycercus eximius,* Common Myna *Acridotheres tristis* and White-striped Freetail Bat *Tadarida australis*. Standing dead trees also provide a number of microhabitats and foraging resources for fauna amongst fallen limbs, bark and leaf litter.

Planted Vegetation

This habitat type is characterised by planted exotic and non-indigenous trees and shrubs typically found in wind-breaks, gardens and as scattered paddock trees. The non-indigenous Sugar Gum *Eucalyptus cladocalyx* was the most common species found in wind-break plantings and as scattered paddock trees within the study area. Scattered trees are likely to be used by common woodland birds such as the Little Raven, Magpie-lark *Grallina cyanoleuca*, Galah and introduced birds such as Common Starling *Sturnus vulgaris*. Common raptors such as Nankeen Kestrel *Falco cenchroides* and Black-shouldered Kite *Elanus axillaris* are likely to use scattered paddock trees for perching and nesting.

Flowering trees and shrubs planted within the study area provide additional food resources and habitat for a number of nectar feeding birds such as Red Wattlebird *Anthochaera carunculata* and White-plumed Honeyeater *Lichenostomus penicillatus.* Crested Pigeons *Ocyphaps lophotes* were observed nesting within planted garden shrubs in the study area. Some mature planted Eucalypts may also provide foraging resources amongst fallen limbs, bark and leaf litter. These planted trees are unlikely to contain hollows. Many scattered paddock trees within the study area were surrounded by an understorey of woody weeds, particularly Box-thorn.

Buildings and roads

There are a number of residential houses and farm buildings located within the study area. A number of species use these structures as habitat for shelter and nesting. Fallen debris from buildings and other built structures (e.g. sheet metal, wooden fence palings) can also provide additional shelter for reptiles, small mammals and frogs. Species observed nesting in buildings during the current assessment included Welcome Swallow, Willie Wagtail, Spotted Turtle Dove *Streptopelia chinensis* and House Sparrow. Species recorded under building debris included Common Blue-tongue lizard, Striped Marsh Frog *Limnodynastes peronii*, Southern Bullfrog and the introduced House Mouse *Mus musculus*.

Paved two-lane roads form the western and southern boundaries of the study area. An unsealed road (Boundary Road) forms the northern boundary. An additional two roads (Woods Road - unsealed and Dohertys Road - sealed) run through the study area. While roads are of no significant conservation value, they are occasionally used by some fauna species. For example, road surfaces can be used as a basking site and heat source for thermoregulation in a number reptile and frog species. Water run-off from roads can promote plant growth on road verges which in turn provides additional food sources for species such as Eastern Grey Kangaroos, particularly in arid areas and during periods of low rainfall.

Carrion on roads also provides an additional source of food for scavengers and birds including ravens, Australian Magpie and some raptors.

Rock Walls and Rock Piles

Rock walls are a common feature in the basalt plains to the west of Melbourne and there are numerous rock walls located along property and parcel boundaries within the study area. Rock walls identified within the study area range from a single line of rocks along a fenceline to more structured rock walls of up to 2 m in height. All rock walls within the study area are constructed from loose basalt rocks that have presumably been removed from the surrounding landscape.

Rock walls and rock piles identified within Contract Area 81 provide a linear strip of habitat for reptiles, small mammals and invertebrates. They are also likely to harbour introduced mammals including Red Fox and European Rabbit.

3.4.2 Fauna species recorded

A total of 48 indigenous fauna species (three mammals, 39 birds, 3 reptiles, and three frogs) and 13 introduced fauna species (five mammals and eight birds) were recorded within Contract Area 81 during the current field assessment (Appendix 4, Table A4.1). The AVW contains records of 168 fauna species (148 indigenous and 20 introduced) from the defined search area comprising the study area and a 5 km buffer (Appendix 4, Table A4.2).

3.4.3 Threatened fauna species

A total of five nationally threatened fauna species and 12 state significant fauna species have been previously recorded within 5 km of Contract Area 81 or were recorded during the current field investigation (Table 8; Figure A3a–i).

3.4.3.1 Nationally significant species

Records of three of the nationally threatened species (Plains-wanderer, Striped Legless Lizard and Growling Grass Frog) were sourced from the AVW or DEWHA database and the remaining two species (Golden Sun Moth and Grey-headed Flying-fox *Pteropus poliocephalus*) were identified from previous reports or were recorded during the current field investigation within Contract Area 81 (Table 8; Figure A3a–i). Golden Sun Moth has been recorded to the south-east of Contract Area 81 within the Truganina South Precinct by Brett Lane & Associates (2010). Grey-headed Flying-fox was recorded within Contract Area

81 during the current field investigation. No other nationally significant species were recorded during the current field assessment.

This assessment does not include targeted surveys for Growling Grass Frog and Golden Sun Moth. They are being undertaken in the Sub-regional Surveys required under the Strategic Assessment. A Sub-regional Strategy will be developed for these species.

The EPBC Protected Matters Search tool predicts the occurrence of, or suitable habitat for an additional eight nationally significant species within a 5 km radius of the study area (Table 8).

3.4.3.2 State significant species

The AVW and/or Birds Australia database contain records for 12 state significant fauna species within 5km of Contract Area 81. One of these species, Eastern Great Egret Egret, was recorded within Contract Area 81 during the current field assessment. An additional two species of state significance, Baillon's Crake *Porzana pusilla* and Lewin's Rail *Lewinia pectoralis*, have no previous records within 5km of the study area but have the potential to occur based on the presence of suitable habitat recorded during the current field assessment.

The EPBC Protected Matters Search tool also predicts the occurrence of, or suitable habitat for one additional state significant species (White-bellied Sea Eagle *Haliaeetus leucogaster*) within a 5 km radius of the study area (Table 8).

3.4.3.3 Other conservation categories

In addition to the 13 nationally significant species and 15 state significant species that have previously been recorded or are predicted to occur within 5kms of the study area, the AVW and /or Birds Australia database contain records for eight species that are listed as near threatened under the DSE Advisory List (2005; Table 8). Of these eight species, four are considered to have a medium or higher likelihood of occurrence within the study area (Brown Quail *Coturnix ypsilophora*, Little Button-quail *Turnix velox*, Latham's Snipe *Gallinago hardwickii* and Fat-tailed Dunnart *Sminthopsis crassicaudata*).

Fauna species has state significance when it is listed as threatened (critically endangered, endangered or vulnerable) in Victoria under the DSE Advisory List (DSE 2007c). Fauna species listed as near threatened or data deficient are listed in Table 8 below, however in accordance with advice from DSE they are not considered to be at the same level of risk as those species assigned higher categories of threat. These species are not required to be considered for best or

remaining 50% of habitat under Victoria's Native Vegetation Framework, and are therefore not discussed in further detail within this report.

Table 8. Significant fauna species occurring or predicted to occur within 5 km of the contract area**.**

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

Table 8.

Scientific Name	Common Name	Conservation status			Database	Other source	Current survey	Total number of documented records*	Likelihood of occurrence**	Habitat
		EPBC	DSE	FFG						
Nationally significant										
Synemon plana	Golden Sun Moth	CE	cr	L	DEWHA	BLA (2009)		1	High	Grassland
Lathamus discolor	Swift Parrot	EN	en	L	DEWHA			0	Low	Eucalypt woodland
Anthochaera phrygia	Regent Honeyeater	EN	cr	L	DEWHA			0	Negligible	Eucalypt woodland
Dasyurus maculatus	Spot-tailed Quoll	EN	en	L	DEWHA			0	Negligible	Forest
Isoodon obesulus obesulus	Southern Brown Bandicoot	EN	nt		DEWHA			0	Negligible	Grassland / Woodland / Heathland
Tympanocryptis pinguicolla	Grassland Earless Dragon	EN	cr	L	DEWHA			0	Low	Grassland / Grassy Woodland
Pedionomus torquatus	Plains-wanderer	VU	cr	L	AVW			1	Medium	Grassland
Rostratula australis	Australian Painted Snipe	VU	cr	L	DEWHA			0	Low	Wetlands / riparian areas
Pteropus poliocephalus	Grey-headed Flying-fox	VU	vu	L	DEWHA		1	1	Recorded	Eucalypt woodland / various
Delma impar	Striped Legless Lizard	VU	en	L	DEWHA, AVW			17	High	Grassland / escarpments
Litoria raniformis	Growling Grass Frog	VU	en	L	DEWHA, AVW			10	High	Wetlands / riparian areas
Prototroctes maraena	Australian Grayling	VU	vu	L	DEWHA			0	Not assessed	Aquatic (rivers, creeks)
Galaxiella pusilla	Dwarf Galaxias	VU	vu	L	DEWHA			0	Not assessed	Aquatic (rivers, creeks, wetlands)
State significant										

Table 8.

Scientific Name	Common Name	Conservation status			Database	Other source	Current survey	Total number of documented records*	Likelihood of occurrence**	Habitat
		EPBC	DSE	FFG						
Turnix pyrrhothorax	Red-chested Button-quail		vu	L	BA			2	Medium	Grassland / Grassy Woodland
Lewinia pectoralis	Lewin's Rail		vu	L		**		0	Medium	Wetlands / riparian areas
Porzana pusilla	Baillon's Crake		vu	L		**		0	Medium	Wetlands / riparian areas
Platalea regia	Royal Spoonbill		vu		AVW. BA			4	Medium	Wetlands / riparian areas
Ardea modesta	Eastern Great Egret		vu	L	AVW, BA		1	6	Recorded	Wetlands / riparian areas
Ardea intermedia	Intermediate Egret		cr	L	AVW			1	Low	Wetlands / riparian areas
Egretta garzetta	Little Egret		en	L	AVW, BA			6	Medium	Wetlands / riparian areas
Botaurus poiciloptilus	Australasian Bittern		en	L	AVW			1	Low	Wetlands / riparian areas
Anas rhynchotis	Australasian Shoveler		vu		AVW			2	Low	Wetlands / riparian areas
Aythya australis	Hardhead		vu		AVW			1	Low	Wetlands / riparian areas
Haliaeetus leucogaster	White-bellied Sea-Eagle		vu	L	DEWHA			0	Negligible	Coastal, lakes, riparian areas
Falco subniger	Black Falcon		vu		AVW, Ba			4	High	Grassland / Grassy Woodland
Calidris tenuirostris	Great Knot		en	L	AVW			1	Negligible	Coastal / Estuarine
Xenus cinereus	Terek Sandpiper		en	L	AVW			1	Negligible	Coastal / Estuarine
Sterna albifrons	Little Tern		vu	L	AVW			1	Negligible	Coastal / Marine
Other conservation categories (Near Threatened or data deficient)										
Chrysococcyx osculans	Black-eared Cuckoo		nt		AVW			1	Low	Woodlands
Coturnix ypsilophora	Brown Quail		nt		AVW			3	Medium	Grassland / Grassy Woodland
Turnix velox	Little Button-quail		nt		BA			1	Medium	Grassland / Grassy Woodland
Gallinago hardwickii	Latham's Snipe		nt		AVW, BA			4	Medium	Wetlands / riparian area
Circus assimilis	Spotted Harrier		nt		AVW, BA			7	Low	Grassland / Grassy Woodland
Calidris subminuta	Long-toed Stint		nt		AVW			1	Negligible	Wetlands
Calidris alba	Sanderling		nt		AVW			5	Negligible	Coastal / Estuarine
Sminthopsis crassicaudata	Fat-tailed Dunnart		nt		AVW			7	High	Grassland / Grassy Woodland

National significance – CE (critically endangered), EN (endangered), VU (vulnerable). State significance – ce (critically endangered), en (endangered), vu (vulnerable), nt (near threatened), L (*Flora and Fauna Guarantee Act* listed). * from review data only, refer to Figure 3 for records from the current assessment. **Determined as likely to occupy the contract area by Biosis Research. Rationale for likelihood of occurrence is largely based on the amount and quality of habitat present within the contract area. Refer to Section 3.4.4.

3.4.4 Best or remaining 50% habitat for threatened fauna species

Of the 13 nationally significant species and 15 state significant species that have been recorded or are predicted to occur within 5km of the study area. The general habitat requirements are discussed in Table 9 for those that are considered to have a medium or higher likelihood of occurrence within the contract area (Appendix A2.2).

Table 9. Description of broad habitat requirements for threatened fauna species occurring or predicted to occur within Contract Area 81.

Species	Likelihood of occurrence	Description
Plains Wanderer *Pedionomus torquatus* (EPBC listed – Nationally significant)	Medium	The Plains-wanderer is a small ground-dwelling bird that occupies high quality native grassland with a sparse open structure. Due to a range of threatening processes, the species has declined markedly across most of its range. Populations are now patchily distributed throughout south-west Queensland, the Riverina district of NSW and north-central Victoria. A targeted survey for Plains-wanderer was undertaken as part of the current assessment for Contract Area 81. The results of these surveys and the values of the site to Plains-wanderer are discussed in further detail below.
Grey-headed Flying-fox *Pteropus poliocephalus* (EPBC listed – Nationally significant).	Recorded	The Grey-headed Flying-fox is a large bat that feeds on the nectar, fruits and leaves of many different plants. The species is highly mobile and will regularly travel up to 50km away from roost sites while foraging. One Grey-headed Flying-fox was recorded flying overhead while conducting a nocturnal Plains-wanderer survey in the south-east corner of Contract Area 81 during the current assessment. While it is possible that individuals will fly over the study area and occasionally forage within planted trees, the study area is not considered to contain any critical habitat for the foraging and roosting requirements of the Grey-headed Flying-fox.

Table 9. Description of broad habitat requirements for threatened fauna species occurring or predicted to occur within Contract Area 81.

Species	Likelihood of occurrence	Description
Striped Legless Lizard *Delma impar* (EPBC listed – Nationally significant).	High	The Striped Legless Lizard is a cryptic fossorial reptile that inhabits native and modified grasslands, where sufficient cover is available to provide protection from predators. The species has previously been recorded within Contract Area 81 in 1989 at Truganina Cemetery, the nearby recreation reserve and areas immediately to the north (Barlow 1989). There are also a number of recent records close to the study area, including two records from Ravenhall in 2009 (Biosis Research 2010b), and four records from Deer Park in 2003 and 2004. Suitable habitat for Striped Legless Lizard exists within the native grassland and modified rocky grasslands present within Contract Area 81. The likelihood of Striped Legless Lizard occurring within the study area is considered to be high.
Growling Grass Frog *Litoria raniformis* (EPBC listed – Nationally significant).	High	The Growling Grass Frog occupies a variety of permanent and semi-permanent waterbodies which generally contain abundant submerged and emergent vegetation. The species will also occupy slow-moving sections of creeks and rivers. Individuals are capable of dispersing over large distances, traversing a variety of terrestrial and aquatic habitats while searching for suitable wetlands. Habitat connectivity is therefore important for this species to persist in the long-term. There are previous records of Growling Grass Frog both within Contract Area 81 and from within a 5km radius. The species was recorded in 1991 as being widespread throughout the upper reaches of Skeleton Creek, including the present study area (Schulz et al 1991). There are also a number of recent records to the south of the study area. In November 2003, Biosis Research conducted a flora and fauna assessment of a proposed pedestrian bridge site on Skeleton Creek, Grevillea Crescent, which is approximately 3km south of Contract Area 81. A total of 4 adult Growling Grass Frogs were recorded within Skeleton Creek during this assessment (Biosis Research 2004). All farm dams and deeper pools located within Dry and Skeleton creeks contain very little to no aquatic and fringing vegetation. The creeklines within the study area in their present state have potential to be used as a corridor for the movement and dispersal of individuals from southern sections of Skeleton Creek. If grazing pressure was reduced and appropriate fringing and aquatic vegetation re-established, the deeper pools located along creeklines within the study area could potentially provide suitable breeding habitat for this species. Individuals may also use terrestrial habitat within the contract area to move across the landscape.

Table 9. Description of broad habitat requirements for threatened fauna species occurring or predicted to occur within Contract Area 81.

Species	Likelihood of occurrence	Description
Golden Sun Moth *Synemon plana* (EPBC listed – Nationally significant).	High	The Golden Sun Moth is a small diurnal moth that is characteristically associated with grasslands that have a high cover of native Wallaby grasses (Austrodanthonia sp). However, recent surveys around Melbourne have found that Golden Sun Moth also inhabit grasslands supporting predominately introduced vegetation (Gilmore et al. 2008). During the 2009 flight season, Biosis Research undertook surveys at 20 parcels within Contract Area 81. One parcel was surveyed three times, nine were surveyed twice and ten were surveyed once (Biosis Research 2010). No GSM were recorded in any of these parcels, however a minimum of four surveys are required (as per EPBC Act Policy Statement 3.12: Significant Impact Guidelines for the critically endangered Golden Sun Moth) in order to accurately determine whether the species is present at a particular site. An assessment conducted by Brett Lane and Associates in grassland areas within the Truganina South Precinct detected a population of Golden Sun Moth within 200 metres of the south-east corner of the study area in 2008 (Brett Lane & Associates 2009). There are no previous AVW records for Golden Sun Moth within 5km of the study area. Suitable habitat for Golden Sun Moth exists within the native and modified grassland areas present within Contract Area 81 (Figure 6).
Red-chested Button-quail *Turnix pyrrhothorax* (DSE Advisory List – State significant).	Medium	The Red-chested Button-quail is a small nocturnal bird that occurs in grasslands and grassy woodlands of temperate and tropical Australia. In south-eastern Australia they prefer dense and often damp grasslands with very little to no tree cover. Records of this species from within Victoria are rare and scattered. There are no previous AVW records of the species from within the study area, however there are two recent Birds Australia database records from 2004 at the Boral Quarry site located approximately 4km to the north of Contract Area 81. The dense native grasslands within Contract Area 81 provide potentially suitable habitat for Red-chested Button-quail, although at most it is only likely to be a rare to vagrant visitor.
Lewin's Rail *Lewinia pectoralis* and **Baillon's Crake** *Porzana pusilla* (DSE Advisory List – State significant).	Medium	Lewin's Rail and Baillon's Crake are small waterbirds that occupy a range of wetland habitats with dense fringing and emergent vegetation. While there are no records for either species from within the study area, there are a small number of AVW records further to the south from the late 1980s and early 1990s. Waterbodies within Contract Area 81 in their current condition contain very little fringing and emergent vegetation, however with increased rainfall and reduced grazing pressure these areas could potentially provide suitable habitat for these two species.

Table 9. Description of broad habitat requirements for threatened fauna species occurring or predicted to occur within Contract Area 81.

Species	Likelihood of occurrence	Description
Royal Spoonbill *Platalea regia*, **Little Egret** *Egretta garzetta* and **Eastern Great Egret** *Ardea modesta* (DSE Advisory List – State significant).	Medium (Eastern Great Egret recorded)	These species prefer the shallows of wetlands for foraging activities. Occasionally they will forage in small waterways or wet grassland areas. The farm dams and waterways within the study area provide only poor foraging habitat for these wading waterbirds. On occasions, small numbers of some of these species may forage within the farm dams, wetlands and watercourses that occur within the study area. One Eastern Great Egret was observed flying from one of the large waterholes located on the southern section of Skeleton Creek during the current assessment.
Black Falcon *Falco subniger (DSE Advisory List – State significant).*	High	The Black Falcon occurs in open wooded lands and large open plains containing low vegetation including grasslands, pasture and croplands across arid and semi-arid zones. The species is often associated with terrestrial wetlands, particularly in arid areas. There is one AVW record of the species within the study area from 1999. There is also one additional AVW record for the species from within 5km of the study area in 2003. Black Falcons are partly migratory and are capable of successfully foraging over large areas of open land. Therefore, the species is likely to occasionally utilise the open grassland, pasture and cropland within the study area as foraging habitat.

Table 10 provides detail of whether native vegetation zones delineated for assessing vegetation condition (see Table 7) constitute the best 50% or remaining 50% of habitat for relevant threatened species (in Table 8) within the Victorian Volcanic Plain bioregion; in sense of the Native Vegetation Framework.

Table 10: Determination of best or remaining 50% of habitat for threatened fauna species within the bioregion. Letters under each species are decision pathways in Table 2 of DSE (2007). NFC – No further consideration. Rem. – remaining 50% of habitat within the bioregion, BEST – best 50% of habitat within the bioregion.

Property PFI	Site identifier	Zone	Habitat Zone	EVC description	Grey-headed Flying-fox		Eastern Great Egret		Plains-wanderer		Striped Legless Lizard		Growling Grass Frog		Golden Sun Moth		Red-chested Button-quail		Lewin's Rail		Baillon's Crake		Royal Spoonbill		Little Egret		Black Falcon	
21448	1	A	1	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
21448	2	A	2	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
21448	4	A	3	Plains Grassy Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC		
21448	5	A	4	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
21448	6	A	5	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
21448	7	A	6	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
21448	8	A	7	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
21448	9	A	8	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
21448	13	A	9	Plains Grassy Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC		
21448	18	A	10	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
21448	19	A	11	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
21448	20	A	12	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.
50258532	1	A	13	Plains Sedgy Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NFC		
50258541	1	A	14	Brackish Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC		
50258569	1	A	15	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
50258569	2	A	16	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
52475755	1	A	17	Stony Knoll Shrubland	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
52475756	3	A	18	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	BEST	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
52475756	3	B	19	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	BEST	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
52934928	1	A	20	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
52934928	2	A	21	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
52934928	3	A	22	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53040321	1	A	23	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53040321	3	A	24	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53040321	5	A	25	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53040321	8	A	26	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53040321	12	A	27	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53040321	13	A	28	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53040321	14	A	29	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53092076	1	A	30	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53092076	1	B	31	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53092076	4	A	32	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53092076	5	A	33	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
53092076	6	A	34	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
206068192	1	A	35	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
206068192	3	A	36	Aquatic Herbland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NFC		
206068192	4	A	37	Plains Sedgy Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NFC		
207317976	1	A	38	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	B	39	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	C	40	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	D	41	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	E	42	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	F	43	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	G	44	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	H	45	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	I	46	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	J	47	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	K	48	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	L	49	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	1	M	50	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	2	A	51	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	3	A	52	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	3	B	53	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	4	A	54	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	5	A	55	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	6	A	56	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	7	A	57	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	8	A	58	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
207317976	10	A	59	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
208396502	1	A	60	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
208396502	2	A	61	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
208396502	3	A	62	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
208396502	4	A	63	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
208396502	5	A	64	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
208396502	6	A	65	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
208396502	7	A	66	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
208396502	8	A	67	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	1	A	68	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	1	B	69	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	1	C	70	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	1	D	71	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	1	E	72	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	1	F	73	Stony Knoll Shrubland	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	1	G	74	Plains Sedgy Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NFC		
211562023	4	A	75	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	5	A	76	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	8	A	77	Plains Grassy Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC		
211562023	9	A	78	Plains Grassy Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC		
211562023	10	A	79	Plains Grassy Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC		
211562023	12	A	80	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	14	A	81	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	15	A	82	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	BEST	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	17	A	83	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	18	A	84	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	19	A	85	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	20	A	86	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	22	A	87	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	23	A	88	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	24	A	89	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	25	A	90	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	27	A	91	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	28	A	92	Plains Sedgy Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	ADF	Rem.	ADF	Rem.	AD	NFC		
211562023	29	A	93	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	30	A	94	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	31	A	95	Stony Knoll Shrubland	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	32	A	96	Brackish Wetland	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC		
211562023	33	A	97	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
211562023	34	A	98	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
R207317976	3	A	99	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
R208396502	2	A	100	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
R208396502	3	A	101	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
R211562023	2	A	102	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
R211562023	4	A	103	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		
R211562023	6	A	104	Plains Grassland Heavier Soils	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.	AD	NFC	AD	NFC	AD	NFC	AD	NFC	AD	NFC	ADF	Rem.		

3.4.5 Targeted fauna survey

Plains-wanderer habitat and targeted survey results

Areas of native grassland within the study area were assessed to determine their suitability for Plains-wanderer using the Plains-wanderer Habitat Management Guide (NPWS 2002). Additionally, an expert on the species visited the study area on 8 October 2009 to determine areas suitable for survey (Baker-Gabb 2009). Ideal (primary) Plains-wanderer habitat typically occurs in sparse native grassland on hard red-brown soils and is characterised by having 50% bare ground, 10% fallen leaf litter and the remaining 40% made up of herbs and grass tussocks (NPWS 2002).

No areas of ideal (Primary) Plains-wanderer habitat were identified within Contract Area 81 during the current assessment. There were several small areas that contained habitat with a structure that was 'slightly too dense' for Plains-wanderer, particularly in the two properties that are located in the far south-east corner of the study area. These areas were characterised by a high cover of grasses and 25–40% cover of bare ground. Plains-wanderers are less frequent in such areas, but may still occur (NPWS 2002, Baker-Gabb 2009). Most of the native grassland areas within the study area had a habitat structure that was 'much too dense' for Plains-wanderer, with very little cover of bare ground and dense tussocks that had an average height greater than that tolerated by the species. Plains-wanderers are typically absent from these areas. Survey for Plains-wanderer focused on areas with a habitat structure that was either 'slightly too dense' or 'much too dense'. The rest of the study area was deemed negligible habitat and no targeted survey for the species was undertaken in these areas.

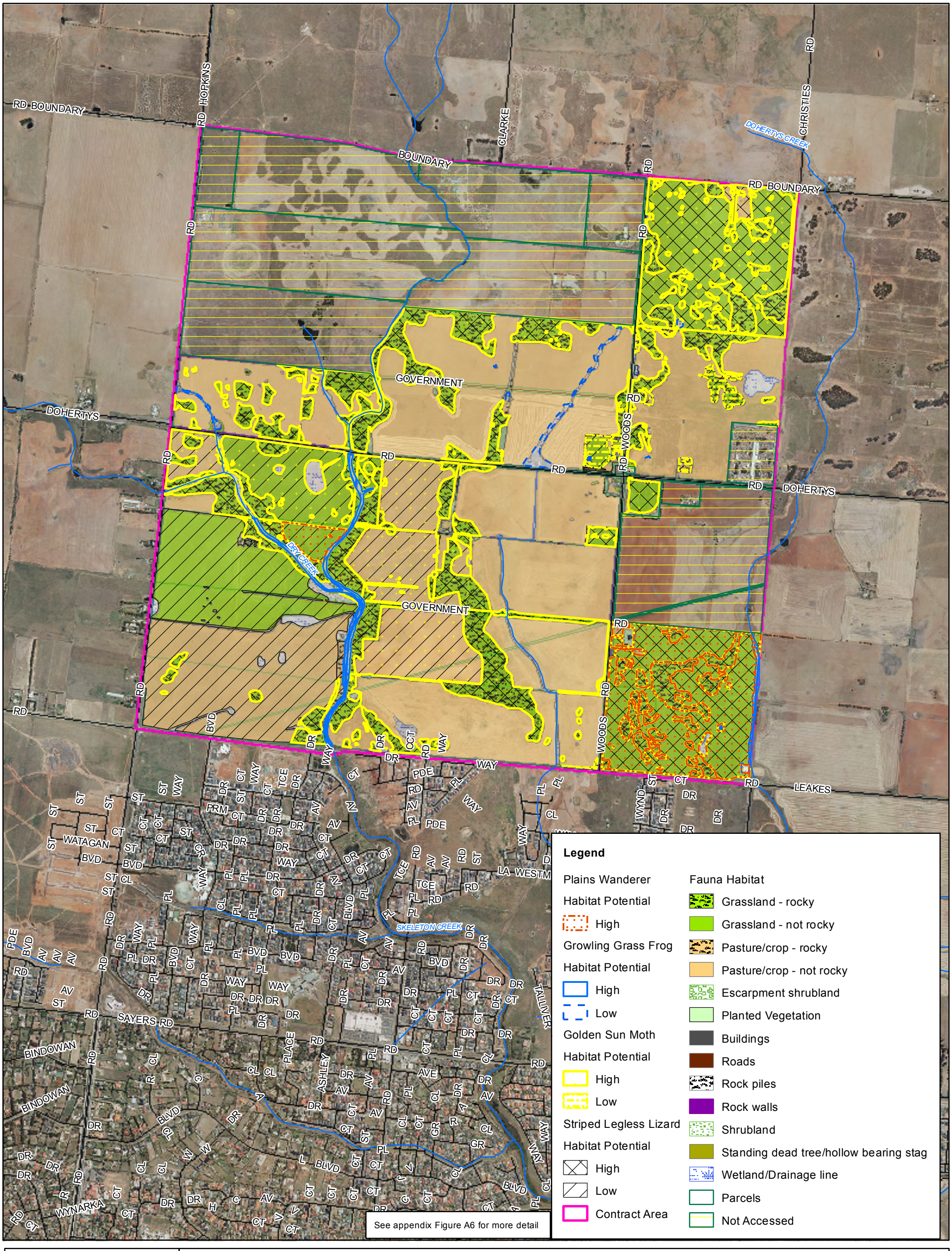
Plains-wanderer surveys were undertaken on 13, 21 January 2010 and 8, 9, 11 February 2010. No Plains-wanderers were recorded during the current targeted surveys within Contract Area 81 (Table 11). There is a previous BA record of Plains-wanderer from 2004 within a 5km radius of Contract Area 81. The location of this record was the Deer Park Quarry Site 11, which is located off Hopkins Road and to the south of the Western Freeway. There are no other recent records for the species within 5 km of the study area. Given the lack of high quality habitat within Contract Area 81 and the scarcity of recent records from the surrounding area, it is considered unlikely that Plains-wanderers make significant use of the site. While there is potential for individuals to occasionally utilise grassland habitat within the contract area, these areas are considered unlikely to support a resident population of the species.

Table 11: Results of targeted Plains-wanderer surveys within Contract Area 81.

Date	Property PFI	Staff	Start time	End time	Temperature	Wind	Moon	Cloud cover	Rain	Plains-wanderers observed	Other species observed
13/01/2010	22475756, 50258569, 211562023, 208396502, 207317976	Clare McCutcheon, Lindsey Heffernan, Daniel Gilmore, Katrina Sofo	21:30	3:15	Cold <15° C	Light	No moon	50% cloud	Mist	None	Stubble Quail, Australasian Pipit, Banded Lapwing, European Rabbit, Red Fox,
21/01/2010	22475756, 50258569, 211562023, 208396502, 207317976	Ian Smales, Lindsey Heffernan, Mark Venosta, Anthony Byrne	21:20	2:55	Mild 15–25° C	Calm	Quarter moon	Overcast	None	None	Stubble Quail, Australasian Pipit, Feral cat
8/02/2010	22475756, 50258569, 211562023, 208396502, 207317976	Clare McCutcheon, Mark Venosta, Katrina Sofo, Daniel Gilmore	21:40	3:20	Mild 15–25° C	Calm	No moon	None	None	None	Stubble Quail, Australasian Pipit, European Skylark, Black-fronted Dotterel, Southern Bullfrog, Spotted Marsh Frog, White-striped Freetail Bat, Feral Cat, European Rabbit
9/02/2010	50258569, 208396502, 207317976	Clare McCutcheon, Mark Venosta, Katrina Sofo, Daniel Gilmore	21:40	3:00	Mild 15–25° C	Calm	No moon	Overcast	None	None	Stubble Quail, Australasian Pipit, European Skylark, Red Fox
11/02/2010	50258569, 207317976, 208396502,	Mark Venosta, Anthony Byrne, Katrina Sofo, Daniel Gilmore	21:30	23:30	Mild 15–25° C	Calm	No moon	Overcast	None	None	Stubble Quail, Australasian Pipit, Banded Lapwing, Masked Lapwing, Grey-headed Flying-fox Southern Bullfrog,

Bird census surveys

Bird census surveys were conducted during the early morning and late afternoon at three sites within Contract Area 81 on the 2 and 3 of February 2010 (Figure 2). A total of 19 bird species was recorded (14 native and five introduced) (Table A4.1 and A4.2). Only one additional species was recorded during the bird census survey that was not recorded during the general fauna survey (Restless Flycatcher *Myiagra inquita*).



Legend

Plains Wanderer
Habitat Potential
- High

Growling Grass Frog
Habitat Potential
- High
- Low

Golden Sun Moth
Habitat Potential
- High
- Low

Striped Legless Lizard
Habitat Potential
- High
- Low

Contract Area

Fauna Habitat
- Grassland - rocky
- Grassland - not rocky
- Pasture/crop - rocky
- Pasture/crop - not rocky
- Escarpment shrubland
- Planted Vegetation
- Buildings
- Roads
- Rock piles
- Rock walls
- Shrubland
- Standing dead tree/hollow bearing stag
- Wetland/Drainage line
- Parcels
- Not Accessed

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VICTORIA 3207

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

Figure 6: Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Date: 30 October 2010
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File number: 8059
Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig 6 Fauna habitat CA81.mxd

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4.0 BIODIVERSITY LEGISLATION AND GOVERNMENT POLICY

Biodiversity legislation and government policy that is relevant to Contract Area 81 are 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).

An agreement under the Strategic Assessment provision of the EPBC Act (Section 146(1) Agreement, Part 10 Strategic Assessment (EPBC Act)) was made between the Commonwealth of Australia and the State of Victoria

on 16th June 2009. The Strategic Assessment provides an opportunity to align State and Commonwealth requirements and approval standards for issues of common interest (DSE 2009c).

NES matters relevant to Contract Area 81

There are three matters of NES 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 EPBC Act are discussed in Section 3.1.2 and listed in Table 2. In summary, two listed species (Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* and Button Wrinklewort *Rutidosis leptorhynchoides*) were recorded within Contract Area 81 (Figure A3). There is also suitable habitat within Contract Area 81 for ten additional species of national significance (Table 2). The presence and extent of these species on some parts of the contract area are uncertain as not all land was accessible at the time of this assessment (Figure A2).

Listed fauna species: Fauna species listed under the Act are discussed in Section 3.4.4 and listed in Table 8. In summary one listed species, Grey-headed Flying Fox was recorded within Contract Area 81 (Figure A3). Four other species have at least a medium to high likelihood of occurring within the contract area: Golden Sun Moth (high) Plains-wanderer (medium), Striped Legless Lizard (high) and Growling Grass Frog (high).

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 4, Table A4.3 and summarised below:

- Fourteen migratory species have previous records within 5km of Contract Area 81 in the AVW and/or Birds Australia database.
- Eight additional species have no previous records but are predicted to occur, or their habitat is predicted to occur, within 5 km of the contract area (EPBC Protected Matters Search tool).

While some of these species would be expected to use the study area on occasions, and some of them may do so regularly, 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. The lower reaches of Skeleton Creek are within the Port Phillip Bay (western shoreline) and Bellarine Peninsula Ramsar site, however this is greater than 10km downstream of Contract Area 81. Significant impacts on the Ramsar site are not expected provided appropriate aquatic mitigation measures are followed.

Implications for Contract Area 81

The land within Contract Area 81 contains matters of NES which would trigger the EPBC Act in the event an action required an environmental approval under the Act.

An agreement under the Strategic Assessment provision of the EPBC Act (Section 146(1) Agreement, Part 10 Strategic Assessment (EPBC Act)) was made between the Commonwealth of Australia and the State of Victoria on 16th June 2009. The Strategic Assessment provides an opportunity to align State and Commonwealth requirements and approval standards for issues of common interest (DSE 2009c).

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. Protected plants parts include living (e.g. flowers, seeds, shoots, roots) and non-living plant material (e.g. bark, leaves, other litter) (www.dse.vic.gov.au).

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 (www.dse.vic.gov.au).

Implications for Contract Area 81

Much of the land in Contract Area 81 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 Contract Area 81. This community is mapped as *Heavier-soils* Plains Grassland on Figure A4.

Parts of Contract Area 81 that are public land require a permit from DSE under the FFG Act to remove listed and protected flora species. Listed threatened and protected species recorded in Contract Area 81 during the current assessment are identified in Appendix 2, Table A2.1. All species that are component of the Western (Basalt) Plains Grassland Community are also protected under the Act.

Precinct planning for Contract Area 81 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 Catchment and Land Protection Act 1994

The purpose of the *Catchment and Land Protection Act* 1994 (CaLP Act) in part is to set up a framework for integrated management and protection of catchment and to set up a system of controls of noxious weeds and pest animals.

Implications for Contract Area 81

Landowners have an obligation to control regionally controlled weed species such as Serrated Tussock, Chilean Needle-grass, African Box-thorn and Horehound. The distribution of these species and implications of planning decisions on the spread of these species must be given due consideration.

4.2.3 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 Vegetation 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 Contract Area 81

It is possible that some or all of Contract Area 81 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.

4.2.4 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.

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 Contract Area 81

The net gain implications for native vegetation within Contract Area 81 are not discussed within this report.

4.2.5 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 Contract Area 81

A permit will be required if habitat is to be removed 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.

4.2.6 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 waterways 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 Contract Area 81

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.

4.2.7 Environment Effects Act 1978

The Environmental Effects Act 1978 is the legislation in Victoria which is used

by the Minister for Planning to make a decision on the need for an Environmental Effects Statement (EES) for projects with potentially significant environmental effects. The Act enables Ministers, local government and statutory authorities to make an informed decision about whether a project with potentially significant environmental impact should proceed. If required by the Minister for Planning, an EES will need to be prepared by the proponent for the development site.

4.2.8 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 Contract Area 81

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.

4.2.9 Victoria's Biodiversity Strategy

Actions to ensure biodiversity is managed in a manner that is both ecologically sound and sustainable is identified in *Victoria's Biodiversity – Directions in Management* (NRE 1997). The key goal of that Strategy is the principle of 'no net loss' of native vegetation. The native vegetation goals of the strategy are implemented through Victoria's Native Vegetation Management Framework (NRE 2002).

Implications for Contract Area 81

The net gain implications for native vegetation within Contract Area 81 are not discussed within this report. Other objectives of the strategy should be considered during the planning phase.

4.3 Local

4.3.1 Local planning scheme matters

Some local government planning zones and overlay relate directly to biodiversity matters. Most land within the contract area falls under Melton City Council's Green Wedge Zone. There is also an Environmental Significance Overlay covering some of Contract Area 81. The objectives of Melton City Council's zoning and overlays can be found at http://www.dse.vic.gov.au/planningschemes/.

Implications for Contract Area 81

Planning applications within areas covered by these overlays will need to consider the objectives of these overlays.

Clause 52.16 applies to land where a native vegetation precinct plan, corresponding to that land, is incorporated into this scheme. Where an NVPP applies, a permit is required to remove, destroy or lop native vegetation, except where it is in accordance with that NVPP. Though an NVPP can stand alone, it may form part of a more general strategic or precinct structure plan. The purpose of an NVPP is to protect and conserve native vegetation, to reduce the impact of land and water degradation and provide habitat for plants and animals, and to enable other areas of native vegetation to be removed in accordance with the NVPP. The NVPP may require specified works to be provided or specified payments to be made to offset the removal, destruction or lopping of native vegetation. Where an NVPP is incorporated and listed in the schedule to clause 52.17 Native Vegetation, no permit is required under Clause 52.17.

5.0 KEY BIODIVERSITY ISSUES AND IMPLICATIONS IDENTIFIED FROM THE ASSESSMENT

The future proposed land use within Contract Area 81 may result in significant impacts to existing biodiversity values by (amongst other factors):

- the permanent removal of some native species and their habitats;
- the fragmentation of native species populations into genetically and geographically isolated smaller populations,
- changes to wildlife behaviour (e.g. changes to migratory routes);
- increased invasion by exotic species and garden escapes;
- disturbance to soil; and
- landscape level changes to water supply, movement and quality.

It is important that biodiversity values within Contract Area 81 be maintained in the long term and that more mobile species (particularly rare or threatened species) should have access to a network of suitable environments connected through a series of habitat corridors.

The Victorian Volcanic Plain supports nationally significant ecosystems and species values such as Natural Temperate Grasslands, Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens*, Golden Sun Moth *Synemon plana* (listed as critically endangered under the EPBC Act), Striped Legless Lizard *Delma impar*, Plains-wanderer *Pedionomus torquatus*, Large-fruit Fireweed *Senecio macrocarpus*, River Swamp Wallaby-grass *Amphibromus fluitans* and Growling Grass Frog *Litoria raniformis*. These values remain due to the persistence of native vegetation and habitats within a predominantly agricultural landscape.

At a regional level, there are significant landscape components within Contract Area 81 such as the biosites Truganina Cemetery and Skeleton Creek.

5.1 Opportunities to reduce potential impacts

The following general recommendations have been made regarding opportunities to reduce potential impacts to biodiversity values within Contract Area 81:

- Retain corridors of vegetation for the movement of fauna species, providing connectivity for flora species populations and for the fauna species on which some plant species rely for pollination and dispersal. Priority connections include the Skeleton Creek corridor. Plains Grassland in the south-eastern corner of the contract area is also likely to provide important habitat connectivity with the same EVC on private land further south (outside of the contract area).

- Maintain and protect wetland vegetation within the contract area. Incorporate these wetland areas into development designs ensuring that natural hydrology is maintained. That is, ephemeral and seasonal wetlands should be maintained so that they are inundated following sufficient rainfall, and allowed to dry out over summer. Therefore, they would not be suitable for stormwater runoff collection or treatment.

- Retain all High and Very High conservation significance native vegetation.

- Retain and protect all sites containing populations of rare or threatened plant taxa.

- Prepare translocation plans for rare or threatened plant taxa which will be otherwise displaced by development.

- Maintain and fence a minimum 50 m buffer between all retained native vegetation / waterways and land developed for residential use or other purposes.

5.2 Opportunities to protect and enhance local and regional biodiversity values

The following general recommendations have been made regarding opportunities to protect and enhance biodiversity values within Contract Area 81:

- Prepare conservation management plans for the ongoing management of native vegetation. This should include the provision for ecological burning in Plains Grassland. Allowances should be made for this when planning residential areas. Management plans allow for the formulation of management actions, timing and targets which can be used to measure the success of the action. Without such plans, management of retained native vegetation is unlikely to result in the maintenance and appropriate protection of biodiversity values identified during this assessment.

- Prepare conservation management plans for Spiny Rice-flower, Button Wrinklewort and Arching Flax-lily for the contract area. Undertaken monitoring of populations during and following development. Management plans with appropriate actions, timing and targets will ensure that management within these species area of occupancy is consistent with ongoing conservation of the species.

- As there are no current data regarding the distribution of Striped Legless Lizard within the contract area, it is recommended that salvage for this species takes place during an appropriate season prior to construction

works. This should be take place in any area of Plains Grassland or associated vegetation.

- Prepare a roadside vegetation management plan for road reserves containing remnant native vegetation. Identify no-go zones during the design phase to limit construction access. Investigate alternative alignments for road upgrades.
- Arrange access into areas that were unable to be assessed during the current assessment so that biodiversity values can be quantified.

6.0 CONCLUSION

The areas assessed within Contract Area 81 as part of the GAA biodiversity assessment contain a significant area of native vegetation. Of the 1075 ha in the contract area, 738.2 ha of land was assessed and **217.87 hectares** of native vegetation in habitat zones were mapped within accessible areas of Contract Area 81. This comprises **78.22 habitat hectares** (hha) of the endangered EVCs:

- Plains Grassland (210.08ha),
- Plains Grassy Wetland (4.01 ha),
- Plains Sedgy Wetland (0.43 ha),
- Stony Knoll Shrubland (2.75 ha),
- Aquatic Herbland (0.04 ha) and
- Brackish Wetland (0.56 ha).

All of the Plains Grassland and Plains Grassy Wetland within this area meet the criteria for the EPBC Act listed ecological community *Natural Temperate Grassland of the Victorian Volcanic Plain* (critically endangered). All Plains Grassland is Western (Basalt) Plains Grassland Community listed under the FFG Act. In addition, the area provides valuable habitat for nationally significant species such as Spiny Rice-flower, Button Wrinklewort, Striped Legless Lizard, Growling Grass Frog and Golden Sun Moth. A number of state significant species have also been recorded within the contract area, or have the potential to occur.

This assessment does not include targeted surveys for Growling Grass Frog and Golden Sun Moth as they are being undertaken in the Sub-regional Surveys required under the Strategic Assessment. A Sub-regional Strategy will be developed for these species.

A number of state significant species have also been recorded within the contract area, or have the potential to occur. A number of state significant species have also been recorded within the contract area, or have the potential to occur.

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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

Contract Area 81 flora data

A.2.1. Flora Results

Flora species (137 indigenous species, 101 introduced species) recorded within Contract Area 81 during the current assessment.

Significance of species (Source: DSE Flora Information System which follows DSE advisory lists)

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)
K	Listed as poorly known in Australia (Walsh & Stajsic 2007)

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

e	Endangered
v	Vulnerable
r	Rare
k	Poorly known in Victoria
L	Listed as threatened under the Flora and Fauna Guarantee Act 1988
p	Protected species on public land listed 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 in Contract Area 81 during the current investigation 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 under-sampled in the available data.

All indigenous species have at least local significance

sp	Species (singular)
spp.	Species (plural)
s.s.	*sensu stricto* (in the stricter sense)
s.l.	*sensu lato* (in the broader sense)
sp. aff.	*species affinis* (A species which is yet to be formally described but has close affinities to the species of the name provided)
#	Species with dual origin status in Victoria

Catchment and Land Protection Act 1994 noxious weed listing categories
P = Regionally Prohibited, C = Regionally Controlled, R = Restricted. S = State Prohibited

Table A2.1 Flora recorded within Contract Area 81 during the current assessment.

Table A2.1. Indigenous species							
Lifeform	**Family**	**Scientific name**	**Common name**	**EPBC**	**DSE**	**FFG**	**Regionally significant**
Fern	Adiantaceae	*Cheilanthes austrotenuifolia*	Green Rock-fern				✓
		Cheilanthes sieberi subsp. *sieberi*	Narrow Rock-fern				✓
Graminoid	Anthericaceae	*Arthropodium minus*	Small Vanilla-lily				✓
		Arthropodium sp.	Vanilla Lily				
	Colchiceae	*Burchardia umbellata*	Milkmaids				
	Cyperaceae	*Bolboschoenus caldwellii*	Salt Club-sedge				✓
		Bothriochloa macra	Red-leg Grass				✓
		Carex breviculmis	Common Grass-sedge				
		Carex spp.	Sedge				
		Carex tereticaulis	Poong'ort				✓
		Eleocharis pallens	Pale Spike-sedge		k		
		Eleocharis sp.	Spike Sedge				
	Hemerocallidaceae	*Dianella revoluta* s.l.	Black-anther Flax-lily				
		Dianella sp. aff. *longifolia* (Benambra)	Arching Flax-lily		v		
	Juncaceae	*Juncus bufonius*	Toad Rush				✓
		Juncus pallidus	Pale Rush				
		Juncus sarophorus	Broom Rush				✓
		Juncus sp.	Rush				
		Juncus subsecundus	Finger Rush				✓
	Juncaginaceae	*Triglochin procera* s.s.	Common Water-ribbons				✓
	Poaceae	*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 pilosa	Velvet Wallaby-grass				✓
		Austrodanthonia racemosa var. *racemosa*	Slender Wallaby-grass				
		Austrodanthonia setacea	Bristly Wallaby-grass				
		Austrostipa bigeniculata	Kneed Spear-grass				
		Austrostipa curticoma	Short-crown Spear-grass				✓
		Austrostipa elegantissima	Feather Spear-grass				✓
		Austrostipa nodosa	Knotty Spear-grass				✓
		Austrostipa scabra	Rough Spear-grass				
		Austrostipa setacea	Corkscrew Spear-grass				✓
		Chloris truncata	Windmill Grass				✓
		Dichelachne crinita	Long-hair Plume-grass				✓
		Elymus scaber var. *scaber*	Common Wheat-grass				
		Lachnagrostis spp.	Blown Grass				
		Microlaena stipoides var. *stipoides*	Weeping Grass				
		Poa sieberiana var. *hirtella*	Grey Tussock-grass				✓
		Poa sieberiana var. *sieberiana*	Grey Tussock-grass				✓
		Themeda triandra	Kangaroo Grass				
		Walwhalleya proluta	Rigid Panic				

Table A2.1. Indigenous species							
Lifeform	**Family**	**Scientific name**	**Common name**	**EPBC**	**DSE**	**FFG**	**Regionally significant**
	Xanthorrhoeaceae	*Lomandra filiformis*	Wattle Mat-rush				
		Lomandra micrantha s.s.	Small-flower Mat-rush				✓
		Lomandra nana	Dwarf Mat-rush				✓
Forb	Amaranthaceae	*Alternanthera denticulata* s.s.	Lesser Joyweed				✓
		Alternanthera sp. 1 (Plains)	Plains Joyweed		k		✓
		Ptilotus macrocephalus	Feather Heads				
	Apiaceae	*Eryngium ovinum*	Blue Devil				✓
	Asteraceae	*Brachyscome dentata*	Lobe-seed Daisy			P	
		Brachyscome spp.	Daisy			P	
		Calocephalus citreus	Lemon Beauty-heads			P	✓
		Calocephalus lacteus	Milky Beauty-heads			P	✓
		Centipeda cunninghamii	Common Sneezeweed			P	✓
		Chrysocephalum apiculatum s.s.	Common Everlasting			P	✓
		Chrysocephalum sp. 1	Plains Everlasting			P	
		Cymbonotus preissianus	Austral Bear's-ear			P	✓
		Euchiton involucratus s.s.	Star Cudweed			P	✓
		Leptorhynchos squamatus	Scaly Buttons			P	✓
		Pseudognaphalium luteoalbum	Jersey Cudweed			P	✓
		Rutidosis leptorhynchoides	Button Wrinklewort	EN	e	L, P	
		Senecio quadridentatus	Cotton Fireweed			P	
		Senecio sp.	Groundsel			P	
		Solenogyne dominii	Smooth Solenogyne			P	✓
		Vittadinia cuneata	Fuzzy New Holland Daisy			P	✓
		Vittadinia gracilis	Woolly New Holland Daisy			P	✓
	Boraginaceae	*Cynoglossum suaveolens*	Sweet Hound's-tongue				✓
	Brassicaceae	*Lepidium pseudotasmanicum*	Shade Peppercress				✓
	Campanulaceae	*Wahlenbergia luteola*	Bronze Bluebell				✓
		Wahlenbergia sp.	Bluebell				
	Chenopodiaceae	*Atriplex semibaccata*	Berry Saltbush				✓
		Chenopodium pumilio	Clammy Goosefoot				✓
		Einadia nutans subsp. *nutans*	Nodding Saltbush				✓
	Clusiaceae	*Hypericum gramineum*	Small St John's Wort				
		Hypericum spp.	St John's Wort				
	Convolvulaceae	*Dichondra repens*	Kidney-weed				
	Crassulaceae	*Crassula decumbens* var. *decumbens*	Spreading Crassula				✓
		Crassula sieberiana s.l.	Sieber Crassula				✓
	Euphorbiaceae	*Chamaesyce drummondii*	Flat Spurge				
	Fabaceae	*Cullen parvum*	Small Scurf-pea		e	L	
		Desmodium varians	Slender Tick-trefoil		k		✓
		Glycine tabacina s.s.	Variable Glycine				✓
	Geraniaceae	*Erodium crinitum*	Blue Heron's-bill				✓
		Erodium spp.	Heron's Bill				
		Geranium retrorsum s.s.	Grassland Crane's-bill				✓
		Geranium sp. 3	Pale-flower Crane's-bill		r		✓
		Geranium sp. 5	Naked Crane's-bill				✓
		Geranium sp.	Crane's Bill				
		Pelargonium australe	Austral Stork's-bill				✓

Table A2.1. Indigenous species

Lifeform	Family	Scientific name	Common name	EPBC	DSE	FFG	Regionally significant
		Pelargonium rodneyanum	Magenta Stork's-bill				✓
		Pelargonium spp.	Stork's Bill				
	Goodeniaceae	*Goodenia pinnatifida*	Cut-leaf Goodenia				✓
		Velleia paradoxa	Spur Velleia				
	Haloragaceae	*Gonocarpus tetragynus*	Common Raspwort				
		Haloragis heterophylla	Varied Raspwort				✓
		Haloragis sp.	Raspwort				
		Myriophyllum sp.	Water-milfoil				
	Hemerocallidaceae	*Tricoryne elatior*	Yellow Rush-lily				
	Lamiaceae	*Mentha satureoides*	Creeping mint				
	Lythraceae	*Lythrum hyssopifolia*	Small Loosestrife				
	Onagraceae	*Epilobium billardierianum*	Variable Willow-herb				✓
	Orchidaceae	*Thelymitra* sp.	Sun Orchid			P	
	Oxalidaceae	*Oxalis perennans*	Grassland Wood-sorrel				
	Polygonaceae	*Rumex brownii*	Slender Dock				✓
		Rumex dumosus	Wiry Dock				✓
		Rumex sp.	Dock				
	Ranunculaceae	*Ranunculus* sp.	Buttercup				
	Rosaceae	*Acaena echinata*	Sheep's Burr				✓
	Rubiaceae	*Asperula conferta*	Common Woodruff				✓
	Stackhousiaceae	*Stackhousia monogyna*	Creamy Stackhousia				✓
		Stackhousia subterranea	Plains Stackhousia				
	Veronicaceae	*Plantago gaudichaudii*	Narrow Plantain				✓
		Veronica gracilis	Slender Speedwell				✓
Tree	Mimosaceae	*Acacia mearnsii*	Black Wattle			P	
Shrub	Asteraceae	*Cassinia arcuata*	Drooping Cassinia				✓
	Chenopodiaceae	*Enchylaena tomentosa* var. *tomentosa*	Ruby Saltbush				
		Maireana decalvans	Black Cotton-bush				
		Maireana enchylaenoides	Wingless Bluebush				✓
		Maireana sp.	Bluebush				
		Sclerolaena muricata var. *villosa*	Grey Roly-poly				
	Mimosaceae	*Acacia paradoxa*	Hedge Wattle				
		Acacia pycnantha	Golden Wattle			P	✓
		Acacia sp.	Wattle				
	Pittosporaceae	*Bursaria spinosa* subsp. *spinosa*	Sweet Bursaria				
	Polygonaceae	*Muehlenbeckia florulenta*	Tangled Lignum				✓
	Thymeleaceae	*Pimelea curviflora* s.s.	Curved Rice-flower				✓
		Pimelea glauca	Smooth Rice-flower				✓
		Pimelea linifolia	Slender Rice-flower				✓
		Pimelea spinescens subsp. *spinescens*	Spiny Rice-flower	CR	e		
	Violaceae	*Melicytus dentatus* s.s.	Tree Violet				✓
Scrambler / climber	Convolvulaceae	*Convolvulus angustissimus*	Blushing Bindweed				
		Convolvulus remotus	Grass Bindweed				✓
	Ranunculaceae	*Clematis microphylla* s.l.	Small-leaved Clematis				

Table A2.1. Introduced species

Lifeform	Family	Scientific name	Common name	CaLP Act listing
Graminoid	Asphodelaceae	*Asphodelus fistulosus*	Onion Weed	R
	Cyperaceae	*Cyperus eragrostis*	Drain Flat-sedge	
	Iridaceae	*Romulea rosea*	Onion Grass	
	Poaceae	*Aira caryophyllea*	Silvery Hair-grass	
		Aira elegantissima	Delicate Hair-grass	
		Avena barbata	Bearded Oat	
		Avena sp.	Oat	
		Avena sterilis subsp. *ludoviciana*	Sterile Oat	
		Briza maxima	Large Quaking-grass	
		Bromus catharticus	Prairie Grass	
		Bromus hordeaceus subsp. *hordeaceus*	Soft Brome	
		Bromus sp.	Brome	
		Cynodon dactylon var. *dactylon*	Couch	
		Dactylis glomerata	Cocksfoot	
		Ehrharta erecta var. *erecta*	Panic Veldt-grass	
		Ehrharta longiflora	Annual Veldt-grass	
		Eleusine tristachya	American Crows-foot Grass	
		Holcus lanatus	Yorkshire Fog	
		Hordeum leporinum	Barley-grass	
		Hordeum murinum s.l.	Barley-grass	
		Hordeum sp.	Barley Grass	
		Lolium perenne	Perennial Rye-grass	
		Lolium rigidum	Wimmera Rye-grass	
		Lolium sp.	Rye Grass	
		Nassella hyalina	Cane Needle-grass	
		Nassella neesiana	Chilean Needle-grass	R
		Nassella sp.	Needle Grass	
		Nassella trichotoma	Serrated Tussock	C
		Paspalum dilatatum	Paspalum	
		Paspalum distichum	Water Couch	
		Pennisetum clandestinum	Kikuyu	
		Pentaschistis airoides subsp. *airoides*	False Hair-grass	
		Phalaris aquatica	Toowoomba Canary-grass	
		Poa bulbosa	Bulbous Meadow-grass	
		Polypogon monspeliensis	Annual Beard-grass	
		Setaria parviflora	Slender Pigeon Grass	
		Tribolium obliterum	Desmazeria	
		Vulpia bromoides	Squirrel-tail Fescue	
		Vulpia sp.	Fescue	
Forb	Aizoaceae	*Galenia pubescens* var. *pubescens*	Galenia	
	Asteraceae	*Arctotheca calendula*	Cape Weed	
		Cirsium vulgare	Spear Thistle	C
		Cynara cardunculus	Artichoke Thistle	C
		Gazania linearis	Gazania	
		Helminthotheca echioides	Ox-tongue	
		Hypochoeris radicata	Flatweed	

Table A2.1. Introduced species

Lifeform	Family	Scientific name	Common name	CaLP Act listing
		Leontodon taraxacoides subsp. *taraxacoides*	Hairy Hawkbit	
		Scolymus hispanicus	Golden Thistle	C
		Scorzonera laciniata	Scorzonera	
		Sonchus asper s.s.	Rough Sow-thistle	
		Sonchus oleraceus	Common Sow-thistle	
		Xanthium spinosum	Bathurst Burr	C
	Brassicaceae	*Brassica fruticulosa*	Twiggy Turnip	
		Brassica spp.	Turnip	
		Brassica X *juncea*	Indian Mustard	
		Capsella bursa-pastoris	Shepherd's Purse	
		Lepidium africanum	Common Peppercress	
		Lepidium draba	Hoary Cress	C
	Caryophyllaceae	*Cerastium* spp.	Mouse-ear Chickweed	
		Spergularia media s.s.	Greater Sea-spurrey	
	Chenopodiaceae	*Chenopodium album*	Fat Hen	
		Chenopodium murale	Sowbane	
	Cucurbitaceae	*Cucumis myriocarpus* subsp. *leptodermis*	Paddy Melon	
	Fabaceae	*Medicago polymorpha*	Burr Medic	
		Medicago spp.	Medic	
		Trifolium angustifolium var. *angustifolium*	Narrow-leaf Clover	
		Trifolium dubium	Suckling Clover	
		Trifolium repens var. *repens*	White Clover	
		Trifolium striatum	Knotted Clover	
		Trifolium subterraneum	Subterranean Clover	
		Vicia sativa	Common Vetch	
		Vicia sp.	Vetch	
	Fumariaceae	*Fumaria* spp.	Fumitory	
	Geraniaceae	*Erodium botrys*	Big Heron's-bill	
		Erodium cicutarium	Common Heron's-bill	
		Erodium malacoides	Oval Heron's-bill	
		Erodium moschatum	Musky Heron's-bill	
		Geranium dissectum	Cut-leaf Crane's-bill	
	Lamiaceae	*Marrubium vulgare*	Horehound	C
		Salvia verbenaca	Wild Sage	
	Malvaceae	*Malva nicaeensis*	Mallow of Nice	
		Malva parviflora	Small-flower Mallow	
		Malva spp.	Mallow	
		Modiola caroliniana	Red-flower Mallow	
	Oxalidaceae	*Oxalis pes-caprae*	Soursob	R
		Oxalis spp. (naturalised)	Wood Sorrel	
	Polygonaceae	*Acetosella vulgaris*	Sheep Sorrel	
		Polygonum aviculare s.s.	Hogweed	
		Rumex conglomeratus	Clustered Dock	
		Rumex crispus	Curled Dock	
		Rumex pulcher subsp. *pulcher*	Fiddle Dock	
	Solanaceae	*Physalis viscosa*	Sticky Ground-cherry	C
		Solanum nigrum s.s.	Black Nightshade	

Table A2.1. Introduced species

Lifeform	Family	Scientific name	Common name	CaLP Act listing
	Veronicaceae	*Kickxia elatine*	Hairy Toadflax	
		Plantago coronopus	Buck's-horn Plantain	
		Plantago lanceolata	Ribwort	
Shrub	Rosaceae	*Rosa rubiginosa*	Sweet Briar	C
	Solanaceae	*Lycium ferocissimum*	African Boxthorn	C
Tree	Myrtaceae	*Eucalyptus cladocalyx*	Sugar Gum	
Scrambler / climber	Apocynaceae	*Vinca major*	Blue Periwinkle	

Table A2.2. Existing flora records within a 5km buffer zone of Contract Area 81 (Source: Flora Information System 2009)

Table A2.2. Indigenous species						
	Family	**Scientific Name**	**Common Name**	**EPBC**	**DSE**	**FFG**
	Ditrichaceae	*Pleuridium nervosum*	Earth Moss			
	Pottiaceae	*Barbula calycina*	Common Beard-moss			
		Crossidium davidai	Gypsum Moss			
	Adiantaceae	*Cheilanthes austrotenuifolia*	Green Rock-fern			
		Cheilanthes sieberi subsp. *sieberi*	Narrow Rock-fern			
		Cheilanthes spp.	Rock Fern			
	Marsileaceae	*Marsilea costulifera*	Narrow-leaf Nardoo			
		Marsilea drummondii	Common Nardoo			
		Marsilea hirsuta	Short-fruit Nardoo			
		Marsilea spp.	Nardoo			
		Pilularia novae-hollandiae	Austral Pillwort			
	Anthericaceae	*Arthropodium minus*	Small Vanilla-lily			
		Arthropodium spp. (s.s.)	Vanilla Lily			
	Aizoaceae	*Tetragonia implexicoma*	Bower Spinach			
	Alismataceae	*Alisma plantago-aquatica*	Water Plantain			
		Damasonium minus	Star Fruit			
	Amaranthaceae	*Alternanthera denticulata* s.l.	Lesser Joyweed			
		Alternanthera denticulata s.s.	Lesser Joyweed			
		Alternanthera sp. 1 (Plains)	Plains Joyweed		k	
		Alternanthera spp.	Joyweed			
		Ptilotus macrocephalus	Feather Heads			
		Ptilotus spathulatus f. *spathulatus*	Pussy Tails			
	Cyperaceae	*Bolboschoenus caldwellii*	Salt Club-sedge			
		Bolboschoenus spp.	Club Sedge			
		Carex appressa	Tall Sedge			
		Carex bichenoviana	Plains Sedge			
		Carex breviculmis	Common Grass-sedge			
		Carex gaudichaudiana	Fen Sedge			
		Carex inversa	Knob Sedge			
		Carex spp.	Sedge			
		Carex tasmanica	Curly Sedge	VU	v	L
		Carex tereticaulis	Poong'ort			
		Cyperus gunnii subsp. *gunnii*	Flecked Flat-sedge			
		Cyperus lhotskyanus	Creeping Flat-sedge			
		Cyperus spp.	Flat Sedge			
		Eleocharis acuta	Common Spike-sedge			
		Eleocharis macbarronii	Grey Spike-sedge		k	
		Eleocharis pallens	Pale Spike-sedge		k	
		Eleocharis pusilla	Small Spike-sedge			
		Eleocharis sphacelata	Tall Spike-sedge			
		Eleocharis spp.	Spike Sedge			
		Ficinia nodosa	Knobby Club-sedge			
		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 spp.	Club Sedge			

Table A2.2. Indigenous species						
	Family	**Scientific Name**	**Common Name**	**EPBC**	**DSE**	**FFG**
		Isolepis victoriensis	Victorian Club-sedge			
		Schoenoplectus tabernaemontani	River Club-sedge			
		Schoenus apogon	Common Bog-sedge			
		Schoenus tesquorum	Soft Bog-sedge			
	Hemerocallidaceae	*Caesia calliantha*	Blue Grass-lily			
		Dianella brevicaulis	Small-flower Flax-lily			
		Dianella longifolia s.l.	Pale Flax-lily			
		Dianella longifolia var. *grandis* s.l.	Glaucous Flax-lily			
		Dianella longifolia var. *longifolia* s.l.	Pale Flax-lily			
		Dianella revoluta s.l.	Black-anther Flax-lily			
		Dianella revoluta var. *revoluta* s.l.	Black-anther Flax-lily			
		Dianella sp. aff. *longifolia* (Benambra)	Arching Flax-lily		v	
		Tricoryne elatior	Yellow Rush-lily			
	Juncaceae	*Juncus amabilis*	Hollow Rush			
		Juncus australis	Austral Rush			
		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 spp.	Rush			
		Juncus subsecundus	Finger Rush			
	Orchidaceae	*Diuris basaltica*	Small Golden Moths	EN	v	p/L
		Diuris behrii	Golden Cowslips		v	p
		Diuris lanceolata s.l.	Golden Moths			p
		Diuris palustris	Swamp Diuris		v	p/L
		Diuris pardina	Leopard Orchid			p
		Diuris X fastidiosa	Proud Diuris		e	p
		Microtis parviflora	Slender Onion-orchid			p
		Microtis unifolia	Common Onion-orchid			p
		Prasophyllum frenchii	Maroon Leek-orchid	EN	e	p/L
		Prasophyllum suaveolens	Fragrant Leek-orchid	EN	e	L
		Pterostylis spp.	Greenhood			p/L
		Thelymitra arenaria	Forest Sun-orchid			p
		Thelymitra exigua	Short Sun-orchid		k	p
		Thelymitra pauciflora s.l.	Slender Sun-orchid			p
		Oxalis corniculata s.l.	Yellow Wood-sorrel			
		Oxalis exilis	Shady Wood-sorrel			
		Oxalis perennans	Grassland Wood-sorrel			
		Oxalis radicosa	Stout-rooted Wood-sorrel			
		Oxalis spp.	Wood Sorrel			
	Poaceae	*Amphibromus fluitans*	River Swamp Wallaby-grass	VU		
		Amphibromus neesii	Southern Swamp Wallaby-grass			

Table A2.2. Indigenous species						
	Family	**Scientific Name**	**Common Name**	**EPBC**	**DSE**	**FFG**
		Amphibromus nervosus	Common Swamp Wallaby-grass			
		Amphibromus pithogastrus	Plump Swamp Wallaby-grass		e	L
		Amphibromus spp.	Swamp Wallaby-grass			
		Austrodanthonia auriculata	Lobed Wallaby-grass			
		Austrodanthonia bipartita s.l.	Leafy Wallaby-grass			
		Austrodanthonia bipartita s.s.	Leafy Wallaby-grass			
		Austrodanthonia caespitosa	Common Wallaby-grass			
		Austrodanthonia carphoides	Short Wallaby-grass			
		Austrodanthonia duttoniana	Brown-back Wallaby-grass			
		Austrodanthonia eriantha	Hill Wallaby-grass			
		Austrodanthonia fulva	Copper-awned Wallaby-grass			
		Austrodanthonia geniculata	Kneed Wallaby-grass			
		Austrodanthonia induta	Shiny Wallaby-grass			
		Austrodanthonia 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			
		Austrodanthonia setacea var. *setacea*	Bristly Wallaby-grass			
		Austrodanthonia spp.	Wallaby Grass			
		Austrostipa aristiglumis	Plump Spear-grass			
		Austrostipa bigeniculata	Kneed Spear-grass			
		Austrostipa curticoma	Short-crown Spear-grass			
		Austrostipa exilis	Heath Spear-grass		r	
		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 rudis subsp. *rudis*	Veined Spear-grass			
		Austrostipa scabra	Rough 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 spp.	Spear Grass			
		Austrostipa stuposa	Quizzical Spear-grass			
		Bothriochloa macra	Red-leg Grass			
		Bromus spp.	Brome			
		Chloris truncata	Windmill Grass			
		Cynodon dactylon	Couch			
		Danthonia s.l. spp.	Wallaby Grass			
		Deyeuxia quadriseta	Reed Bent-grass			
		Deyeuxia spp.	Bent-grass			
#		*Dichanthium sericeum* subsp. *sericeum*	Silky Blue-grass			
		Dichelachne crinita	Long-hair Plume-grass			
		Dichelachne sciurea spp. agg.	Short-hair Plume-grass			
		Dichelachne spp.	Plume Grass			
		Distichlis distichophylla	Australian Salt-grass			
		Elymus scaber var. *scaber*	Common Wheat-grass			

Table A2.2. Indigenous species						
	Family	**Scientific Name**	**Common Name**	**EPBC**	**DSE**	**FFG**
		Eragrostis brownii	Common Love-grass			
		Eragrostis infecunda	Southern Cane-grass			
		Eragrostis parviflora	Weeping Love-grass			
		Glyceria spp.	Sweet Grass			
		Lachnagrostis aemula s.l.	Leafy Blown-grass			
		Lachnagrostis aemula s.s.	Leafy Blown-grass			
		Lachnagrostis filiformis	Common Blown-grass			
		Lachnagrostis filiformis var. 1	Common Blown-grass			
		Lachnagrostis filiformis var. 2	Wetland Blown-grass		k	
		Lachnagrostis spp.	Blown Grass			
		Microlaena stipoides var. *stipoides*	Weeping Grass			
		Notodanthonia semiannularis	Wetland Wallaby-grass			
		Panicum decompositum var. *decompositum*	Native Millet			
		Panicum effusum	Hairy Panic			
		Panicum spp.	Panic			
		Pentapogon quadrifidus var. *quadrifidus*	Five-awned Spear-grass			
		Phragmites australis	Common Reed			
		Poa labillardierei	Common Tussock-grass			
		Poa labillardierei var. labillardierei	Common Tussock-grass			
		Poa rodwayi	Velvet Tussock-grass			
		Poa sieberiana	Grey Tussock-grass			
		Poa sieberiana var. *hirtella*	Grey Tussock-grass			
		Poa sieberiana var. *sieberiana*	Grey Tussock-grass			
		Poa spp.	Tussock Grass			
		Puccinellia stricta	Australian Saltmarsh-grass			
		Puccinellia stricta var. *stricta*	Australian Saltmarsh-grass			
		Themeda triandra	Kangaroo Grass			
		Tripogon loliiformis	Rye Beetle-grass		r	
		Walwhalleya proluta	Rigid Panic			
	Typhaceae	*Typha domingensis*	Narrow-leaf Cumbungi			
		Typha orientalis	Broad-leaf Cumbungi			
		Typha spp.	Bulrush			
	Xanthorrhoeaceae	*Lomandra effusa*	Scented Mat-rush			
		Lomandra filiformis	Wattle Mat-rush			
		Lomandra micrantha s.l.	Small-flower Mat-rush			
		Lomandra micrantha s.s.	Small-flower Mat-rush			
		Lomandra multiflora subsp. *multiflora*	Many-flowered Mat-rush			
		Lomandra nana	Dwarf Mat-rush			
	Apiaceae	*Daucus glochidiatus*	Australian Carrot			
		Eryngium ovinum	Blue Devil			
		Eryngium spp.	Eryngium			
		Eryngium vesiculosum	Prickfoot			
		Hydrocotyle sibthorpioides	Shining Pennywort			
		Hydrocotyle spp.	Pennywort			
		Lilaeopsis polyantha	Australian Lilaeopsis			
	Asteraceae	*Asteraceae* spp.	Composite			p
		Brachyscome basaltica var. *gracilis*	Woodland Swamp-daisy			p
		Brachyscome dentata	Lobe-seed Daisy			p
		Brachyscome spp.	Daisy			p
		Calocephalus citreus	Lemon Beauty-heads			p

Table A2.2. Indigenous species

	Family	Scientific Name	Common Name	EPBC	DSE	FFG
		Calocephalus lacteus	Milky Beauty-heads			p
		Calocephalus spp.	Beauty Heads			p
		Calotis anthemoides	Cut-leaf Burr-daisy			p
		Calotis scabiosifolia	Rough Burr-daisy			p
		Calotis scabiosifolia var. *scabiosifolia*	Rough Burr-daisy			p
		Calotis scapigera	Tufted Burr-daisy			p
		Calotis spp.	Burr Daisy			p
		Cassinia aculeata	Common Cassinia			p
		Cassinia arcuata	Drooping Cassinia			p
		Cassinia spp.	Cassinia			p
		Centipeda cunninghamii	Common Sneezeweed			p
		Chrysocephalum apiculatum s.l.	Common Everlasting			p
		Chrysocephalum apiculatum s.s.	Common Everlasting			p
		Chrysocephalum sp. 1	Plains Everlasting			p
		Chrysocephalum spp.	Everlasting			p
		Cotula australis	Common Cotula			p
		Cotula spp.	Cotula			p
		Craspedia glauca spp. agg.	Common Billy-buttons			p
		Craspedia paludicola	Swamp Billy-buttons			p
		Craspedia spp.	Billy Buttons			p
		Cymbonotus preissianus	Austral Bear's-ear			p
		Euchiton collinus s.s.	Creeping Cudweed			p
		Euchiton involucratus s.l.	Common Cudweed			p
		Euchiton involucratus s.s.	Star Cudweed			p
		Euchiton sphaericus	Annual Cudweed			p
		Euchiton spp.	Cudweed			p
		Gnaphalium spp.	Cudweed			p
		Helichrysum aff. *rutidolepis* (Lowland Swamps)	Pale Swamp Everlasting		v	p
		Helichrysum rutidolepis s.l.	Pale Everlasting			p
		Helichrysum rutidolepis s.s.	Pale Everlasting			p
		Helichrysum spp.	Everlasting			p
		Hyalosperma demissum	Moss Sunray			p
		Isoetopsis graminifolia	Grass Cushion			p
		Lagenophora huegelii	Coarse Bottle-daisy			p
		Leptorhynchos squamatus	Scaly Buttons			p
		Leptorhynchos squamatus subsp. *squamatus*	Scaly Buttons			p
		Leptorhynchos tenuifolius	Wiry Buttons			p
		Microseris scapigera spp. *agg.*	Yam Daisy			p
		Microseris spp.	Yam Daisy			p
		Minuria leptophylla	Minnie Daisy			p
		Myriocephalus rhizocephalus	Woolly-heads			p
		Ozothamnus obcordatus	Grey Everlasting			p
		Picris angustifolia	Native Picris			p
		Podolepis jaceoides s.s.	Showy Podolepis			p
		Podolepis sp. 1	Basalt Podolepis		e	p
		Pseudognaphalium luteoalbum	Jersey Cudweed			p
		Pycnosorus chrysanthes	Golden Billy-buttons			p
		Rhodanthe anthemoides	Chamomile Sunray			p
		Rutidosis leptorhynchoides	Button Wrinklewort	EN	e	p/L
		Senecio campylocarpus	Floodplain Fireweed		r	p

Table A2.2. Indigenous species

	Family	Scientific Name	Common Name	EPBC	DSE	FFG
		Senecio glomeratus	Annual Fireweed			p
		Senecio macrocarpus	Large-headed Fireweed	VU	e	p/L
		Senecio pinnatifolius	Variable Groundsel			p
		Senecio quadridentatus	Cotton Fireweed			p
		Senecio spp.	Groundsel			p
		Siloxerus multiflorus	Small Wrinklewort			p
		Solenogyne dominii	Smooth Solenogyne			p
		Solenogyne gunnii	Hairy Solenogyne			p
		Sonchus spp.	Sow Thistle			p
		Taraxacum spp.	Dandelion			p
		Triptilodiscus pygmaeus	Common Sunray			p
		Vittadinia cervicularis	Annual New Holland Daisy			p
		Vittadinia cuneata	Fuzzy New Holland Daisy			p
		Vittadinia cuneata var. *cuneata*	Fuzzy New Holland Daisy			p
		Vittadinia dissecta s.l.	Dissected New Holland Daisy			p
		Vittadinia gracilis	Woolly New Holland Daisy			p
		Vittadinia muelleri	Narrow-leaf New Holland Daisy			p
		Xerochrysum viscosum	Shiny Everlasting			p
	Azollaceae	*Azolla filiculoides*	Pacific Azolla			
	Boraginaceae	*Heliotropium* spp.	Heliotrope			
	Brassicaceae	*Lepidium spp.*	Peppercress			
	Campanulaceae	*Isotoma fluviatilis* subsp. *australis*	Swamp Isotome			
		Lobelia irrigua	Salt Pratia			
		Lobelia pedunculata s.l.	Matted Pratia			
		Lobelia pratioides	Poison Lobelia			
		Lobelia spp.	Lobelia			
		Wahlenbergia communis s.l.	Tufted Bluebell			
		Wahlenbergia communis s.s.	Tufted Bluebell			
		Wahlenbergia gracilenta s.l.	Annual Bluebell			
		Wahlenbergia gracilenta s.s.	Hairy Annual-bluebell			
		Wahlenbergia gracilis	Sprawling Bluebell			
		Wahlenbergia graniticola s.l.	Granite Bluebell			
		Wahlenbergia luteola	Bronze Bluebell			
		Wahlenbergia multicaulis	Branching Bluebell			
		Wahlenbergia spp.	Bluebell			
	Caryophyllaceae	*Spergularia marina* s.l.	Salt Sand-spurrey			
		Spergularia media s.l.	Coast Sand-spurrey			
		Spergularia sp. 3	Salt Sea-spurrey			
		Spergularia spp.	Sand Spurrey			
	Casuarinaceae	*Allocasuarina verticillata*	Drooping Sheoak			
	Chenopodiaceae	*Atriplex leptocarpa*	Slender-fruit Saltbush			
		Atriplex semibaccata	Berry Saltbush			
		Atriplex spp.	Saltbush			
		Chenopodium desertorum subsp. *microphyllum*	Small-leaf Goosefoot			
		Chenopodium glaucum	Glaucous Goosefoot			
		Chenopodium pumilio	Clammy Goosefoot			
		Chenopodium spp.	Goosefoot			
		Einadia hastata	Saloop			
		Einadia nutans subsp. *nutans*	Nodding Saltbush			
		Enchylaena tomentosa var. *tomentosa*	Ruby Saltbush			
		Maireana decalvans	Black Cotton-bush			

Table A2.2. Indigenous species

	Family	Scientific Name	Common Name	EPBC	DSE	FFG
		Maireana enchylaenoides	Wingless Bluebush			
		Maireana spp.	Bluebush			
		Rhagodia candolleana subsp. *candolleana*	Seaberry Saltbush			
		Rhagodia parabolica	Fragrant Saltbush		r	
		Sarcocornia quinqueflora	Beaded Glasswort			
		Sarcocornia quinqueflora subsp. *quinqueflora*	Beaded Glasswort			
		Sclerolaena muricata	Black Roly-poly			
		Sclerolaena muricata var. *semiglabra*	Dark Roly-poly		k	
		Sclerolaena muricata var. *villosa*	Grey Roly-poly			
		Sclerolaena spp.	Copperburr			
		Suaeda australis	Austral Seablite			
	Clusiaceae	*Hypericum gramineum*	Small St John's Wort			
	Colchicaceae	*Wurmbea dioica*	Common Early Nancy			
	Convolvulaceae	*Convolvulus angustissimus*	Blushing Bindweed			
		Convolvulus angustissimus subsp. *angustissimus*	Blushing Bindweed			
		Convolvulus angustissimus subsp. *omnigracilis*	Slender Bindweed		k	
		Convolvulus erubescens spp. agg.	Pink Bindweed			
		Convolvulus remotus	Grass Bindweed			
		Convolvulus spp.	Bindweed			
		Dichondra repens	Kidney-weed			
		Wilsonia rotundifolia	Round-leaf Wilsonia			
	Crassulaceae	*Crassula closiana*	Stalked Crassula			
		Crassula decumbens var. *decumbens*	Spreading Crassula			
		Crassula helmsii	Swamp Crassula			
		Crassula peduncularis	Purple Crassula			
		Crassula sieberiana s.l.	Sieber Crassula			
		Crassula sieberiana s.s.	Sieber Crassula			
		Crassula spp.	Crassula			
		Crassula tetramera	Australian Stonecrop			
	Cupressaceae	*Callitris* spp.	Cypress-pine			
	Cuscutaceae	*Cuscuta* spp.	Dodder			
	Droseraceae	*Drosera peltata* subsp. *auriculata*	Tall Sundew			
		Drosera peltata subsp. *peltata*	Pale Sundew			
	Elatinaceae	*Elatine gratioloides*	Waterwort			
#	Euphorbiaceae	*Chamaesyce drummondii*	Flat Spurge			
	Fabaceae	*Cullen parvum*	Small Scurf-pea		e	L
		Cullen spp.	Scurf Pea			
		Cullen tenax	Tough Scurf-pea		e	L
		Desmodium gunnii	Southern Tick-trefoil			
		Desmodium spp.	Tick Trefoil			
		Desmodium varians	Slender Tick-trefoil		k	
		Dillwynia cinerascens s.s.	Grey Parrot-pea			
		Eutaxia microphylla	Common Eutaxia			
		Eutaxia microphylla var. *diffusa*	Spreading Eutaxia			
		Eutaxia microphylla var. *microphylla*	Common Eutaxia			
		Glycine clandestina	Twining Glycine			
		Glycine latrobeana	Clover Glycine	VU	v	L
		Glycine tabacina s.s.	Variable Glycine			

Table A2.2. Indigenous species						
	Family	**Scientific Name**	**Common Name**	**EPBC**	**DSE**	**FFG**
		Kennedia prostrata	Running Postman			
		Lotus spp.	Trefoil			
	Gentianaceae	*Sebaea ovata*	Yellow Sebaea			
	Geraniaceae	*Erodium crinitum*	Blue Heron's-bill			
		Erodium spp.	Heron's Bill			
		Geranium retrorsum s.l.	Grassland Crane's-bill			
		Geranium retrorsum s.s.	Grassland Crane's-bill			
		Geranium solanderi s.l.	Austral Crane's-bill			
		Geranium solanderi var. *solanderi* s.s.	Austral Crane's-bill		v	
		Geranium sp. 2	Variable Crane's-bill			
		Geranium sp. 5	Naked Crane's-bill			
		Geranium spp.	Crane's Bill			
		Pelargonium australe	Austral Stork's-bill			
		Pelargonium rodneyanum	Magenta Stork's-bill			
	Goodeniaceae	*Goodenia gracilis*	Slender Goodenia			
		Goodenia heteromera	Spreading Goodenia			
		Goodenia humilis	Swamp Goodenia			
		Goodenia macbarronii	Narrow Goodenia		v	L
		Goodenia pinnatifida	Cut-leaf Goodenia			
		Goodenia spp.	Goodenia			
		Velleia paradoxa	Spur Velleia			
	Haloragaceae	*Gonocarpus tetragynus*	Common Raspwort			
		Haloragis aspera	Rough Raspwort			
		Haloragis glauca f. *glauca*	Bluish Raspwort		k	
		Haloragis heterophylla	Varied Raspwort			
		Haloragis spp.	Raspwort			
		Myriophyllum crispatum	Upright Water-milfoil			
		Myriophyllum simulans	Amphibious Water-milfoil			
		Myriophyllum spp.	Water-milfoil			
	Hydatellaceae	*Trithuria submersa*	Trithuria			
	Hydrocharitaceae	*Ottelia ovalifolia subsp. ovalifolia*	Swamp Lily			
	Hypoxidaceae	*Hypoxis glabella var. glabella*	Tiny Star			
		Hypoxis vaginata	Yellow Star			
	Isoetaceae	*Isoetes muelleri*	Rock Quillwort			
	Juncaginaceae	*Triglochin procera* s.l.	Water Ribbons			
		Triglochin procera s.s.	Common Water-ribbons			
		Triglochin spp.	Water Ribbons			
		Triglochin striata	Streaked Arrowgrass			
	Lamiaceae	*Mentha satureoides*	Creeping mint			
		Mentha spp.	Mint			
	Lemnaceae	*Lemna disperma*	Common Duckweed			
		Wolffia australiana	Tiny Duckweed			
	Lentibulariaceae	*Utricularia australis*	Yellow Bladderwort			
		Utricularia dichotoma s.l.	Fairies' Aprons			
	Linaceae	*Linum marginale*	Native Flax			
	Lythraceae	*Lythrum hyssopifolia*	Small Loosestrife			
		Lythrum salicaria	Purple Loosestrife			
	Malvaceae	*Malva preissiana* s.l.	Australian Hollyhock			
		Malva spp.	Mallow			
	Mimosaceae	*Acacia mearnsii*	Black Wattle			p
		Acacia melanoxylon	Blackwood			
		Acacia paradoxa	Hedge Wattle			

Table A2.2. Indigenous species

	Family	Scientific Name	Common Name	EPBC	DSE	FFG
		Acacia pycnantha	Golden Wattle			p
		Acacia spp.	Wattle			p
	Myrtaceae	*Eucalyptus camaldulensis*	River Red-gum			
		Eucalyptus microcarpa	Grey Box			
		Eucalyptus spp.	Eucalypt			
		Melaleuca lanceolata subsp. *lanceolata*	Moonah			
	Onagraceae	*Epilobium billardierianum*	Variable Willow-herb			
		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			
		Ludwigia peploides subsp. *montevidensis*	Clove-strip			
	Pittosporaceae	*Bursaria spinosa*	Sweet Bursaria			
	Polygalaceae	*Comesperma polygaloides*	Small Milkwort		v	L
	Polygonaceae	*Muehlenbeckia florulenta*	Tangled Lignum			
		Muehlenbeckia spp.	Lignum			
		Persicaria decipiens	Slender Knotweed			
		Persicaria prostrata	Creeping Knotweed			
		Polygonum spp.	Hogweed			
		Rumex bidens	Mud Dock			
		Rumex brownii	Slender Dock			
		Rumex dumosus	Wiry Dock			
		Rumex spp.	Dock			
		Rumex tenax	Narrow-leaf Dock			
		Portulaca oleracea	Common Purslane			
	Potamogetonaceae	*Potamogeton cheesemanii*	Red Pondweed			
		Potamogeton pectinatus	Fennel Pondweed			
		Potamogeton tricarinatus s.l.	Floating Pondweed			
	Primulaceae	*Samolus repens*	Creeping Brookweed			
	Ranunculaceae	*Ranunculus amphitrichus*	Small River Buttercup			
	Rosaceae	*Acaena echinata*	Sheep's Burr			
		Acaena novae-zelandiae	Bidgee-widgee			
		Acaena ovina	Australian Sheep's Burr			
		Acaena spp.	Sheep's Burr			
	Rubiaceae	*Asperula conferta*	Common Woodruff			
		Asperula scoparia	Prickly Woodruff			
		Asperula spp.	Woodruff			
		Asperula wimmerana	Wimmera Woodruff	R	r	
	Scrophulariaceae	*Limosella australis*	Austral Mudwort			
	Solanaceae	*Solanum aviculare*	Kangaroo Apple			
		Solanum spp.	Nightshade			
	Stackhousiaceae	*Stackhousia monogyna*	Creamy Stackhousia			
		Stackhousia spp.	Stackhousia			
		Stackhousia subterranea	Plains Stackhousia			
	Stylidiaceae	*Levenhookia dubia*	Hairy Stylewort			
	Thymelaeaceae	*Pimelea axiflora*	Bootlace Bush			
		Pimelea curviflora s.l.	Curved Rice-flower			
		Pimelea curviflora s.s.	Curved Rice-flower			

Table A2.2. Indigenous species

	Family	Scientific Name	Common Name	EPBC	DSE	FFG
		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			
		Pimelea spinescens	Spiny Rice-flower		e	L
		Pimelea spinescens subsp. *spinescens*	Spiny Rice-flower	CR	e	
		Pimelea spinescens subsp. *spinescens*	Spiny Rice-flower	CR	e	
	Verbenaceae	*Verbena spp.*	Verbena			
	Veronicaceae	*Callitriche* spp.	Water Starwort			
		Plantago gaudichaudii	Narrow Plantain			
		Plantago spp.	Plantain			
		Plantago varia	Variable Plantain			
		Veronica gracilis	Slender Speedwell			
	Violaceae	*Melicytus dentatus* s.l.	Tree Violet			
		Melicytus dentatus s.s.	Tree Violet			
		Melicytus spp.	Tree Violet			
		Viola hederacea sensu Entwisle (1996)	Ivy-leaf Violet			

Table A2.2. Introduced species

	Family	Scientific Name	Common Name	Aust. Native	CaLP Act listed
	Alliaceae	*Allium triquetrum*	Angled Onion		R
		Allium vineale	Crow Garlic		R
	Asphodelaceae	*Asphodelus fistulosus*	Onion Weed		R
	Cyperaceae	*Cyperus congestus*	Dense Flat-sedge		
		Cyperus eragrostis	Drain Flat-sedge		
		Isolepis hystrix	Awned Club-sedge		
		Isolepis levynsiana	Tiny Flat-sedge		
	Iridaceae	*Gladiolus* spp.	Gladiolus		
		Moraea miniata	Two-leaf Cape-tulip		C
		Moraea setifolia	Thread Iris		
		Romulea minutiflora	Small-flower Onion-grass		
		Romulea rosea	Onion Grass		
		Romulea rosea var. *australis* s.s.	Common Onion-grass		
		Romulea spp.	Onion Grass		
	Juncaceae	*Juncus acutus* subsp. *acutus*	Spiny Rush		C
		Juncus articulatus	Jointed Rush		
		Juncus capitatus	Capitate Rush		
	Juncaginaceae	*Lilaea scilloides*	Lilaea		
	Poaceae	*Agrostis capillaris*	Brown-top Bent		
		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		
		Aira spp.	Hair Grass		

Table A2.2. Introduced species

	Family	Scientific Name	Common Name	Aust. Native	CaLP Act listed
		Anthoxanthum odoratum	Sweet Vernal-grass		
		Avena barbata	Bearded Oat		
		Avena fatua	Wild Oat		
		Avena sativa	Oat		
		Avena spp.	Oat		
		Avena sterilis	Sterile Oat		
		Avena sterilis subsp. *ludoviciana*	Sterile Oat		
		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		
		Catapodium rigidum	Fern Grass		
		Cortaderia selloana	Pampas Grass		
		Cynosurus echinatus	Rough Dog's-tail		
		Dactylis glomerata	Cocksfoot		
		Echinochloa crus-galli	Barnyard Grass		
		Echinochloa esculenta	Japanese Millet		
		Ehrharta erecta var. *erecta*	Panic Veldt-grass		
		Ehrharta longiflora	Annual Veldt-grass		
		Ehrharta spp.	Veldt Grass		
		Eleusine indica	Goose-grass		
		Eleusine tristachya	American Crows-foot Grass		
		Festuca arundinacea	Tall Fescue		
		Gastridium phleoides	Nit-grass		
		Hainardia cylindrica	Common Barb-grass		
		Holcus lanatus	Yorkshire Fog		
		Hordeum hystrix	Mediterranean Barley-grass		
		Hordeum leporinum	Barley-grass		
		Hordeum marinum	Sea Barley-grass		
		Hordeum murinum s.l.	Barley-grass		
		Hordeum spp.	Barley Grass		
		Hordeum vulgare s.s.	Barley		
		Lagurus ovatus	Hare's-tail Grass		
		Lolium loliaceum	Stiff Rye-grass		
		Lolium perenne	Perennial Rye-grass		
		Lolium rigidum	Wimmera Rye-grass		
		Lolium spp.	Rye Grass		
		Molineriella minuta	Small Hair-grass		
		Nassella hyalina	Cane Needle-grass		
		Nassella leucotricha	Texas Needle-grass		
		Nassella neesiana	Chilean Needle-grass		R
		Nassella spp.	Needle Grass		
		Nassella trichotoma	Serrated Tussock		C
		Parapholis incurva	Coast Barb-grass		
		Parapholis spp.	Barb Grass		

Table A2.2. Introduced species

	Family	Scientific Name	Common Name	Aust. Native	CaLP Act listed
		Parapholis strigosa	Slender Barb-grass		
		Paspalum dilatatum	Paspalum		
		Paspalum distichum	Water Couch		
		Paspalum spp.	Paspalum		
		Pennisetum clandestinum	Kikuyu		
		Pentaschistis airoides subsp. *airoides*	False Hair-grass		
		Phalaris aquatica	Toowoomba Canary-grass		
		Phalaris minor	Lesser Canary-grass		
		Phalaris paradoxa	Paradoxical Canary-grass		
		Phalaris spp.	Canary Grass		
		Phleum pratense	Timothy Grass		
		Piptatherum miliaceum	Rice Millet		
		Poa annua	Annual Meadow-grass		
		Poa bulbosa	Bulbous Meadow-grass		
		Rostraria cristata	Annual Cat's-tail		
		Setaria parviflora	Slender Pigeon Grass		
		Setaria pumila subsp. *pumila*	Pale Pigeon-grass		
		Setaria spp. (naturalised)	Pigeon Grass		
		Sporobolus africanus	Rat-tail Grass		
		Stenotaphrum secundatum	Buffalo Grass		
		Tribolium acutiflorum s.l.	Desmazeria		
		Tribolium acutiflorum s.s.	Crested Desmazeria		
		Tribolium obliterum	Desmazeria		
		Triticum aestivum	Wheat		
		Vulpia bromoides	Squirrel-tail Fescue		
		Vulpia muralis	Wall Fescue		
		Vulpia myuros	Rat's-tail Fescue		
		Vulpia spp.	Fescue		
	Aizoaceae	*Aptenia cordifolia*	Heart-leaf Ice-plant		
		Galenia pubescens var. *pubescens*	Galenia		
		Galenia spp.	Galenia		
	Alismataceae	*Alisma lanceolata*	Water Plantain		
	Amaranthaceae	*Amaranthus albus*	Stiff Tumbleweed		
		Amaranthus muricatus	Rough-fruit Amaranth		
	Anacardiaceae	*Schinus molle*	Pepper Tree		
	Apiaceae	*Conium maculatum*	Hemlock		C
		Foeniculum vulgare	Fennel		R
	Asparagaceae	*Asparagus asparagoides*	Bridal Creeper		R
	Asteraceae	*Arctotheca calendula*	Cape Weed		
		Aster subulatus	Aster-weed		
		Berkheya rigida	African Thistle		
		Carduus pycnocephalus	Slender Thistle		
		Carduus spp.	Slender Thistle		
		Carduus tenuiflorus	Winged Slender-thistle		
		Carthamus lanatus	Saffron Thistle		C
		Cirsium arvense	Perennial Thistle		C
		Cirsium vulgare	Spear Thistle		C
		Conyza bonariensis	Flaxleaf Fleabane		
		Conyza spp.	Fleabane		
		Conyza sumatrensis	Tall Fleabane		
		Cotula bipinnata	Ferny Cotula		

Table A2.2. Introduced species

	Family	Scientific Name	Common Name	Aust. Native	CaLP Act listed
		Cotula coronopifolia	Water Buttons		
		Cynara cardunculus	Artichoke Thistle		C
		Cynodon dactylon var. *dactylon*	Couch		
		Dittrichia graveolens	Stinkwort		C
#		*Eclipta platyglossa*	Yellow Twin-heads	✓	
		Gamochaeta calviceps	Silky Cudweed		
		Gamochaeta purpurea s.l.	Purple Cudweed		
		Gamochaeta purpurea s.s.	Spiked Cudweed		
		Gazania linearis	Gazania		
		Gazania spp.	Gazania		
		Hedypnois cretica	Cretan Hedypnois		
		Helianthus annuus	Common Sunflower		
		Helminthotheca echioides	Ox-tongue		
		Hieracium spp.	Hawkweed		S
		Hypochoeris glabra	Smooth Cat's-ear		
		Hypochoeris radicata	Flatweed		
		Hypochoeris spp.	Cat's Ear		
		Lactuca saligna	Willow-leaf Lettuce		
		Lactuca serriola	Prickly Lettuce		
		Leontodon taraxacoides subsp. *taraxacoides*	Hairy Hawkbit		
		Leucanthemum vulgare	Ox-eye Daisy		C
		Onopordum acanthium subsp. *acanthium*	Scotch Thistle		
		Scolymus hispanicus	Golden Thistle		C
		Scorzonera laciniata	Scorzonera		
		Scorzonera laciniata var. *calcitrapifolia*	Scorzonera		
		Scorzonera laciniata var. *laciniata*	Scorzonera		
		Senecio pterophorus	African Daisy		C
		Silybum marianum	Variegated Thistle		C
		Soliva sessilis	Jo Jo		
		Sonchus asper s.l.	Rough Sow-thistle		
		Sonchus asper s.s.	Rough Sow-thistle		
		Sonchus asper subsp. *asper*	Rough Sow-thistle		
		Sonchus asper subsp. *glaucescens*	Blue Sow-thistle		
		Sonchus oleraceus	Common Sow-thistle		
		Taraxacum officinale spp. agg.	Garden Dandelion		
		Tolpis barbata	Yellow Hawkweed		
		Tragopogon porrifolius	Salsify		
		Vellereophyton dealbatum	White Cudweed		
		Xanthium spinosum	Bathurst Burr		C
	Boraginaceae	*Echium plantagineum*	Paterson's Curse		C
		Echium vulgare	Viper's Bugloss		C
	Brassicaceae	*Barbarea intermedia*	Wintercress		
		Brassica fruticulosa	Twiggy Turnip		
		Brassica rapa	White Turnip		
		Brassica spp.	Turnip		
		Brassica tournefortii	Mediterranean Turnip		
		Brassica X *juncea*	Indian Mustard		
		Cakile edentula	American Sea Rocket		
		Diplotaxis muralis	Wall Rocket		

Table A2.2. Introduced species

	Family	Scientific Name	Common Name	Aust. Native	CaLP Act listed
		Diplotaxis spp.	Rocket		
		Diplotaxis tenuifolia	Sand Rocket		
		Hirschfeldia incana	Buchan Weed		
		Lepidium africanum	Common Peppercress		
		Lepidium campestre	Field Peppercress		
		Lepidium draba	Hoary Cress		C
		Nasturtium officinale	Watercress		
		Raphanus raphanistrum	Wild Radish		
		Rapistrum rugosum	Giant Mustard		
		Rorippa palustris	Marsh Yellow-cress		
		Sinapis spp.	Mustard		
		Sisymbrium irio	London Rocket		
		Sisymbrium officinale	Hedge Mustard		
	Cactaceae	*Opuntia* spp.	Prickly Pear		
		Opuntia stricta	Common Prickly-pear		C
	Campanulaceae	*Lobelia erinus*	Bedding Lobelia		
	Caryophyllaceae	*Cerastium balearicum*	Balearic Mouse-ear Chickweed		
		Cerastium glomeratum s.l.	Common Mouse-ear Chickweed		
		Cerastium glomeratum s.s.	Sticky Mouse-ear Chickweed		
		Moenchia erecta	Erect Chickweed		
		Petrorhagia dubia	Velvety Pink		
		Polycarpon tetraphyllum	Four-leaved Allseed		
		Silene gallica	French Catchfly		
		Spergularia rubra s.l.	Red Sand-spurrey		
		Stellaria media	Chickweed		
	Chenopodiaceae	*Atriplex prostrata*	Hastate Orache		
		Beta vulgaris	Beet		
		Beta vulgaris subsp. *maritima*	Wild Beet		
		Chenopodium album	Fat Hen		
		Chenopodium murale	Sowbane		
	Convolvulaceae	*Convolvulus arvensis*	Common Bindweed		C
	Crassulaceae	*Crassula biplanata*	Crassula		
		Crassula natans var. *minus*	Water Crassula		
	Cucurbitaceae	*Cucumis myriocarpus* subsp. *leptodermis*	Paddy Melon		
		Ecballium elaterium	Squirting Cucumber		
	Cupressaceae	*Cupressus* spp.	Cypress		
	Cuscutaceae	*Cuscuta epithymum*	Common Dodder		
		Cuscuta planiflora	Small-seed Alfalfa-dodder		
	Dipsacaceae	*Dipsacus fullonum* subsp. *fullonum*	Wild Teasel		C
	Euphorbiaceae	*Euphorbia peplus*	Petty Spurge		
		Ricinus communis	Castor Oil Plant		
	Fabaceae	*Calicotome spinosa*	Spiny Broom		P
		Genista linifolia	Flax-leaf Broom		C
		Genista monspessulana	Montpellier Broom		C
		Lotus angustissimus	Slender Bird's-foot Trefoil		
		Lotus corniculatus	Bird's-foot Trefoil		
		Medicago arabica	Spotted Medic		
		Medicago minima	Little Medic		
		Medicago polymorpha	Burr Medic		
		Medicago spp.	Medic		

Table A2.2. Introduced species

	Family	Scientific Name	Common Name	Aust. Native	CaLP Act listed
		Medicago truncatula	Barrel Medic		
		Melilotus indicus	Sweet Melilot		
		Trifolium angustifolium var. *angustifolium*	Narrow-leaf Clover		
		Trifolium arvense var. *arvense*	Hare's-foot Clover		
		Trifolium campestre var. *campestre*	Hop Clover		
		Trifolium dubium	Suckling Clover		
		Trifolium fragiferum var. *fragiferum*	Strawberry Clover		
		Trifolium glomeratum	Cluster Clover		
		Trifolium ornithopodioides	Birdsfoot Clover		
		Trifolium pratense	Red Clover		
		Trifolium repens var. *repens*	White Clover		
		Trifolium spp.	Clover		
		Trifolium striatum	Knotted Clover		
		Trifolium subterraneum	Subterranean Clover		
		Trifolium tomentosum var. *tomentosum*	Woolly Clover		
		Ulex europaeus	Gorse		
		Vicia sativa	Common Vetch		
		Vicia spp.	Vetch		
		Vicia tetrasperma	Slender Vetch		
	Fumariaceae	*Fumaria bastardii*	Bastard's Fumitory		
		Fumaria muralis subsp. *muralis*	Wall Fumitory		
	Gentianaceae	*Centaurium erythraea*	Common Centaury		
		Centaurium spp.	Centaury		
		Centaurium tenuiflorum	Slender Centaury		
		Cicendia quadrangularis	Square Cicendia		
	Geraniaceae	*Erodium botrys*	Big Heron's-bill		
		Erodium cicutarium	Common Heron's-bill		
		Erodium malacoides	Oval Heron's-bill		
		Erodium moschatum	Musky Heron's-bill		
		Geranium dissectum	Cut-leaf Crane's-bill		
		Geranium molle var. *molle*	Dove's Foot		
	Hypericaceae	*Hypericum perforatum* subsp. *veronense*	St John's Wort		C
	Lamiaceae	*Marrubium vulgare*	Horehound		C
		Mentha pulegium	Pennyroyal		
		Salvia verbenaca	Wild Sage		
		Salvia verbenaca var. *verbenaca*	Wild Sage		
		Stachys arvensis	Stagger Weed		
	Linaceae	*Linum trigynum*	French Flax		
		Linum usitatissimum	Flax		
	Malvaceae	*Lagunaria patersonia subsp. patersonia*	Pyramid Tree		
		Malva nicaeensis	Mallow of Nice		
		Malva parviflora	Small-flower Mallow		
		Modiola caroliniana	Red-flower Mallow		
#	Mimosaceae	*Acacia longifolia*	Sallow Wattle	✓	
		Acacia saligna	Golden Wreath Wattle	✓	
		Acacia spp. (naturalised)	Wattle (naturalised)	✓	
	Myrtaceae	*Eucalyptus cladocalyx*	Sugar Gum		
#		*Eucalyptus leucoxylon*	Yellow Gum	✓	
#		*Melaleuca armillaris* subsp. *armillaris*	Giant Honey-myrtle	✓	

Table A2.2. Introduced species

	Family	Scientific Name	Common Name	Aust. Native	CaLP Act listed
	Oleaceae	*Fraxinus angustifolia*	Desert Ash		
		Fraxinus spp.	Ash		
		Olea europaea	Olive		
	Orobanchaceae	*Parentucellia latifolia*	Red Bartsia		
	Oxalidaceae	*Oxalis corniculata* s.s.	Creeping Wood-sorrel		
		Oxalis pes-caprae	Soursob		R
		Oxalis purpurea	Large-flower Wood-sorrel		
		Oxalis spp. (naturalised)	Wood Sorrel		
	Papaveraceae	*Glaucium flavum*	Yellow Horned-poppy		
	Phytolaccaceae	*Phytolacca octandra*	Red-ink Weed		
	Pinaceae	*Pinus radiata*	Radiata Pine		
		Pinus spp.	Pine		
#	Pittosporaceae	*Pittosporum undulatum*	Sweet Pittosporum	✓	
	Polygalaceae	*Polygala monspeliaca*	Annual Milkwort		
	Polygonaceae	*Acetosella vulgaris*	Sheep Sorrel		
		Polygonum arenastrum	Wireweed		
		Polygonum aviculare s.l.	Prostrate Knotweed		
		Polygonum aviculare s.s.	Hogweed		
		Polypogon monspeliensis	Annual Beard-grass		
		Rumex conglomeratus	Clustered Dock		
		Rumex crispus	Curled Dock		
		Rumex obtusifolius subsp. *obtusifolius*	Broad-leaf Dock		
		Rumex spp. (naturalised)	Dock (naturalised)		
	Primulaceae	*Anagallis arvensis*	Pimpernel		
		Anagallis minima	Chaffweed		
	Ranunculaceae	*Ranunculus muricatus*	Sharp Buttercup		
	Resedaceae	*Reseda lutea*	Cut-leaf Mignonette		
	Rosaceae	*Malus pumila*	Apple		
		Prunus cerasifera	Cherry Plum		
		Prunus persica	Peach		
		Rosa rubiginosa	Sweet Briar		C
		Rosa spp.	Rose		
		Rubus fruticosus spp. agg.	Blackberry		C
	Rubiaceae	*Coprosma repens*	Mirror Bush		
		Galium aparine	Cleavers		
		Galium murale	Small Goosegrass		
		Sherardia arvensis	Field Madder		
	Scrophulariaceae	*Verbascum thapsus* subsp. *thapsus*	Great Mullein		R
	Solanaceae	*Lycium ferocissimum*	African Box-thorn		C
		Physalis spp.	Ground Cherry		
		Physalis viscosa	Sticky Ground-cherry		C
		Solanum linnaeanum	Apple of Sodom		C
		Solanum nigrum s.s.	Black Nightshade		
		Solanum nigrum sensu Willis (1972)	Black Nightshade		
	Ulmaceae	*Ulmus* aff. *procera*	Common Elm		
		Ulmus spp.	Elm		
	Urticaceae	*Urtica urens*	Small Nettle		
	Veronicaceae	*Callitriche stagnalis*	Common Water-starwort		
		Kickxia elatine	Hairy Toadflax		
		Kickxia elatine subsp. *crinita*	Twining Toadflax		
		Linaria pelisseriana	Pelisser's Toad-flax		

Table A2.2. Introduced species

	Family	Scientific Name	Common Name	Aust. Native	CaLP Act listed
		Plantago coronopus	Buck's-horn Plantain		
		Plantago coronopus subsp. *coronopus*	Buck's-horn Plantain		
		Plantago lanceolata	Ribwort		
		Plantago major	Greater Plantain		
		Plantago myosurus subsp. *myosurus*	Mouse Plantain		

A2.2 Significant flora species – likelihood of occurrence criteria

Table A2.3 Likelihood of occurrence criteria for rare or threatened species under consideration.

Likelihood scale:

Likelihood of occurrence	Potential criteria
Recorded	• Species recorded on site during current or previous assessment • Aquatic species recorded from connected waterbodies in close proximity to the site during current or previous assessment.
High	• Sufficient good quality habitat is present on site • Sufficient good quality habitat is present in connected waterbodies in close proximity to the site. • Site is within species natural distributional range (if known). • Species has been recorded within 5 km or from the relevant catchment/basin since 1980.
Medium	• Records of terrestrial species within 5 km of the site or of aquatic species in the relevant basin/neighbouring basin but habitat limited in its capacity to support the species due to extent, quality, or isolation.
Low	• No records within 5 km of the site or for aquatic species, the relevant basin/neighbouring basin, since 1980. • Substantial loss of habitat since any previous record(s).
Negligible	• Habitat not present on site • Habitat for aquatic species not present in connected waterbodies in close proximity to the site. • Habitat present but sufficient targeted survey has been conducted at an optimal time of year and species wasn't recorded.

APPENDIX 3

EVC Benchmarks

Heavier-soils Plains Grassland (EVC 132_61)
Stony Knoll Shrubland (EVC 649)
Aquatic Herbland (EVC 653)
Plains Grassy Wetland (EVC 125)
Plains Sedgy Wetland (EVC 647)
Brackish Wetland (EVC 656)

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 132_61: *Heavier-soils* Plains Grassland

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

Life Forms:

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

* Note: treat as one life form in this EVC

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

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

Organic Litter:
10% cover

Victoria The Place To Be

Ecological Vegetation Class bioregion benchmark

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 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

Ecological Vegetation Class bioregion benchmark

Victoria
The Place To Be

EVC 649: Stony Knoll Shrubland - Victorian Volcanic Plain bioregion

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

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 653: Aquatic Herbland

Description:
Herbland of permanent to semi-permanent wetlands, dominated by sedges (especially on shallower verges) and/or aquatic herbs. Occurs on fertile paludal soils, typically heavy clays beneath organic accumulations.

Life Forms:

Life form	#Spp	%Cover	LF code
Large Herb	2	10%	LH
Medium Herb	5	40%	MH
Small or Prostrate Herb	2	10%	SH
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	4	10%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
Total understorey projective foliage cover		**85%**	

LF Code	Species typical of at least part of EVC range	Common Name
LH	*Villarsia reniformis*	Running Marsh-flower
MH	*Myriophyllum simulans*	Amphibious Water-milfoil
MH	*Potamogeton tricarinatus s.l.*	Floating Pondweed
MH	*Potamogeton pectinatus*	Fennel Pondweed
MH	*Marsilea drummondii*	Common Nardoo
SH	*Azolla filiculoides*	Pacific Azolla
SH	*Lobelia pratioides*	Poison Lobelia
SH	*Lemna disperma*	Duckweed
LNG	*Eleocharis sphacelata*	Tall Spike-sedge
MTG	*Triglochin procerum s.l.*	Water Ribbons
MTG	*Lachnagrostis filiformis*	Common Blown-grass
MTG	*Glyceria australis*	Australian Sweet-grass
MTG	*Austrodanthonia duttoniana*	Brown-back Wallaby-grass
MNG	*Eleocharis pusilla*	Small Spike-sedge
MNG	*Eleocharis acuta*	Common Spike-sedge

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

Organic Litter:
10% cover

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Aster subulatus*	Aster-weed	high	low
LH	*Rumex crispus*	Curled Dock	high	low
MH	*Plantago coronopus*	Buck's-horn Plantain	high	high
MH	*Cotula coronopifolia*	Water Buttons	high	high
MTG	*Lolium rigidum*	Wimmera Rye-grass	high	low
MTG	*Romulea rosea*	Onion Grass	high	low

Ecological Vegetation Class bioregion benchmark

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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)

Ecological Vegetation Class bioregion benchmark

Victoria The Place To Be

EVC 125: Plains Grassy Wetland - Victorian Volcanic Plain bioregion

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

Department of Sustainability and Environment

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

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Ecological Vegetation Class bioregion benchmark

Department of Sustainability and Environment

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.

Ecological Vegetation Class bioregion benchmark

Victoria The Place To Be

APPENDIX 4

Contract Area 81 fauna data

A4.1 Significant fauna species – likelihood of occurrence criteria

Source: DSE Atlas of Victorian Wildlife 2009 Version, BA database (1998–22.01.10), DEWHA database (22/01/10)

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

- **National 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

- **State Status of species:**

Cr critically endangered (DSE 2007b)
e endangered (DSE 2007b)
v vulnerable (DSE 2007b)
cd conservation dependent (DSE 2007b)
nt near threatened (DSE 2007b)
dd data deficient (DSE 2007b)
L listed under Flora and Fauna Guarantee Act

*introduced species

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)

Table A4.1. Indigenous fauna species recorded as part of the general and targeted surveys in the study area

Scientific Name	Common Name	Conservation status			Type of record	Survey method
		EPBC	DSE	FFG		
Birds						
Acanthagenys rufogularis	Spiny-cheeked Honeyeater				Observed	GF
Acanthiza chrysorrhoa	Yellow-rumped Thornbill				Observed	GF, C
Anas superciliosa	Pacific Black Duck				Observed	GF
Anthochaera carunculata	Red Wattlebird				Observed	GF, C
Anthochaera chrysoptera	Little Wattlebird				Observed	GF
Anthus novaeseelandiae	Australasian Pipit				Observed	GF, C, Noct
Aquila audax	Wedge-tailed Eagle				Observed	GF
Ardea modesta	Eastern Great Egret		vu	L	Observed	GF
Chenonetta jubata	Australian Wood Duck				Observed	GF
Chrysococcyx basalis	Horsfield's Bronze-Cuckoo				Observed	GF
Cincloramphus cruralis	Brown Songlark				Observed	GF
Coracina novaehollandiae	Black-faced Cuckoo-shrike				Observed	GF
Corvus coronoides	Australian Raven				Observed	GF
Corvus mellori	Little Raven				Observed	GF, C
Coturnix pectoralis	Stubble Quail				Observed	GF, Noct
Egretta novaehollandiae	White-faced Heron				Observed	GF
Elanus axillaris	Black-shouldered Kite				Observed	GF, C
Elseyornis melanops	Black-fronted Dotterel				Observed	GF, Noct
Eolophus roseicapilla	Galah				Observed	GF
Falco berigora	Brown Falcon				Observed	GF
Falco cenchroides	Nankeen Kestrel				Observed	GF, C
Falco longipennis	Australian Hobby				Observed	GF
Grallina cyanoleuca	Magpie-lark				Observed	GF, C
Gymnorhina tibicen	Australian Magpie				Observed	GF, C
Hirundo neoxena	Welcome Swallow				Observed	GF
Hirundo nigricans	Tree Martin				Observed	GF
Lichenostomus penicillatus	White-plumed Honeyeater				Observed	GF, C
Malurus cyaneus	Superb Fairy-wren				Observed	GF, C
Microcarbo melanoleucos	Little Pied Cormorant				Observed	GF
Myiagra inquieta	Restless Flycatcher				Observed	C
Nymphicus hollandicus	Cockateil				Observed	GF
Ocyphaps lophotes	Crested Pigeon				Observed	GF, C
Platycercus eximius	Eastern Rosella				Observed	GF
Rhipidura albiscarpa	Grey Fantail				Observed	GF
Rhipidura leucophrys	Willie Wagtail				Observed	GF, C
Taeniopygia guttata	Zebra Finch				Observed	GF
Threskiornis spinicollis	Straw-necked Ibis				Observed	GF
Vanellus miles	Masked Lapwing				Observed	GF, Noct
Vanellus tricolor	Banded Lapwing				Observed	Noct
Mammals						
Macropus giganteus	Eastern Grey Kangaroo				Observed	GF
Pteropus poliocephalus	Grey-headed Flying-fox	VU	vu	L	Observed	Noct
Tadarida australis	White-striped Freetail Bat				Heard	Noct
Reptiles						

Scientific Name	Common Name	Conservation status			Type of record	Survey method
		EPBC	DSE	FFG		
Notechis scutatus	Tiger Snake				Observed	GF
Pseudonaja textilis	Eastern Brown Snake				Observed	GF
Tiliqua scincoides	Common Blue-tongued Lizard				Observed	GF
Frogs						
Crinia signifera	Common Froglet				Heard	GF
Limnodynastes dumerilii	Southern Bullfrog				Observed	GF, Noct
Limnodynastes tasmaniensis	Spotted Marsh Frog				Observed	GF, Noct

Table A4.2. Exotic fauna species recorded as part of the general and targeted surveys in the study area

Scientific Name	Common Name	Type of record	Survey type
Birds			
Acridotheres tristis	Common Myna	Observed	GF
Alauda arvensis	European Skylark	Observed	GF, C, Noct
Carduelis carduelis	European Goldfinch	Observed	GF, C
Carduelis chloris	European Greenfinch	Observed	GF
Passer domesticus	House Sparrow	Observed	GF, C
Streptopelia chinensis	Spotted Turtle-Dove	Observed	GF, C
Sturnus vulgaris	Common Starling	Observed	GF, C
Turdus merula	Common Blackbird	Observed	GF
Mammals			
Felis catus	Cat	Observed	GF, Noct
Lepus europeaus	European Hare	Observed	GF
Macropus giganteus	Eastern Grey Kangaroo	Observed	GF
Mus musculus	House Mouse	Observed	GF
Oryctolagus cuniculus	European Rabbit	Observed	GF, Noct
Vulpes vulpes	Red Fox	Observed	GF, Noct
Survey type: GF = General Fauna Survey, C = Bird Census Survey, Noct = Nocturnal targeted Plains-wanderer survey			

Table A4.3. Existing fauna records within a 5km buffer zone of Contract Area 81 (Source: Atlas of Victorian Wildlife 2009)

Scientific Name	Common Name	Conservation Status			Introduced species
		EPBC	DSE	FFG	
Birds					
Acanthagenys rufogularis	Spiny-cheeked Honeyeater				
Acanthiza chrysorrhoa	Yellow-rumped Thornbill				
Acanthiza nana	Yellow Thornbill				
Accipiter fasciatus	Brown Goshawk				
Acridotheres tristis	Common Myna				*
Acrocephalus stentoreus	Clamorous Reed Warbler				
Alauda arvensis	European Skylark				*
Anas castanea	Chestnut Teal				
Anas gracilis	Grey Teal				
Anas platyrhynchos	Northern Mallard				*
Anas rhynchotis	Australasian Shoveler		vu		
Anas superciliosa	Pacific Black Duck				
Anthochaera carunculata	Red Wattlebird				
Anthochaera chrysoptera	Little Wattlebird				
Anthochaera phrygia	Regent Honeyeater	EN	cr	L	
Anthus novaeseelandiae	Australasian Pipit				
Aphelocephala leucopsis	Southern Whiteface				
Apus pacificus	Fork-tailed Swift				
Aquila audax	Wedge-tailed Eagle				
Ardea ibis	Cattle Egret				
Ardea intermedia	Intermediate Egret		cr	L	
Ardea modesta	Eastern Great Egret		vu	L	
Ardea pacifica	White-necked Heron				
Aythya australis	Hardhead		vu		
Botaurus poiciloptilus	Australasian Bittern		en	L	
Calamanthus fuliginosus	Striated Fieldwren				
Calidris alba	Sanderling		nt		
Calidris subminuta	Long-toed Stint		nt		
Calidris tenuirostris	Great Knot		en	L	
Carduelis carduelis	European Goldfinch				*
Carduelis chloris	European Greenfinch				*
Chenonetta jubata	Australian Wood Duck				
Chlidonias leucopterus	White-winged Black Tern				
Chroicocephalus novaehollandiae	Silver Gull				
Chrysococcyx basalis	Horsfield's Bronze-Cuckoo				
Chrysococcyx osculans	Black-eared Cuckoo		nt		
Cincloramphus cruralis	Brown Songlark				
Circus approximans	Swamp Harrier				
Circus assimilis	Spotted Harrier		nt		
Cisticola exilis	Golden-headed Cisticola				

Scientific Name	Common Name	Conservation Status			Introduced species
		EPBC	DSE	FFG	
Cladorhynchus leucocephalus	Banded Stilt				
Columba livia	Rock Dove				*
Coracina novaehollandiae	Black-faced Cuckoo-shrike				
Corvus coronoides	Australian Raven				
Corvus mellori	Little Raven				
Corvus sp.	Unknown Raven				
Coturnix pectoralis	Stubble Quail				
Coturnix ypsilophora	Brown Quail		nt		
Cuculus pallidus	Pallid Cuckoo				
Cygnus atratus	Black Swan				
Dromaius novaehollandiae	Emu				
Egretta garzetta	Little Egret		en	L	
Egretta novaehollandiae	White-faced Heron				
Elanus axillaris	Black-shouldered Kite				
Elseyornis melanops	Black-fronted Dotterel				
Eolophus roseicapilla	Galah				
Eopsaltria australis	Eastern Yellow Robin				
Epthianura albifrons	White-fronted Chat				
Erythrogonys cinctus	Red-kneed Dotterel				
Falco berigora	Brown Falcon				
Falco cenchroides	Nankeen Kestrel				
Falco longipennis	Australian Hobby				
Falco peregrinus	Peregrine Falcon				
Falco subniger	Black Falcon		vu		
Fulica atra	Eurasian Coot				
Gallinago hardwickii	Latham's Snipe		nt		
Gallinula tenebrosa	Dusky Moorhen				
Gallinula ventralis	Black-tailed Native-hen				
Glossopsitta concinna	Musk Lorikeet				
Glossopsitta porphyrocephala	Purple-crowned Lorikeet				
Glossopsitta pusilla	Little Lorikeet				
Grallina cyanoleuca	Magpie-lark				
Gymnorhina tibicen	Australian Magpie				
Haliaeetus leucogaster	White-bellied Sea-Eagle		vu	L	
Haliastur sphenurus	Whistling Kite				
Hieraaetus morphnoides	Little Eagle				
Himantopus himantopus	Black-winged Stilt				
Hirundapus caudacutus	White-throated Needletail				
Hirundo ariel	Fairy Martin				
Hirundo neoxena	Welcome Swallow				
Hirundo nigricans	Tree Martin				
Lathamus discolor	Swift Parrot	EN	en	L	
Lewinia pectoralis	Lewin's Rail		vu	L	
Lichenostomus penicillatus	White-plumed Honeyeater				

Scientific Name	Common Name	Conservation Status			Introduced species
		EPBC	DSE	FFG	
Lichenostomus virescens	Singing Honeyeater				
Limicola falcinellus	Broad-billed Sandpiper				
Limosa lapponica	Bar-tailed Godwit				
Malacorhynchus membranaceus	Pink-eared Duck				
Malurus cyaneus	Superb Fairy-wren				
Manorina melanocephala	Noisy Miner				
Megalurus gramineus	Little Grassbird				
Melithreptus lunatus	White-naped Honeyeater				
Merops ornatus	Rainbow Bee-eater				
Microcarbo melanoleucos	Little Pied Cormorant				
Milvus migrans	Black Kite				
Mirafra javanica	Horsfield's Bushlark				
Myiagra cyanoleuca	Satin Flycatcher				
Neochmia temporalis	Red-browed Finch				
Neophema chrysostoma	Blue-winged Parrot				
Ocyphaps lophotes	Crested Pigeon				
Pachycephala pectoralis	Golden Whistler				
Pachycephala rufiventris	Rufous Whistler				
Pardalotus striatus	Striated Pardalote				
Passer domesticus	House Sparrow				*
Passer montanus	Eurasian Tree Sparrow				*
Pedionomus torquatus	Plains-wanderer	VU	cr	L	
Pelecanus conspicillatus	Australian Pelican				
Petroica boodang	Scarlet Robin				
Petroica phoenicea	Flame Robin				
Phalacrocorax sulcirostris	Little Black Cormorant				
Philomachus pugnax	Ruff				
Phylidonyris novaehollandiae	New Holland Honeyeater				
Platalea flavipes	Yellow-billed Spoonbill				
Platalea regia	Royal Spoonbill		vu		
Platelea sp.	Unidentified spoonbill				
Platycercus elegans elegans	Crimson Rosella				
Platycercus eximius	Eastern Rosella				
Poliocephalus poliocephalus	Hoary-headed Grebe				
Porphyrio porphyrio	Purple Swamphen				
Porzana fluminea	Australian Spotted Crake				
Porzana pusilla	Baillon's Crake		vu	L	
Psephotus haematonotus	Red-rumped Parrot				
Recurvirostra novaehollandiae	Red-necked Avocet				
Rhipidura albiscarpa	Grey Fantail				
Rhipidura leucophrys	Willie Wagtail				
Rhipidura rufifrons	Rufous Fantail				
Rostratula australis	Australian Painted Snipe	VU	cr	L	
Sterna hirundo	Common Tern				

Scientific Name	Common Name	Conservation Status			Introduced species
		EPBC	DSE	FFG	
Sternula albifrons	Little Tern		vu	l	
Streptopelia chinensis	Spotted Turtle-Dove				*
Sturnus vulgaris	Common Starling				*
Tachybaptus novaehollandiae	Australasian Grebe				
Tadorna tadornoides	Australian Shelduck				
Taeniopygia guttata	Zebra Finch				
Threskiornis molucca	Australian White Ibis				
Threskiornis sp.	Unidentified ibis				
Threskiornis spinicollis	Straw-necked Ibis				
Todiramphus sanctus	Sacred Kingfisher				
Tringa nebularia	Common Greenshank				
Tringa stagnatilis	Marsh Sandpiper				
Turdus merula	Common Blackbird				*
Turnix pyrrhothorax	Red-chested Button-quail		vu	L	
Turnix velox	Little Button-quail		nt		
Tyto javanica	Pacific Barn Owl				
Vanellus miles	Masked Lapwing				
Vanellus tricolor	Banded Lapwing				
Xenus cinereus	Terek Sandpiper		en	L	
Zosterops lateralis	Silvereye				
Mammals					
Dasyurus maculatus	Spot-tailed Quoll	EN	en	L	
Felis catus	Cat				*
Isoodon obesulus obesulus	Southern Brown Bandicoot	EN	nt		
Lepus europeaus	European Hare				*
Macropus giganteus	Eastern Grey Kangaroo				
Mus musculus	House Mouse				*
Oryctolagus cuniculus	European Rabbit				*
Pteropus poliocephalus	Grey-headed Flying-fox	VU	vu	L	
Rattus rattus	Black Rat				*
Sminthopsis crassicaudata	Fat-tailed Dunnart		nt		
Tachyglossus aculeatus	Short-beaked Echidna				
Trichosurus vulpecula	Common Brushtail Possum				
Vulpes vulpes	Red Fox				*
Reptiles					
Bassiana duperreyi	Eastern Three-lined Skink				
Christinus marmoratus	Marbled Gecko				
Ctenotus robustus	Large Striped Skink				
Delma impar	Striped Legless Lizard	VU	en	L	
Drysdalia coronoides	White-lipped Snake				
Egernia cunninghami	Cunningham's Skink				
Notechis scutatus	Tiger Snake				
Pseudemoia pagenstecheri	Tussock Skink				

Scientific Name	Common Name	Conservation Status			Introduced species
		EPBC	DSE	FFG	
Pseudemoia pagenstecheri/cryodroma	Tussock Skink/Alpine Bog Skink				
Pseudemoia sp.	Unidentified grass skink				
Pseudonaja textilis	Eastern Brown Snake				
Suta flagellum	Little Whip Snake				
Tiliqua scincoides	Common Blue-tongued Lizard				
Tympanocryptis pinguicolla	Grassland Earless Dragon	EN	cr	L	
Amphibians					
Crinia signifera	Common Froglet				
Limnodynastes dumerilii	Southern Bullfrog				
Limnodynastes dumerilii dumerilii	Southern Bullfrog (northern form)				
Limnodynastes peronii	Striped Marsh Frog				
Limnodynastes tasmaniensis	Spotted Marsh Frog				
Limnodynastes tasmaniensis SCR	Spotted Marsh Frog SCR				
Litoria ewingii (southern)	Southern Brown Tree Frog (southern)				
Litoria raniformis	Growling Grass Frog	VU	en	L	
Neobatrachus sudelli	Common Spadefoot Toad				
Fish					
Anguilla australis	Short-finned Eel				
Carassius auratus	Goldfish				*
Galaxias maculatus	Common Galaxias				
Galaxiella pusilla	Dwarf Galaxias	VU	vu	L	
Gambusia holbrooki	Eastern Gambusia				*
Misgurnus anguillicaudatus	Oriental Weatherloach				*
Nannoperca australis	Southern Pygmy Perch				
Philypnodon grandiceps	Flatheaded Gudgeon				
Prototroctes maraena	Australian Grayling	VU	vu	L	
Invertebrates					
Synemon plana	Golden Sun Moth	CR	cr	L	

Table A4.3. Fauna species listed under the migratory provisions of the EPBC Act and predicted to occur in Contract Area 81

Includes records from the following sources:

- DSE Victorian Fauna Database 2007 Version
- DEWHA database (accessed on 01.02.10)
- Birds Australia data search
- Current survey

Search area is 5 km radius.

Most recent record:

#	species predicted to occur by the PMST (not recorded on other databases unless dated)
Year	recorded on databases listed above
This study	recorded during current survey

Scientific Name	Common Name	Most recent record
Limosa lapponica	Bar-tailed Godwit	1987
Tringa nebularia	Common Greenshank	1986
Tringa stagnatilis	Marsh Sandpiper	1985
Xenus cinereus	Terek Sandpiper	1986
Calidris tenuirostris	Great Knot	1982
Calidris alba	Sanderling	1987
Limicola falcinellus	Broad-billed Sandpiper	1986
Gallinago hardwickii	Latham's Snipe	2004/#
Rostratula australis	Australian Painted Snipe	#
Ardea modesta	Eastern Great Egret	2000/#
Haliaeetus leucogaster	White-bellied Sea-Eagle	#
Merops ornatus	Rainbow Bee-eater	#
Hirundapus caudacutus	White-throated Needletail	#
Apus pacificus	Fork-tailed Swift	#
Rhipidura rufifrons	Rufous Fantail	#
Myiagra cyanoleuca	Satin Flycatcher	#
Acrocephalus stentoreus	Clamorous Reed Warbler	2004
Anthochaera phrygia	Regent Honeyeater	#
Philomachus pugnax	Ruff	1986
Sterna hirundo	Common Tern	1987
Calidris subminuta	Long-toed Stint	1984
Ardea ibis	Cattle Egret	1999/#

APPENDIX 5 MAPS

Figure A1: Overview of Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009–2011

Figure A2a–i: Property Survey and Access Status, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009–2011.

Figure A3a-i: National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009–2011

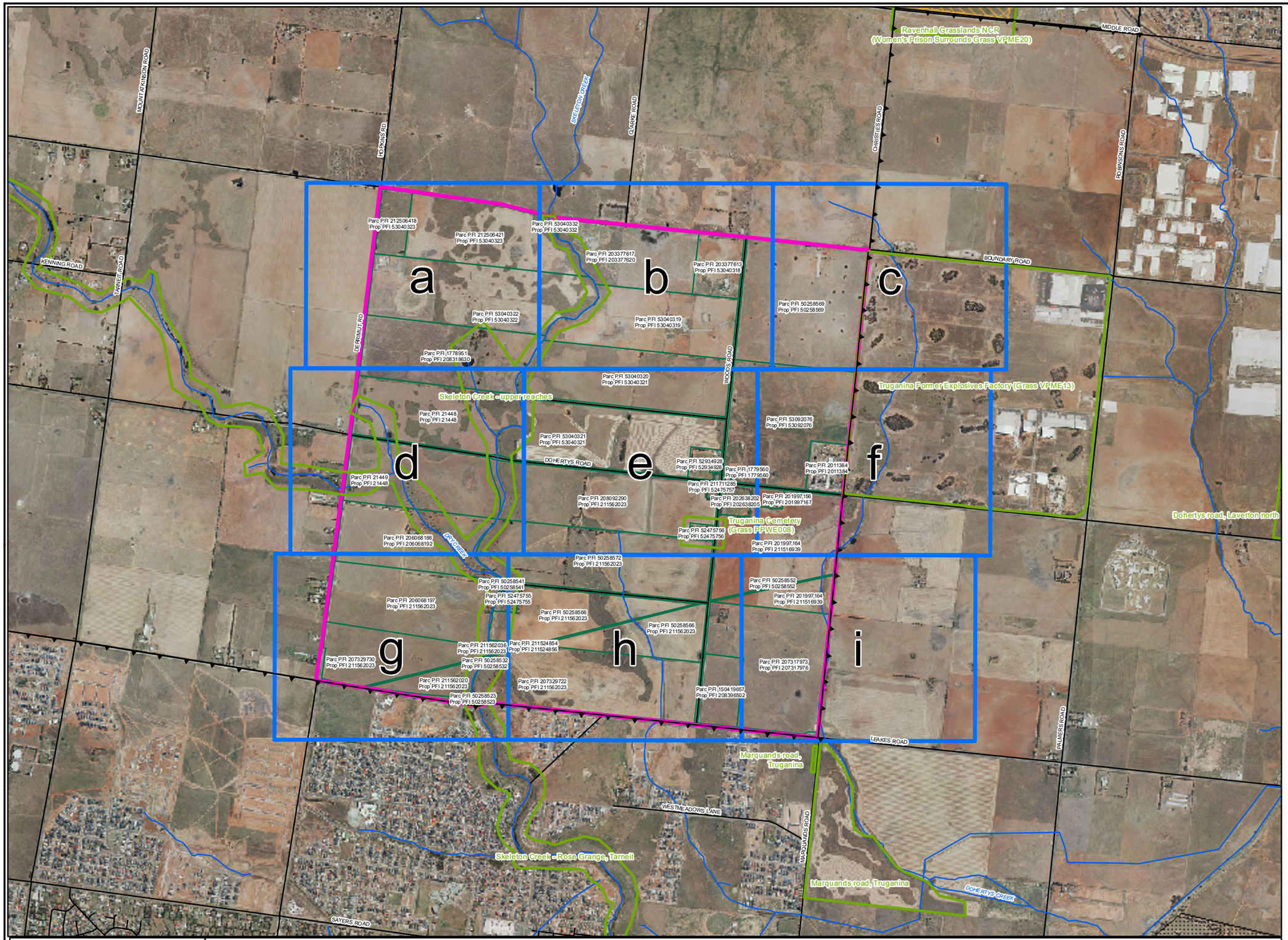
Figure A3b: National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009–2011

Figure A3b: National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009–2011

Figure A4a–i: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009–2011

Figure A5a–i: Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009–2011p

Figure A6a–i: Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009–2011



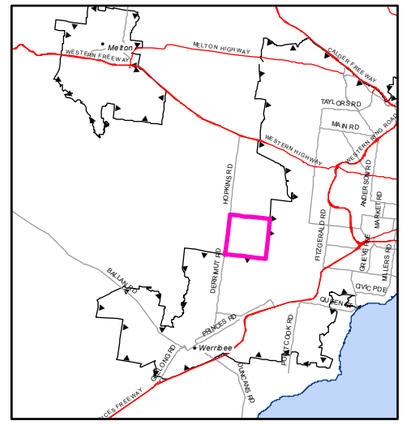


Figure A1

Legend

- Detail maps
- Urban Growth Boundary
- Biosites
- Contract Area 81
- Parcel boundary

Public Land

- Nature Conservation Reserve
- Crown Land reserved

Figure A1: Overview of Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A1 Overview CA 81.mxd

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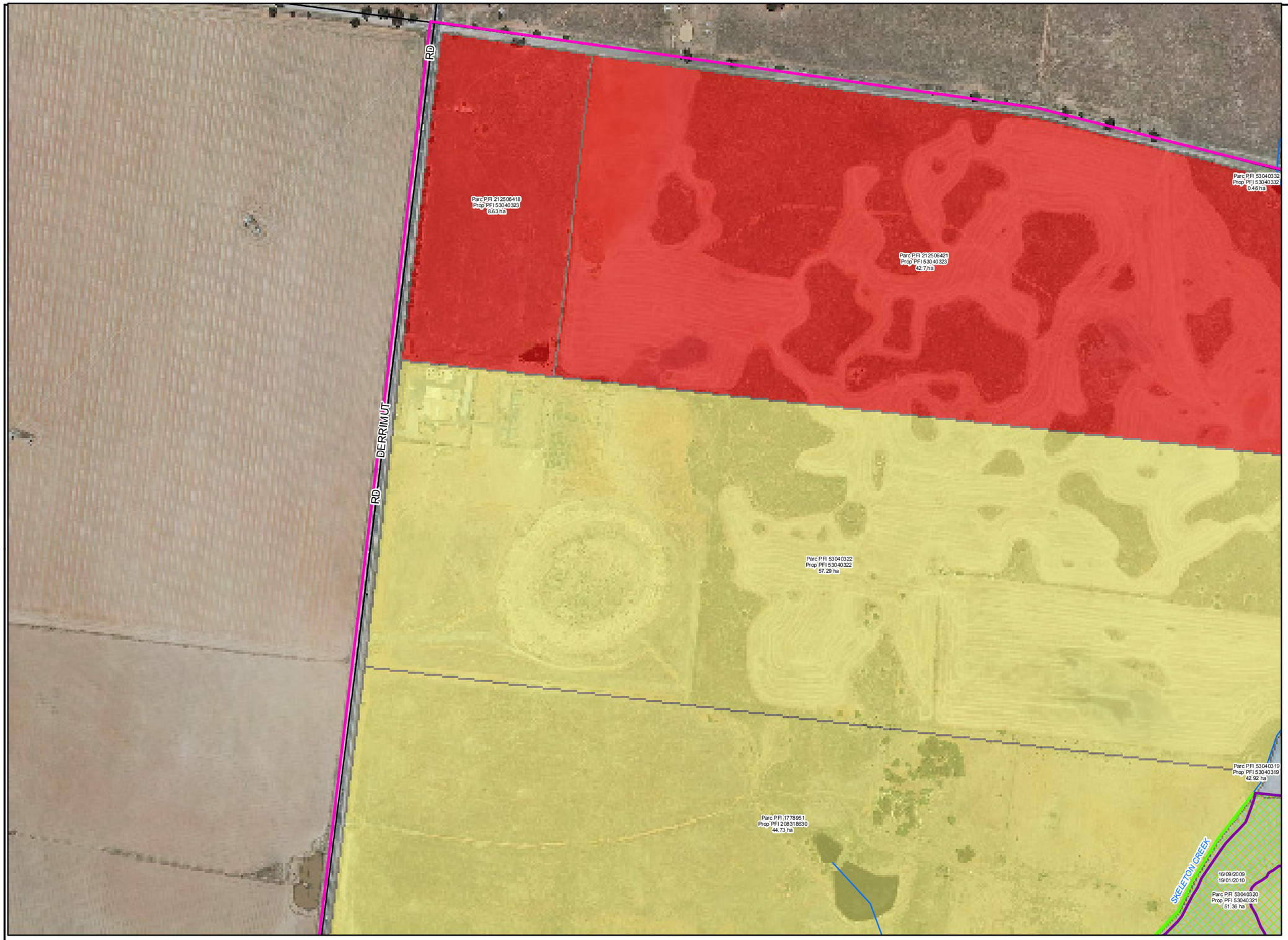

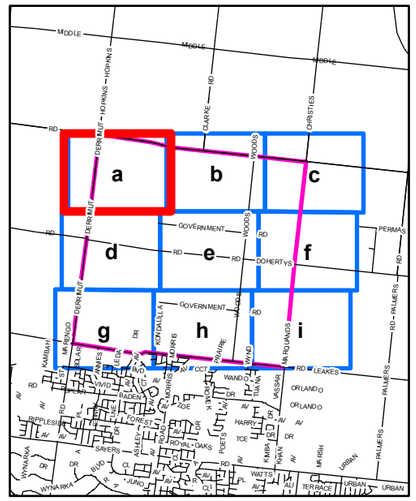

Legend

Contract Area

Survey Status

- Habitas and General flora survey
- General fauna survey
- Bird Point
- Targeted Flora survey showing dates of survey
- Targeted Fauna survey showing dates of survey

Access Status

- Yes
- Tried to contact
- No number
- Denied

Figure A2 a

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Figure A2 a : Property Survey and Access Status, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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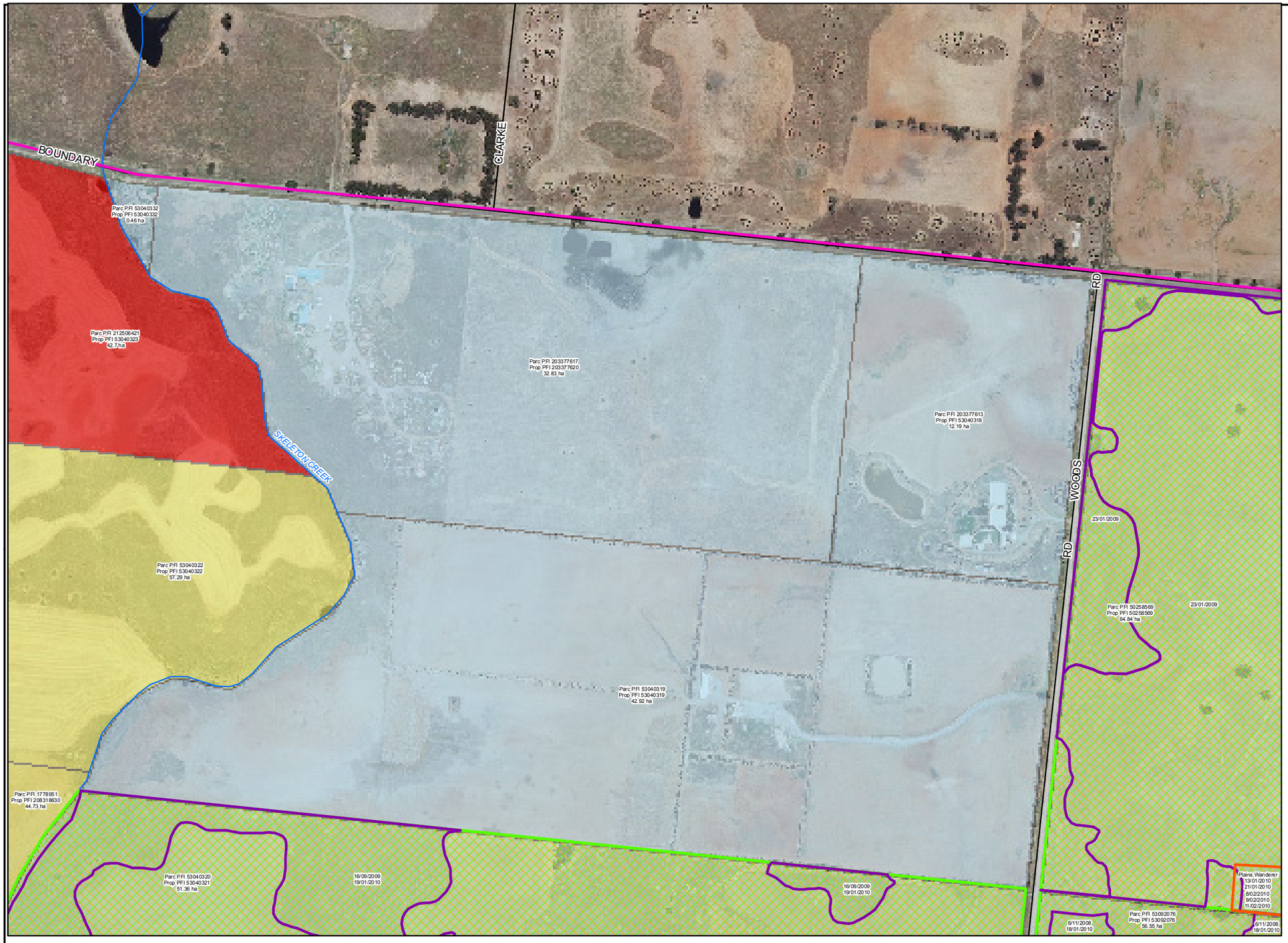

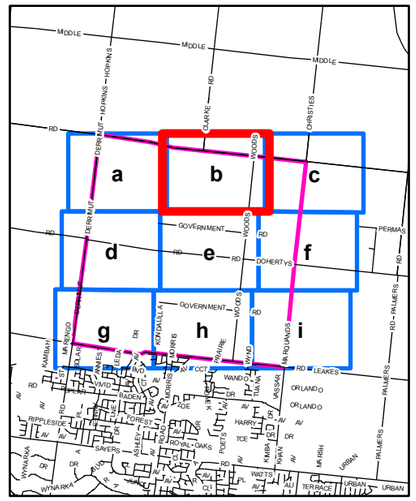

Legend

Contract Area

Survey Status

- Habitas and General flora survey
- General fauna survey
- Bird Point
- Targeted Flora survey showing dates of survey
- Targeted Fauna survey showing dates of survey

Access Status

- Yes
- Tried to contact
- No number
- Denied

Figure A2 b

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Figure A2 b : Property Survey and Access Status, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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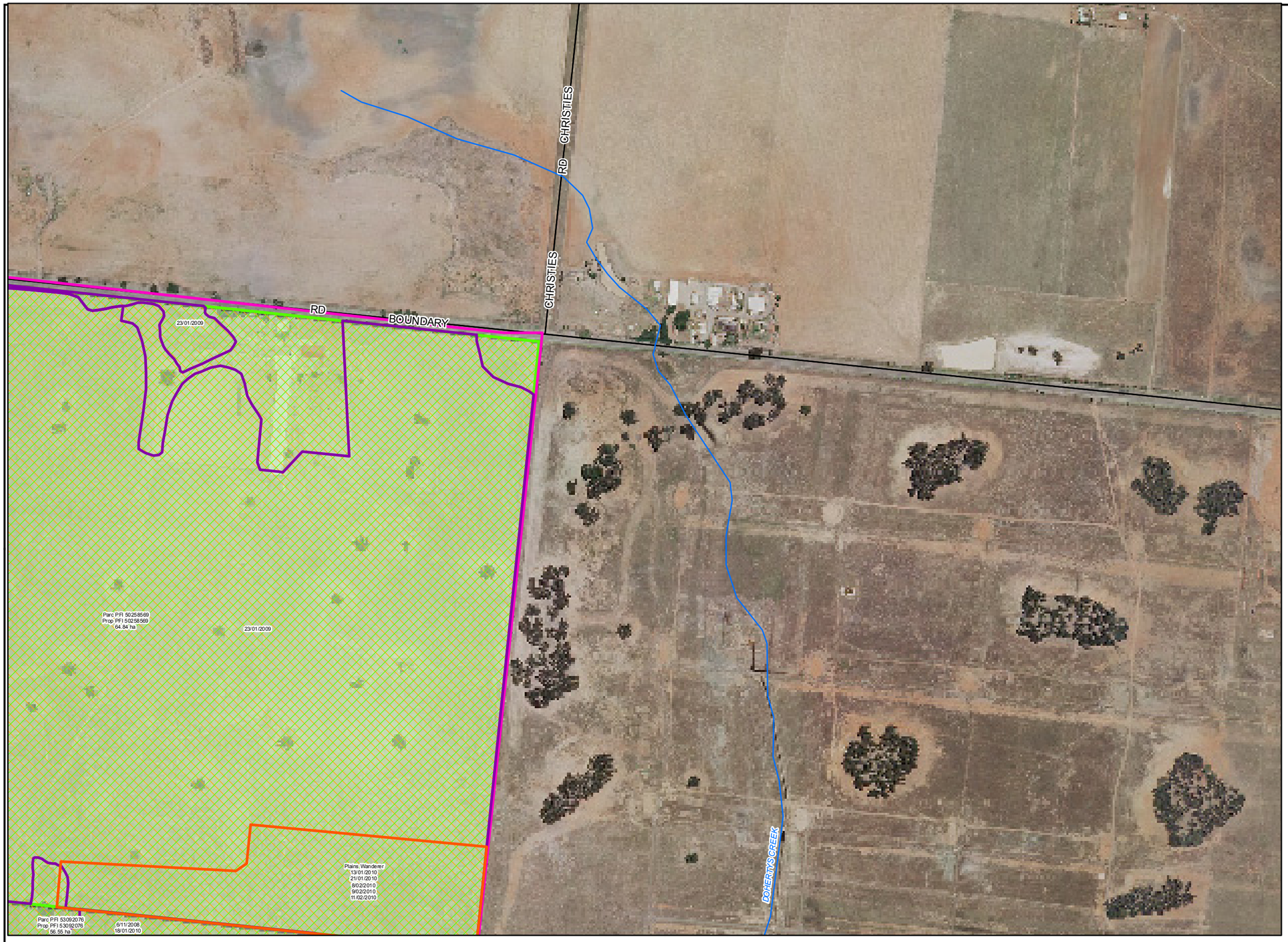

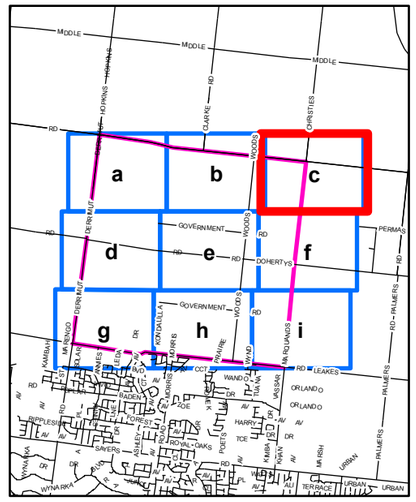

Legend

- Contract Area

Survey Status

- Habitas and General flora survey
- General fauna survey
- Bird Point
- Targeted Flora survey showing dates of survey
- Targeted Fauna survey showing dates of survey

Access Status

- Yes
- Tried to contact
- No number
- Denied

Figure A2 c

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Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A2 Property Access CA81.mxd

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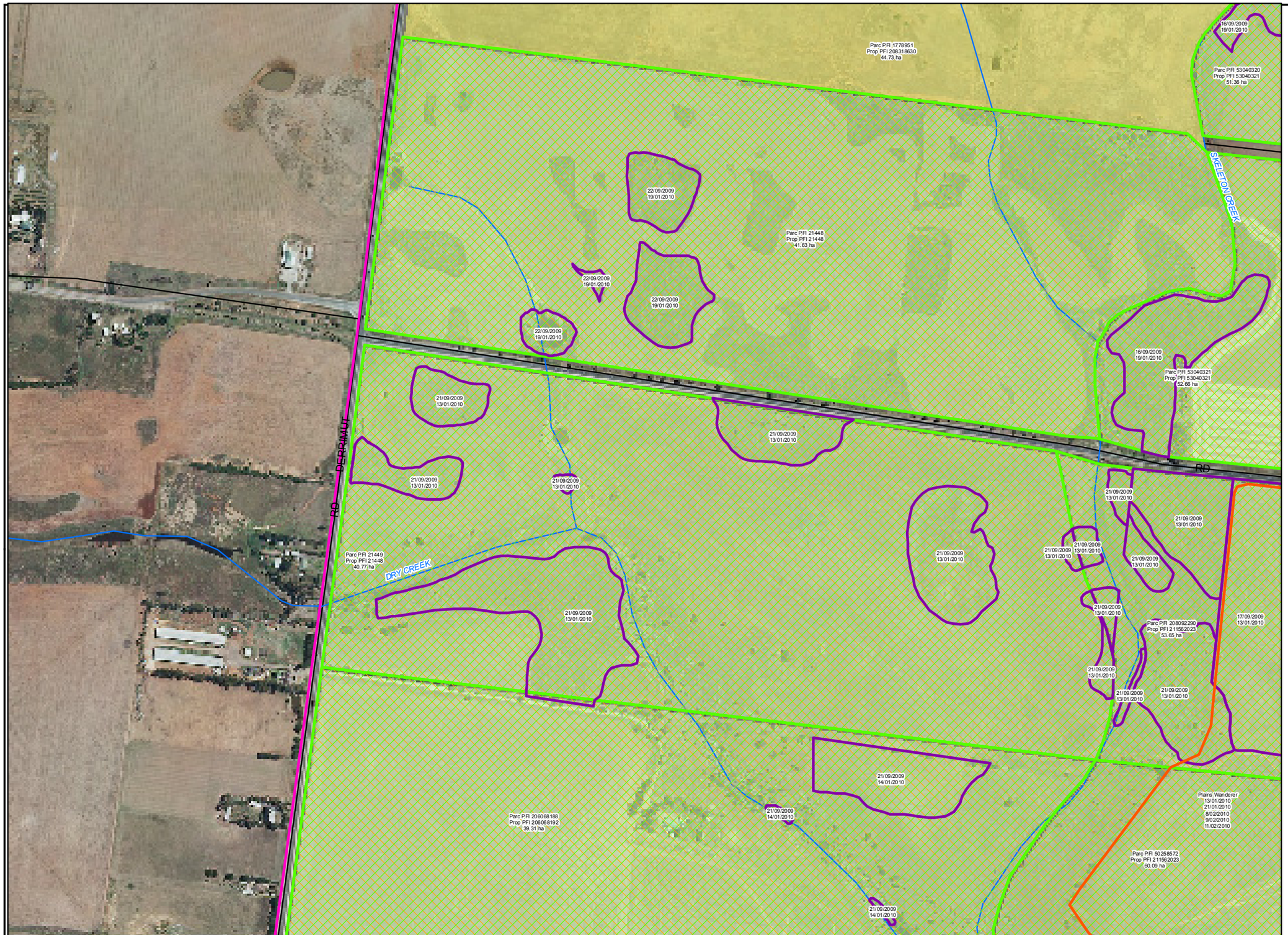

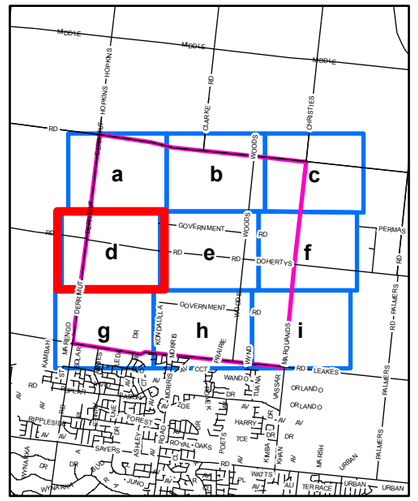

Legend

Contract Area

Survey Status

Habitas and General flora survey

General fauna survey

Bird Point

Targeted Flora survey showing dates of survey

Targeted Fauna survey showing dates of survey

Access Status

Yes

Tried to contact

No number

Denied

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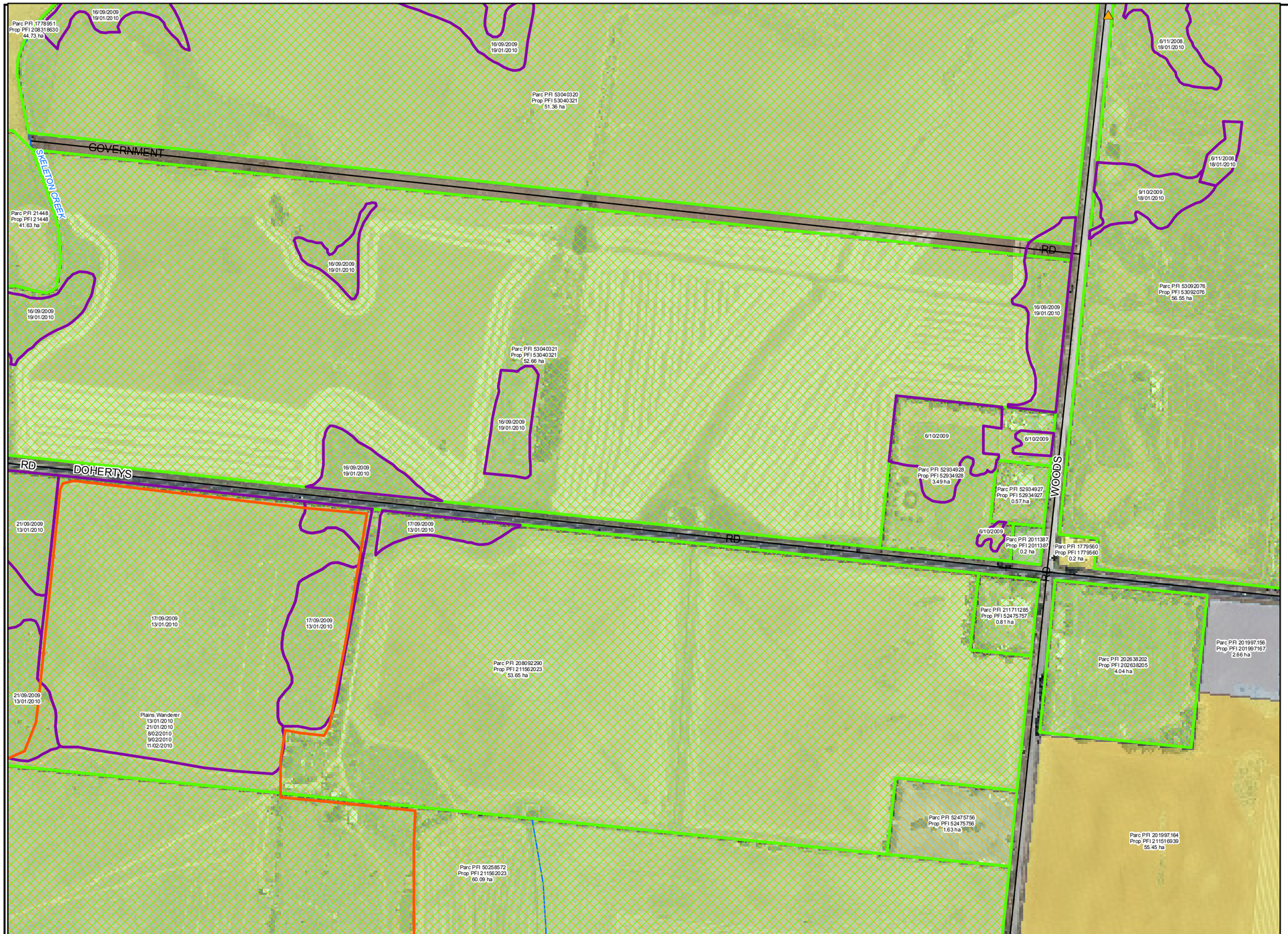

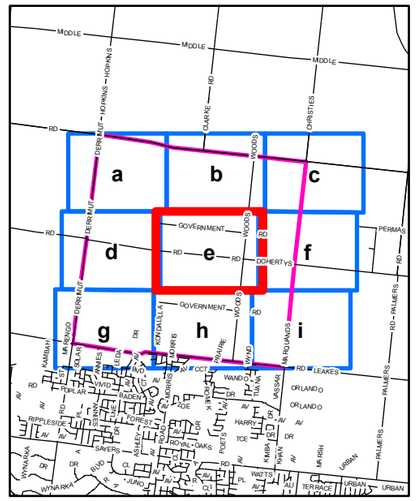

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Contract Area

Survey Status

Habitas and General flora survey

General fauna survey

Bird Point

Targeted Flora survey showing dates of survey

Targeted Fauna survey showing dates of survey

Access Status

Yes

Tried to contact

No number

Denied

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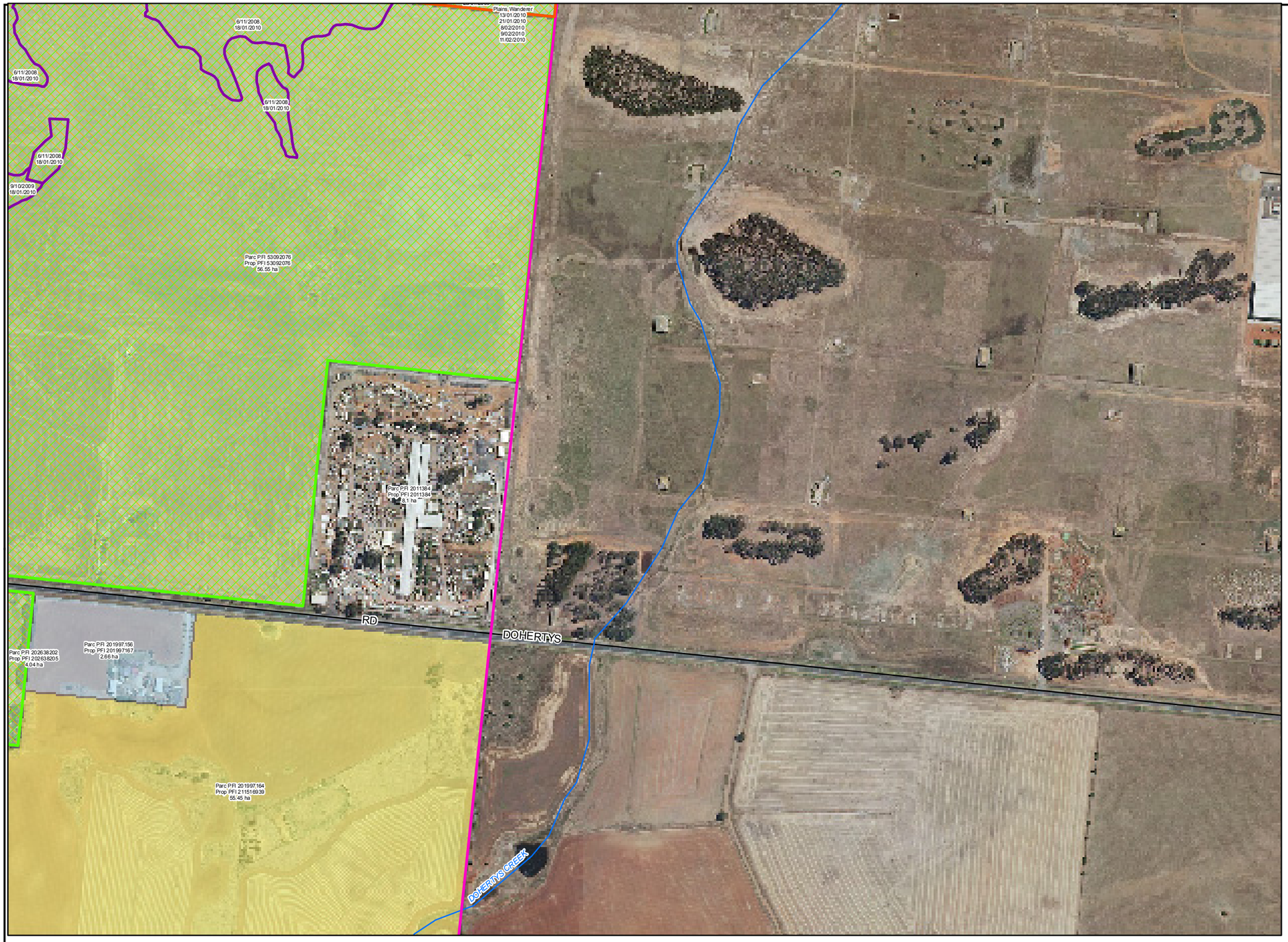

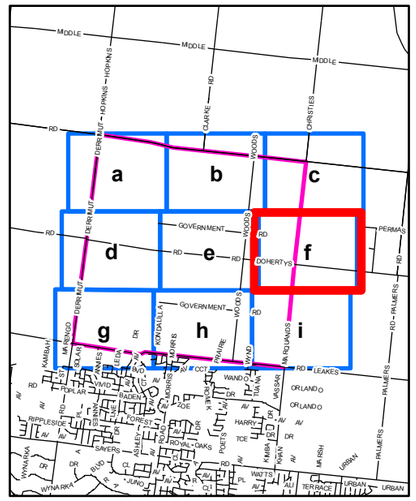

Legend

- Contract Area

Survey Status

- Habitas and General flora survey
- General fauna survey
- Bird Point
- Targeted Flora survey showing dates of survey
- Targeted Fauna survey showing dates of survey

Access Status

- Yes
- Tried to contact
- No number
- Denied

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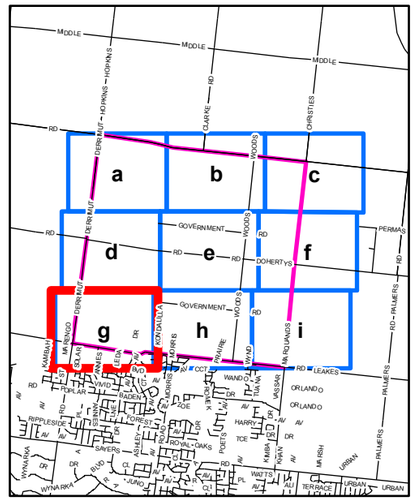

Legend

Contract Area

Survey Status

Habitas and General flora survey

General fauna survey

Bird Point

Targeted Flora survey showing dates of survey

Targeted Fauna survey showing dates of survey

Access Status

Yes

Tried to contact

No number

Denied

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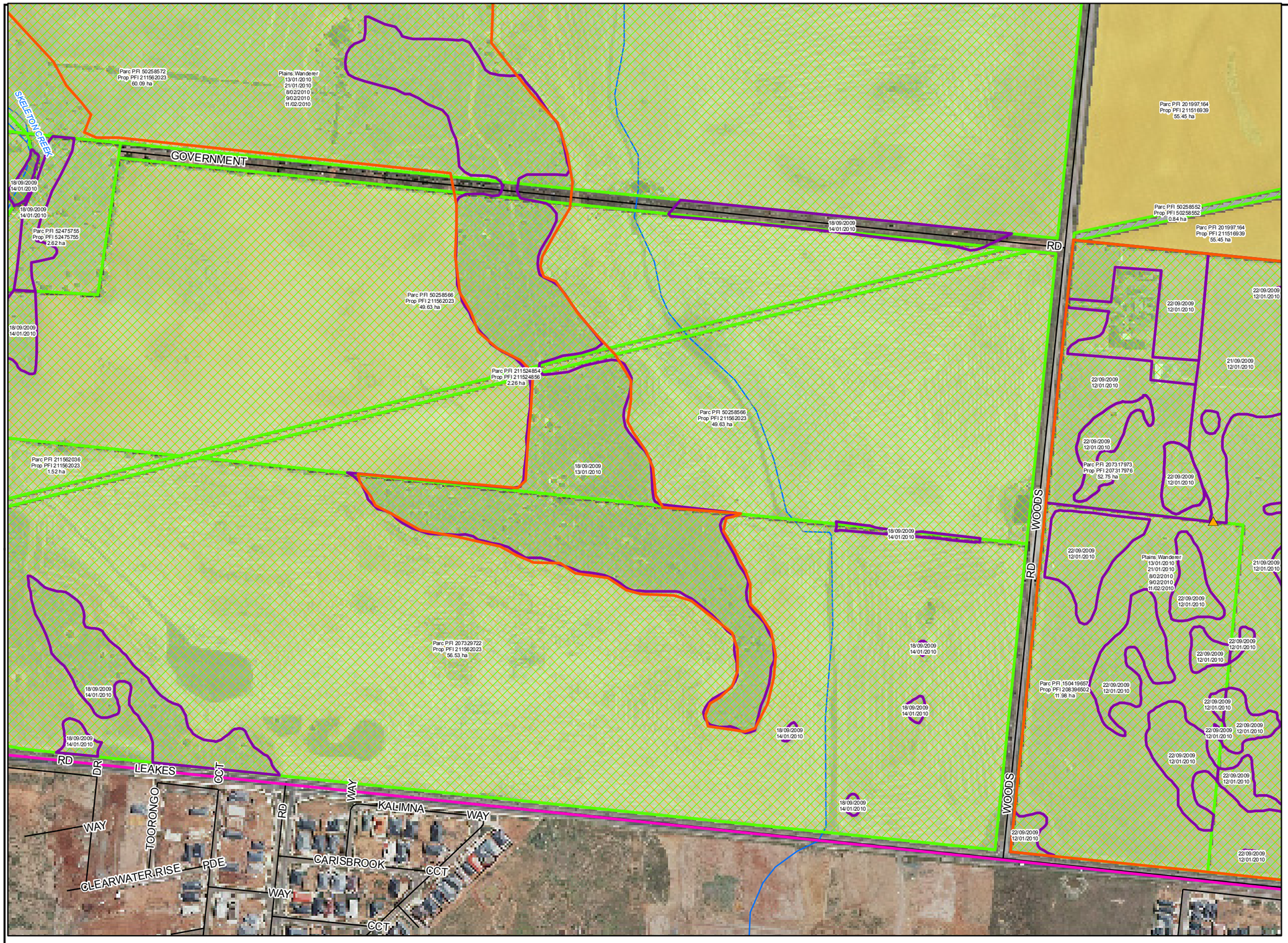

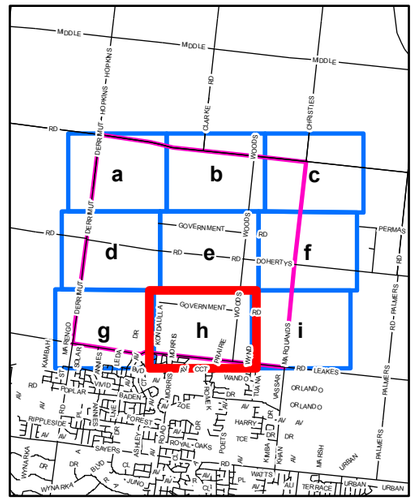

Legend

Contract Area

Survey Status

- Habitas and General flora survey
- General fauna survey
- Bird Point
- Targeted Flora survey showing dates of survey
- Targeted Fauna survey showing dates of survey

Access Status

- Yes
- Tried to contact
- No number
- Denied

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File number: 8059

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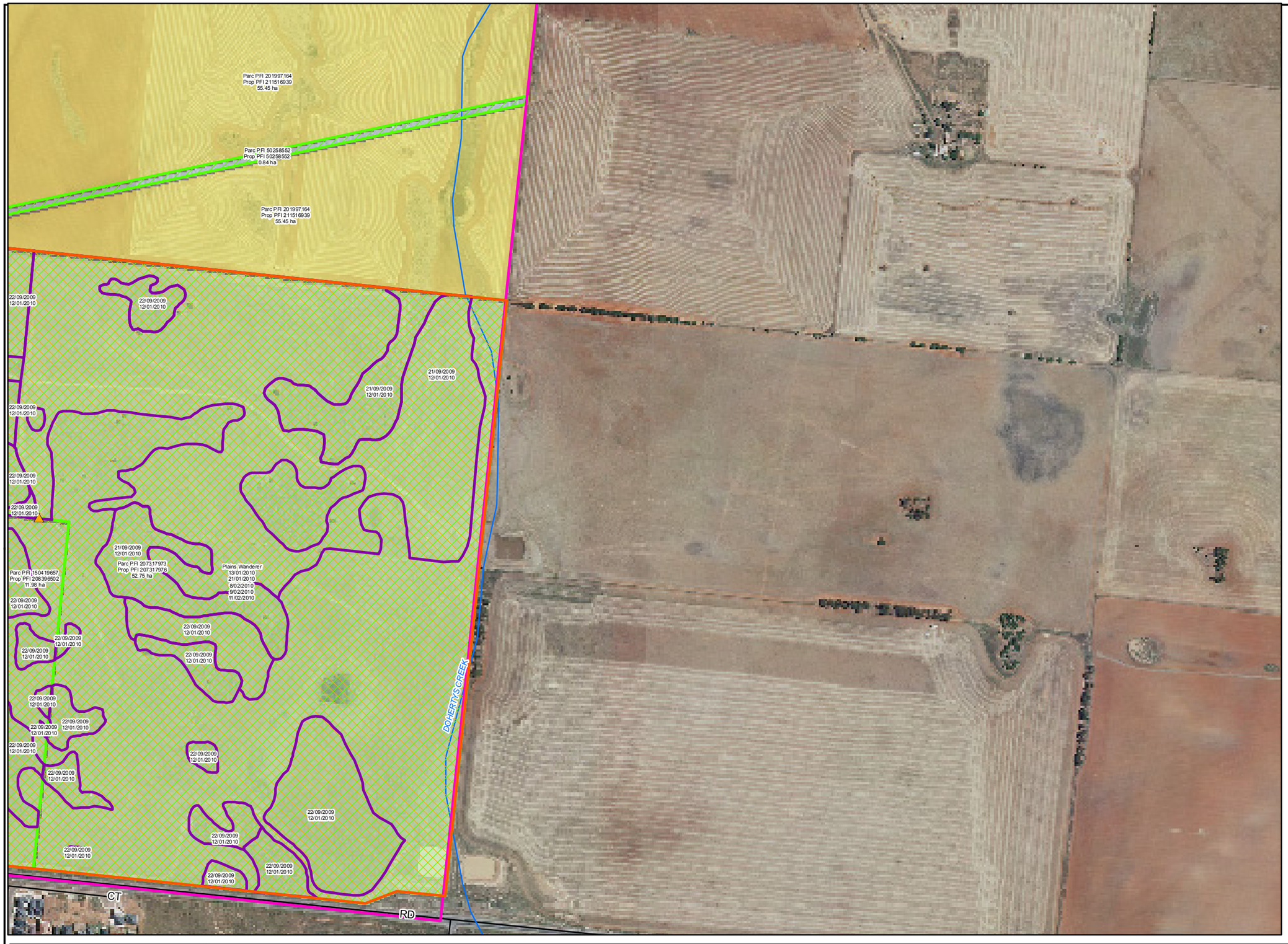

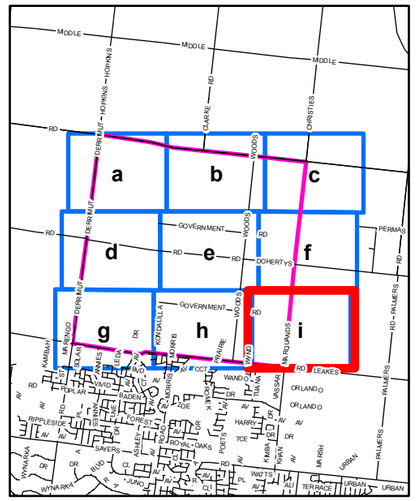

Legend

Contract Area

Survey Status

Habitas and General flora survey

General fauna survey

Bird Point

Targeted Flora survey showing dates of survey

Targeted Fauna survey showing dates of survey

Access Status

Yes

Tried to contact

No number

Denied

Figure A2 i

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Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A2 Property Access CA81.mxd

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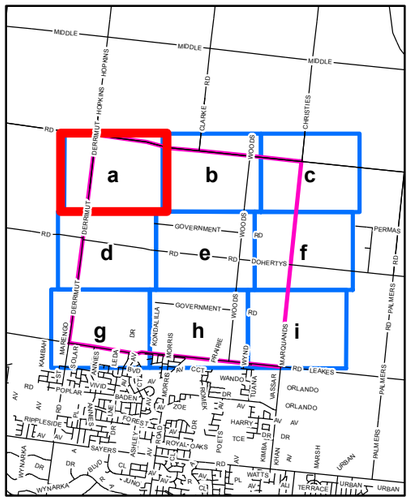

Legend

Targeted and Current (2009) Flora results

Significance

- National
- State

Flora database records with year

Significance

- National
- State

Targeted and Current (2009) Fauna results

Significance

- National
- State

Fauna database records with year

Significance

- National
- State
- Contract Area
- Parcels
- Not Accessed

Note: Nationally significant species labels are highlighted in yellow

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Figure A3 a : National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A3a

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A3 Sig species CA81.mxd

0 50 100 200 300 400 500

Meters

1: 5,000 at A3

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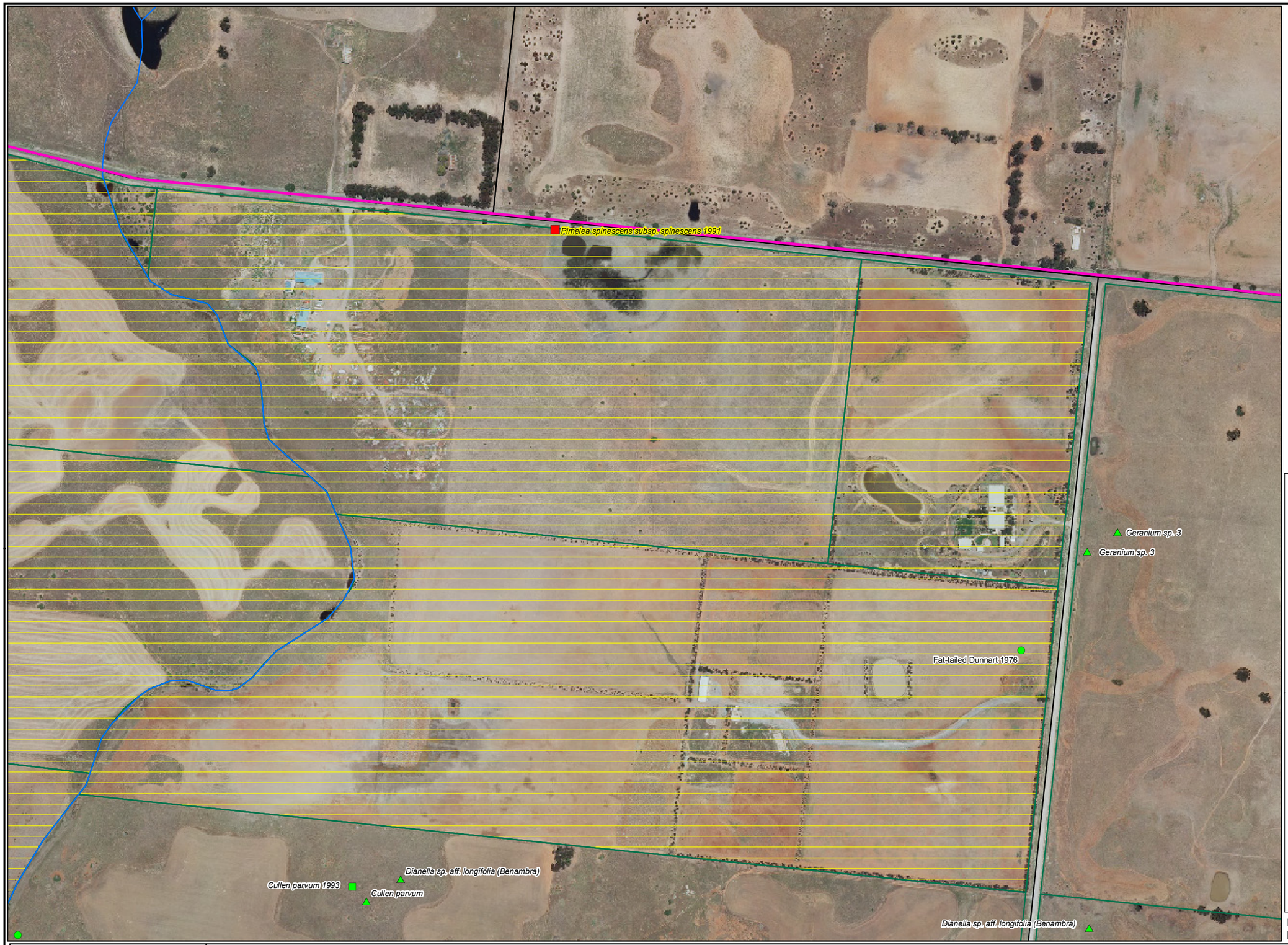

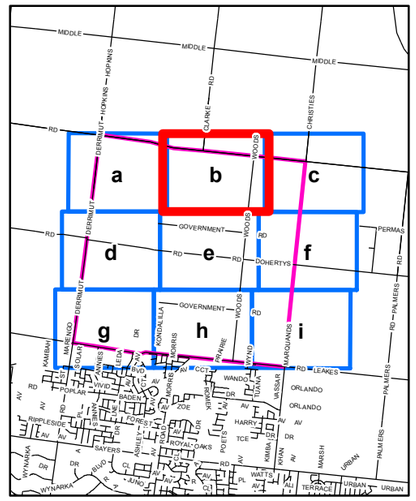

Legend

Targeted and Current (2009) Flora results

Significance

- National
- State

Flora database records with year

Significance

- National
- State

Targeted and Current (2009) Fauna results

Significance

- National
- State

Fauna database records with year

Significance

- National
- State
- Contract Area
- Parcels
- Not Accessed

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Figure A3 b : National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A3b

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A3 Sig species CA81.mxd

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Meters
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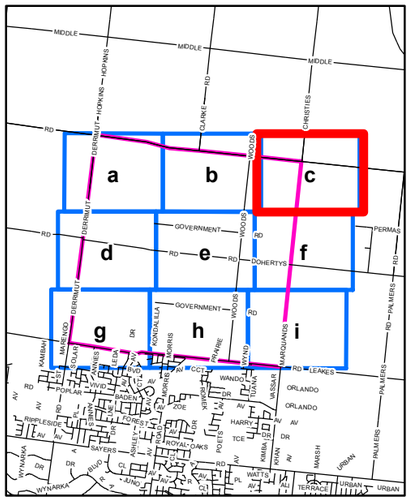

Legend

Targeted and Current (2009) Flora results

Significance

- National
- State

Flora database records with year

Significance

- National
- State

Targeted and Current (2009) Fauna results

Significance

- National
- State

Fauna database records with year

Significance

- National
- State
- Contract Area
- Parcels
- Not Accessed

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Figure A3 c : National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A3c

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A3 Sig species CA81.mxd

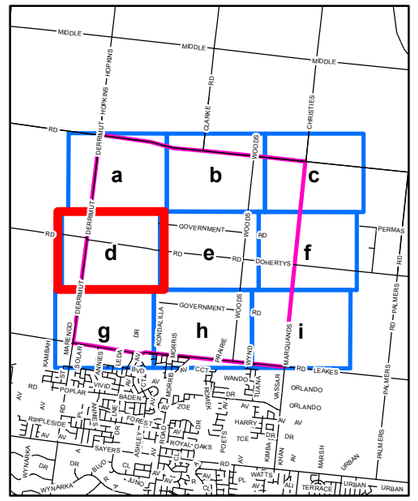
0 50 100 200 300 400 500

Meters

1: 5,000 at A3

N W E S

VicGrid(94)



Legend

Targeted and Current (2009) Flora results

Significance

- National
- State

Flora database records with year

Significance

- National
- State

Targeted and Current (2009) Fauna results

Significance

- National
- State

Fauna database records with year

Significance

- National
- State
- Contract Area
- Parcels
- Not Accessed

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Figure A3 d : National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A3d

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A3 Sig species CA81.mxd

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Meters

1: 5,000 at A3

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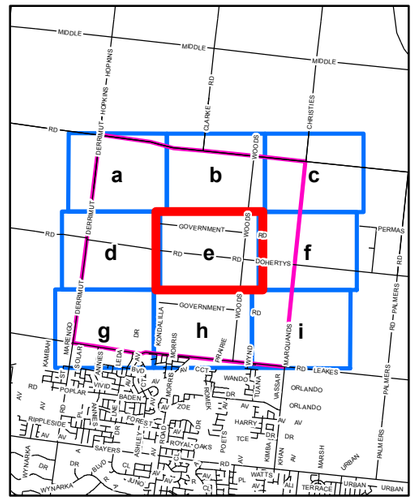
VicGrid(94)



Legend

Targeted and Current (2009) Flora results

Significance

- National
- State

Flora database records with year

Significance

- National
- State

Targeted and Current (2009) Fauna results

Significance

- National
- State

Fauna database records with year

Significance

- National
- State

- Contract Area
- Parcels
- Not Accessed

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Figure A3 e : National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A3e

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A3 Sig species CA81.mxd

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Meters
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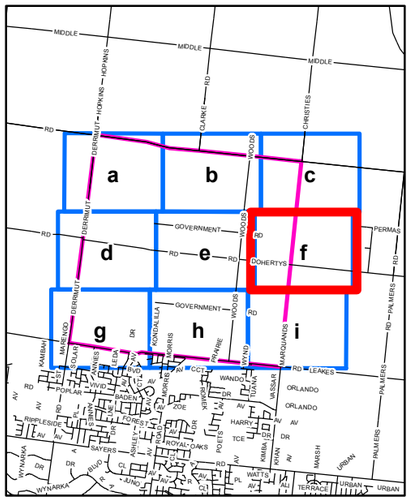

Legend

Targeted and Current (2009) Flora results

Significance

- National
- State

Flora database records with year

Significance

- National
- State

Targeted and Current (2009) Fauna results

Significance

- National
- State

Fauna database records with year

Significance

- National
- State
- Contract Area
- Parcels
- Not Accessed

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Figure A3 f : National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A3f

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A3 Sig species CA81.mxd

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Meters
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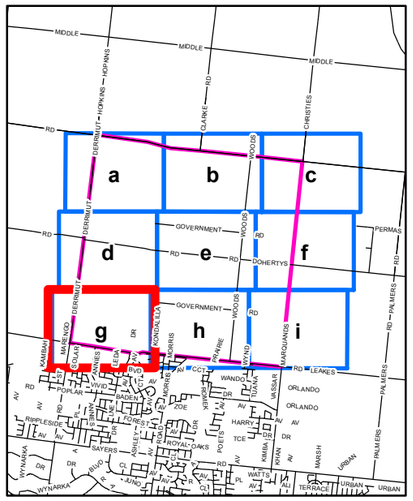
N W E S
VicGrid(94)



Legend

Targeted and Current (2009) Flora results

Significance

- National
- State

Flora database records with year

Significance

- National
- State

Targeted and Current (2009) Fauna results

Significance

- National
- State

Fauna database records with year

Significance

- National
- State
- Contract Area
- Parcels
- Not Accessed

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Figure A3g

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A3 Sig species CA81.mxd

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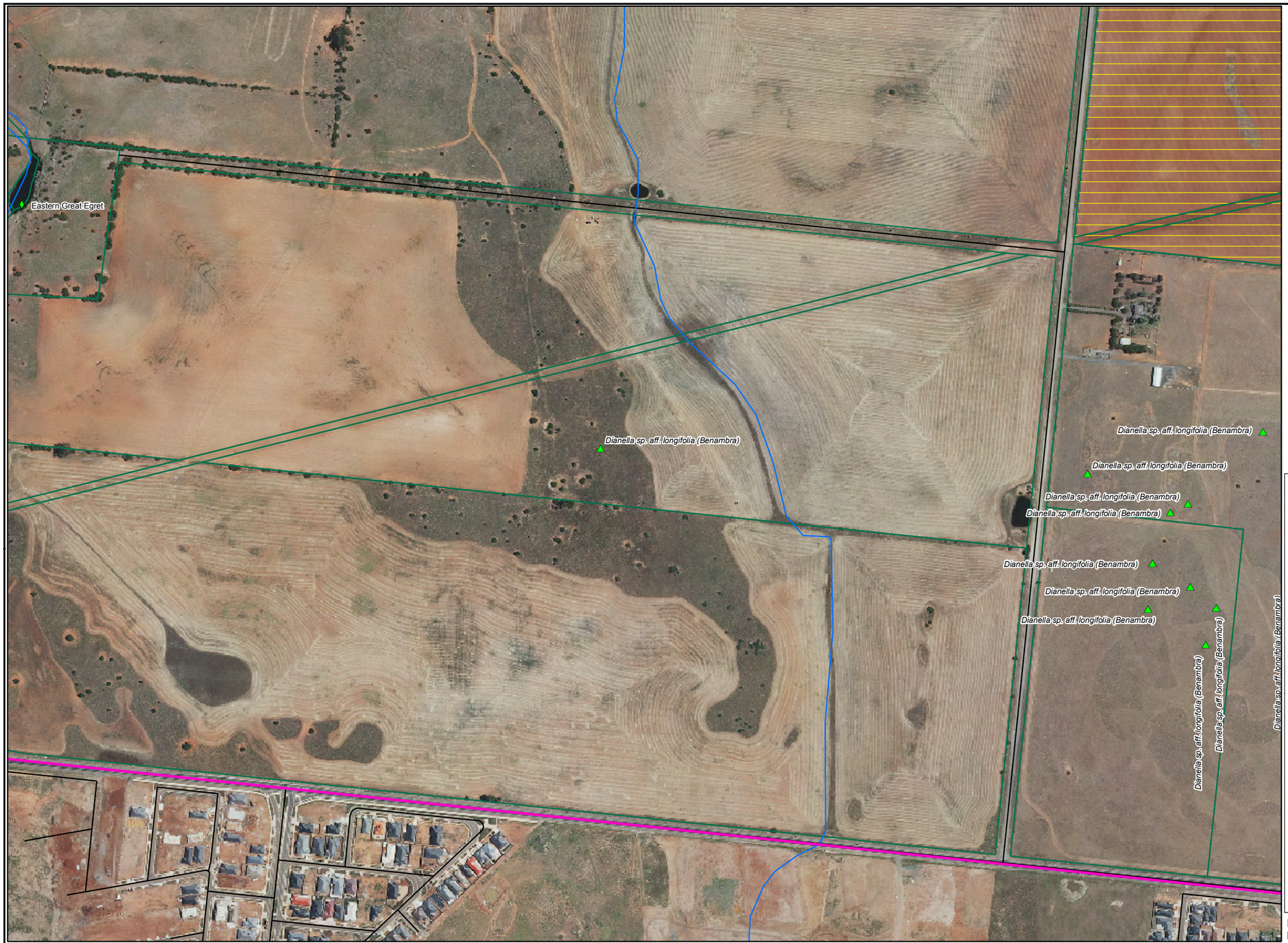

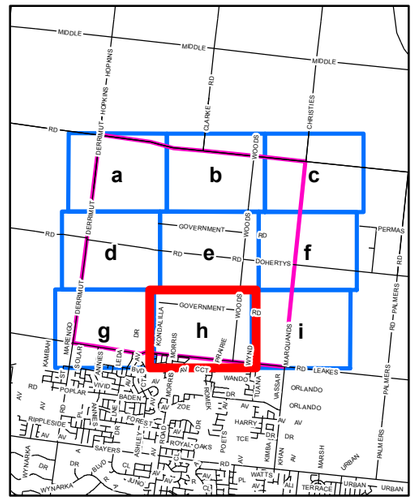

Legend

Targeted and Current (2009) Flora results

Significance

- National
- State

Flora database records with year

Significance

- National
- State

Targeted and Current (2009) Fauna results

Significance

- National
- State

Fauna database records with year

Significance

- National
- State
- Contract Area
- Parcels
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Figure A3 h : National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A3h

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A3 Sig species CA81.mxd

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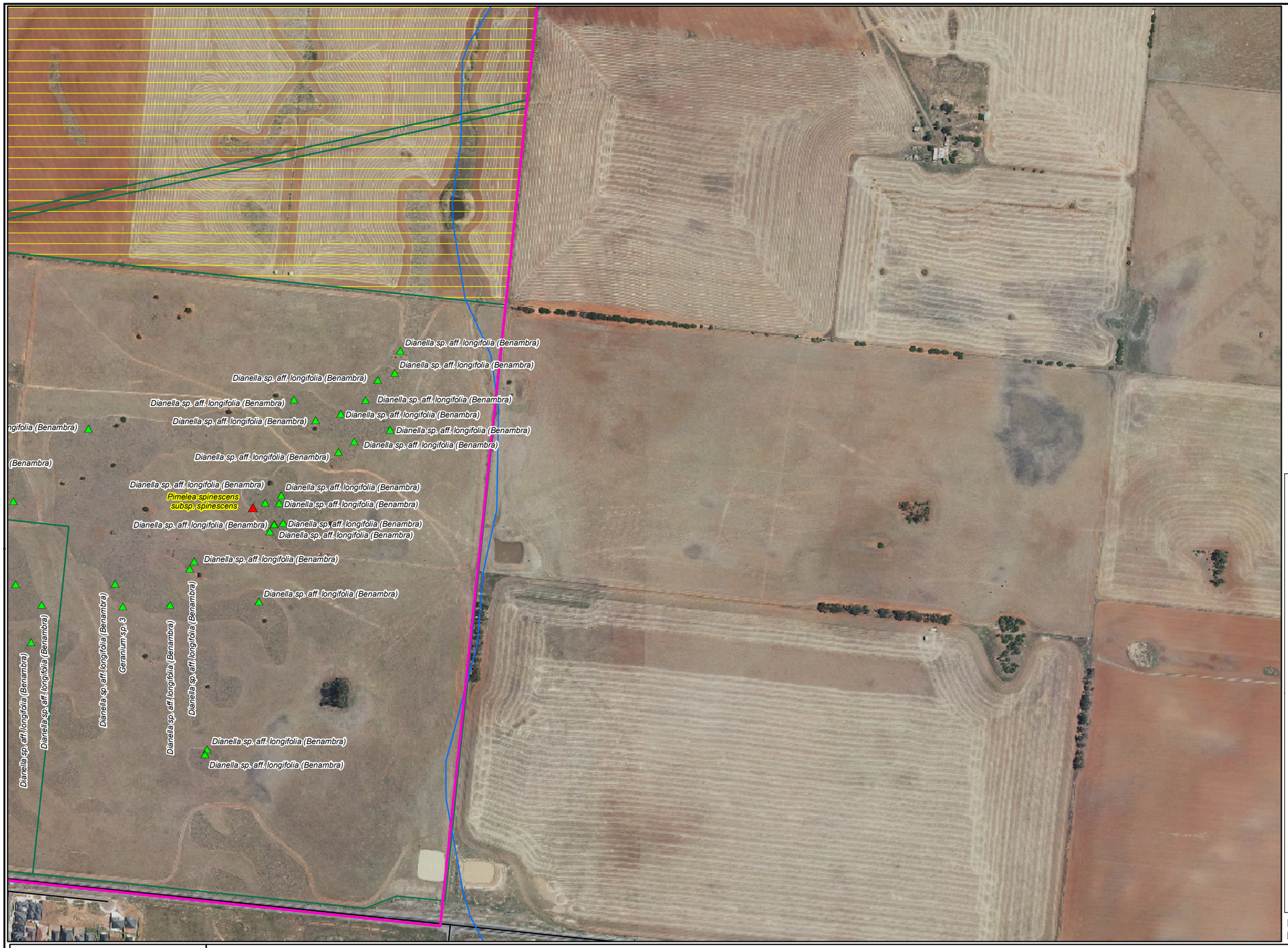

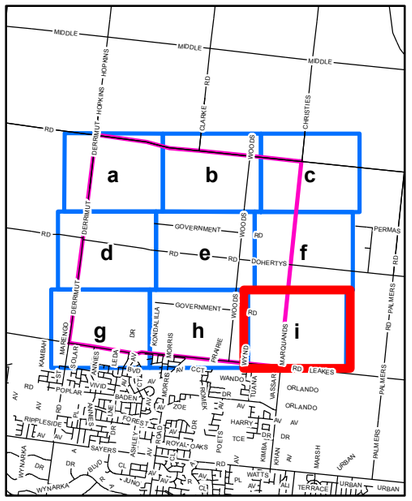

Legend

Targeted and Current (2009) Flora results

Significance

- National
- State

Flora database records with year

Significance

- National
- State

Targeted and Current (2009) Fauna results

Significance

- National
- State

Fauna database records with year

Significance

- National
- State

- Contract Area
- Parcels
- Not Accessed

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Figure A3 i : National and State Significant flora and fauna species locations, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A3i

Date: 29 April 2011
Checked by: MDD
Drawn by: SKM
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A3 Sig species CA81.mxd

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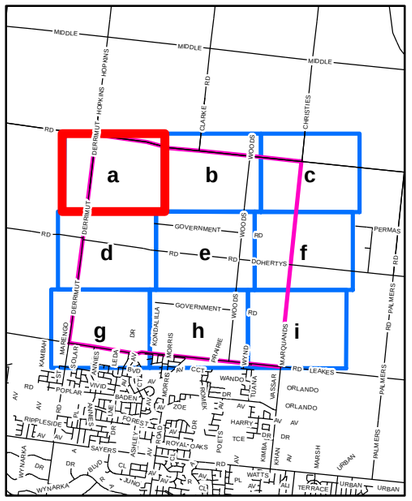

Legend

Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 653 Aquatic Herbland
- 656 Brackish Wetland
- Degraded treeless vegetation
- EPBC listed Natural Temperate Grassland of the Victorian Volcanic Plain
- Non Native Vegetation
- Contract Area
- Not Accessed
- Parcels

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Figure A4 a: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A4 a

Date: 11 July 2011
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File number: 10497/8059

Location: ...10497 - V8059\Mapping\Updated Data Disk for GAA\10497-V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A4 EVCs CA81.mxd

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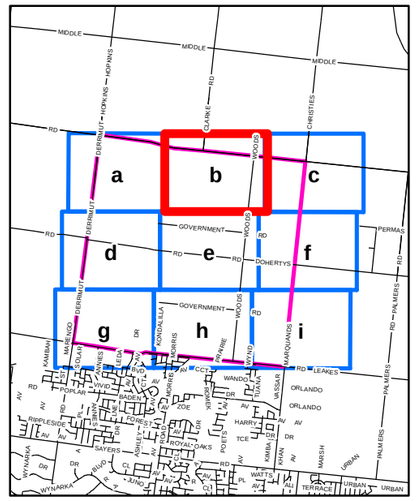

Legend

Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 653 Aquatic Herbland
- 656 Brackish Wetland
- Degraded treeless vegetation
- EPBC listed Natural Temperate Grassland of the Victorian Volcanic Plain
- Non Native Vegetation
- Contract Area
- Not Accessed
- Parcels

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Figure A4 b: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A4 b

Date: 11 July 2011
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Drawn by: SKM\KVC
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Updated Data Disk for GAA\10497-V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A4 EVCs CA81.mxd

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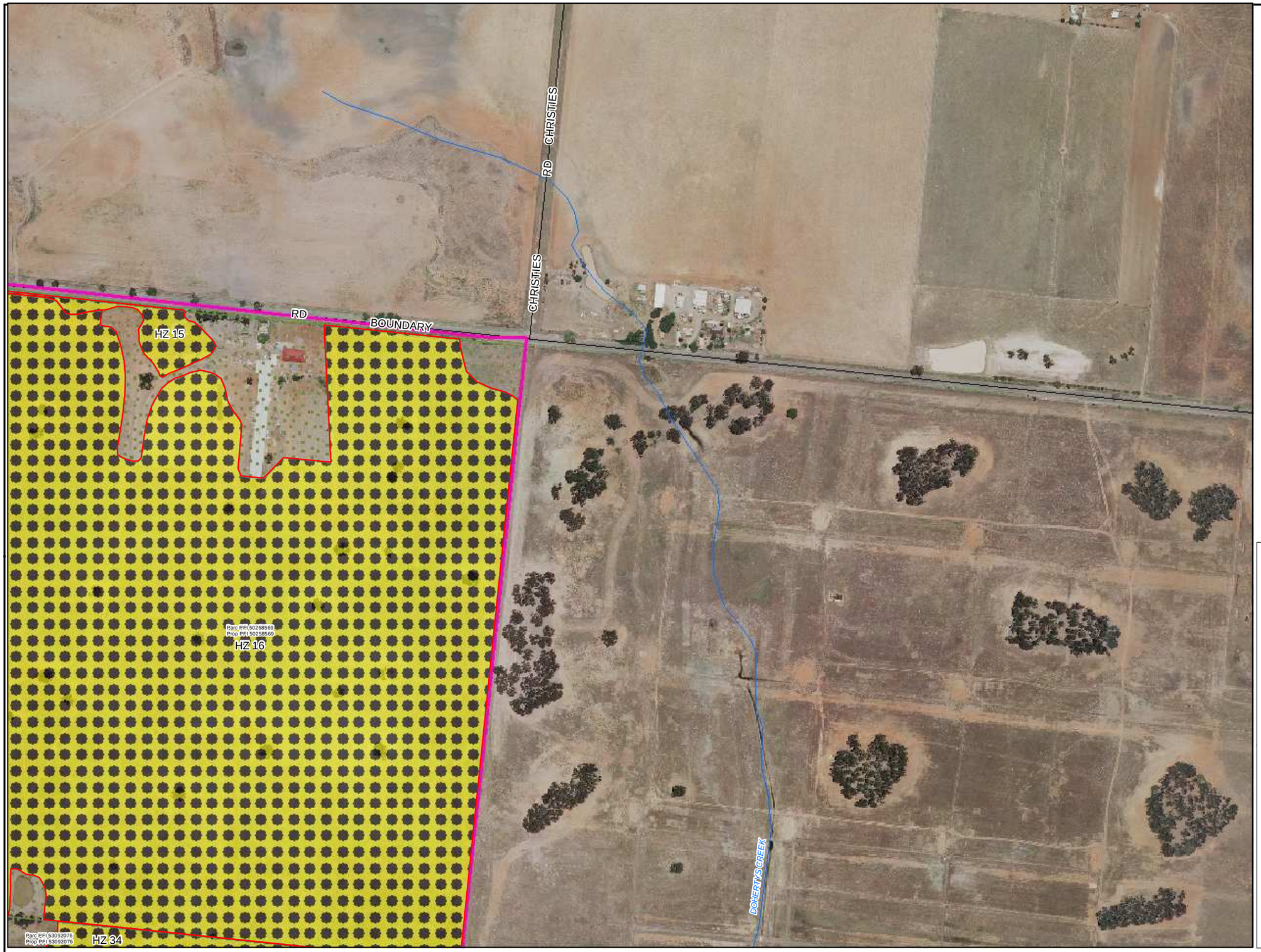

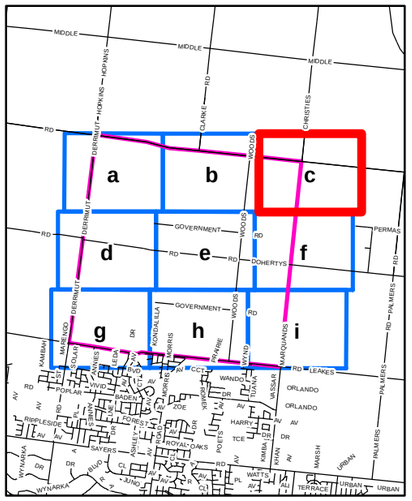

Legend

Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 653 Aquatic Herbland
- 656 Brackish Wetland
- Degraded treeless vegetation
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- Not Accessed
- Parcels

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Figure A4 c: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A4 c

Date: 11 July 2011
Checked by: MDD
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File number: 10497/8059

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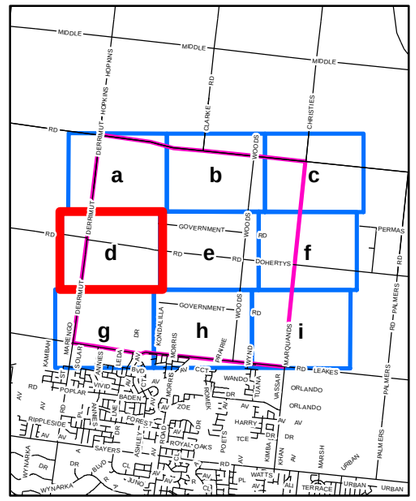

Legend

Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 653 Aquatic Herbland
- 656 Brackish Wetland
- Degraded treeless vegetation
- EPBC listed Natural Temperate Grassland of the Victorian Volcanic Plain
- Non Native Vegetation
- Contract Area
- Not Accessed
- Parcels

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Figure A4 d: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A4 d

Date: 11 July 2011
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File number: 10497/8059

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N W E S
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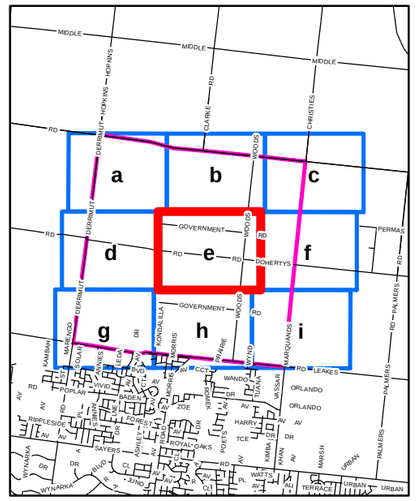

Legend

Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
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Figure A4 e: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A4 e

Date: 11 July 2011
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File number: 10497/8059

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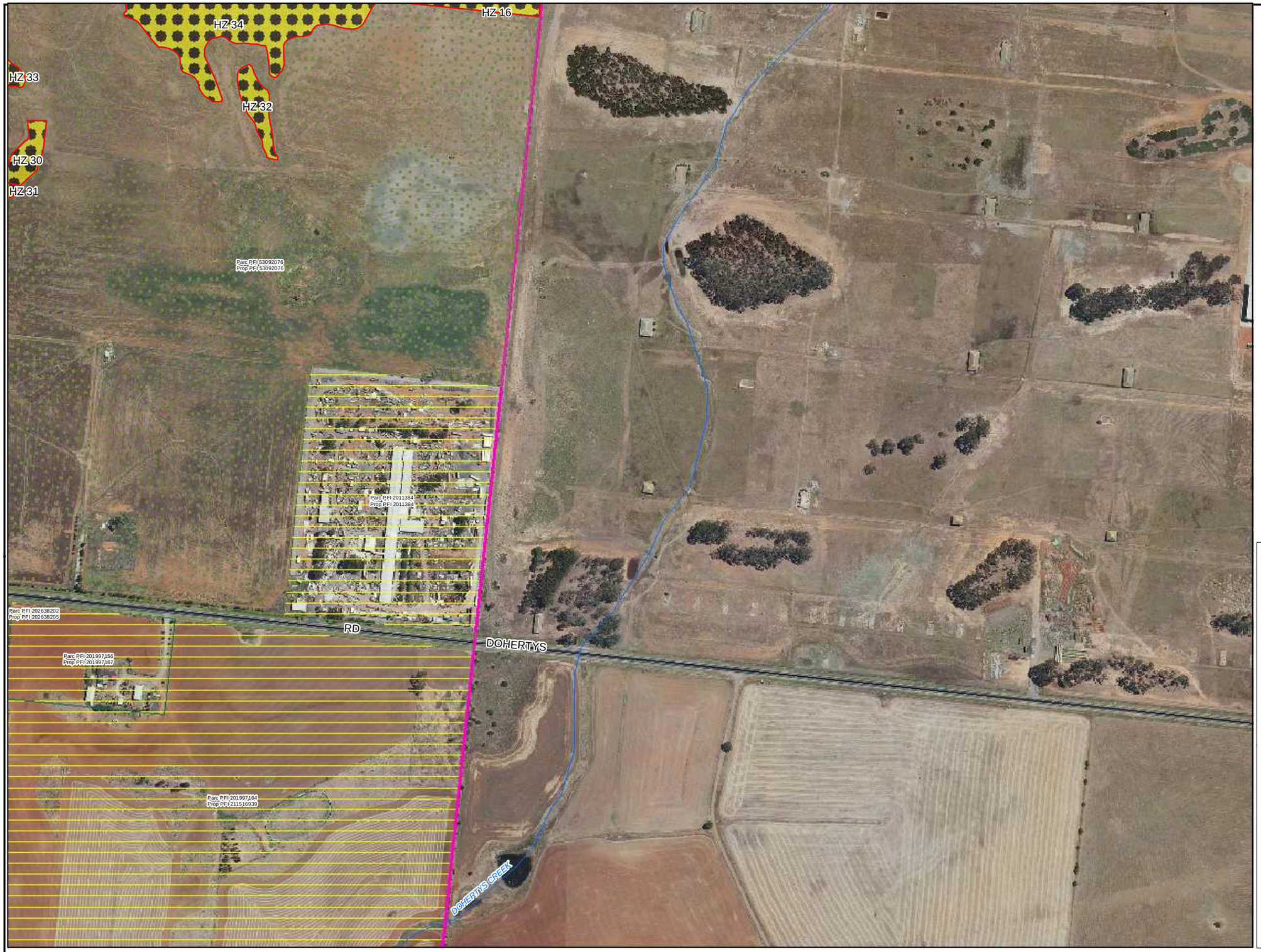

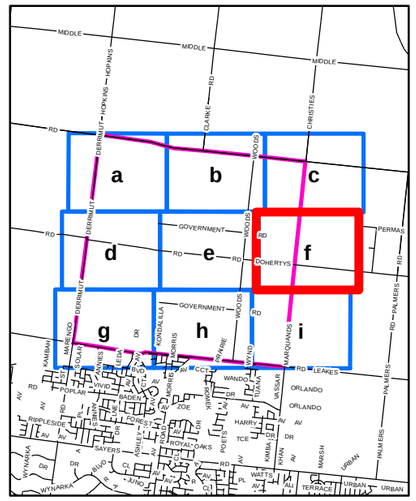

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Native Vegetation

EVC

- 125 Plains Grassy Wetland
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Figure A4 f : Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A4 f

Date: 11 July 2011
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File number: 10497/8059

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Meters
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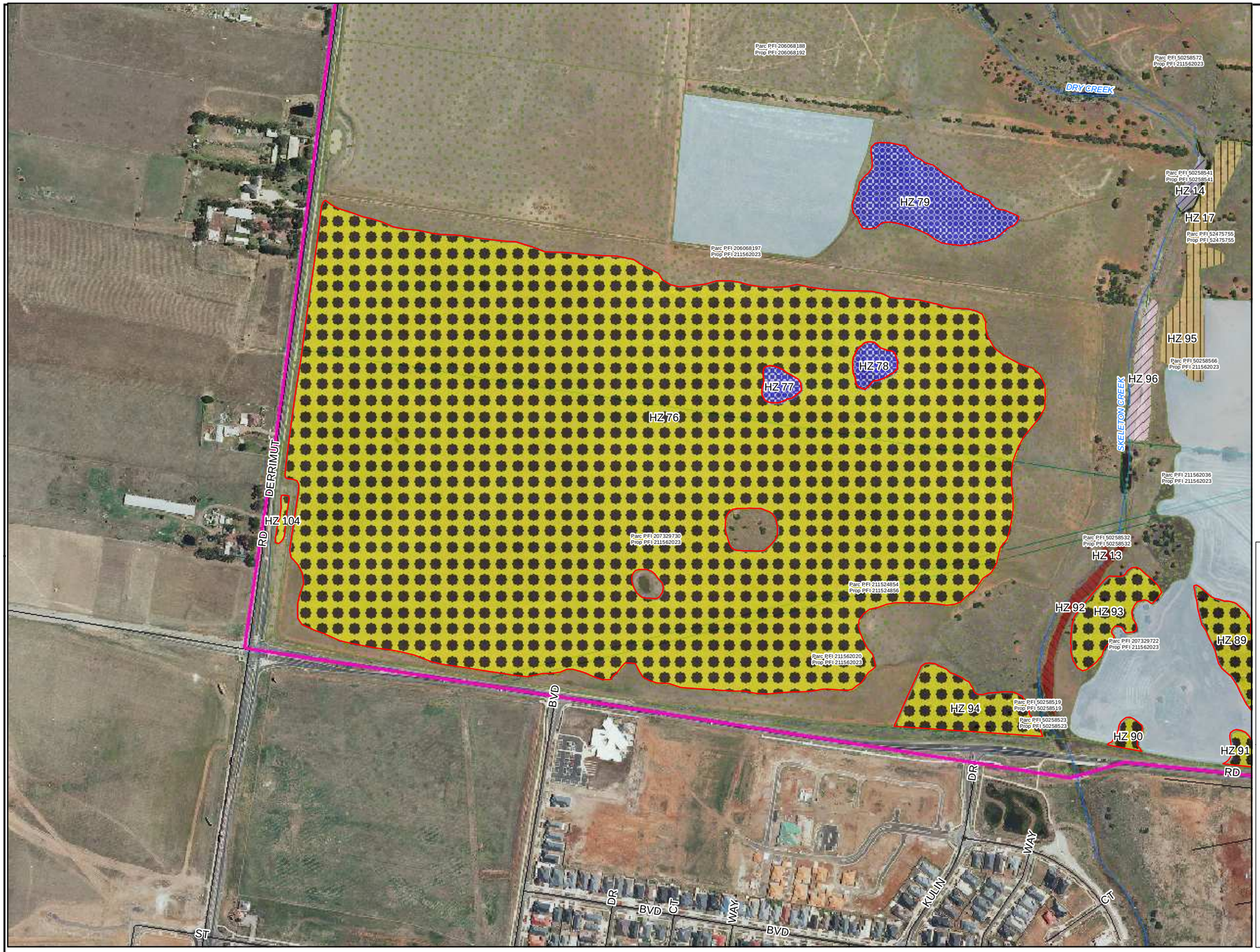

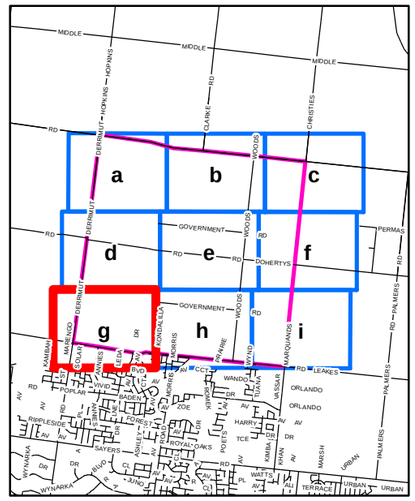

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Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 647 Plains Sedgy Wetland
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Figure A4 g: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A4 g

Date: 11 July 2011
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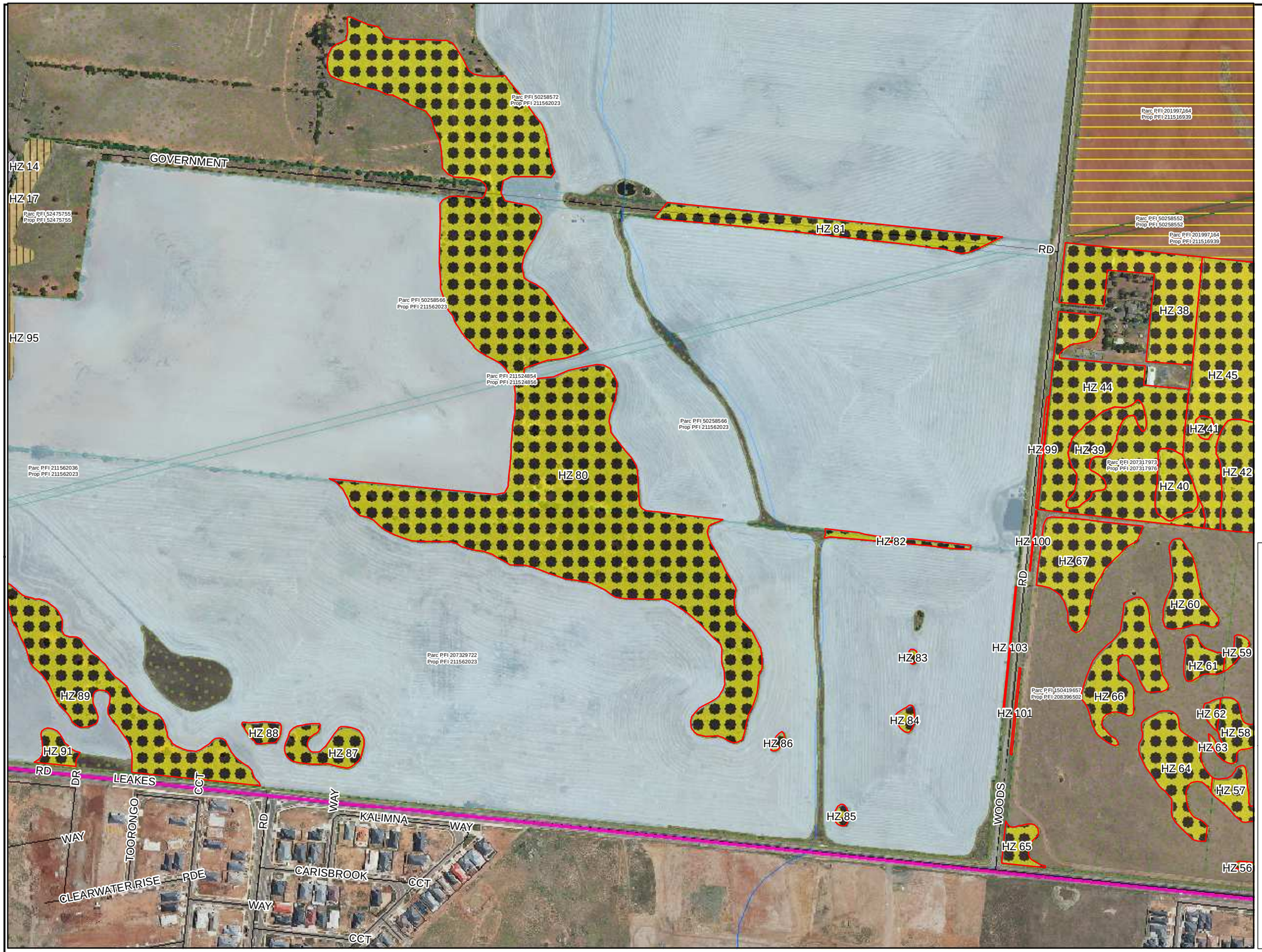

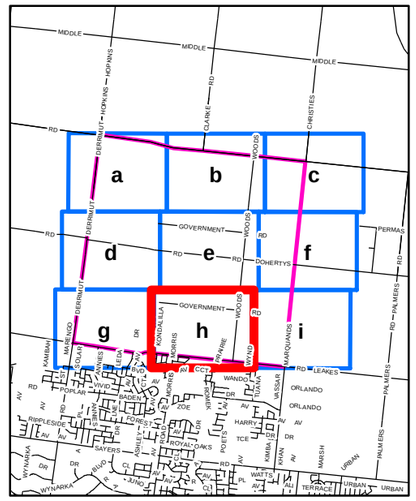

Legend

Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 653 Aquatic Herbland
- 656 Brackish Wetland
- Degraded treeless vegetation
- EPBC listed Natural Temperate Grassland of the Victorian Volcanic Plain
- Non Native Vegetation
- Contract Area
- Not Accessed
- Parcels

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Figure A4 h: Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A4 h

Date: 11 July 2011
Checked by: MDD
Drawn by: SKM\KVC
File number: 10497/8059

Location: ...10497 - V8059\Mapping\Updated Data Disk for GAA\10497-V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A4 EVCs CA81.mxd

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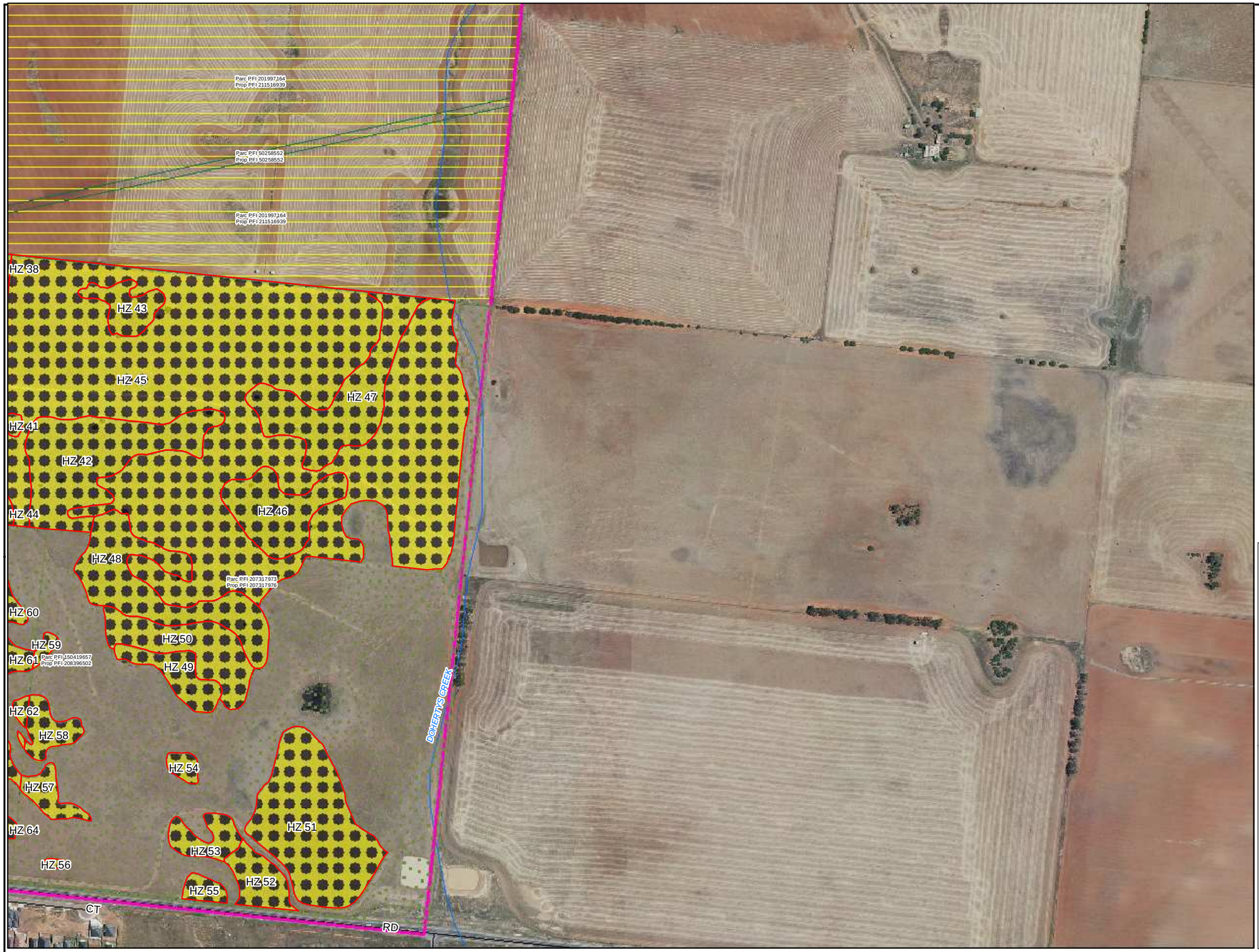

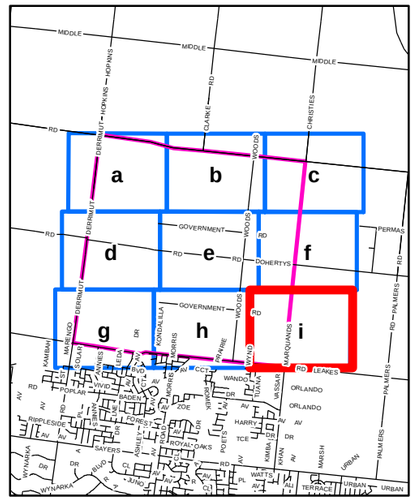

Legend

Native Vegetation

EVC

- 125 Plains Grassy Wetland
- 132_61 Heavier-soils Plains Grassland
- 647 Plains Sedgy Wetland
- 649 Stony Knoll Shrubland
- 653 Aquatic Herbland
- 656 Brackish Wetland
- Degraded treeless vegetation
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- Non Native Vegetation
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Figure A4 i : Vegetation, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A4 i

Date: 11 July 2011
Checked by: MDD
Drawn by: SKM\KVC
File number: 10497/8059

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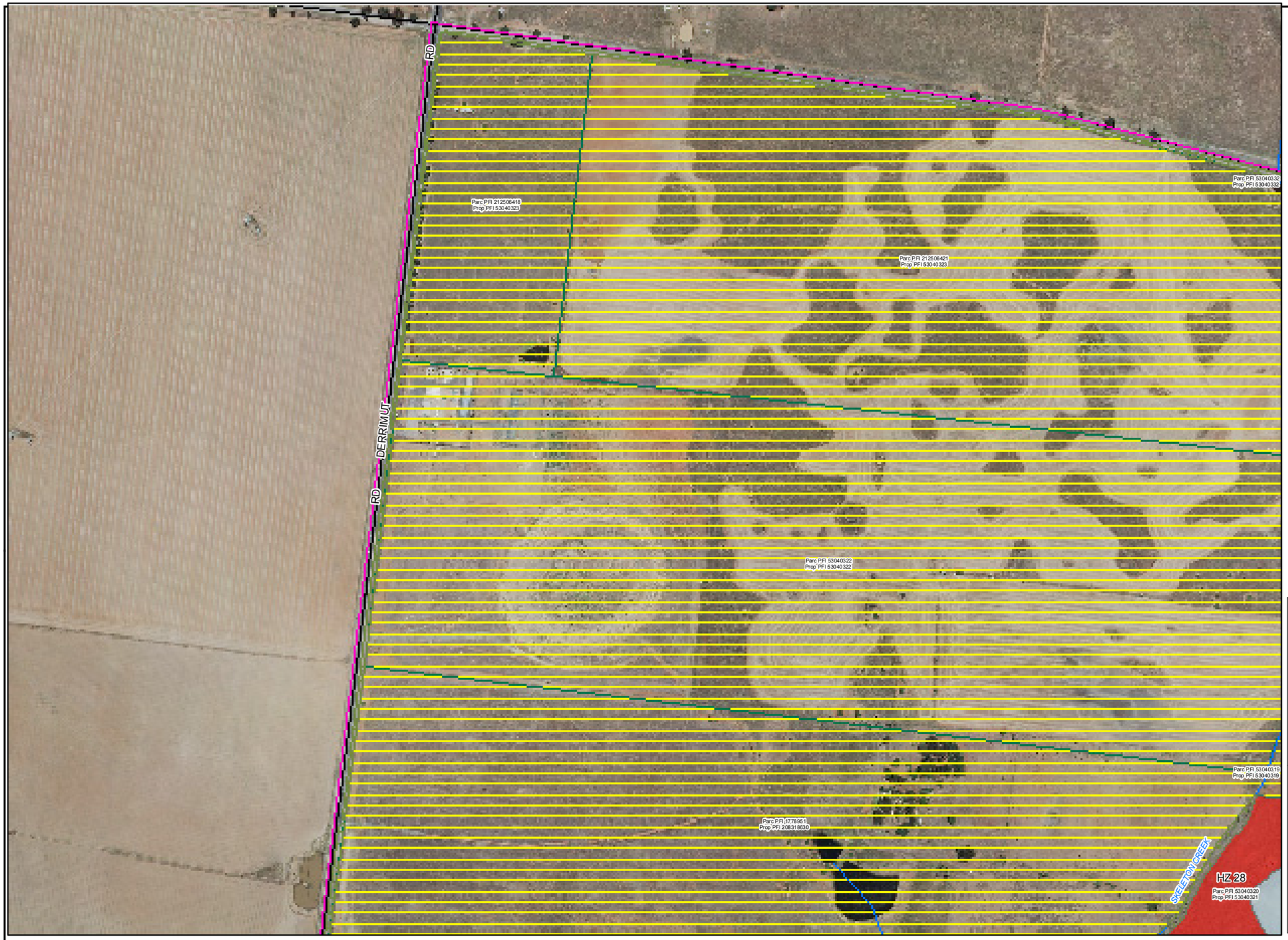

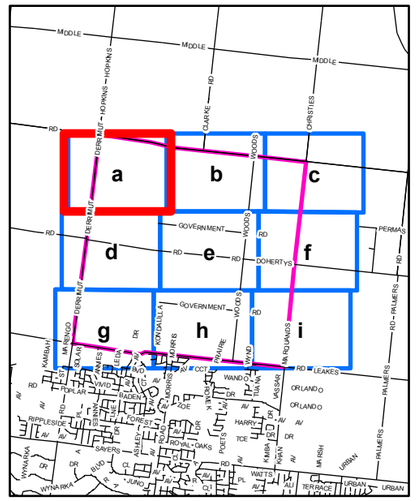

Legend

Native vegetation

Conservation Significance

- Very High
- High

Other vegetation

- Degraded treeless vegetation
- Non Native vegetation
- Contract Area
- Parcels
- Not Accessed

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Figure A5 a : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A5 a

Date: 7 Octoberb 2010
Checked by: MDD
Drawn by: SKM
File number: 8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A5 Cons sig CA81.mxd

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Meters

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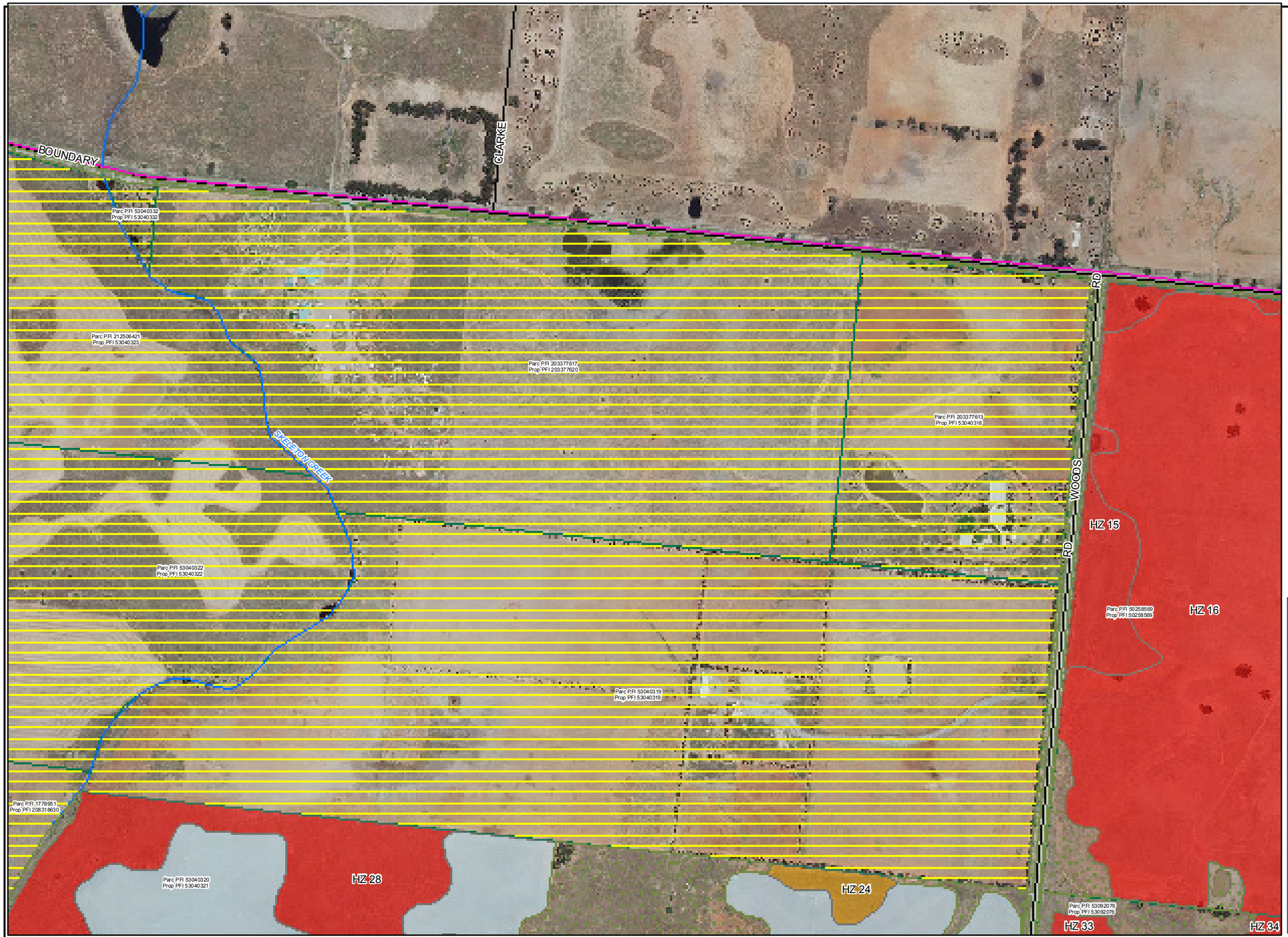

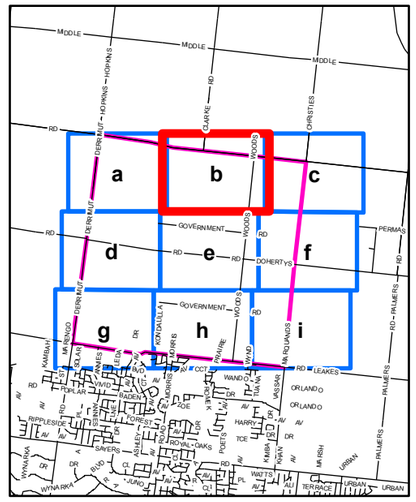

Legend

Native vegetation

Conservation Significance

- Very High
- High

Other vegetation

- Degraded treeless vegetation
- Non Native vegetation
- Contract Area
- Parcels
- Not Accessed

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Figure A5 b : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A5 b

Date: 7 Octoberb 2010
Checked by: MDD
Drawn by: SKM
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Meters

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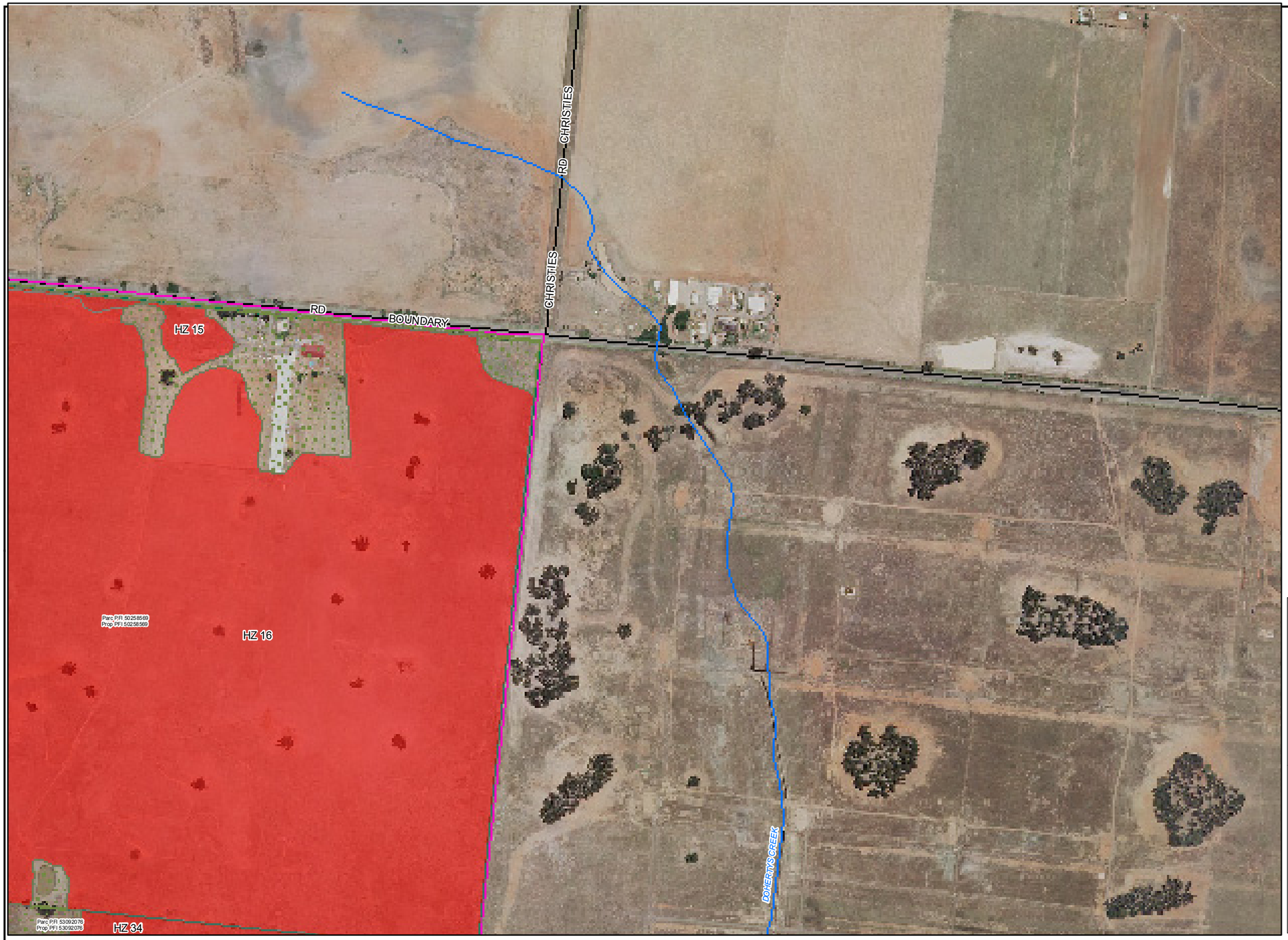

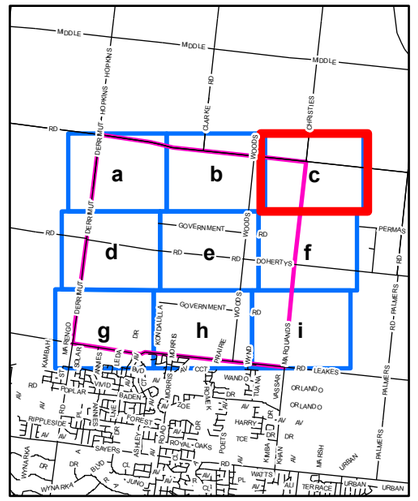

Legend

Native vegetation

Conservation Significance

- Very High
- High

Other vegetation

- Degraded treeless vegetation
- Non Native vegetation
- Contract Area
- Parcels
- Not Accessed

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Figure A5 c : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A5 c

Date: 7 Octoberb 2010
Checked by: MDD
Drawn by: SKM
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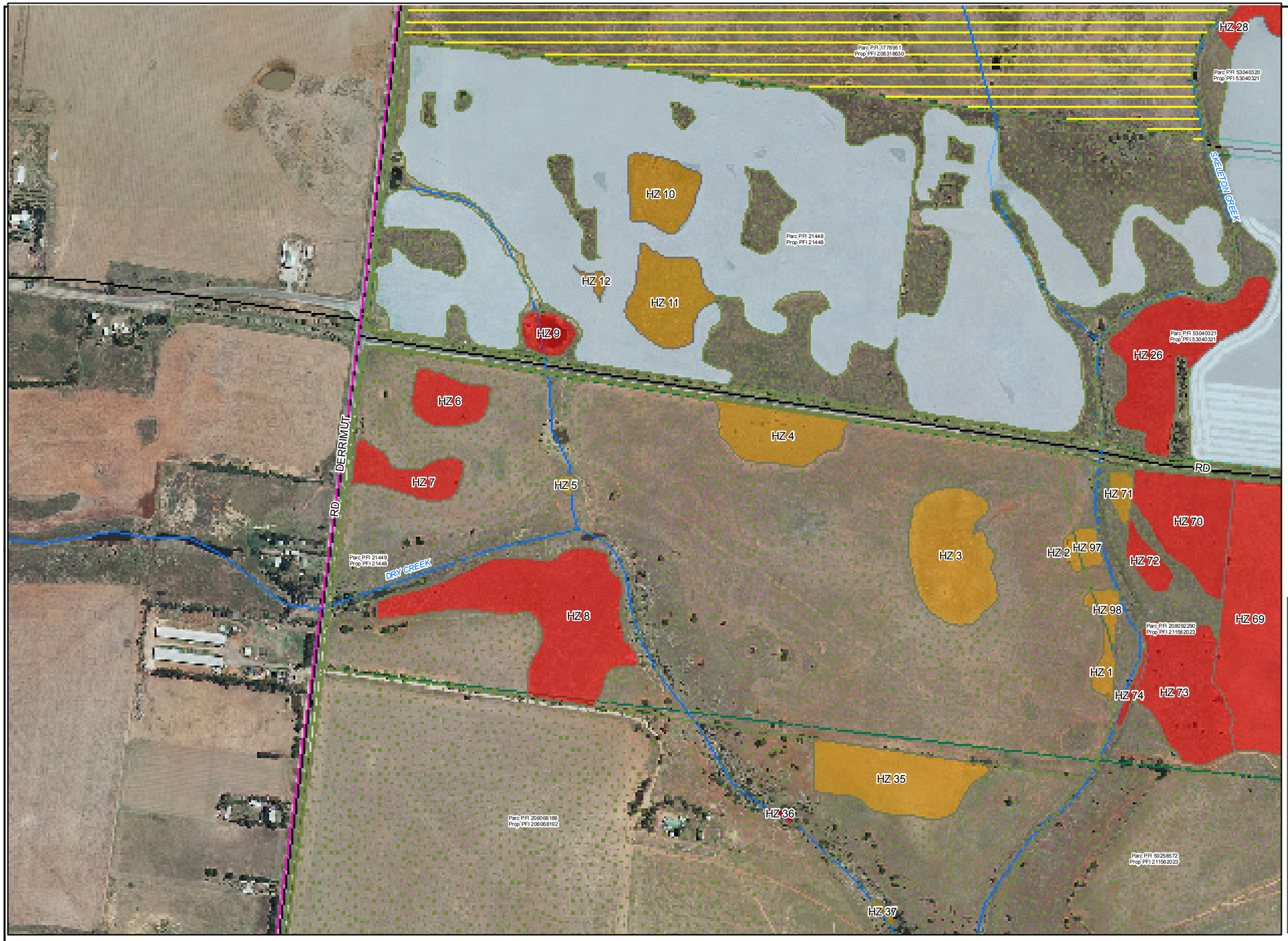

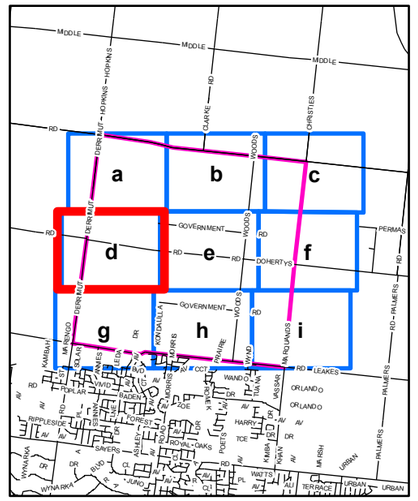

Legend

Native vegetation

Conservation Significance

- Very High
- High

Other vegetation

- Degraded treeless vegetation
- Non Native vegetation
- Contract Area
- Parcels
- Not Accessed

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Figure A5 d : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A5 d

Date: 7 Octoberb 2010
Checked by: MDD
Drawn by: SKM
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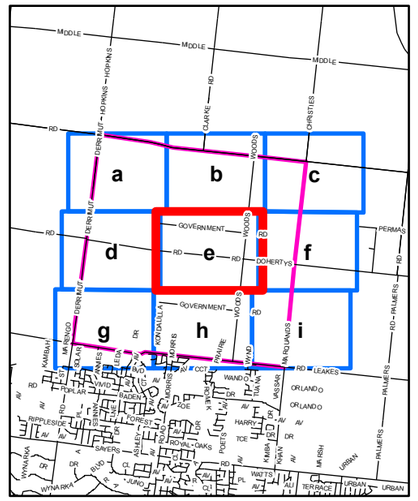

Legend

Native vegetation

Conservation Significance

- Very High
- High

Other vegetation

- Degraded treeless vegetation
- Non Native vegetation
- Contract Area
- Parcels
- Not Accessed

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Figure A5 e : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A5 e

Date: 7 Octoberb 2010
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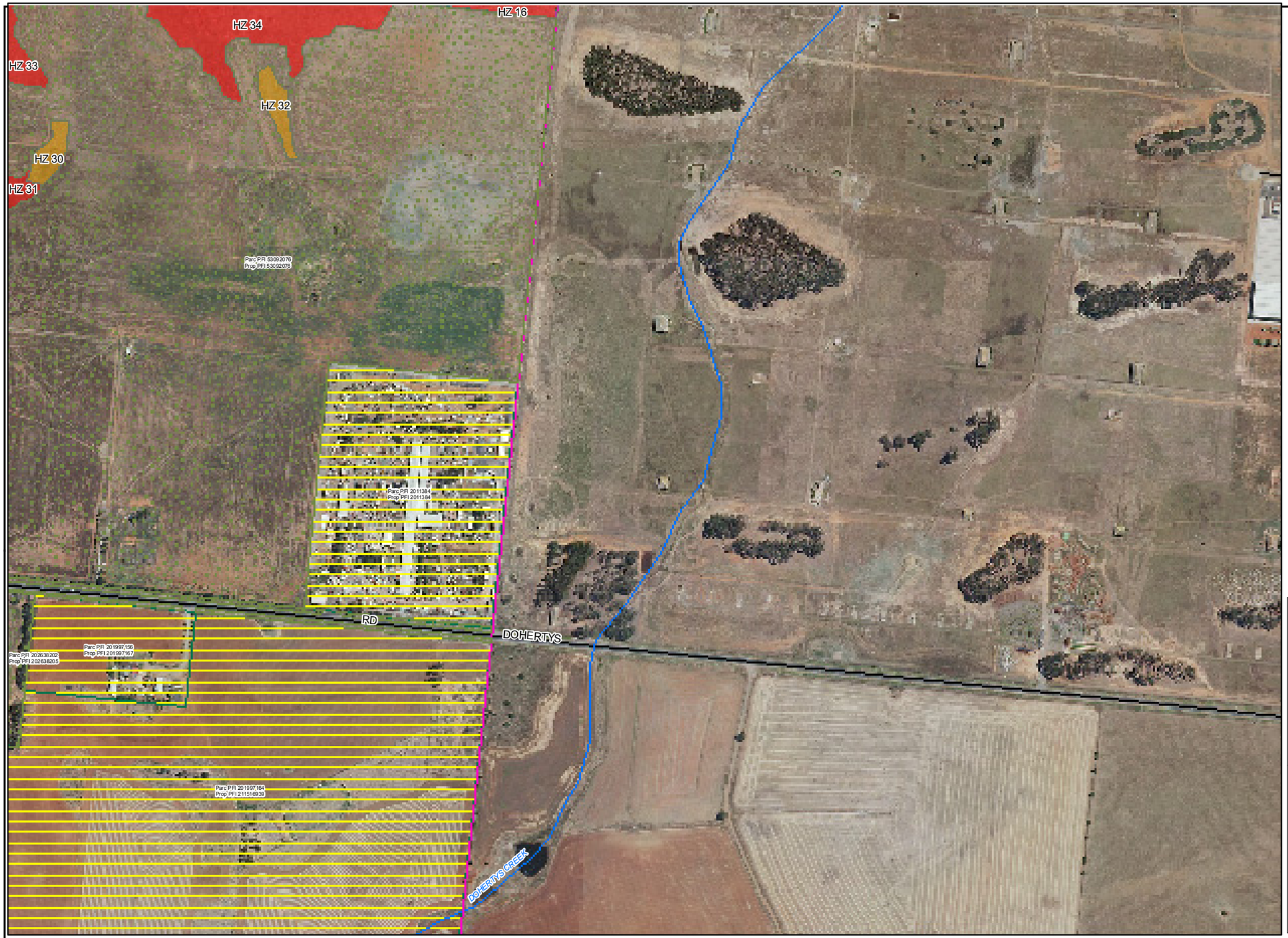

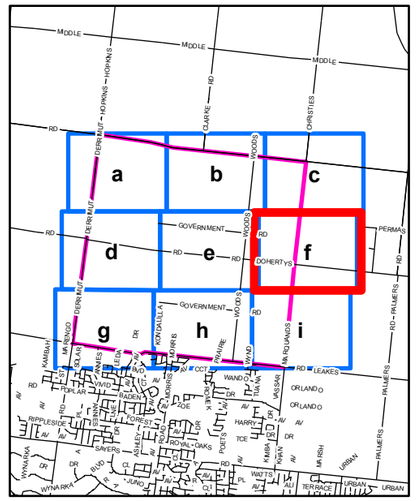

Legend

Native vegetation

Conservation Significance

- Very High
- High

Other vegetation

- Degraded treeless vegetation
- Non Native vegetation
- Contract Area
- Parcels
- Not Accessed

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Figure A5 f : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A5 f

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Checked by: MDD
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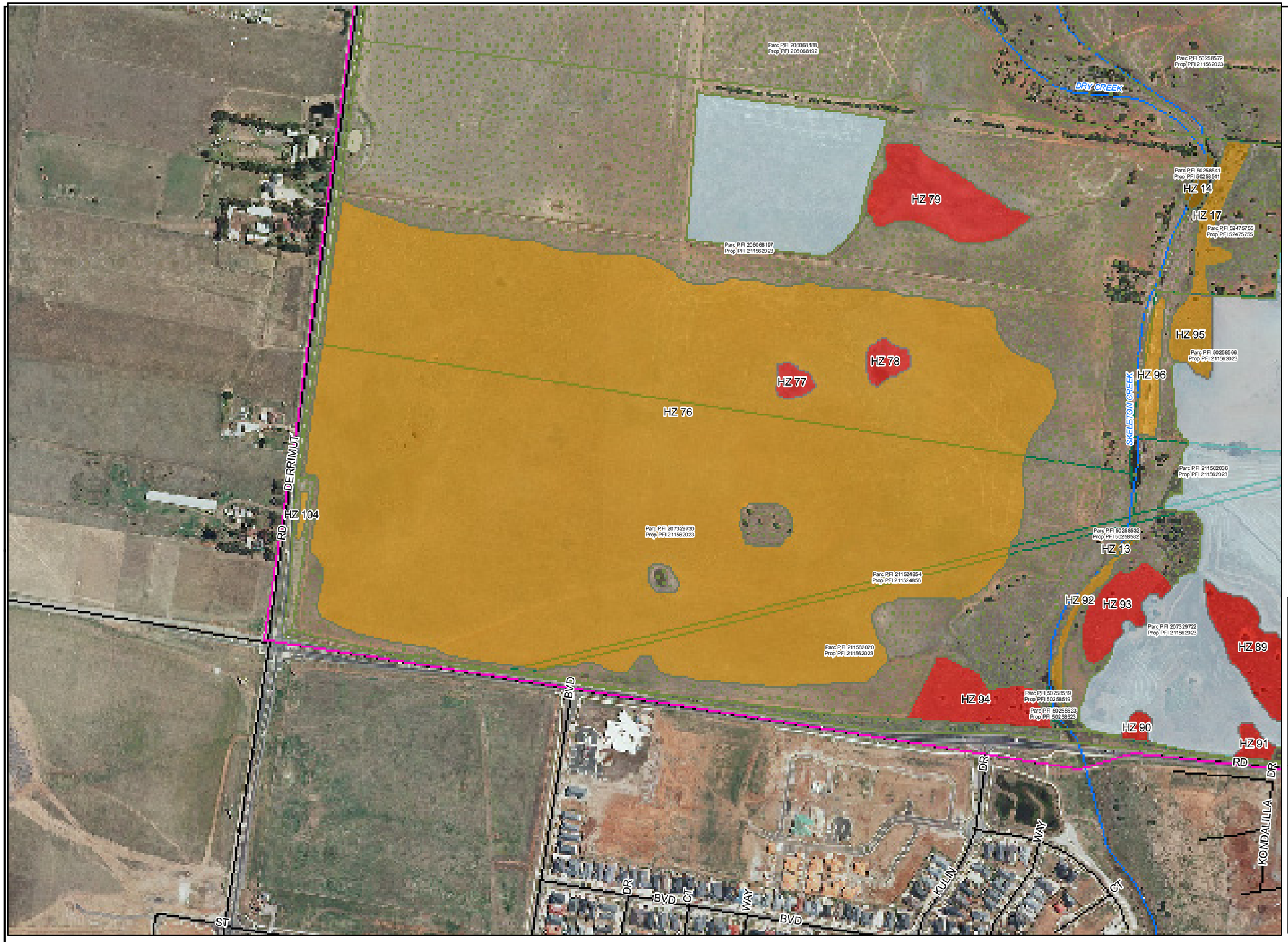

Legend

Native vegetation

Conservation Significance

- Very High
- High

Other vegetation

- Degraded treeless vegetation
- Non Native vegetation
- Contract Area
- Parcels
- Not Accessed

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Figure A5 g : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A5 g

Date: 7 Octoberb 2010
Checked by: MDD
Drawn by: SKM
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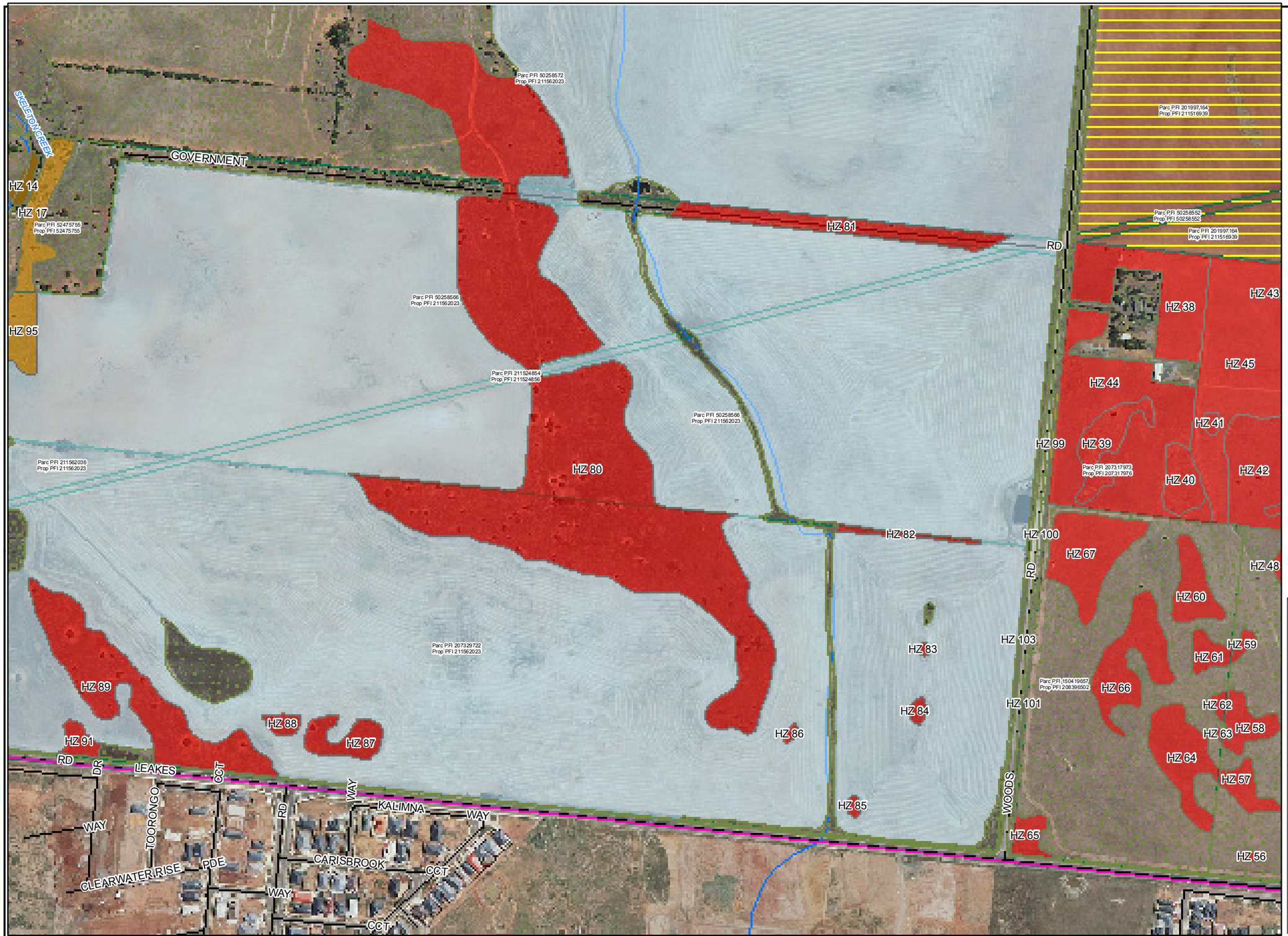

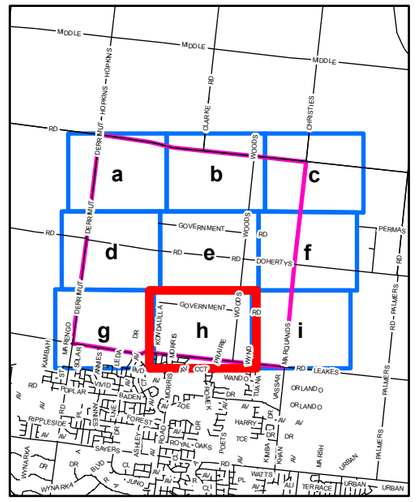

Legend

Native vegetation

Conservation Significance

- Very High
- High

Other vegetation

- Degraded treeless vegetation
- Non Native vegetation
- Contract Area
- Parcels
- Not Accessed

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Figure A5 h : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A5 h

Date: 7 Octoberb 2010
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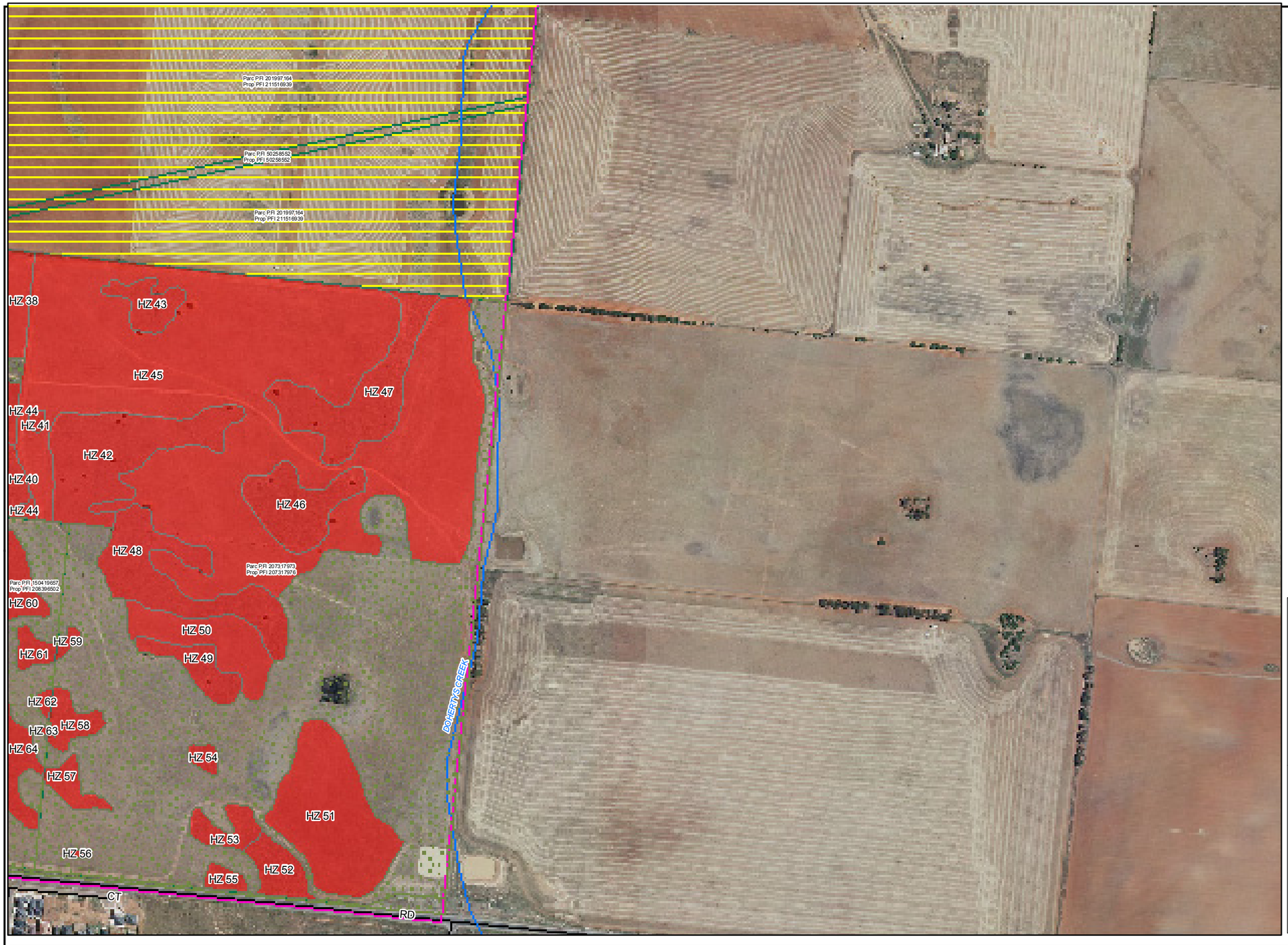

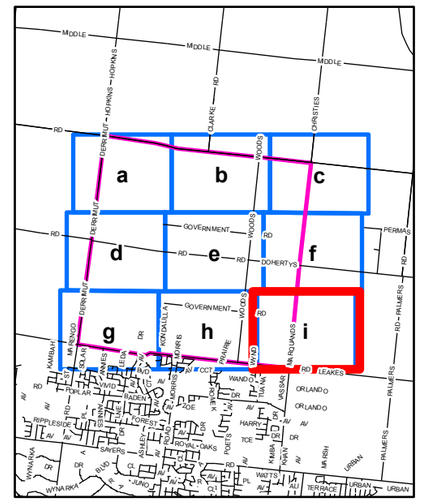

Legend

Native vegetation

Conservation Significance

- Very High
- High

Other vegetation

- Degraded treeless vegetation
- Non Native vegetation
- Contract Area
- Parcels
- Not Accessed

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Figure A5 i : Conservation significance of habitat zones according to the Native Vegetation Framework (NRE 2002), Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A5 i

Date: 7 Octoberb 2010
Checked by: MDD
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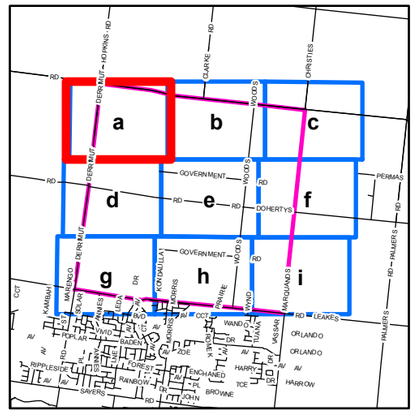

Legend

Plains Wanderer
Habitat Potential
- High

Growling Grass Frog
Habitat Potential
- High
- Low

Golden Sun Moth
Habitat Potential
- High
- Low

Striped Legless Lizard
Habitat Potential
- High
- Low

Fauna Habitat
- Grassland - rocky
- Grassland - not rocky
- Pasture/crop - rocky
- Pasture/crop - not rocky
- Escarpment shrubland
- Planted Vegetation
- Buildings
- Roads
- Rock piles
- Rock walls
- Shrubland
- Standing dead tree/hollow bearing stag
- Wetland/Drainage line
- Contract Area
- Parcels
- Not Accessed

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Figure A6 a : Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A6 a

Date: 30 October 2010
Checked by: MDD
Drawn by: SKM
File number: 8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A6 Fauna habitat CA81.mxd

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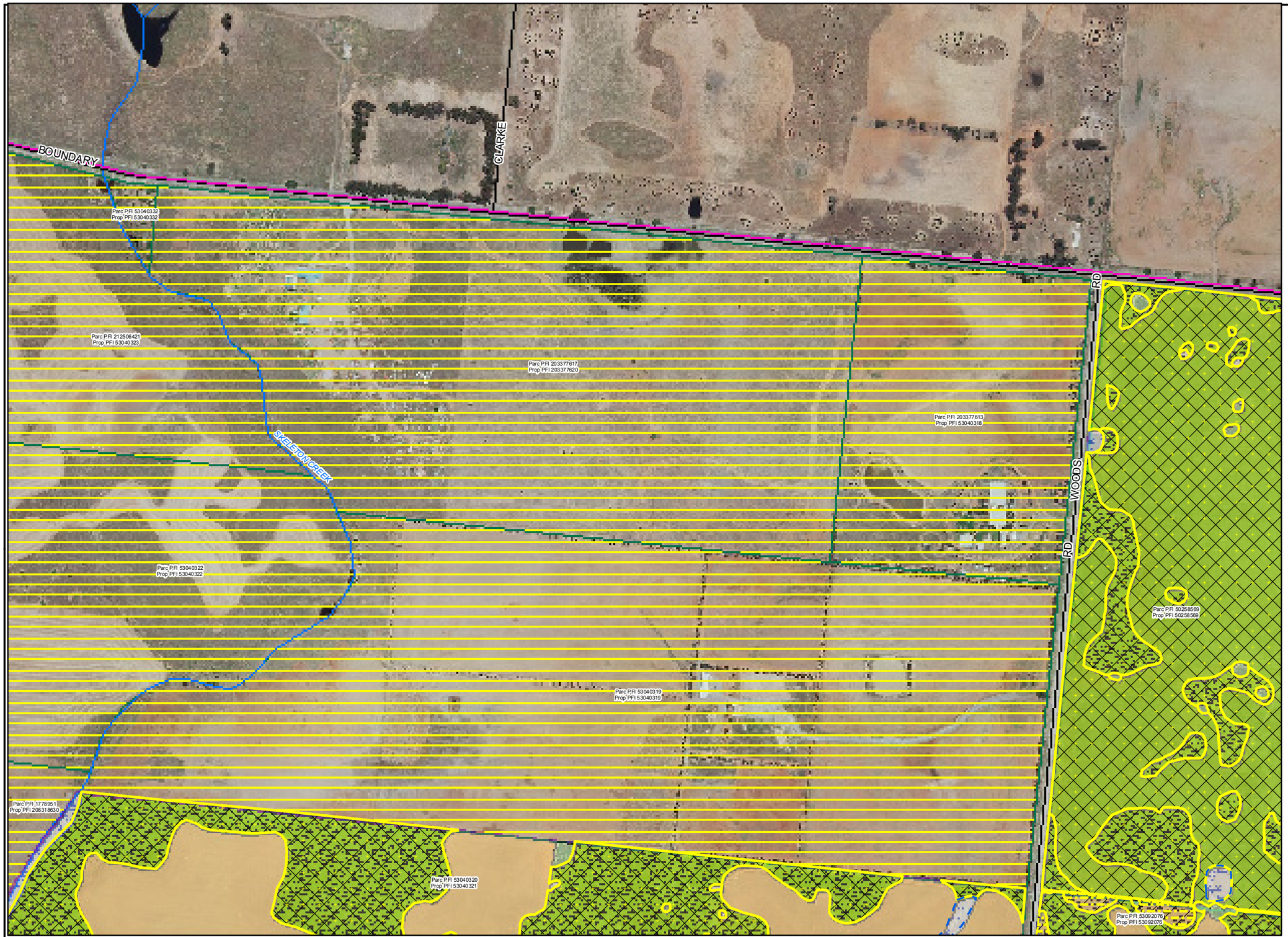

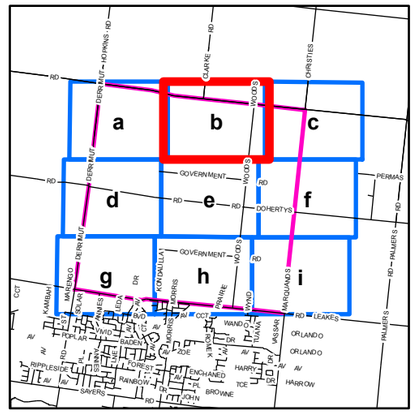

Legend

Plains Wanderer
Habitat Potential
- High

Growling Grass Frog
Habitat Potential
- High
- Low

Golden Sun Moth
Habitat Potential
- High
- Low

Striped Legless Lizard
Habitat Potential
- High
- Low

Fauna Habitat
- Grassland - rocky
- Grassland - not rocky
- Pasture/crop - rocky
- Pasture/crop - not rocky
- Escarpment shrubland
- Planted Vegetation
- Buildings
- Roads
- Rock piles
- Rock walls
- Shrubland
- Standing dead tree/hollow bearing stag
- Wetland/Drainage line
- Contract Area
- Parcels
- Not Accessed

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Figure A6 b : Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A6 b

Date: 30 October 2010
Checked by: MDD
Drawn by: SKM
File number: 8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A6 Fauna habitat CA81.mxd

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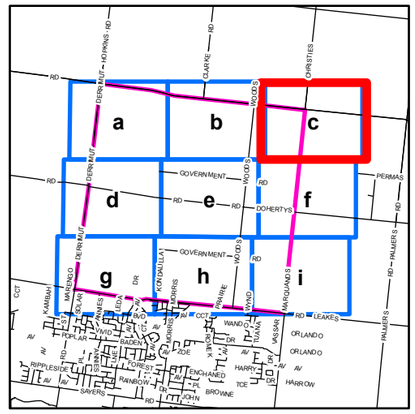

Legend

Plains Wanderer
Habitat Potential
- High

Growling Grass Frog
Habitat Potential
- High
- Low

Golden Sun Moth
Habitat Potential
- High
- Low

Striped Legless Lizard
Habitat Potential
- High
- Low

Fauna Habitat
- Grassland - rocky
- Grassland - not rocky
- Pasture/crop - rocky
- Pasture/crop - not rocky
- Escarpment shrubland
- Planted Vegetation
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- Rock piles
- Rock walls
- Shrubland
- Standing dead tree/hollow bearing stag
- Wetland/Drainage line
- Contract Area
- Parcels
- Not Accessed

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Figure A6 c : Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A6 c

Date: 30 October 2010
Checked by: MDD
Drawn by: SKM
File number: 8059

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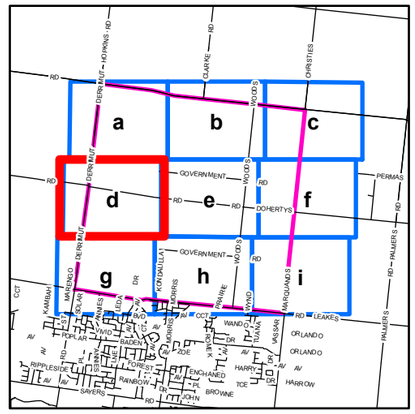

Legend

Plains Wanderer
Habitat Potential
- High

Growling Grass Frog
Habitat Potential
- High
- Low

Golden Sun Moth
Habitat Potential
- High
- Low

Striped Legless Lizard
Habitat Potential
- High
- Low

Fauna Habitat
- Grassland - rocky
- Grassland - not rocky
- Pasture/crop - rocky
- Pasture/crop - not rocky
- Escarpment shrubland
- Planted Vegetation
- Buildings
- Roads
- Rock piles
- Rock walls
- Shrubland
- Standing dead tree/hollow bearing stag
- Wetland/Drainage line
- Contract Area
- Parcels
- Not Accessed

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Figure A6 d : Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A6 d

Date: 30 October 2010
Checked by: MDD
Drawn by: SKM
File number: 8059

Location: ...10497 - V8059\Mapping\Biodiversity Reports\CA81\8059 Fig A6 Fauna habitat CA81.mxd

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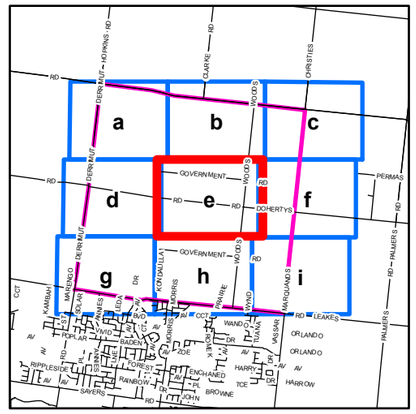

Legend

Plains Wanderer
Habitat Potential
- High

Growling Grass Frog
Habitat Potential
- High
- Low

Golden Sun Moth
Habitat Potential
- High
- Low

Striped Legless Lizard
Habitat Potential
- High
- Low

Fauna Habitat
- Grassland - rocky
- Grassland - not rocky
- Pasture/crop - rocky
- Pasture/crop - not rocky
- Escarpment shrubland
- Planted Vegetation
- Buildings
- Roads
- Rock piles
- Rock walls
- Shrubland
- Standing dead tree/hollow bearing stag
- Wetland/Drainage line
- Contract Area
- Parcels
- Not Accessed

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Figure A6 e : Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A6 e

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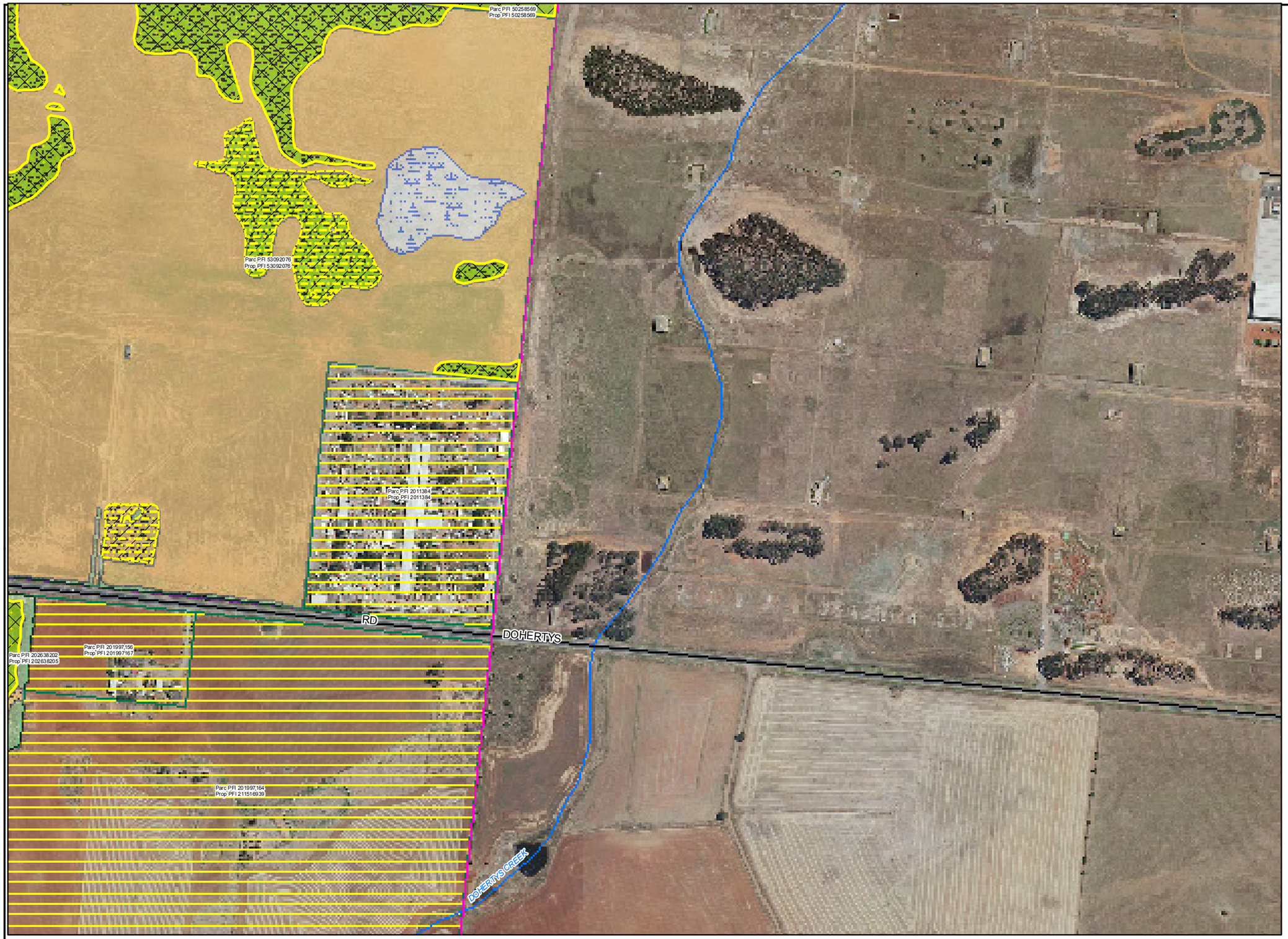

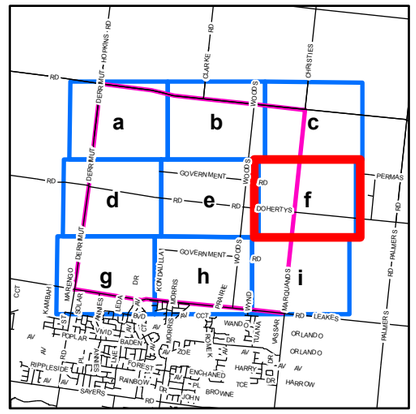

Legend

Plains Wanderer
Habitat Potential
- High

Growling Grass Frog
Habitat Potential
- High
- Low

Golden Sun Moth
Habitat Potential
- High
- Low

Striped Legless Lizard
Habitat Potential
- High
- Low

Fauna Habitat
- Grassland - rocky
- Grassland - not rocky
- Pasture/crop - rocky
- Pasture/crop - not rocky
- Escarpment shrubland
- Planted Vegetation
- Buildings
- Roads
- Rock piles
- Rock walls
- Shrubland
- Standing dead tree/hollow bearing stag
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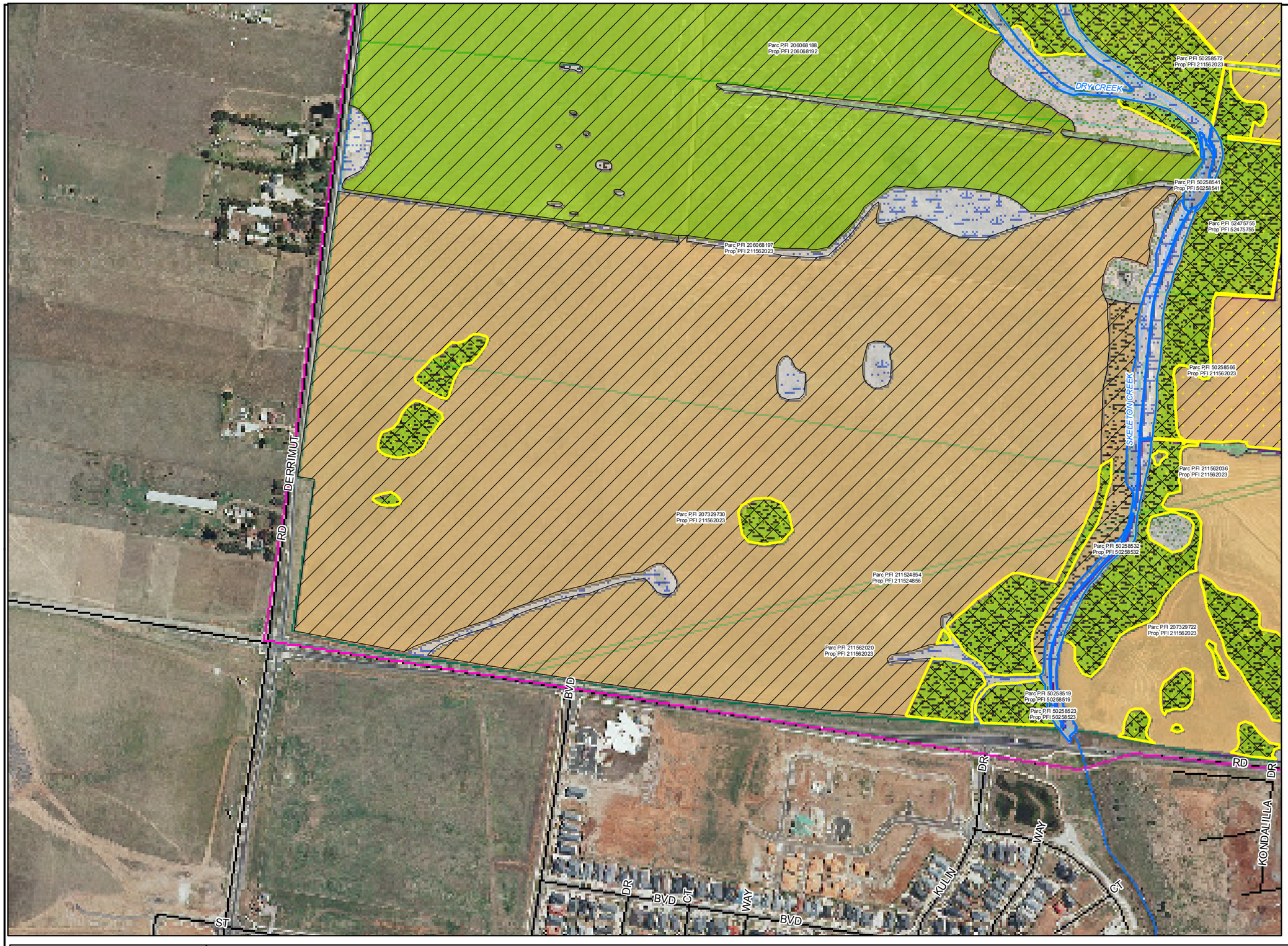

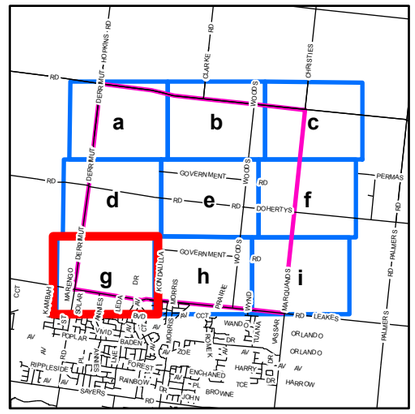

Legend

Plains Wanderer
Habitat Potential
- High

Growling Grass Frog
Habitat Potential
- High
- Low

Golden Sun Moth
Habitat Potential
- High
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- Grassland - rocky
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Figure A6 g : Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

Figure A6 g

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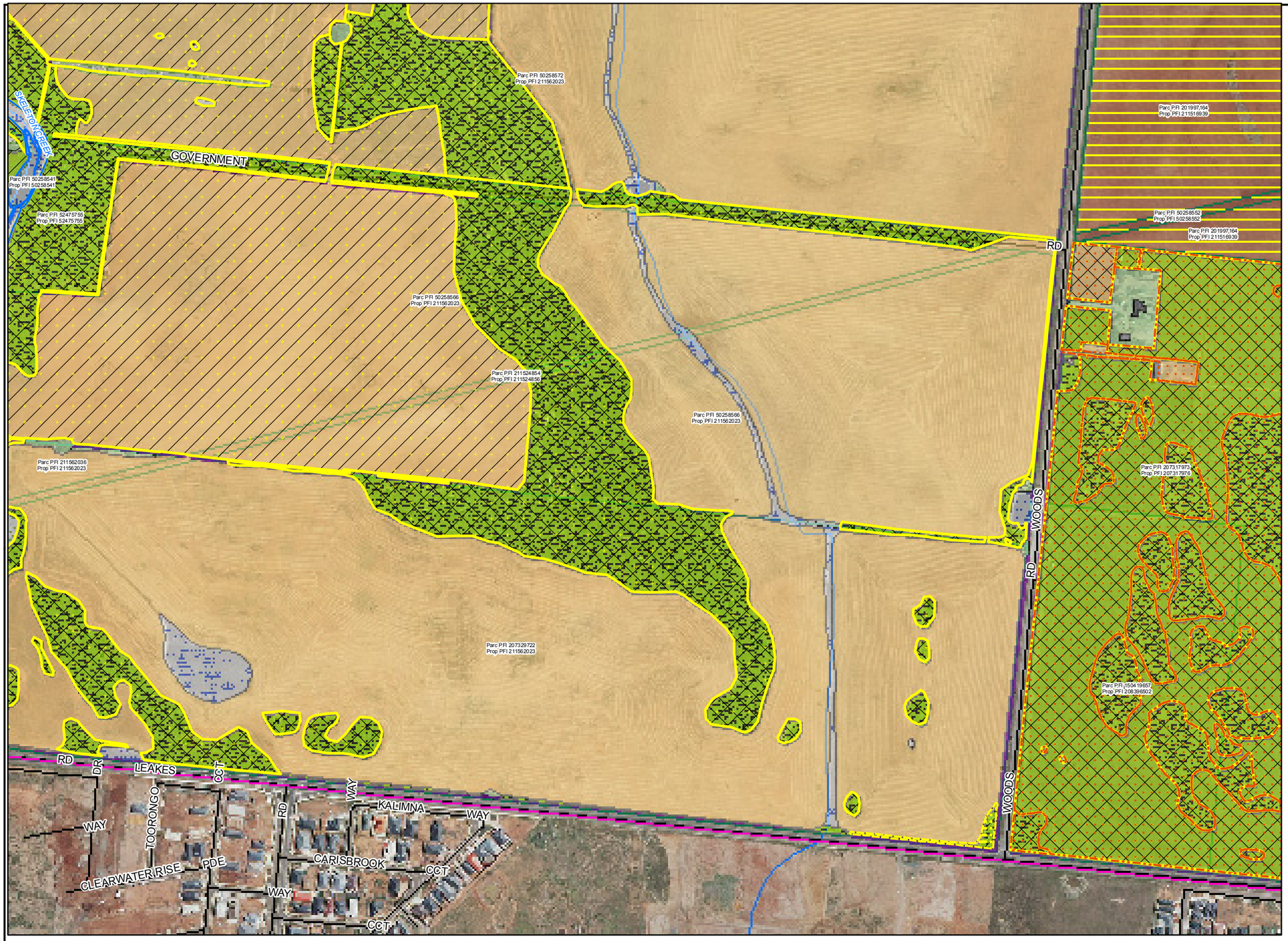

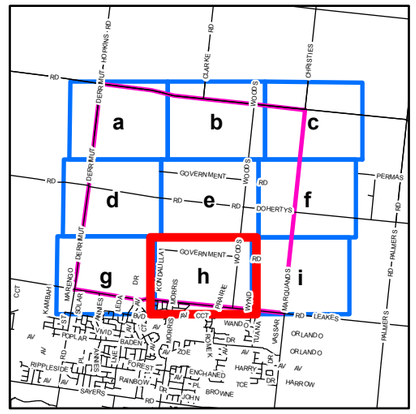

Legend

Plains Wanderer
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Figure A6 h

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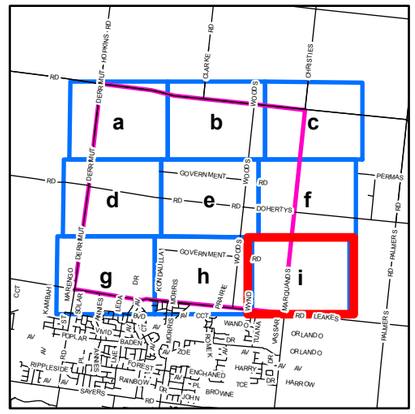

Legend

Plains Wanderer
Habitat Potential
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Habitat Potential
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Figure A6 i : Fauna Habitat, Contract Area 81, Growth Areas Authority Biodiversity Mapping Project 2009-2011

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APPENDIX 6 SITE PHOTOGRAPHS

Figure A7. Plains Grassland with native grass and forb cover amongst embedded rock. This area shows the EPBC Act listed community Natural Temperate Grassland of the Victorian Volcanic Plain and the FFG listed community Western (Basalt) Plains Grassland. Southeast corner of contract area.

Figure A8. Plains Grassland with native grass and forb cover amongst embedded rock although of lower quality than example shown above. This area would also meet the criteria for both EPBC and FFG listed ecological (grassland) communities but have a lower diversity of native species associated. Central contract area.

Figure A9. Degraded Treeless Vegetation predominantly covered in introduced species with a low cover of native grasses and other herbs. This area does not meet the definition criteria for a patch of native vegetation. Central contract area.

Figure A10. Water hole at the confluence of Dry Creek and Skeleton Creek. Site of record for the state significant Eastern Great Egret recorded during the current assessment.

Figure A11. Section of Dry Creek in west of contract area. The vegetation of this creek alignment is mostly Degraded Treeless Vegetation including introduced shrubs such as African Box-thorn.

Figure A12. Crops (non-native vegetation) on the boundary of rocky un-cropped areas in the north central contract area. These cropped areas may be mapped as Degraded Treeless Vegetation as they can contain a low cover of opportunistic native species.

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