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# SUB-REGIONAL SPECIES STRATEGY FOR THE GOLDEN SUN MOTH





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# 1. INTRODUCTION

This Sub-regional Species Strategy for the Golden Sun Moth 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* (EPBC Act).<sup>1</sup>

The Melbourne Strategic Assessment evaluated the impacts of the State Government's *Delivering Melbourne's Newest Sustainable Communities* program on matters of national environmental significance listed under the EPBC Act.

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 (west of Werribee to Deer Park) and the Outer Metropolitan Ring Transport Corridor/E6 Road Reservation.

The 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. These commitments are outlined in *Delivering Melbourne's Newest Sustainable Communities: program report* (Victorian Government, 2009b), and include the preparation of this strategy.

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

*Sub-Regional Species Strategies will be prepared for some specific matters of national environmental significance such as the Growling Grass Frog, Southern Brown Bandicoot, and Golden Sun Moth. These strategies will inform the preparation of the Biodiversity Conservation Strategies by identifying important populations, areas to be retained (where known) as required by prescriptions and habitat links. They will influence negotiations and the design of precincts that will occur during the preparation of precinct structure plans, as required by the relevant prescriptions. Each Sub-Regional Strategy must be approved by the Commonwealth Government prior to the finalisation of the Biodiversity Conservation Strategy.*<sup>2</sup>

## 1.1 Purpose of the strategy

The purpose of this strategy is to:

- > Inform the preparation of the Biodiversity Conservation Strategy (DEPI, 2013a) and Growth Corridor Plans (GAA 2012), which will inform the design of precincts during the preparation of precinct structure plans and the preparation and implementation of conservation management plans
- > Identify important areas of habitat to be protected as required by the prescription for the Golden Sun Moth.

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

2 Victorian Government, 2009

This strategy will:

- > Update the known occurrences and status of Golden Sun Moth within and near Melbourne as a result of recent surveys
- > Update Victoria's progress towards achieving its protection targets and describe the mechanism by which these targets can be achieved
- > Provide a map showing retention zones in the urban area
- > Describe the assessment and accounting process for Golden Sun Moth
- > Provide an approach for managing Golden Sun Moth in the new growth corridors of Melbourne (i.e. areas added as part of Planning Scheme Amendment VC68) that can potentially replace the current prescription.

## 1.2 Area covered by the strategy

- > 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).

This strategy applies to:

- > The four growth corridors within the expanded 2010 Urban Growth Boundary given effect by Planning Scheme Amendment VC68. 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.

This strategy does not apply to the Regional Rail Link corridor between west of Werribee and Deer Park (section 2). The strategy 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 this strategy:

- > 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 strategy.

### 1.3 Strategy development and consultation

Under the program report, the Department of Environment and Primary Industries (DEPI) (formerly the Department of Sustainability and Environment (DSE)) is the lead agency for the preparation of this strategy.

An agency working group has been actively involved in the implementation planning for this strategy, and its connection to the growth corridor planning process. This group includes the Growth Areas Authority, the State Department of Planning and Community Development, the State Department of Transport, and the State Department of Treasury and Finance.

A public consultation process was run in November and December 2011, with submissions sought on the draft strategy for Golden Sun Moth, related draft conservation strategies and draft Growth Corridor Plans for Melbourne. The final strategy was informed by submissions received during this process.

The draft strategy committed to further investigating potential Golden Sun Moth conservation areas before finalisation. DSE engaged a consultant to undertake further Golden Sun Moth surveys and habitat assessments within potential conservation areas to inform the final strategy (Ecology & Heritage Partners, 2012). These surveys were dependent on access to private properties which in some cases was refused.



Photo: Copyright Nathan Garvey

## 2. STATUTORY CONTEXT

Golden Sun Moth is 'Critically Endangered' in Victoria (DSE, 2009a) and 'Critically Endangered' nationally under the EPBC Act (DEWHA 2009). Golden Sun Moth is also listed as threatened under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). It is restricted to Victoria, Australian Capital Territory and southern NSW where it occurs in native and non-native grassland.

### 2.1 Commonwealth legislation

The EPBC Act is the Commonwealth Government's principal environmental legislation and provides for the protection of matters of national environmental significance. The Act requires any proposals likely to have a significant impact on matters of national environmental significance (e.g. listed threatened species and their habitat) to be approved by the Commonwealth Environment Minister.

Under section 146 of the EPBC 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, 2009b) evaluated the impacts of the State Government's Urban Growth Boundary Review for Melbourne program on species and ecological communities listed under the EPBC Act, as well as on Ramsar-listed wetlands.

The Commonwealth Environment Minister endorsed the program, as set out in the program report, in February 2010. The endorsement of the program under Part 10 of the EPBC Act 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 EPBC Act.

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.



Photo: Golden Sun Moth habitat, Copyright Daniel Gilmore

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

#### 2.1.1 Program report

The program report is the primary statutory document associated with the Melbourne Strategic Assessment. It 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. This strategy plays a key role in delivering the outcomes for the Golden Sun Moth.

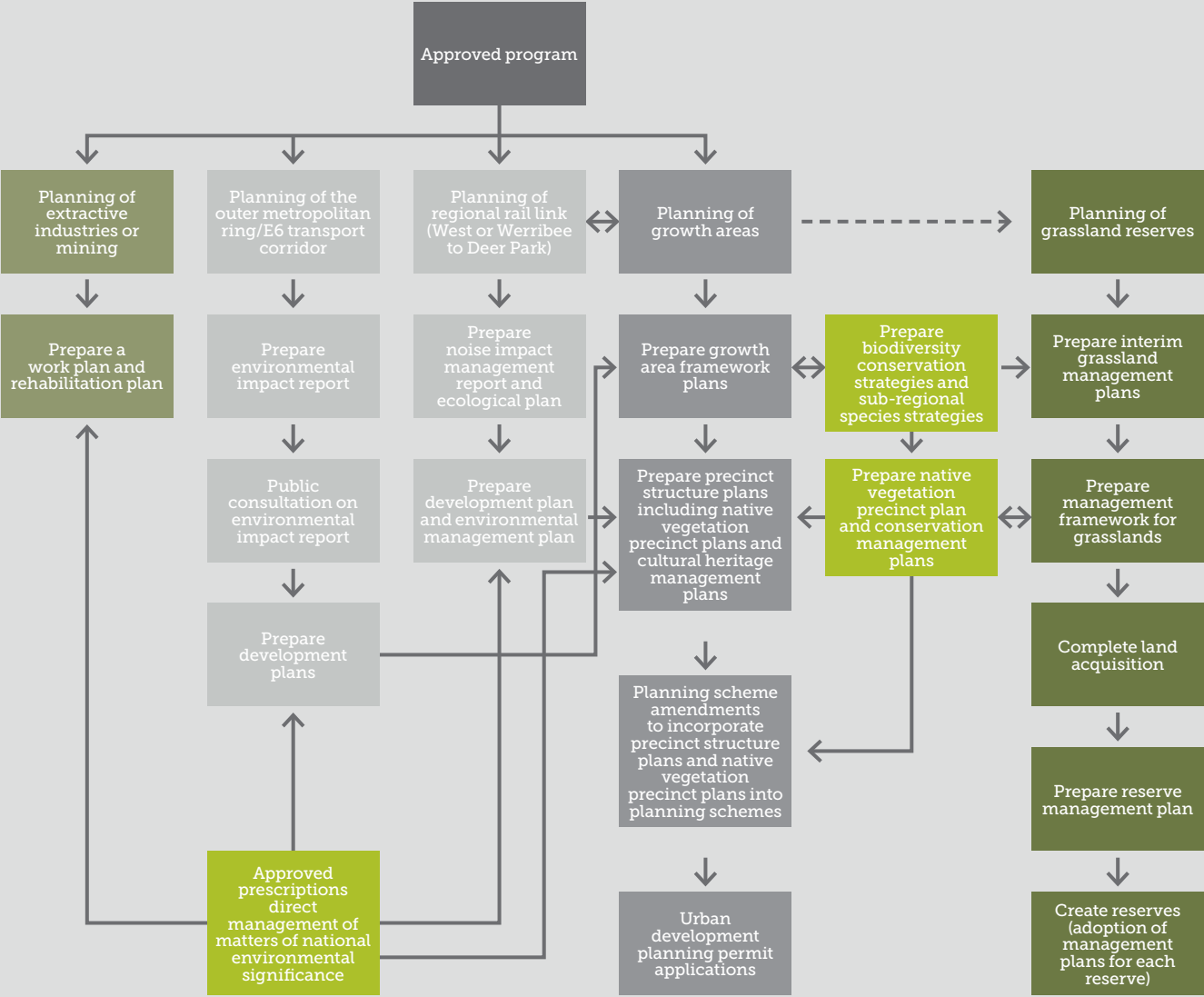
The program report outlines the steps for implementing the program, including the logic and relationship between the key statutory documents. This strategy is a requirement of Stage 2 of the program's implementation process (see diagram 1).

2.2 State legislation

The *Planning and Environment Act 1987* (P&E Act) is the primary legislation for regulating the program in Victoria. The P&E 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.

The key state legislation that will apply at each stage of implementing the program is identified 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.

Diagram 1: Process for Stage 2 of the Program – Implementation (Victorian Government 2009)





## 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 with the involvement of 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.

The 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.

The Growth Corridor Plans have been informed by this strategy and the Biodiversity Conservation Strategy (DEPI, 2013a). The plans require approval by the State Minister for Planning.

### 2.3.2 Biodiversity Conservation Strategy

The Biodiversity Conservation Strategy (DEPI, 2013a) sets out all the requirements for matters of national environmental significance and state significance in the growth corridors to satisfy commitments made to the Commonwealth Government in the program report.

The purposes of the Biodiversity Conservation Strategy are:

- > Inform and guide the preparation of the Growth Corridor Plans
- > 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.

The Biodiversity Conservation Strategy identifies land within the growth corridors that cannot be cleared for urban development and will be protected and managed for conservation, and land that can be cleared. No additional land will be required to be protected during the precinct structure planning stage in the area covered by the Biodiversity Conservation Strategy.

The Biodiversity Conservation Strategy has applied the protection requirements of the sub-regional species strategies to identify the land that is required to be protected for conservation. The implementation of the Biodiversity Conservation Strategy will therefore satisfy the protection requirements of this strategy.

### 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.

The 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.

Precinct structure 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 relevant authority (usually council) for urban development.



Photo: DSE

### 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 Victorian 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 within 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 assessment and mapping to standards specified by DEPI.

Native vegetation precinct plans must be prepared based on the time-stamping maps and dataset (see DEPI, 2013a), which will cover all native vegetation patches within the precinct, and will be supplemented by surveys of individual trees only where relevant.

The plans are incorporated into the relevant local planning scheme. The plans are prepared in accordance with DSE's Biodiversity Precinct Structure Planning Kit<sup>3</sup> and in accordance with the program report, must be consistent with the prescriptions.

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3 The Biodiversity Precinct Structure Planning Kit provides direction on the type, detail and format of information to be provided in precinct structure plans in the form of mandatory templates. The kit specifies the state and Commonwealth governments' requirements to meet the standards and commitments in the program report. The kit is consistent with the Native Vegetation Management Framework. The kit will be reviewed periodically by DEPI and the GAA as planning processes are refined during the development of precinct structure plans and where necessary will be updated to reflect the new requirements and processes in the Biodiversity Conservation Strategy.

### 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 the Golden Sun Moth conservation areas located within the growth corridors when land is secured for conservation. Management plans are explained in more detail in the Biodiversity Conservation Strategy (DEPI, 2013a).

### 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 those matters have been approved by the Commonwealth Government.

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 (or compensatory habitat), 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
- > Grassy Eucalypt Woodland
- > Golden Sun Moth
- > Striped Legless Lizard
- > Growling Grass Frog
- > Southern Brown Bandicoot
- > Matted Flax-lily
- > Spiny Rice-flower
- > Migratory species.

The program report allows the existing prescriptions to be revised in certain circumstances.

This strategy incorporates the requirements of the prescription for Golden Sun Moth (DEWHA, 2010) with some refinements to the way the prescription is implemented. The implementation of this strategy will satisfy the intent and requirements of the prescription and is designed to deliver the conservation outcomes for the species identified in the program report.

This strategy replaces the approved prescription for Golden Sun Moth within the growth corridors including any of the existing 28 precincts for which a planning scheme amendment to introduce a precinct structure plan has not been approved prior to 1 March 2012.

In some precinct structure plan areas, landowners have undertaken surveys for Golden Sun Moth to DSE standards and wish to utilise the approach set out in the prescription for Golden Sun Moth to determine their offset obligations, rather than utilise the standardised flat-fee approach set out in the Biodiversity Conservation Strategy. This approach may be utilised in the following specific areas:

- > Greenvale Activity Centre (now part of PSP 21 Greenvale Central)
- > Werribee Employment Precinct (PSP 39) (includes the new PSP 39A Point Cook West)
- > Rockbank North (PSP 1079) (part only)<sup>4</sup>
- > Lockerbie North (part only)<sup>5</sup>
- > Lockerbie<sup>6</sup>
- > Manor Lakes (part only)<sup>7</sup>
- > Truganina employment precinct<sup>8</sup>.

### 2.3.8 Funding of the conservation measures

The conservation measures in this strategy will be funded using a cost recovery model. The model will establish the fees that will be collected from developers and used to mitigate the impacts of urban development on Golden Sun Moth habitat in the area covered by this strategy.

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

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- 4 This relates to land at 1992-2106 Western Hwy Rockbank (2010 growth corridor) only, which represents about 90 percent of the precinct.
  - 5 This relates to land at 75 Stewart St Beveridge only, which represents about 25 percent of the precinct.
  - 6 This applies to the following land within the Lockerbie Precinct only: 40 Dywer Street, Kalkallo; 300 Hume Highway, Beveridge; 1450 Hume Highway, Kalkallo; 1440 Hume Highway, Kalkallo; 110 Dwyer Street, Kalkallo.
  - 7 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, and land covered by planning permit WYP3840.
  - 8 Only where a planning permit issued prior to the Commonwealth Environment Minister's approval of the Biodiversity Conservation Strategy authorises the use of the Golden Sun Moth prescriptions in determining Golden Sun Moth obligations for the land.

### 3. CURRENT STATUS AND INFORMATION

At the time DSE prepared the Strategic Impact Assessment Report (DSE, 2009b), the known sightings of Golden Sun Moth were almost exclusively concentrated in and around the west and north of Melbourne, with a very few records across the west and north of the state (Figures 1 and 2). The report stressed that this was more than likely a skewed picture of its true distribution as most surveys had been done as part of urban development planning.

The Strategic Impact Assessment Report stated:

*The lack of widespread surveying and recent survey results indicate that the true state of the species is more likely to be endangered or vulnerable rather than critically endangered.*

The Growth Areas Authority (GAA) has done intensive, targeted surveys for Golden Sun Moth in the new growth corridors over the last two years. During a similar period DSE has also done surveys across the historic range of the Golden Sun Moth in regional Victoria, outside the Urban Growth Boundary (Brown and Tolsma 2010, Brown *et al.* 2011).

Many new sites have been found throughout southern and western Victoria as a result of this work. Figures 1 and 2 show the increase in recorded occurrences of Golden Sun Moth across south-western Victoria and within Melbourne since the Strategic Impact Assessment Report was prepared in 2009.

In 2010, the GAA commissioned an investigation and analysis of information about the Golden Sun Moth within south-eastern Australia, including the data gathered by DSE and the GAA over the previous year. Analysis of this information from Victoria, Australian Capital Territory and New South Wales indicates that there may be grounds for downgrading the moth's conservation status from critically endangered to endangered (Gilmore and Harvey 2010). This would primarily be due to the increases in the known area of occupied habitat since the species was listed in 2000, from less than 10km<sup>2</sup> to more than 150km<sup>2</sup> (Gilmore and Harvey 2010).



Photo: Copyright Daniel Gilmore

Since that work was undertaken, additional data has been collected by DSE and GAA. Preliminary analysis indicates these data are unlikely to change the conclusion of Gilmore and Harvey (2010) despite the additional confirmed occurrences.

Any decision to amend the conservation status of the Golden Sun Moth would be made by the Commonwealth Government. The time required for the Commonwealth Government to consider all evidence and initiate the amendment process, if necessary, means that any decision to amend the conservation status is unlikely to result in any changes to the approach adopted under the Melbourne Strategic Assessment, at least in the short-term.



## 4. APPROACH TO DATE

The program report sets out the approach Victoria is taking to managing Golden Sun Moth in the urban context over the short and long-term. The main components of this approach are described below.

### 4.1 Long-term target

Victoria has committed to the following target for the conservation of Golden Sun Moth habitat:

*Eighty per cent of the highest priority habitats for Golden Sun Moth within the Victorian Volcanic Plains bioregion will be permanently protected and managed.*

Highest priority habitats for the Golden Sun Moth are defined as: *places where 'high contribution to species persistence' and 'confirmed habitat' intersect.*

In this report 'high contribution to species habitat' is abbreviated to high contribution habitat.

When this commitment was made, about 15 per cent of these highest priority habitats were protected in existing conservation reserves. Section 5.2 provides an update on progress towards meeting this target.

### 4.2 Application of the prescription

The Commonwealth Environment Minister approved the prescription for Golden Sun Moth on 16 April 2010 (Appendix 1). The prescription sets the rules for managing the species within a precinct structure plan or other development area, including a requirement to survey to determine presence or absence of the moth prior to land-use decisions being made. Importantly it determines whether habitat can be cleared or whether it must be retained on-site.

#### High contribution to species persistence habitat

Areas of native vegetation (grassland, grassy woodland) within potentially well connected Golden Sun Moth habitat (native and non-native) where connected habitat is separated by breaks in habitat of less than 200 metres. Native vegetation here essentially means that native species comprise at least 25 per cent of the understorey vegetation cover.

Note: this is a summary of the full definition described in Appendix 3 of the Strategic Impact Assessment Report (DSE, 2009b).

#### Confirmed habitat

Areas of habitat located within a land parcel within which parcel five or more Golden Sun Moths have been recorded.

The general effect of the prescription is to allow for clearing of Golden Sun Moth habitat within the growth corridors conditional on these habitat areas being offset (typically to the Western Grassland Reserves). The prescription requires retention of Golden Sun Moth habitat in native vegetation within a development area if certain conditions are met:

- > At least 100 hectares of contiguous, native high quality grassland habitat in or around the precinct
- > These areas comprise native habitat patches less than 200 metres apart
- > Each habitat patch contains less than 25 per cent cover of high threat perennial grassy weeds.

To date this trigger has been met only once in the Urban Growth Zone.<sup>9</sup>

Offset requirements for native vegetation that is Golden Sun Moth habitat are determined in the same way as for a native vegetation offset, using the habitat hectares metric and following the approach in the Native Vegetation Management Framework (DNRE 2002). In this case the native vegetation offset and Golden Sun Moth offset can be co-located (i.e. one offset satisfies both requirements) provided the offset site supports a population of Golden Sun Moth.

The prescription also requires offsets for non-native vegetation that is Golden Sun Moth habitat. This offset is at a rate of 1 hectare of non-native vegetation that is Golden Sun Moth habitat for 1 hectare of native vegetation that is Golden Sun Moth habitat with a confirmed population of Golden Sun Moth. These offsets can be located anywhere in the Victorian Volcanic Plain bioregion.

#### 4.3 Large areas of habitat permanently protected

The program report committed to establishing the 15,000 hectare Western Grassland Reserves outside the Urban Growth Boundary, which are designed to protect Golden Sun Moth habitat and known populations. These reserves will be progressively acquired over 10 years and be managed in a way that enables Golden Sun Moth to be sustained over the long term through a series of connected populations and adaptive management regimes.

#### 4.4 Smaller reserves to manage risk

Generally larger areas of connected habitat are considered the priority for protection of Golden Sun Moth over the long-term. A selection of smaller reserves and protected areas are also required to mitigate the potential risk of catastrophic events in the large reserves. It is well known that small reserves can contain substantial numbers of Golden Sun Moth that have persisted for many years with targeted management.

These additional reserves will be located both inside and outside the Urban Growth Boundary. Smaller reserves within Melbourne will help retain genetic diversity across the species' range, in conjunction with offsets secured outside urban Melbourne.

#### 4.5 Greatly improved information

One of the greatest challenges with managing the Golden Sun Moth in the urban context has been the lack of information on its true extent and distribution. In addition, the characteristics of the Golden Sun Moth mean that it can only be surveyed over a very limited number of days between October and January each year. This limits the amount of new data that can be collected in any given year.

Therefore a key part of the approach has been to undertake strategically planned surveys and collection of habitat information to improve our ability to make informed management choices.



Photo: Copyright Daniel Gilmore

<sup>9</sup> The Truganina South Community Precinct Structure Plan resulted in a Golden Sun Moth reserve of 38 hectares and clearing of 250 hectares (figures approximate).

## 5. APPLICATION OF THE PRESCRIPTION

### 5.1 Strategic application of the prescription in the growth corridors

New and existing data has been analysed to determine areas within the growth corridors where the particular habitat triggers outlined in the Golden Sun Moth prescription are likely to be met. This has been a collaborative exercise between DSE and the GAA.

#### 5.1.1 Analysis methods

The following process was used to determine where the Golden Sun Moth prescription was likely to trigger an on-site protection requirement.

The initial determination of where the protection criteria in the prescription may be met is dependent on information about native vegetation extent and condition, including the extent of perennial high threat weeds. DSE has produced a native vegetation extent and condition map for each of the new growth corridors as part of the native vegetation time-stamping project which is included in the Biodiversity Conservation Strategy (DEPI, 2013a).

The data used to produce the native vegetation map include the necessary components to analyse the criteria in the prescription.

The geographic information systems process to spatially analyse the prescription was as follows:

- > Identify native vegetation polygons containing grassland or grassy woodland patches with less than 25 per cent high threat perennial grassy weeds<sup>10</sup>
- > Buffer these native vegetation patches by 100 metres
- > Identify areas containing overlapping polygons (i.e. no more than 200 metres apart) which are at least 100 hectares in extent.

The final step was to determine whether Golden Sun Moth has been confirmed within the greater than 100 hectare habitat areas according to criteria in DSE's Biodiversity Precinct Structure Planning Kit. This step is dependent on survey data, which in some cases is not available due to access to private property having been refused.

The analysis of available data described above resulted in maps showing all areas where the retention triggers in the prescription have been met – areas of native grassland at less than 200 metres apart with less than 25 per cent high threat perennial grassy weeds. The maps show areas of 50 to 100 hectares and areas greater than 100 hectares (see Figures 3 and 4).

These maps represent a maximum extent of habitat protection as a result of applying the prescription. These areas were refined following prioritisation of sites, as described below.

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10 This is primarily determined by identifying areas with a weed score of 6 or above (from habitat hectares data). This is considered a reasonable surrogate for 'less than 25 per cent high threat perennial grassy weeds' criterion in the prescription. However where data on the per cent cover of high threat perennial grassy weeds has been recorded this was used in preference.

### 5.1.2 Prioritising sites for protection

The completion of mapping showing where the retention triggers in the prescription apply (Figures 3 and 4) have provided a spatial view of the prescription enabling the prescription to be considered strategically in order to implement the prescription and achieve the outcomes in the program report and this strategy in the most effective manner.

The following criteria are relevant in applying the prescription strategically:

- > The practical management of retained areas taking into account the future land-use context and the availability of site data
- > The objective of establishing smaller reserves and protected areas, providing insurance against risk of catastrophic events in the large reserves outside the Urban Growth Boundary
- > The need to retain genetic diversity across the species' range.

The application of these criteria has emphasised the importance of retaining areas distant from the larger Western Grassland Reserves (to mitigate the potential risk of catastrophic events and to protect more of the species' range) but only where such areas are practically manageable. In the western growth corridor, the relative importance for Golden Sun Moth conservation of sites such as Woods Road Truganina and the Kororoit Regional Park/Clarkes Road grasslands is increased compared to sites abutting the proposed Western Grassland Reserves. It also stresses the importance of sites in the northern growth corridor at Kalkallo and Mickleham which are a considerable distance from existing reserves such as the Craigieburn Grassland Reserve as well as the proposed Grassy Eucalypt Woodland Reserve (outside the Urban Growth Boundary).

A further consideration is the management of areas retained for conservation. Although the prescription includes a requirement to retain habitat and establish a protected area if certain triggers are met, not all of the habitat that meets these triggers need be retained, as there is a secondary test regarding the practical management of the site. This test is the responsibility of DSE, which will determine the final size and shape of the reserves. In this case, some areas of habitat identified for retention according to the prescription will be permitted to be removed, subject to appropriate offsets. The factors considered in making these determinations are discussed in detail in Gilmore and Mueck (2010).

The result of this assessment in the context of the prescription map (Figures 3 and 4) is that certain areas that have potentially very high edge effects or are otherwise unconsolidated have not been included in this strategy as Golden Sun Moth conservation areas on the basis of practical management considerations.

On the basis of the above prioritisation criteria, some areas previously set aside for protection of Golden Sun Moth in Planning Scheme Amendment VC68 and zoned as Rural Conservation Zone are no longer considered to be priority habitat for the species. These areas provide only low quality habitat for Golden Sun Moth (they generally contain little or no native vegetation, as shown in Figure 11 of the Biodiversity Conservation Strategy). Specifically these areas are:

- > The northern section (about 50 hectares) of the Rural Conservation Zone adjacent to Riding Boundary Road, Mount Cottrell and the proposed Outer Metropolitan Ring Transport Corridor/E6 Road Reservation
- > The northern section (about 60 hectares) of the Rural Conservation Zone within the 'Ballan Triangle' adjacent to Ballan Road, Wyndham Vale and Outer Metropolitan Ring Transport Corridor/E6 Road Reservation
- > The entirety (about 270 hectares) of the Rural Conservation Zone adjacent to Black Forest Road, Mambourin and the Outer Metropolitan Ring Transport Corridor/E6 Road Reservation.

The result of this prioritisation is the identification of Golden Sun Moth conservation areas.

### 5.1.3 Conservation areas

There are no areas identified for conservation of Golden Sun Moth within the north-western growth corridor despite the presence of some small areas (less than 20 hectares) of high contribution habitat. The lack of larger areas of connected high contribution habitat and the absence of Golden Sun Moth records resulting from surveys that have been undertaken to date makes the north-western growth corridor a low priority for conservation of the species.



Photo: DSE

In the northern growth corridor there are no areas which meet the 100 hectare threshold of confirmed high contribution habitat (Figure 4). However, given the abundance of Golden Sun Moth records in the northern growth corridor and the lack of protection of high contribution habitat within the growth corridor, it is considered imperative to secure some of the most important areas for Golden Sun Moth conservation. The two largest areas of confirmed high contribution habitat in the northern growth corridor are at Kalkallo (west of the Hume Hwy) and at Mickleham Rd/Mt Ridley Road. Protecting these sites will contribute effectively to the objectives of:

- > Establishing smaller reserves and protected areas, providing insurance against risk of catastrophic events in the large reserves outside the Urban Growth Boundary
- > Retaining genetic diversity across the species' range.

Three other conservation areas in the northern growth corridor designated in the Biodiversity Conservation Strategy (conservation areas 26, 27 and 33) (DEPI, 2013a) will also protect areas of confirmed high contribution habitat for Golden Sun Moth, in particular conservation area 26. Although these conservation areas are primarily established to protect other matters of national environmental significance, they will contribute to the overall conservation outcomes for Golden Sun Moth as a result of improved management of habitat within the relevant areas.

In the western growth corridor (Figure 3) there are seven conservation areas. The Woods Road conservation area is an extension to the overall Truganina South conservation area and was an integral component of the prescription triggers and rationale that established the Truganina South Community Precinct Structure Plan.

The other conservation areas are included due to the presence of confirmed high contribution habitat and/or for additional reasons identified in the Biodiversity Conservation Strategy (DEPI, 2013a).

Figures 3 and 4 show the Golden Sun Moth conservation areas. The details of each area identified for conservation of Golden Sun Moth are provided in Table 1..



**Table 1:** Conservation areas for Golden Sun Moth within the growth corridors

Site	Conservation area	Justification
WESTERN GROWTH CORRIDOR		
<b>Sinclair Rd Plumpton, Taylors Rd Plumpton and Clarkes Rd Rockbank</b>	Conservation areas 1, 2 and 3	Part of Clarkes Rd/Kororoit Ck North grassland area that meets prescription requirement for habitat*  Site also protected for additional reasons identified in the Biodiversity Conservation Strategy (DEPI, 2013a)
<b>Greigs Rd Mount Cottrell</b>	Conservation area 4	Part of large area that meets prescription requirement for habitat*  Golden Sun Moth confirmed on-site  Contiguous with Western Grassland Reserves so less of a priority for securing additional parts of the species' range (refer criteria in section 5.1.2.2)  Site also protected for additional reasons identified in the Biodiversity Conservation Strategy (DEPI, 2013a)
<b>Mount Atkinson Rd Mount Cottrell</b>	Conservation area 7	Part of large area that meets prescription requirement for habitat*  Contiguous with Western Grassland Reserves so less of a priority for securing additional parts of the species' range (refer criteria in section 5.1.2.2). Size of Golden Sun Moth population unknown due to inability to access site for surveys.  Site protected for additional reasons identified in the Biodiversity Conservation Strategy (DEPI, 2013a)
<b>Middle Rd (north) Mount Cottrell</b>	Conservation area 8	Part of large area that meets prescription requirement for habitat*  Set aside for protection of Golden Sun Moth in Planning Scheme Amendment VC68, however size of Golden Sun Moth population unknown due to inability to access site for surveys
<b>Middle Rd (south) Mount Cottrell</b>	Conservation area 9	Part of large area that meets prescription requirement for habitat*  Contiguous with Western Grassland Reserves so less of a priority for securing additional parts of the species range (refer criteria in section 5.1.2.2). Size of Golden Sun Moth population unknown due to inability to access site for surveys  Site protected for additional reasons identified in the Biodiversity Conservation Strategy (DEPI 2013a)
<b>Woods Rd Truganina</b>	Conservation area 11	Part of Truganina South Golden Sun Moth Conservation Site. Priority site for retention
<b>Ballan Rd Wyndham Vale</b>	Conservation area 13	Part of large area that meets prescription requirement for habitat*  Set aside for protection of Golden Sun Moth in Planning Scheme Amendment VC68, however size of Golden Sun Moth population within the highest quality habitat (eastern half of site) is unknown due to inability to access site for surveys.

\* Within an area of at least 100 hectares that comprises native vegetation patches less than 200 metres apart and each containing less than 25 per cent cover of high threat perennial grassy weeds.

Site	Conservation area	Justification
<b>NORTHERN GROWTH CORRIDOR</b>		
<b>Kalkallo West</b>	Conservation area 23	<p>Largest area within the north growth corridor that meets most prescription requirements for habitat (but less than 100 hectares)*</p> <p>Golden Sun Moth confirmed on-site</p> <p>Important site for securing additional parts of the species range (refer criteria in section 5.1.2)</p>
<b>Mt Ridley West, Mickleham</b>	Conservation area 26	<p>Much of this large site supports grassy woodland vegetation that meets most prescription requirements for habitat (but less than 100 hectares)*</p> <p>Golden Sun Moth confirmed at several locations on-site</p> <p>Site also protected for additional reasons identified in the Biodiversity Conservation Strategy (DEPI, 2013a)</p>
<b>Summerhill Rd (West), Wollert</b>	Conservation area 27	<p>Golden Sun Moth confirmed on-site, however only part of the site supports higher quality habitat (i.e. meets most prescription requirements) and this is less than 100 hectares*.</p> <p>Site also protected for additional reasons identified in the Biodiversity Conservation Strategy (DEPI, 2013a)</p>
<b>Mickleham Rd Mickleham</b>	Conservation area 29	<p>Second largest area within the north growth corridor that meets most prescription requirements for habitat (but less than 100 hectares)*</p> <p>Golden Sun Moth confirmed on-site</p> <p>Important site for securing additional parts of the species range (refer criteria in section 5.1.2)</p> <p>Site also protected for additional reasons identified in the Biodiversity Conservation Strategy (DEPI 2013a)</p>
<b>Austral Bricks Site, Wollert</b>	Conservation Area 30	<p>Much of this large site supports grassy woodland and grassland vegetation that meets most prescription requirements for habitat (but less than 100 hectares)*</p> <p>Golden Sun Moth confirmed on-site (i.e. within the property), but extent of population within the conservation area is currently unknown</p> <p>Site also protected for additional reasons identified in the Biodiversity Conservation Strategy (DEPI 2013a)</p>
<b>O'Hearns Rd, Epping</b>	Conservation area 33	<p>Golden Sun Moth confirmed on-site, however only small areas of the site support higher quality habitat (i.e. meets most prescription requirements) and this is less than 100 hectares*.</p> <p>Site also protected for additional reasons identified in the Biodiversity Conservation Strategy (DEPI, 2013a)</p>

\* Within an area of at least 100 hectares that comprises native vegetation patches less than 200 metres apart and each containing less than 25 per cent cover of high threat perennial grassy weeds.



Photo: DEPI

#### 5.1.4 Management of conservation areas

The EPBC Act requires any proposals likely to have a significant impact on listed threatened species and their habitat (matters of national environmental significance) to be approved by the Commonwealth Environment Minister. The approved prescription – and this strategy once approved by the Minister – provides a basis for determining these significant impacts in the context of the Melbourne Strategic Assessment.

The Victorian Planning Provisions and relevant planning schemes will be amended to require landowners to secure land in Golden Sun Moth conservation areas located within the growth corridors. 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 strategy.

Management plans will be prepared for the Golden Sun Moth conservation areas located within the growth corridors that set out how these areas will be managed to conserve this species and identifying conservation objectives and management arrangements. Management plans are explained in more detail in the Biodiversity Conservation Strategy (DEPI, 2013a).

The mechanisms for securing and managing land identified for conservation by this strategy are described in more detail in the Biodiversity Conservation Strategy (DEPI, 2013a).

## 5.2 Achieving 80 per cent protection across the Victorian Volcanic Plain

Victoria has committed to protection of 80 per cent of confirmed high contribution habitat for Golden Sun Moth across the Victorian Volcanic Plain bioregion.

DEPI is responsible for formal accounting of the 80 per cent protection goal. All permanently protected 'high contribution' habitat will be counted towards this goal if it achieves the same standard of protection as for an offset under the Native Vegetation Management Framework (DNRE 2002). This will include:

- > Conservation areas protected within the Urban Growth Boundary
- > Land secured to provide offsets for clearing of Golden Sun Moth habitat outside the Urban Growth Boundary
- > Areas within existing and new conservation reserves, not part of the Melbourne Strategic Assessment, where the required standard of protection is achieved.

When this commitment was made, about 15 per cent of the highest priority habitat was protected. The securing of land proposed for the Western Grassland Reserves will protect about 8,100 hectares of confirmed high contribution habitat. In addition the conservation areas within the Urban Growth Boundary identified in the Biodiversity Conservation Strategy (DEPI, 2013a) will protect about 410 hectares of confirmed high contribution habitat. These two components will increase the overall percentage protected to about 75 per cent (DEPI, 2013c). The proposed Grassy Eucalypt Woodland Reserve outside Melbourne has not been included in this 75 per cent protection figure, as surveys to confirm the presence of the Golden Sun Moth have not yet been undertaken in the area.

After this, an additional 680 hectares of confirmed high contribution habitat is required to be permanently protected to achieve the 80 per cent target (DEPI, 2013c).

In order to achieve this, the requirement to provide compensatory habitat for the removal of non-native Golden Sun Moth habitat will now be focussed primarily on achieving the remainder of the Golden Sun Moth habitat required to meet the 80 per cent target. This will occur as follows:

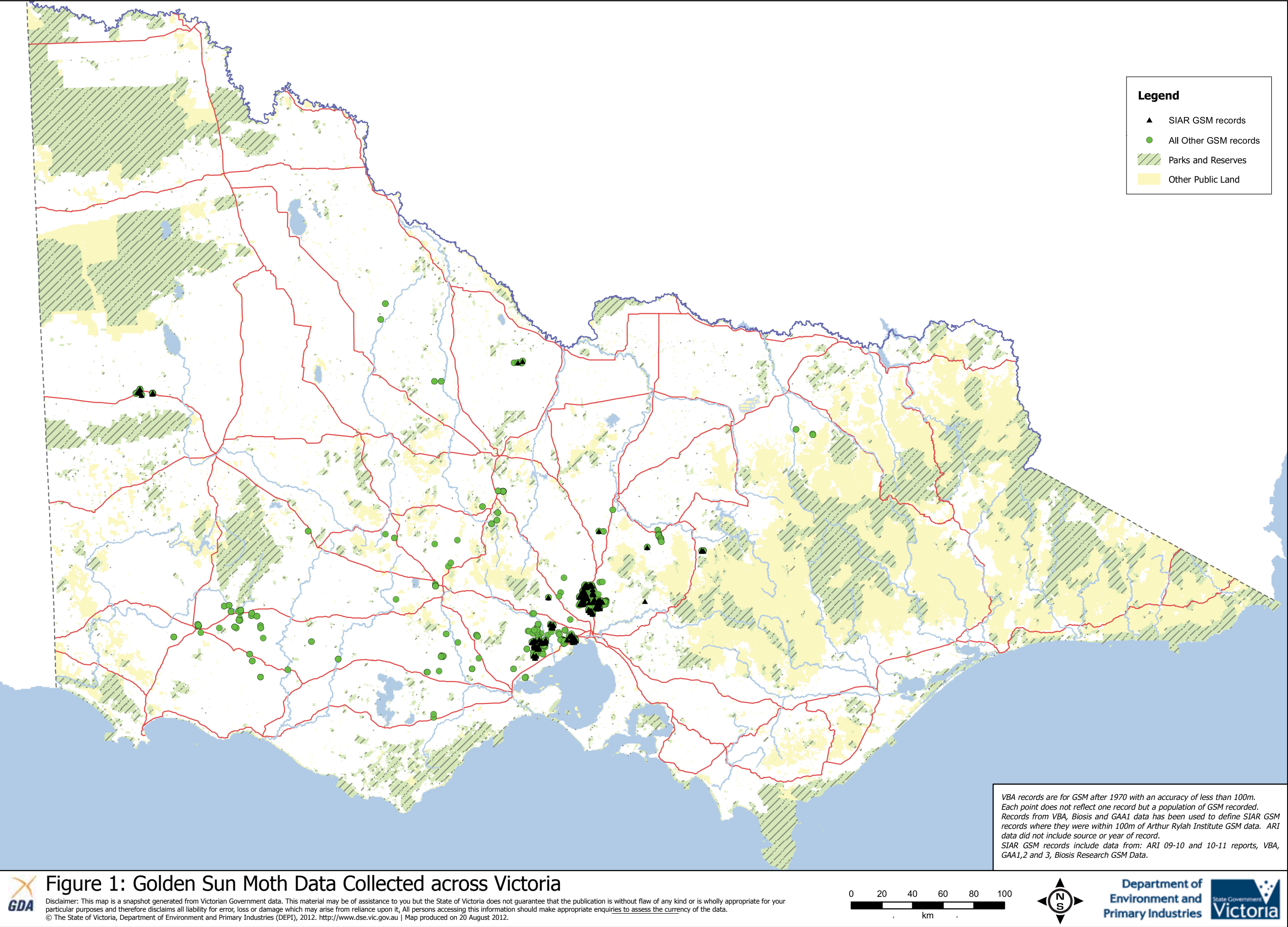
- > All habitat (native and non-native grassland and woodlands), excluding any areas identified as Growling Grass Frog habitat in DEPI (2013b), will be deemed to be 'confirmed habitat' and therefore invoke an offset requirement if cleared. This removes the need for surveys within the growth corridors, other than in areas designated as a conservation reserve.
- > 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 this strategy and 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, 2013c).

- > For areas in which Golden Sun Moth surveys have been completed prior to 1 March 2012 following procedures outlined in DEPI's Biodiversity Precinct Structure Planning Kit, the offsetting approach in the Golden Sun Moth prescription can be used for the removal of medium contribution habitat instead of the approach described above. The areas that have met this survey standard are listed in section 2.3.7. Once landowners provide the final spatial data resulting from these surveys and prescription requirements, offsets will only be required for those areas associated with actual Golden Sun Moth locations. DEPI will determine prices for offsets on a full cost recovery basis.
- > Further survey work will be undertaken for Golden Sun Moth across the Victorian Volcanic Plain bioregion. When this work is completed a new map will be prepared showing target areas for securing compensatory habitat. Note that the new survey data will not change the total amount of compensatory habitat to be protected to meet the overall targets and commitments in this strategy.

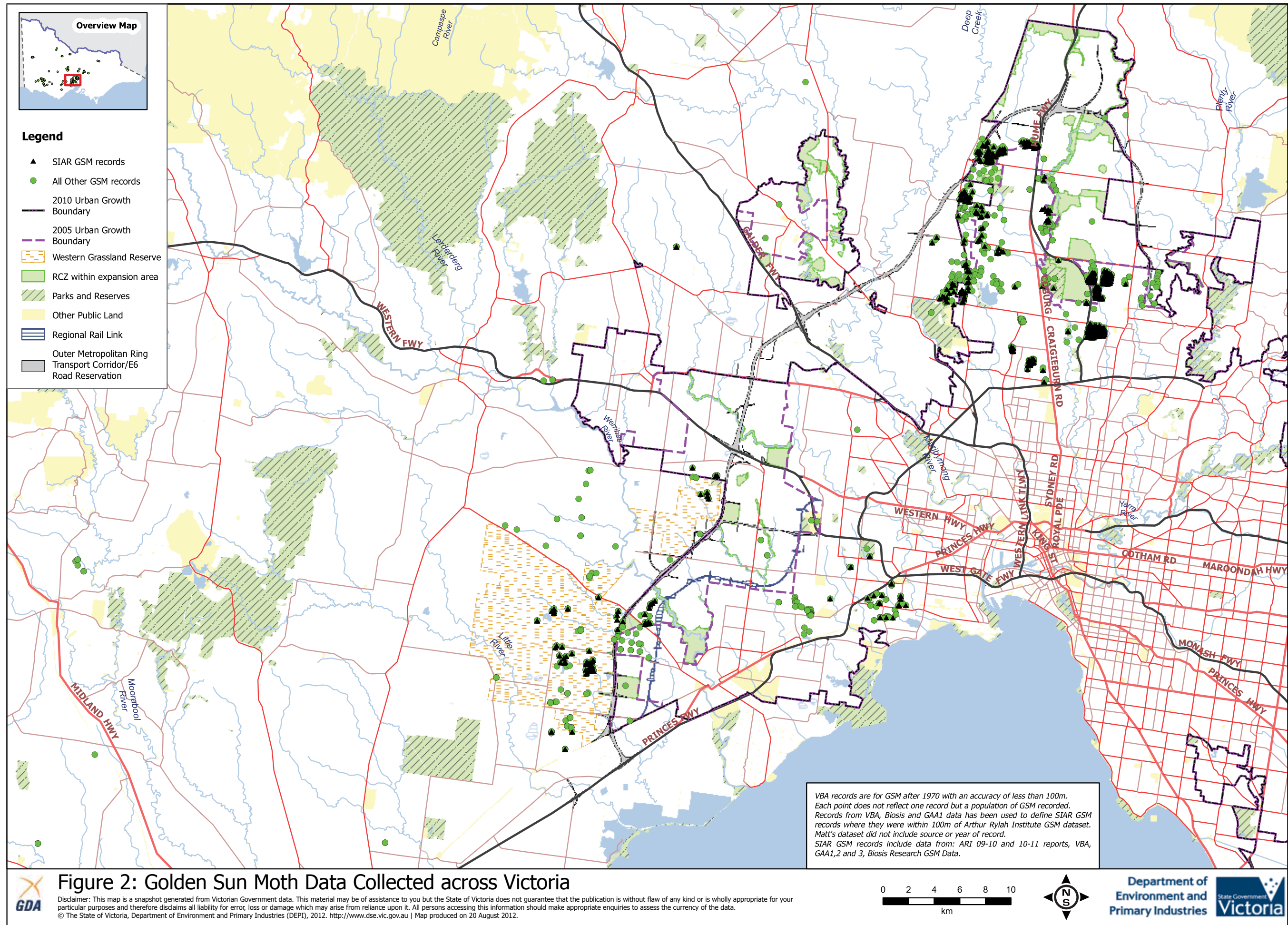
DEPI will continue to report on progress towards achieving the 80 per cent protection target. Annual updates will be published on the DEPI website.



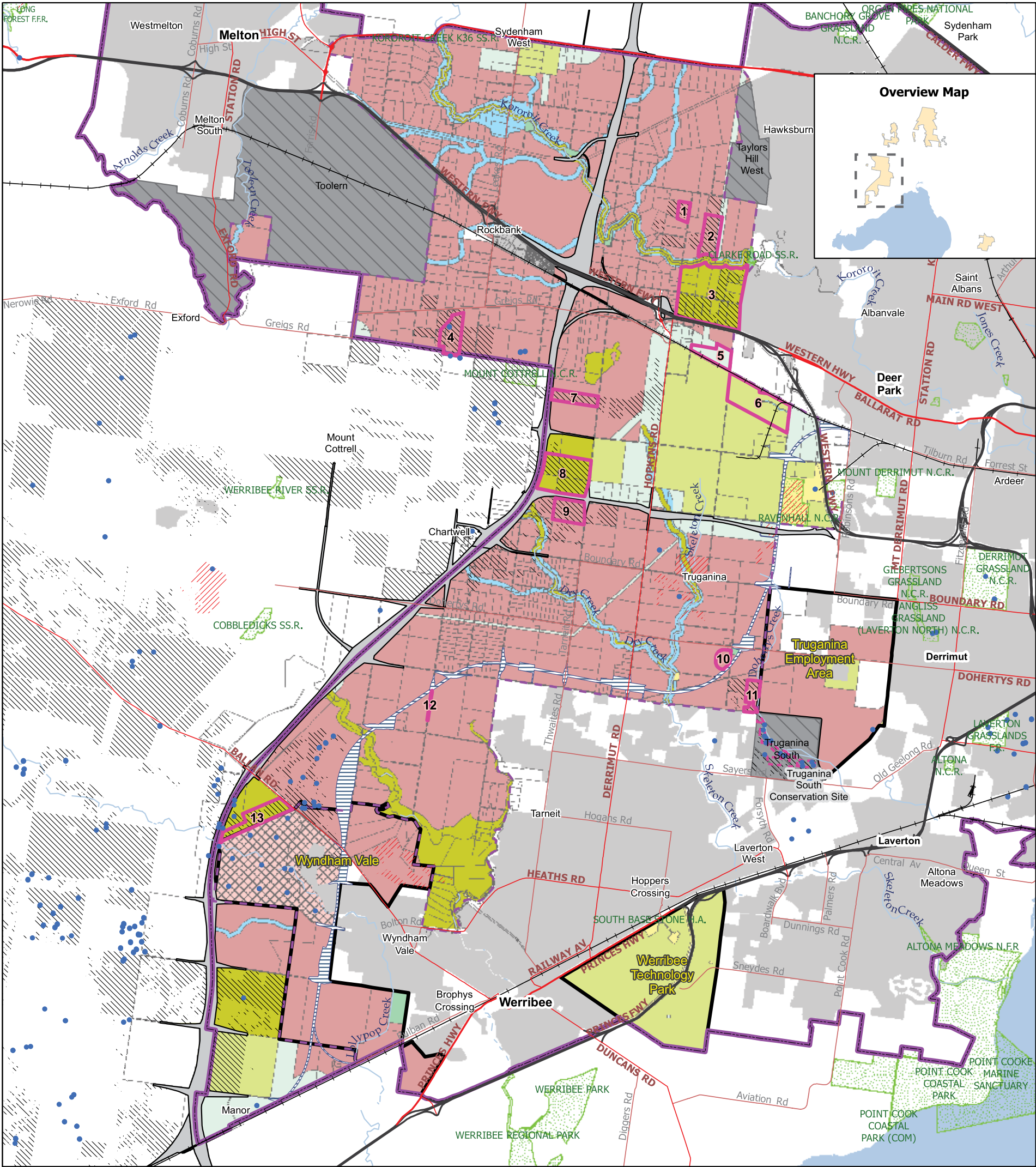












### Legend

- 2010 Urban Growth Boundary
- 2005 Urban Growth Boundary
- Outer Metropolitan Ring Transport Corridor/E6 Road Reservation
- Regional Rail Link
- 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

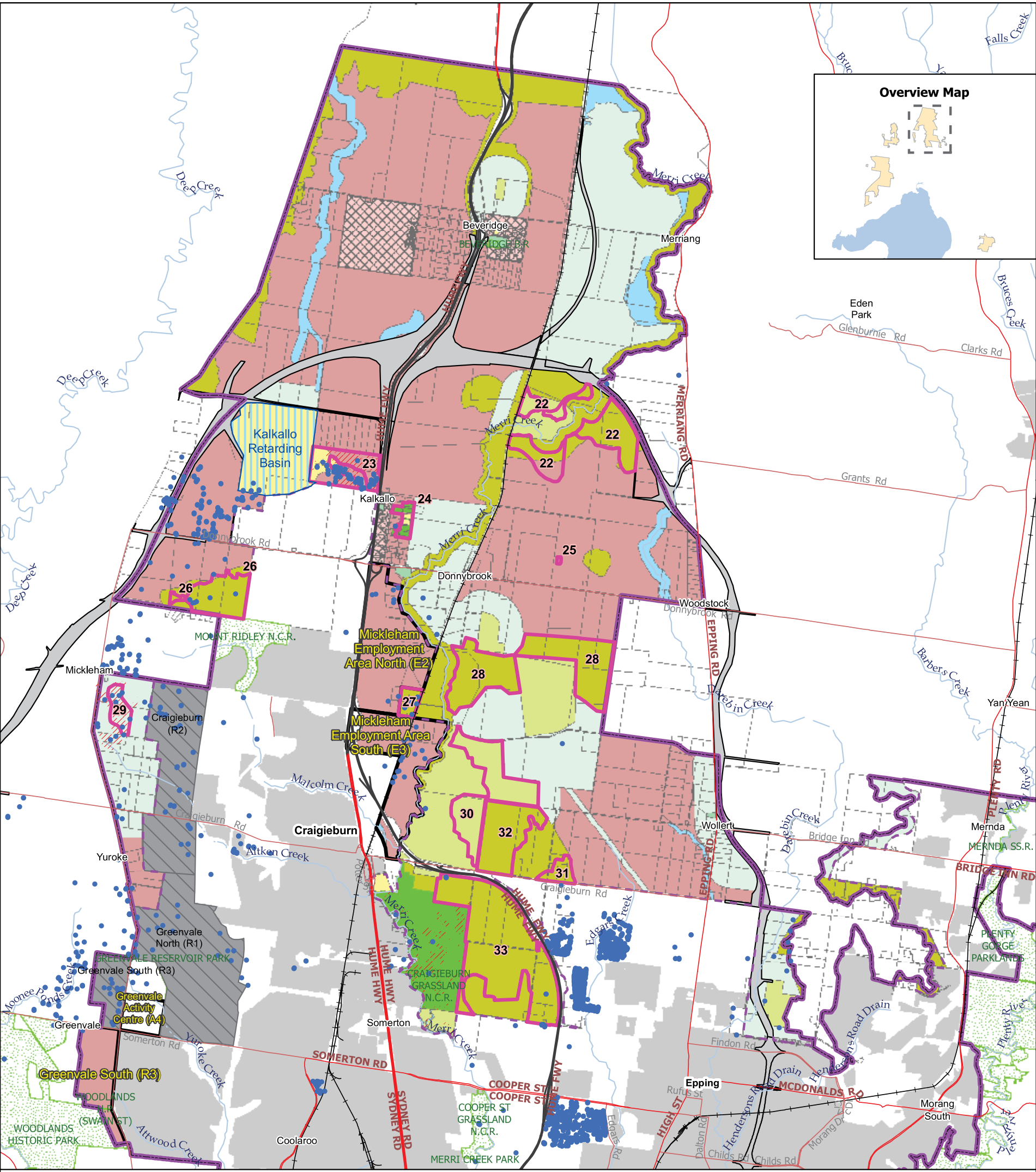
- Public Use Zone
- Rural Conservation Zone
- Special Use Zone
- Urban Flood Zone
- Urban Growth Zone
- Other Urban Zones

- Roads**
  - Freeway
  - Highway
  - Main Road
  - Main Road (Unsealed)
  - Collector
  - Named Watercourse
- Scale: 0 to 5 km
- North Arrow

**Figure 3: Golden Sun Moth – Western Growth Corridor**

Disclaimer: This map is a snapshot generated from Victorian Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data. © The State of Victoria, Department of Environment and Primary Industries (DEPI), 2012. <http://www.dse.vic.gov.au> | Map produced on 20 August 2012.





**Figure 4: Golden Sun Moth – Northern Growth Corridor**

Disclaimer: This map is a snapshot generated from Victorian Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data. © The State of Victoria, Department of Environment and Primary Industries (DEPI), 2012. <http://www.dse.vic.gov.au> | Map produced on 26 April 2012.

## 6. SUMMARY OF KEY DIRECTIONS

This strategy incorporates the requirements of the prescription for Golden Sun Moth. However it also includes some changes to the way the prescription is implemented in the 'new' growth corridors, that is the area between the 2005 and 2010 Urban Growth Boundaries, and land within some of the existing 28 precincts included in the strategic assessment program report (Victorian Government 2009)<sup>11</sup>. The implementation of this strategy will satisfy the intent and requirements of the prescription and is likely to deliver the overall conservation outcomes in a more cost-effective manner. As envisaged in the Strategic Impact Assessment Report the approach set out in this strategy (and affirmed through the Biodiversity Conservation Strategy) will replace the need for a prescription within the new growth corridors.

The two conservation outcomes identified in the program report, with an emphasis on large conservation reserves, together with a network of small reserves inside and outside the Urban Growth Boundary, will be delivered as a result of this strategy (together with the Biodiversity Conservation Strategy). The Western Grassland Reserves satisfies the first component, complemented by the proposed Grassy Woodland Reserve north-east of Melbourne. These reserves will be funded by fees collected from developers to mitigate the impacts of urban development on native vegetation and threatened species habitat in the area covered by this strategy.

The new conservation areas within the Urban Growth Boundary identified in this strategy (and the accompanying Biodiversity Conservation Strategy) together with the future network of protected areas across the Victorian Volcanic Plain generated from Golden Sun Moth offsets will achieve the second component and ensure a reasonable spread of protected habitat areas across the range of the species.

The strategy outlines how the long-term target of achieving protection across the relevant bioregion (through appropriate management) of at least 80 per cent of the total area of places where 'high contribution to species persistence' and 'confirmed habitat' intersect described in the program report will be achieved. The combination of creating the Western Grassland Reserves together with securing new conservation areas within the Urban Growth Boundary identified in the Biodiversity Conservation Strategy (DEPI, 2013a) will achieve 75 per cent protection of these priority habitats. The approach set out in section 5.2 of this strategy will achieve the remaining five per cent of the required target. This will be secured outside the Urban Growth Boundary.

DEPI will continue to report on progress towards achieving the 80 per cent protection target. In addition the results of subsequent surveys will be published and will be used to determine potential sites outside Melbourne that could be secured as compensatory habitat for clearing of non-native Golden Sun Moth habitat within Melbourne. All such updates will be published annually on the DEPI website.

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11 Specifically includes those 28 precincts for which a planning scheme amendment to introduce a Precinct Structure Plan has not been approved prior to 1 March 2012.



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# APPENDIX 1: FINAL PRESCRIPTION FOR GOLDEN SUN MOTH

## Preamble

This prescription must be read in conjunction with any sub-regional strategy for Golden Sun Moth prepared by the Department of Sustainability and Environment in conjunction with the Growth Areas Authority and approved by the Commonwealth.

Before approving clearing of confirmed Golden Sun Moth habitat, decision makers must first check with the Department of Sustainability and Environment to determine the current level of protection across the relevant bioregion of confirmed 'high contribution' habitat.

In this case, protection means the same as it does for a Victorian native vegetation offset: that is, a permanent binding management agreement or public conservation reserve which targets the conservation of the species.

Surveys of Golden Sun Moth will be undertaken by the Growth Areas Authority and Department of Sustainability and Environment across the bioregion over the next two years according to a standard methodology set out in the Biodiversity Precinct Structure Planning Kit. If Golden Sun Moth is recorded at a site, habitat within the whole land parcel in which it is recorded will be designated as 'confirmed', unless the parcel is greater than 3ha in size and DSE has approved a finer scale assessment to determine actual habitat. Such a finer scale assessment would utilise the methodology in the Biodiversity Precinct Structure Planning Kit and would only be applicable to areas of medium or low contribution to species persistence habitat (see below). Instead of assuming all habitat on the parcel is confirmed (i.e. occupied) on the basis of finding five Golden Sun Moths, it would instead survey the whole parcel systematically (two repeat visits with decreasing sized transects) to record a circle of 100 metre radius centred on every point where an actual moth was located. At the end of this process the recorded circles will represent the confirmed habitat for the purposes of this prescription.

The native vegetation data collected during site surveys will be used by the Department of Sustainability and Environment to confirm the relevant habitat classes (contribution to species persistence) on that site. The three species persistence categories are described in Appendix 3 of the Strategic Impact Assessment Report October 2009 and summarised as follows.

High: Areas of native vegetation (grassland, grassy woodland) within potentially well connected Golden Sun Moth habitat (native and non-native) where connected habitat is separated by breaks in habitat of less than 200 metres. Native vegetation here essentially means that native species comprise at least 25 per cent of the understorey vegetation cover.

Medium: Areas of non-native vegetation within well connected Golden Sun Moth habitat as above.

Low: Native or non-native vegetation within poorly connected habitat.

Once this step has been undertaken, the area to be reconciled with the 80 per cent protection target across the bioregion is then the area of 'high contribution to species persistence' habitat on the land parcel as a whole.

Areas retained for Golden Sun Moth that meet the 100ha threshold below could be either scattered habitat within a broader public open space network or condensed habitat surrounded by urban development. Any retained habitat must be able to be practically managed given the current and future land-use context. The thresholds below have been chosen partly for this reason. Management requirements include identification of a practical biomass reduction regime (where required) that can be implemented in the long-term and that manages risk of collateral damage to the Golden Sun Moth population on the site (e.g. as a result of fire or slashing). The determination of a practical management area and shape will be undertaken by the Department of Sustainability and Environment.

This may exclude from the reserve areas deemed to be impractical or required for local infrastructure (e.g. bike path, local road, etc.) as long as the reserve provides for protection and management of Golden Sun Moth within the precinct (or other development). In situations where this cannot practically be achieved, the matter must be referred to the Commonwealth for resolution.

## Detail

Prior to permitting clearing, surveys to confirm presence or absence of Golden Sun Moth must be undertaken according to the standard methodology set out in the Biodiversity Precinct Structure Planning Kit and relevant native vegetation data must be collected to enable application of this prescription, in any areas shown as habitat on Figure 38 of this report or as updated by the Department of Sustainability and Environment.

Clearing of native vegetation on a land parcel confirmed to support Golden Sun Moth may not occur until there is:

*protection across the relevant bioregion (through appropriate management) of at least 80 per cent of the total area of places where 'high contribution to species persistence' and 'confirmed habitat' intersect,*

as confirmed by the most recent publicly available report compiled by the Department of Sustainability and Environment;

Or

If the 80 per cent target of 'protected confirmed high contribution habitat' has not been reached across the bioregion (as advised by the Department of Sustainability and Environment) such clearing may be permitted in the following circumstances:

1. If the clearance is unavoidable for the provision of infrastructure of state significance; or
2. If the native habitat that could otherwise be retained within the land parcel contains greater than 25 per cent cover of high threat perennial grassy weeds; or
3. If the habitat proposed to be cleared is not located within an area of at least 100ha comprising native habitat patches less than 200 metres apart.

Non-native habitat (ie. 'medium' and 'low' contribution habitat) and areas of non-habitat on that land parcel may be cleared, subject to native vegetation or other requirements (see below).

If clearing of high contribution habitat (native grassland or grassy woodland) is permitted, an offset must be found and secured prior to the commencement of the associated clearing of native vegetation or habitat. In these cases offsets will be determined by treating the vegetation to be removed as Very High conservation significance as a result of its habitat values for the Golden Sun Moth, and the relevant like for like criteria followed including a requirement that the offset site must contain a population of Golden Sun Moth. Offsets in these cases must be located within areas of 'high contribution to species persistence' habitat containing a population of Golden Sun Moth (e.g. Western Grassland Reserves, Grassy Eucalypt Woodland Reserve or areas of native vegetation retained within the Urban Growth Boundary that meet prescription requirements for retention of Golden Sun Moth).

Prior to clearing of confirmed 'medium' contribution habitat an equivalent area of native vegetation confirmed to support Golden Sun Moth must be found and secured. If the Department of Sustainability and Environment has approved a finer scale assessment of confirmed habitat, any area not included within a confirmed habitat circle would be excluded from offsetting requirements.

Prior to commencement of clearing of confirmed 'low contribution' habitat the proponent must commission surveys and confirm the presence of an area of confirmed Golden Sun Moth habitat outside the Urban Growth Boundary equivalent to that proposed to be cleared.

In circumstances agreed by the Department of Sustainability of Environment, the requirement to identify and secure offset habitat prior to clearing may be met through credits arranged with the Department of Sustainability and Environment and BushBroker for the future acquisition of offsets within the reserve areas described above.

Any sites retained as a result of this prescription must be managed to the standards specified for a native vegetation offset under Victoria's Native Vegetation Management Framework in terms of security and management. A fully costed Conservation Management Plan must be prepared to the satisfaction of the Department of Sustainability and Environment prior to commencement of clearing within the sub-precinct setting out the detailed management arrangements for the Golden Sun Moth within the retained area.

