

Amendment C205 to the Hume Planning Scheme  
Lindum Vale Precinct Structure Plan:  
Ecological Assessment

**Expert retained by Satterley Property Group Pty Ltd**  
**12 February 2018**

## 1. Name and address

---

Aaron HARVEY

Director – Consulting Services

Biosis Pty Ltd

38 Bertie Street

Port Melbourne

VIC 3207

## 2. Qualifications and experience

---

### 2.1 Qualifications and Training

- Bachelor of Science (Hons), Deakin University
- Bachelor of Applied Science, Deakin University
- Diploma Natural Resource Management, Swinburne University

### 2.2 Professional Affiliations and Memberships

- Australian Institute of Alpine Studies
- Environment Institute of Australia and New Zealand
- Victorian Planning and Environmental Law Association

### 2.3 Professional Experience

I am the Director of Consulting Services at Biosis Pty Ltd, a leading ecology and cultural heritage consulting firm with offices in Melbourne, Ballarat, Wangaratta and interstate. I have worked extensively in a wide range of environments throughout eastern Australia, conducting numerous flora and fauna surveys, preparing rehabilitation and revegetation plans and providing general ecological advice to Commonwealth, State and Local Government, private companies and land managers. I have particular experience in flora and fauna management, habitat hectares assessments and environmental impact studies, especially within Melbourne's growth areas.

From 2008 to 2015, I worked closely with the Growth Areas Authority (GAA, now the Victorian Planning Authority (VPA)) and the Victorian Government Department of Sustainability and Environment (DSE, now the Victorian Department of Environment, Land, Water and Planning (DELWP)) on the mapping of vegetation and fauna habitat across approximately 20,000 hectares in the Melbourne region. I was also involved in the Sub-regional Survey for the Golden Sun Moth and in revising the Southern Brown Bandicoot and Growling Grass Frog Sub-regional Species Strategies (SRSS) for the GAA and DSE respectively.

I have also worked on a range of major projects across Victoria and NSW including large scale peri-urban and regional infrastructure developments, as well as a number of alpine resort projects.

Further details about my qualifications and experience can be found in Appendix 1.

## 3. Area of expertise to make this report

---

### 3.1 General expertise

I have worked extensively across south eastern Australia for more than 15 years, conducting flora and fauna surveys and providing specialist advice on ecological management in a wide range of environments. Most of this work has been based in Victoria and much of it has been in Melbourne's peri-urban fringe.

### 3.2 Site-specific expertise

Biosis has a long history of involvement with the site having conducted assessments for Rob Viney Pty Ltd, MAB Corporation and the Victorian Planning Authority (and its predecessor the Metropolitan Planning Authority).

I conducted a site inspection on 6 December 2017.

## 4. Other contributors to this report and their expertise

---

I, Aaron Harvey, have researched and written this expert evidence report with the assistance of colleagues from Biosis. During my preparation of this expert evidence report, I sought advice from the following current colleagues at Biosis:

- Steve Mueck, Senior Consultant Botanist, who is experienced in botanical surveys and vegetation quality assessments. Steve has extensive experience with the site having conducted several site inspections dating back to the 2004 and assisted with the background research.
- Sally Mitchell, Senior GIS officer, who is experienced in Geographic Information Systems (GIS) and prepared the maps that accompany this report.

## 5. Scope of this report

---

I have been requested by Linda Choi of Norton Rose Fulbright, instructing solicitors for Satterley Property Group Pty Ltd, to:

- Independently review the proposed amendment from an ecological perspective and, if appropriate, prepare an independent expert report; and
- If required, appear at the Panel Hearing scheduled to commence on 19 February 2018 for the purposes of presenting your expert opinion concerning ecological matters.

## 6. Statement of Evidence

### 6.1 Scope of evidence

This expert witness statement comprises an assessment of the ecological values of Lindum Vale (PSP 1202).

This statement draws on a number of reports prepared by Biosis for Lindum Vale since 2004 including:

- Biosis Research 2004. *Flora assessment of the Cocking Property, Mickleham Road, Mickleham, Victoria*. Report for Robin Viney Pty Ltd. Authors: Brown, L. and Mueck, S. Biosis Research Pty Ltd, Melbourne. Project no. 3916.
- Biosis Research 2009. *Survey of the Golden Sun Moth at Lindum Vale, Mickleham, Victoria*. Report for MAB Corporation. Authors: Venosta, M., Gilmore, D. and Garvey, N. Biosis Research Pty Ltd, Melbourne. Project no. 7564.
- Biosis Research 2010. Targeted Striped Legless Lizard survey – Lindum Vale Property, Mickleham. Report for MAB Corporation. Author M. Venosta, Biosis Research, Melbourne. Project 7559.
- Biosis Research 2012. 'Lindum Vale' Property, 1920 and 2040 Mickleham Road, Mickleham, Victoria: Flora and fauna assessment. Authors S. Mueck & D. Gilmore, Biosis Research, Melbourne. Project 13869.
- Biosis Research 2013. Systematic search for Matted Flax-lily in areas of native vegetation at "Lindum Vale" 1920 and 2040 Mickleham Road, Mickleham. Report for MAB Corporation. Author S. Mueck, Biosis Research, Melbourne. Project 16178.
- Biosis 2014. *Tree Assessment and Arboricultural Report: Lindum Vale, Mickleham*. Report for MAB Corporation. Author Callow, D. Biosis, Melbourne. Project No. 17916.
- Biosis 2015. Lindum Vale: Golden Sun Moth survey and habitat assessment. Report for MAB Corporation. Author: Venosta, M. and Mueck, S. Biosis Pty Ltd, Melbourne. Project no. 19308.
- Biosis 2016. Lindum Vale PSP 1202: Biodiversity Assessment. Report for Metropolitan Planning Authority. Authors: Mueck, S., Salmon, K. & Gilmore, D. Biosis Pty Ltd, Melbourne. Project no. 19679.
- Biosis 2018. Ground-truthing native vegetation at Lindum Vale. Report for Victorian Planning Authority. Authors: Mueck, S. Biosis Pty Ltd, Melbourne. Project no. 26638.

### 6.2 Site assessment

#### Species

Surveys of the study area have recorded a total of 56 indigenous and 59 introduced plant species (Biosis 2016).

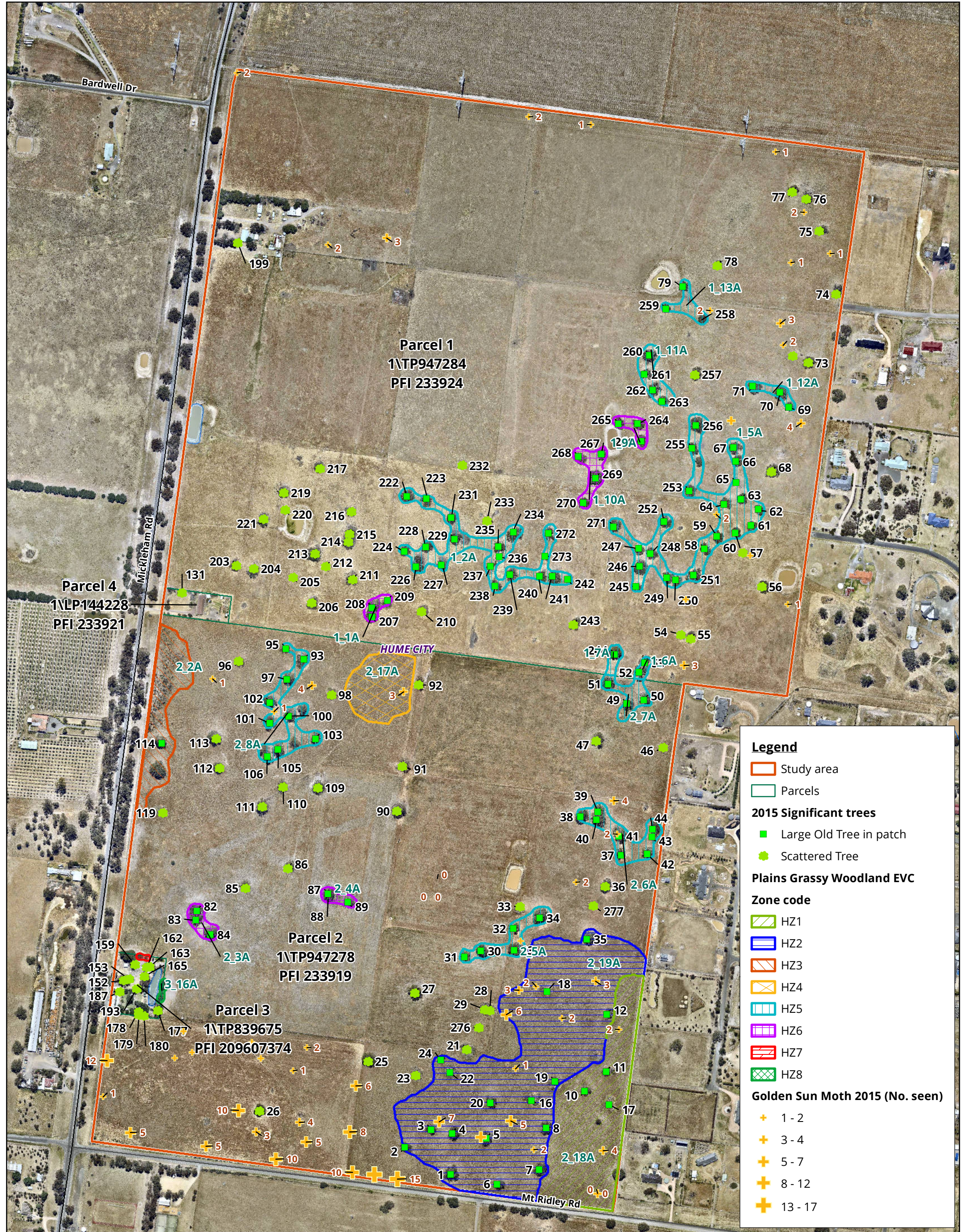
One of these indigenous species is considered to be threatened in Victoria: Austral Crane's-bill *Geranium solanderi* var. *solanderi* s.s. This species was restricted to areas of native vegetation in and around the road reserve of Mount Ridley Road. Targeted searches for threatened flora (primarily Matted Flax-lily *Dianella amoena*) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have been conducted and no such species have been recorded.

#### Vegetation

The site supports remnants of the endangered ecological vegetation class (EVC) Plains Grassy Woodland (EVC 55). This native vegetation includes eight Habitat Zones (HZs) covering 16.959 hectares and 61 scattered trees based on the definitions of native vegetation outlined by DEPI (2013) (Figure 1). Note that the current

guidelines (DELWP 2017) would result in many of the patches of native vegetation identified by Biosis 2016 to be classified as clusters of scattered trees.





**Legend**

Study area  
Parcels

**2015 Significant trees**

- Large Old Tree in patch
- Scattered Tree

**Plains Grassy Woodland EVC**

**Zone code**

- HZ1
- HZ2
- HZ3
- HZ4
- HZ5
- HZ6
- HZ7
- HZ8

**Golden Sun Moth 2015 (No. seen)**

- 1 - 2
- 3 - 4
- 5 - 7
- 8 - 12
- 13 - 17

Figure 1. Ecological features of Lindum Vale.



Habitat Zone 1 was assessed as corresponding to the EPBC Act listed community Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP).

### 6.3 Fauna Habitat

Fauna recorded from the site includes 33 birds (26 native), four mammals (2 native), two native reptiles, two native frogs and one native moth (Golden Sun Moth *Synemon plana*).

Habitat within the PSP includes an open cover of large hollow bearing trees, mainly River Red-gum *Eucalyptus camaldulensis* and Grey Box *Eucalyptus macrocarpa*, open grassy habitat with a variable proportion of native and introduced grasses, dry stone wall scattered across the site and planted vegetation associated with houses found along Mickleham Road.

Targeted surveys for Striped Legless Lizard *Delma impar*, failed to record this EPBC Act listed species. However targeted surveys for Golden Sun Moth (GSM) found the species to be widespread across the PSP. Biosis 2015 mapped the condition (suitability) of GSM habitat across the PSP (Figure 2), with 0 representing the least suitable habitat and 8 representing the most suitable habitat across the site.

### 6.4 Proposed Development Options

Lindum Vale was identified as a logical inclusion for the broader expansion of the Melbourne Urban Growth Boundary. As part of the planning process for this inclusion, Biosis 2016 provided input into the preparation of a native vegetation precinct plan (NVPP) to the Metropolitan Planning Authority (MPA) (now the Victorian Planning Authority - VPA) (Figure 3). Subsequently the design for the precinct has been revised by the VPA (2018) (Figure 4).

#### 6.4.2 MPA 2016 footprint

Biosis 2016 assessed the proposed development footprint provided by the MPA as providing a loss of native vegetation totalling 9.556 ha including 6.181 ha identified as various habitat zones and 48 scattered trees (Figure 3). Of the patches of native vegetation present, only Habitat Zones 1, 2, 3 and 4 support any significant cover of indigenous understorey species.

This footprint would result in the protection of Habitat Zone 1 (beyond the impacts associated with the expansion of Mount Ridley Road – 0.226 ha lost, 2.59 ha retained) within a conservation reserve, the loss of about half of Habitat Zone 2 (3.932 or 56% of HZ2), the loss of all of all of Habitat Zones 4, 7 and 8 (0.87 ha, 0.105 ha and 0.033 ha respectively), the loss of most of Habitat Zone 3 (0.989 ha) and the retention of most of Habitat Zones 5 and 6 (clearing 0.115 ha or about 3%, and complete retention respectively).

While the proposed conservation reserve in the south east corner of the PSP would be managed to enhance all aspects of the Plains Grassy Woodland present, other areas of retained native vegetation would, from an ecological perspective, amount to the protection and management of the trees.

The loss of 48 scattered trees represents about 79% of the scattered trees present within the PSP.

Offsets for this impact, defined under the DEPI 2013 biodiversity assessment guidelines (the Guidelines) amounted to the provision of 1.456 General Biodiversity Equivalence Units (GBEU) with a minimum Strategic Biodiversity Score (SBS) of 0.274. No specific offsets were identified in association with the proposed impact. Such offsets (i.e. GBEUs within the Port Phillip and Western Port Catchment Management Authority) are readily purchased over the counter from a registered broker.

However the Guidelines were recently revised and the new guidelines came into operation in December 2017 (DELWP 2017). While transitional arrangements to maintain the assessment of a project under the 2013 Guidelines can be made (DELWP have advised that Council may approve this process), information is also

available to provide for assessments under the current guidelines for the removal of native vegetation. This offset assessment was conducted for the VPA 2018 plan.



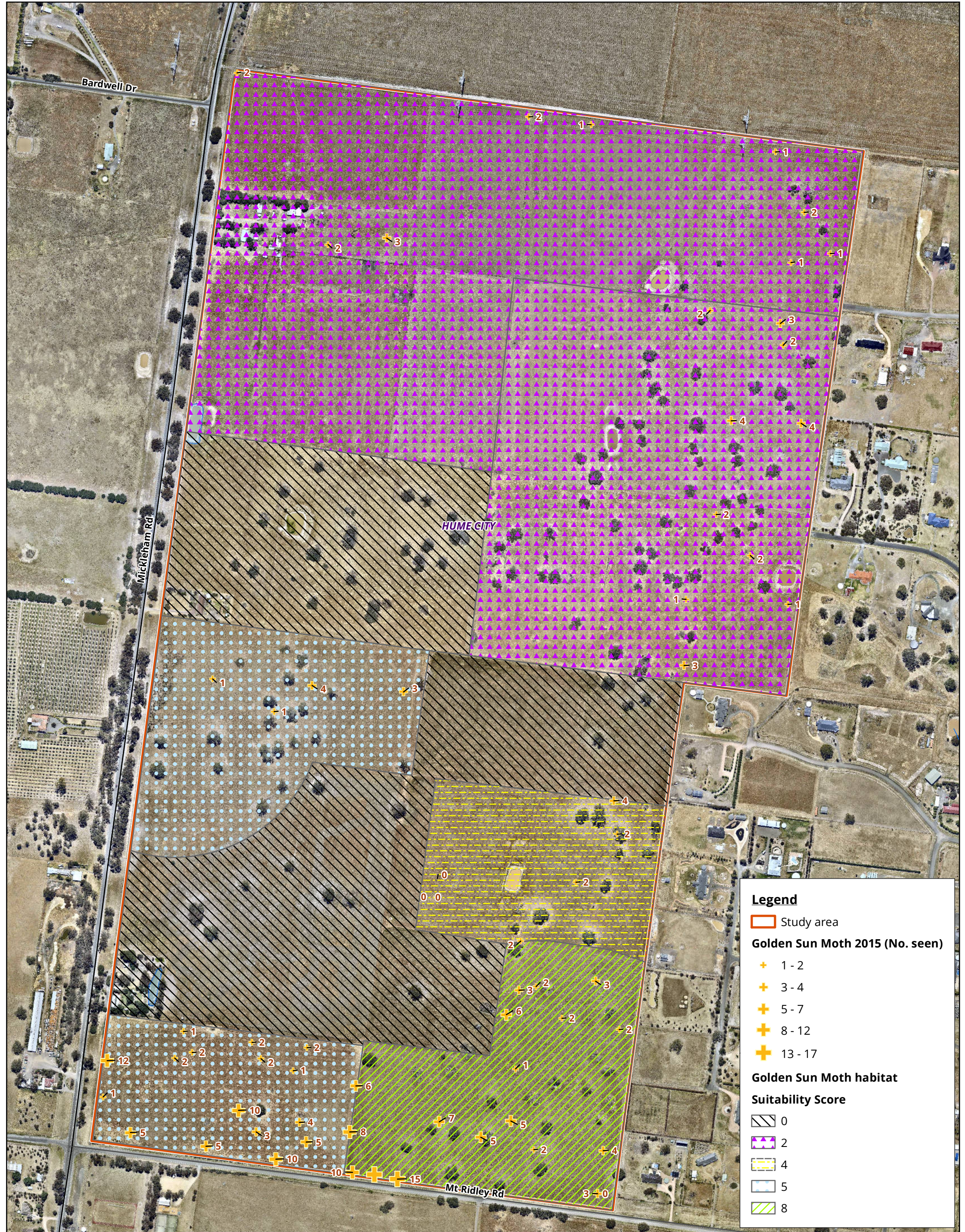
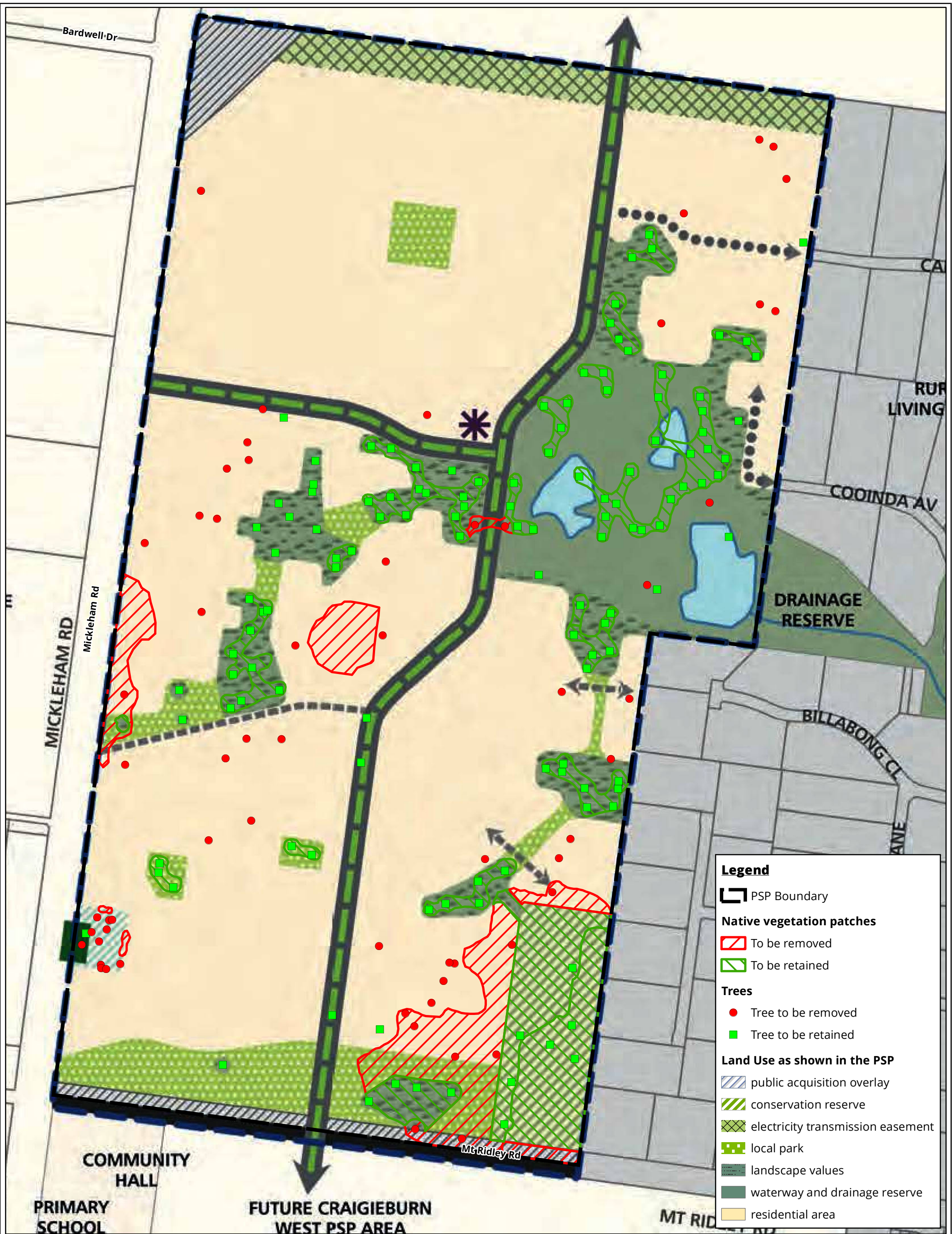


Figure 2. The condition of GSM habitat within Lindum Vale







### 6.4.3 VPA 2018 footprint

A revised Future Urban Structure Plan (Plan 3) provided by the VPA 2018 (Figure 4) alters the proposed configuration of development resulting in the following changes to the impact on native vegetation:

The south eastern conservation reserve is expanded from 4.83 ha to cover 6.15 ha of native vegetation by including an additional 1.32 ha of HZ2. Patches otherwise retained by the 2016 configuration have had a few minor reductions associated with proposed tree removal. An additional 16 trees have been identified for retention within the 2018 footprint in comparison to the 2016 footprint. However many of these are being retained for 'landscape' purposes and appear to be isolated and will therefore have a reduced ecological viability.

Under the current guidelines the prescribed offsets for the VPA 2018 plan amounts to the provision of 2.638 general habitat units (GHU) with a minimum strategic biodiversity value score of 0.453 and the protection of 39 large trees.

The concept design process generated numerous options for the retention and clearing of native vegetation to provide the final NVPP. This process included consultation with Council and is provided as evidence that the proposed development has considered the presence of native vegetation and avoided it where possible. This includes the nomination of a conservation reserve and the retention of a high proportion of the indigenous trees. All trees identified as retained have had impacts to them minimised through the retention of tree protection zones (TPZs). The maintenance of trees within urban drainage pathways also maintains many of the retained trees within an environment still considered appropriate for the ecology of the dominant species (River Red-gum).

### 6.4.4 Impact Comparisons

Comparing the two proposals (2016 and 2018), the overall impact to Habitat Zones 1, 3 and 4 are basically unchanged (Figure 5).

An increase in the extent of the conservation reserve both retains more native vegetation but also expands the area actively managed to protect an endangered EVC and increases the overall viability of the reserve and area actively managed for the conservation of GSM.

Changes between the 2016 and 2018 design relating to individual trees have resulted in a net increase of nine trees protected. While a number of trees have been severely impacted by fire and some have died, these still require a permit for removal and need to be accounted for.

Trees 1 and 6 are both nominated for retention in the 2018 design, with only tree 6 nominated as lost in the 2016 design. Both are unlikely to be considered retained given the likely impact of the expansion of Mount Ridley Road. Other trees such, as tree 23 were nominated for retention by the 2016 design and have subsequently died. This has resulted in Council acknowledging that such trees can be cleared. However the vegetation loss accounting process still needs to consider these trees in the assessment process.

Overall, the change from the 2016 design to the 2018 design is considered to provide an improved ecological outcome, largely because of the increase in the size of the proposed conservation reserve. The larger reserve will provide for active ecological management for the conservation of all native species and habitat present, including the critically endangered Golden Sun Moth.

While the retention of mature eucalypts to provide for broader habitat continuity within the landscape is a worthy conservation objective, these trees exist within a heavily modified landscape where only the most mobile species, such as bats and birds, are able to utilise this matrix. As such, any relatively minor change in the distribution of these elements across the landscape is unlikely to have a measurable impact on biodiversity.

The broader planning conservation objectives for this land are outlined by the details associated with the requirements of the Environmental Significance Overlays (ESO 5 and ESO 11) covering all or part of this PSP. The requirements of these ESO's for the 2016 development footprint are outlined by Biosis 2016. The same commentary is considered relevant to the VPA 2018 proposed development footprint.

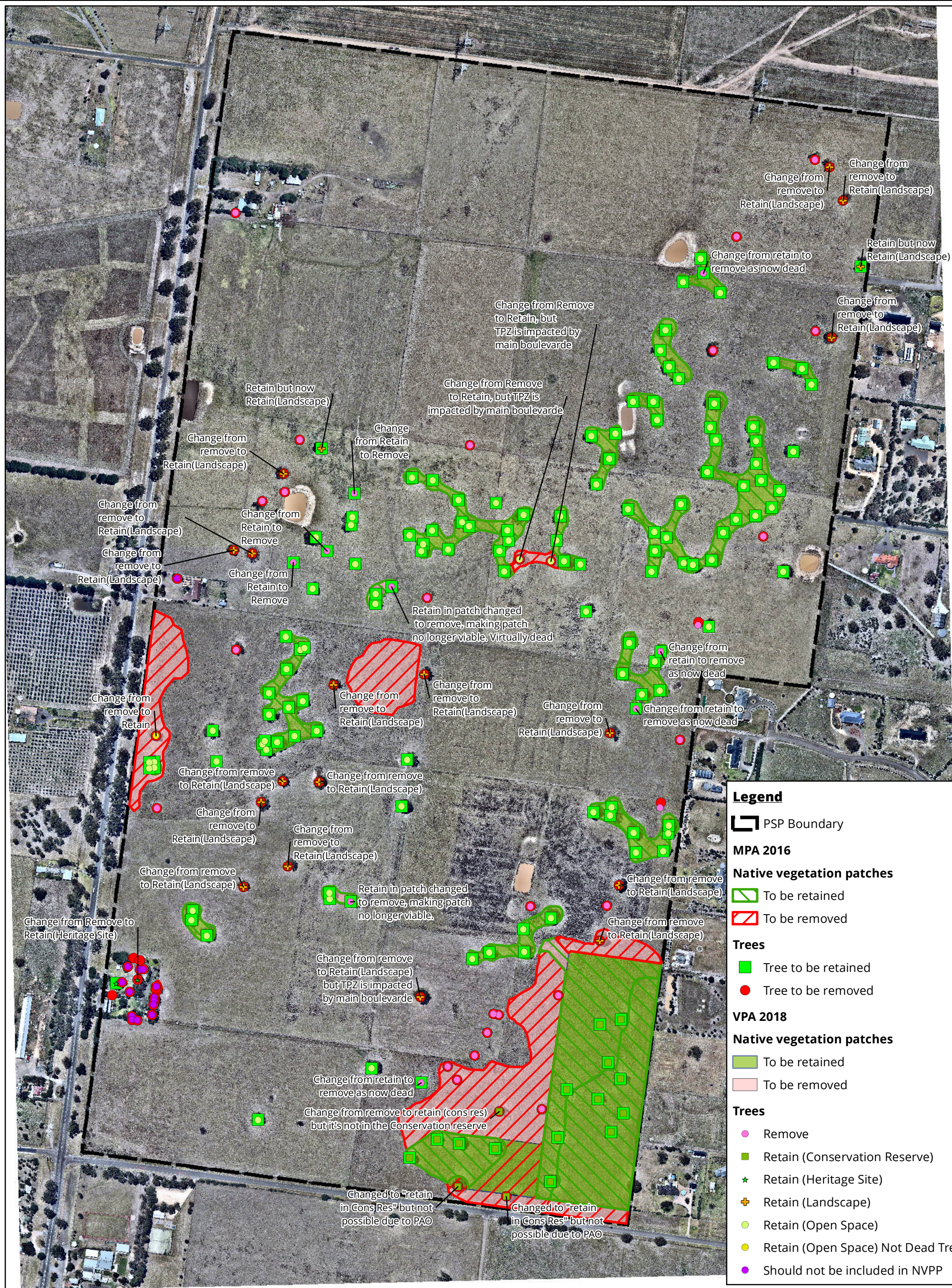


**Figure 4. The impact on native vegetation of the proposed VPA 2018 development footprint at Lindum Vale.**

Acknowledgements: NearMap imagery 2014, VicMap data ©State of Victoria

Matter: 26810,  
Date: 07 February 2018,  
Checked by: SGM, Drawn by: SKM, Last edited by: smitchell  
Location: P:\26800s\26810\Mapping\26810\_F4\_VPA2018.mxd





### Legend

PSP Boundary

### MPA 2016

#### Native vegetation patches

To be retained

To be removed

#### Trees

Tree to be retained

Tree to be removed

### VPA 2018

#### Native vegetation patches

To be retained

To be removed

#### Trees

Remove

Retain (Conservation Reserve)

Retain (Heritage Site)

Retain (Landscape)

Retain (Open Space)

Retain (Open Space) Not Dead Tree

Should not be included in NVPP

**Figure 5. Changes to the proposed impact on native vegetation - MPA 2016 to VPA 2018**



## 6.5 Council Submission

Council have indicated in their submission to Amendment C205 (relating to the MPA 2016 development footprint) that the PSP protects a significant proportion of the site's biodiversity values and provides important connectivity to landscape and ecological values in the wider area, including the Mount Ridley Conservation Area, the future conservation area in the Craigieburn West PSP and Woodland Heritage Park. While council has been involved in the development of the PSP and associated NVPP it considers a number of biodiversity related issues raised during this process have not been dealt with in the production of the MPA 2016 development footprint. These issues include a preference for:

- all of Habitat Zone 2 to be included in the Conservation Reserve; and
- the EPBC Act approvals process to be completed so as to avoid any potential conflicts in land-use allocations.

In their review of Biosis 2016, Council's consultant (Ecology and Heritage Partners Pty Ltd - EHP) indicated that they could observe no clear distinction between Habitat Zones 1 and 2. They recommended that the assessment of these two zones be conducted during spring so that any contrast between the two zones would be more apparent.

Biosis Research 2012 conducted fieldwork on 27 September 2011 (early to mid-spring) with the only constraint being that the site had been subject to grazing by domestic stock. That assessment classified the vegetation of this south eastern corner as a single habitat zone (as considered appropriate by EHP).

A subsequent assessment of this vegetation (Biosis 2016) conducted in November 2014 and March 2015 identified the two habitat zones now used to separate a defined area of the EPBC Act listed Grassy Eucalypt Woodland of the Victorian Volcanic Plain (a federally defined community) from within the broader area of Plains Grassy Woodland (a Victorian defined community).

The eastern Habitat Zone (HZ1) supports more native species including species such as Kangaroo Grass *Themeda triandra*, Blue Devil *Eryngium ovinum*, Chocolate Lilies *Arthropodium strictum* and Milkmaids *Burchardia umbellata*, which contribute to an understorey score of 15/25. Further west these species drop out and the cover of herbaceous species is significantly lower. The understorey score for HZ2 was assessed as 5/25. As this understorey score is two categories different to that identified for HZ1, the separation of these two zones satisfies the criteria for the identification of separate habitat zones (DSE 2004).

At the time of the Biosis 2016 assessment numerous herbaceous species were recorded and the division between the habitat zones was determined by careful examination of the vegetation. The assessment was conducted when the species richness of the site and the abundance of relevant species would have been apparent to a skilled observer.

The conservation reserve defined by VPA 2018 includes a greater area of HZ2 (1.32 ha more) than that reserved by the MPA 2016 design. This provides an improved conservation outcome for this vegetation and may also provide for increased passive recreation opportunities.

The development of Lindum Vale has been defined as a controlled action under the EPBC Act (Referral EPBC 2015/7516) to be assessed using preliminary documentation. While that documentation is yet to be submitted and approved, the development as a whole has been accepted for assessment. The proposed development footprint submitted to the Department of the Environment and Energy (DoEE) is the MPA 2016 plan. Draft preliminary documentation has been prepared to identify the overall impact of the proposed development and how the development would respond to this impact under the EPBC Act Environmental Offsets Policy (DSEWPac 2012). Any design changes prescribed by the panel would also potentially influence any conditions of approval associated with the referral to the Australian Government Minister for Environment. Completion of the State approvals process can therefore streamline the federal process.

## 6.6 Conclusion

Without pre-empting any decision that may be made by the Australian Government Minister for the Environment, it is my experience that it is highly unlikely that the proposed Lindum Vale development footprint would need to be altered as a result of the federal approvals process. It is also my experience that the development, subject to a series of conditions such as prescribed offset requirements, would be approved. Any changes to the design prescribed by the panel which are generally in accordance with or have a lesser impact to matters of national environmental significance (i.e. Golden Sun Moth and Grassy Eucalypt Woodland of the Victorian Volcanic Plain) are highly unlikely to alter the approvals process conducted by the Australian Government.

Both the MPA 2016 and VPA 2018 proposed plans have considered the presence of native vegetation and propose a development footprint which retains some elements and propose the loss of others. The VPA 2018 design retains a greater area of native vegetation within a conservation reserve proposed for ongoing active ecological management. That design also retains additional trees. In that context the VPA's 2018 design is considered to provide a superior conservation outcome. However, neither design is measurably better or worse at maintaining habitat continuity in a local or regional sense as the broader environment has already been significantly modified and isolated by agricultural development and existing approvals for urban development will maintain this level of isolation.

The VPA 2018 design is considered superior to the MPA 2016 concept from a biodiversity perspective, largely because of the larger size of the conservation reserve rather than the number or overall proportion of existing trees which are retained. Despite this the broad measure of offsets required to compensate for the proposed loss of native vegetation has numerically increased from 1.456 GBEUs to 2.638 GHUs with an added requirement to protect 39 large trees. But note that the method to calculate offsets has changed significantly and the offset units are different and therefore not directly comparable. An assessment of VPA 2018 using DEPI 2013 would result in a lower GBEU offset prescription, while assessing MPA 2016 using DELWP 2017 would result in a higher GHU and large tree prescription.

Council remain of the view that all of HZ2 should be retained and managed within the proposed conservation reserve. Maximising the retention and active ecological management of all the native vegetation present would provide an improved conservation outcome while also lowering the overall offset prescription for the development using both the Victorian and commonwealth offset prescriptions.

## 7. References

---

DEPI 2013. *Permitted clearing of native vegetation - Biodiversity assessment guidelines*. Victorian Government Department of Environment and Primary Industries, Melbourne.

DELWP 2017. *Guidelines for the removal, destruction or lopping of native vegetation*. Department of Environment, Land, Water and Planning, East Melbourne.

DSE 2004. *Native Vegetation: Sustaining a living landscape. Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method. Version 1.3*. Victorian Government Department of Sustainability & Environment, Melbourne.

DSEWPaC 2012. Environment Protection and Biodiversity Conservation Act 1999 *Environmental Offsets Policy*. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

## 8. Author's Declaration

---

I have made all inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the panel.

A handwritten signature in black ink, appearing to read 'A. Harvey'.

Aaron Harvey  
Director Consulting Services  
Biosis Pty Ltd  
12 February 2018

## 9. Attachment 1: Curriculum Vitae

---

## Position

Director – Consulting Services

## Qualifications

BSc (Hons), BAppSc, DipNRM



## Professional experience

Aaron has over fifteen years' experience, having worked extensively in a wide range of environments throughout south-eastern Australia conducting environmental impact assessments, flora and fauna surveys, preparing rehabilitation and revegetation plans and providing general ecological advice to Commonwealth and State government, private companies and land managers.

For nearly 10 years Aaron has worked closely with the Victorian Planning Authority (VPA) and developers on the Melbourne Strategic Assessment including the mapping of vegetation and fauna habitat across more than 10,000 hectares in the Melbourne region. He was also the Project Director responsible for the delivery of Sub-regional Species Strategies for Growling Grass Frog and Southern Brown Bandicoot.

Aaron has specialist skills in negotiation which are particularly well regarded by clients and regulators. His success as Project Director on large scale multi-disciplinary teams demonstrates Biosis' ability to bring together large teams who can work closely with clients and Commonwealth and State governments.

Objective, competitive and motivated to contribute to the greater good, Aaron's role as Director-Consulting Services is to challenge our people to be their professional best and to deliver best practise consulting to our broad range of clients.

## Key project experience

### Project Director

Runway Development Program Melbourne Airport. Biosis was commissioned by Melbourne Airport to undertake large scale and detailed ecological and cultural heritage studies to inform the Major Development Plan for the proposed third runway and associated infrastructure at Melbourne Airport. Works included detailed flora and fauna studies including targeted surveys for threatened species and preparation of Cultural Heritage Management Plans (CHMPs) and heritage assessments for the proposed development of the new runway.

**Project Director**

Victorian Desalination Project. Biosis completed the ecological and cultural heritage studies for the Environmental Effects Statement (EES) for Major Projects Victoria and the Victorian State Government for the Victorian Desalination Project which included the desalination plant site, water transfer pipeline and associated infrastructure including powerline easement. Works included detailed flora and fauna studies including targeted surveys for threatened species and preparation of Cultural Heritage Management Plans (CHMPs) for the plant and pipeline.

**Project Director**

Esso's Hastings to Longford Gas Pipeline replacement project. Biosis was commissioned by Worley Parsons and Esso to assess the ecological values of a 197km pipeline. This work included detailed vegetation and targeted threatened fauna assessments as well as offsets calculations and strategy development for the entire pipeline.

**Project Director**

Outer Eynesbury Development. Biosis was commissioned to assess the ecological and cultural heritage values of 6,000 hectares on the peri-urban fringe of Melbourne. This work included vegetation assessments, targeted flora and fauna surveys as well as detailed offset calculations and scenario testing for various development footprints associated with the proposed future use of this land.