JUNE 2013

BIODIVERSITY CONSERVATION STRATEGY FOR MELBOURNE'S GROWTH CORRIDORS

State Government Victoria

Published by the Victorian Government Department of Environment and Primary Industries
Melbourne, June 2013

Authorised by the Victorian Government, 8 Nicholson Street,
East Melbourne.

ISBN 978-1-74287-603-0 (online)

For more information contact the DEPI Customer Service Centre 136 186

Accessibility
If you would like to receive this publication in an accessible format, such as large print or audio, please telephone 136 186, or email customer.service@depi.vic.gov.au

Deaf, hearing impaired or speech impaired? Call us via the National Relay Service on 133 677 or visit www.relayservice.com.au

This document is also available in PDF format on the internet at www.dse.vic.gov.au

Cover photo: Grassy Eucalypt Woodland, DSE

CONTENTS

1. INTRODUCTION

The Biodiversity Conservation Strategy (BCS) for Melbourne's growth corridors has been prepared in response to obligations arising from the strategic assessment conducted under Part 10 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.[1]

The Melbourne Strategic Assessment evaluated the impacts of the State Government's program *Delivering Melbourne's newest sustainable communities* on matters of national environmental significance.

The program provides for urban development in four growth corridors within Melbourne's expanded 2010 Urban Growth Boundary and in 28 existing precincts within the 2005 Urban Growth Boundary. It also provides for the development of the Regional Rail Link Corridor between west of Werribee and Deer Park (section 2) and the Outer Metropolitan Ring Transport Corridor.

The Melbourne Strategic Assessment required the State Government to make commitments to the Commonwealth Government in relation to conservation outcomes and measures to protect matters of national environmental significance, which are outlined in *Delivering Melbourne's newest sustainable communities: program report* (Victorian Government, 2009).

These commitments include the preparation of the BCS and sub-regional species strategies.

The requirement to prepare the BCS arises from the program report, which committed to:

> *An overarching Biodiversity Conservation Strategy will be prepared for each of the expanded growth corridors. These Strategies will inform the preparation of the Growth Area Framework Plans and ensure high level guidance. They will outline how the areas of biodiversity value (State and Commonwealth) within the growth areas will be managed and will spatially identify how outcomes for matters of national environmental significance will be delivered.... Each Biodiversity Conservation Strategy must be approved by the Commonwealth Government prior to the finalisation of the Growth Area Framework Plans.'*[2]

PHOTO: Grassland Candles, DEPI

The BCS was prepared by the Department of Environment and Primary Industries (DEPI, formerly Department of Sustainability and Environment, DSE) in consultation with the Growth Areas Authority (GAA) and the Department of Planning and Community Development (DPCD), and was endorsed by an Inter-Departmental Task Force.

1 The results of the Melbourne Strategic Assessment are set out in 'Delivering Melbourne's Newest Sustainable Communities Strategic Impact Assessment Report' (DSE, 2009).

2 Victorian Government, 2009.

1.1 Purpose of the Biodiversity Conservation Strategy

The purpose of the BCS is to:

- Inform and guide the preparation of the Growth Corridor Plans (GAA, 2012)
- Outline how the conservation outcomes for matters of national environmental significance in the program report will be achieved spatially within the growth corridors and how impacts on these matters will be mitigated
- Identify the land within the growth corridors that is required to be protected due to the sub-regional species strategies and the prescriptions for matters of national environmental significance
- Identify how areas set aside for conservation will be managed
- Outline how mitigation measures will be implemented.

1.2 Scope of the Biodiversity Conservation Strategy

The BCS is the overarching strategy for the protection of biodiversity in the growth corridors. It sets out all the conservation measures required for matters of national environmental significance and state significance to satisfy the commitments to the Commonwealth Government and to meet state requirements, including *Victoria's Native Vegetation Management: A Framework for Action* (Native Vegetation Management Framework) (DNRE, 2002). These conservation measures comprise:

- The protection and management of land of high biodiversity value within defined conservation areas and areas outside the Urban Growth Boundary
- Requirements to provide offsets for removal of native vegetation and threatened species habitat on land not required for conservation and suitable for urban development
- Requirements to salvage and translocate certain threatened species prior to removal of habitat on land not required for conservation and suitable for urban development.

The BCS identifies 36 conservation areas within the growth corridors that will be protected and managed in perpetuity. Land not within a conservation area and suitable for urban development may be cleared of native vegetation in accordance with an approval

Photo: Button Wrinklewort, DEPI

by the Commonwealth Environment Minister under the endorsed program and subject to Victorian legal and planning processes (e.g. *Flora and Fauna Guarantee Act 1988, Planning and Environment Act 1987*).

The BCS has applied the requirements of the prescriptions and the Native Vegetation Management Framework (DNRE, 2002) strategically at a growth corridor level to identify conservation areas, and removes the need to protect additional land resulting from these requirements at the precinct structure planning stage, or other development approval stages.

In accordance with the program report, survey, salvage and/or translocation and offset requirements apply to land that is suitable for urban development and may be cleared of native vegetation. These requirements are set out in the BCS.

The biodiversity values of some land previously set aside for conservation under Planning Scheme Amendment VC 68 have been re-assessed. Some of this land was found to be of lower biodiversity value and is not required for conservation. These areas of land have been excluded from the conservation areas and may be made available for urban development.

In accordance with the program report, the BCS addresses all matters of national environmental significance that are currently known to occur in the growth corridors and matters of state significance. The matters of national environmental significance are:

- Commonwealth listed threatened species and ecological communities
- Commonwealth listed migratory species
- Wetlands of international importance.

The matters of state significance are:

- Threatened species and ecological communities listed under the *Flora and Fauna Guarantee Act 1988*
- Species listed on the DEPI's Rare and Threatened Species Advisory Lists.

The BCS does not require future protection of any additional land to that identified in the BCS, for matters of national environmental significance or state significance that are not currently known to occur within the growth corridors, or for new matters listed under the *Environment Protection and Biodiversity Conservation Act 1999* or the *Flora and Fauna Guarantee Act 1988*.

Photo: Large-fruit Groundsel, DEPI

The precinct structure planning stage or planning permit stage may provide opportunities to protect these matters on a voluntary basis, particularly on land unavailable for urban development (e.g. on land set aside for open space or drainage or road reserves).

Two sub-regional species strategies for Growling Grass Frog and Golden Sun Moth have been prepared to support the BCS. The requirements of these strategies are consistent with the requirements of the BCS. In the event of an inconsistency, the BCS prevails over the Growling Grass Frog and Golden Sun Moth strategies.

A third Sub-regional Species Strategy for Southern Brown Bandicoot is currently being prepared by DEPI. The strategy will focus on areas outside the area covered by the BCS. The BCS may require amendment for the south-eastern growth corridor to be consistent with any additional requirements of the strategy. The strategy requires approval from the Commonwealth Government.

The BCS does not assess the impacts of the State Government's program on matters of national environmental significance or state significance, but rather outlines how the commitments in the program report will be achieved. The assessment of the impacts of the program was undertaken by the Melbourne Strategic Assessment (see section 2.1).

1.3 Area covered by the Biodiversity Conservation Strategy

The State Government's program, as defined in the program report, means the Urban Growth Boundary Review for Melbourne for the development of land, including associated transport infrastructure, within the following areas:

- Investigation areas for the expansion of the 2005 Urban Growth Boundary
- Areas inside the 2005 Urban Growth Boundary for which a planning scheme amendment to introduce a precinct structure plan had not commenced as at 26 May 2009 (the existing 28 precincts)
- Areas in the Outer Metropolitan Ring Transport Corridor/E6 Road Reservation and the Regional Rail Link corridor between west of Werribee and Deer Park (section 2).

The BCS applies to:

- The four growth corridors within the expanded 2010 Urban Growth Boundary given effect by Planning Scheme Amendment VC68 (see Figures 3 to 6). These are:
  - Western growth corridor – Melton and Wyndham
  - North-western growth corridor – Sunbury
  - Northern growth corridor – Hume, Whittlesea and Mitchell
  - South-eastern growth corridor – Casey and Cardinia
- The existing 28 precincts within the 2005 Urban Growth Boundary for which a planning scheme amendment to introduce a precinct structure plan is approved **after** 1 March 2012, as well as the Truganina Employment Area.
- The Outer Metropolitan Ring Transport Corridor/E6 Road Reservation.

The BCS does not apply to the Regional Rail Link corridor between west of Werribee and Deer Park (section 2). The BCS also does not apply to the existing 28 precincts within the 2005 Urban Growth Boundary for which a planning scheme amendment to introduce a precinct structure plan is approved **prior to** 1 March 2012, except for the Truganina Employment Area.

Of the existing 28 precincts (as defined in the program report) the following 16 are covered by the BCS:

- Beaconsfield
- Berwick Waterways
- Botanic Ridge
- Casey Central Town Centre
- C21 Business Park
- Hampton Park
- Greenvale Activity Centre (A4)
- Greenvale North (R1)
- Mickleham Employment Area North (E2)
- Mickleham Employment Area South (E3)
- Officer Employment Area
- Pakenham Employment Area (Stage 1)
- Pakenham Employment Area (Stage 2)
- Truganina Employment Area
- Werribee Technology Park
- Wyndham Vale.

In addition, part of Greenvale South (R3) is also covered by the BCS.

The area covered by the BCS is shown in Figures 1 and 2.

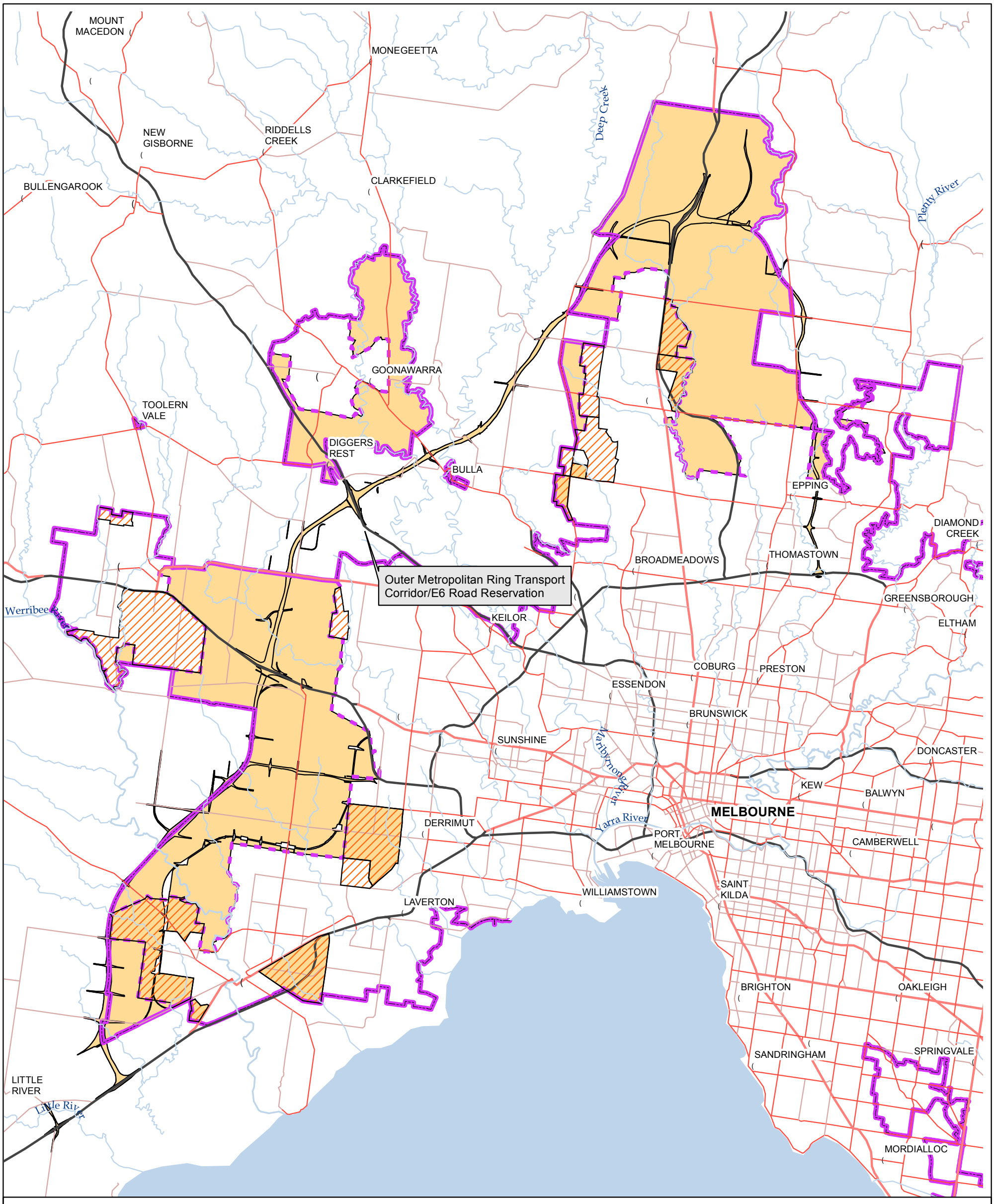


Figure 1: Area covered by the Biodiversity Conservation Strategy – Western, North-Western and Northern Growth Corridors

GDA

Department of Environment and Primary Industries

State Government Victoria

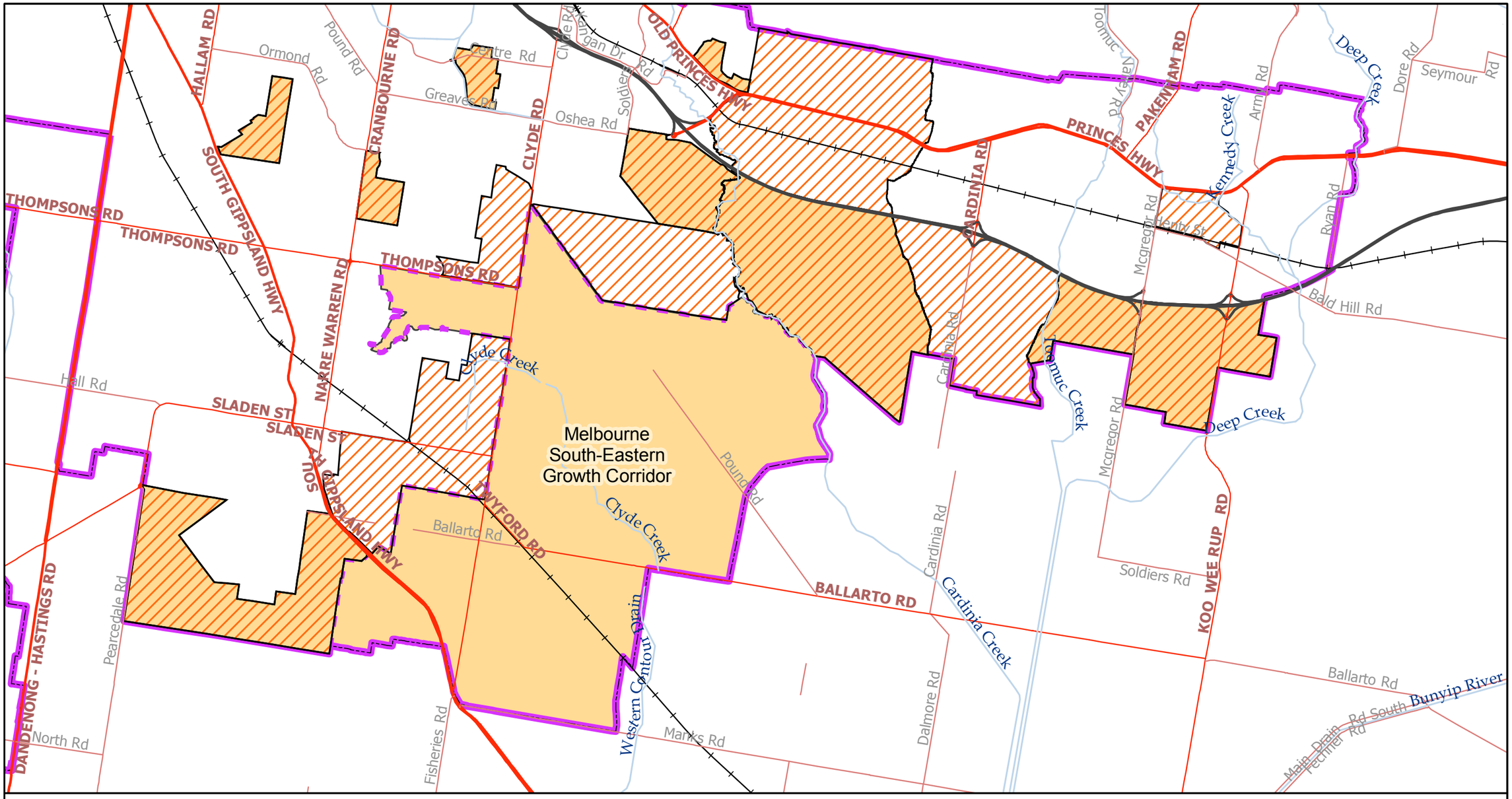


Figure 2: Area covered by the Biodiversity Conservation Strategy – South-Eastern Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

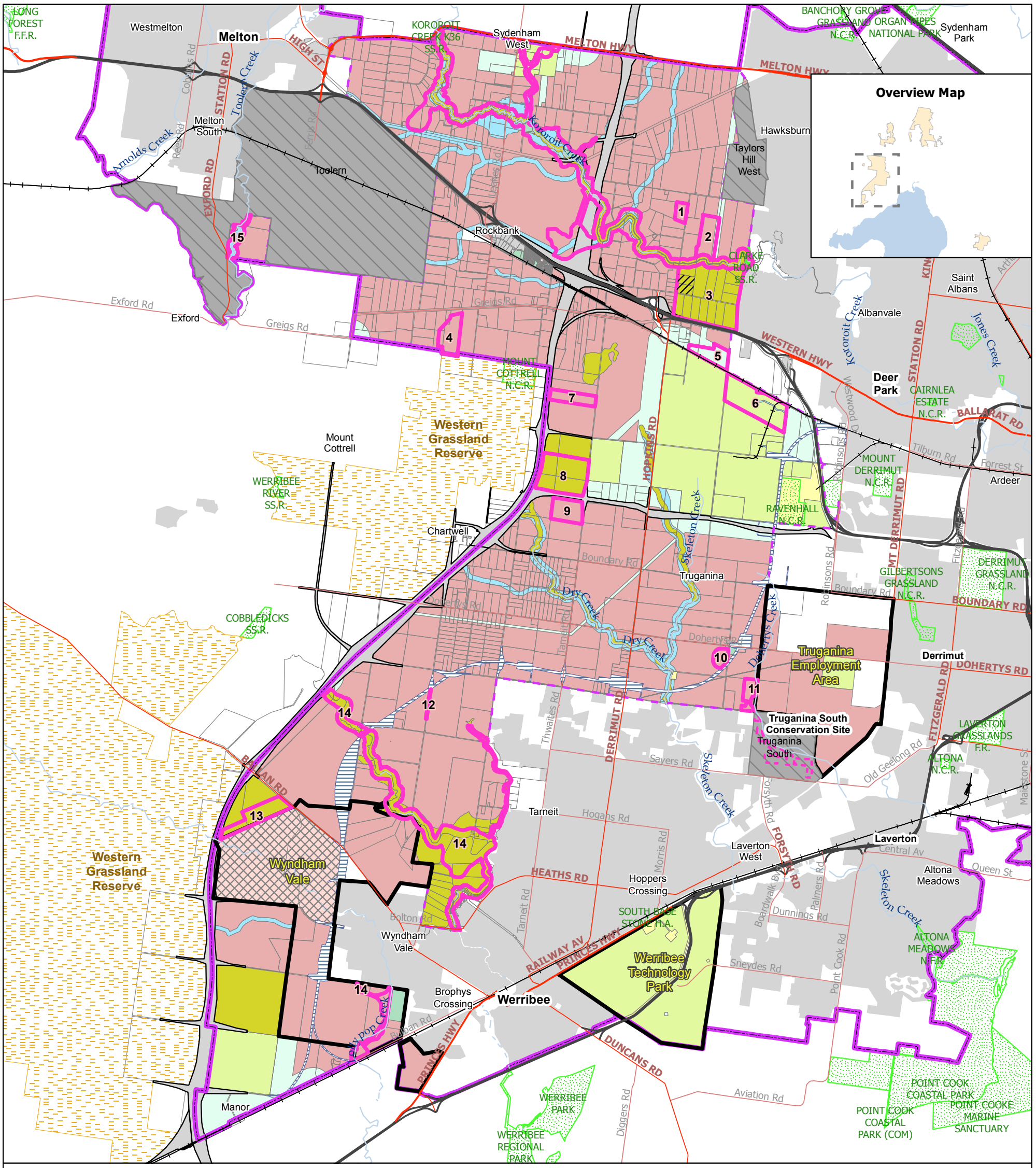


Figure 3: Conservation Areas – Western Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

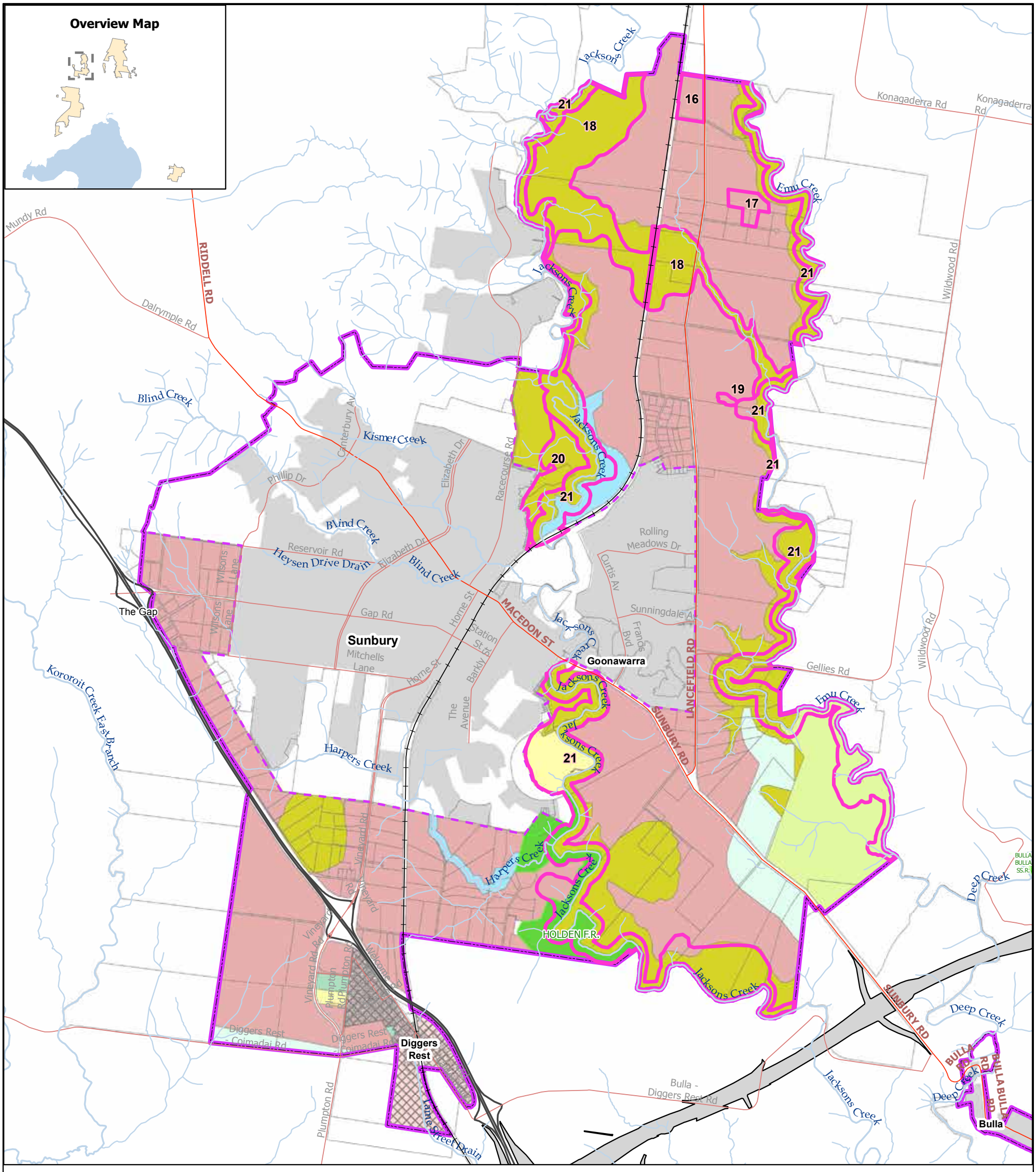
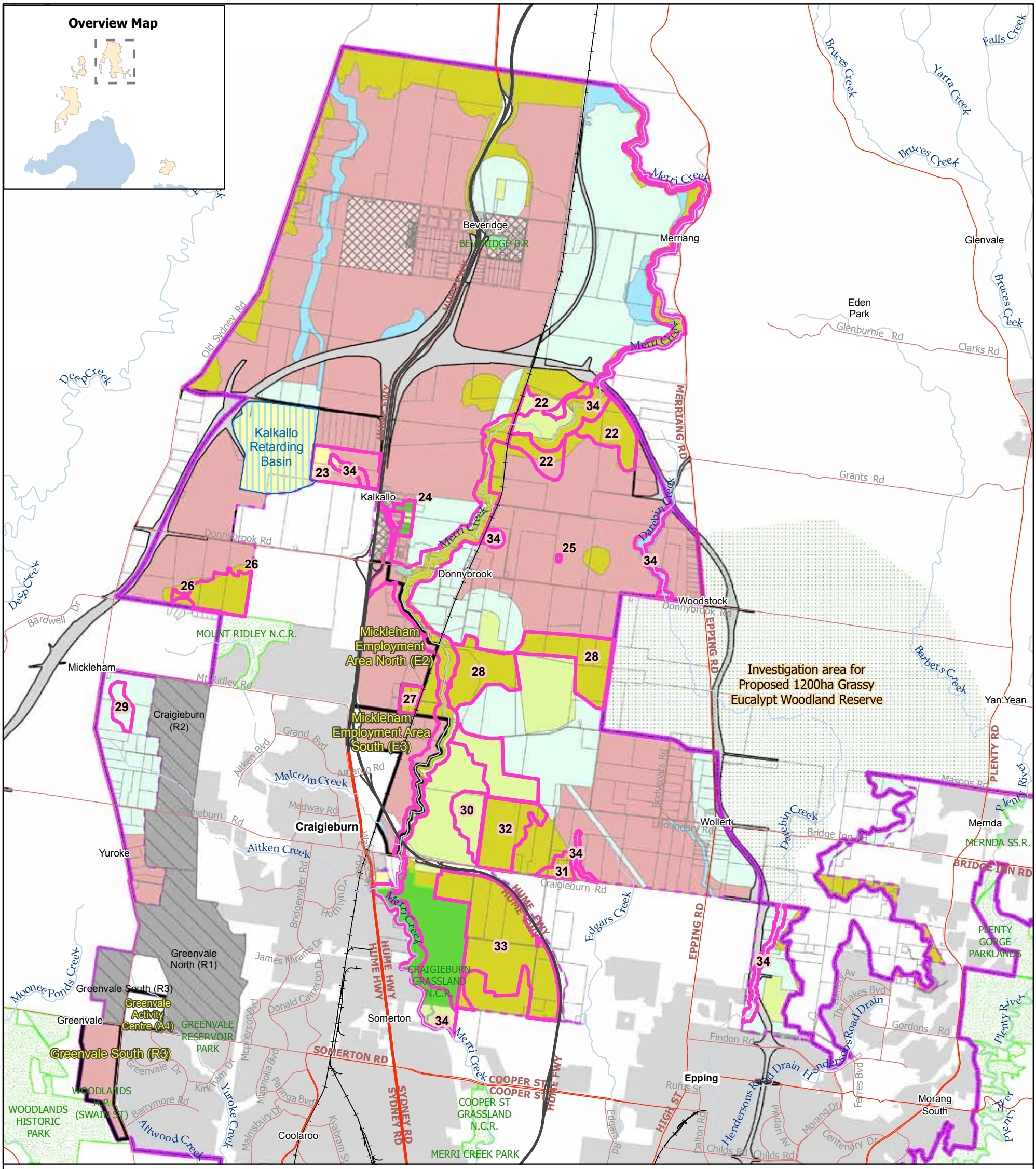


Figure 4: Conservation Areas – North-Western Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria



Legend

- 2010 Urban Growth Boundary
- 2005 Urban Growth Boundary
- Outer Metropolitan Ring Transport Corridor/E6 Road Reservation
- Parks or Reserves
- Property Boundaries
- Urbanised Area

Precinct Structure Plan area

(existing 28 precincts)

- Incomplete
- Complete

Current Planning Scheme Zones

- Farm Zone
- Public Conservation and Recreation Zone
- Public Park and Recreation Zone
- Public Use Zone
- Rural Conservation Zone
- Special Use Zone
- Urban Flood Zone
- Urban Growth Zone
- Other Urban Zones
- Conservation Area

Roads

- Freeway
- Highway
- Main Road
- Main Road (Unsealed)
- Collector
- Named Watercourse

0 1 2 3 4 5 km

Figure 5: Conservation Areas – Northern Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

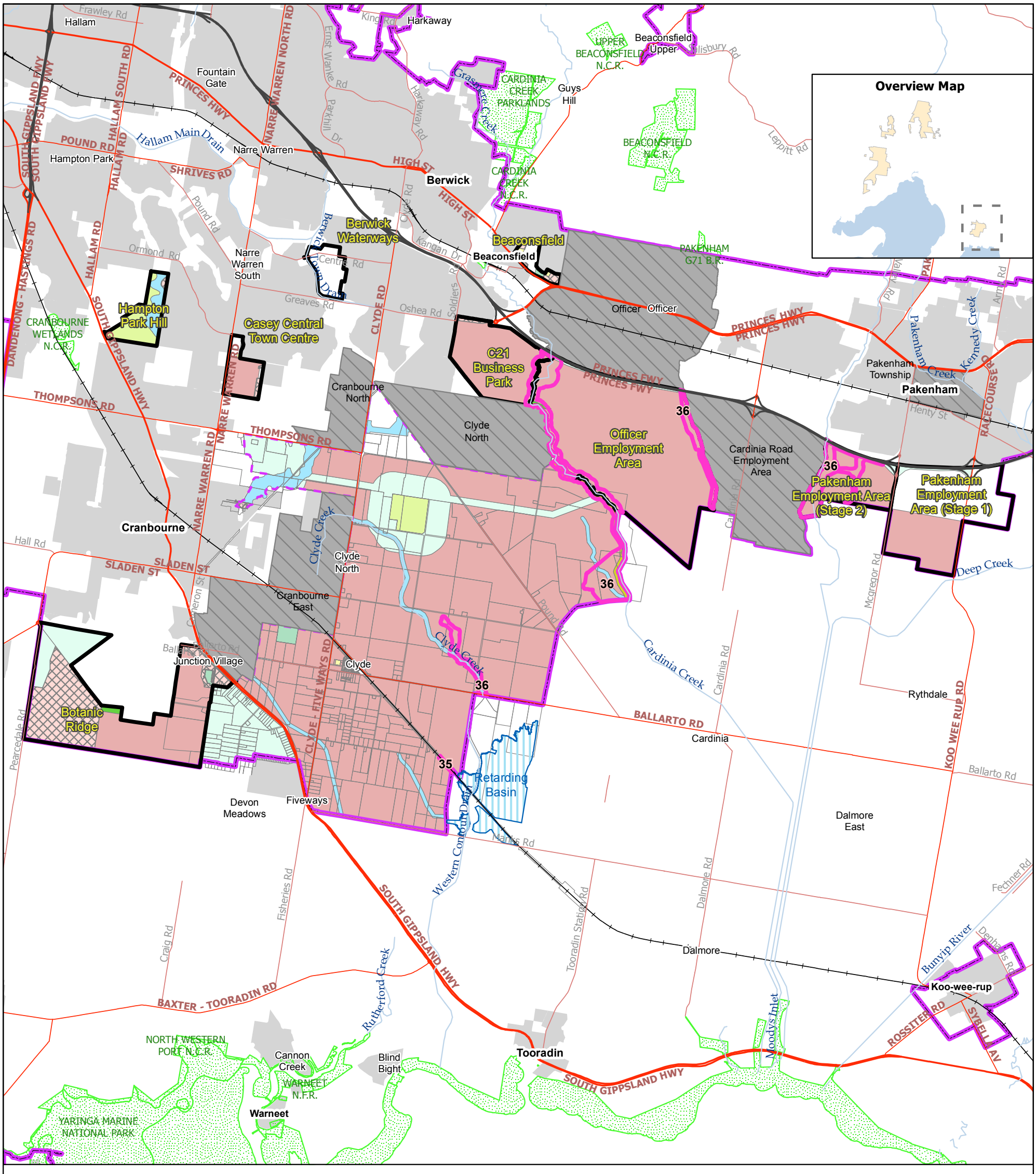


Figure 6: Conservation Areas – South-Eastern Growth Corridor

Department of Environment and Primary Industries

State Government Victoria

2. STATUTORY CONTEXT

2.1 Commonwealth legislation

The *Environment Protection and Biodiversity Conservation Act 1999* is the Commonwealth Government's principal environmental legislation and provides for the protection of matters of national environmental significance. Under section 146 of the Act, the Commonwealth Environment Minister may agree to undertake a strategic assessment of the impacts of actions delivered under a policy, plan or program on these matters.

The *Delivering Melbourne's Newest Sustainable Communities Strategic Impact Assessment Report* (DSE, 2009) evaluated the impacts of the State Government's program *Delivering Melbourne's newest sustainable communities* (Victorian Government, 2009) on matters of national environmental significance, including threatened species and ecological communities, migratory species and wetlands of international importance.

The Commonwealth Environment Minister endorsed the program, as set out in the program report, in February 2010. The endorsement of the program was a necessary step prior to any approval by the Minister of 'actions' or 'classes of actions' forming part of the program in accordance with section 146B of the *Environment Protection and Biodiversity Conservation Act 1999*.

Actions affecting matters of national environmental significance cannot be done until an approval is granted by the Commonwealth Environment Minister. Any approved action must occur in accordance with the endorsed program and conditions set by the Minister.

To date the Commonwealth Environment Minister has approved two classes of actions under the endorsed program: the Regional Rail Link project between west of Werribee and Deer Park (section 2) and urban development in the existing 28 precincts within the 2005 Urban Growth Boundary.

Photo: Grassy Eucalypt Woodland, DEPI

2.1.1 Program report

The program report is the primary statutory document associated with the Melbourne Strategic Assessment. The program report contains binding commitments on the part of the State Government to the Commonwealth Government.

The commitments in the program report include a requirement to establish planning mechanisms for implementing the various aspects of the program. This includes preparing a Biodiversity Conservation Strategy for Melbourne's growth corridors and sub-regional species strategies to inform the preparation of Growth Corridor Plans and precinct structure plans.

The program report also identifies the conservation outcomes to be achieved for each matter of national environmental significance and the mechanisms for how these outcomes will be delivered. The BCS plays a key role in delivering these conservation outcomes.

The steps for implementing the program are outlined in the program report, including the logic and relationship between the key statutory documents. The BCS is a requirement of stage 2 of the program's implementation process (see diagram 1).

2.2 State legislation

The *Planning and Environment Act 1987* is the primary legislation for implementing the program. The Act provides for the preparation of a comprehensive set of provisions and policies for planning schemes, which regulate the use and development of land in Victoria.

Other legislation of particular relevance to the BCS includes:

- *Flora and Fauna Guarantee Act 1988*
- *Wildlife Act 1975*
- *National Parks Act 1975*
- *Conservation Forests and Lands Act 1987*
- *Victorian Conservation Trust Act 1972*
- *Crown Land (Reserves) Act 1978.*

The key state legislation that will apply at each stage of implementing the program is outlined in section 4 of the program report. Other legislation may be triggered, depending on the nature of land-use activity occurring (e.g. extractive industry and utilities). The program report also details the relevant planning policy mechanisms triggered by the legislation.

2.3 Planning policy framework

2.3.1 Growth Corridor Plans

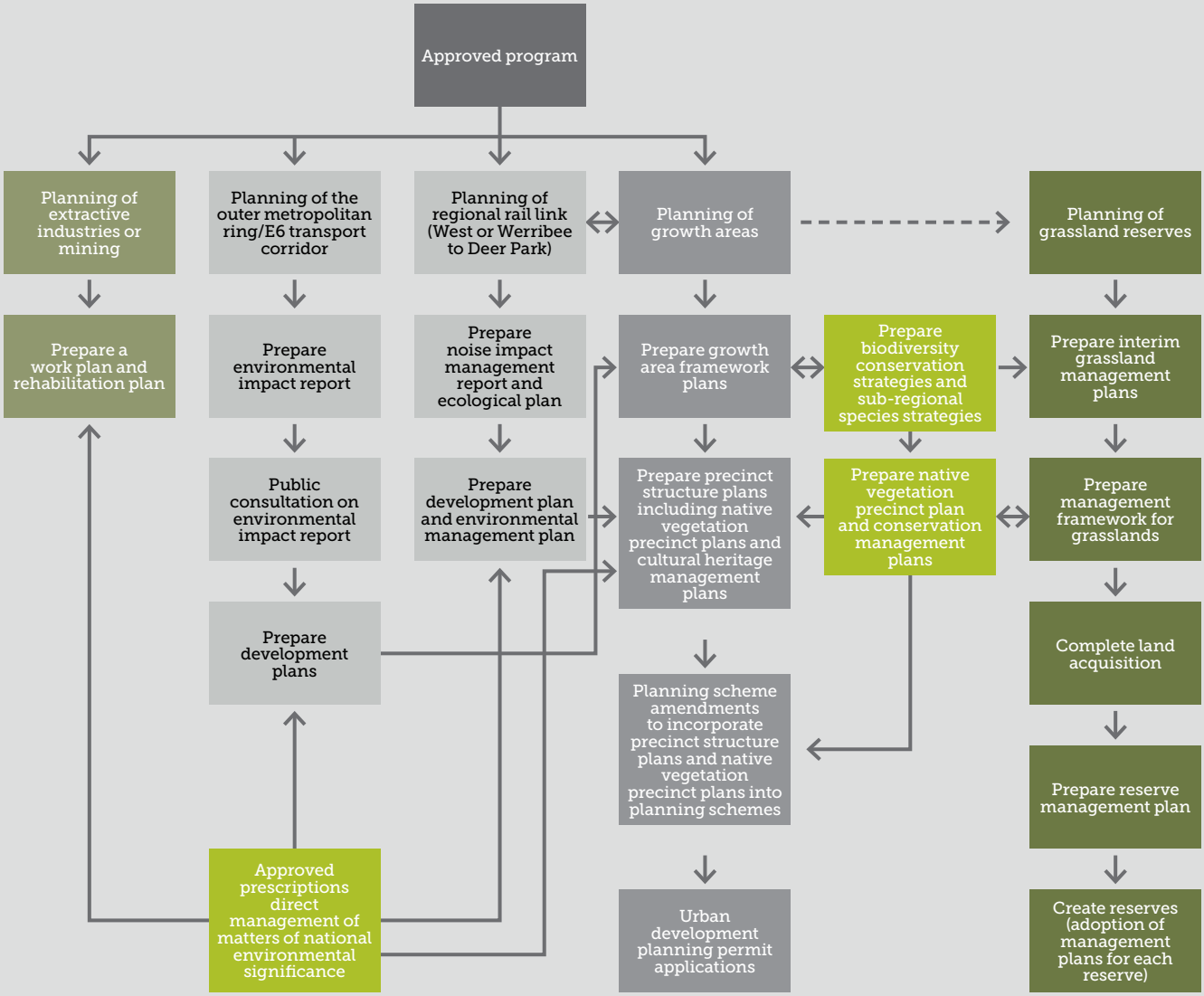
Growth Corridor Plans (GAA, 2012) (formerly referred to as Growth Area Framework Plans) have been prepared by the GAA in conjunction with DPCD, DSE and other State Government departments and agencies and the growth corridor councils. These plans guide the creation of new communities within the growth corridors in accordance with the State Planning Policy Framework.

Growth Corridor Plans set out the regional framework for the preparation of precinct structure plans within the growth corridors and show broad land-use patterns, proposed transport networks, regional open space, important waterways and areas of environmental sensitivity.

In accordance with the program report, the Growth Corridor Plans have been informed by the BCS and the sub-regional species strategies. The plans incorporate the location and boundaries of each conservation area consistent with the BCS and exclude urban development from each area.

The Growth Corridor Plans require approval from the State Minister for Planning.

Diagram 1: Process for stage 2 of the program – implementation
(Note: as a result of the BCS, the approved prescriptions will cease to remain in force in certain areas – see section 2.3.7)



2.3.2 Sub-regional species strategies

A commitment of the program report includes the preparation of sub-regional species strategies for certain matters of national environmental significance. These were required for three threatened fauna species for which impact mitigation involved further information collection and consideration of habitat connectivity across and beyond the growth corridors.

The purpose of the sub-regional species strategies is to inform the preparation of the BCS by identifying important populations, areas of habitat to be protected as required by the prescriptions, and habitat corridors. These strategies influence the design of precincts during the preparation of precinct structure plans.

Sub-regional species strategies also identify conservation goals and priorities and set out mitigation requirements, management and funding arrangements for areas to be protected, and monitoring and research requirements.

Sub-regional species strategies have been prepared by DEPI for Growling Grass Frog (DEPI, 2013a) and Golden Sun Moth (DEPI, 2013b).

A third Sub-regional species strategy is currently being prepared by DEPI for the Southern Brown Bandicoot; the strategy will focus primarily on areas outside the area covered by the BCS.

These strategies require approval from the Commonwealth Environment Minister.

The BCS has applied the protection requirements of the sub-regional species strategies for Growling Grass Frog and Golden Sun Moth to identify conservation areas.

The implementation of the BCS together with the sub-regional species strategies, including the strategy for the Southern Brown Bandicoot, will satisfy the conservation requirements for these three matters of national environmental significance.

2.3.3 Precinct structure plans

Precinct structure plans set out the future structure of a suburb, detailing the location of housing, activity centres, community facilities, local transport networks, open space and areas of biodiversity value. The precinct structure planning process applies to land within the growth corridors and the existing 28 precincts within the 2005 Urban Growth Boundary.

Precinct structure plans must be prepared in accordance with the Growth Corridor Plans and the Precinct Structure Planning Guidelines (GAA, 2009). These guidelines provide guidance on the assessment, protection and management of biodiversity values within the precinct and identify outputs that must be produced, including a native vegetation precinct plan.

The plans must be prepared and approved by the State Minister for Planning and incorporated into the relevant planning scheme before urban development can proceed (some exceptions apply). Once a plan has been incorporated into the relevant planning scheme, planning permits can be granted by the responsible authority (usually council) for urban development.

2.3.4 Planning permits

A planning permit is a legal document that gives permission for a use or development on a particular parcel of land under a planning scheme. The permit includes written conditions that must be satisfied in carrying out an approved use or development. The conservation outcomes in the program report may be given effect by the precinct structure plan informing the conditions of development and subdivision permits.

A planning permit is required for the removal of native vegetation unless an exemption applies. The Native Vegetation Management Framework (DNRE, 2002) is a relevant decision guideline when assessing any proposal to remove native vegetation.

2.3.5 Native vegetation precinct plans

Native vegetation precinct plans set out the requirements for the protection and removal of native vegetation within a precinct. In the case of the growth corridors, the plans are a tool used to protect Commonwealth listed ecological communities.

The plans must be prepared for each precinct in the growth corridors and the existing 28 precincts in accordance with Clause 52.16 of local planning schemes. The plans are prepared using native vegetation assessments and mapping to standards specified by DEPI.

Native vegetation precinct plans must be prepared based on the time-stamping maps and dataset (see section 4.1.2), which cover all native vegetation patches within the precinct, and will be supplemented by surveys of individual trees where relevant.

The plans are incorporated into the relevant local planning scheme. Native vegetation precinct plans are prepared in accordance with DSE's Biodiversity Precinct Structure Planning Kit, and in accordance with the program report, must be consistent with the prescriptions.

2.3.6 Conservation management plans

Conservation management plans outline how matters of national environmental significance and state significance will be protected and managed within a precinct and must be prepared where there are important populations or habitats of threatened species within the growth corridors that require particular management.

The plans are prepared as part of the precinct structure planning process. They will be prepared by DEPI in consultation with the landholder and relevant authorities as appropriate.

Conservation management plans will inform detailed management plans that will be prepared for individual properties within a conservation area when land is secured for conservation (see section 5.2).

2.3.7 Prescriptions

The program report committed to preparing prescriptions for matters of national environmental significance. Impacts on matters of national environmental significance are not permitted until prescriptions for these matters have been approved by the Commonwealth Environment Minister.

The prescriptions establish requirements for the identification and protection of habitat for matters of national environmental significance, which influences the design of precincts during the preparation of precinct structure plans. The prescriptions also identify how impacts on these matters are to be mitigated, including through the provision of offsets, translocation, and the implementation of a conservation management plan.

Prescriptions are required to be approved by the Commonwealth Environment Minister. The Minister approved prescriptions for most relevant matters of national environmental significance in 2010. These are:

- Natural Temperate Grassland of the Victorian Volcanic Plain
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain
- Golden Sun Moth
- Striped Legless Lizard
- Growling Grass Frog
- Southern Brown Bandicoot
- Matted Flax-lily
- Spiny Rice-flower
- Migratory species.

The program report states that prescriptions will be revised in certain circumstances. The triggers for revising prescriptions are:

- The publication of any new recovery plan or policy statement for a matter of national environmental significance subject to a prescription
- Any new substantial scientific information on the status of a relevant matter of national environmental significance subject to a prescription
- Any indication that the conservation outcomes in the program report or the sub-regional species strategies will be unachievable or there may be better ways to achieve the outcomes.

The BCS has applied the protection requirements of the approved prescriptions to identify conservation areas. The requirements in the prescriptions relating to offsetting, salvage and translocation and conservation management plans have also been incorporated into the BCS (see sections 5.2 and 6.3). The implementation of the BCS will therefore give effect to the prescriptions to ensure protection of matters of national environmental significance.

Compliance with the BCS will satisfy the requirements of the prescriptions in relation to:

- The four growth corridors
- The existing 28 precincts for which a planning scheme amendment to introduce a precinct structure plan is approved after 1 March 2012, as well as the Truganina Employment Area
- The Outer Metropolitan Ring Transport Corridor/E6 Road Reservation.

The prescriptions will continue to apply directly to actions taken in:

- The Regional Rail Link (section 2)
- The existing 28 precincts for which a planning scheme amendment to introduce a precinct structure plan is approved prior to 1 March 2012, except for the Truganina Employment Area (which is within the area covered by the BCS).

Note that in some precinct structure plan areas, landowners have completed all necessary surveys to required DEPI standards and wish to use the approach set out in the approved prescription for Golden Sun Moth to determine their offset obligations rather than the approach set out in the BCS (see section 6.3). This approach may only be used in the following areas and only where landowners provide the final spatial data resulting from these surveys and prescription requirements to DEPI for accounting purposes:

- Greenvale Activity Centre (now part of Precinct Structure Plan 21 Greenvale Central)
- Rockbank North Precinct (Precinct Structure Plan 1079) (part only)[3]
- Lockerbie North Precinct (part only)[4]
- Lockerbie Precinct[5]
- Manor Lakes Precinct (part only)[6]
- Truganina Employment Area[7].

3 This applies to land at 1992-2106 Western Hwy Rockbank (2010 growth area) only, which represents about 90 per cent of the precinct.

4 This applies to land at 75 Stewart St, Beveridge only, which represents about 25 per cent of the precinct.

5 This applies to the following land within the Lockerbie Precinct only:
40 Dwyer Street, Kalkallo; 300 Hume Highway, Beveridge; 1450 Hume Highway, Kalkallo; 1440 Hume Highway, Kalkallo; and 110 Dwyer Street, Kalkallo.

6 This applies to land shown as the 'Precinct Structure Plan Area' in the Manor Lakes Precinct Structure Plan (August, 2011) excluding land covered by planning permit WYP3665/05 and draft planning permit WYP5123/11, as well as land covered by planning permit WYP3840.

7 This applies only where a planning permit issued prior to the Commonwealth Environment Minister's approval of the BCS authorises the use of the Golden Sun Moth prescription in determining Golden Sun Moth obligations for the land.

Photo: Natural Temperate Grassland, DEPI

2.4 Funding of the conservation measures

The conservation measures in the BCS and program report, including the establishment of the conservation areas within the growth corridors and the Western Grassland Reserves, will be funded using a cost recovery model.

The cost recovery model will establish the fees that will be collected from developers and used to mitigate the impacts of urban development on native vegetation and threatened species habitat in the area covered by the BCS.

The cost recovery model has been developed in accordance with the State Government's Cost Recovery Guidelines and rules regarding competition policy.

DEPI will publish a document describing the cost recovery model and detailing the fee structure and prices. The document will explain the principles underpinning the model and the method for setting the fees. It will set out the governance, accountability and transparency measures that will be established to administer the fees and manage risks, and describe the method for reviewing the fees over time.

The biodiversity fees will be governed though a specific trust that will include a requirement for regular reporting on income and expenditure and the results of independent audits.

3. CONSERVATION OUTCOMES AND GUIDING PRINCIPLES

3.1 Conservation outcomes

The program report committed to conservation outcomes for each matter of national environmental significance that occurs within the growth corridors. The BCS is the key policy mechanism for achieving these outcomes. The key conservation outcomes are summarised as follows:

- Establish large permanently protected areas outside the growth corridors to protect native grasslands and grassy woodlands and threatened species associated with these habitat types such as Golden Sun Moth
- Establish a network of smaller permanently protected areas within and outside the growth corridors to enhance connectivity and protect native grasslands, grassy woodlands, wetlands, and threatened species (e.g. Golden Sun Moth) and migratory species associated with these habitat types, and to achieve specified protection targets
- No substantial negative change to populations of threatened flora that occur within the growth corridors at specific locations, including Small Golden Moths Orchid, Button Wrinklewort, Large-fruit Groundsel, Maroon Leek-orchid and Swamp Everlasting
- Maintain functioning sustainable populations of Southern Brown Bandicoot and Growling Grass Frog within and adjacent to the growth corridors with connectivity between populations. Protect and enhance all populations of Southern Brown Bandicoot and important populations of Growling Grass Frog that occur within the growth corridors.

The detailed outcomes to be achieved for each matter of national environmental significance are listed in Appendix 2. Sections 5.4 to 5.7 outline how the BCS achieves these outcomes.

3.2 Guiding principles

The BCS has been prepared in accordance with a number of guiding principles that were considered in preparing the Melbourne Strategic Assessment:

- Consider biodiversity impacts and mitigation approaches early in decision-making and at a strategic level to improve biodiversity outcomes and address the cumulative impacts of urban development within the Urban Growth Boundary
- Apply established biodiversity conservation planning principles to decision-making processes. These principles include:
  - Large habitat areas are more likely to support viable populations of a greater diversity of threatened and key functional species, greater genetic diversity, more natural disturbance regimes, and habitats at a range of successional stages, and are able to better recover from disturbance events such as fire
  - Small and medium habitat areas are important in supporting a diversity of habitat types, important populations of certain species, and habitat connectivity across a landscape
  - Connectivity between habitat patches and across a landscape is important in supporting metapopulations, the recolonisation of habitat patches after a disturbance, and breeding
  - Buffer zones around habitat areas are important in supporting viable populations, reducing the impacts of adjacent land-uses and potentially enhancing habitat connectivity
  - Isolated habitat areas are likely to be recolonised by individuals more readily if located near larger habitat areas

- In accordance with the Native Vegetation Management Framework (DNRE, 2002), mitigate impacts on biodiversity through a hierarchy of:
  - First – avoid impacts
  - Second – minimise impacts
  - Third – offset where impacts are unavoidable
- Use the best available ecological information to make decisions. Use data collected from detailed surveys, and where this is not possible, use data from rapid assessments and native vegetation and species modelling, as well as expert advice
- Recognise and manage for uncertainty by monitoring the outcomes of mitigation and management measures and applying adaptive management principles to key decisions as appropriate. The approach to monitoring and adaptive management for the BCS is described in section 7.

The application of these principles has resulted, for example, in the establishment of the Western Grassland Reserves outside the growth corridors that will be used to offset unavoidable removal of native vegetation and threatened species habitat within the growth corridors. This approach allows offsets to be consolidated into the largest area of native grasslands remaining around Melbourne, which will improve biodiversity outcomes compared to a site by site approach to offsetting that leads to many smaller and scattered offsets.

4. METHODS

4.1 Data used to prepare the Biodiversity Conservation Strategy

The BCS was prepared using all data available to DSE on the biodiversity values of the growth corridors. Data was collected for the Strategic Impact Assessment Report (DSE, 2009) and a significant amount of additional data has been collected since the completion of this report.

The key additional data used to prepare the BCS comprises:

- Surveys and assessments by the GAA in specific precincts across the growth corridors for native vegetation type, extent and condition and targeted surveys for certain Commonwealth and State listed threatened species done between the period 2008 to 2011 (see section 4.1.1). The results of these surveys are described in biodiversity assessment reports available on the GAA's website
- Surveys and assessments of specific properties done as part of DSE's time-stamping project for native vegetation type, extent and condition. The results of these surveys have been incorporated into maps that consolidate all available information on native vegetation of the growth corridors (see section 4.1.2). These maps are shown in Figures 11 to 18
- Targeted surveys across the growth corridors for Growling Grass Frog and Golden Sun Moth done by the GAA and DSE. The results of these surveys are described in technical reports including those associated with the sub-regional species strategies for these species (Ecology & Heritage Partners, 2011a; Ecology & Heritage Partners, 2011b; DEPI, 2013a; DEPI, 2013b)
- Surveys done on behalf of DSE in potential conservation areas identified in the draft BCS targeting certain Commonwealth listed threatened species. The results of these surveys are described in Ecology & Heritage Partners (2011a)
- Surveys of specific properties undertaken by landowners or DSE for native vegetation and threatened species as part of the public consultation process for the draft BCS and for the preparation of management plans. The results of these surveys are described in public submissions (see DEPI, 2013d), in DEPI, (2013e, 2013f, 2013g) and in AECOM (2006) and Golder Associates (2010)
- Investigations by DSE of a number of properties in relation to Grassy Eucalypt Woodland and specific Commonwealth listed threatened species, in response to specific issues raised by landowners. The results of these investigations are described in DSE (2012 d, e, f)
- Surveys and assessments by the State Department of Transport for the Regional Rail Link project. Data from these surveys are included in the time-stamping dataset (see section 4.1.2).

As a result, the majority of the growth corridors have been surveyed, as shown in Figures 7 to 10.

DSE also consulted with a wide range of stakeholders, including councils, academics, conservation groups, developers and local naturalists. As part of this process, DSE conducted a workshop with consultants to help identify or confirm the biodiversity values of specific areas of interest. The data that informed this workshop is provided in AECOM (2011), Biosis Research (2011), Ecology Australia (2011), Ecology & Heritage Partners (2011b), GHD (2011) and Practical Ecology (2011a).

4.1.1 Growth Area Authority surveys

The GAA engaged ecological consultants in three projects over three years between 2008 to 2011 to survey and assess native vegetation and threatened species in specific precincts across the growth corridors. The purpose of the projects was to identify priorities for the protection and enhancement of biodiversity and the preparation of native vegetation precinct plans. The scope of the surveys was developed jointly with DSE.

The GAA projects involved the collection of information on native vegetation type, extent and condition and Commonwealth and state listed threatened species within the growth corridors, as follows:

- 'GAA 1' (2008/2009) included surveys of native vegetation and non-threatened flora and fauna
- 'GAA 2' (2009/2010) included surveys of native vegetation and flora and fauna as well as targeted surveys for certain Commonwealth and state listed threatened species
- 'GAA 3' (2010/2011) included surveys of native vegetation and flora and fauna as well as targeted surveys for certain Commonwealth and state listed threatened species.

The areas surveyed by each of these projects are shown in Figures 7 to 10. The survey results are documented in biodiversity assessment reports available on the GAA website.

4.1.2 Time-stamping project

The time-stamping project captured and 'time stamped' information on native vegetation type, extent and condition. A detailed description of the project is provided in *A new approach to biodiversity in Melbourne's growth corridors: Time-stamping native vegetation data* (DEPI, 2013c).

The time-stamping project established a definitive native vegetation dataset and maps for the area covered by the BCS. The project built on the GAA surveys to complete the assessment of native vegetation within the growth corridors.

Surveys for the time-stamping project were done on land that had not already been surveyed through the GAA projects or by the State Department of Transport for the Regional Rail Link project.

DSE provided relevant landowners within the Urban Growth Zone with native vegetation maps, which represented DSE's understanding of the native vegetation patches on their properties. While the majority of the growth corridors had been surveyed, the maps provided to landowners relied on estimated information on native vegetation type, extent and condition in areas where no surveys had been undertaken. This estimation was based on remote sensed data and on-ground observations and augmented by rapid vegetation assessments done by DSE from 2009 to 2011.

Where landowners identified inaccuracies in the maps, DSE engaged ecological consultants to undertake surveys to confirm or alter the maps. This involved the collection of information on vegetation type, extent and condition within areas of native vegetation. The standards for this data collection are provided in DSE (2010a). The areas surveyed specifically for the time-stamping project are shown in Figures 7 to 10.

DSE then prepared native vegetation maps that consolidated all available information on native vegetation type, extent and condition collected through:

- Time-stamping project
- GAA surveys
- Regional Rail Link project
- Native vegetation modelling undertaken by DSE.

The resulting time-stamping dataset is the definitive native vegetation dataset for the area covered by the BCS and will be used to calculate the offset requirements of urban development. Offsets will be calculated using the 'time stamped' extent and condition of the native vegetation, rather than its extent and condition at the time the vegetation is removed.

The time-stamping dataset will also be used to account for native vegetation offsets in the area covered by the BCS. The process for this accounting will be specified in the Monitoring and Reporting Framework (see section 7.2).

The time-stamping project did not include surveys for threatened species or collect information on scattered trees. Information on large old trees within native vegetation patches is included only where those patches are based on surveyed data. Scattered trees and remaining large old trees will be identified and assessed for offsets through the precinct structure planning process (see section 6.3).

Under the time-stamping project, Natural Temperate Grassland is assumed to equate to two Ecological Vegetation Classes shown in Figures 15 to 18: Plains Grassland and Creekline Tussock Grassland. Grassy Eucalypt Woodland is not assumed to equate to any particular Ecological Vegetation Class and is mapped separately (see Figures 19 and 20).

The draft time-stamping maps were included in the draft BCS (DSE, 2011a) and were published on the DSE website during the public consultation process (see section 4.4). Public consultation resulted in several submissions from landowners in areas indicated in the Growth Corridor Plans for potential urban development, but where native vegetation surveys had not been done.

These areas were not included within the original scope of the time-stamping project, which focussed on land zoned Urban Growth Zone. Some of these public submissions have resulted in DSE accepting new data from the relevant landowners for inclusion in the time-stamping dataset, subject to quality assurance by DSE (see section 4.1.3). This process was dependent on landowners finalising data submissions to DSE and concluded in May 2012.

The final time-stamping maps are shown in Figures 11 to 18. Figures 11 to 14 show the habitat scores of native vegetation. Figures 15 to 18 show the Ecological Vegetation Classes.

4.1.3 Quality Assurance for data

The collection and mapping of native vegetation data includes a Quality Assurance (QA) process done by DSE. The process ensures that the mapping and assessment undertaken as part of the BCS is of adequate detail and to a sufficient standard. This includes data collected by consultants working on behalf of government agencies such as the GAA and landowners, as well as DSE staff. The quality assurance process consists of three stages:

- Stage 1: QA conducted by each consultant for the data they have collected, in accordance with specified standards (see DSE, 2010a)
- Stage 2: Verification by DSE's Data Management Team, involving checking each dataset for completeness and compliance with the specified standards
- Stage 3: Audit and validation of the mapping and assessment data by DSE, involving field audits, a Vegetation Quality Assessment Competency Check, and an analysis of the assessment data to ensure that it meets the specified standards.

4.2 Determining conservation areas

The conservation areas identified in the BCS were determined in consideration of the following:

- The contribution of the area to achieving the conservation outcomes for matters of national environmental significance in the program report
- The protection requirements of the sub-regional species strategies and the prescriptions (see sections 4.2.1 and 4.2.2)
- The size and significance of any populations of threatened or rare species listed under the *Flora and Fauna Guarantee Act 1988* and DSE's Rare and Threatened Species Advisory Lists
- The ability to practically manage the area, taking into consideration factors such as size and shape, the management requirements of the key biodiversity assets and adjacent current and future land-uses.

In determining the contribution of the area to achieving the conservation outcomes for matters of national environmental significance, the following factors were taken into account:

- The size and significance of any populations of matters of national environmental significance, taking into account the criteria in the Commonwealth Government's Significant Impact Guidelines (DEH, 2006) and guidelines for specific matters (DSEWPC 2011a, b; DEWHA 2009a, b, c, d; DEWHA, 2008)
- Whether the area comprises high contribution to species persistence habitat for a matter of national environmental significance, as defined in the Strategic Impact Assessment Report (DSE, 2009)
- The condition of the native vegetation in the area, including the per cent cover of high threat perennial grassy weeds.

The Tables in sections 5.4 to 5.7 identify how each conservation area contributes to achieving the conservation outcomes. A description of how the protection requirements of the sub-regional species strategies and the prescriptions were applied is provided in sections 4.2.1 and 4.2.2.

4.2.1 Applying the requirements of sub-regional species strategies

Growling Grass Frog

The Sub-regional Species Strategy for the Growling Grass Frog (DEPI, 2013a) was prepared by DEPI and informed by technical work done by consultants, including literature reviews, targeted surveys, development of a habitat connectivity model, stream by stream site analysis and technical workshops (DEPI, 2013a; Biosis Research, 2012; Ecology & Heritage Partners, 2011a).

The strategy identifies suitable habitat for the Growling Grass Frog in two categories:

- Habitat of highest conservation significance that will be protected and managed to ensure the conservation of important populations (as defined by the Commonwealth Government) (Growling Grass Frog corridors or 'Category 1 corridors')
- Habitat of lesser significance that can be cleared for urban development, subject to providing compensatory habitat ('Category 2 habitat').

All the Growling Grass Frog corridors identified in the sub-regional species strategy have been identified in the BCS as conservation areas, and are described in sections 5.4 to 5.7. These corridors comprise all the land in the area covered by the BCS requiring protection to achieve the conservation outcomes for Growling Grass Frog in the program report and to satisfy the protection requirements of the prescription.

Southern Brown Bandicoot

A draft Sub-regional Species Strategy for the Southern Brown Bandicoot (DSE, 2011g) was prepared by DSE and informed by technical work undertaken by consultants, including literature reviews, targeted surveys, use of Population Viability Analysis tools and habitat models, and technical workshops (Practical Ecology, 2011b).

As a result of submissions received during the public consultation process in November-December 2011, the draft strategy will be replaced by a new strategy for the Southern Brown Bandicoot. The new strategy will be developed on the basis of additional technical work and will be informed by the existing technical report (Practical Ecology, 2011b).

The new strategy requires approval from the Commonwealth Government.

Golden Sun Moth

The Sub-regional Species Strategy for the Golden Sun Moth (DEPI, 2013b) was prepared by DEPI. The strategy was informed by technical work undertaken by DSE and the GAA, including targeted surveys for the Golden Sun Moth in the growth corridors and across the Victorian Volcanic Plain, and the time-stamping dataset and maps (see section 4.1.2).

The strategy identifies land requiring protection to achieve the conservation outcomes for Golden Sun Moth in the program report and to satisfy the protection requirements of the prescription.

The prescription requires that Golden Sun Moth habitat greater than 100 hectares in total (comprising patches of native grassland or grassy woodland less than 200 m apart containing less than 25 per cent high threat perennial weeds) must be protected.

Any areas protected due to the prescription must be of a size and shape that enables their effective management, given the current and future urban land-use context.

The methodology for applying the protection rules in the prescription is detailed in the sub-regional species strategy. In summary, the methodology comprised the following key steps:

- The time-stamping dataset was used to analyse the protection rules in the prescription that relate to native vegetation habitat, weediness and connectivity
- Analysis of native vegetation was overlaid with records of Golden Sun Moth (where available) to identify areas of confirmed habitat
- Maps were prepared to identify all the land within the growth corridors potentially required to be protected due to the prescription (see Figures 21 and 22)
- Criteria were applied to select a subset of this land, which included consideration of:
  - Practical management (e.g. size, shape, land-use context)
  - The objective of establishing smaller conservation areas, providing mitigation against potential risk of catastrophic events in the large conservation areas outside the Urban Growth Boundary
  - The need to retain genetic diversity across the species' range.

The last two criteria derive from the conservation objectives for the Golden Sun Moth in the program report. These criteria were used to identify the highest priority sites for protection across the growth corridors and to exclude some sites that would otherwise require protection under the prescription where they were of lower priority (e.g. difficult to practically manage). The sub-regional species strategy also included two additional sites in the northern growth corridor which were below the area threshold for protection under the prescription but met the other criteria. These two sites will protect a part of the species' range (and likely genetic diversity) in an area highly populated with Golden Sun Moth.

Areas requiring protection for Golden Sun Moth in the sub-regional species strategy have been identified in the BCS as conservation areas. These are conservation areas 1, 2, 3, 4 and 11 in the western growth corridor (see Figure 3) and conservation areas 16 and 21 in the northern growth corridor (see Figure 5), and are described in sections 5.4 to 5.7. Sites 7, 8, 9, and 13 (Figure 3) have also been excluded from urban development due to their likely importance for Golden Sun Moth, despite lack of access to enable surveys to be undertaken.

These areas comprise all the land in the area covered by the BCS requiring protection to achieve the conservation outcomes for Golden Sun Moth in the program report and to satisfy the protection requirements of the prescription. In some cases, these conservation areas were protected in the BCS for other reasons (e.g. threatened flora species).

4.2.2 Applying the requirements of prescriptions

The BCS has applied the protection requirements of the prescriptions to identify all land in the area covered by the BCS that requires protection due to the prescriptions.

The prescriptions were applied to the information collected in surveys (see section 4.1), such as vegetation type, extent and condition, and where required, to modelled information, to identify the land requiring protection in the BCS.

Some of these surveys occurred subsequent to the draft BCS (DSE, 2011a) to determine whether areas identified as potential conservation areas should be retained as conservation areas to protect specific matters of national environmental significance. The changes made as a consequence of these surveys are described in A new approach to biodiversity in *Melbourne's growth corridors: Public Consultation Report of Findings* (DEPI, 2013d).

All areas identified as a result of this process have been designated as conservation areas in the BCS, except one area discussed in the draft BCS that included potential (unsurveyed) habitat for Spiny Rice-flower. In accordance with the prescriptions, it is considered that protection of this area is incompatible with the achievement of state significant planning objectives.

In addition, due to the criteria established in the Sub-regional Species Strategy for Golden Sun Moth, not all areas triggered by the prescription for Golden Sun Moth will be protected. This is balanced by two areas in the northern growth corridor that are considered to better achieve the conservation outcomes for the species (see section 4.2.1 and DEPI, 2013b).

Matters of national environmental significance known to occur within the growth corridors with no prescriptions prepared are also addressed by the BCS. Attention was focussed on sites where significant impacts on these matters would likely occur. This approach was intended to avoid impacts on matters with no prescriptions prepared and avoid the need for new prescriptions.

The key example of this approach is the protection of a population of Large-fruit Groundsel at Rockbank, which occurs in conservation area 5 (see Figure 3). This species was noted in the program report as requiring a prescription to be developed to inform future development planning. The approach in the BCS makes the requirement for this prescription unnecessary.

Grassy Eucalypt Woodland

The prescription requires that 80 per cent of Grassy Eucalypt Woodland in the growth corridors that meets the Commonwealth listed definition of the community be protected. Conservation areas for Grassy Eucalypt Woodland must be of a size and shape that enables their effective management, given the current and future urban land-use context.

The methodology for identifying Grassy Eucalypt Woodland and applying the protection requirements in the prescription comprised the following key steps (see Appendix 3):

- Identification of areas of potential Grassy Eucalypt Woodland on the basis of geological maps, aerial photos, observations from roadsides, historic parish plans, and use of Geographic Information Systems
- Identification of areas within potential Grassy Eucalypt Woodland considered 'highly likely' to comprise the ecological community on the basis of site assessments, observations from roadsides, and landscape information (these site assessments were used to confirm the presence of woodland on properties surveyed in the field through the GAA surveys or by DSE)
- Use of Geographic Information Systems to determine the amount of 'highly likely' Grassy Eucalypt Woodland that occurs within the conservation areas and the percentage of the total amount within the growth corridors that this amount represents.

All areas of potential and 'highly likely' Grassy Eucalypt Woodland occur within the north-western and northern growth corridors (see Figures 19 and 20).

This process resulted in the identification of a number of areas of land zoned Urban Growth Zone or Farming Zone requiring protection due to the prescription for Grassy Eucalypt Woodland. These include conservation areas 16, 17 and 19 in the north-western growth corridor and conservation areas 25 and 29 in the northern growth corridor (see Figures 4 and 5).

A number of other areas were also identified as requiring protection. These areas are all located on land zoned Rural Conservation Zone through Planning Scheme Amendment VC68 and will be protected in conservation areas.

Table 1 identifies the percentage of 'highly likely' Grassy Eucalypt Woodland that will be protected in conservation areas, including the three areas of land zoned Urban Growth Zone or Farming Zone.

The table shows that about 61 per cent of all areas of 'highly likely' Grassy Eucalypt Woodland will be protected in conservation areas. Additional conservation outcomes for this ecological community will be sought through the improved management of conservation areas containing Grassy Eucalypt Woodland in the northern growth corridor.

Given some uncertainty about the final amount of land over the 61 per cent that will be protected for Grassy Eucalypt Woodland in conservation areas, additional land will be added to the proposed 1,200 hectare Grassy Woodland Reserve to be established outside the 2010 Urban Growth Boundary.

The Grassy Eucalypt Woodland Reserve will be funded by fees collected from developers to mitigate impacts on native vegetation or threatened species habitat in the area covered by the BCS (see section 2.4). The total area to be added to the Grassy Woodland Reserve will be between 100 and 200 hectares and will be determined once the exact extent and quality of Grassy Eucalypt Woodland to be cleared for urban development in the growth corridors and protected in conservation areas is confirmed.

Most areas required to be protected due to the prescription for Grassy Eucalypt Woodland have been identified as conservation areas. The additional areas protected and/or enhanced through the approaches described above are considered sufficient to protect Grassy Eucalypt Woodland within and beyond the growth corridors. As a result, the implementation of the BCS is considered to satisfy the protection requirements of the prescription.

These measures to protect Grassy Eucalypt Woodland are in addition to the commitment in the program report to establish the 1,200 hectare Grassy Woodland Reserve.

Table 1: Percentage of 'highly likely' Grassy Eucalypt Woodland protected in conservation areas

	North-western growth corridor	Northern growth corridor	Total (all growth corridors)
Total amount of Grassy Eucalypt Woodland within growth corridor	57 hectares	369 hectares	426 hectares
Amount of Grassy Eucalypt Woodland protected in conservation areas	39 hectares	220 hectares	259 hectares
Percentage of Grassy Eucalypt Woodland protected in conservation areas	68 per cent	60 per cent	61 per cent

Matted Flax-lily and Spiny Rice-flower

The prescription for Matted Flax-lily requires areas of native habitat where the species occurs that has less than 25 per cent cover of high threat perennial grassy weeds to be protected.

The prescription for Spiny Rice-flower requires protection in certain circumstances. Where populations are between five and 200 plants, sites must be protected where the native vegetation has less then 25 per cent cover of high threat perennial grassy weeds.

Conservation areas for Matted Flax-lily and Spiny Rice-flower must be of a size and shape that enables their effective management, given the current and future urban land-use context.

The methodology for applying the protection requirements in the prescriptions for Matted Flax-lily and Spiny Rice-flower comprised the following key steps:

- The time-stamping dataset (see section 4.1.2) was used to determine habitat of high contribution to species persistence for Matted Flax-lily and Spiny Rice-flower (as defined in the prescriptions, the habitat for these species comprises native vegetation greater than 0.35 condition score within contiguous habitat greater than 50 hectares)[8]
- A lower area threshold of 20 hectares was also analysed using the same native vegetation condition score (greater than 0.35) to ensure the results of the analysis were conservative
- A map was prepared to identify all the areas within the growth corridors that meet these native vegetation condition and area thresholds
- Analysis of native vegetation was overlaid with records of Matted Flax-lily and Spiny Rice-flower (where available) to identify areas of confirmed habitat.

Photo: Blue Devil, Ecology and Heritage Partners

This process resulted in the identification of several areas within the growth corridors requiring protection due to the prescriptions for Matted Flax-lily and Spiny Rice-flower. Where survey data for these species was absent, such areas were designated as potential conservation areas in the draft BCS and surveys were then done by DSE or landholders. Where surveys failed to detect threatened species, most of these areas, or parts of them, were made available for urban development. Where access to do surveys could not be obtained, these areas were designated as conservation areas (i.e. excluded from urban development).

For Spiny Rice-flower, a number of areas of land zoned Urban Growth Zone (conservation areas 1, 2, 4 and 12) and one area zoned Farming Zone (conservation area 5) require protection to satisfy the prescription requirements. All these conservation areas are in the western growth corridor (see Figure 3). For Matted Flax-lily, one area of land zoned Urban Growth Zone (conservation area 23) requires protection to satisfy the prescription requirements. This conservation area is located in the northern growth corridor (see Figure 5).

8 High contribution habitat for Matted Flax-lily comprises areas of native vegetation greater than 0.4 site condition score, so the use of a site condition score of 0.35 is conservative. High contribution habitat for Spiny Rice-flower also includes areas of native grassland greater than 0.2 site condition score within contiguous habitat of greater than 500 hectares. Given land-use constraints, this area threshold was not analysed.

Photo: Striped Legless Lizard, Copyright Daniel Gilmore

Several other areas were also identified as requiring protection for Matted Flax-lily and Spiny Rice-flower. These areas are all located on land zoned Rural Conservation Zone (or undevelopable areas within land zoned Special Use Zone) through Planning Scheme Amendment VC68 and will be protected in conservation areas. Where the BCS identifies potential changes to the boundaries of these areas (see sections 5.4 to 5.7), any changes must ensure populations and important habitat for Matted Flax-lily or Spiny Rice-flower remain protected for conservation. Additional surveys will be required to confirm this prior to any such change.

All areas required to be protected due to the prescriptions for Matted Flax-lily and Spiny Rice-flower (except the patch of native vegetation located between Werribee River and Tarneit Road described in the draft BCS) have been identified as conservation areas. As a result, the implementation of the BCS is considered to satisfy the protection requirements of these prescriptions.

Migratory species

The prescription for migratory waterbird species requires the protection of wetlands (and buffers around wetlands) known or likely to contain nationally important populations of migratory species.

The methodology for applying the protection requirements in the prescription for migratory species comprised the following key steps:

- Review of available data on the location and distribution of wetlands and populations of migratory species
- Consultation with consultants and other experts to discuss the available data and identify or confirm the biodiversity values of particular areas of interest (see section 4.1).

This process did not identify any areas within the Urban Growth Zone requiring protection due to the prescription for migratory species. No wetland areas within the growth corridors are known to contain nationally important populations of migratory waterbird species.

The Minta Farm wetlands in the Minta Farm Precinct (previously known as C21 Business Park) (see Figure 4) are likely to support nationally important populations of some migratory waterbirds and will be managed through the precinct structure planning process.

Substantial areas of wetland habitat within the growth corridors will be protected or created, and managed, to enhance opportunities for migratory waterbird species (see for example Melbourne Water retarding basins described in sections 5.6 and 5.7). In addition, conservation management plans will be prepared for each conservation area (see section 5.2.3) that will include, where relevant, requirements to protect, manage and monitor wetland habitat and enhance opportunities for migratory waterbirds in conjunction with water quality and flood protection. As a result, the implementation of the BCS is considered to satisfy the protection requirements of the prescription.

Natural Temperate Grassland and Striped Legless Lizard

The prescriptions for Natural Temperate Grassland and Striped Legless Lizard do not require land to be protected within the growth corridors as impacts on these matters were avoided and minimised in locating the Urban Growth Boundary (see DSE, 2009).

Growling Grass Frog, Golden Sun Moth and Southern Brown Bandicoot

The implementation of the sub-regional species strategies for the Growling Grass Frog and Golden Sun Moth have been prepared in accordance with, and satisfy the protection requirements of the prescriptions for these species (see section 4.2.1). The Sub-regional Species Strategy for the Southern Brown Bandicoot will satisfy the prescription requirements for that species.

4.3 Rural Conservation Zone not required for conservation

Planning Scheme Amendment VC68 zoned some land in the growth corridors as suitable for biodiversity conservation. This land was zoned Rural Conservation Zone (see Figures 3 to 6).

Native vegetation surveys since Planning Scheme Amendment VC68 (see section 4.1) have shown that some of this land is of lower biodiversity value because it contains little or no native vegetation and does not provide any additional significant biodiversity values (e.g. by providing habitat connectivity or buffering adjacent land-uses). These areas will be made available for urban development where landform or other constraints allow. The remainder of the land zoned Rural Conservation Zone of higher biodiversity value is included in conservation areas.

The future zoning and land-use of areas of Rural Conservation Zone not required for conservation will be determined by the State Minister for Planning.

The basis of DEPI's decisions in relation to this land is identified in *A new approach to biodiversity in Melbourne's growth corridors: Public Consultation Report of Findings* (DEPI, 2013d).

4.4 Public consultation

Public consultation has been an essential part of the process for finalising the BCS and the sub-regional species strategies.

Consultation was coordinated by the GAA as part of the public consultation process on the Growth Corridor Plans. Public feedback on the draft strategies was formally sought during a six week period from 9 November to 20 December 2011. The draft BCS and sub-regional species strategies were released for public consultation on 9 November 2011 along with supporting documentation including the release of the time-stamping native vegetation dataset for the growth corridors.

The objectives of the consultation process were to:

- Provide an opportunity for the public to provide feedback on the draft strategies
- Allow landowners, developers and other interested parties to provide new information to guide the finalisation of these plans.

The GAA received 467 submissions on the Growth Corridor Plans. A total of 253 submissions raised issues relating to the BCS or sub-regional species strategies and were forwarded to DSE.

Submissions were received from: local councils; planning and development industry peak bodies; environment and community groups; landowners and their representatives (including developers, planning consultants, environmental consultants and legal advisors); academics and environmental researchers; concerned individuals and a range of other interested parties.

Particular attention was given to:

- New data or information provided on specific sites or areas, particularly those identified for conservation purposes in the draft BCS and sub-regional species strategies
- Submissions regarding boundaries of conservation areas, potential conservation areas and habitat corridors designated in the sub-regional species strategies for Growling Grass Frog and Southern Brown Bandicoot
- Where submissions suggest further clarification and justification is required for protection of sites for conservation purposes and in relation to offset requirements
- Where further clarification is required on implementation of the strategies, particularly regarding responsibilities and management commitments for conservation areas.

The response to submissions and final form of the BCS and sub-regional species strategies also incorporated the findings of additional surveys and investigations of potential conservation areas and Growling Grass Frog habitat requirements. These investigations were undertaken by consultants engaged by DSE concurrently with the public consultation process.

Details of the issues raised in the submissions and the State Government's response to these issues are presented in the *A new approach to biodiversity in Melbourne's growth corridors: Public Consultation Report of Findings* (DEPI, 2013d). This report includes details on changes made to conservation areas as a result of the public consultation process.

4.5 Data limitations

While the BCS was prepared using all data available to DSE on the biodiversity values of the area covered by the BCS, some uncertainty about biodiversity values remains.

This arises from a reliance on modelled data in some areas (which makes some boundaries of threatened ecological communities imprecise), the difficulty in detecting some threatened species (e.g. orchids) and the lack of data on nationally important populations of migratory species.

DSE has addressed this uncertainty in a number of ways, including through:

- Consultation with a wide range of stakeholders to help identify available data on biodiversity values and to confirm the biodiversity values of specific areas of interest (see section 4.1)
- Testing the accuracy of, and correcting deficiencies in relation to, the modelled native vegetation data through consultation with landowners and consultants through the time-stamping project
- Adopting a precautionary approach in making decisions, for example, in applying the prescriptions for Grassy Eucalypt Woodland, Spiny Rice-flower and Matted Flax-lily (see section 4.2.2) and in assuming the presence of threatened species in native vegetation to be cleared
- Identifying areas in the draft BCS (DSE, 2011a) – potential conservation areas – where particular uncertainty exists in relation to biodiversity values and doing further surveys of these areas to inform the finalisation of the BCS (see *A new approach to biodiversity in Melbourne's growth corridors: Public Consultation Report of Findings* (DEPI, 2013d).

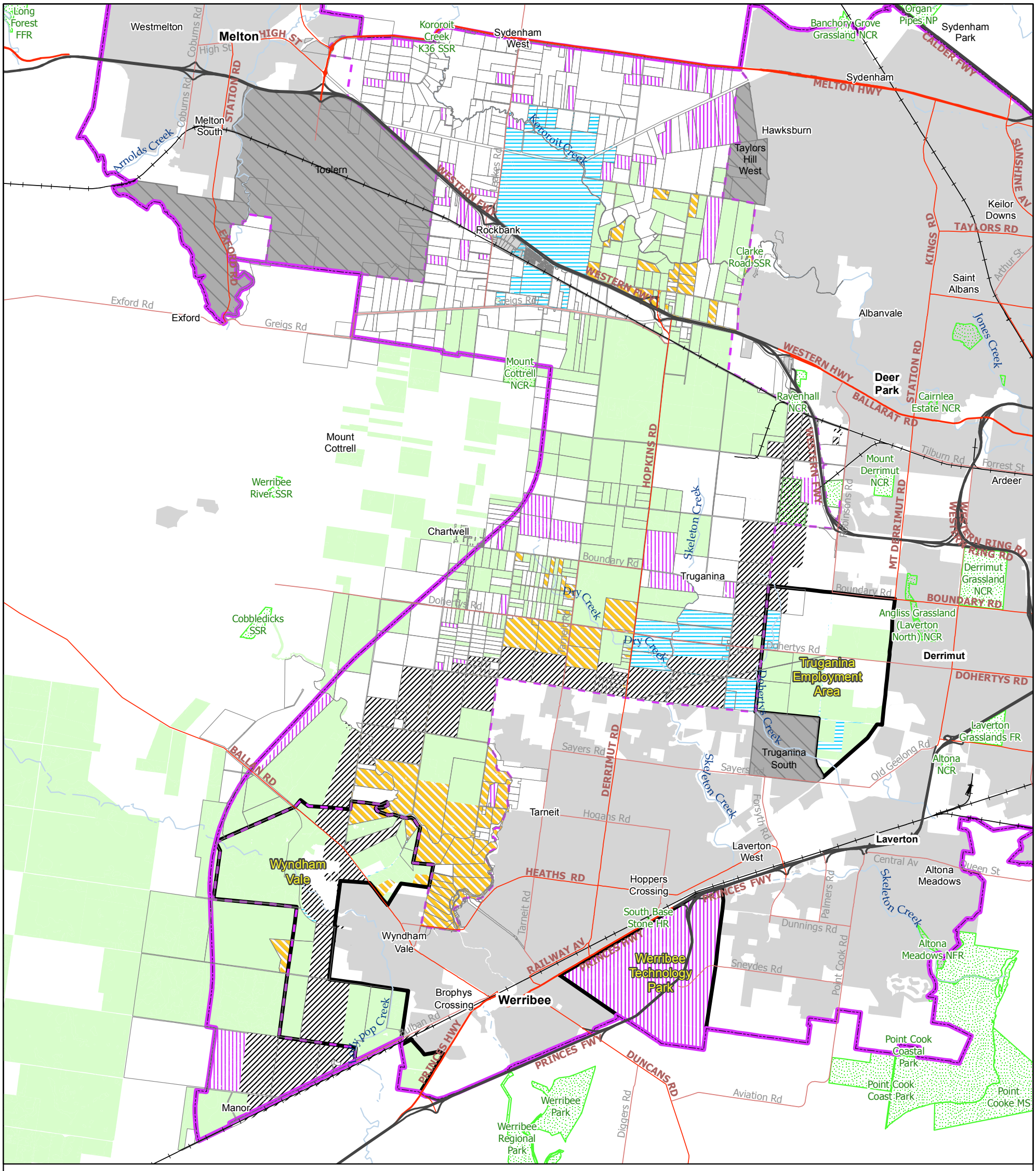


Figure 7: Native Vegetation Survey Areas - Western Growth Corridor

Department of Environment and Primary Industries

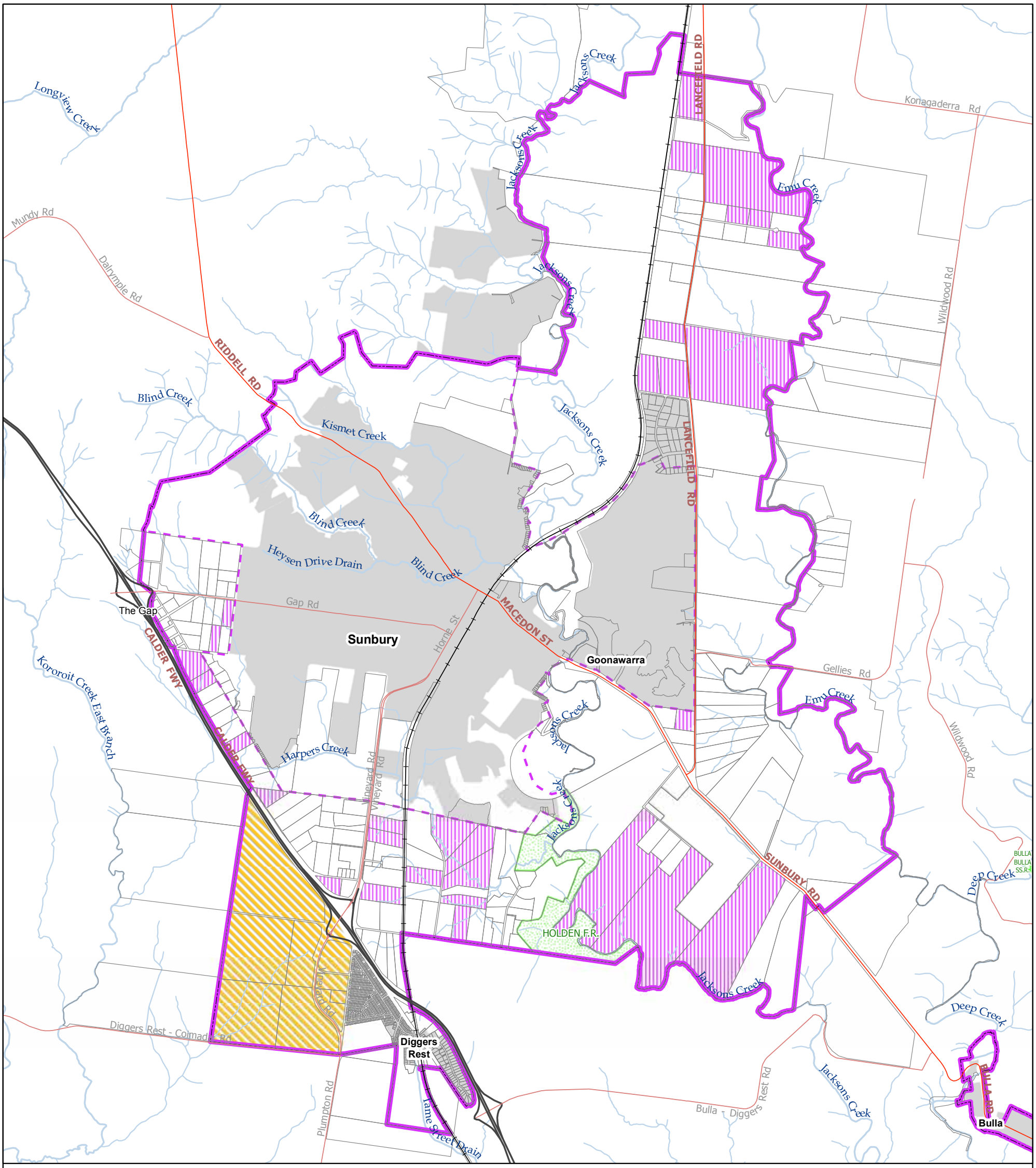
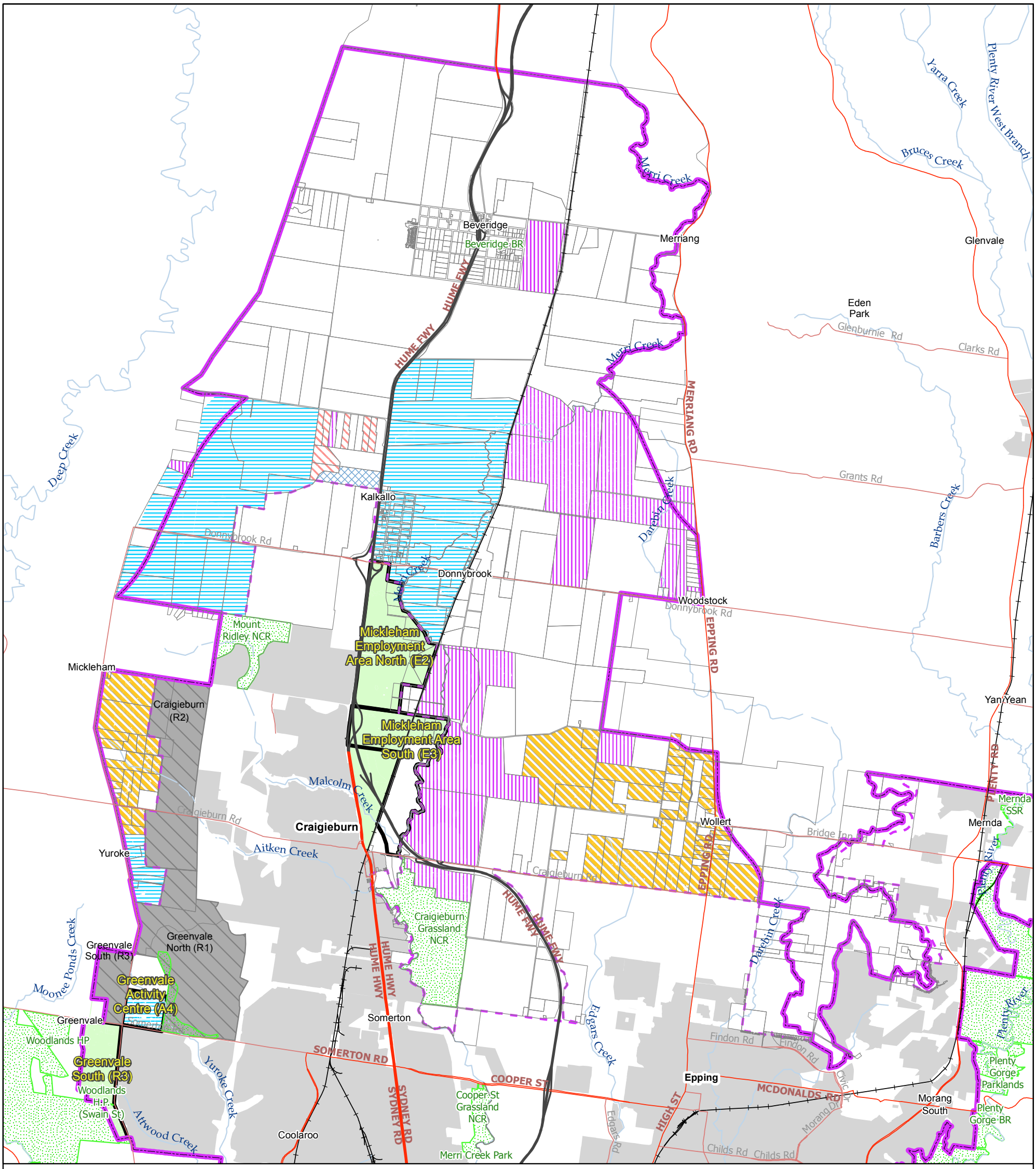


Figure 8: Native Vegetation Survey Areas – North-Western Growth Corridor

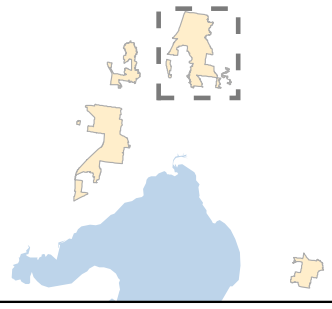
GDA

Department of Environment and Primary Industries

State Government Victoria



Overview Map



Legend

- 2010 Urban Growth Boundary
- 2005 Urban Growth Boundary
- Parks or Reserves
- Property Boundaries
- Urbanised Area

Native Vegetation Ground Survey

- GAA1
- GAA2
- GAA3
- GAA3b
- RRL
- Time Stamping
- Other Vegetation Survey

Roads

- Freeway
- Highway
- Main Road
- Main Road (Unsealed)
- Collector
- Named Watercourse

Precinct Structure Plan area

(existing 28 precincts)

- Incomplete
- Complete

N S

0 1 2 3 4 5

km

Figure 9: Native Vegetation Survey Areas - Northern Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

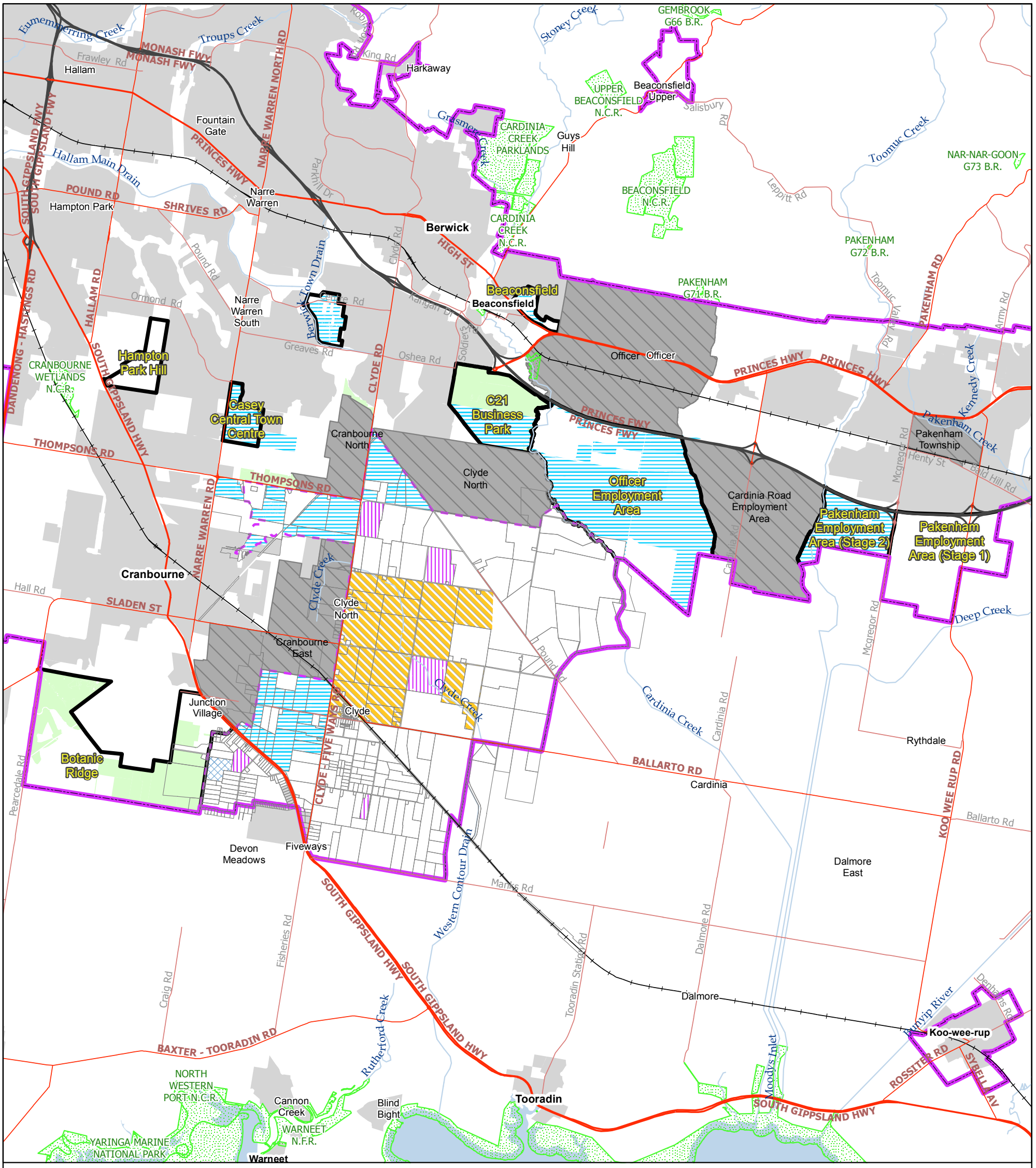


Figure 10: Native Vegetation Survey Areas – South-Eastern Growth Corridor

Department of Environment and Primary Industries

State Government Victoria

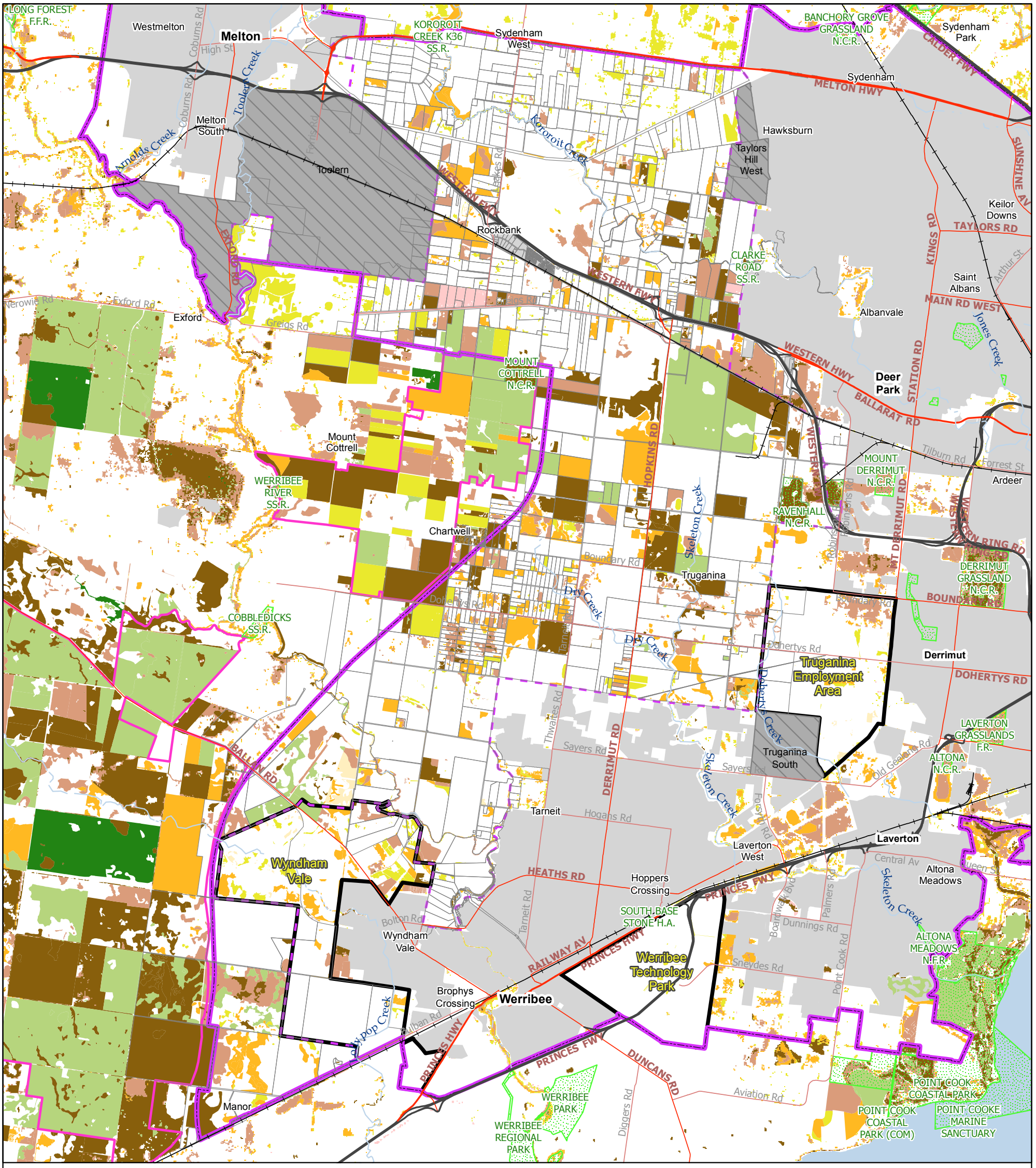


Figure 11: Native Vegetation Habitat Score – Western Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

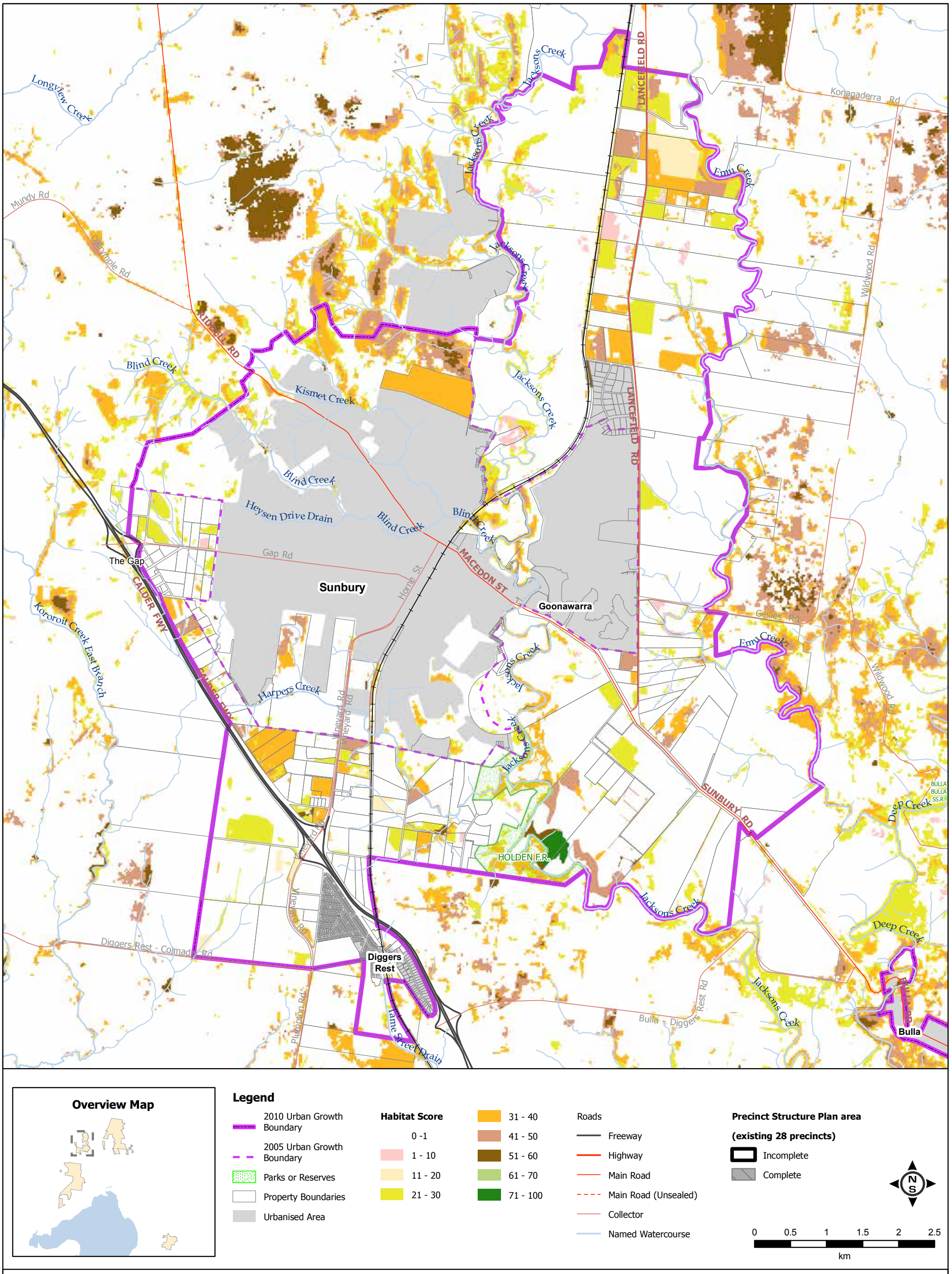


Figure 12: Native Vegetation Habitat Score – North-Western Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

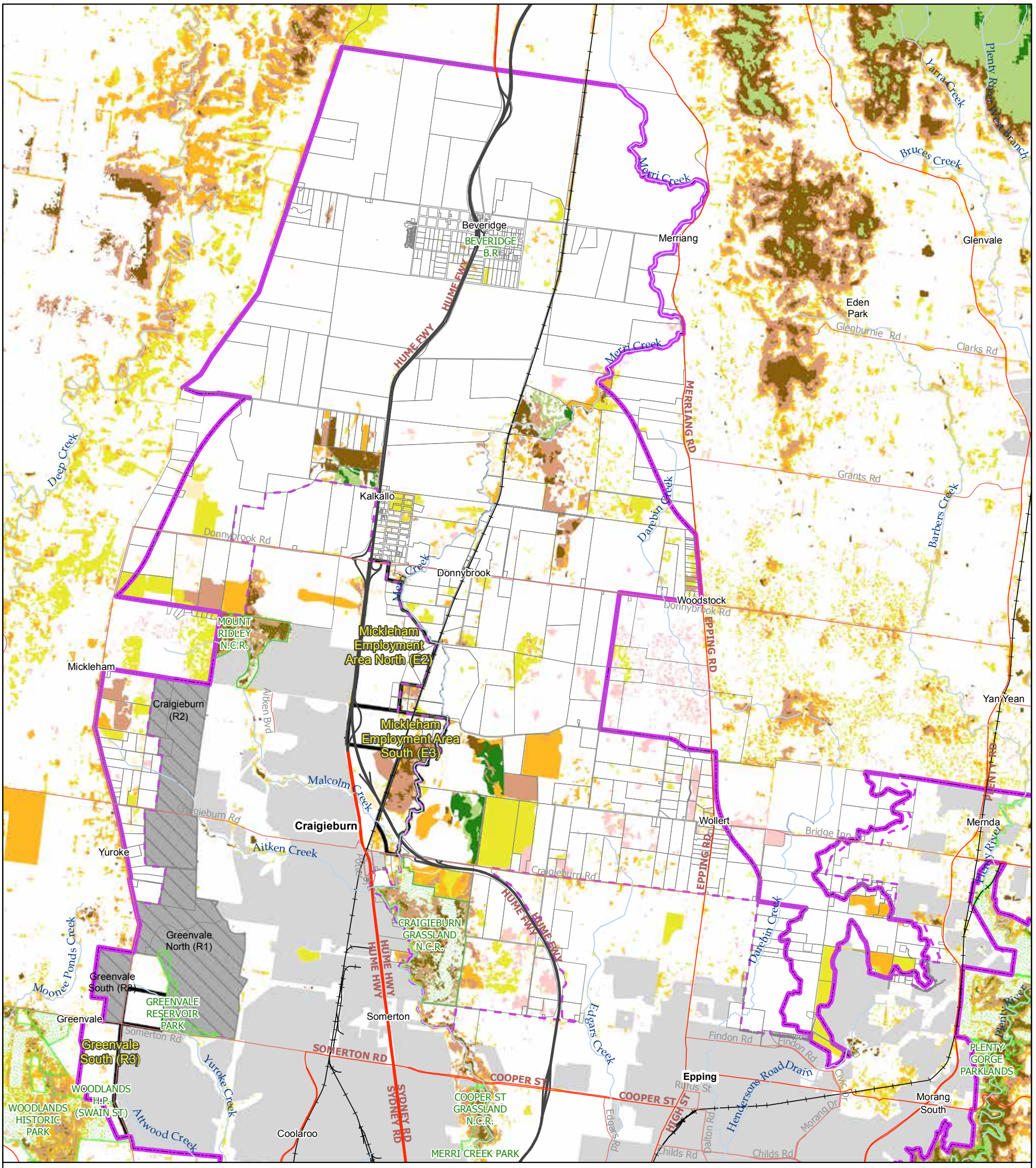


Figure 13: Native Vegetation Habitat Score – Northern Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

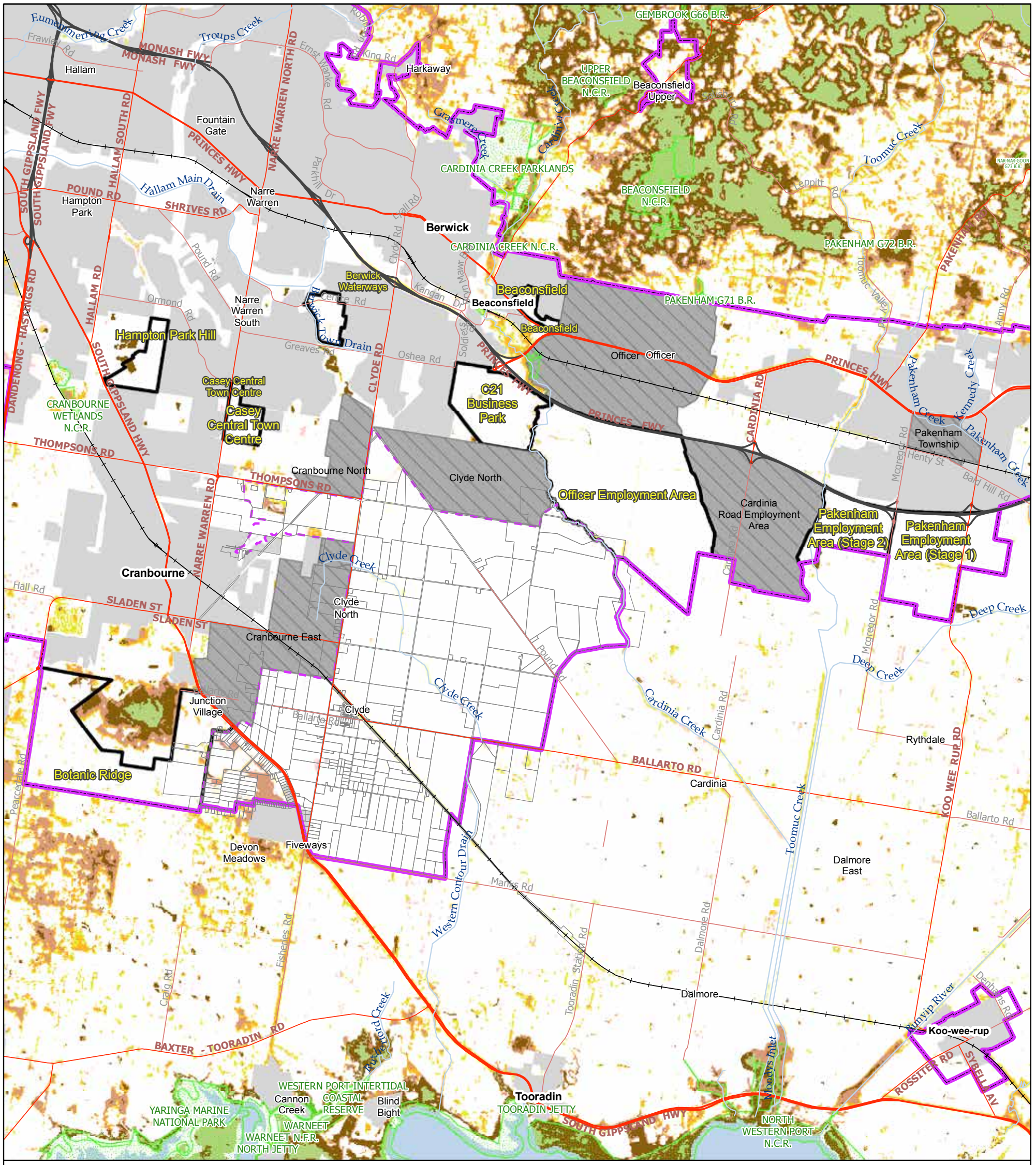


Figure 14: Native Vegetation Habitat Score – South-Eastern Growth Corridor

Department of Environment and Primary Industries

State Government Victoria

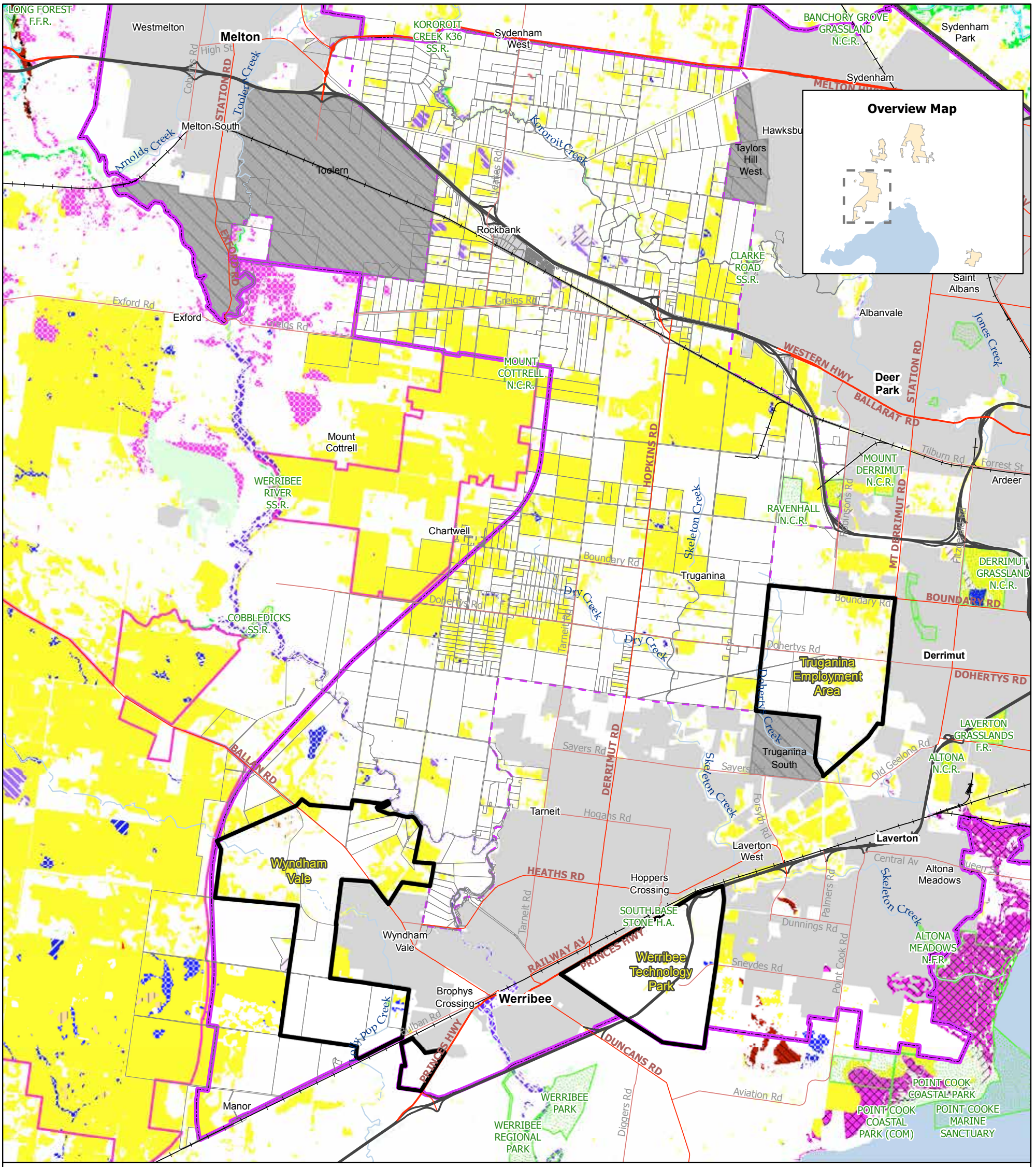


Figure 15: Native Vegetation Ecological Vegetation Classes – Western Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

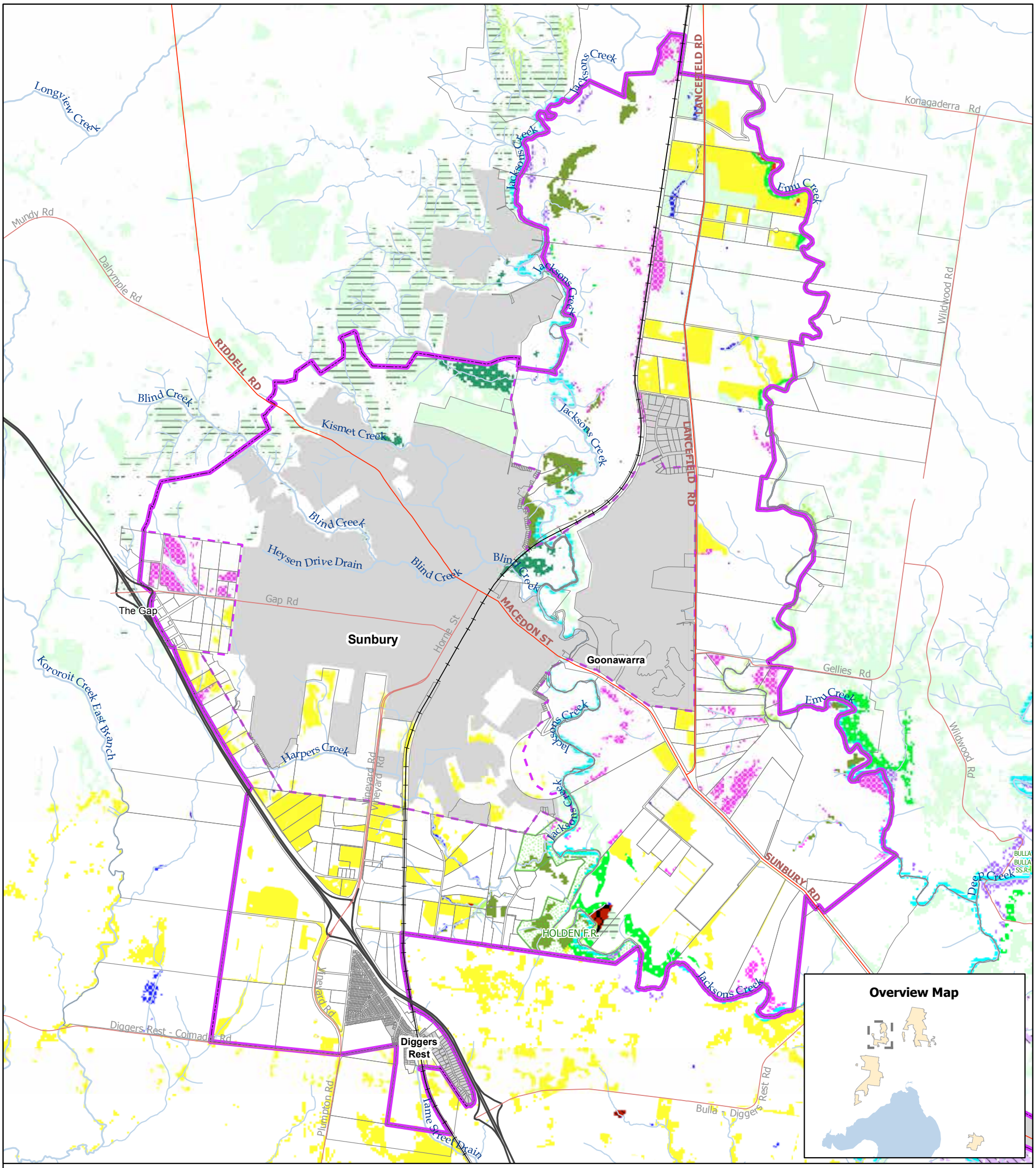


Figure 16: Native Vegetation Ecological Vegetation Classes – North-Western Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

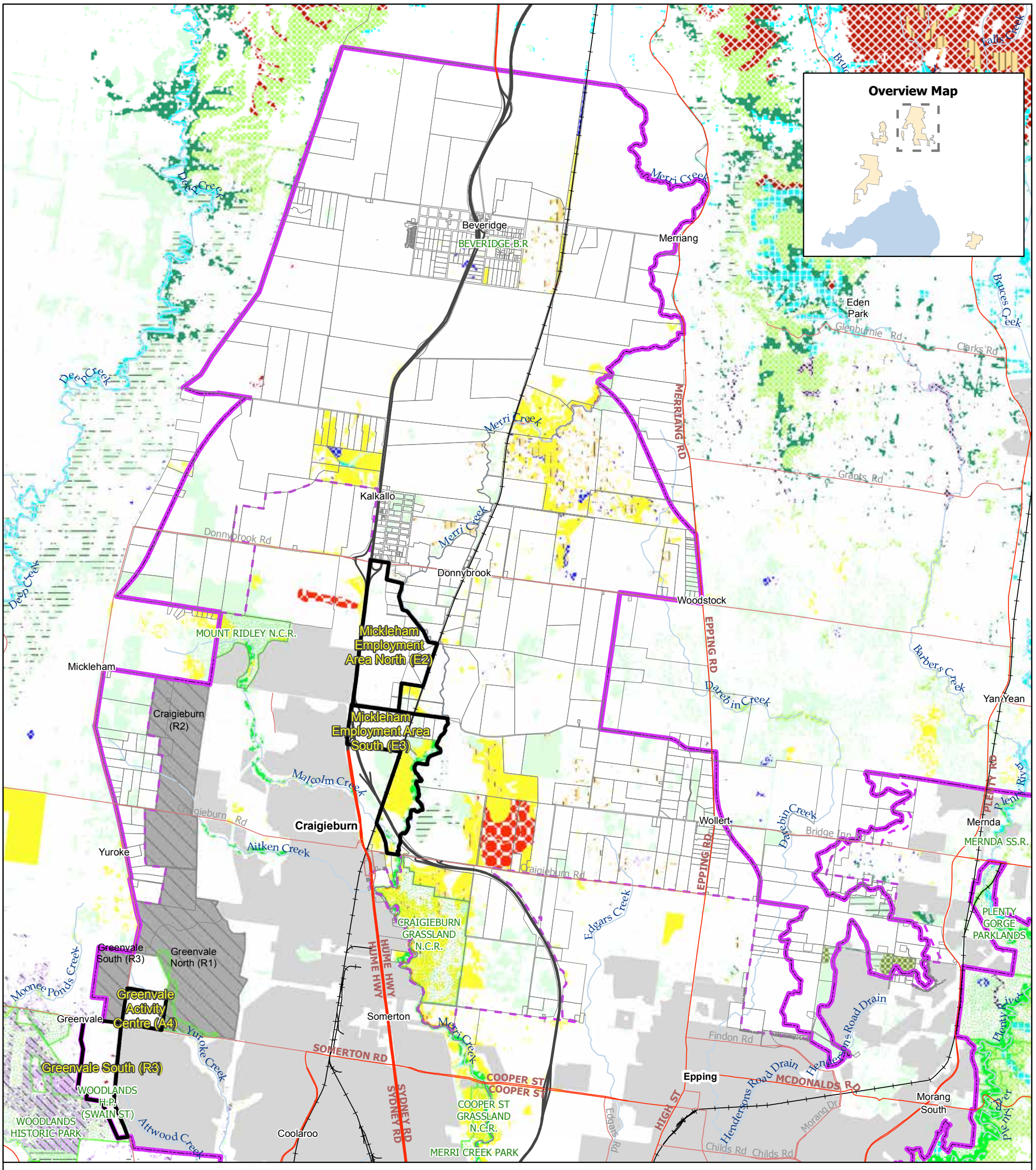


Figure 17: Native Vegetation Ecological Vegetation Classes – Northern Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

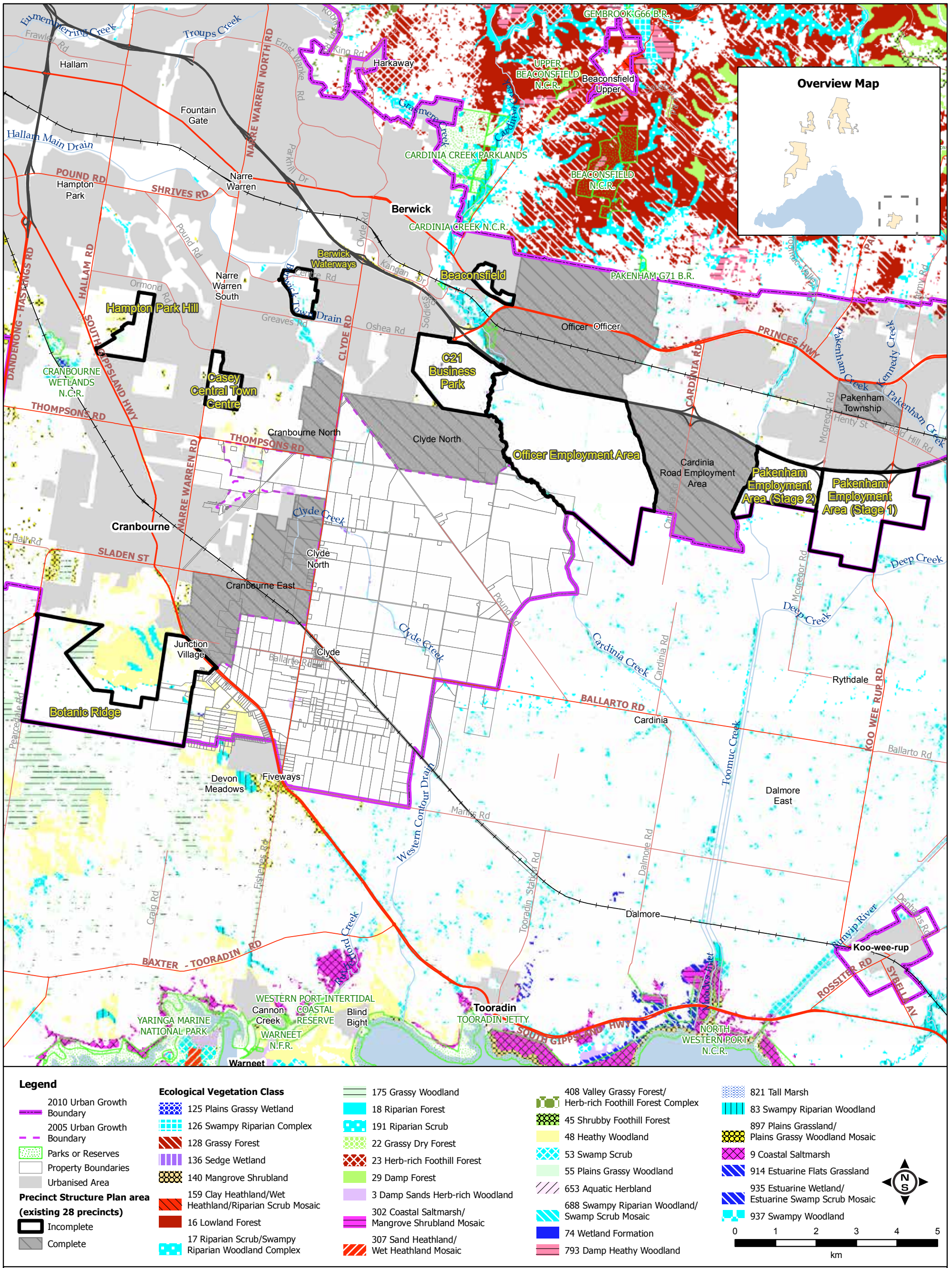


Figure 18: Native Vegetation Ecological Vegetation Classes – South–Eastern Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

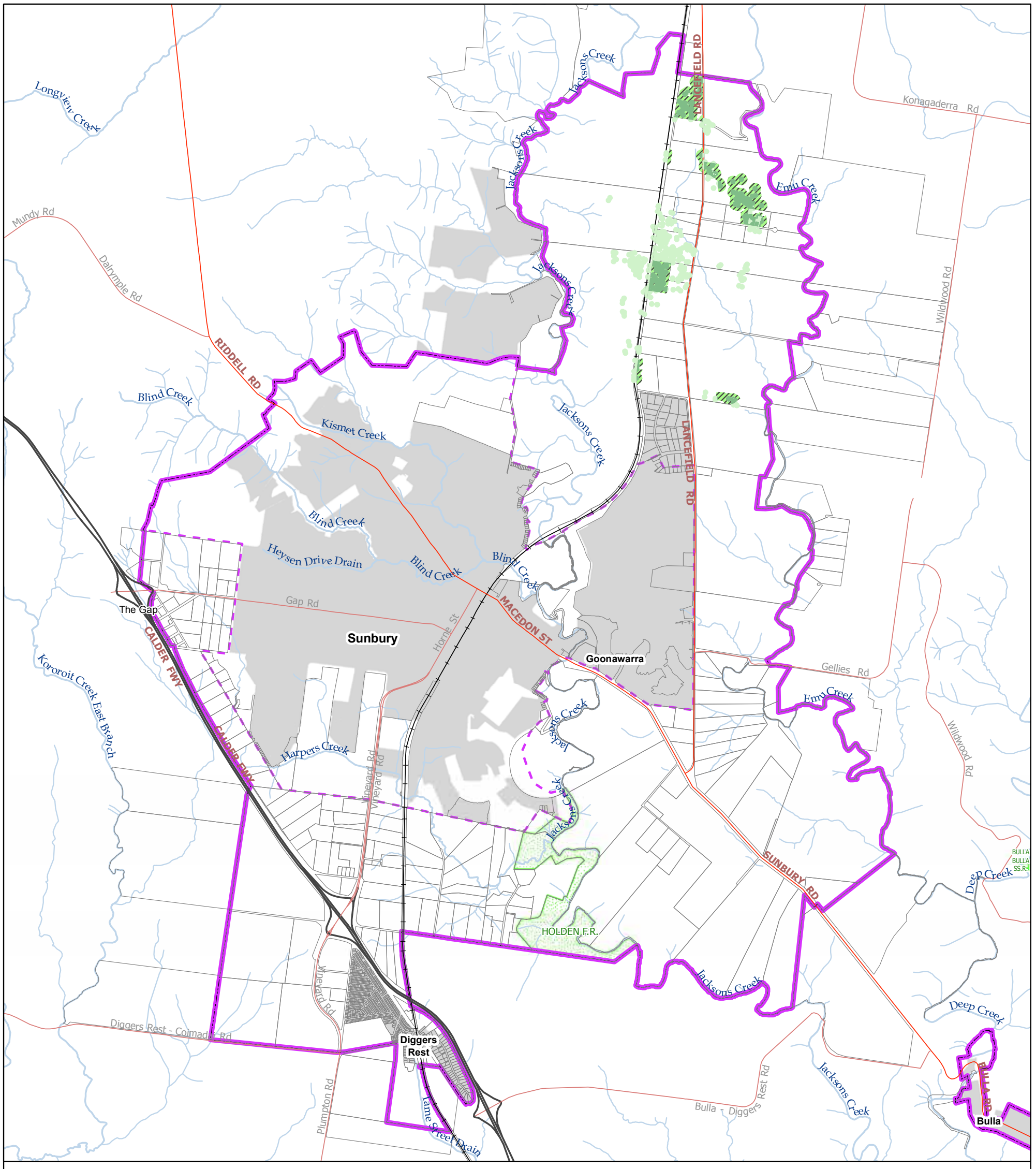


Figure 19: Grassy Eucalypt Woodland – North-Western Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria

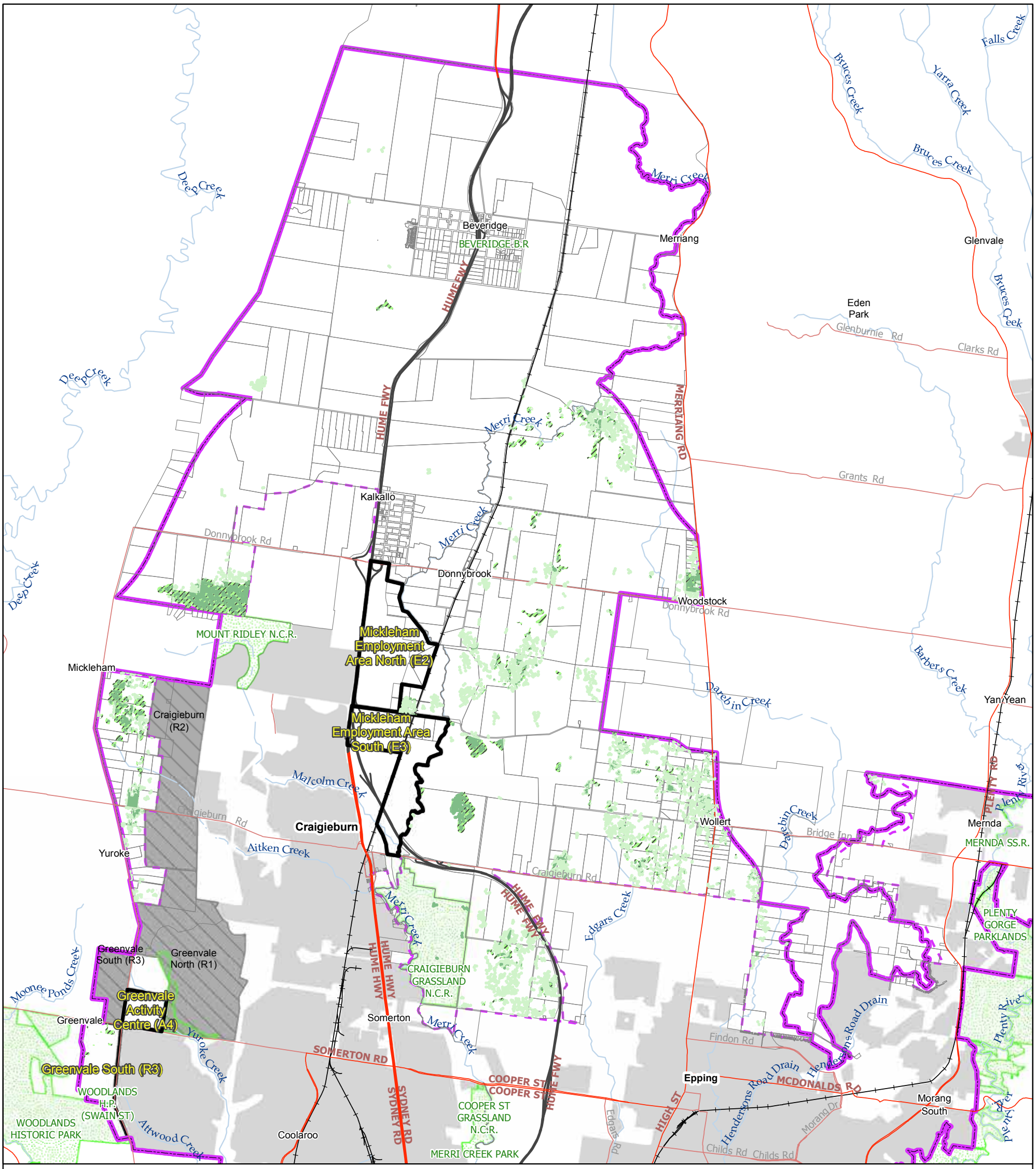
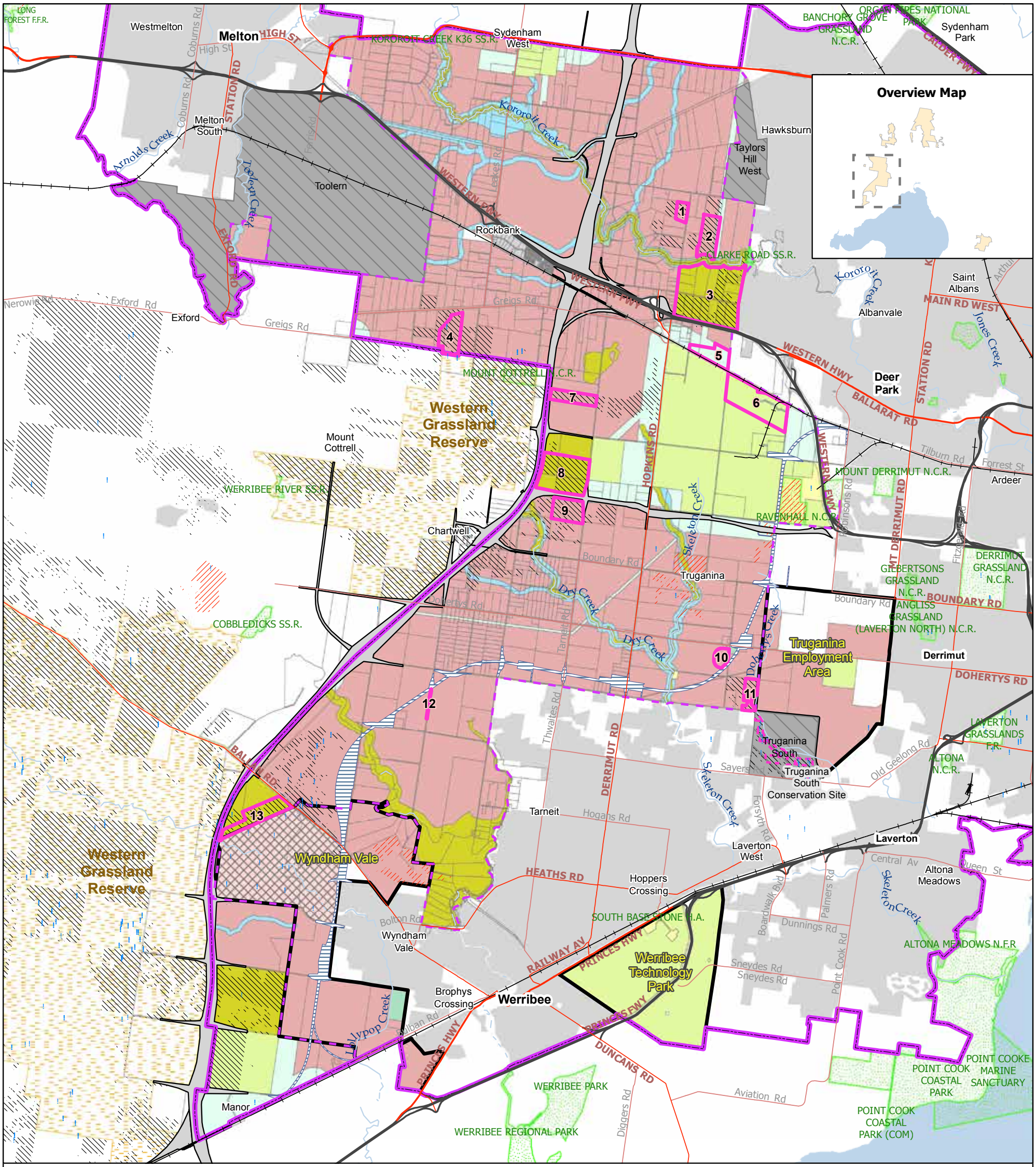


Figure 20: Grassy Eucalypt Woodland – Northern Growth Corridor

Department of Environment and Primary Industries

State Government Victoria



Legend

- 2010 Urban Growth Boundary
- 2005 Urban Growth Boundary
- Western Grassland Reserve
- Outer Metropolitan Ring Transport Corridor/E6 Road Reservation
- Parks or Reserves
- Property Boundaries
- Urbanised Area

All Golden Sun Moth records

NB. Each point represents a summary of the data and may include many Golden Sun Moth sitings.

Priority Golden Sun Moth Habitat

- 50 - 100 ha connected
- > 100 ha connected

- Conservation Area

Precinct Structure Plan area

(existing 28 precincts)

- Incomplete
- Complete

Current Planning Scheme Zones

- Farm Zone
- Public Conservation and Recreation Zone
- Public Park and Recreation Zone
- Public Use Zone
- Rural Conservation Zone
- Special Use Zone
- Urban Flood Zone
- Urban Growth Zone
- Other Urban Zones

Roads

- Freeway
- Highway
- Main Road
- Main Road (Unsealed)
- Collector
- Named Watercourse

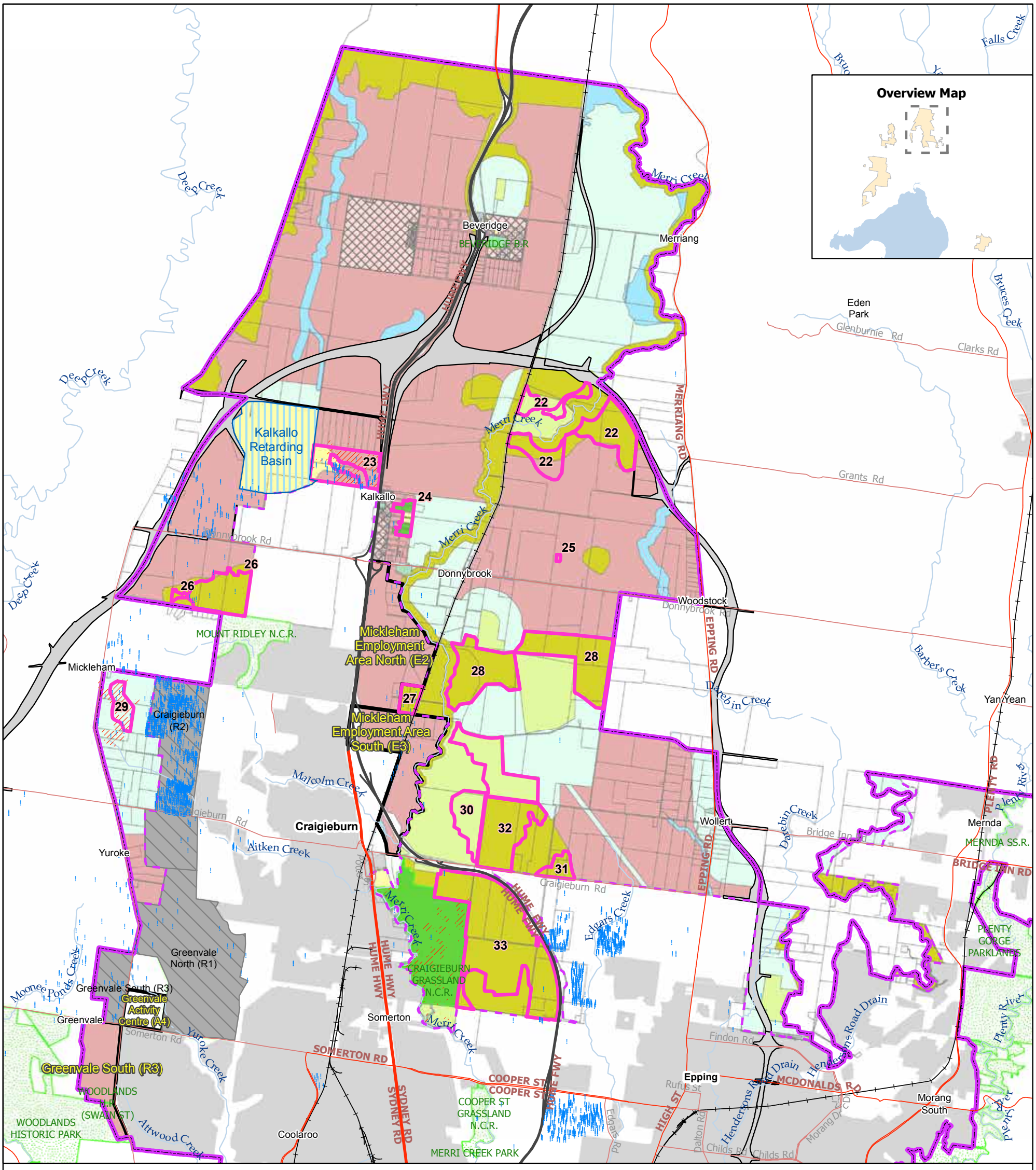
0 1 2 3 4 5 km

Figure 21: Golden Sun Moth – Western Growth Corridor

GDA

Department of Environment and Primary Industries

State Government Victoria



Legend

- 2010 Urban Growth Boundary
- 2005 Urban Growth Boundary
- Outer Metropolitan Ring Transport Corridor/E6 Road Reservation
- Parks or Reserves
- Property Boundaries
- Urbanised Area
- All Golden Sun Moth records

Priority Golden Sun Moth Habitat

- 50 - 100 ha connected
- > 100 ha connected

Precinct Structure Plan area

(existing 28 precincts)

- Incomplete
- Complete
- Conservation Area

Current Planning Scheme Zones

- Farm Zone
- Public Conservation and Recreation Zone
- Public Park and Recreation Zone
- Public Use Zone
- Rural Conservation Zone
- Special Use Zone
- Urban Flood Zone
- Urban Growth Zone
- Other Urban Zones

Roads

- Freeway
- Highway
- Main Road
- Main Road (Unsealed)
- Collector
- Named Watercourse

0 1 2 3 4 5 km

Figure 22: Golden Sun Moth – Northern Growth Corridor

Department of Environment and Primary Industries

State Government Victoria

5. CONSERVATION AREAS

5.1 Introduction

Conservation areas are areas of biodiversity value for matters of national environmental significance and state significance within the growth corridors that will be protected and managed to achieve the conservation outcomes in the program report.

The conservation areas comprise all the land that will require protection for conservation within the growth corridors. Land that is not a conservation area and is suitable for urban development may be cleared of native vegetation in accordance with an approval by the Commonwealth Environment Minister under the endorsed program and subject to Victorian legal and planning processes (e.g. *Flora and Fauna Guarantee Act 1988, Planning & Environment Act 1987*).

Urban development will be excluded from conservation areas and each conservation area will be protected and managed for conservation in perpetuity.

Development that occurs as a direct result of urban development, such as transport infrastructure (e.g. roads, bridges), utility infrastructure and public facilities, will only be permitted within conservation areas with the agreement of DSE, and only after appropriate design and construction impact mitigation processes have been put in place. Any such impact within conservation areas will incur an offset or compensatory habitat fee as for areas outside conservation areas (see section 6.3). Development that occurs within 20 m of conservation area boundaries will require consultation with DSE to ensure impacts on conservation areas are minimised and the standards for buffers are achieved (see section 5.2.4).

The BCS identifies 36 conservation areas within the growth corridors (see Figures 3 to 6). Each conservation area is described in sections 5.4 to 5.7. The following information is provided:

- Size of the area in hectares and its boundary
- Key rationale for protecting the area
- Biodiversity values of national and state significance protected in the area
- Contribution of the area to achieving the conservation outcomes in the program report
- Further actions that will be done to protect and manage the area.

The boundaries of each conservation area shown in sections 5.4 to 5.7 are final and will not be subject to future modification during the precinct structure planning stage or under any other development approval, except where minor potential changes are specifically identified.

The public consultation process (see section 4.4) resulted in changes to the boundaries of some conservation areas in the draft BCS. These changes are described in A new approach to biodiversity in *Melbourne's growth corridors: Public Consultation Report of Findings* (DEPI, 2013d).

The conservation areas in the BCS fall into a number of categories, as shown in Table 2 and will be managed accordingly. These categories are:

- **Nature conservation.** These areas will be protected and managed primarily for nature conservation, including matters of national environmental significance and state significance.
- **Growling Grass Frog conservation, floodplain and open space.** These areas will be protected and managed primarily for the Growling Grass Frog in accordance with the requirements of the Sub-regional Species Strategy for the Growling Grass Frog, but will also include areas managed for floodplain and stormwater infrastructure as well as areas of open space for passive recreation.
- **Regional parks.** These areas will be protected and managed as regional parks, with specific conservation management regimes in place for areas containing matters of national environmental significance. The final boundaries for the regional parks are still to be determined but will not reduce the extent of the conservation areas in the BCS.
- **Existing public land.** These areas will be protected and managed by the existing public land manager. An alternative public land manager may be identified in the future.
- **Existing offsets.** These areas will be protected and managed under existing offset arrangements.
- **Open space.** These areas have been zoned unsuitable for urban development (e.g. Rural Conservation Zone) partly or primarily for landscape values and will be further surveyed to determine the boundaries of areas required for biodiversity protection.

In a few cases, further surveys will be required to determine the appropriate management category (Table 2).

The program report also commits to the establishment of two other nature conservation areas outside the Urban Growth Boundary:

- The Western Grassland reserves (15,000 ha), and
- The Grassy Eucalypt Woodland reserve (at least 1200 ha).

A number of existing conservation reserves or other important areas managed to protect threatened species are located within the growth corridors, including:

- Ravenhall Nature Conservation Reserve (see Figure 3)
- Holden Flora and Fauna Conservation Reserve (see Figure 4)
- Craigieburn Grassland Conservation Reserve (see Figure 5)
- Royal Botanic Gardens Cranbourne (see Figure 6).

The program report committed to protecting existing conservation reserves. In accordance with this commitment, the Growth Corridor Plans have excluded urban development from existing reserves, and they are not discussed further in the BCS.

5.2 Securing and managing conservation areas

All conservation areas will be protected and managed for conservation in perpetuity. This will be achieved through one or more of the following mechanisms:

- Statutory planning provisions (i.e. including state and local policies, appropriate planning zones, overlays and/or other provisions to restrict urban development)
- Acquiring land (e.g. Transfer of land to the Crown)
- On-title management agreements.

Table 2: Categories of conservation areas in the BCS

Type of conservation area	Conservation area number	Name
Nature conservation	1	Kororoit Creek North Grassland, Plumpton
	2	Kororoit Creek North Grassland, Plumpton
	3 (part only)	Kororoit Creek Regional Park
	4	Greig's Rd, Mount Cottrell
	5	Ravenhall North Grassland, Rockbank
	11	Woods Rd, Truganina
	16	Grassy Eucalypt Woodland site, Sunbury
	17	Grassy Eucalypt Woodland site, Sunbury
	18 (part only)	Lancefield Road, Sunbury
	19	Grassy Eucalypt Woodland site, Sunbury
	22 (part only)	Bald Hill, Donnybrook
	23	Hume Freeway, Kalkallo
	25	Grassy Eucalypt Woodland site, Donnybrook
	26	Mt Ridley West, Mickleham
	27	Summerhill Rd West, Wollert
	29	Mickleham Rd, Mickleham
	30	Austral Bricks, Wollert
	31	Craigieburn Rd East, Wollert
	32	Craigieburn Rd West, Wollert
	33 (part only)	O'Hearns Rd, Epping
Growling Grass Frog conservation, floodplain and open space	14 (part only)	GGF Corridors – Western Growth Corridor (south)
	15 (part only)	GGF Corridors – Western Growth Corridor (north)
	21	GGF Corridors – North-Western Growth Corridor
	34	GGF Corridors – Northern Growth Corridor
	36 (part only)	GGF Corridors – South-Eastern Growth Corridor
Regional parks	3 (part only)	Kororoit Creek Regional Park
	14 (part only)	GGF Corridors – Western Growth Corridor (south) (Werribee Township Regional Park)
	15 (part only)	GGF Corridors – Western Growth Corridor (north) (Kororoit Creek Regional Park)
	36 (part only)	GGF Corridors – South-Eastern Growth Corridor (Cranbourne Regional Park)
Existing public land	10 (part only)	Truganina Cemetery and buffer, Truganina
	12	Sewells Road, Tarneit
	24	Kalkallo Common Grassland, Kalkallo
	35	Clyde-Tooradin Rail Reserve
Existing offset	6	Deer Park Quarry Grassland, Ravenhall
Open space	10 (part only)	Truganina Cemetery and buffer, Truganina
	18 (part only)	Lancefield Rd, Sunbury
	20	Racecourse Rd, Sunbury
	22 (part only)	Bald Hill, Donnybrook
	28	Summerhill Rd East, Wollert
	33 (part only)	O'Hearns Rd, Epping
Type of conservation area to be determined following surveys	7	Mount Atkinson Grassland, Mount Cottrell
	8	Middle Rd (North), Mount Cottrell
	9	Middle Rd (South), Mount Cottrell
	13	Ballan Rd, Wyndham Vale
Nature Conservation areas outside the Urban Growth Boundary (location to be determined following surveys)	Golden Sun Moth (680 ha required)	
	Spiny Rice-flower (394 ha required)	
	Matted Flax-lily (529 ha required)	

Photo: A Fringe Lily, Ecology and Heritage Partners

5.2.1 Zones and overlays

All conservation areas will be zoned appropriately for conservation. Planning scheme overlays appropriate for conservation may also be applied to each conservation area. The zones and overlays will restrict urban development within these areas.

The State Minister for Planning will determine the most appropriate planning provisions that will be applied to conservation areas.

5.2.2 Conservation management plans

A conservation management plan will be prepared for each conservation area.

Conservation management plans will outline how matters of national environmental significance and state significance, including native vegetation, will be managed across the whole conservation area. Conservation management plans will identify conservation objectives and general management measures including arrangements to secure land.

Conservation management plans will not set out detailed management requirements for the land within the conservation area. Detailed management plans will be prepared when land is secured for conservation (see section 5.2.3).

Conservation Management Plans will be prepared by DEPI in consultation with the landholder and relevant authorities as appropriate.

5.2.3 Transfer of land to the Crown and on-title management agreements

The Victorian Planning Provisions and relevant planning schemes will be amended to require landowners to secure land within conservation areas. This requirement will be triggered when a landowner seeks a planning permit for subdivision or works permitted on a lot which includes a conservation area.

Land can be secured by entering into an on-title management agreement with DEPI under section 69 of the *Conservation Forests and Lands Act 1987* or, where the landowner prefers, by transferring land to the Crown where an appropriate public land manager is available. In some cases land may be acquired by another public authority, where this arrangement can meet the conservation protection and management requirements of the BCS. Where the requirement to secure land is not triggered under a planning scheme, DEPI will encourage landowners to voluntarily secure land through the same mechanisms.

Detailed management plans will be prepared for individual properties that are secured within the conservation area. The form of these management plans will depend on whether land is transferred to the Crown or retained in private ownership. The detailed management plans will identify specific mandatory management actions, implementation responsibilities and timeframes and monitoring and reporting requirements that apply to that specific part of the conservation area.

Transfer of land to the Crown

Land transferred to the Crown will typically be reserved under the *Crown Land (Reserves) Act 1978* and managed in perpetuity. This land will be managed by an appropriate public land manager in accordance with the relevant overarching conservation management plan that applies to the area (see section 5.2.2).

Detailed management plans will be prepared for the individual properties that are secured within the conservation area, typically under the *Crown Land (Reserves) Act 1978*. A single plan may be prepared for all land transferred to the Crown within the conservation area. DEPI will be responsible for monitoring and enforcing compliance with the management plans.

On-title management agreements

On-title management agreements will require landowners to protect and manage their land subject to the agreements in perpetuity. This land will be managed by the landowner in accordance with the requirements of detailed management plans that will form a schedule to the agreements. On-title management agreements and management plans will be prepared in accordance with the relevant conservation management plan that applies to the area (see section 5.2.2). Separate agreements will be prepared for each property within the conservation area that is secured.

Photo: Australian Trefoil, DEPI

DEPI will be responsible for preparing on-title management agreements in consultation with landowners and for monitoring and enforcing compliance with the agreements. Landowners will be required to monitor and regularly report to DEPI on the implementation of the agreements.

Implementation of active management components of these plans will typically be funded by fees collected from developers to mitigate impacts on native vegetation or threatened species habitat in the area covered by the BCS (see section 2.4).

5.2.4 Buffers for conservation areas

The interface between conservation areas and urban development must be carefully managed. Buffers for conservation areas will be established at the precinct structure planning stage and will be achieved through appropriate design of interface areas.

Note that the requirements in this section do not apply to the Growling Grass Frog conservation areas as buffer treatments are already included within the boundaries of the conservation areas.

Principles

In the urban context, managed buffers may be required to:

- Allow incoming weeds to be controlled without damaging biological values
- Manage water inflows or outflows, to protect the hydrology of the conservation areas
- Provide a zone to absorb excess nutrients from adjoining land
- Provide a zone where a fire break can be maintained without compromising biological values
- Allow regular burning of native vegetation without endangering life and property
- Give scope for expansion of natural ecosystems, where this can be achieved in the context of public open space
- Provide complementary public space that ensures conservation areas are accessible and attractive, to minimise the chances of neglect or vandalism and maximise the chances that people will use, enjoy and protect the areas.

Table 3: Summary of different land transfer and on-title management agreement options

Option	Implications for landowner	Protection mechanism	Management responsibility	Management, monitoring and reporting requirements	Compliance
Landowner transfers land to Crown	Landowner is not required to manage the land	Declaration as reserve under *Crown Land (Reserves) Act 1978*	Public land manager	Set out in management plan	DEPI audits compliance with management plan
Landowner enters on-title management agreement	Landowner is required to manage the land for conservation	On-title management agreement with DEPI under *Conservation Forests and Lands Act 1987*	Landowner	Set out in management agreement consistent with relevant conservation management plan requirements	DEPI audits compliance with management agreement

Basic standards

The BCS requires the following basic standards for managing the interface between conservation areas and urban development to be met:

- Precincts should be designed to separate conservation areas from land that is built upon (e.g. private housing or industrial) by using one or more of the following land-uses: sealed roads, paths, recreational parks, public open space, ecological restoration areas or grazing land. This buffer zone should be designed to maintain a distance of at least 20 m from the conservation area to the nearest built up areas. The zone may include necessary fire breaks and fire management measures, including modified vegetation zones.
- Where development is occurring under the Bushfire Management Overlay the advice of the Country Fire Authority will be sought regarding adequate buffers for bushfire risk mitigation. As required by clause 44.06 of the Victoria Planning Provisions, subdivisions must be designed to account for bushfire hazard on a site by site basis. For grasslands on relatively flat land a buffer of 20 m would be adequate in most instances.
- Fences of urban or industrial properties should not abut a conservation area.
- Natural or pre-development hydrological patterns should be maintained in all conservation areas where practicable. This applies to surface and groundwater flows.
- Buffers should not be planted with species which could behave as environmental weeds (including vigorous rhizomatous grasses such as Buffalo, Kikuyu and Couch).
- Buffer zones should be managed. If an area is set aside to buffer a conservation area and will not be maintained for another purpose (e.g. road or park), its management must be provided for in a conservation management plan. This is likely to require only simple and routine maintenance (e.g. mowing or spraying) to minimise the spread of high risk invasive weeds.
- In general, trees should not be planted within 10 m of native grassland or wetland. This would typically mean that trees could be planted on the residential side of the adjoining roadside, but not the reserve side. However, there may be situations where closer tree planting is acceptable without compromising the values of the conservation area.

Site-specific buffer considerations

As a general principle, buffers (including all interface management activities) should be located outside conservation areas. Where areas of low biodiversity value are present, buffers may be located within conservation areas provided all of the basic principles listed above apply, and provided the management of the area only includes the following land-uses:

- Maintenance of fire breaks
- Public open space/passive recreation
- Ecological restoration
- Water management.

Photo: Natural Temperate Grassland,
Ecology and Heritage Partners

The delineation of any buffer areas within conservation areas must be approved by DEPI.

Truganina Cemetery is an exceptional case. It is small (less than 2 hectares) but protects multiple matters of national environmental significance. It is the only case where the boundaries of the conservation area shown in the BCS explicitly include a buffer (of up to 200 m). In this case it is expected that the basic standards listed above are met within the buffer and no further buffering or interface management is required (see section 5.4).

5.2.5 Public access to conservation areas

Public access will generally be allowed in conservation areas in public ownership, particularly within those conservation areas or parts of conservation areas identified as open space, regional parks and floodplain open space (Table 2). Public access will only be allowed in conservation areas in private ownership with the agreement of the landowner. In some cases, particularly in nature conservation areas (Table 2), public access in public conservation areas will be restricted to designated areas. Public access arrangements for each conservation area will be set out in the relevant conservation management plan.

5.2.6 Areas of conservation value outside the Urban Growth Boundary

The BCS establishes conservation programs to locate and protect areas of conservation value outside the Urban Growth Boundary for certain matters of national environmental significance impacted by urban development within the growth corridors (Table 2). These include sites of conservation value for Golden Sun Moth, Spiny Rice-flower and Matted Flax-lily in rural Victoria and potentially sites for the Southern Brown Bandicoot outside the south-eastern growth corridor (subject to the new Sub-regional Species Strategy to be prepared for the Southern Brown Bandicoot, see section 4.2.1). The identification, protection and management of these sites will be funded by fees collected from developers to mitigate impacts on native vegetation or threatened species habitat in the area covered by the BCS (see section 2.4).

Land identified through these conservation programs will be protected through voluntary on-title management agreements or voluntary purchase of land by the Crown. There will be no compulsory acquisition of land as part of these programs.

5.3 Regional parks

Some conservation areas will be contained within three regional parks proposed within the growth corridors (see sections 5.4 to 5.7). The regional parks are:

- Cranbourne Regional Park: located along Cardinia Creek in Cardinia Shire and Casey City Council areas
- Kororoit Creek Regional Park: located along Kororoit Creek north of the Western Freeway in Melton Shire
- Werribee Township Regional Park: located along the Werribee River in the City of Wyndham

DEPI will finalise the boundaries of the regional parks through the precinct structure planning process or earlier where appropriate.

There are a number of mechanisms used for acquiring land for regional parks. Most commonly, a Public Acquisition Overlay is placed over the land through an amendment to the relevant municipal planning scheme. This signals the State Government's intention to acquire the property for parkland purposes. In general land is acquired through voluntary negotiations with the landowner, rather than compulsory acquisition.

5.4 Conservation areas, western growth corridor

The western (Melton and Wyndham) growth corridor has significant biodiversity values including threatened communities of Natural Temperate Grasslands. Threatened fauna species that occur include Striped Legless Lizard, Golden Sun Moth and Growling Grass Frog.

Threatened flora species occur throughout the growth corridor, including significant populations of Spiny Rice-flower and Large-fruit Groundsel. The major waterways of Werribee River and Kororoit Creek are important habitat corridors providing connectivity through the growth corridor.

Conservation area 1, Western Growth Corridor: Kororoit Creek North Herb-rich Grasslands, Plumpton

Total area and boundary	> 13.29 hectares > Boundary is shown in Figure 23
Management category	> Nature conservation
Key rationale for protection of area	> Protects high quality, herb-rich native grassland that contains a significant population of Spiny Rice-flower within a practically manageable area
Biodiversity values of national significance	> High quality herb-rich Natural Temperate Grassland > Spiny Rice-flower population (greater than 50) within high persistence habitat > High persistence habitat for Golden Sun Moth (population not confirmed) > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Spiny Rice-flower > Golden Sun Moth habitat > Striped Legless Lizard habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Establishes a small conservation area within an area of greatest contribution to Spiny Rice-flower and Golden Sun Moth persistence
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: Biosis Research (2011); Biosis Research (2010i); DSE (2012b); DSE (2011c); DSE (2009)

Conservation area 2, Western Growth Corridor: Kororoit Creek North Herb-rich Grasslands, Ravenhall

Total area and boundary	> 45.02 hectares > Boundary is shown in Figure 23
Management category	> Nature conservation
Key rationale for protection of area	> Protects high quality, herb-rich native grassland that contains a significant population of Spiny Rice-flower within a practically manageable area
Biodiversity values of national significance	> High quality herb-rich Natural Temperate Grassland > Spiny Rice-flower population (greater than 20) within high persistence habitat > High persistence habitat for Golden Sun Moth (population not confirmed) > Habitat for Striped Legless Lizard (population not confirmed) > Likely population of Small Golden Moths Orchid
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Plains Grassy Wetland > Spiny Rice-flower > Golden Sun Moth habitat > Striped Legless Lizard habitat > Likely population of Small Golden Moths Orchid
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Establishes a small conservation area within an area of greatest contribution to Spiny Rice-flower and Golden Sun Moth persistence
Further actions	> Finalise boundaries for Kororoit Creek Regional Park > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – confirm mechanisms for the acquisition of land to be included within Kororoit Creek Regional Park – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

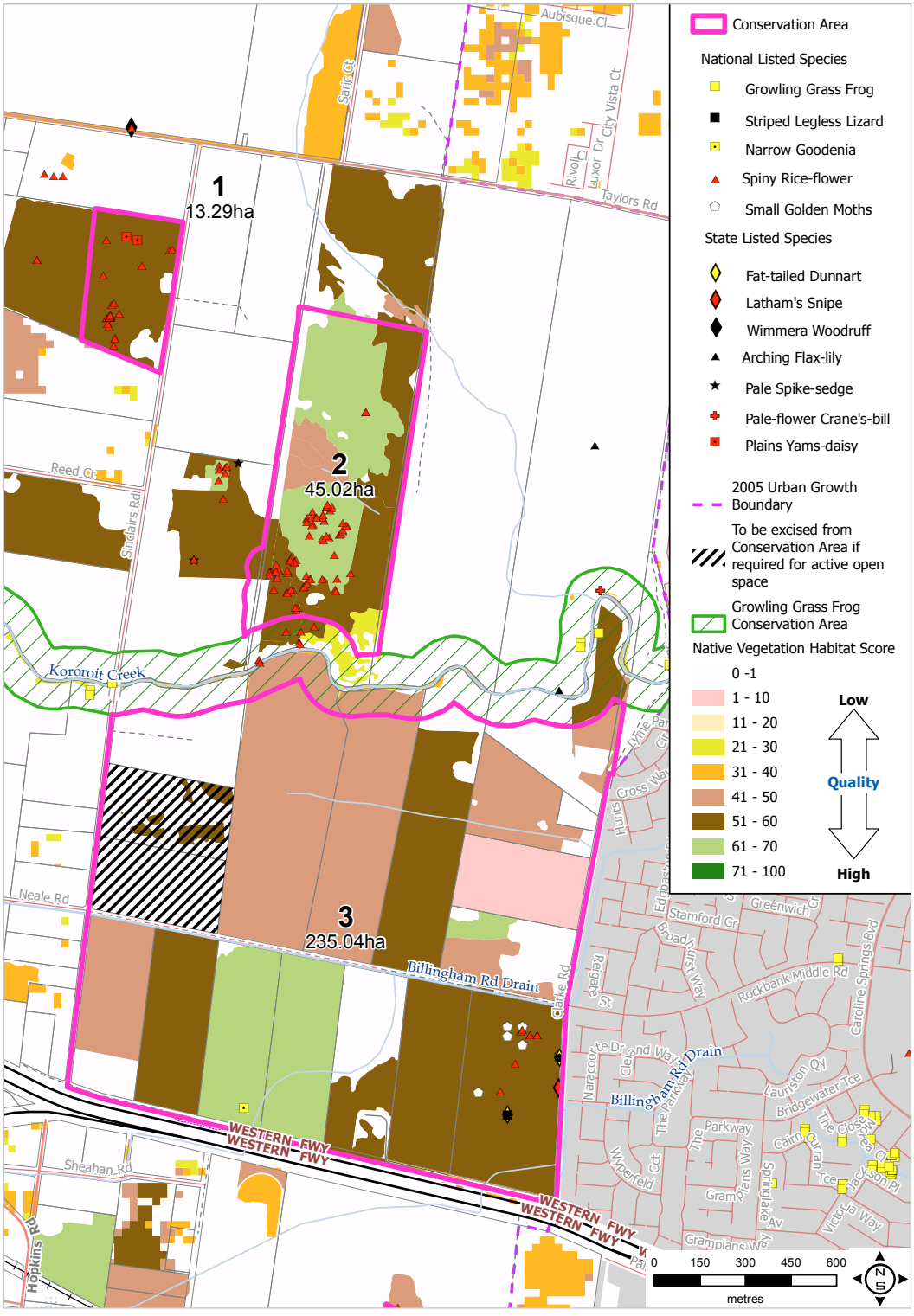
Reference: Biosis Research (2011); Biosis Research (2010i); Brett Lane & Associates report in submission no. GCP 356; DSE (2012a); DSE (2011c); DSE (2009)

Conservation area 3, Western Growth Corridor: Clarke's Road Grassland, Rockbank

Total area and boundary	> 235.04 hectares > Boundary is shown in Figure 23
Management category	> Regional park (part only)
Key rationale for protection of area	> Protects high quality, herb-rich native grassland that contains a range of biodiversity values of national and state significance within a practically manageable area, including the most significant population of Small Golden Moths Orchid in Victoria
Biodiversity values of national significance	> High quality herb-rich Natural Temperate Grassland > Small Golden Moths Orchid (population greater than 400, only wild population known in Victoria out of three populations in total) > Spiny Rice-flower population within high persistence habitat > Growling Grass Frog population > A number of Sun Orchid (Thelymitra) species > High persistence habitat for Golden Sun Moth (population not confirmed) > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Small Golden Moths Orchid > Spiny Rice-flower > Growling Grass Frog > Golden Sun Moth habitat > Striped Legless Lizard habitat > Inland Sicklefern > Derrinallum Billy-buttons
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Establishes a small conservation area within an area of greatest contribution to Spiny Rice-flower and Golden Sun Moth persistence > Contributes to ensuring no substantial negative change to known populations of Small Golden Moths Orchid > Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations
Further actions	> Finalise boundaries of Kororoit Creek Regional Park > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – confirm mechanisms for the acquisition of land to be included within Kororoit Creek Regional Park – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* for areas of land outside Kororoit Creek Regional Park and/or transfer land to Crown where an appropriate public land manager is available

Reference: Backhouse and Lester (2010); Biosis Research (2010i); DSE (2012a); (DSE, 2012b); DSE (2011c); DSE (2009); Ecology Partners (2011a)

Figure 23: Conservation areas 1, 2 and 3, Kororoit Creek North Herb-rich Grasslands, Plumpton and Clarke's Road Grassland, Rockbank



Conservation area 4, Western Growth Corridor: Greig's Road Grassland, Mount Cottrell

Total area and boundary	> 46.27 hectares > Boundary is shown in Figure 24
Management category	> Nature conservation
Key rationale for protection of area	> Protects high quality, herb-rich native grassland that contains a significant population of Spiny Rice-flower within a practically manageable area
Biodiversity values of national significance	> High quality herb-rich Natural Temperate Grassland > Spiny Rice-flower population (greater than 1000) within high persistence habitat > Golden Sun Moth population within high persistence habitat > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Spiny Rice-flower > Golden Sun Moth > Striped Legless Lizard habitat > Austral Trefoil > Basalt Podolepis
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Establishes a small conservation area within an area of greatest contribution to Spiny Rice-flower and Golden Sun Moth persistence
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: Biosis Research (2011); DSE (2012a); DSE (2012b); DSE (2011c); DSE (2009); Ecology & Heritage Partners report in submission no. GCP 446

Figure 24: Conservation area 4, Greig's Road Grassland, Mount Cottrell

Conservation area 5, Western Growth Corridor: Ravenhall North Grassland

Total area and boundary	> 35.33 hectares > Boundary is shown in Figure 25
Management category	> Nature conservation
Key rationale for protection of area	> Protects high quality native grassland that contains significant populations of Large-fruit Groundsel and Spiny Rice-flower within a practically manageable area
Biodiversity values of national significance	> High quality Natural Temperate Grassland > Large-fruit Groundsel population (greater than 300, one of the largest known populations in Victoria) > Spiny Rice-flower population (greater than 100) within high persistence habitat > Striped Legless Lizard population within high quality habitat
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Large-fruit Groundsel > Spiny Rice-flower > Striped Legless Lizard > Arching Flax-lily > Austral Trefoil
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Contributes to ensuring no substantial negative change to known populations of Large-fruit Groundsel > Establishes a small conservation area within an area of greatest contribution to Spiny Rice-flower persistence > Contributes to ensuring sustainable populations of Striped Legless Lizard
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available > Determine extent of Large-fruit Groundsel population on adjacent railway reserve and put in place appropriate measures to minimise impacts of future rail maintenance and construction works (this may be achieved through a conservation management plan during precinct structure planning or by a separate process)

Reference: Biosis Research (2010i); DSE (2011c); DSE (2009); Ecology & Heritage Partners (2012)

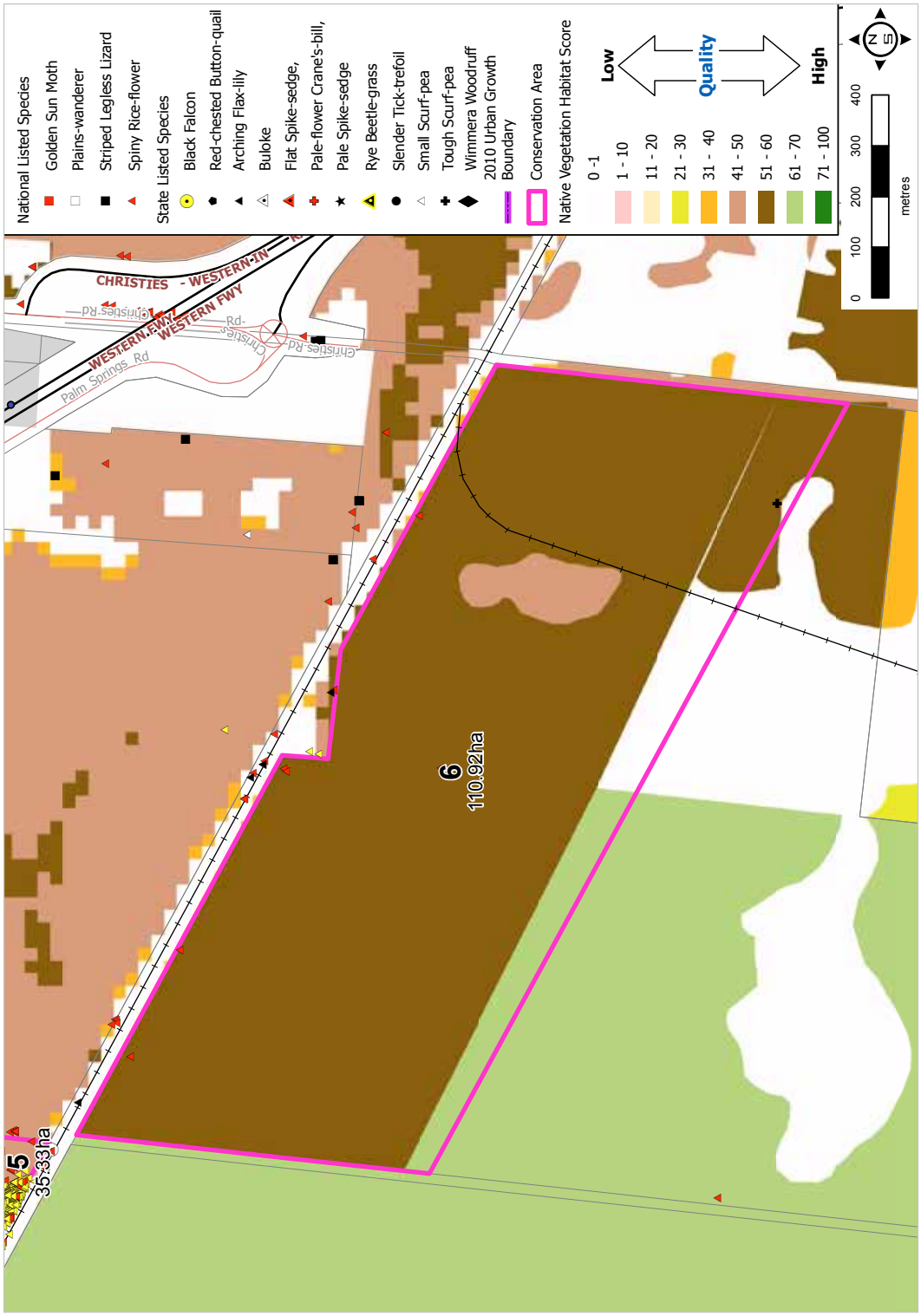
Figure 25: Conservation area 5, Ravenhall North Grassland

Conservation area 6, Western Growth Corridor: Deer Park Quarry Grassland, Ravenhall

Total area and boundary	> 110.92 hectares > Boundary is shown in Figure 26
Management category	> Existing offset
Key rationale for protection of area	> Protects high quality native grassland that contains populations of Striped Legless Lizard and Spiny Rice-flower within a practically manageable area
Biodiversity values of national significance	> High quality Natural Temperate Grassland > Striped Legless Lizard population within high quality habitat > Spiny Rice-flower population within high persistence habitat > High quality habitat for Large-fruit Groundsel (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Striped Legless Lizard > Spiny Rice-flower > Large-fruit Groundsel habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Establishes a small conservation area within an area of greatest contribution to Spiny Rice-flower persistence > Contributes to ensuring sustainable populations of Striped Legless Lizard
Further actions	> None required – this conservation area is protected and managed as a requirement of extractive industry work authority WA97 (1 June 1996)

Reference: AECOM (2006); DSE (2011c); DSE (2009)

Figure 26: Conservation area 6, Deer Park Quarry Grassland, Ravenhall



Conservation area 7, Western Growth Corridor: Mount Atkinson Grassland

Total area and boundary	> 31.56 hectares > Boundary is shown in Figure 27
Management category	> To be determined following surveys
Key rationale for protection of area	> Protects high quality native grassland that contains high persistence habitat for Golden Sun Moth and Spiny Rice-flower within a practically manageable area. Note: Permanent protection of this conservation area is based on estimated data as DSE could not obtain access to do relevant threatened species surveys
Biodiversity values of national significance	> High quality Natural Temperate Grassland > High persistence habitat for Golden Sun Moth (population not confirmed) > High persistence habitat for Spiny Rice-flower (population not confirmed) > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Golden Sun Moth habitat > Spiny Rice-flower habitat > Striped Legless Lizard habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within an area of greatest contribution to Golden Sun Moth and Spiny Rice-flower persistence
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available – determine type of conservation area following surveys

Reference: Biosis Research (2010h); DSE (2012a); DSE (2011c); DSE (2009); Ecology and Heritage Partners (2012)

Conservation area 8, Western Growth Corridor: Middle Road (North), Mount Cottrell

Total area and boundary	> 112.58 hectares > Boundary is shown in Figure 27
Management category	> To be determined following surveys
Key rationale for protection of area	> Protects high quality native grassland that contains high persistence habitat for Golden Sun Moth within a practically manageable area Note: Permanent protection of this conservation area is based on estimated data as DSE could not obtain access to do relevant threatened species surveys
Biodiversity values of national significance	> High quality Natural Temperate Grassland > High persistence habitat for Golden Sun Moth (population not confirmed) > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Golden Sun Moth habitat > Striped Legless Lizard habitat > Small Scurf-pea
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within an area of greatest contribution to Golden Sun Moth persistence
Further actions	> Protect conservation area through the following actions: – retain the Rural Conservation Zone – retain the Environmental Significance Overlay – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available – determine type of conservation area following surveys

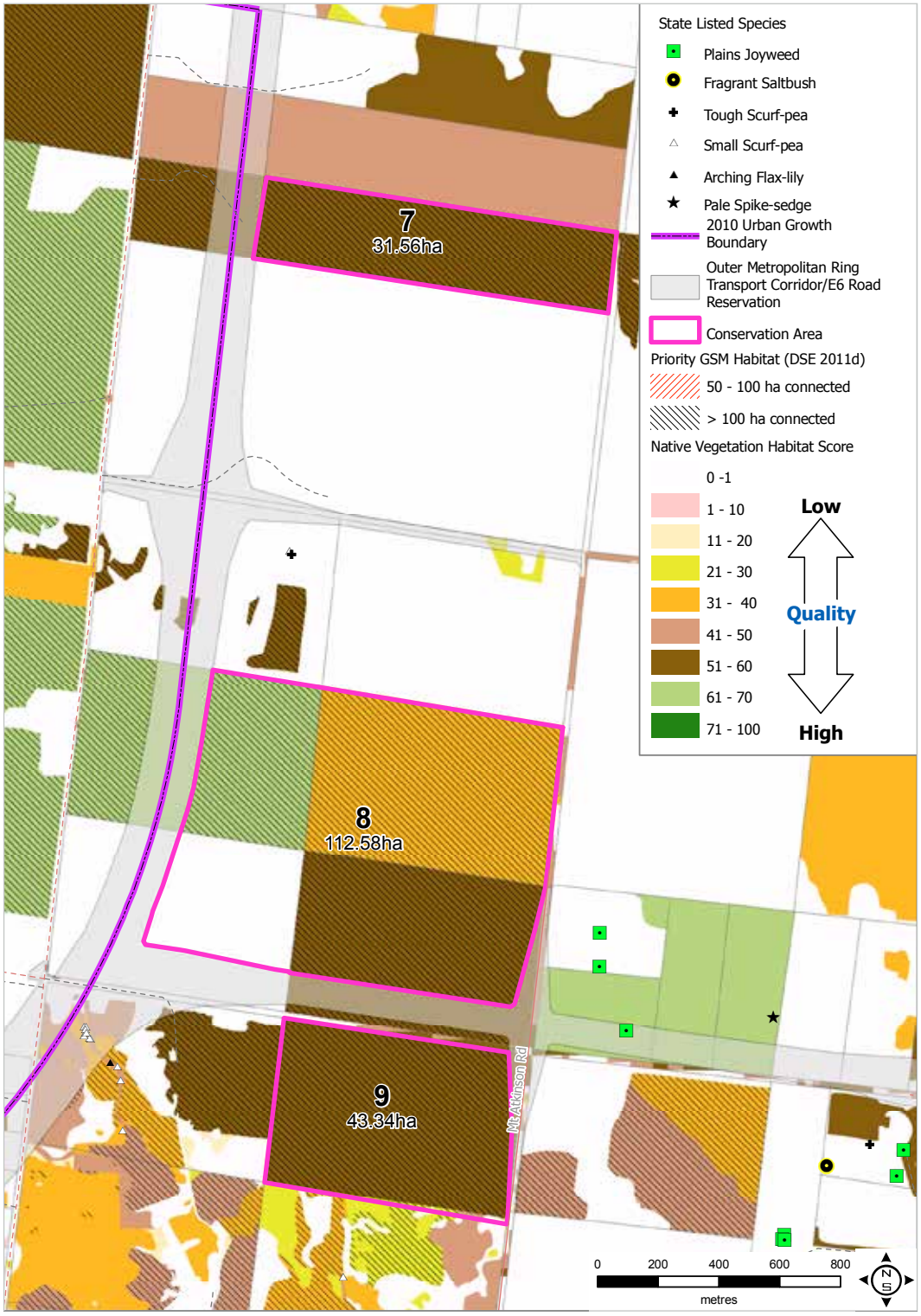
Reference: Biosis Research (2010f); DSE (2012b); DSE (2011c); DSE (2009)

Conservation area 9, Western Growth Corridor: Middle Road (South), Mount Cottrell

Total area and boundary	> 43.34 hectares > Boundary is shown in Figure 27
Management category	> To be determined following surveys
Key rationale for protection of area	> Protects high quality native grassland that contains high persistence habitat for Golden Sun Moth within a practically manageable area Note: Permanent protection of this conservation area is based on estimated data as DSE could not obtain access to do relevant threatened species surveys
Biodiversity values of national significance	> High quality Natural Temperate Grassland > High persistence habitat for Golden Sun Moth (population not confirmed) > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Golden Sun Moth habitat > Striped Legless Lizard habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within an area of greatest contribution to Golden Sun Moth persistence
Further actions	> Protect conservation area through the following actions: – retain the Rural Conservation Zone – retain the Environmental Significance Overlay – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available – determine type of conservation area following surveys

Reference: DSE (2012b); DSE (2011c); DSE (2009)

Figure 27: Conservation area 7, Mount Atkinson Grassland; Conservation area 8, Middle Road (North), Mount Cottrell; Conservation area 9, Middle Road (South), Mount Cottrell

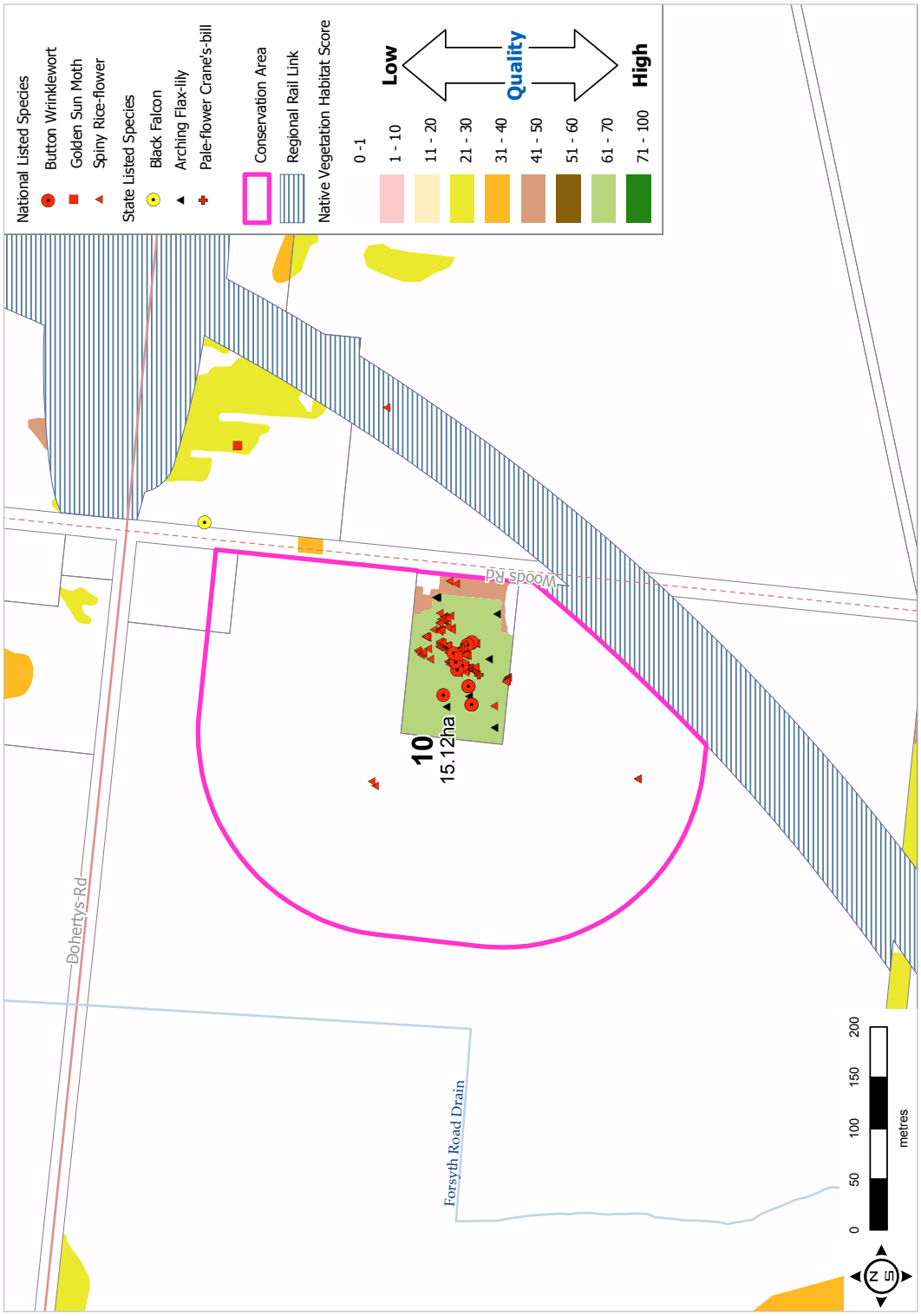


Conservation area 10, Western Growth Corridor: Truganina Cemetery Grassland and Buffer

Total area and boundary	> 15.12 hectares > Conservation area boundary includes a buffer to protect the site from threats as described below, and is shown in Figure 28 Note: Further planning work in this area may require the conservation area buffer to be reviewed at the precinct structure planning stage
Management category	> Existing public land (cemetery) > Open space (majority of buffer)
Key rationale for protection of area	> Protects a small very high quality native grassland that contains a large range of biodiversity values of national and state significance together with a buffer to protect the site from threats and enable management of grassland values
Biodiversity values of national significance	> Very high quality Natural Temperate Grassland > Spiny Rice-flower population within high quality habitat > Button Wrinklewort population within high quality habitat (one of the largest and most important populations in Victoria) > Habitat for Striped Legless Lizard (population not confirmed recently)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Spiny Rice-flower > Button Wrinklewort > Striped Legless Lizard habitat > Arching Flax-lily
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Establishes a small conservation area within an area of greatest contribution to persistence for Spiny Rice-flower > Contributes to ensuring no substantial negative change to known populations of Button Wrinklewort
Further actions	> Review conservation area buffer at the precinct structure planning stage if necessary. Any revised buffer must be to the satisfaction of DEPI and should: – be no less than 50m from the cemetery and include wider areas up to 200m – meet the basic standards listed in Section 5.2.4 – provide space for an expanded cemetery (alternative locations for burials) so as to phase out burials within the existing cemetery where these impact on biodiversity values – provide complementary public space to minimise the chances of neglect or vandalism and maximise the chances that people will use, enjoy and protect the areas (e.g. mown grass, playgrounds, skateboard or cycle parks, walking tracks, planted beds of appropriate shrubs and trees, car-parks (<10% of buffer area), sporting facilities) – give scope for expansion of the grassland ecosystems and/or threatened species populations where this can be achieved in the context of public open space and landscape/revegetation plantings > Protect conservation area (including buffer) through the following actions: – apply appropriate planning provisions to the land if required (may include a Rural Conservation Zone or a Public Park and Recreation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning. An Environmental Significance Overlay (ES03) in the Wyndham planning scheme already applies to the cemetery – transfer relevant parts of the land to a public land manager > Public land manager to prepare management plan for buffer > DEPI to renegotiate the existing 2000 Public Authority Management Agreement under the Victorian *Flora and Fauna Guarantee Act 1988* with the Wyndham Cemeteries Trust and the Greater Melbourne Cemeteries Trust to protect the biodiversity values of the grassland in the cemetery (and potentially parts of the buffer), in accordance with the commitments in the program report. This will include updating the management plan prepared for the WCT in 2004 (Wlodarczyk and Williams 2004)

Reference: DSE (2011c); DSE (2009); State Government (2009); Wlodarczyk and Williams (2004)

Figure 28: Conservation area 10, Truganina Cemetery Grassland and Buffer

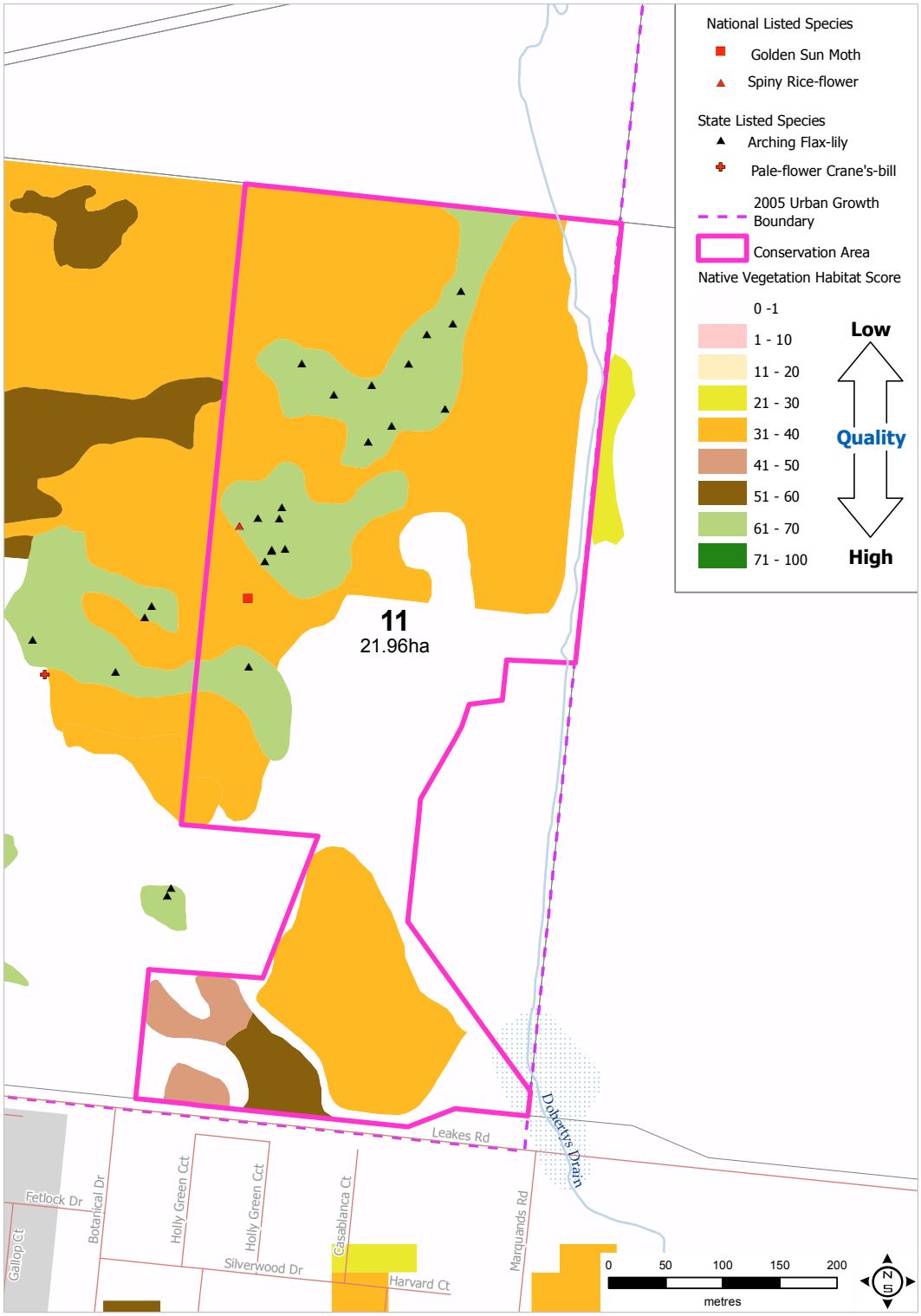


Conservation area 11, Western Growth Corridor: Woods Road, Truganina

Total area and boundary	> 21.96 hectares > Boundary is shown in Figure 29
Management category	> Nature conservation
Key rationale for protection of area	> Protects high quality native grassland that contains high persistence habitat for Golden Sun Moth within a practically manageable area that is contiguous with the Truganina South Precinct Structure Plan Golden Sun Moth reserve
Biodiversity values of national significance	> High quality Natural Temperate Grassland > High persistence habitat for Golden Sun Moth (population confirmed in the Truganina South Precinct Structure Plan Golden Sun Moth reserve) > Spiny Rice-flower population within medium persistence habitat > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Golden Sun Moth habitat > Spiny Rice-flower > Striped Legless Lizard habitat > Arching Flax-lily
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within an area of greatest contribution to Golden Sun Moth persistence
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: Biosis Research (2010f); DSE (2012b); DSE (2011c); DSE (2009)

Figure 29: Conservation area 11, Woods Road, Truganina

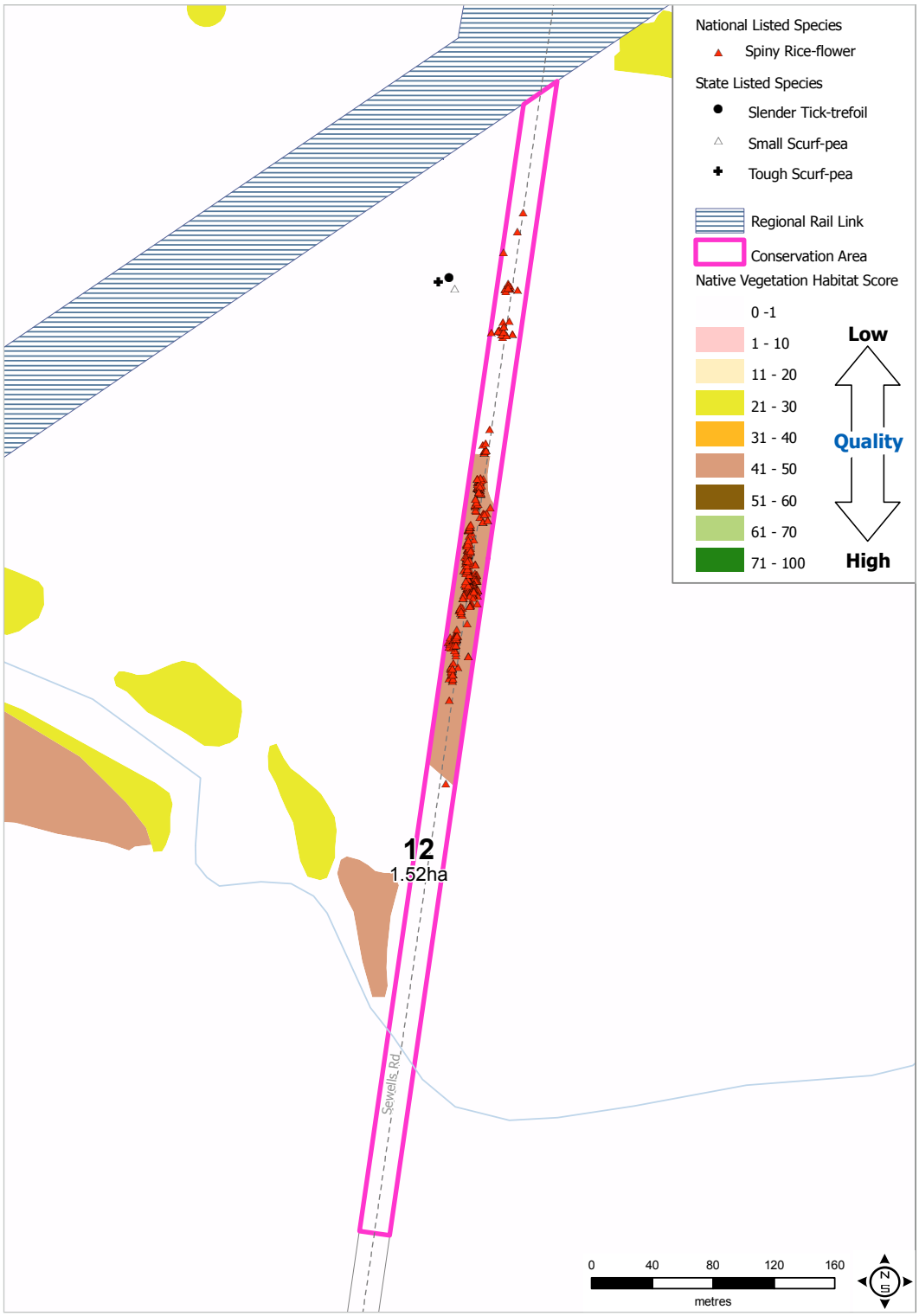


Conservation area 12, Western Growth Corridor: Sewells Road Reserve, Truganina

Total area and boundary	> 1.52 hectares > Boundary is shown in Figure 30
Management category	> Existing public land
Key rationale for protection of area	> Protects high quality, herb-rich native grassland that contains a significant population of Spiny Rice-flower within a practically manageable area (unused road reserve)
Biodiversity values of national significance	> High quality herb-rich Natural Temperate Grassland > Spiny Rice-flower population (greater than 400) within high persistence habitat > High persistence habitat for Golden Sun Moth (population not confirmed) > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Spiny Rice-flower > Golden Sun Moth habitat > Striped Legless Lizard habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Establishes a small conservation area within an area of greatest contribution to Spiny Rice-flower and Golden Sun Moth persistence
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, Public Conservation and Resource Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning and in conjunction with City of Wyndham (the roads authority) – prepare conservation management plan as part of precinct structure planning process and ensure planning provisions for implementation and funding are in place – determine appropriate public land reservation status and land manager, determined by the State Minister for Environment and Climate Change – establish management agreements with public land manager under section 69 of the *Conservation Forests and Lands Act 1987,* or under the *Flora and Fauna Guarantee Act 1988*, or transfer land to Crown Land Reserve status with conservation as primary objective

Reference: DSE (2009); Foreman (2012)

Figure 30: Conservation area 12, Sewells Road Reserve, Truganina

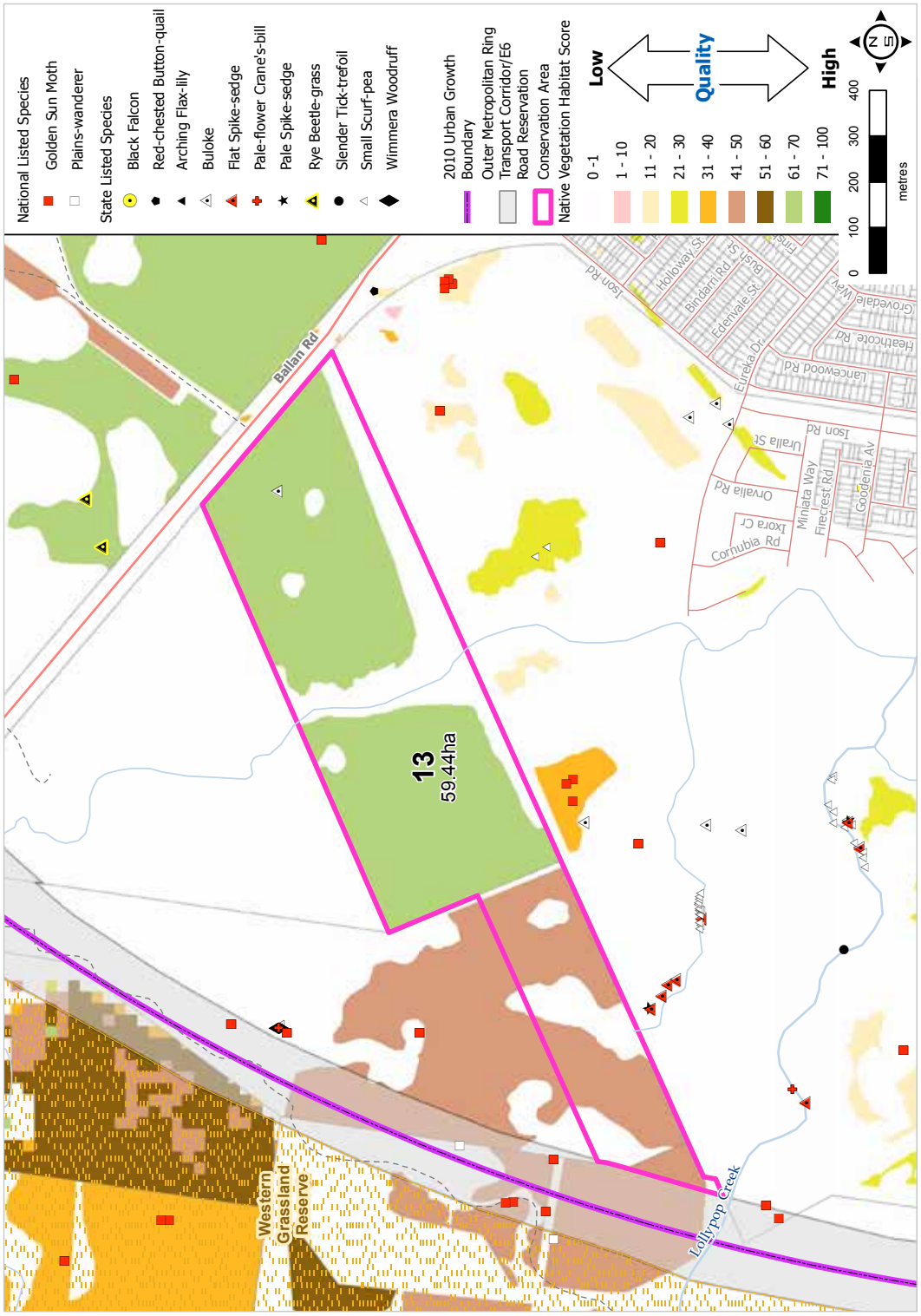


Conservation area 13, Western Growth Corridor: Ballan Road, Wyndham Vale

Total area and boundary	> 59.44 hectares > Boundary is shown in Figure 31
Management category	> To be determined following surveys
Key rationale for protection of area	> Protects high quality native grassland that contains high persistence habitat for Golden Sun Moth within a practically manageable area Note: Permanent protection of this conservation area is based on estimated data as DSE could not obtain access to do relevant threatened species surveys
Biodiversity values of national significance	> High quality Natural Temperate Grassland > Golden Sun Moth population within high persistence habitat > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Golden Sun Moth > Striped Legless Lizard habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within an area of greatest contribution to Golden Sun Moth persistence
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available – determine type of conservation area following surveys

Reference: DSE (2012b); DSE (2011c); DSE (2009); Ecology and Heritage Partners report in submission no. GCP 169

Figure 31: Conservation area 13, Ballan Road, Wyndham Vale



Conservation area 14, Western Growth Corridor: Growling Grass Frog corridors (south)

Total area and boundary	> 372.00 hectares > Boundaries are shown in Figure 3 Note: The boundaries shown in Figure 32c and the Sub-regional Species Strategy for the Growling Grass Frog may be varied slightly if necessary at the precinct structure planning stage to account for site-specific issues. Any variations must not reduce the overall area of the Growling Grass Frog conservation area within that precinct. Any variation must be approved by DEPI.
Management category	> Growling Grass Frog conservation, floodplain and open space (part only) > Regional park (Werribee Township Regional Park)
Key rationale for protection of area	> Protects important populations of Growling Grass Frog and ensures connectivity between populations along the Werribee River and on Lollypop Creek
Biodiversity values of national significance	> Growling Grass Frog within high quality habitat
Biodiversity values of state significance	> Growling Grass Frog
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations
Further actions	> Finalise boundaries of Werribee Township Regional Park > Vary Growling Grass Frog corridor boundary slightly if necessary to account for site-specific issues at the precinct structure planning stage. Any variation: – must not reduce the total area of the Growling Grass Frog corridor within the relevant precinct – must not impact negatively on Growling Grass Frog populations – must be demonstrated to have no effect on the functioning or management objectives of the corridor for the Growling Grass Frog – must be to the satisfaction of DEPI – must be documented in the conservation management plan > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* for areas of land outside Werribee Township Regional Park – confirm mechanisms for the acquisition of land to be included within Werribee Township Regional Park

Reference: Biosis Research (2012); DSE (2012a); DSE (2011c); Ecology Partners (2011a)

Conservation area 15, Western Growth Corridor: Growling Grass Frog corridors (north)

Total area and boundary	> 539.67 hectares > Boundaries are shown in Figures 32 a, b and c Note: The boundaries shown in Figure 32 and the Sub-regional Species Strategy for the Growling Grass Frog may be varied slightly if necessary at the precinct structure planning stage to account for site-specific issues. Any variations must not reduce the overall area of the Growling Grass Frog conservation area within that precinct. Any variation must be approved by DEPI.
Management category	> Growling Grass Frog conservation, floodplain and open space (part only) > Regional park (Kororoit Creek Regional Park)
Key rationale for protection of area	> Protects important populations of Growling Grass Frog and ensures connectivity between populations along the Kororoit Creek and Toolern Creek
Biodiversity values of national significance	> Growling Grass Frog populations within high quality habitat
Biodiversity values of state significance	> Growling Grass Frog > Austral Tobacco > Werribee Blue-box > Fragrant Saltbush
Contribution of area to achievement of conservation outcomes in the program report	> Ensures functioning sustainable populations of Growling Grass Frog with connectivity between populations
Further actions	> Vary Growling Grass Frog corridor boundary slightly if necessary to account for site-specific issues at the precinct structure planning stage. Any variation: – must not reduce the total area of the Growling Grass Frog corridor within the relevant precinct – must not impact negatively on Growling Grass Frog populations – must be demonstrated to have no effect on the functioning or management objectives of the corridor for the Growling Grass Frog – must be to the satisfaction of DEPI – must be documented in the conservation management plan > Protect conservation area through the following actions: – retain Rural Conservation Zone where it exists – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown to be managed by Melbourne Water

Reference: Biosis Research (2012); DSE (2012a); DSE (2011c); Ecology Partners (2011a); State Government (2009)

Figure 32 a: Growling Grass Frog Corridors, Western Growth Corridor

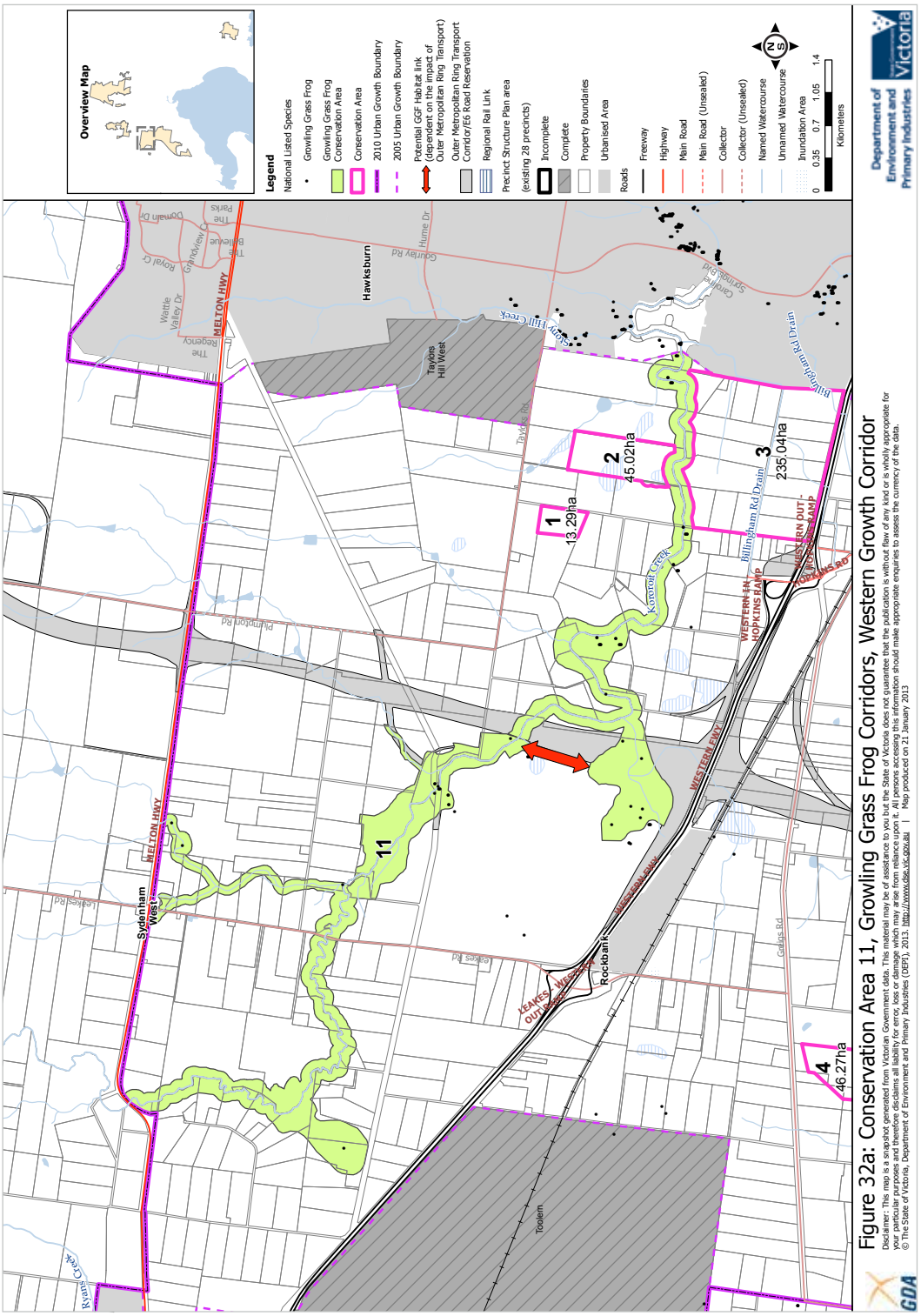


Figure 32 b: Growling Grass Frog Corridors, Western Growth Corridor

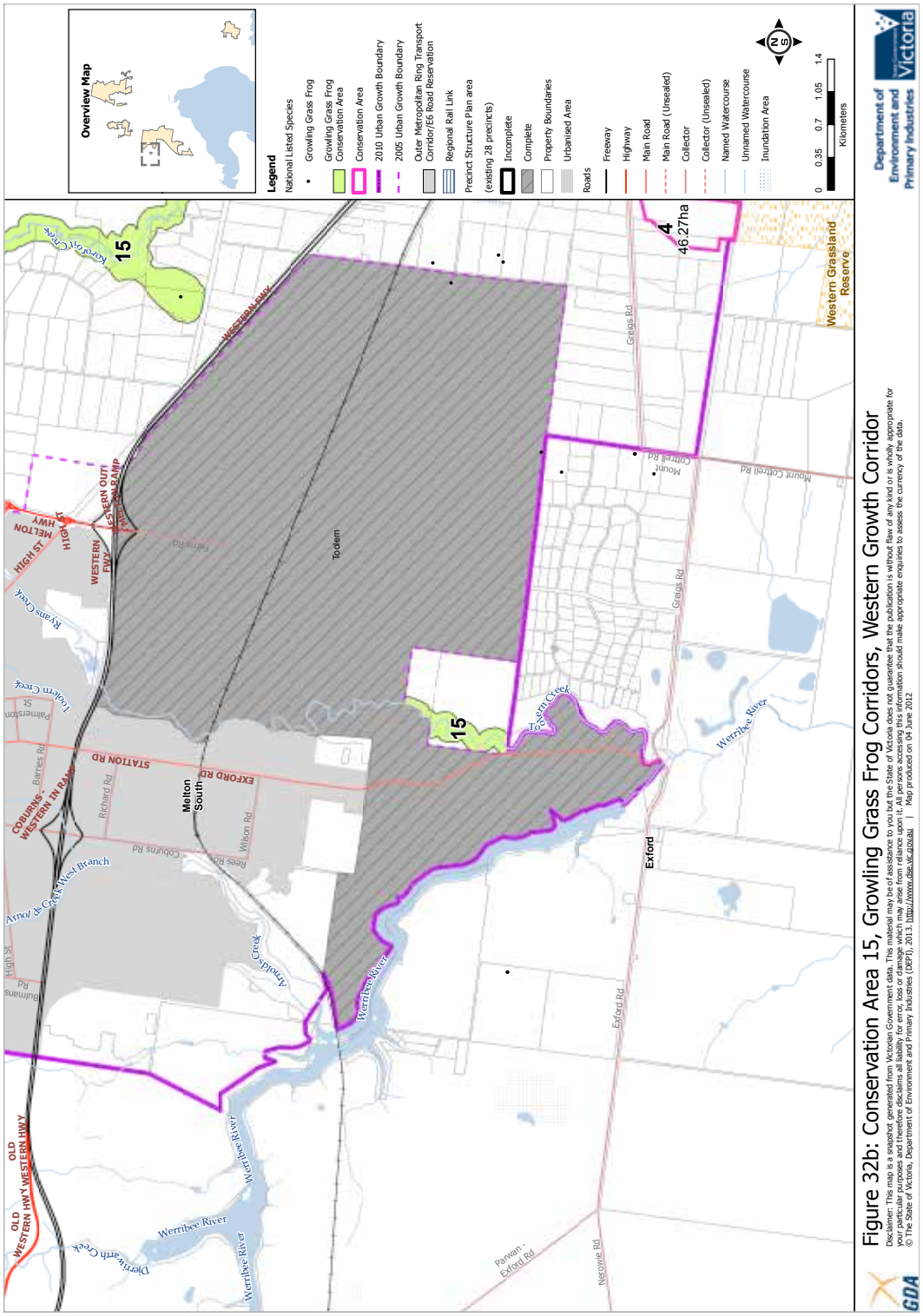
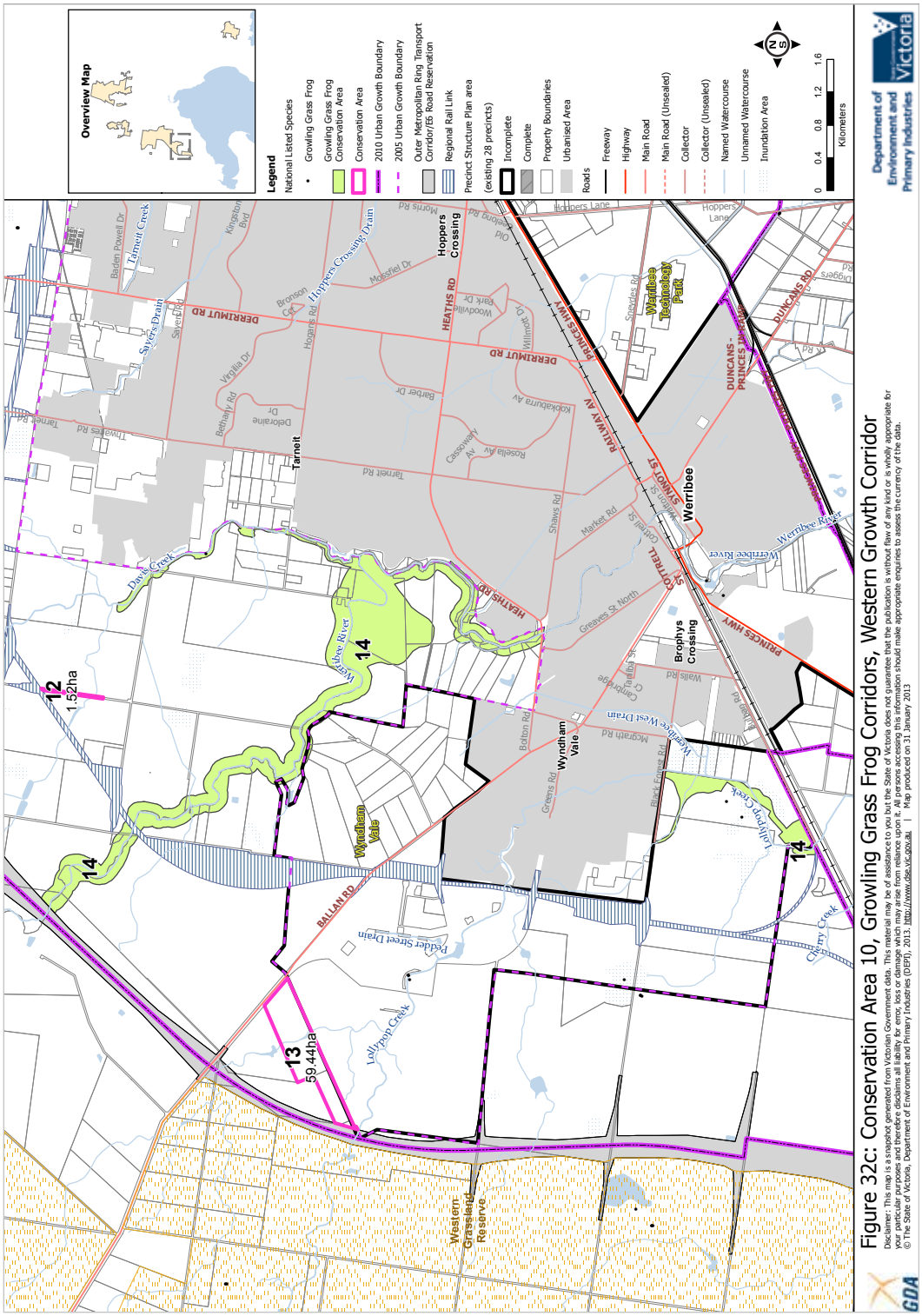


Figure 32 c: Growling Grass Frog Corridors, Western Growth Corridor



5.5 Conservation areas, north-western growth corridor

The north-western (Sunbury) growth corridor supports areas of Grassy Eucalypt Woodland, and may also contain areas of Grey Box Grassy Woodland. The area also supports a number of threatened flora species. Threatened fauna species that occur include Striped Legless Lizard, Golden Sun Moth and Growling Grass Frog.

The growth corridor contains two significant waterways (Jacksons Creek and Emu Creek), which provide important north-south habitat corridors and connectivity through the growth corridor.

Conservation area 16, North-Western Growth Corridor: Grassy Eucalypt Woodland Sites, Sunbury

Total area and boundary	> 18.22 hectares > Boundary is shown in Figure 33
Management category	> Nature conservation
Key rationale for protection of area	> Protects Grassy Eucalypt Woodland within a practically manageable area
Biodiversity values of national significance	> Grassy Eucalypt Woodland
Biodiversity values of state significance	> Currently unknown
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

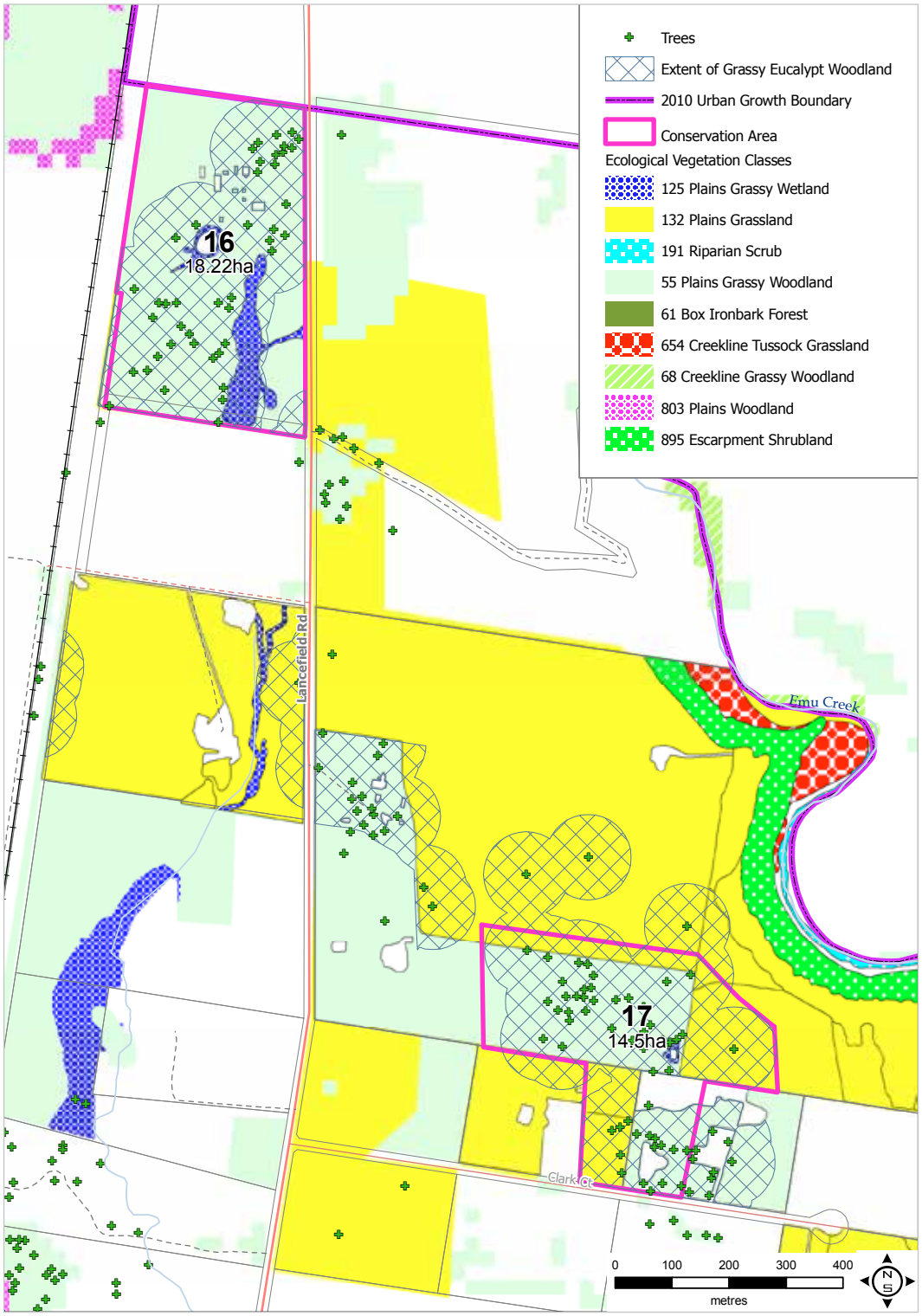
Reference: See Appendix 3

Conservation area 17, North-Western Growth Corridor: Grassy Eucalypt Woodland Sites, Sunbury

Total area and boundary	> 14.50 hectares > Boundary is shown in Figure 33
Management category	> Nature conservation
Key rationale for protection of area	> Protects Grassy Eucalypt Woodland within a practically manageable area
Biodiversity values of national significance	> Grassy Eucalypt Woodland
Biodiversity values of state significance	> Currently unknown
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: See Appendix 3

Figure 33: Conservation areas 16 and 17, Grassy Eucalypt Woodland Sites, Sunbury



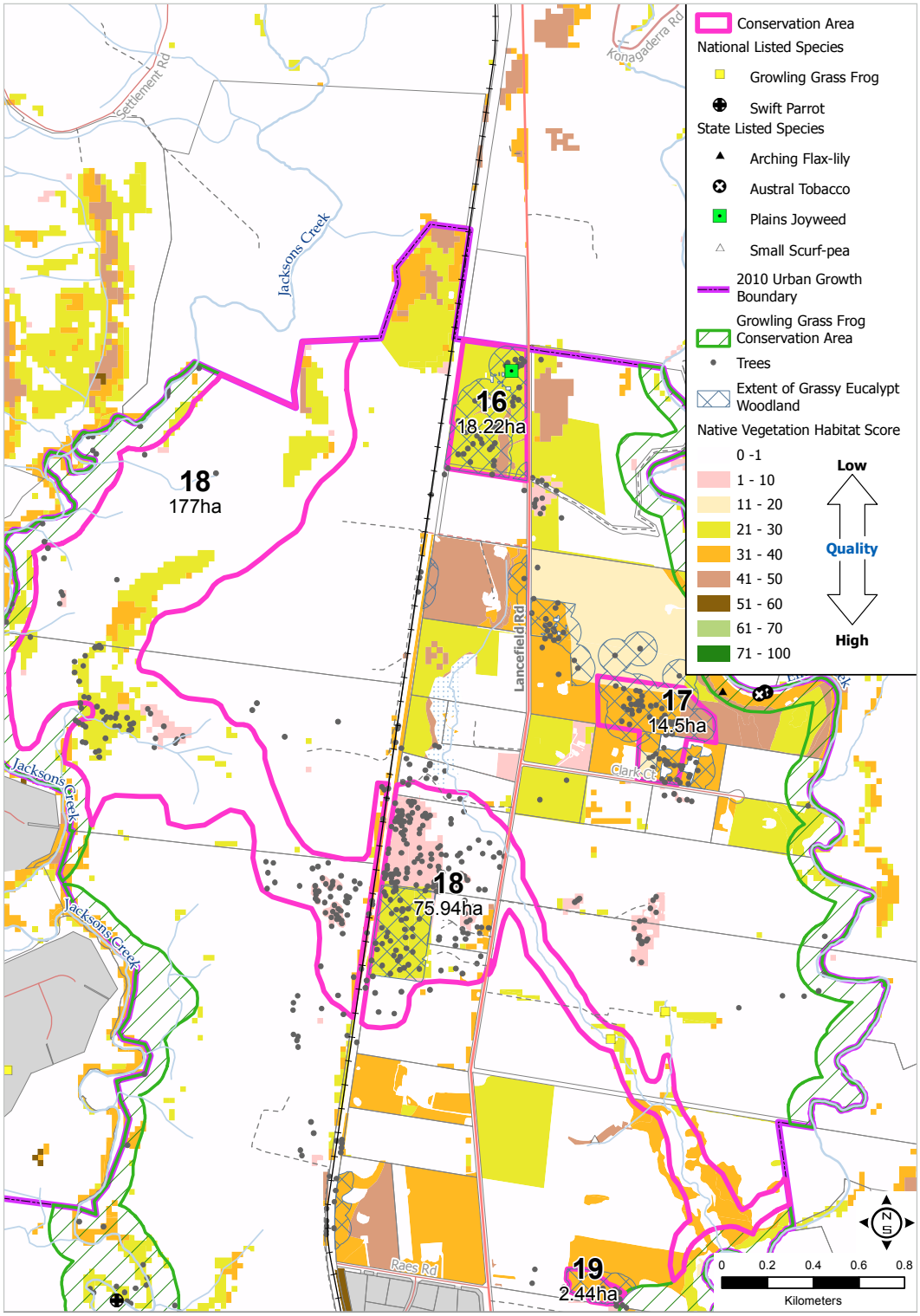
Conservation area 18, North-Western Growth Corridor: Lancefield Road, Sunbury

Total area and boundary	> 177 hectares (western section) + 75.94 hectares (eastern section) > Boundary is shown in Figure 34
Management category	> Nature conservation (part only, primarily between Lancefield Road and railway line) > Open space (majority of site)
Key rationale for protection of area	> Protects Grassy Eucalypt Woodland, and potentially Grey Box Grassy Woodland*, within a practically manageable area and abuts area for protection of Growling Grass Frog along Jacksons Creek Note: This conservation area includes the current Rural Conservation Zone land, which primarily protects landscape values rather than biodiversity values. Only a small proportion of the conservation area contains native vegetation, and the presence of threatened species habitat is unlikely (but is not known) (see Figure 12). Detailed surveys have not been done to determine which areas require protection for their biodiversity values
Biodiversity values of national significance	> Grassy Eucalypt Woodland > Grey Box Grassy Woodlands and Derived Native Grasslands of South Eastern Australia (not confirmed) > High quality habitat for Growling Grass Frog (population not confirmed)
Biodiversity values of state significance	> Growling Grass Frog habitat > Melbourne Yellow-gum
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to the target to protect and manage 80 per cent of all Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary > Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations
Further actions	> Review appropriateness of Rural Conservation Zone at the precinct structure planning stage if necessary, including undertaking detailed surveys. Any revised conservation area: – must protect Growling Grass Frog corridors as mapped in the BCS (see Figures 37 a and b) – must protect Grassy Eucalypt Woodland as mapped in the BCS (see Figures 19 and 20) and/or as defined under the *Environment Protection and Biodiversity Conservation Act 1999* – must protect populations and high quality habitat of any other matters of national environmental significance – must be to the satisfaction of DEPI. > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: Biosis Research (2012); DSE (2012a); DSE (2011c); Ecology Partners (2011a); see Appendix 3

* This refers to the EPBC listed ecological community Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South Eastern Australia

Figure 34: Conservation area 18, Lancefield Road, Sunbury

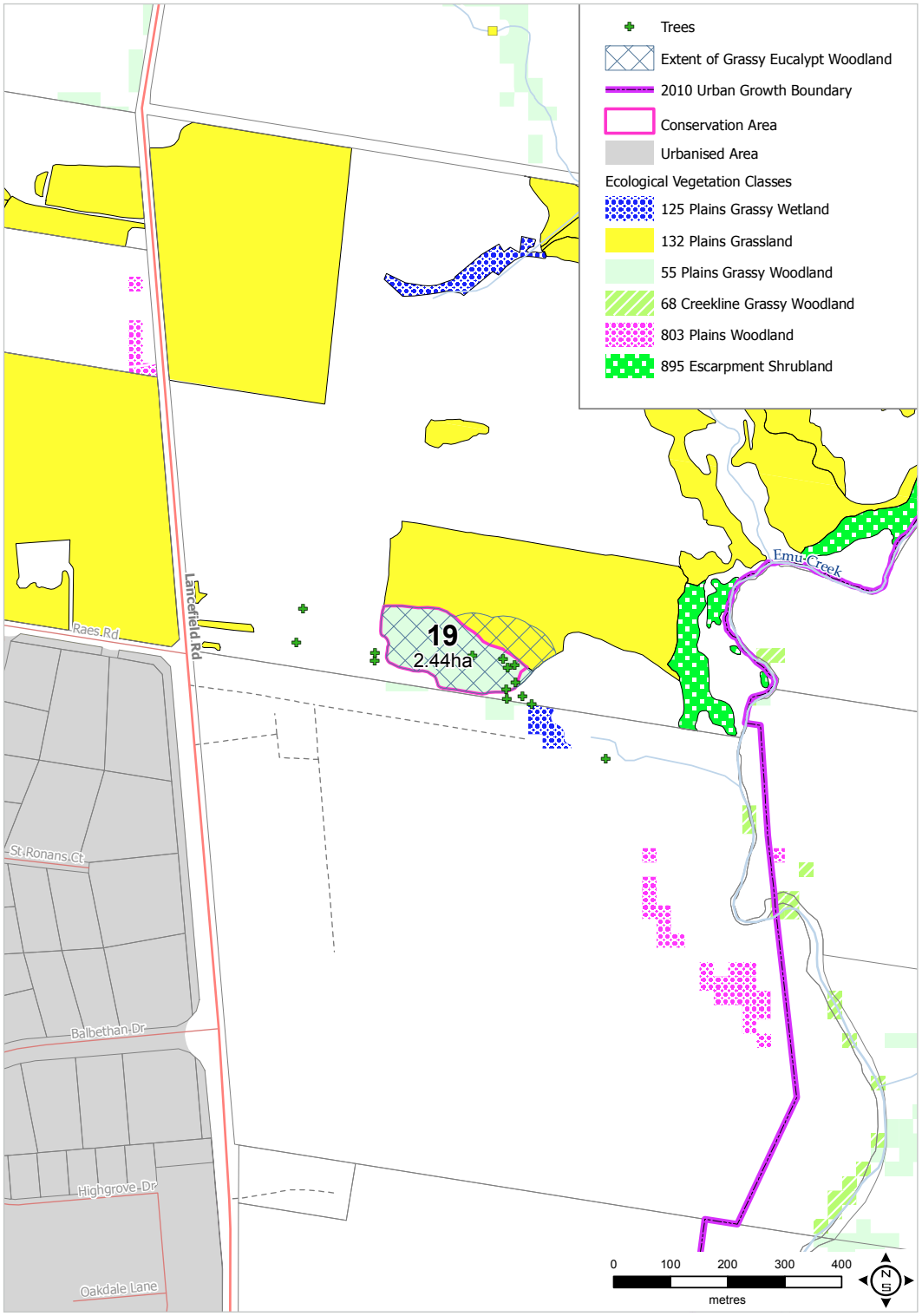


Conservation area 19, North-Western Growth Corridor: Grassy Eucalypt Woodland Sites, Sunbury

Total area and boundary	> 2.44 hectares > Boundary is shown in Figure 35
Management category	> Nature conservation
Key rationale for protection of area	> Protects Grassy Eucalypt Woodland within a practically manageable area
Biodiversity values of national significance	> Grassy Eucalypt Woodland
Biodiversity values of state significance	> Currently unknown
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: See Appendix 3

Figure 35: Conservation area 19, Grassy Eucalypt Woodland Site, Sunbury

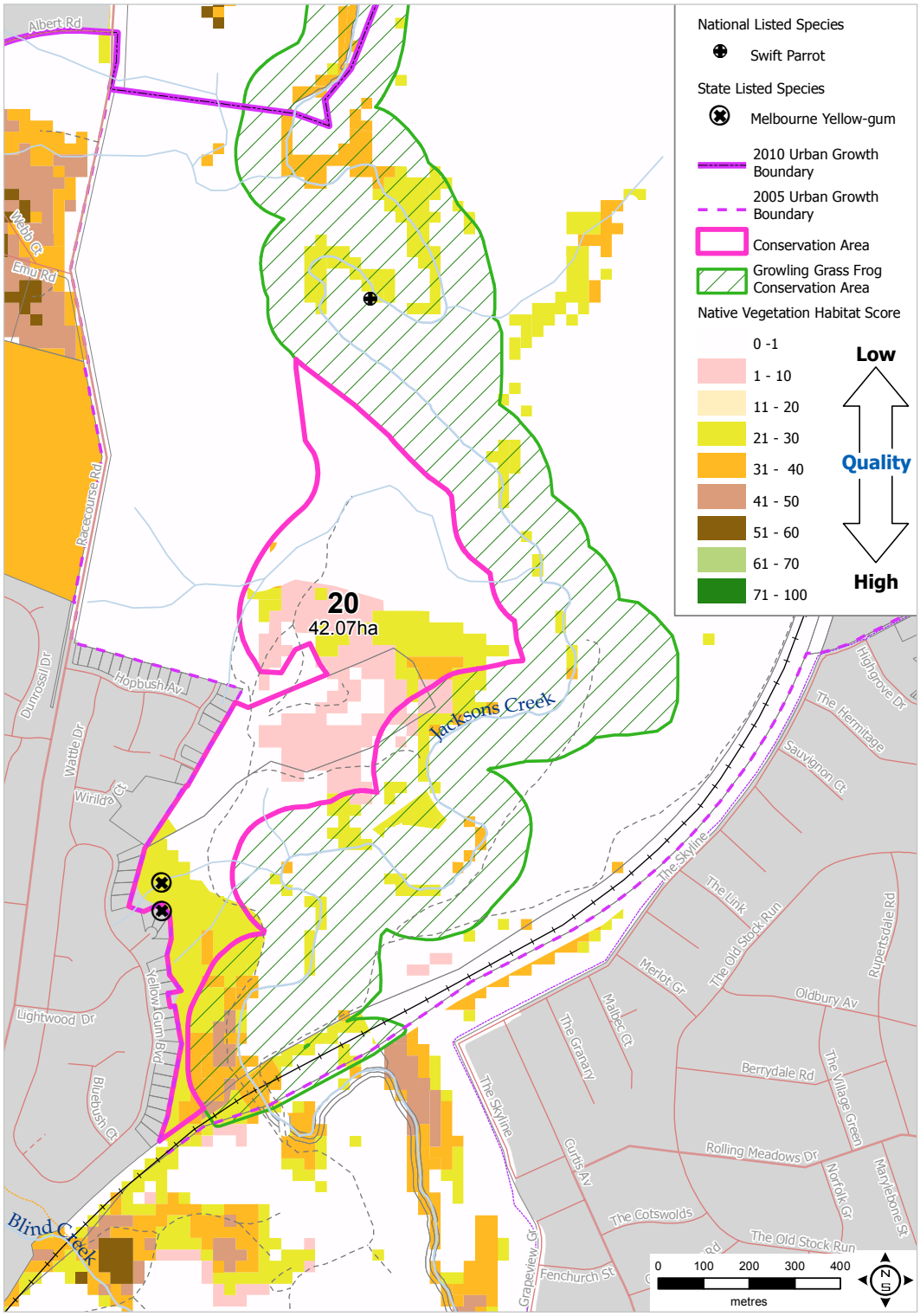


Conservation area 20, North-Western Growth Corridor: Racecourse Road, Sunbury

Total area and boundary	> 42.07 hectares > Boundary is shown in Figure 36
Management category	> Open space
Key rationale for protection of area	> Protects area of woodland within a practically manageable area Note: Permanent protection of this conservation area is based on estimated data as DSE could not obtain access to do relevant surveys. This conservation area includes the current Rural Conservation Zone land, which primarily protects landscape and cultural heritage values rather than biodiversity values. Some of this conservation area does not contain native vegetation (see Figure 12). Detailed surveys have not been done to determine which areas require protection for their biodiversity values
Biodiversity values of national significance	> Not confirmed
Biodiversity values of state significance	> Melbourne Yellow-gum
Contribution of area to achievement of conservation outcomes in the program report	> To be confirmed
Further actions	> Review appropriateness of Rural Conservation Zone at the precinct structure planning stage if necessary, including undertaking detailed surveys. Any revised conservation area: – should protect native vegetation, particularly treed areas – must protect populations and high quality habitat of any matters of national environmental significance – must be to the satisfaction of DEPI > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: Biosis Research (2012), DSE (2012a); DSE (2011c); Ecology Partners (2011a)

Figure 36: Conservation area 20, Racecourse Road, Sunbury



Conservation area 21, North-Western Growth Corridor: Growling Grass Frog Corridors

Total area and boundary	> 666.83 hectares > Boundaries are shown in Figures 37 a and b Note: The boundaries shown in Figure 37 and the Sub-regional Species Strategy for the Growling Grass Frog may be varied slightly if necessary at the precinct structure planning stage to account for site-specific issues.
Management category	> Growling Grass Frog conservation, floodplain and open space
Key rationale for protection of area	> Protects important populations of Growling Grass Frog and ensures connectivity between populations within the north-western growth corridor
Biodiversity values of national significance	> Growling Grass Frog populations within high quality habitat
Biodiversity values of state significance	> Currently unknown
Contribution of area to achievement of conservation outcomes in the program report	> Ensures functioning sustainable populations of Growling Grass Frog with connectivity between populations
Further actions	> Vary Growling Grass Frog corridor boundary slightly if necessary to account for site-specific issues at the precinct structure planning stage. Any variation: – must not reduce the total area of the Growling Grass Frog corridor within the relevant precinct – must not impact negatively on Growling Grass Frog populations – must be demonstrated to have no effect on the functioning or management objectives of the corridor for the Growling Grass Frog – must be to the satisfaction of DEPI – must be documented in the conservation management plan > Protect conservation area through the following actions: – retain Rural Conservation Zone where it exists – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown to be managed by Melbourne Water

Reference: Biosis Research (2012); DSE (2012a); DSE (2011c); Ecology Partners (2011a); State Government (2009)

Figure 37 a: Growling Grass Frog Corridors, North-Western Growth Corridor

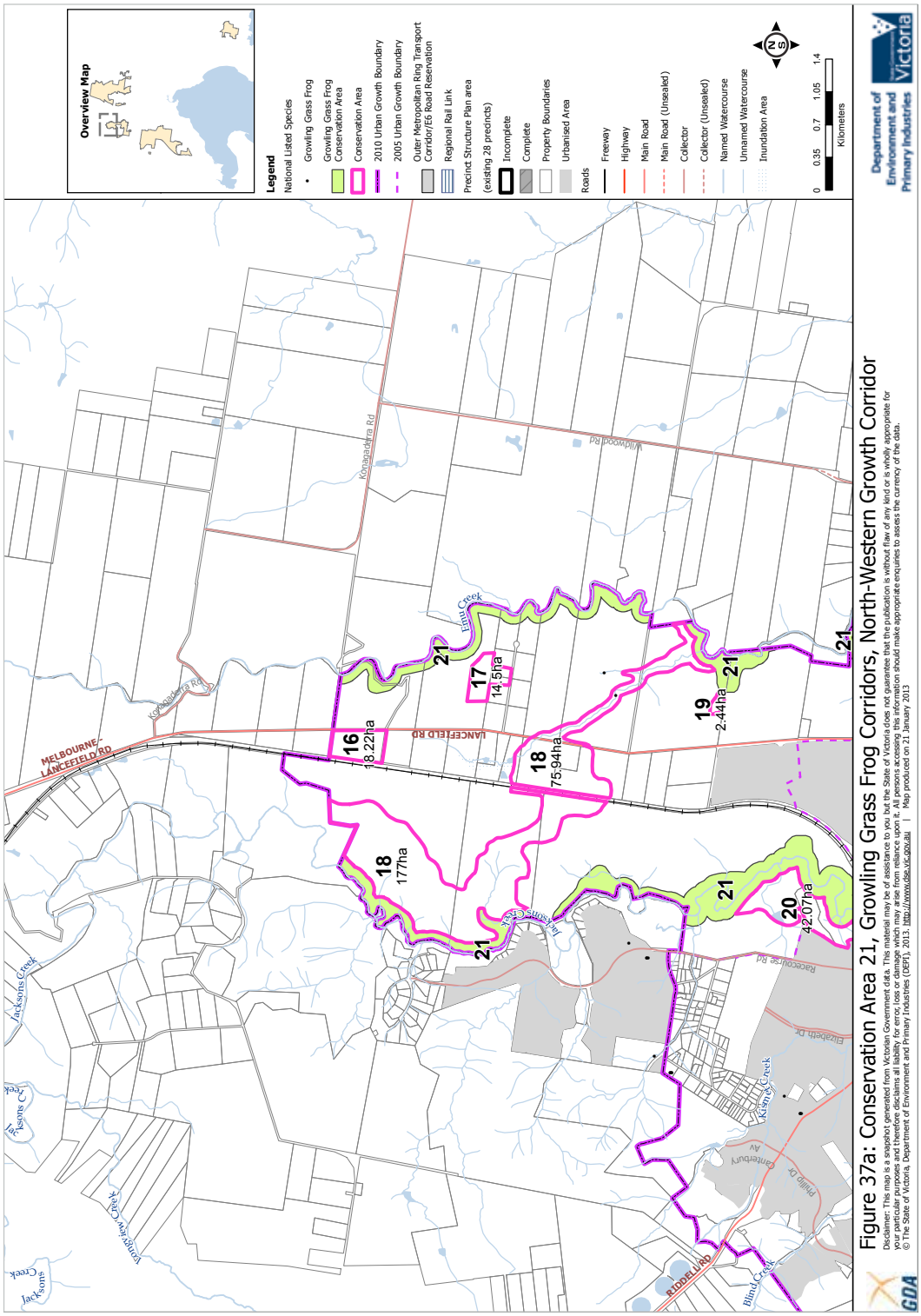
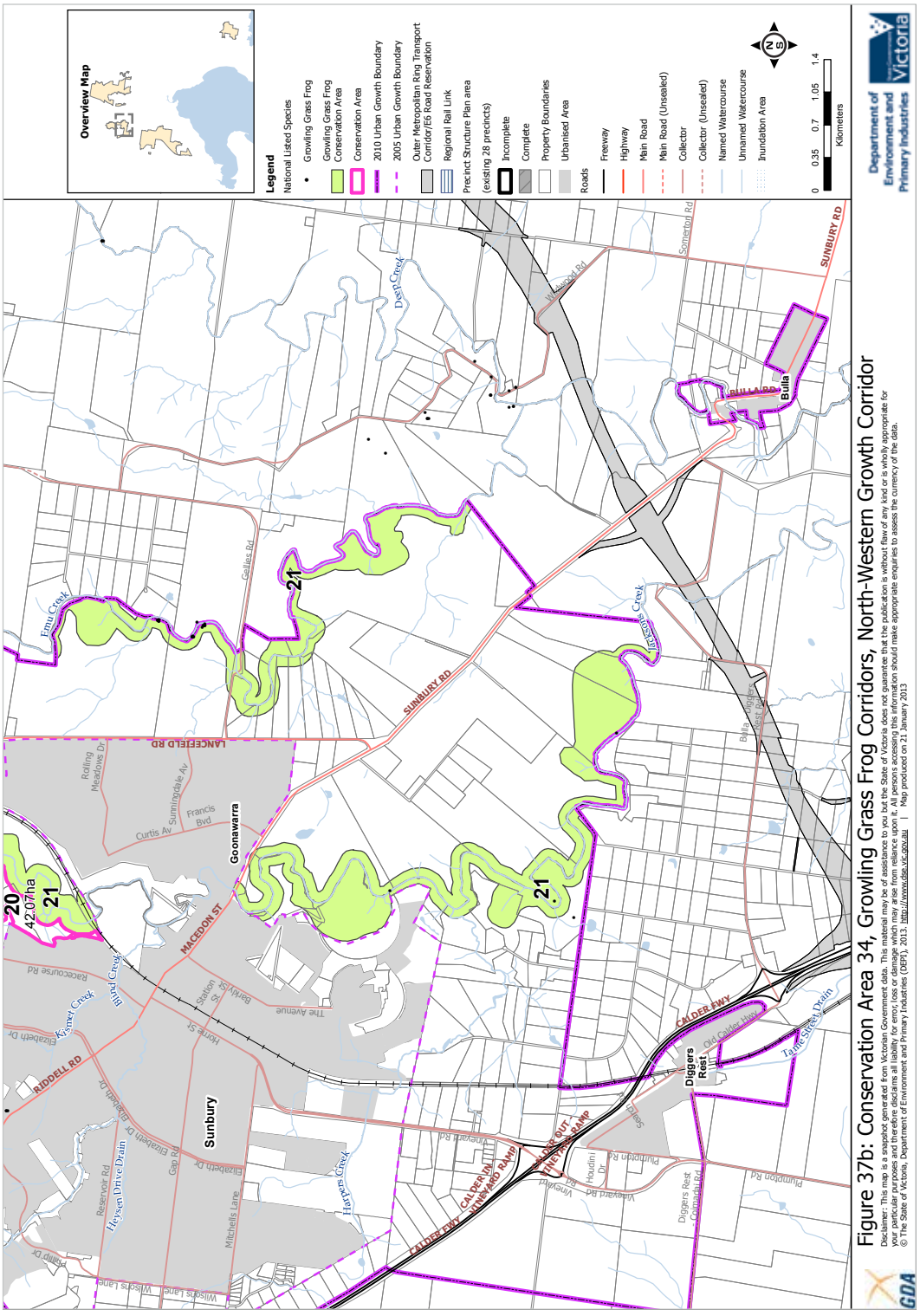


Figure 37 b: Growling Grass Frog Corridors, North-Western Growth Corridor



5.6 Conservation areas, northern growth corridor

The northern (Hume, Whittlesea and Mitchell) growth corridor has significant biodiversity values, with large numbers of remnant River Red Gums scattered across the landscape and the threatened communities Natural Temperate Grassland and Grassy Eucalypt Woodland also occurring.

A number of threatened flora and fauna species occur. Merri Creek is a major north-south biodiversity corridor providing important habitat and connectivity through the growth corridor.

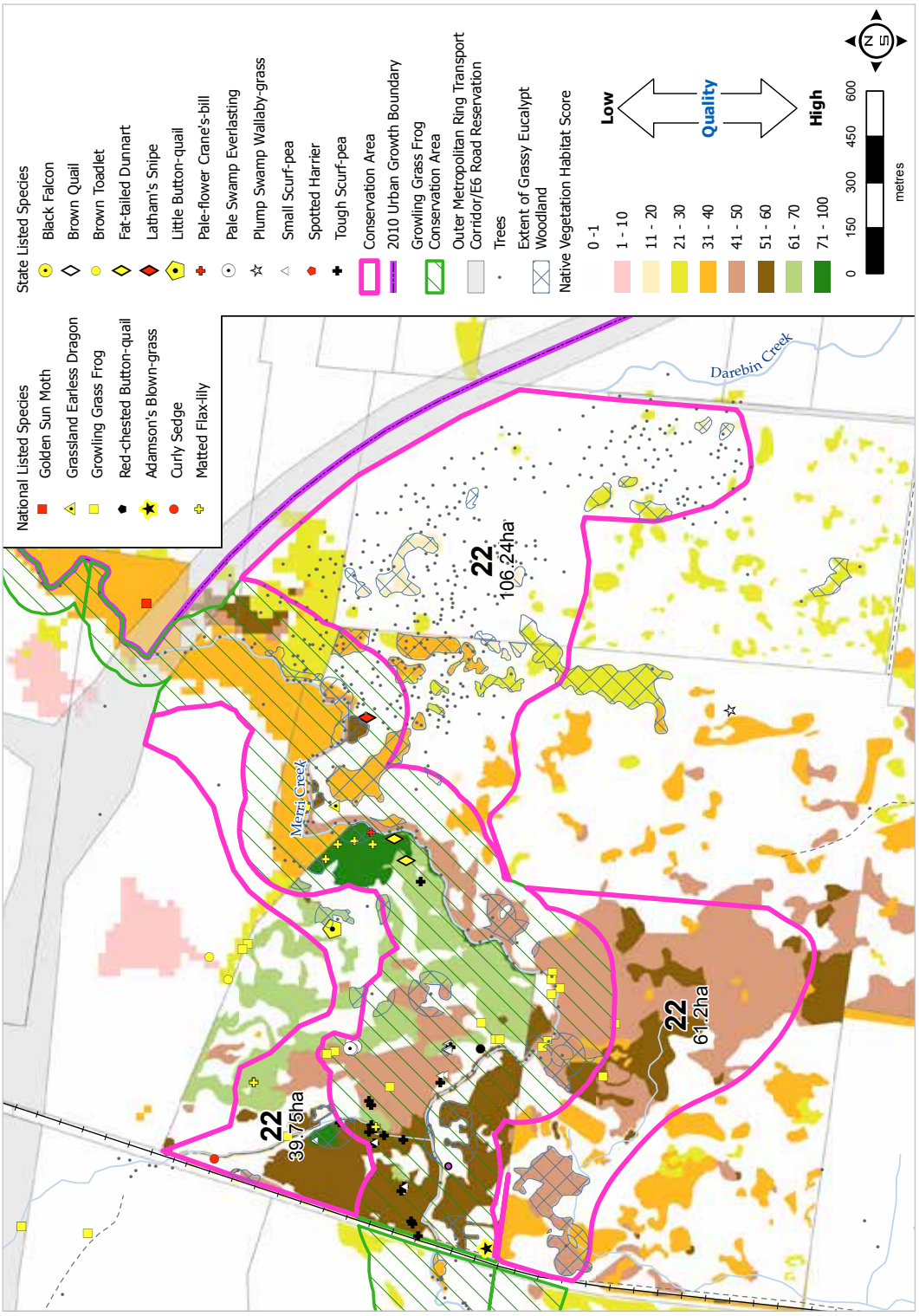
5.6.1 Conservation areas, northern growth corridor

Conservation area 22, Northern Growth Corridor: Bald Hill, Donnybrook

Total area and boundary	> 207.18 hectares > Boundary is shown in Figure 38
Management category	> Nature conservation (majority of site) > Open space (eastern section containing predominantly scattered trees)
Key rationale for protection of area	> Protects high quality native grassland that contains a range of biodiversity values of national significance within a practically manageable area
Biodiversity values of national significance	> High quality Natural Temperate Grassland > Grassy Eucalypt Woodland > Matted Flax-lily population within high quality habitat > Curly Sedge population within high quality habitat > Adamson's Blown-grass population (not confirmed recently) > Growling Grass Frog population within high quality habitat > Grassland Earless Dragon population (not confirmed recently) > High persistence habitat for Golden Sun Moth (population not confirmed) > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04 > Matted Flax-lily > Curly Sedge > Adamson's Blown-grass population (not confirmed recently) > Growling Grass Frog > Grassland Earless Dragon population (not confirmed recently) > Golden Sun Moth habitat > Striped Legless Lizard habitat > Tough Scurf-pea > Rye Beetle-grass (not confirmed)
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations > Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary > Contributes to ensuring no substantial negative change to known populations of Curly Sedge
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown to be managed by Melbourne Water

Reference: Biosis Research (2011); Carter (2010); DSE (2012a); DSE (2011c); Ecology Partners (2011a); Ecology & Heritage Partners reports in submission no. 276

Figure 38: Conservation area 22, Bald Hill, Donnybrook

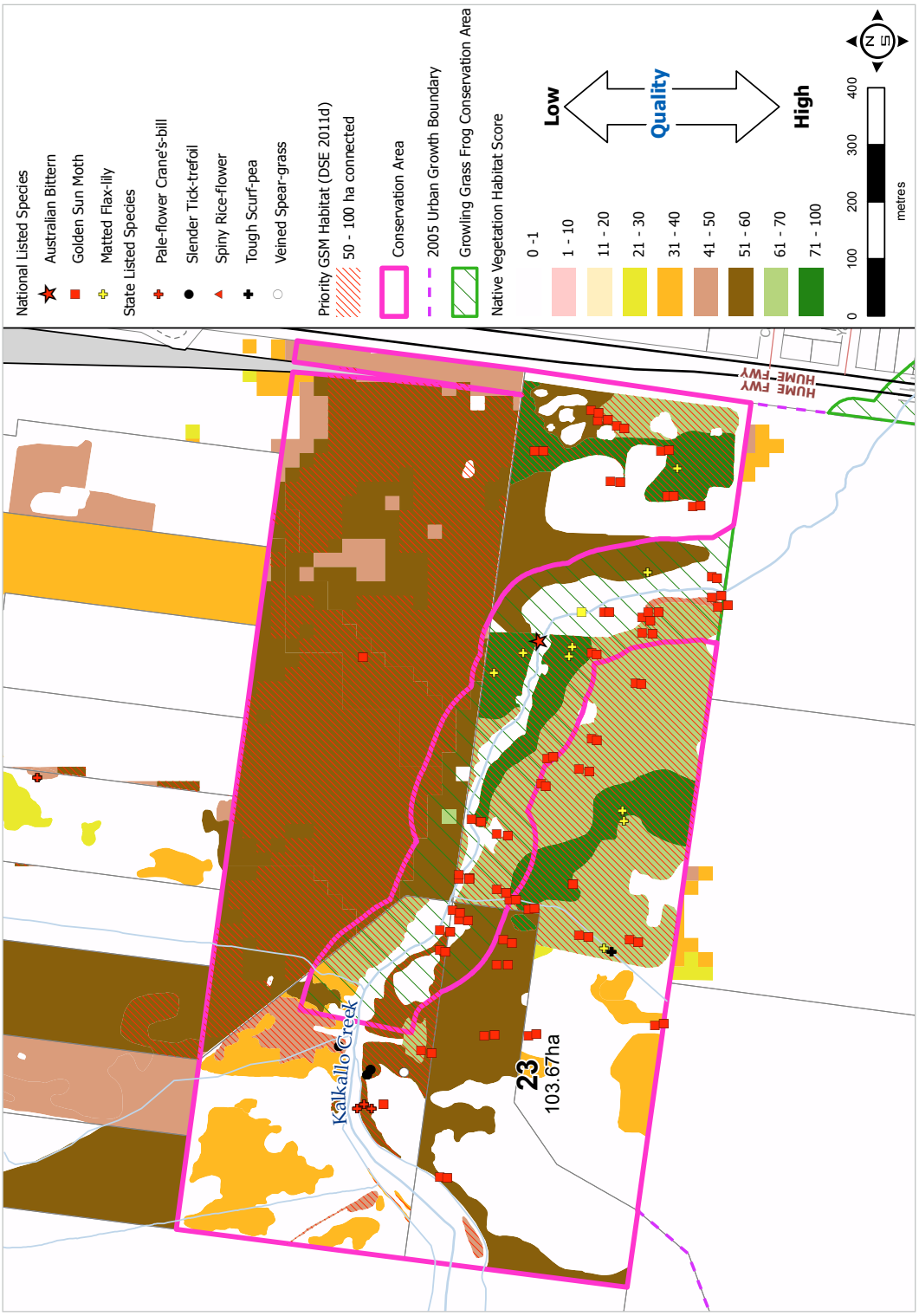


Conservation area 23, Northern Growth Corridor: Hume Freeway, Kalkallo

Total area and boundary	> 103.67 hectares > Boundary is shown in Figure 39
Management category	> Nature conservation
Key rationale for protection of area	> Protects high quality native grassland that contains Golden Sun Moth and other biodiversity values of national significance within a practically manageable area
Biodiversity values of national significance	> High quality Natural Temperate Grassland > Golden Sun Moth population within high persistence habitat > Matted Flax-lily population within high quality habitat > Growling Grass Frog population within high quality habitat > Habitat for Australian Bittern (recorded on property at Kalkallo Creek) > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Golden Sun Moth > Matted Flax-lily > Growling Grass Frog > Small Scurf-pea > Australian Bittern > Striped Legless Lizard habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area to protect Natural Temperate Grassland within the growth corridors > Establishes a small conservation area within an area of greatest contribution to persistence for Matted Flax-lily and Golden Sun Moth > Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations > Contributes to a network of conservation areas that includes a diversity of wetland areas managed for migratory species
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: Biosis Research (2012); Biosis Research (2011); DSE (2009)

Figure 39: Conservation area 23, Hume Freeway, Kalkallo

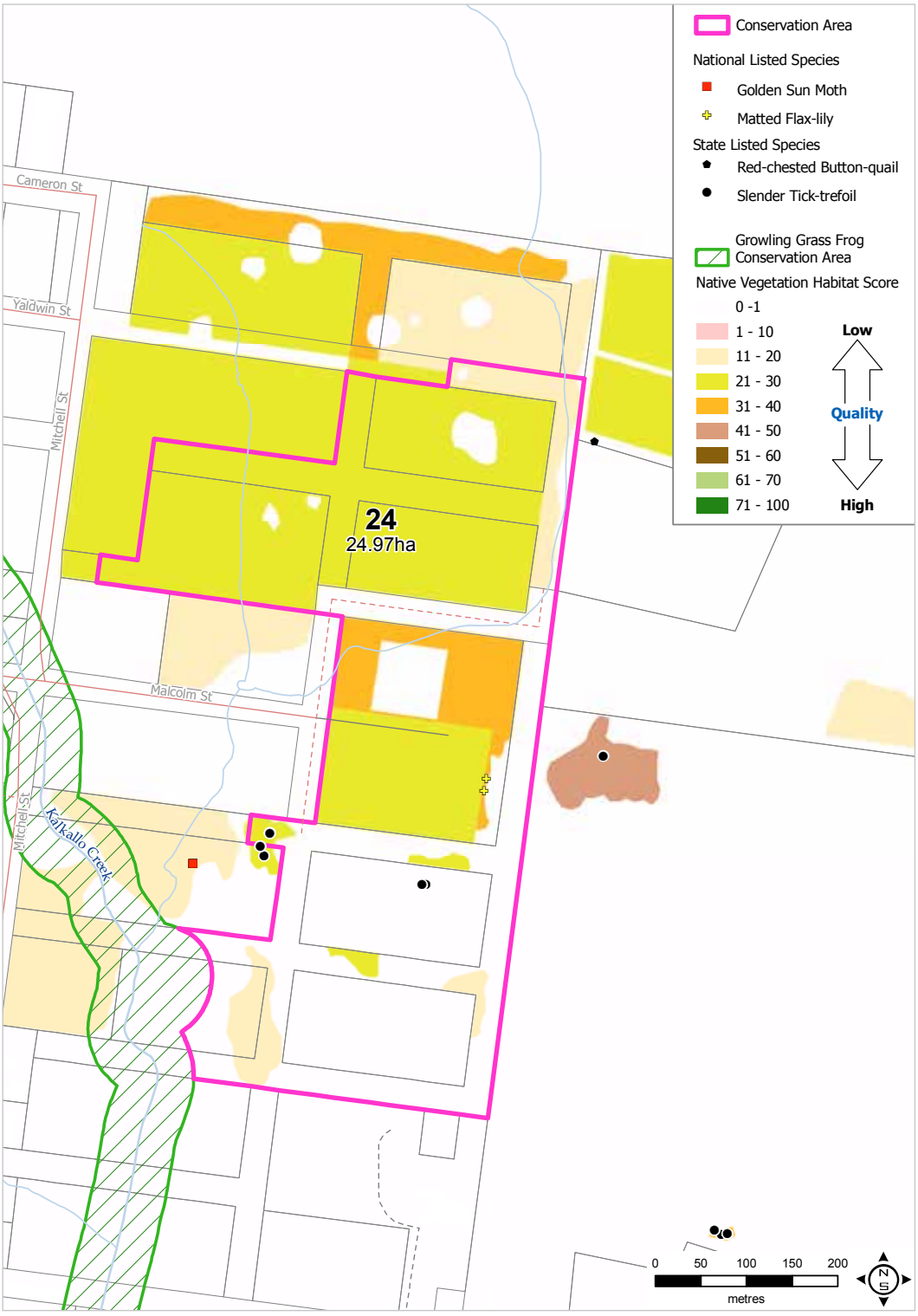


Conservation area 24, Northern Growth Corridor: Kalkallo Common Grassland and Cemetery, Kalkallo

Total area and boundary	> 24.97 hectares > Boundary is shown in Figure 40
Management category	> Existing public land
Key rationale for protection of area	> Protects high quality native grassland that contains a range of biodiversity values of national significance within a practically manageable area, on existing Crown land
Biodiversity values of national significance	> High quality Natural Temperate Grassland > Matted Flax-lily population within high quality habitat > Habitat for Striped Legless Lizard
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Matted Flax-lily > Purple Blown-grass > Plains Yam-daisy > Striped Legless Lizard habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Establishes a small conservation area within an area of greatest contribution to persistence for Matted Flax-lily
Further actions	> Protect conservation area through the following actions: – prepare conservation management plan and ensure planning provisions for implementation and funding are appropriate in place (currently zoned as Public Conservation and Resource Zone) – establish management agreements with land managers where these do not currently exist to manage identified values Note: The conservation area includes the road reserve between Kalkallo Common and the Cemetery. The road reserve is able to be developed and used as a road if necessary. The remaining part of the conservation area must be protected for conservation

Reference: Hume City Council (2010); SMEC (2011a)

Figure 40: Conservation area 24, Kalkallo Common Grassland, Kalkallo

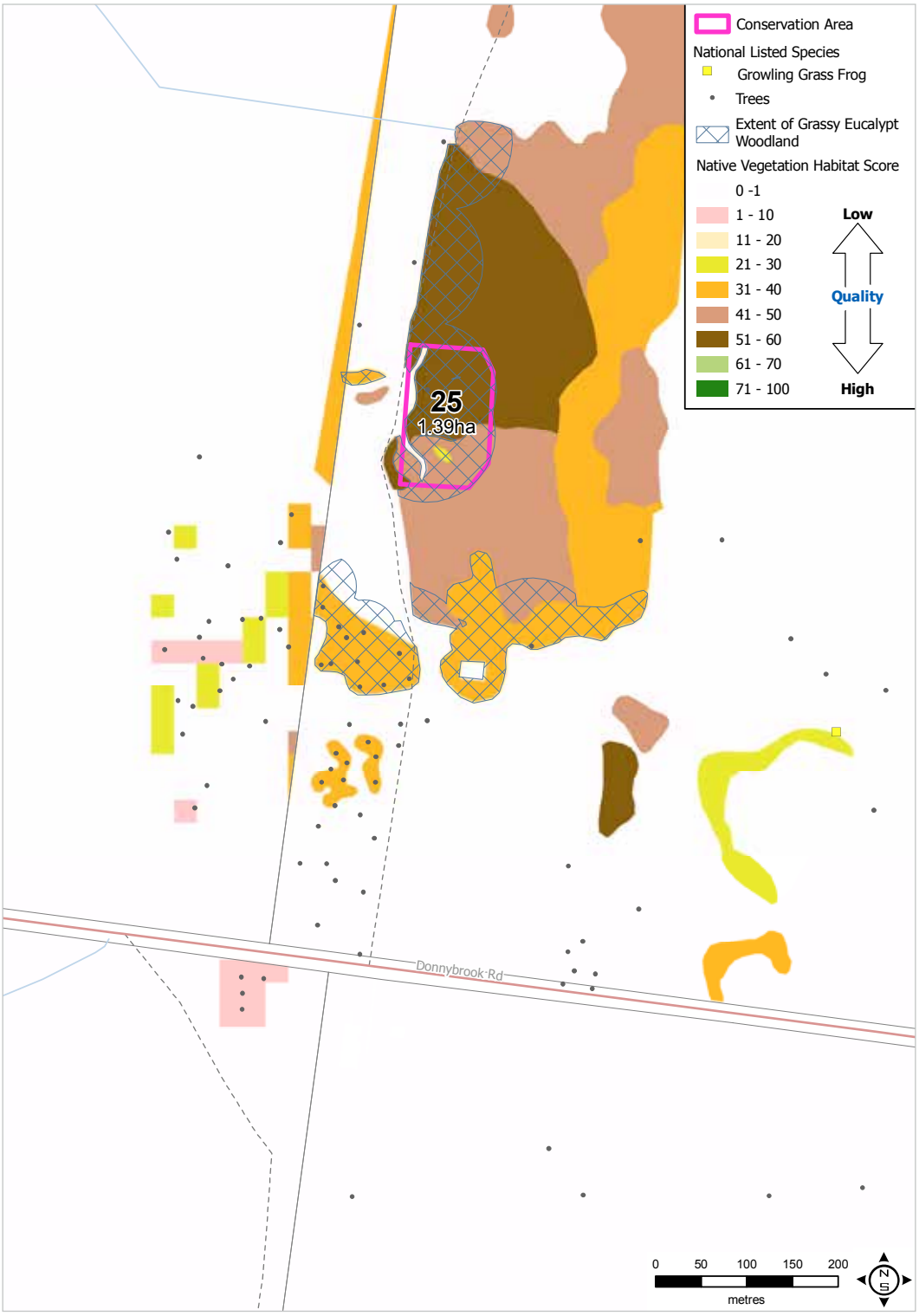


Conservation area 25, Northern Growth Corridor: Grassy Eucalypt Woodland Site, Donnybrook

Total area and boundary	> 1.39 hectares > Boundary is shown in Figure 41
Management category	> Nature conservation
Key rationale for protection of area	> Protects Grassy Eucalypt Woodland
Biodiversity values of national significance	> Grassy Eucalypt Woodland
Biodiversity values of state significance	> Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: see Appendix 3; Ecology & Heritage Partners reports in submission no. 276

Figure 41: Conservation area 25, Grassy Eucalypt Woodland Site, Donnybrook

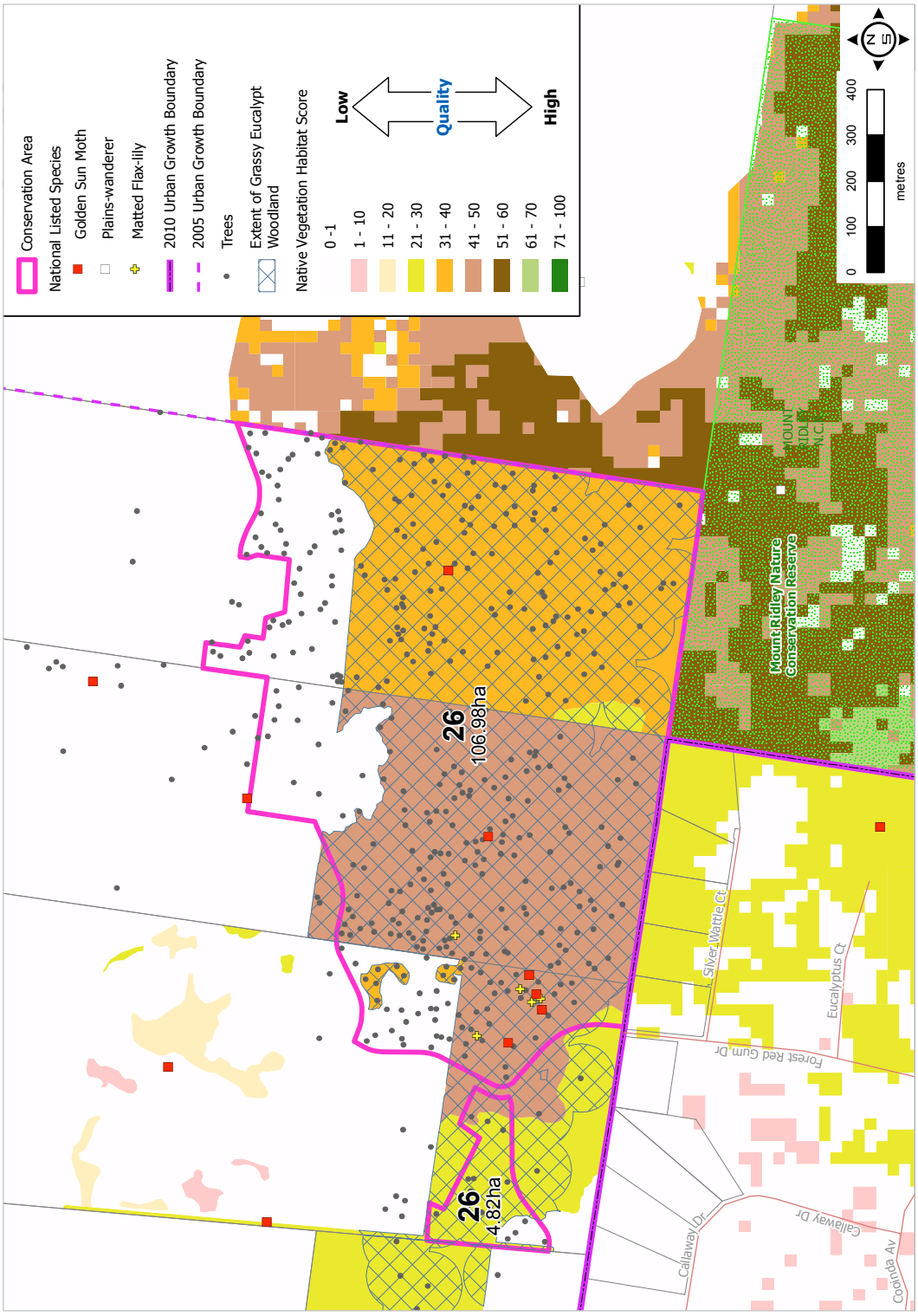


Conservation area 26, Northern Growth Corridor: Mt Ridley West, Mickleham

Total area and boundary	> 111.79 hectares > Boundary is shown in Figure 42
Management category	> Nature conservation
Key rationale for protection of area	> Protects high quality Grassy Eucalypt Woodland within a practically manageable area
Biodiversity values of national significance	> Grassy Eucalypt Woodland > Golden Sun Moth population within high persistence habitat > Matted Flax-lily population within high quality habitat
Biodiversity values of state significance	> Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04 > Golden Sun Moth > Matted Flax-lily > Basalt Tussock-grass
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary > Establishes a small conservation area within an area of greatest contribution to persistence for Matted Flax-lily and Golden Sun Moth > Contributes to a network of conservation areas that includes a diversity of wetland areas managed for migratory species
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: Biosis Research (2011); DSE (2009); SMEC (2011c)

Figure 42: Conservation area 26, Mt Ridley West, Mickleham

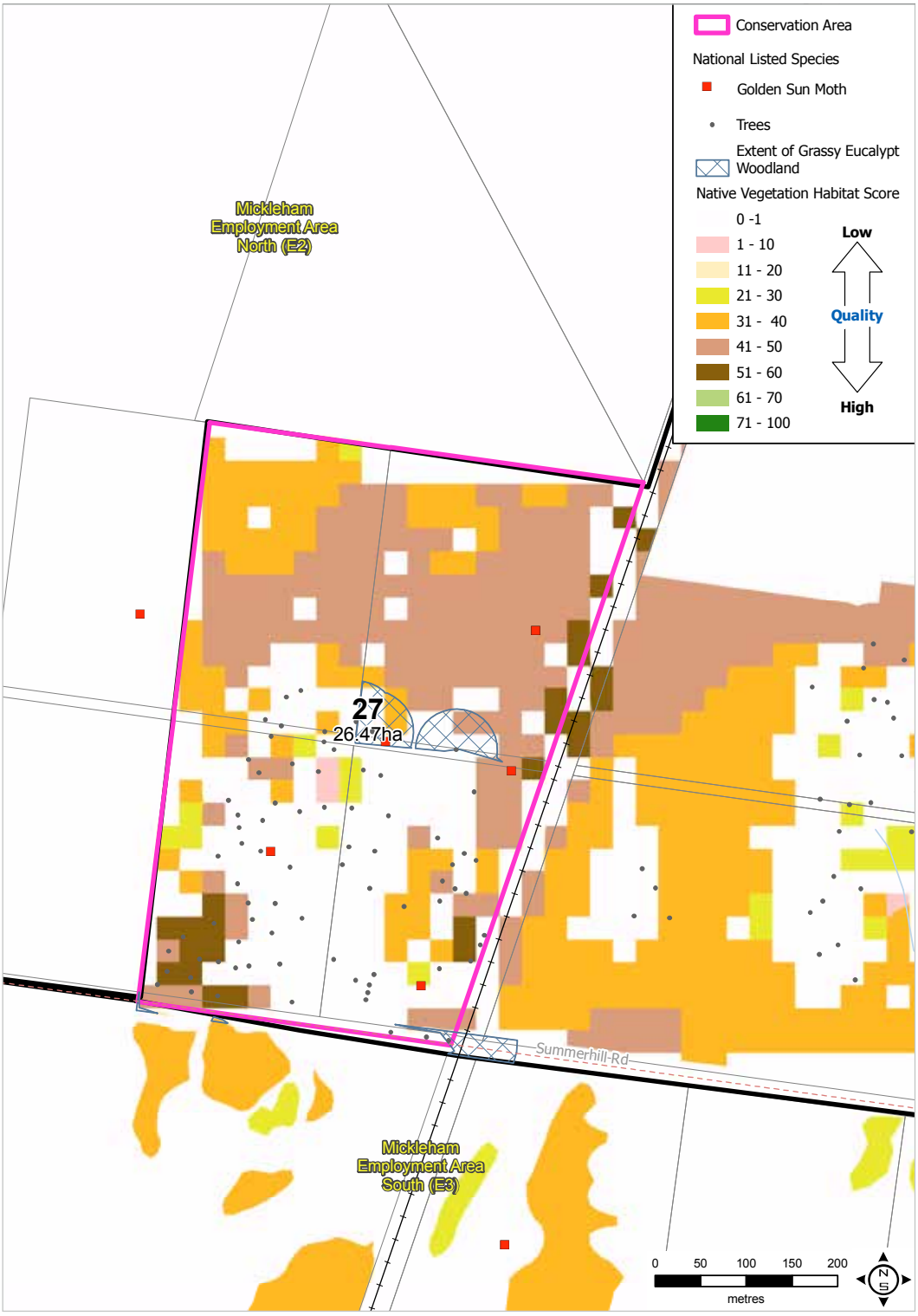


Conservation area 27, Northern Growth Corridor: Summerhill Road (West), Wollert

Total area and boundary	> 26.47 hectares > Boundary is shown in Figure 43
Management category	> Nature conservation
Key rationale for protection of area	> Protects area of Grassy Eucalypt Woodland within a practically manageable area
Biodiversity values of national significance	> Grassy Eucalypt Woodland > Golden Sun Moth population within high persistence habitat > Growling Grass Frog population within high quality habitat > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04 > Growling Grass Frog > Striped Legless Lizard habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary > Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations > Contributes to a network of conservation areas that includes a diversity of wetland areas managed for migratory species > Establishes a small conservation area within an area of greatest contribution to persistence for Golden Sun Moth
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: DSE (2012a); DSE (2011c); Ecology Partners (2011b); Ecology & Heritage Partners report in submission. no GCP 318

Figure 43: Conservation area 27, Summerhill Road (West), Wollert

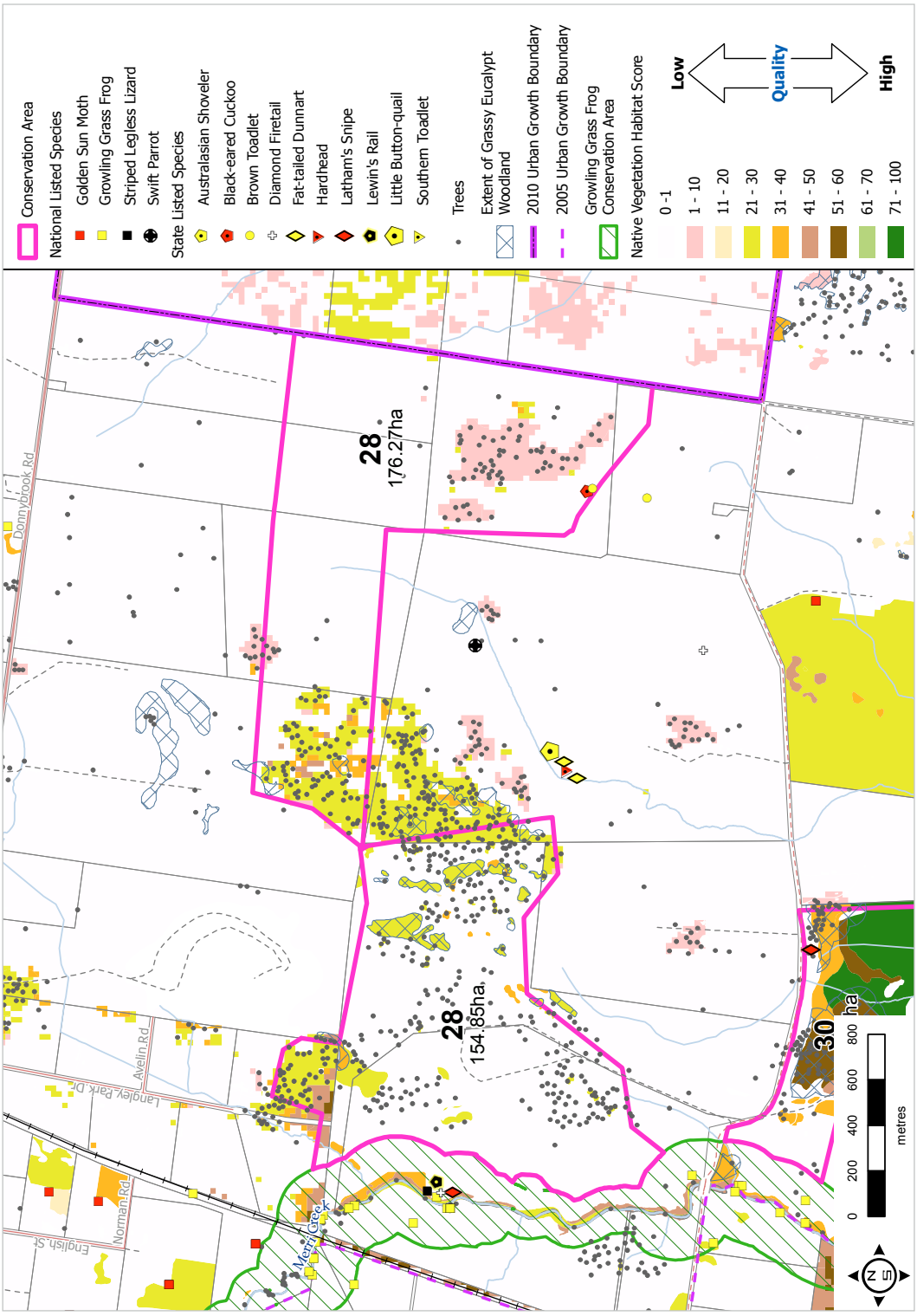


Conservation area 28, Northern Growth Corridor: Summerhill Road (East), Wollert

Total area and boundary	> 154.85 hectares (western section) + 176.27 hectares (eastern section) > Boundary is shown in Figure 44 Note: Further planning work in this area, including in relation to land to the south of the conservation area currently zoned as Special Use Zone (potential extractive industry), is likely to require the conservation area boundary to be reviewed at the precinct structure planning stage
Management category	> Open space
Key rationale for protection of area	> Protects area of Grassy Eucalypt Woodland within a practically manageable area
Biodiversity values of national significance	> Grassy Eucalypt Woodland > Natural Temperate Grassland > Habitat for Striped Legless Lizard (population not confirmed)
Biodiversity values of state significance	> Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04 > Western (Basalt) Plains Grasslands Community > Striped Legless Lizard habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary > Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations > Contributes to a network of conservation areas that includes a diversity of wetland areas managed for migratory species
Further actions	> Review conservation area boundary at the precinct structure planning stage if necessary. Any revised conservation area: – must protect Grassy Eucalypt Woodland as mapped in the BCS (see Figures 19 and 20) and/or as defined under the *Environment Protection and Biodiversity Conservation Act 1999* – must protect populations and high quality habitat of any other matters of national environmental significance – must be to the satisfaction of DEPI > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: DSE (2012a); DSE (2011c); Ecology Partners (2011b); Ecology & Heritage Partners report in submission. no GCP 318

Figure 44: Conservation area 28, Summerhill Road (East), Wollert

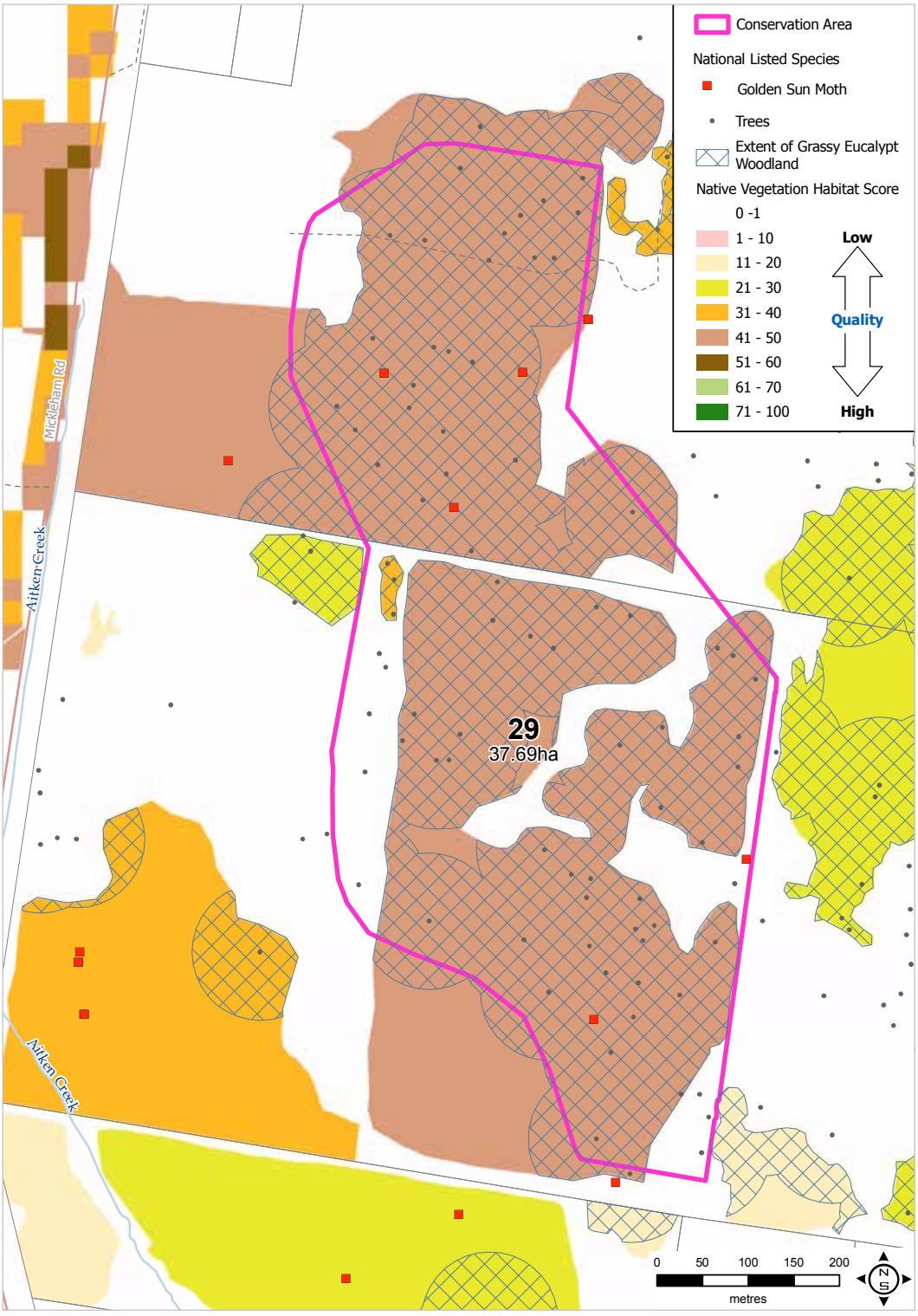


Conservation area 29, Northern Growth Corridor: Mickleham Road, Mickleham

Total area and boundary	> 37.69 hectares > Boundary is shown in Figure 45
Management category	> Nature conservation
Key rationale for protection of area	> Protects Grassy Eucalypt Woodland within a practically manageable area
Biodiversity values of national significance	> Grassy Eucalypt Woodland > Golden Sun Moth population within high persistence habitat
Biodiversity values of state significance	> Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04 > Golden Sun Moth
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary > Establishes a small conservation area within an area of greatest contribution to persistence for Golden Sun Moth
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: Biosis Research (2011)

Figure 45: Conservation area 29, Mickleham Road, Mickleham

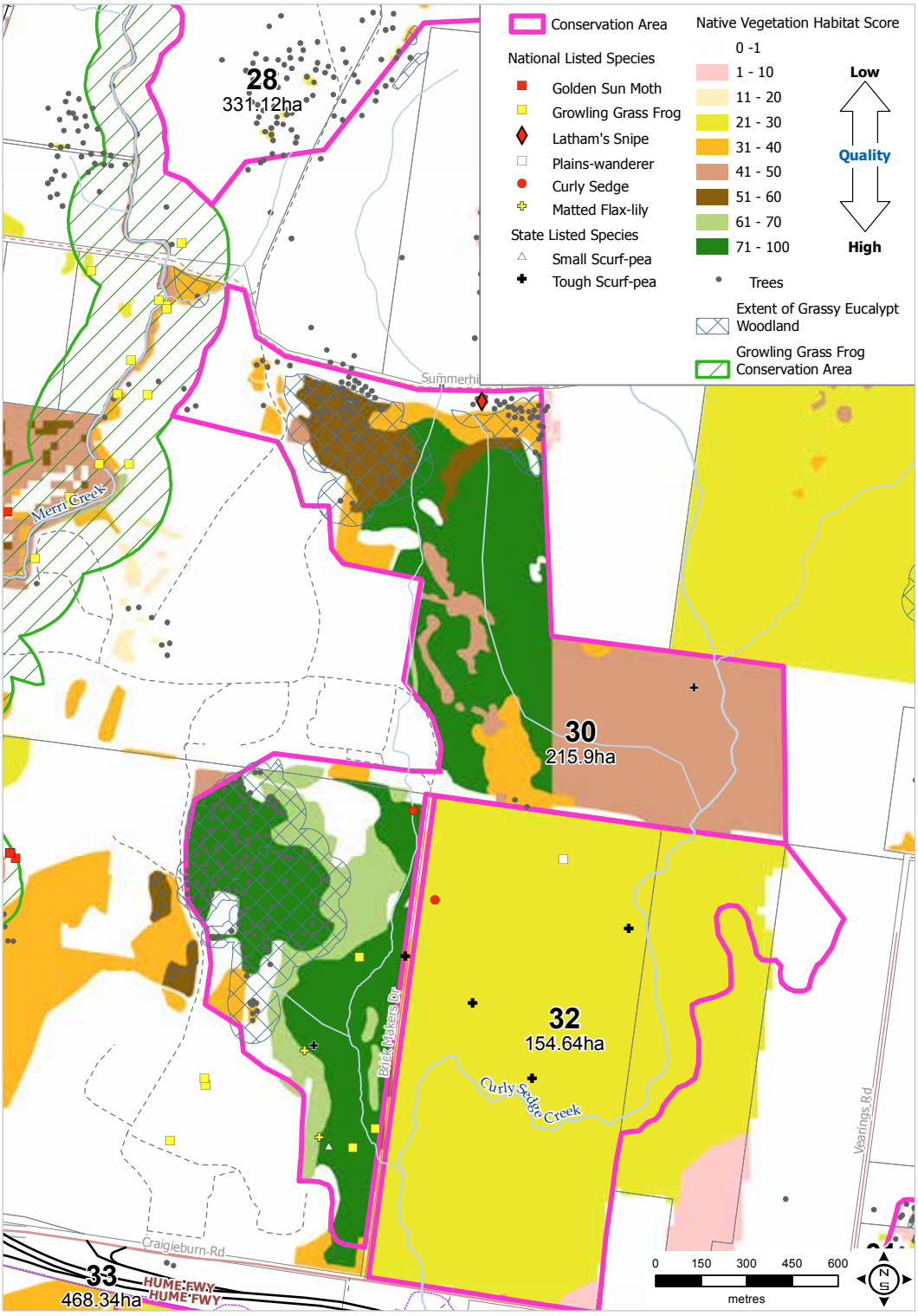


Conservation area 30, Northern Growth Corridor: Austral Bricks Site, Wollert

Total area and boundary	> 215.90 hectares > Boundary is shown in Figure 46
Management category	> Nature conservation
Key rationale for protection of area	> Protects Grassy Eucalypt Woodland and a range of other biodiversity values of national significance within a practically manageable area
Biodiversity values of national significance	> Grassy Eucalypt Woodland > Natural Temperate Grassland > Curly Sedge population within high quality habitat > Matted Flax-lily population within high quality habitat > Striped Legless Lizard population within high quality habitat > Growling Grass Frog population within high quality habitat > High persistence habitat for Golden Sun Moth (extent of population not confirmed) > Habitat for Latham's Snipe (abundance unknown)
Biodiversity values of state significance	> Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04 > Western (Basalt) Plains Grasslands Community > Plains Grassy Wetland > Curly Sedge > Matted Flax-lily > Striped Legless Lizard > Growling Grass Frog > Latham's Snipe habitat
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Contributes to the target to protect 80 per cent of all Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary > Contributes to ensuring no substantial negative change to known populations of Curly Sedge > Contributes to ensuring sustainable populations of Striped Legless Lizard > Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations
Further actions	> Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available Note: Under the works approval, Austral is required to prepare an environmental management plan to protect and manage areas of biodiversity value within the site to the satisfaction of DSE

Reference: Golder Associates (2010); DSE (2011c); Golder Associates report in submission no. GCP 355

Figure 46: Conservation area 30, Austral Bricks Site, Wollert



Conservation area 31, Northern Growth Corridor: Craigieburn Road (East), Wollert

Total area and boundary	> 29.75 hectares > Boundary is shown in Figure 47 Note: Further planning work in this area may require the conservation area boundary to be reviewed at the precinct structure planning stage
Management category	> Nature conservation
Key rationale for protection of area	> Protects Grassy Eucalypt Woodland within a practically manageable area
Biodiversity values of national significance	> Grassy Eucalypt Woodland
Biodiversity values of state significance	> Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to the target to protect 80 per cent of all Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary
Further actions	> Review conservation area boundary at the precinct structure planning stage if necessary. Any revised conservation area: – should generally be similar to that shown in the BCS – must protect Grassy Eucalypt Woodland as mapped in the BCS (see Figures 19 and 20) and/or as defined under the *Environment Protection and Biodiversity Conservation Act 1999* – must protect populations and high quality habitat of any other matters of national environmental significance – must be to the satisfaction of DEPI > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

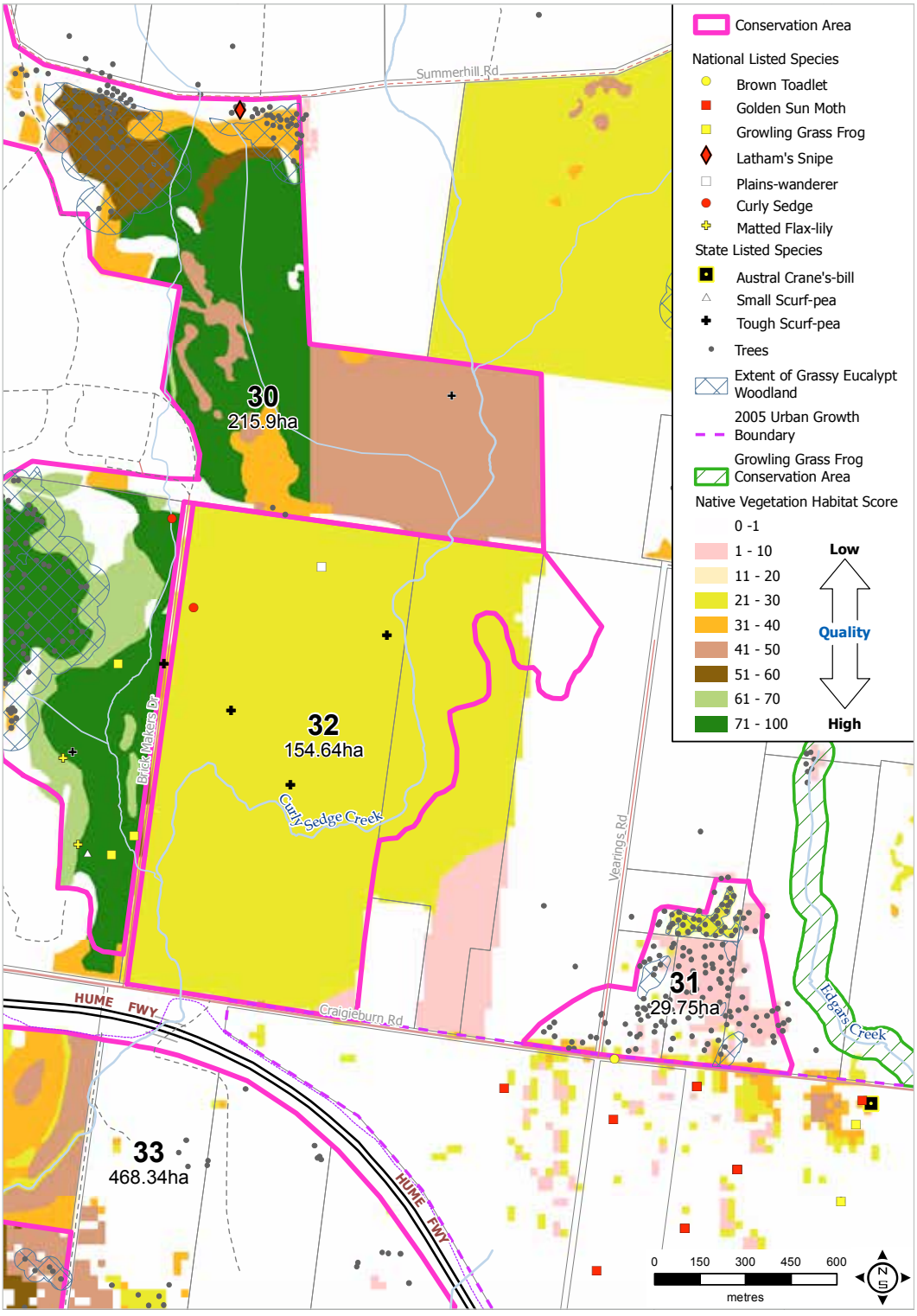
Reference: See Appendix 3; DSE (2011c)

Conservation area 32, Northern Growth Corridor: Craigieburn Road (West), Wollert

Total area and boundary	> 154.64 hectares > Boundary is shown in Figure 47 Note: Further planning work in this area may require the conservation area boundary to be reviewed at the precinct structure planning stage
Management category	> Nature conservation
Key rationale for protection of area	> Protects native grassland that contains a range of biodiversity values of national significance within a practically manageable area
Biodiversity values of national significance	> Natural Temperate Grassland > Curly Sedge population within high quality habitat > Striped Legless Lizard habitaat > Matted Flax-lily population (not confirmed) within high quality habitat > Habitat for Plains-wanderer
Biodiversity values of state significance	> Western (Basalt) Plains Grasslands Community > Curly Sedge > Striped Legless Lizard habitat > Plains-wanderer habitat > Tough Scurf-pea
Contribution of area to achievement of conservation outcomes in the program report	> Establishes a small conservation area within the growth corridors to protect Natural Temperate Grassland > Contributes to ensuring sustainable populations of Striped Legless Lizard > Contributes to ensuring no substantial negative change to known populations of Curly Sedge
Further actions	> Review conservation area boundary at the precinct structure planning stage if necessary. Any revised conservation area: – should generally be similar to that shown in the BCS – must protect populations and high quality habitat of matters of national environmental significance – must be to the satisfaction of DEPI > Protect conservation area through the following actions: > apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown where an appropriate public land manager is available

Reference: DSE (2011c)

Figure 47: Conservation area 31, Craigieburn Road (East), Wollert; Conservation area 32, Craigieburn Road (West), Wollert

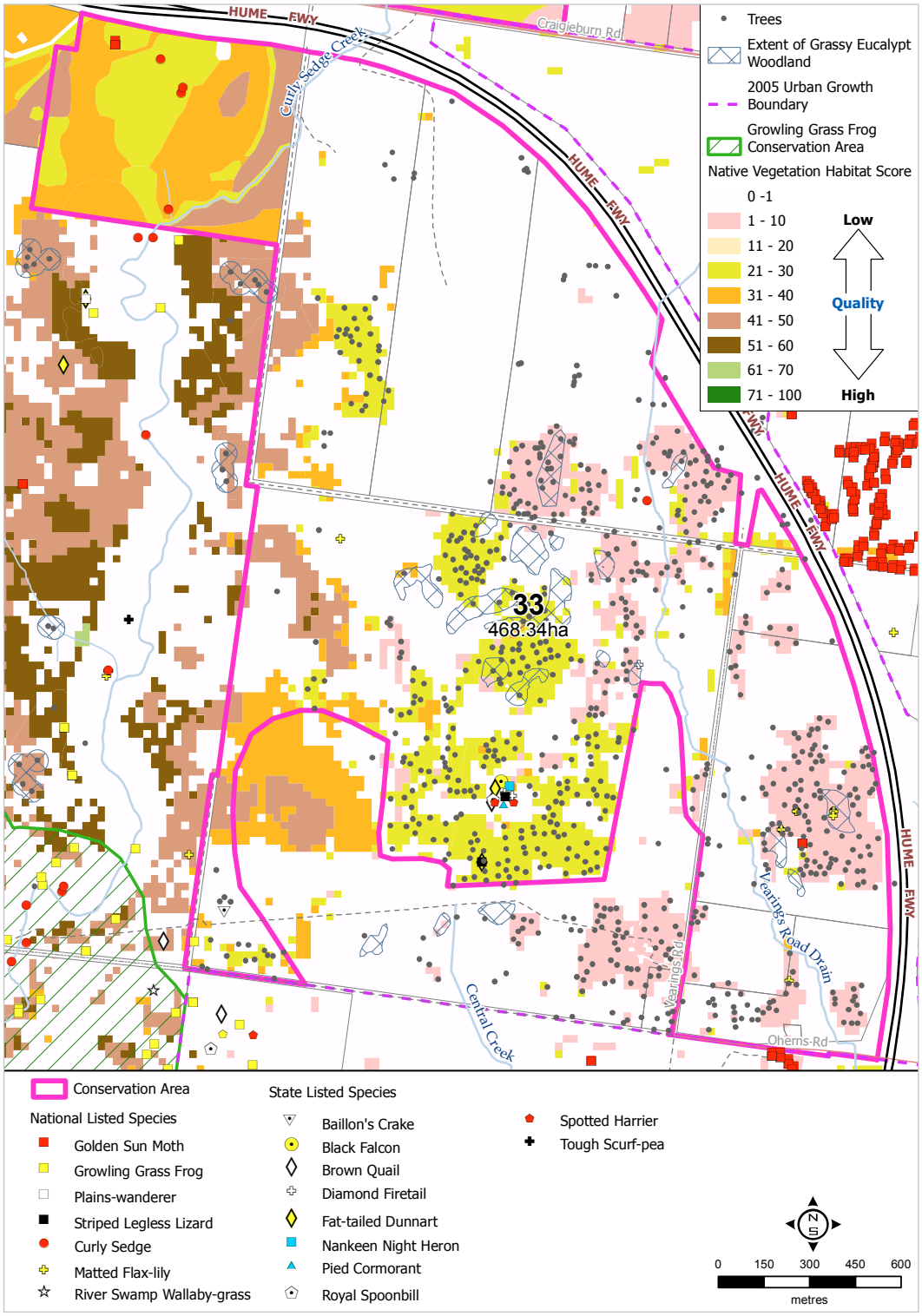


Conservation area 33, Northern Growth Corridor: O'Hearns Road, Epping

Total area and boundary	> 468.34 hectares > Boundary is shown in Figure 48 Note: Further planning work in this area may require the conservation area boundary to be reviewed at the precinct structure planning stage
Management category	> Nature conservation (part) > Open space (majority of site)
Key rationale for protection of area	> Protects Grassy Eucalypt Woodland and other biodiversity values of national significance within a practically manageable area > Provides a strategic habitat link between the Merri Creek and the proposed Grassy Eucalypt Woodland reserve to the east of Melbourne
Biodiversity values of national significance	> Grassy Eucalypt Woodland > Natural Temperate Grassland > Golden Sun Moth population within high persistence habitat > Striped Legless Lizard population within high quality habitat > Matted Flax-lily within high quality habitat > Curly Sedge within high quality habitat
Biodiversity values of state significance	> Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04 > Stony Knoll Shrubland > Golden Sun Moth > Striped Legless Lizard > Matted Flax-lily > Curly Sedge
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to the target to protect 80 per cent of Grassy Eucalypt Woodland within the 2010 Urban Growth Boundary > Establishes a conservation area for Matted Flax-lily > Contributes to ensuring sustainable populations of Striped Legless Lizard > Contributes to ensuring no substantial negative change to known populations of Curly Sedge
Further actions	> Review conservation area boundary at the precinct structure planning stage if necessary. Any revised conservation area: – must protect Grassy Eucalypt Woodland as mapped in the BCS (see Figures 19 and 20) and/or as defined under the *Environment Protection and Biodiversity Conservation Act 1999* – must protect populations and high quality habitat of any other matters of national environmental significance – must protect all mature trees – must maintain a continuous buffer that precludes development between the Craigieburn Grasslands Reserve and stands of trees to the east – must be to the satisfaction of DEPI > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* outside the Merri Creek Parklands Metropolitan Park and/or transfer land to Crown where an appropriate public land manager is available

Reference: Biosis Research (2011); DSE (2011c); DSE (2009); Ecology Partners (2011b)

Figure 48: Conservation area 33, O'Hearns Road, Epping



Conservation area 34, Northern Growth Corridor: Growling Grass Frog Corridors

Total area and boundary	> 1009.74 hectares > Boundaries are shown in Figures 49 a, b and c. Note: The boundaries shown in Figure 49 and the Sub-regional Species Strategy for the Growling Grass Frog may be varied slightly if necessary at the precinct structure planning stage to account for site-specific issues
Management category	> Growling Grass Frog conservation, floodplain and open space
Key rationale for protection of area	> Protects important populations of Growling Grass Frog and ensures connectivity between populations within the northern growth corridor
Biodiversity values of national significance	> Growling Grass Frog within high quality habitat
Biodiversity values of state significance	> Growling Grass Frog
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations
Further actions	> Vary Growling Grass Frog corridor boundary slightly if necessary to account for site-specific issues at the precinct structure planning stage. Any variation: – must not reduce the total area of the Growling Grass Frog corridor within the relevant precinct – must not impact negatively on Growling Grass Frog populations – must be demonstrated to have no negative effect on the functioning or management objectives of the corridor for the Growling Grass Frog – must be to the satisfaction of DEPI – must be documented in the conservation management plan > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land to Crown to be managed by Melbourne Water

Reference: Biosis Research (2012); DSE (2012a); DSE (2011c); Ecology Partners (2011a)

Figure 49 a: Growling Grass Frog Corridors, Northern Growth Corridor

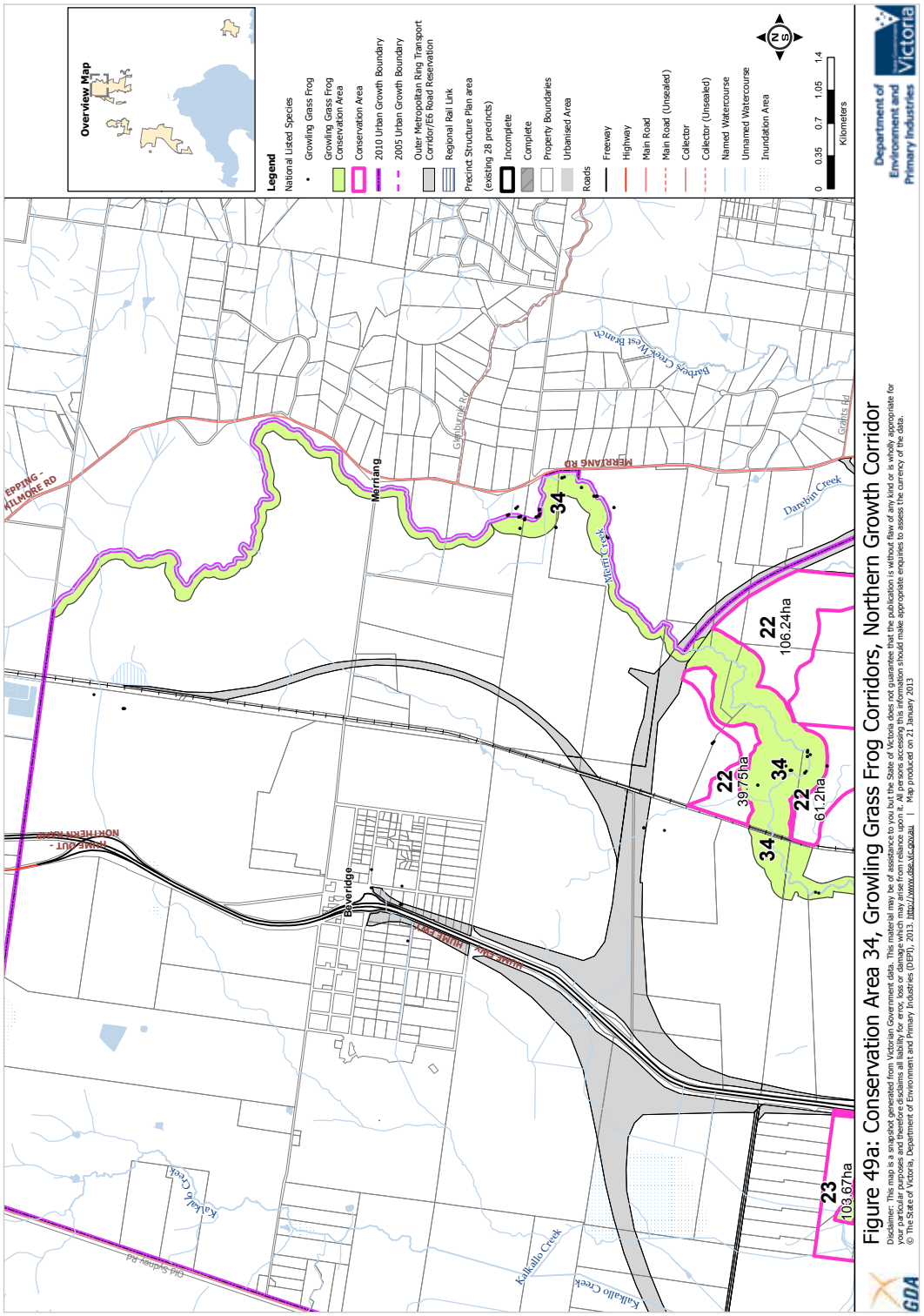


Figure 49 b: Growling Grass Frog Corridors, Northern Growth Corridor

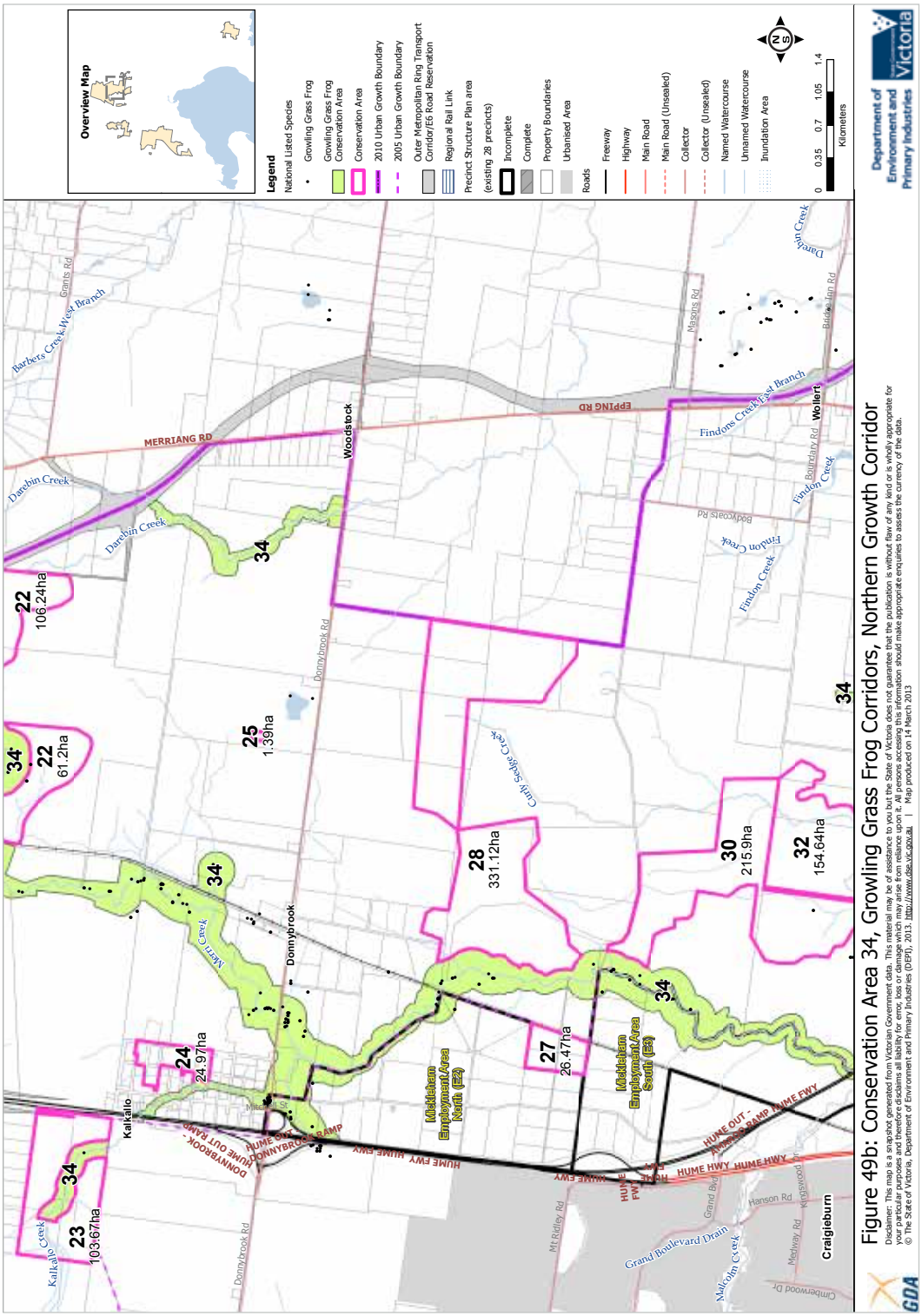
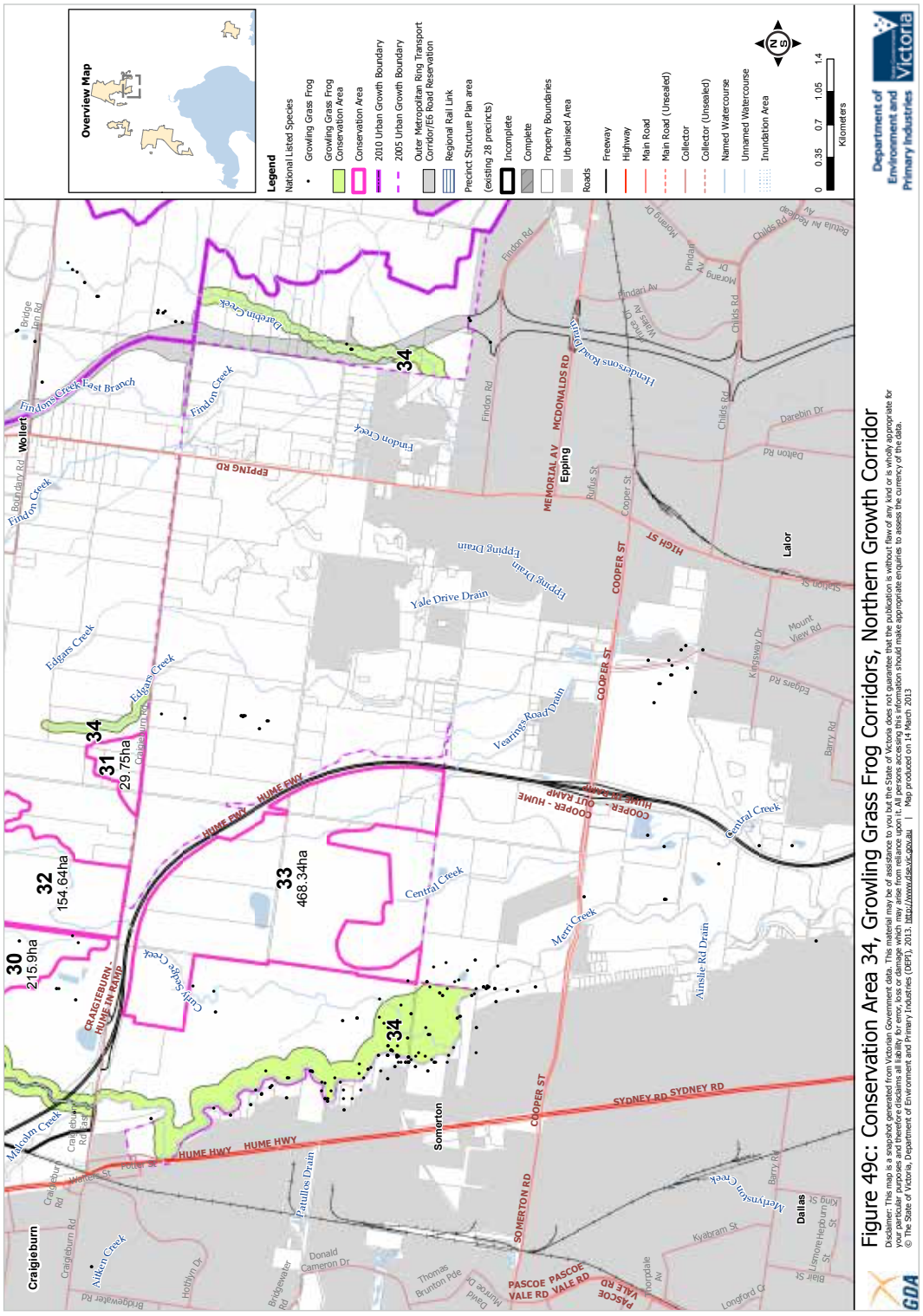


Figure 49 c: Growling Grass Frog Corridors, Northern Growth Corridor



5.6.2 Other areas of biodiversity significance, northern growth corridor

The northern growth corridor contains a Melbourne Water retarding basin that is not classified as a conservation area but contains some areas of biodiversity significance and has potential to deliver significant outcomes for biodiversity (particularly Growling Grass Frog and potentially migratory waterbirds) in a way that is compatible with the overall use of the land (see Biosis Research, 2012; DEPI, 2013a; DSE, 2011b; Ecology Partners, 2011a).

Melbourne Water will firstly identify the boundary of the land required for flood mitigation and treatment purposes and will determine the potential location of constructed wetlands and existing habitat to be managed for Growling Grass Frog in conjunction with DEPI. This will take into account:

- Conservation outcomes for migratory species and Growling Grass Frog as outlined in the BCS
- Any relevant requirements of the Sub-regional Species Strategy for the Growling Grass Frog
- Relevant precinct structure planning issues.

Conservation management plan(s) will be prepared for the land set aside for conservation management. Subject to funding, Melbourne Water will manage these areas of Growling Grass Frog habitat in conjunction with management of the retarding basin. These areas will be managed as for other Growling Grass Frog corridors. Fees collected from developers to mitigate impacts on Growling Grass Frog habitat will be available to fund specific management actions in these areas (see section 2.4).

5.7 Conservation areas, south-eastern growth corridor

The south-eastern (Casey and Cardinia) growth corridor has significant biodiversity values associated with its major creek lines of Deep Creek, Cardinia Creek and Clyde Creek. Habitat for Growling Grass Frog occurs along creek lines and habitat for Southern Brown Bandicoot occurs in patches of native and non-native vegetation throughout the growth corridor. Threatened flora species are scattered throughout the growth corridor, but particularly along the southern end of the railway line and along Manks Road.

5.7.1 Conservation areas, south-eastern growth corridor

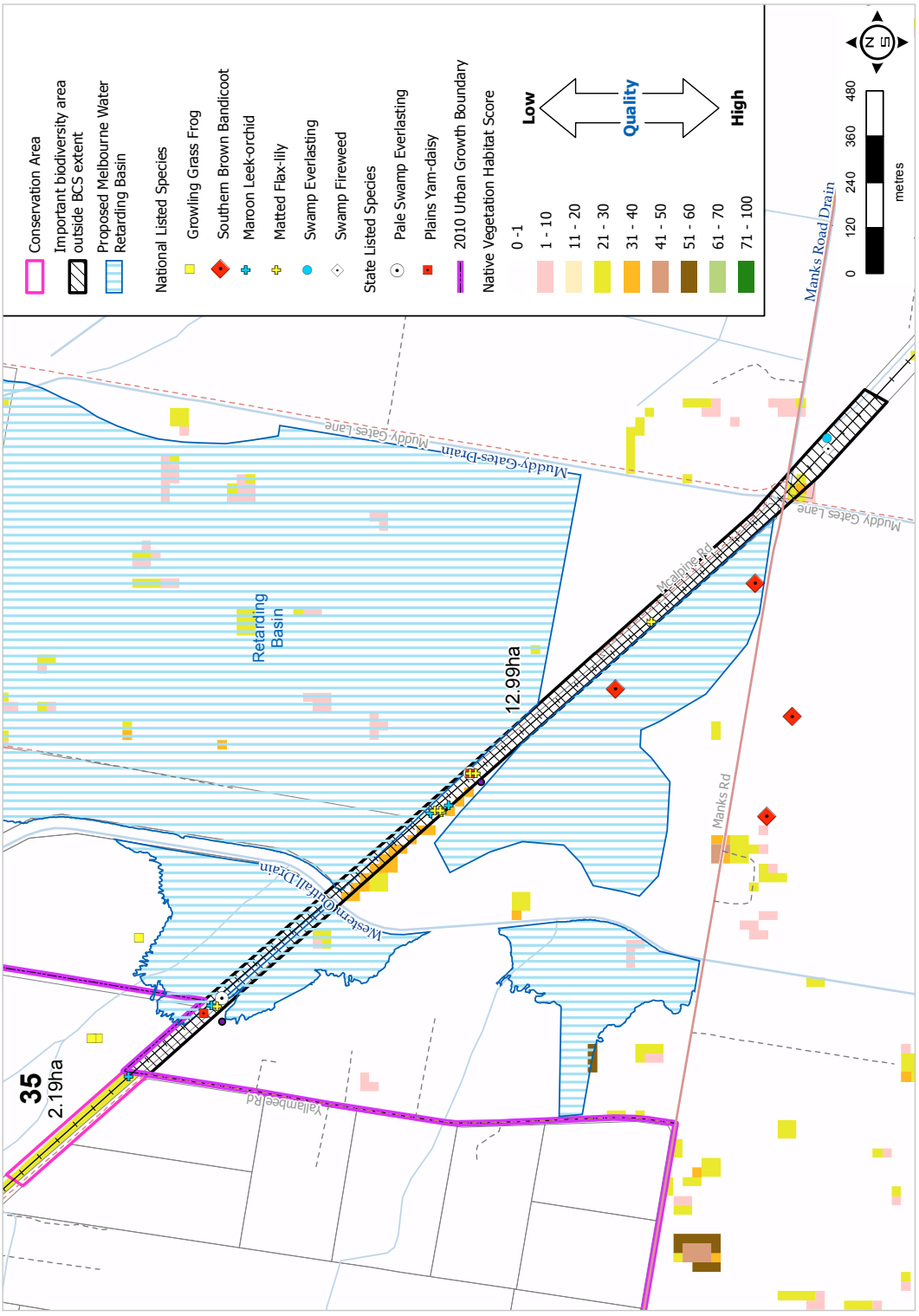
Conservation area 35, South-Eastern Growth Corridor: Clyde-Tooradin Rail Reserve, Clyde

Total area and boundary	> 2.19 hectares > Approximate boundary is shown in Figure 50. Note: The BCS only applies to land within the Urban Growth Boundary and as such, the conservation area excludes the rail reserve land of high biodiversity value that adjoins the conservation area to the south-east (see Figure 50). The conservation area also excludes the actual rail formation (including embankments, ballast and track), but includes the swales at the base of the embankment to the outer extent of the rail reserve (fence), within the linear extent shown in Figure 50. Further planning work in this area may require the conservation area boundary to be reviewed (see below).
Management category	> Existing public land
Key rationale for protection of area	> Protects high quality native grassland that contains a significant population of Maroon Leek-orchid within a practically manageable area. The conservation area adjoins rail reserve land of high biodiversity value containing Swamp Everlasting and other matters of national and state significance

Biodiversity values of national significance	> Maroon Leek-orchid population > Habitat for Swamp Everlasting > Habitat for Matted Flax-lily > Habitat for Southern Brown Bandicoot
Biodiversity values of state significance	> Plains Grassland (South Gippsland) Community > Herb-rich Plains Grassy Wetland > Maroon Leek-orchid > Swamp Everlasting habitat > Matted Flax-lily habitat > Southern Brown Bandicoot habitat > Plains Yam-daisy habitat
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to ensuring no substantial negative change to known populations of Maroon Leek-orchid
Further actions	> Undertake flora survey of the rail reserve > Review conservation area boundary at the precinct structure planning stage (or sooner) if necessary to better account for shared trail requirements, as described below. Any revised conservation area: – must be determined in consideration of the flora surveys – must protect populations and high quality habitat of matters of national environmental significance in the long-term (including management considerations) > Prepare conservation management plan as part of precinct structure planning process in consultation with Department of Transport and VicTrack and ensure implementation and funding mechanisms are identified > Establish management agreements with public land manager under section 69 of the *Conservation Forests and Lands Act 1987, or under the Flora and Fauna Guarantee Act 1988* to protect and manage conservation area. This may include provision of access to DEPI for management purposes > Department of Transport to establish appropriate plans and processes to the satisfaction of DEPI to ensure impacts of future maintenance or construction works (e.g. reopening of rail line) are minimised. Should any impacts to matters of national environmental significance in the conservation area be considered likely by DEPI as a result of such works, the relevant documentation including proposed mitigation measures must be provided to the Commonwealth Government for advice Note: There are currently no proposals to restore the rail line beyond Cranbourne, including this section. The rail reserve is in VicTrack ownership and is currently being managed for a shared walking and horse-riding path (currently under construction at Koo Wee Rup) without precluding the restoration of the railway, in part or in whole, if and when warranted. Not all of the 34 metre rail reserve width will be required for permanent works. It is estimated that at least 50 per cent of the reserve width can be left undisturbed (other than to site a signal and/or advisory sign) under the highest impact scenario (track duplication)

Reference: Biosis Research (2011); Victorian Government (2009)

Figure 50: Conservation area 35, Clyde-Tooradin Rail Reserve, Clyde

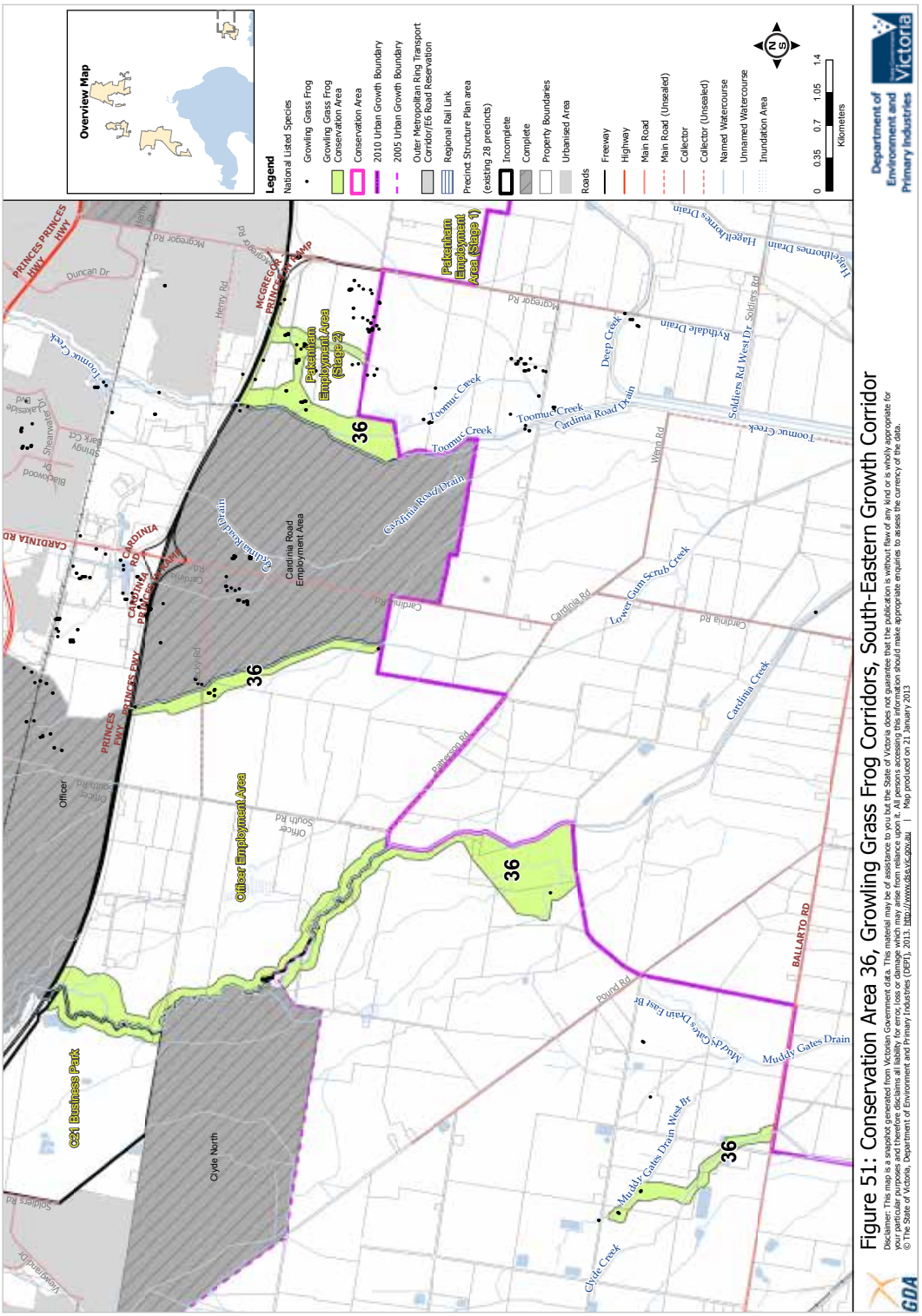


Conservation area 36, South-Eastern Growth Corridor: Growling Grass Frog Corridors

Total area and boundary	> 329.80 hectares > Boundaries are shown in Figure 51 Note: The boundaries shown in Figure 51 and the Sub-regional Species Strategy for the Growling Grass Frog may be varied slightly if necessary at the precinct structure planning stage to account for site-specific issues. Any variations must not reduce the overall area of the Growling Grass Frog conservation area within that precinct. Any variation must be approved by DEPI.
Management category	> Growling Grass Frog conservation, floodplain and open space (part only) > Regional park (Cranbourne Regional Park)
Key rationale for protection of area	> Protects important populations of Growling Grass Frog and ensures connectivity between populations within the northern growth corridor
Biodiversity values of national significance	> Growling Grass Frog populations within high quality habitat > Australian Grayling population within high quality habitat at Cardinia Creek > Dwarf Galaxias population within high quality habitat at Cardinia and Clyde Creeks
Biodiversity values of state significance	> Growling Grass Frog > Australian Grayling > Dwarf Galaxias
Contribution of area to achievement of conservation outcomes in the program report	> Contributes to ensuring functioning sustainable populations of Growling Grass Frog with connectivity between populations > Promotes the persistence and recovery of Australian Grayling populations at Cardinia Creek
Further actions	> Vary Growling Grass Frog corridor boundary slightly if necessary to account for site-specific issues at the precinct structure planning stage. Any variation: – must not reduce the total area of the Growling Grass Frog corridor within the relevant precinct – must not impact negatively on Growling Grass Frog populations – must be demonstrated to have no negative effect on the functioning or management objectives of the corridor for the Growling Grass Frog – must be to the satisfaction of DEPI – must be documented in the conservation management plan > Finalise boundaries, and confirm mechanisms for the acquisition of land to be included within Cranbourne Regional Park, which may incorporate the majority of the Growling Grass Frog habitat and Australian Grayling habitat at Cardinia Creek > Establish management area of 100 m either side of Cardinia Creek within Growling Grass Frog corridor to improve riparian vegetation for Australian Grayling > For precincts adjacent to Cardinia Creek, GAA to prepare conservation management plans and Integrated Water Management Plans to protect and manage Australian Grayling and Dwarf Galaxias habitat and water quality > Protect conservation area through the following actions: – apply appropriate planning provisions to the land depending on the circumstances (may include a Rural Conservation Zone, an Environmental Significance Overlay or another statutory mechanism) to be determined by the State Minister for Planning – prepare conservation management plan(s) and ensure planning provisions for implementation and funding are in place – establish management agreements with landowners under section 69 of the *Conservation Forests and Lands Act 1987* and/or transfer land comprising Australian Grayling or Dwarf Galaxias habitat (and buffer) to Crown to be managed by Council or Melbourne Water

Reference: Biosis Research (2012); Biosis Research (2011); DSE (2012a); DSE (2011c); Ecology Partners (2011a); State Government (2009)

Figure 51: Growling Grass Frog Corridors, South-Eastern Growth Corridor



5.7.2 Other areas of biodiversity significance, south-eastern growth corridor

A Melbourne Water retarding basin is proposed immediately south-east of the growth corridor. Although this is not classified as a conservation area it has potential to deliver significant outcomes for biodiversity. These include:

- Protection of Western Port Ramsar site through improvement of water quality
- Creation of Growling Grass Frog habitat
- Enhancement and creation of habitat for migratory waterbirds
- Potential creation of Dwarf Galaxias habitat
- Potential enhancement and creation of Southern Brown Bandicoot habitat.

Melbourne Water has determined the general location of the retarding basin as shown in Figures 6 and 50. The land currently is in private ownership. Melbourne Water will identify the boundary of the land required for the re-establishment of the former wetlands and may establish a Public Acquisition Overlay over the land. The land covered by the Public Acquisition Overlay would be purchased and transferred to the Crown.

DEPI and Melbourne Water will undertake further work to determine the conservation objectives and design parameters for these various habitat requirements in the context of the primary purpose which is to manage stormwater and flood events from the urban area. This will take into account:

- Conservation outcomes for migratory species, Growling Grass Frog, Western Port Ramsar site, and where appropriate, Southern Brown Bandicoot and Dwarf Galaxias, as set out in the BCS
- Any relevant requirements of the sub-regional species strategies for Growling Grass Frog, and where appropriate, Southern Brown Bandicoot.

A management plan will be prepared for the retarding basin area and will include particular requirements for conservation management. Subject to funding, Melbourne Water will manage the area to deliver the conservation objectives identified in the management plan for these various threatened species in conjunction with retarding basin management.

Fees collected from developers to mitigate impacts on threatened species habitat will be available for specific management actions for Growling Grass Frog or Southern Brown Bandicoot habitat within these areas (see section 2.4). Other species are likely to be managed as part of Melbourne Water's normal floodplain and stormwater management responsibilities.

5.7.3 Conservation areas outside the Urban Growth Boundary

The program report committed to protect 80 per cent of confirmed high persistence habitat for three species across the Victorian Volcanic Plain. DEPI will prepare a protocol for identifying and securing land for Golden Sun Moth, Spiny Rice-flower and Matted Flax-lily outside the Urban Growth Boundary. The protocol will include a process for identifying land in other bioregions containing confirmed high persistence habitat for these species where no land becomes available in the Victorian Volcanic Plain within reasonable timeframes.

Irrespective of any changes in process required by this protocol, the total amount of habitat to be protected to meet the overall targets in the BCS (as identified for each species below) will not change.

The amount required outside the Urban Growth Boundary to meet this target, over and above the Western Grassland Reserves and conservation areas within the Urban Growth Boundary is:

- Golden Sun Moth – 680 hectares (DEPI, 2013h).
- Spiny Rice Flower – 394 hectares (DEPI, 2013i).
- Matted Flax Lily – 529 hectares (DEPI, 2013i).

In some cases, where all relevant requirements can be met, it may be possible to secure and manage one piece of land that contributes to the area targets for more than one species. Within some western Victorian grasslands for example this may be possible for Golden Sun Moth and Spiny Rice-flower, but is less likely for Matted Flax-lily.

The program report also committed to establishing a 1200 hectare conservation reserve outside the Urban Growth Boundary to protect and manage Grassy Eucalypt Woodland. This reserve may also contribute to achieving the conservation targets for Golden Sun Moth and Matted Flax-lily, as envisaged by the program report. However the contribution of the proposed Grassy Eucalypt Woodland reserve to achieving these conservation targets is unknown until reserve establishment commences and detailed survey work is undertaken in the area. DEPI will prepare a protocol for identifying and securing land for the Grassy Eucalypt Woodland reserve. The protocol will include a process for identifying other land with similar habitat characteristics where insufficient land becomes available in the reserve investigation area (Figure 5) within reasonable timeframes.

Photo: Small Golden Moths Orchid, DEPI

6. SURVEYS, SALVAGE AND TRANSLOCATION, AND OFFSETS

Land that is not a conservation area and is suitable for urban development may be cleared of native vegetation in accordance with an approval by the Commonwealth Environment Minister under the endorsed program and subject to Victorian legal and planning processes (e.g. *Flora and Fauna Guarantee Act 1988, Planning and Environment Act 1987*).

In accordance with the program report and the Native Vegetation Management Framework (DNRE, 2002), removal of native vegetation for urban development within the area covered by the BCS is subject to the following requirements:

- Further survey requirements
- Salvage and/or translocation requirements
- Offset and/or compensatory habitat requirements.

These requirements are described in sections 6.1 to 6.3.

6.1 Further survey requirements

The types of surveys required by the BCS are identified in Table 4.

Significant survey work was undertaken as part of the preparation of the BCS. However there is a need for limited, further surveys to be undertaken.

Landowners or the GAA will be responsible for undertaking surveys for large old trees and scattered trees at the precinct structure planning stage or at the planning stage for other development approvals. The decision about who does these surveys will be determined by the GAA as part of the pre-planning process for a precinct.

Large old tree surveys are only required within some time-stamped native vegetation patches (patches that have been based on DSE estimated data). Surveys for scattered trees are only required outside time-stamped native vegetation patches, and only in areas not previously surveyed for scattered trees. DEPI will prepare further guidance on areas requiring tree surveys.

Surveys for large old trees and scattered trees must be done prior to approval of the precinct structure plan and in accordance with relevant survey requirements (see Table 4). DEPI will be responsible for ensuring compliance with these survey requirements.

Surveys to inform monitoring of the Sub-regional Species Strategy for Growling Grass Frog will be done by DEPI and funded by fees collected from developers for impacts on Growling Grass Frog habitat (see section 2.4)

Landowners are expected to provide reasonable access for survey work, to avoid delays to the completion of development approvals for the land.

6.2 Salvage and translocation requirements

In accordance with Commonwealth and state biodiversity policy, translocation will be done as a 'last resort' conservation measure under the BCS.

Salvage and/or translocation will be focused on specific areas suitable for urban development and where required will be undertaken prior to the removal of native vegetation or habitat (see Table 5).

Landowners will be responsible for undertaking salvage and/or translocation. However, DEPI will do this work where landowners grant DEPI access to their land.

The following species may be targeted for salvage and/or translocation:

- Growling Grass Frog
- Striped Legless Lizard
- Matted Flax-lily
- Spiny Rice-flower
- Other threatened and common flora species where required for restoration programs (e.g. within the Western Grassland Reserves).

Table 4: Survey requirements

	Purpose	Location	Timing	Responsibility	Funding	Survey requirements
Large old trees and scattered trees	To determine requirements for large old trees and scattered trees	All growth corridors. Only within areas not previously surveyed for large old trees or scattered trees (DEPI to advise)	Prior to approval of precinct structure plan	Landowner or GAA	Landowner	Time-stamping mapping and condition assessment procedures (2010a)
Growling Grass Frog	To inform monitoring of sub-regional species strategy	Growling Grass Frog corridors	After Growling Grass Frog corridors are secured	DEPI	Offset and compensatory habitat fee collected from developers	Sub-regional Species Strategy for the Growling Grass Frog (DEPI, 2013a)
Golden Sun Moth, Matted Flax-lily, Spiny Rice-flower	To identify and secure conservation areas outside the growth corridors	Outside growth corridors within the Victorian Volcanic Plain	In accordance with annual program requirements	DEPI	Offset and compensatory habitat fee collected from developers	DEPI to prepare protocol

DEPI will prepare salvage and/or translocation protocols as required. The protocols will include requirements for any proposed translocation activity and will set out the obligations of landowners and DEPI (e.g. provision of access, timeframes). Salvage and/or translocation within the growth corridors must be undertaken in accordance with any relevant protocols. DEPI will be responsible for auditing and enforcing compliance with the protocols.

Salvaged material will be used in restoration programs for the Western Grassland Reserves, the proposed Grassy Woodland Reserve and the larger conservation areas within the growth corridors as appropriate (e.g. Melbourne Water retarding basin at Kalkallo, Growling Grass Frog corridors).

Salvage and translocation will focus primarily on native plants rather than native animals and on salvage rather than translocation. For most plant species, seed only will be salvaged and then 'bulked up' in seed orchards before being planted as part of the restoration programs. Due to a range of risks, only a limited number of plant species will be translocated.

Similarly, there are substantial risks associated with translocating animals, including animal welfare issues, behavioural difficulties with territoriality, and problems with monitoring and defining success in cases where animals are difficult to survey and detect.

Initially Striped Legless Lizard will only be translocated if required as part of the Western Grassland Reserves restoration program. A research program has been developed specifically for this species and to determine the role and extent of translocation required. The results of this research program will assist in determining whether further translocation is attempted in the future.

Other threatened reptiles and amphibians (e.g. Grassland Earless Dragon) may be salvaged and translocated where this is incidental to the Striped Legless Lizard program.

Growling Grass Frog found within Category 2 habitat to be removed may be translocated in some cases where there are appropriate locations (e.g. nearby Growling Grass Frog corridors) to receive animals and where disease and other risks are considered manageable. Salvage and/or translocation of other threatened herpetofauna (Swamp Skink, Glossy Grass Skink, Southern Toadlet) may be done in conjunction with salvage and/or translocation of the Growling Grass Frog. DEPI will develop a protocol for the salvage and translocation of Growling Grass Frog.

Salvage and/or translocation activities required by the BCS are identified in Table 5.

Table 5: Salvage and/or translocation activities

	Purpose	Location	Timing	Responsibility and funding	Salvage and/or translocation requirements
Seed collection or salvage of threatened and common flora species within native grassland	For use in the Western Grassland Reserves restoration program	Native grassland patches within western, north-western and northern growth corridors, where specified by DEPI	Prior to removal of native vegetation	Landowner, or DEPI where landowner grants DEPI access	DEPI to prepare protocol
Seed collection or salvage of threatened and common flora species within native grassy woodland	For use in the Grassy Woodland Reserve restoration program	Native grassy woodland within north-western and northern growth corridors, where specified by DEPI	Prior to removal of native vegetation	Landowner, or DEPI where landowner grants DEPI access	DEPI to prepare protocol
Seed collection or salvage of threatened and common flora species within native wetlands	For use in various wetland restoration projects within growth corridors	Native wetlands (all growth corridors), where specified by DEPI	Prior to removal of native vegetation	Landowner, or DEPI where landowner grants DEPI access	DEPI to prepare protocol
Salvage and/or translocation of Striped Legless Lizard	To salvage and/or translocate individuals prior to removal of habitat where a net conservation benefit can be demonstrated	Priority salvage areas of habitat as defined in the Striped Legless Lizard Salvage and Translocation Strategic and Operational Plans	Prior to removal of priority habitat	Landowner, or DEPI where landowner grants DEPI access	Striped Legless Lizard Salvage and Translocation Strategic and Operational Plans (DSE, 2011d,e) (or as updated by DEPI)
Salvage and/or translocation of Growling Grass Frog	To salvage and/or translocate individuals prior to removal of habitat where a net conservation benefit can be demonstrated	Priority salvage areas on land containing Growling Grass Frog Category 2 habitat defined from surveys	Prior to removal of priority habitat	Landowner, or DEPI where landowner grants DEPI access	DEPI to prepare protocol
Salvage and/or translocation of threatened reptiles and amphibians (where incidental to Growling Grass Frog)	To salvage and/or translocate individuals prior to removal of habitat where a net conservation benefit can be demonstrated	Priority salvage areas on land containing Growling Grass Frog Category 2 habitat defined from surveys	Prior to removal of priority habitat	Landowner, or DEPI where landowner grants DEPI access	DEPI to prepare protocol

Photo: Grassy Eucalypt Woodland, Ecology and Heritage Partners

6.3 Offset requirements

The BCS requires the following types of 'offsets' for the removal of native vegetation within the area covered by the BCS:

- Offsets for native vegetation patches
- Offsets for large old trees within native vegetation patches
- Offsets for scattered trees
- Compensatory habitat for certain Commonwealth listed threatened species.

In many cases, the removal of native vegetation will trigger more than one of these 'offset' requirements.

The cost recovery model will establish the offset fees that will be collected from developers and used to mitigate the impacts of urban development on native vegetation (see section 2.4). DEPI will publish a document describing the cost recovery model and detailing the fee structure and prices. The document will explain the principles underpinning the model and the method for setting the fees. It will also set out the governance, accountability and transparency measures that will be established to administer the fees, and describe the method for reviewing the fees over time.

6.3.1 Offsets for native vegetation patches

Removal of all native vegetation patches on land suitable for urban development within the area covered by the BCS will occur in accordance with the offset principles of the Native Vegetation Management Framework (DNRE, 2002).

Offsets for native vegetation patches will be calculated based on the time-stamping dataset and maps. The time-stamping maps show the type, extent and condition of all native vegetation patches in the growth corridors (see section 4.1.2 and Figures 11 to 18). Offsets are required for the removal of any native vegetation patch identified on the time-stamping maps. In calculating offsets, all native vegetation patches will be deemed to be Very High conservation significance under the Native Vegetation Management Framework (DNRE, 2002), consistent with the corridor-wide approach to threatened species (see section 6.3.3).

6.3.2 Offsets for large old trees and scattered trees

The BCS does not require the retention of trees outside conservation areas. However some large old trees may be retained for landscape or aesthetic reasons as a result of precinct structure planning.

A tree will be deemed to be retained if it is on public land or an identified reserve to be managed by a public land manager, and has no ground disturbance (e.g. digging, trenching or stockpiling) within the 'tree retention zone'. The 'tree retention zone' is typically an area larger than the dripline. The zone is defined in a DSE technical standard. However, where agreed by DEPI, the relevant Council standard may be used to define the zone.

Removal of large old trees within native vegetation patches and scattered trees on land suitable for urban development must be offset in accordance with the principles of the Native Vegetation Management Framework (DNRE, 2002).

Offset requirements for large old trees and scattered trees will be determined at the precinct structure planning stage.

Only trees that meet the definition of a protected tree in DSE (2007) can be used as offsets. Such trees will be located in areas managed for conservation and secured in perpetuity.

Trees not protected or retained will be deemed to be cleared and will require an offset. The decision about whether trees require offsets will be made by DEPI or the responsible authority (municipal council). DEPI will work with relevant municipalities to establish an "over the counter" scheme to facilitate tree offsets for the growth corridors.

6.3.3 Compensatory habitat for threatened species

The BCS requires landowners to pay for compensatory habitat for the removal of habitat of the following matters of national environmental significance within the area covered by the BCS, in accordance with the program report:

- Growling Grass Frog
- Southern Brown Bandicoot
- Golden Sun Moth
- Spiny Rice-flower
- Matted Flax-lily.

The compensatory habitat fees are in addition to the offset fees for native vegetation (see section 6.3.1). The fees will be used by DEPI to implement conservation actions required by the sub-regional species strategies and the prescriptions within or associated with conservation areas inside and outside the Urban Growth Boundary, such as surveys, monitoring requirements, management actions and construction works. These conservation actions are required to mitigate the impacts of urban development within the growth corridors on these matters of national environmental significance.

The compensatory habitat fees will be determined using a cost recovery model as described in section 2.4. The fees will apply as set out in Table 6 and as described below.

Growling Grass Frog:

- All land mapped as Category 1 or 2 habitat in the Sub-regional Species Strategy (DEPI, 2013a) will invoke a compensatory habitat fee if cleared or impacted. This fee will cover the cost of establishing and managing the Growling Grass Frog corridors as set out in the Sub-regional Species Strategy (DEPI, 2013a).

Southern Brown Bandicoot:

- All land within the south-eastern growth corridor and relevant precincts (i.e. Botanic Ridge, Officer Employment and Pakenham Employment 1 and 2) will invoke a compensatory habitat fee to cover the cost of implementing conservation measures in the Sub-regional Species Strategy for the Southern Brown Bandicoot when approved (see section 4.2.1). This shared cost across the growth corridor recognises the direct connection between the impact of urban development within the growth corridor and the loss of connectivity and functional habitat for this species.

Golden Sun Moth:

Consistent with the Sub-regional Species Strategy for Golden Sun Moth (DSE, 2012b):

- All habitat (native and non-native grassland and woodlands) and excluding any areas identified as Growling Grass Frog habitat within the area covered by the BCS will be deemed to be 'confirmed habitat' and invoke an offset requirement if cleared.
- All land within non-native habitat for Golden Sun Moth in the western, north-western and northern growth corridors and the Outer Metropolitan Ring Transport Corridor/E6 Road Reservation will invoke a compensatory habitat fee if cleared. This will cover the cost of establishing and managing conservation areas for Golden Sun Moth inside the Urban Growth Boundary (as identified in the BCS) and additional conservation areas outside the Urban Growth Boundary within the Victorian Volcanic Plain, including surveys by DEPI to identify target areas.
- The extent of conservation areas outside the Urban Growth Boundary has been calculated based on the target in the program report to protect 80 per cent of confirmed high persistence habitat across the Victorian Volcanic Plain. The amount of habitat required outside the Urban Growth Boundary to meet this target, over and above the Western Grassland Reserves and conservation areas within the Urban Growth Boundary, is 680 hectares (DEPI, 2013h).

Spiny Rice-flower:

- All land within patches of native vegetation in the western and north-western growth corridors and the Outer Metropolitan Ring Transport Corridor/E6 Road Reservation will invoke a compensatory habitat fee for Spiny Rice-flower if cleared. This will cover the cost of establishing and managing conservation areas for Spiny Rice-flower inside the Urban Growth Boundary (as identified in the BCS) and additonal conservation areas outside the Urban Growth Boundary within the Victorian Volcanic Plain, including surveys by DEPI to identify target areas.
- The extent of conservation areas outside the Urban Growth Boundary has been calculated based on the target in the program report and prescription to protect 80 per cent of confirmed high persistence habitat across the Victorian Volcanic Plain. The amount of habitat required outside the Urban Growth Boundary to meet this target, over and above the Western Grassland Reserves and conservation areas within the Urban Growth Boundary, is 394 hectares (DEPI, 2013i).

Matted Flax-lily:

- All land within patches of native vegetation in the northern growth corridor and the Outer Metropolitan Ring Transport Corridor/E6 Road Reservation will invoke a compensatory habitat fee for Matted Flax-lily if cleared. This will cover the cost of establishing and managing conservation areas for Matted Flax-lily inside the Urban Growth Boundary (as identified in the BCS) and additional conservation areas outside the Urban Growth Boundary within the Victorian Volcanic Plain, including surveys by DEPI to identify target areas.
- The extent of conservation areas outside the Urban Growth Boundary has been calculated based on the target in the program report and prescription to protect 80 per cent of confirmed high persistence habitat across the Victorian Volcanic Plain. The amount of habitat required outside the Urban Growth Boundary to meet this target, over and above the Western Grassland Reserves and conservation areas within the Urban Growth Boundary, is 529 hectares (DEPI, 2013i).

Table 6. Compensatory habitat fees for Melbourne growth corridors

Category of vegetation (note that categories do not overlap)		Definition	Offset requirement and compensatory habitat fee			
			Western growth corridor	North-western growth corridor	Northern growth corridor	South-eastern growth corridor
Native vegetation patches		Areas mapped as native vegetation patches (see time-stamping maps, Figures 11 to 18)	NVMF offset* plus Spiny Rice-flower fee	NVMF offset* plus Spiny Rice-flower fee	NVMF offset* plus Matted Flax-lily fee	NVMF offset* plus Southern Brown Bandicoot fee
Not native vegetation patch	**GSM non-native habitat**	All areas of vegetation except native vegetation patches and Growling Grass Frog Category 1 or 2 habitat	Golden Sun Moth fee	Golden Sun Moth fee	Golden Sun Moth fee	Not applicable (no Golden Sun Moth habitat in south-eastern growth corridor)
	GGF Category 1 or 2 habitat	All areas of Growling Grass Frog habitat that are not native vegetation patches	Growling Grass Frog fee	Growling Grass Frog fee	Growling Grass Frog fee	Growling Grass Frog fee plus Southern Brown Bandicoot fee

* NVMF offset = Offset for native vegetation patches in accordance with the requirements of the Native Vegetation Management Framework (DNRE, 2002) as specified in the BCS.

7. MONITORING AND REVIEW

7.1 Overview

Under the program report, the State Government committed to monitoring and reporting on the implementation of the endorsed program at all implementation stages. The primary purpose of this commitment is to ensure compliance with the program.

The State Government committed to monitoring whether the conservation outcomes for each matter of national environmental significance identified in the program report are being achieved and to revise the conservation outcomes and/or establish new conservation measures in the event that the outcomes are not being achieved.

An important component of the monitoring and reporting process is the preparation of a Monitoring and Reporting Framework. This section describes how matters relevant to the BCS will be addressed in this framework.

The Monitoring and Reporting Framework will be prepared by DEPI in consultation with DPCD, GAA and the Commonwealth Government.

7.2 Requirements of Monitoring and Reporting Framework

The Monitoring and Reporting Framework will cover the relevant commitments set out in the program report and additional specific commitments described in the BCS (see section 8).

The framework will include the following elements relating to the BCS:

- Re-arrangement of the commitments and objectives in the program report and the BCS into an objectives hierarchy (or similar logical tabulation where appropriate)
- Re-statement of ecological commitments in a way that allows quantitative evaluation
- Standards for monitoring and reporting under conservation management plans
- Standards for monitoring native vegetation change
- An adaptive management plan.

7.2.1 Objectives hierarchy

The Monitoring and Reporting Framework will clearly identify how the commitments in the program report and the BCS relate to each other, how they will be measured, and what form of reporting is appropriate. This will be achieved through preparing an objectives hierarchy, with broad aspirational objectives at the top, followed by specific and measurable objectives.

7.2.2 Ecological objectives and conservation outcomes

The program report contains a range of different types of commitments, including commitments relating to administration, such as the preparation of reports or amendments to the planning scheme, and commitments relating to ecological trends.

Administrative commitments have clear tasks and performance measures listed for them, making it simple to monitor their progress and report on whether they have been successfully implemented. However, many of the 'ecological commitments' relate to acceptable levels of environmental change, which cannot be assessed without on-ground measurement.

An example is the commitment made in the program report for a number of threatened species that there will be *'no substantial negative change to known populations within the Urban Growth Boundary, as a result of protection measures and ongoing management'* (Victorian Government, 2009). Such statements make the intention clear, but do not provide sufficient information to allow success or failure to be objectively evaluated.

The Monitoring and Reporting Framework will re-state the ecological commitments in the program report quantitatively, including the conservation outcomes for each matter of national environmental significance. Different approaches will be required for different matters depending on factors such as a species' demography and detectability.

This may involve using numerical count data to assess population size and stability over time (this approach is potentially suitable for a relatively easily detectable threatened plant such as Button Wrinklewort) or assessing stability of a population or an increase or decline in areas of occupancy (this approach is potentially suitable for species that are difficult to detect, are numerous, or have fluctuating populations, such as Growling Grass Frog).

The Monitoring and Reporting Framework will report on the background work done to re-state the ecological commitments in the program report.

7.2.3 Standards for monitoring and reporting under conservation management plans

Conservation management plans for each conservation area must contain clear monitoring and reporting requirements that are consistent between conservation areas. The Monitoring and Reporting Framework will specify a set of monitoring and reporting requirements that must be incorporated into the plans. These requirements will be consistent with the requirements for preparing conservation management plans in DEPI's conservation management plan template.

7.2.4 Standards for monitoring native vegetation change

The program report commits the State Government to developing a standard method for monitoring native vegetation change over time. This standard method will be included within the Monitoring and Reporting Framework and will form a key component of the monitoring required by conservation management plans.

Photo: Striped Legless Lizard, Dan Weller, Ecology and Heritage Partners

7.2.5 Adaptive management plan

Adaptive management is a structured, iterative process of decision making in the face of uncertainty. Adaptive management involves a program of management and monitoring that is adjusted over time as our understanding of a system's response to management improves. The model of adaptive management applied under the BCS will be similar to that applied to guide grassland management for the Western Grassland Reserves (DSE, 2011f).

Adaptive management requires careful planning and the investment of considerable expertise and time. It is not always appropriate and will be implemented only where justified by the magnitude and scope of the problem and the degree of uncertainty involved. The Monitoring and Reporting Framework will include an adaptive management plan.

7.3 Review of the Biodiversity Conservation Strategy

The BCS sets the direction and requirements for conservation within the growth corridors for 20 years. The BCS will be reviewed every five years if monitoring and reporting indicates that the BCS is not achieving the conservation outcomes in the program report or that the development program has changed. Such a review would be done in consultation with the Commonwealth Government.

8. KEY COMMITMENTS

The key commitments made by the State Government in the BCS that are in addition to the commitments in the program report are summarised in Table 7.

The State Minister for Planning and State Minister for Environment and Climate Change are jointly responsible for implementing the commitments in the BCS.

Table 7: Key commitments

Key commitment	Purpose	Responsible agency	Timing	Performance measure
Conservation areas				
Protect and manage the 36 conservation areas in perpetuity	To ensure the conservation outcomes in the program report are achieved	DEPI, assisted by DPCD and GAA	Precinct structure planning stage or when land voluntarily secured	Land in each conservation area is transferred to Crown or subject to on-title management agreement prior to change of use or development of land
Prepare conservation management plans for each conservation area	To ensure conservation areas are managed to a high and consistent standard	DEPI	Precinct structure planning stage	Conservation management plans prepared at precinct structure planning stage for each conservation area If not prepared by DEPI, conservation management plans are to the satisfaction of DEPI
Finalise boundaries of regional parks	To provide certainty to stakeholders	DEPI, assisted by DPCD and GAA	Precinct structure planning stage	Boundaries of regional parks published in Government Gazette
Other areas of conservation value				
Identify additional Grassy Eucalypt Woodland to protect within the context of the precinct structure planning process (including Wollert precinct)	To assist achievement of the 80 per cent protection target for Grassy Eucalypt Woodland	DEPI, assisted by DPCD and GAA	Precinct structure planning stage	Any additional areas of Grassy Eucalypt Woodland that are excluded from urban development are protected and managed to the same standard as an offset or conservation area
Finalise boundaries and establish management arrangements for Melbourne Water retarding basins	To provide certainty to stakeholders and ensure wetland and other values are protected and managed	Melbourne Water, assisted by DEPI and GAA	Precinct structure planning stage	Boundaries of retarding basins finalised and land secured by Melbourne Water or the Crown
Other conservation measures				
Conduct salvage and/or translocation and associated surveys in areas suitable for urban development	To provide material for restoration programs and minimise impacts on species in areas for urban development	DEPI	Prior to removal of native vegetation before or after precinct structure planning stage	Salvage and/or translocation undertaken in accordance with relevant protocols
Prepare salvage and/or translocation protocol for Growling Grass Frog and other species as appropriate	To ensure salvage and/or translocation is undertaken to a high and consistent standard	DEPI in consultation with Commonwealth Government	Prior to implementing salvage and/or translocation activities	Protocols prepared to satisfaction of DEPI

Key commitment	Purpose	Responsible agency	Timing	Performance measure
Conduct surveys to monitor Growling Grass Frog corridors	To ensure conservation outcomes in the sub-regional species strategies are achieved	DEPI	After Growling Grass Frog corridors are secured	Surveys establish adequate baseline data and enable trends in populations to be detected
Determine extent of Large-fruit Groundsel population on railway reserve adjacent to conservation area 5, and establish appropriate protection/impact mitigation measures	To ensure impacts of future railway works on threatened species populations are avoided where possible and mitigated where not	DoT, assisted by DEPI	Prior to upgrade works commencing	Protocols prepared to satisfaction of Commonwealth Government
Amend planning schemes to require use of time-stamping dataset and maps in calculating offsets	To ensure the time-stamping dataset and maps are used to calculate offsets requirements	DPCD, assisted by DEPI and GAA	Prior to approval of actions under the endorsed program for the growth corridors	Planning scheme amended to require use of time-stamping dataset and maps
Establish 'over the counter' tree offset scheme for growth corridors	To facilitate the provision of tree offsets for the growth corridors	Local government, assisted by DEPI	During next two years	'Over the counter' offset scheme established and utilised by landowners
Establish cost recovery scheme, including process	To ensure the administration and use of the fees is transparent and effective	DEPI	Prior to approval of actions under the endorsed program for the growth corridors	Scheme established
Areas of conservation value outside the Urban Growth Boundary				
Prepare new Southern Brown Bandicoot Sub-regional Species Strategy and submit to Commonwealth Environment Minister for approval	To ensure functioning sustainable populations of Southern Brown Bandicoot within and beyond the growth corridors	DEPI	2013	Sub-regional Species Strategy submitted for approval to Commonwealth Environment Minister
Surveys outside the Urban Growth Boundary for populations and habitat of Spiny Rice-flower, Matted Flax-lily and Golden Sun Moth	To identify target conservation areas outside the growth corridors for these species	DEPI	In accordance with annual program requirements	Target conservation areas identified that contain the amounts of habitat required for these species as set out in the BCS
Protect and manage conservation areas outside the Urban Growth Boundary in perpetuity for Spiny Rice-flower, Matted Flax-lily and Golden Sun Moth	To achieve the conservation outcomes in the program report and the requirements of the BCS	DEPI, in consultation with Commonwealth Government	In accordance with annual program requirements	The following amounts of land are transferred to Crown or subject to in-perpetuity on-title management agreements for each species: > Spiny Rice-flower – 394 hectares > Matted Flax-lily – 529 hectares > Golden Sun Moth – 680 hectares

Key commitment	Purpose	Responsible agency	Timing	Performance measure
Monitoring and Reporting				
Prepare Monitoring and Reporting Framework in accordance with the commitment in the program report, and including the following: > establish objectives hierarchy > re-state conservation outcomes > prepare monitoring and reporting standards for conservation management plans > prepare standards for monitoring native vegetation change > prepare adaptive management plan	To ensure the conservation outcomes in the program report can be monitored and additional conservation measures implemented if required	DEPI, in consultation with DPCD, GAA and Commonwealth Government	Within 6 months of BCS approval	Monitoring and Report Framework prepared to satisfaction of Commonwealth Government

9. REFERENCES

AECOM (2006) Deer Park Quarry Management Plan: Northern Grassland, Striped Legless Lizard & Plains Rice-flower, Boral Resources (Vic) Pty Limited, February 2006

AECOM (2010) Biodiversity Assessment Project (Native Vegetation) PSP 40: Wyndham Vale, GAA, July 2010

AECOM (2011) Letter to Department of Sustainability and Environment, dated 7 July, 2011, 'Re: Sites for Conservation Within Melbourne Growth corridors', Prepared for Department of Sustainability and Environment, Melbourne

ARI (2010) A survey for the Golden Sun Moth *Synemon plana* on the Victorian Volcanic Plains, 2009. Arthur Rylah Institute for Environmental Research, Department of Sustainability and Environment, Heidelberg

ARI (2011) A survey for the Golden Sun Moth *Synemon plana* on the Victorian Volcanic Plains, 20010-11. Arthur Rylah Institute for Environmental Research, Department of Sustainability and Environment, Heidelberg

Backhouse, G and Lester, K (2010) National Recovery Plan for the Small Golden Moths Orchid *Diuris basaltica*, Department of Sustainability and Environment, East Melbourne

Biosis Research Pty Ltd (2010a) Sub-regional fauna survey for the Golden Sun Moth, March 2010 Prepared for Growth Areas Authority, Melbourne

Biosis Research Pty Ltd (2010b) Biodiversity Assessment Report (Native Vegetation) Melton – Wyndham Investigation Area: Section A, March 2010, Prepared for Growth Areas Authority, Melbourne

Biosis Research Pty Ltd (2010c) Biodiversity Assessment Report (Native Vegetation) Melton – Wyndham Investigation Area: Section B, March 2010, Prepared for Growth Areas Authority, Melbourne

Biosis Research Pty Ltd (2010d) Biodiversity Assessment Report (Native Vegetation) Melton – Wyndham Investigation Area: Section C, March 2010, Prepared for Growth Areas Authority, Melbourne

Biosis Research Pty Ltd (2010e) Biodiversity Assessment Report (Native Vegetation) Melton – Wyndham Investigation Area: Section D, March 2010, Prepared for Growth Areas Authority, Melbourne

Biosis Research Pty Ltd (2010f) Biodiversity Assessment Report (Native Vegetation) Melton – Wyndham Investigation Area: Section E, March 2010, Prepared for Growth Areas Authority, Melbourne

Biosis Research Pty Ltd (2010g) Biodiversity Assessment Report (Native Vegetation) Melton – Wyndham Investigation Area: Section F, March 2010, Prepared for Growth Areas Authority, Melbourne

Biosis Research Pty Ltd (2010h) Biodiversity Assessment Report (Native Vegetation) Melton – Wyndham Investigation Area: Section G, March 2010, Prepared for Growth Areas Authority, Melbourne

Biosis Research Pty Ltd (2010i) Biodiversity Assessment Report (Native Vegetation) Melton – Wyndham Investigation Area: Section H, March 2010, Prepared for Growth Areas Authority, Melbourne

Biosis Research Pty Ltd (2011) Important Sites for Biodiversity Conservation: Melbourne's Urban Growth Zones, Report to Department of Sustainability and Environment, East Melbourne

Biosis Research Pty Ltd (2012) Review of habitat corridors for Growling Grass Frog *Litoria raniformis* within Melbourne's Urban Growth Areas. Prepared for Department of Sustainability and Environment, East Melbourne

Carter, O (2010) National Recovery Plan for the Curly Sedge *Carex tasmanica*, Department of Sustainability and Environment, East Melbourne

DEH (2006) Significant Impact Guidelines: Matters of national environmental significance, EPBC Act Policy Statement 1.1

DEWHA (2008) Natural Temperate Grassland of the Victorian Volcanic Plain, EPBC Policy Statement 3.8

DEWHA (2009a) Significant impact guidelines for the critically endangered spiny rice-flower (*Pimelea spinescens* subsp. *spinescens*): Nationally threatened species and ecological communities EPBC Act policy statement 3.11

DEWHA (2009b) Significant impact guidelines for the critically endangered golden sun moth (*Synemon plana*): Nationally threatened species and ecological communities EPBC Act policy statement 3.12

DEWHA (2009c) Significant impact guidelines for 36 migratory shorebird species: Migratory species EPBC Act policy statement 3.21

DEWHA (2009d) Significant impact guidelines for the vulnerable growling grass frog (*Litoria raniformis*): Nationally threatened species and ecological communities EPBC Act policy statement 3.14

DNRE (1998) Craigieburn Grassland Interim Management Statement, Parks, Flora and Fauna Department of Natural Resources and Environment, East Melbourne

DNRE (2002) Victoria's Native Vegetation Management: A Framework for Action, Department of Natural Resources and Environment, East Melbourne

DSE (2004) Vegetation Quality Assessment Manual–Guidelines for applying the habitat hectares scoring method. Version 1.3. Department of Sustainability and Environment, East Melbourne

DSE (2006) Native Vegetation Gain Approach – Technical basis for calculating gains through improved native vegetation management and revegetation. Department of Sustainability and Environment, East Melbourne

DSE (2007) Native Vegetation: Guide for assessment of referred planning permit applications. Department of Sustainability and Environment, East Melbourne.

DSE (2009) Delivering Melbourne's Newest Sustainable Communities – Strategic Impact Assessment Report. Department of Sustainability and Environment, East Melbourne

DDSE (2010) Time-stamping Project 2010/11: vegetation mapping and condition assessment procedures. Department of Sustainability and Environment, East Melbourne

DSE (2011b) Biodiversity Conservation Strategy for Melbourne's Growth Areas, Draft for Public Consultation. Department of Sustainability and Environment, East Melbourne

DSE (2011c) Victorian Biodiversity Atlas, Department of Sustainability and Environment, East Melbourne

DSE (2011d) Salvage & translocation of Striped Legless Lizard in the urban growth area of Melbourne: Strategic Approach. Department of Sustainability and Environment, East Melbourne

DSE (2011e) Salvage & translocation of Striped Legless Lizard in the urban growth area of Melbourne: Operational Plan. Department of Sustainability and Environment, East Melbourne

DSE (2011f) Western Grassland Reserves: Grassland management targets and adaptive management (2011). Department of Sustainability and Environment, East Melbourne

DSE (2011g) Sub-regional Species Strategy for the Southern Brown Bandicoot. Draft for Public Consultation. Department of Sustainability and Environment, East Melbourne

DEPI (2013a) Sub-regional Species Strategy for the Growling Grass Frog. Department of Environment and Primary Industries, East Melbourne

DEPI (2013b) Sub-regional Species Strategy for the Golden Sun Moth. Department of Environment and Primary Industries, East Melbourne

DEPI (2013c) A new approach to biodiversity in Melbourne's growth corridors: Time-stamping native vegetation data, Public consultation 2010-11, Final report, Department of Environment and Primary Industries, East Melbourne

DEPI (2013d) A new approach to biodiversity in Melbourne's growth corridors: Public Consultation Report of Findings, Department of Environment and Primary Industries, East Melbourne

DEPI (2013e) Report on 737 Griegs Road, Mount Cottrell, Melbourne Strategic Assessment. Department of Environment and Primary Industries, East Melbourne

DEPI (2013f) Report on 755 Griegs Road, Mount Cottrell, Melbourne Strategic Assessment. Department of Environment and Primary Industries, East Melbourne

DEPI (2013g) Report on 25 and 35 Clarke Court, Sunbury, Melbourne Strategic Assessment. Department of Environment and Primary Industries, East Melbourne

DEPI (2013h) Spatial definition of habitat for Golden Sun Moth across the Victorian Volcanic Plain bioregion, Melbourne Strategic Assessment. Department of Environment and Primary Industries, East Melbourne

DEPI (2013i) Spatial definition of habitat for Spiny Rice-flower and Matted Flax-lily across the Victorian Volcanic Plain bioregion, Melbourne Strategic Assessment. Department of Environment and Primary Industries, East Melbourne

DSEWPC (2011a) *Environment Protection and Biodiversity Conservation Act 1999* referral guidelines for the vulnerable striped legless lizard, *Delma impar*

DSEWPC (2011b) *Environment Protection and Biodiversity Conservation Act 1999* draft referral guidelines for the endangered southern brown bandicoot (eastern), *Isoodon obesulus obesulus*

Ecology Australia (2011) Letter to Department of Sustainability and Environment, dated 5 July 2011, 'Re: Important sites for conservation in the Melbourne Growth corridors', Prepared for Department of Sustainability and Environment, East Melbourne

Ecology & Heritage Partners (2011a) Growling Grass Frog *Litoria raniformis* Habitat Assessment and Targeted Surveys across Melbourne's Extended Urban Growth and Precinct Structure Plan Areas, Prepared for Department of Sustainability and Environment, East Melbourne

Ecology & Heritage Partners (2011b) Letter to Department of Sustainability and Environment, dated 5 August 2011, 'RE: Important Sites for Conservation within Melbourne's Growth Corridors', Prepared for Department of Sustainability and Environment, East Melbourne

Ecology & Heritage Partners (2012) Targeted Significant Species Surveys of Potential Conservation Areas within Melbourne's Revised Growth Corridor, Final Report, Prepared for Department of Sustainability and Environment, East Melbourne

Ecology Partners (2011a) Sub-regional Growling Grass Frog *Litoria raniformis* Conservation Strategy within the revised Urban Growth Boundary and Associated 28 Precincts: Technical Background and Guidelines, Prepared for Department of Sustainability and Environment, East Melbourne

Ecology Partners (2011b) Biodiversity Assessment for Area 1, 'Beaconsfield', Beaconsfield, Prepared for Growth Areas Authority, Melbourne

Ecology Partners (2011c) Biodiversity Assessment for Area 5, 'Officer Employment Area', Officer Prepared for Growth Areas Authority, Melbourne

Ecology Partners (2011d) Biodiversity Assessment for Area 7, 'Pakenham Employment Area', Pakenham, Prepared for Growth Areas Authority, Melbourne

Ecology Partners (2011e) Biodiversity Assessment for Area 9, 'Berwick Waterways', Berwick, Prepared for Growth Areas Authority, Melbourne

Ecology Partners (2011f) Biodiversity Assessment for Area 12, 'Casey Central', Cranbourne, Prepared for Growth Areas Authority, Melbourne

Ecology Partners (2011g) Biodiversity Assessment for Area 48, 'Fiveways Northeast', Clyde, Prepared for Growth Areas Authority, Melbourne

Foreman, P.W. (2012) Draft National Recovery Plan for the Spiny Rice-flower *Pimelea spinescens* Rye. subsp. *spinescens*. 2012 to 2016. Report prepared by Blue Devil Consulting for the Department of Sustainability, Environment, Water, Population and Communities, Canberra

GAA (2009) Precinct Structure Planning Guidelines, Growth Areas Authority, Melbourne

GAA (2012) Growth Corridor Plans, Growth Areas Authority, Melbourne

GHD (2011) Letter to Department of Sustainability and Environment, dated 21 July 2011, 'Important Sites for Conservation in Melbourne Growth corridor Summary of GHD Information', Prepared for Department of Sustainability and Environment, East Melbourne

Golder Associates (2010) Environmental Management Plan Vegetation, Austral Bricks Craigieburn, Summerhill and Wollert Sites, Brickworks Limited, 28 October 2010

Practical Ecology (2010a) Biodiversity Assessment Report (Native Vegetation) PSP 10: Botanic Ridge September 2010, Prepared for Growth Areas Authority, Melbourne

Practical Ecology (2010b) Biodiversity Assessment Report (Native Vegetation) PSP 13: Clyde North, September 2010, Prepared for Growth Areas Authority, Melbourne

Practical Ecology (2010c) Biodiversity Assessment Report (Native Vegetation) PSP 16: Cranbourne North, September 2010, Prepared for Growth Areas Authority, Melbourne

Practical Ecology (2011a) 'Identification of Sites Important to the Conservation of Threatened Species or Ecological Communities within the Growth corridors', Prepared for Department of Sustainability and Environment, East Melbourne

Practical Ecology (2011b) Southern Brown Bandicoot Sub-regional Species Strategy: Technical Report and Recommendations, Prepared for Department of Sustainability and Environment

Practical Ecology (2011c) Biodiversity Assessment Report C21 Business Park, PSP Area 11, Prepared for Growth Areas Authority, Melbourne

Practical Ecology (2011d) Biodiversity Assessment Report Investigation Area 42, Prepared for Growth Areas Authority, Melbourne

Practical Ecology (2011e) Biodiversity Assessment Report Investigation Area 43, Prepared for Growth Areas Authority, Melbourne

SMEC (2009) Native Vegetation Mapping Project: Biodiversity Assessment Report – Mickleham, PSP Area 25 and 26, December, 2009, Prepared for Growth Areas Authority, Melbourne

SMEC (2010a) Biodiversity Assessment Report (Native Vegetation) PSP 23: Greenvale South April 2010, Prepared for Growth Areas Authority, Melbourne

SMEC (2010b) Biodiversity Assessment Report (Native Vegetation) PSP 23: Greenvale South April 2010, Prepared for Growth Areas Authority, Melbourne

SMEC (2011a) Biodiversity Assessment Report-Contract Area 57-Lockerbie Kalkallo, Biodiversity Mapping 2009-2011, Prepared for Growth Areas Authority, Melbourne

SMEC (2011b) Biodiversity Assessment Report-Contract Area 59-Yuroke Biodiversity Mapping 2009-2011, Prepared for Growth Areas Authority, Melbourne

SMEC (2011c) Biodiversity Assessment Report-Contract Area 55-Mickleham Woodlands Biodiversity Mapping 2009-2011, Prepared for Growth Areas Authority, Melbourne

Threatened Species Scientific Committee (2008) Advice to the Minister for the Environment, Heritage and the Arts from the Threatened Species Scientific Committee on an Amendment to the List of Threatened Ecological Communities under the Environment Protection and Biodiversity Conservation Act 1999: Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Threatened Species Scientific Committee (2010) Advice to the Minister for the Environment, Heritage and the Arts from the Threatened Species Scientific Committee on an Amendment to the List of Threatened Ecological Communities under the *Environment Protection and Biodiversity Conservation Act 1999*: Grey Box (*Eucalyptus macrocarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia

Victorian Government (2009) Delivering Melbourne's Newest Sustainable Communities – Program Report. Department of Planning and Community Development, East Melbourne

Wlodarczyk, P and Williams, L (2004) Truganina Cemetery Environmental Management Plan, Wyndham City Council

10. GLOSSARY

2005 Urban Growth Boundary

The Urban Growth Boundary as it stood immediately prior to the ratification of Planning Scheme Amendment VC68.

2010 Urban Growth Boundary

The Urban Growth Boundary as amended by Planning Scheme Amendment VC68.

Conservation Area

An area of high biodiversity value for matters of national environmental significance and State significance identified in the BCS that will be protected and managed to meet the commitments to the Commonwealth Government in the Program Report.

Ecological Vegetation Class (EVC)

A type of native vegetation classification that is determined through a combination of its floristics, life form and ecological characteristics, and through an inferred fidelity to particular environment attributes. Each EVC includes a collection of floristic communities (i.e. lower level in the classification that is based solely on groups in the same species) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating.

Endorsed Program

The program, as defined in the Program Report, means the Urban Growth Boundary Review for Melbourne for the development of land, including associated transport infrastructure, within the following areas:

- investigation areas for the expansion of the 2005 Urban Growth Boundary
- areas inside the 2005 Urban Growth Boundary for which a planning scheme amendment to introduce a Precinct Structure Plan had not commenced as at 26 May 2009 (the existing 28 precincts)
- areas in the Outer Metropolitan Ring Transport Corridor/E6 Road Reservation and the Regional Rail Link corridor between west of Werribee and Deer Park (section 2).

The Commonwealth Environment Minister endorsed the program, as set out in the Program Report, in February 2010.

Grassy Woodland Reserve

A large conservation reserve that will be established outside the Urban Growth Boundary south-west of Whittlesea of at least 1,200 hectares in size to protect Grassy Eucalypt Woodland. The reserve is a commitment in the Program Report.

Habitat hectare

A site-based measure of quality and quantity of native vegetation that is assessed in the context of the relevant native vegetation type (EVC). The Vegetation Quality Assessment (Habitat Hectare Approach) is published by the Secretary to the Department of Environment and Primary Industries from time to time.

Habitat score

A score assigned to a habitat zone that indicates the quality of the vegetation relative to the EVC benchmark. It is the sum of the site condition score and landscape context score, usually expressed as a percentage or on a scale of 0.00 to 1.00.

High threat weeds

Introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

Large old tree

A tree with a diameter at breast height equal to or greater than the large old tree diameter as specified in the relevant EVC benchmark.

Matters of national environmental significance (MNES)

Matters of ecological value protected under the Commonwealth's principle environmental legislation — the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). These include:

- Commonwealth listed threatened species and ecological communities
- migratory species protected under international agreements
- wetlands of international importance (listed under the Ramsar Convention)
- Commonwealth marine environment
- world heritage properties
- national heritage places
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mines).

Under the EPBC Act actions that have, or are likely to have, a significant impact on a matter of national environmental significance, require approval from the Commonwealth Environment Minister. The Minister will decide whether assessment and approval is required under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

Medium Old Tree

A tree with a diameter at breast height equal to or greater than 0.75 of the large tree diameter in the relevant EVC benchmark but less than the diameter at breast height for a large old tree.

Melbourne Strategic Assessment

A process to cut red tape and streamline environmental assessments in implementing the Victorian Government's Program to expand Melbourne's Urban Growth Boundary in four growth corridors and develop associated transport infrastructure. The approach, agreed by the Victorian and Commonwealth governments, utilises a 'strategic assessment' process under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This required an assessment of the impacts of the Program on matters of national environmental significance listed under the EPBC Act.

Native vegetation

Plants indigenous to Victoria, including trees, shrubs, herbs and grasses (as defined in Clause 72 of the planning scheme).

Native Vegetation Management Framework

Victoria's Native Vegetation Management – A Framework for Action establishes the strategic direction for the protection, enhancement and revegetation of native vegetation across Victoria. The goal 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.'*

Native vegetation patch (remnant patch)

An area of native vegetation, with or without trees, where less than 75 per cent of the total understorey plant cover is weeds or non-native plants; or an area with trees where tree canopy cover is at least 20 per cent. Patches of native vegetation may be treeless, such as grasslands, wetlands or some alpine communities.

Offset

A measurable native vegetation conservation outcome resulting from any works, or other actions to make reparation for the loss of native vegetation arising from the removal or destruction of native vegetation as required under the appropriate Act. The gains must be commensurate with the loss according to the criteria of the Native Vegetation Management Framework and must be secure and ongoing.

Planning Scheme Amendment VC68

An amendment to the Victorian Planning Provisions and planning schemes, ratified by Victorian Parliament on 29 July 2010 and gazetted on 6 August 2010. The amendment expanded Melbourne's Urban Growth Boundary, and put in place Public Acquisition Overlays for the proposed 15,000 hectare Western Grassland Reserve, the Regional Rail Link and the Outer Metropolitan Ring/E6 Transport Corridor.

Potential Conservation Area

An area of potentially high biodiversity value identified in the draft BCS (released for public consultation in November 2011). Where access was granted by landowners, these areas were further investigated by DSE prior to finalising the BCS to confirm their biodiversity values and determine whether they require protection. Potential Conservation Areas subsequently shown to include lower biodiversity values have not been identified as Conservation Areas in the BCS.

Prescriptions

Specific requirements to mitigate the impact of the program on matters of national environmental significance prepared as a commitment in the Program Report and approved by the Commonwealth Environment Minister (see section 2.3.7).

Program Report

The Program Report for the Melbourne Strategic Assessment provides the details of commitments made by the Victorian Government to manage potential impacts on matters of national environmental significance through the life of the program. It sets the framework for the implementation, monitoring and reporting of program activities, including these environmental commitments. The Program Report was endorsed by the Commonwealth Environment Minister on 2 February 2010.

Remnant patch (see native vegetation patch)

Salvage

The removal and safekeeping of plant material or animals from an area that is to be destroyed, for the purpose of conserving it. Salvage may involve the removal of live animals, plant seeds, cuttings or whole plants. 'Salvage' only refers to the act of 'taking and safekeeping'; it may be followed by translocation into the wild, or by incorporation into a captive or nursery population.

Scattered tree

Large Old Trees and Medium Old Trees within an area where at least 75 percent of the total understorey plant cover is weeds or non-native plants and the overall canopy cover for a group (i.e. three or more) of trees is less than 20 percent.

Site condition score

Measure of the 'naturalness' of a patch of vegetation using a number of site-based attributes assessed against a defined benchmark. Site condition score is combined with the landscape context score to determine the habitat score.

Strategic Impact Assessment Report (SIAR)

The Strategic Impact Assessment Report (SIAR) was prepared by DSE in 2009 as the first key step in the Melbourne Strategic Assessment process. The SIAR assessed the impacts of the Program on matters of national environmental significance in the growth areas and recommended a range of measures to minimise and mitigate these impacts. The SIAR included an evaluation of threatened and migratory species, threatened ecological communities and Ramsar wetlands of international significance.

Translocation

The deliberate movement of an organism from one place to another, for the purposes of nature conservation. In the context of the BCS, translocation involves the removal of organisms from wild populations which will be destroyed (i.e. salvage), a period of holding in a secure environment, then a release into a wild location which is secure and well managed.

Western Grassland Reserves

The Western Grassland Reserves comprise 15,000 hectares of land in two large areas to the west of Melbourne identified as a future conservation reserve as part of the Victorian Government's commitments under the Melbourne Strategic Assessment. The reserves are designed to protect critically endangered grasslands, and to offset the ecological impact of urban growth in Melbourne's north and west. The reserves are identified by a Public Acquisition Overlay and an Environmental Significance Overlay established by Planning Scheme Amendment VC68.

11. APPENDICES

Appendix 1: Matters of national environmental significance discussed in the Biodiversity Conservation Strategy

Threatened Fauna

Species Common Name	Species Scientific Name	Conservation Status under EPBC Act
> Dwarf Galaxias	> *Galaxiella pusilla*	> Vulnerable
> Golden Sun Moth	> *Synemon plana*	> Critically Endangered
> Grassland Earless Dragon	> *Tympanocryptis pinguicolla*	> Endangered
> Growling Grass Frog	> *Litoria raniformis*	> Vulnerable
> Plains-wanderer	> *Pedionomus torquatus*	> Vulnerable
> Latham's Snipe	> *Gallinago hardwickii*	> Migratory species, JAMBA, CAMBA
> Southern Brown Bandicoot	> *Isoodon obesulus obesulus*	> Endangered
> Striped Legless Lizard	> *Delma impar*	> Vulnerable

Threatened Flora

Species Common Name	Species Scientific Name	Conservation Status under EPBC Act
> Button Wrinklewort	> *Rutidosis leptorrhynchoides*	> Endangered
> Curly Sedge	> *Carex tasmanica*	> Vulnerable
> Curved Rice-flower	> *Pimelea curviflora var curviflora*	> Vulnerable
> Large-fruit Groundsel, Large-fruit Fireweed	> *Senecio macrocarpus*	> Vulnerable
> Spiny Rice-flower	> *Pimelea spinescens subsp. spinescens*	> Critically Endangered
> Small Golden Moths Orchid	> *Diuris basaltica*	> Endangered
> Swamp Fireweed	> *Senecio psilocarpus*	> Vulnerable
> Matted Flax-lily	> *Dianella amoena*	> Endangered
> Maroon Leek-orchid	> *Prasophyllum frenchii*	> Endangered

Threatened Ecological Communities

Ecological Community	Conservation Status under EPBC Act
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	> Critically Endangered. > This community is a woodland of spreading gum trees, growing on volcanic plains, in the north-western and northern (where most extensive) growth corridors.

Appendix 2: Conservation outcomes for each matter of national environmental significance committed to in the program report

Natural Temperate Grasslands

The conservation outcomes for Natural Temperate Grasslands committed to in the program report are as follows:

- The creation of large (at least 15,000 hectares) consolidated areas of permanently protected native grasslands outside the Urban Growth Boundary in Melbourne's west, managed to improve their quality and offset losses from removal of grasslands associated with urban development and transport infrastructure
- A number of smaller conservation areas within the Urban Growth Boundary at Clarkes Road, Truganina Cemetery, Craigieburn and associated with Merri Creek in the north, some within the urban context, providing additional protection for key sites and connectivity between related habitat types, particularly grassy woodlands, stony knolls and floodplain grasslands
- The long term sustainability and persistence of the Natural Temperate Grasslands of the Victorian Volcanic Plain ecological community through permanent protection and enhancement of the ecological functions and values of the largest consolidated remaining area of grasslands.

Grassy Eucalypt Woodlands

The conservation outcomes for Grassy Eucalypt Woodlands committed to in the program report are as follows:

- A large conservation area outside the urban Growth Boundary south-west of Whittlesea of at least 1,200ha in size
- Eighty per cent of all Grassy Eucalypt Woodland within the Urban Growth Boundary retained and managed in secure conservation areas
- Improved quality of retained areas of vegetation including supplementary planting to improve structure
- A network of small and medium sized conservation areas and permanently protected private land habitat in the Hume-Whittlesea growth corridor associated with Merri Creek and Darebin Creek floodplains. These will consolidate and connect key areas of Grassy Eucalypt Woodland and associated habitats (stony knolls, plains grassland, floodplain grasslands and riparian areas)
- A network of small connected conservation areas in the Sunbury area to protect Grassy Eucalypt Woodland and associated habitats.

Golden Sun Moth, Spiny Rice-flower and Matted Flax-lily

The conservation outcomes for Golden Sun Moth, Spiny Rice-flower and Matted Flax-lily committed to in the program report are as follows:

- Eighty per cent of highest priority habitats for these species within the Victorian Volcanic Plains bioregion (confirmed sites contributing most to species persistence as defined in the prescriptions for these species) will be permanently protected and managed
- Large areas (at least 15,000 hectares) of permanently protected grassland habitat managed in a way that enables Golden Sun Moth and Spiny Rice-flower (and potentially Matted Flax-lily) to be sustained over the long term through a series of connected populations and adaptive management regimes
- Large areas (greater than 1,200 hectares) of permanently protected grassy woodland habitat managed in a way that enables Golden Sun Moth and Matted Flax-lily to be sustained over the long term through a series of connected populations and adaptive management regimes
- A selection of smaller conservation areas and protected areas under targeted management in areas with the greatest contribution to species persistence, providing insurance against risk of catastrophic events in the large conservation areas

- Greatly improved information on Golden Sun Moth distribution within Victoria to support important research and management knowledge
- Minimisation of the probability of extinction of Spiny Rice-flower in the wild and an increase in the probability of important populations becoming self-sustaining in the long term.

Small Golden Moths Orchid

The conservation outcomes for Small Golden Moths Orchid committed to in the program report are as follows:

- No substantial negative change to known populations within the Urban Growth Boundary, as a result of protection measures and ongoing management.

Southern Brown Bandicoot and Growling Grass Frog

The conservation outcomes for Southern Brown Bandicoot and Growling Grass Frog committed to in the program report are as follows:

- Functioning sustainable populations of Southern Brown Bandicoot and Growling Grass Frog within and adjacent to the 2010 Urban Growth Boundary with connectivity between populations
- Protection and enhancement of all populations of Southern Brown Bandicoot including the population at the Royal Botanic Gardens Cranbourne
- Protection and enhancement of important populations of Growling Grass Frog including the Merri Creek population, and those in the Pakenham and south-eastern growth corridor, Kororoit Creek in the west and Darebin Creek in the north.

Striped Legless Lizard

The conservation outcomes for Striped Legless Lizard committed to in the program report are as follows:

- A series of conservation areas and other managed areas established such that viable populations are maintained across the known distribution of the species
- A program of research and monitoring done to provide a basis for adaptive management of the Striped Legless Lizard
- Salvage and translocation options assessed, feasibilities determined and protocol developed for translocation.

Australian Grayling

The conservation outcomes for Australian Grayling committed to in the program report are as follows:

- Management of factors, including migration routes, riparian vegetation and water quality, affecting Australian Grayling populations to promote persistence and recovery of the species in Cardinia Creek.

Button Wrinklewort and Large-fruit Groundsel

The conservation outcomes for Button Wrinklewort and Large-fruit Groundsel committed to in the program report are as follows:

- No substantial negative change to known populations within the Urban Growth Boundary, as a result of protection measures and ongoing management.

Maroon Leek-orchid and Swamp Everlasting

The conservation outcomes for Maroon Leek-orchid and Swamp Everlasting committed to in the program report are as follows:

- No substantial negative change to known populations within the Urban Growth Boundary, as a result of protection measures and ongoing management
- The potential extinction in the wild of Maroon Leek-orchid is averted and the ability of each population to become self-sustaining in the long term is increased.

Listed species within current prescriptions, and species and communities that may be listed in the future

The conservation outcomes for listed species within current prescriptions, and species and communities that may be listed in the future committed to in the program report are as follows:

- All listed species and ecological communities are identified and assessed prior to planning and construction of development works
- No substantial negative change to known populations within the Urban Growth Boundary, as a result of protection measures and ongoing management, or outcomes as otherwise agreed with the Commonwealth Government.

Migratory species, waterways, wetlands and Ramsar sites

The conservation outcomes for migratory species, waterways, wetlands and Ramsar sites committed to in the program report are as follows:

- A network of small and large conservation areas including a diversity of wetland areas managed for their migratory species and other wetland values, particularly in areas distant from urban development
- Improved management and design of retained and constructed wetlands to maximise habitat opportunities for migratory species
- Major new area of re-established wetlands managed for water quality mitigation and biodiversity conservation
- Improved water quality entering Western Port Ramsar site
- Same or improved water quality entering Port Phillip Bay Ramsar site
- Limited indirect disturbances (e.g. dogs) to identified wetlands.

Appendix 3: Methodology for applying the Grassy Eucalypt Woodland prescription

The State Government has committed to protecting 80 per cent of Grassy Eucalypt Woodland (GEW) within the growth corridors. The method for determining the level of GEW protection is as follows:

GEW was first identified by bringing together two separate spatial datasets (i.e. maps), one describing the canopy of the community, the other its understorey:

- The first map represents the area with a tree canopy that meets the GEW canopy criteria (only). This map was compiled using the point locations of individual remnant trees relevant to GEW (about 6,000 trees). This dataset includes trees identified during on-ground property surveys (including GAA1, GAA2, GAA3 and surveys by DSE – see section 4.1); trees identified from the roadside with binoculars and located with reference to aerial photographs; and likely trees identified from aerial photographs alone (in areas which could not be observed). Only trees on basaltic terrain and of species relevant to GEW are included (the vast majority are River Red Gum, with a few Swamp Gum, Manna Gum and Yellow Box trees). 100 of these trees were selected at random, and their canopy diameters were measured from aerial imagery in both a horizontal and vertical direction, being careful to account for shadows. Mean canopy diameter was 18m. Assuming arbitrarily that a healthy canopy is 80 per cent opaque, it is evident that a 36m radius thrown out around each tree will bound the largest defined area that meets the GEW canopy cover criteria (i.e. > 5 per cent). The points representing trees were thus buffered by 36m, resulting in a polygon representing GEW canopy.
- The second map represents the understorey conditions, and was used to distinguish actual (i.e. Commonwealth listed) GEW from areas of trees that do not meet the community criteria. This dataset was compiled from several sources:
  - Field-based property surveys, including GAA1, GAA2, GAA3 and surveys by DSE (see section 4.1). All areas considered remnant patches under the Victorian Vegetation Framework (>25 per cent native cover) were considered to meet the GEW criteria (>50 per cent native grass cover OR <70 per cent perennial weeds). These data do not precisely address the GEW criteria, but contain data sufficiently similar to be useable. Components of the Habitat Hectares site scores for remnant patches provide information relevant to other aspects of the GEW condition criteria (diversity, cover of native species groups), but these were found not to add any further resolution and were not actually used.
  - Virtually all stony rises observed in the area retained sufficient native cover to be considered part of the listed ecological community. Given this, stony rises that were not assessed but were visible on aerial images were also considered to meet the understorey criteria for GEW.
  - Observations made using binoculars from roadsides were able to further confirm or discount some additional patches of potential GEW.

These two datasets were combined, allowing likely GEW to be identified. GEW may, however, also occur in treeless areas, under two scenarios:

- GEW may be represented by derived grasslands, where the trees have been cleared, but the understorey remains. The exact boundaries of such areas are difficult to determine without exact knowledge of the former distribution of trees. Any treeless areas that retain sufficient native cover and which were within 75m of a tree in confirmed GEW were considered derived grasslands within the definition of GEW. Historic Parish Plans from the Public Records Office of Victoria were examined, to confirm that no large areas of derived grassland were likely to have been missed by this process (none were identified).
- Treeless stony knolls that are 'adjacent' (here taken to mean in contact) with areas of GEW are also considered GEW, in line with the community definition. These were identified from aerial imagery.

When stony knolls and derived grasslands are considered, the landscape can be categorised and mapped as follows:

- Areas thought to meet GEW criteria which retain trees
- Treeless stony knolls and derived grasslands thought to meet GEW criteria
- Areas of former GEW which retain their canopy trees (not GEW)
- Areas without GEW (the residual).

These data are included in a geographic information system (GIS) map layer held by DSE. This layer was superimposed with the conservation areas described in this strategy, along with the existing Craigeburn Grasslands Nature Conservation Reserve to determine how much of the expected GEW was protected.

The table below shows that about 61 per cent of the area of 'highly likely' Grassy Eucalypt Woodland within the growth corridors is protected in conservation areas. The protection of the remaining 19 per cent of Grassy Eucalypt Woodland will be sought through the precinct structure planning process where voluntary opportunities arise, through the expansion of the proposed Grassy Woodland Reserve and through the improved management of existing and proposed conservation areas throughout the northern growth corridor.

Table: Percentage of 'highly likely' Grassy Eucalypt Woodland protected in conservation areas within the growth corridors (all figures rounded to the nearest whole number)

	North-western growth corridor	Northern growth corridor	Total (all growth corridors)
Total amount of GEW within growth corridor	57 hectares	369 hectares	426 hectares
Amount of GEW protected in conservation areas	39 hectares	220 hectares	259 hectares
Percentage of GEW protected in conservation areas	68 per cent	60 per cent	61 per cent

DOT7731/1