Expert Evidence Report in relation to:

Sunbury South and Lancefield Road PSPs Vegetation Assessment

Amendments C207 and C208 to the Hume Planning Scheme

This report has been prepared for Melbourne Water and the Victorian Planning Authority

14 August 2017

Biosis offices

AUSTRALIAN CAPITAL TERRITORY

Canberra

Floor 1, Unit 3, 38 Essington Street
Mitchell ACT 2911

Phone: (02) 6102 1200
Email: canberra@biosis.com.au

NEW SOUTH WALES

Newcastle

39 Platt Street
Waratah NSW 2298

Phone: (02) 4968 4901
Email: newcastle@biosis.com.au

Sydney

Unit 14, 17-27 Power Avenue
Alexandria NSW 2015

Phone: (02) 9101 8700
Email: sydney@biosis.com.au

Wollongong

8 Tate Street
Wollongong NSW 2500

Phone: (02) 4201 1090
Email: wollongong@biosis.com.au

TASMANIA

Hobart

Unit 2/2 Gore Street
South Hobart TAS 7004

Phone: (03) 8686 4800
Email: tasmania@biosis.com.au

QUEENSLAND

Brisbane

Suite 4 First Floor, 72 Wickham Street
Fortitude Valley QLD 4006

Phone: (07) 3831 7400
Email: brisbane@biosis.com.au

VICTORIA

Ballarat

506 Macarthur Street
Ballarat VIC 3350

Phone: (03) 5304 4250
Email: ballarat@biosis.com.au

Melbourne (Head Office)

38 Bertie Street
Port Melbourne VIC 3207

Phone: (03) 8686 4800
Fax: (03) 9646 9242
Email: melbourne@biosis.com.au

Wangaratta

16 Templeton Street (PO Box 943)
Wangaratta VIC 3677

Phone: (03) 5721 9453
Email: wangaratta@biosis.com.au

Document information

Report to:	Harwood Andrews on behalf of Melbourne Water and the Victorian Planning Authority
Prepared by:	Daniel Gilmore
Biosis project no.:	25521
File name:	25521.Sunbury.Lancefield.PSPs.Expert.Evidence.Report.FINAL1.20170809.docx
Citation:	Biosis 2017. Expert Evidence Report in relation to: Sunbury South and Lancefield Road PSP vegetation assessment. Author: Gilmore, D. Biosis Pty Ltd, Melbourne. Project no. 20513.

Contents

1. Name and Address

Daniel Gilmore

Senior Consultant Zoologist

Biosis Pty Ltd

38 Bertie Street

Port Melbourne

VIC 3207

2. Qualifications and Experience

2.1 Qualifications and Training

- Bachelor of Conservation Ecology, Deakin University

2.2 Professional Affiliations and Memberships

- Environment Institute of Australia and New Zealand
- Australian Mammal Society

2.3 Professional Experience

I am a Senior Consultant Zoologist at Biosis Pty Ltd, a leading ecology and cultural heritage consulting firm with offices in Melbourne, Ballarat, Wangaratta and interstate. I have experience throughout south eastern Australia. I have worked on, and provided ecological advice to a range of clients for proposed residential and industrial subdivisions, and large infrastructure projects such as wind farms and road developments in Victoria and Tasmania. I have also participated in long-term fauna surveys and provided detailed advice to clients such as local councils and road authorities throughout Victoria. I have authored and co-authored over 200 reports, including flora and fauna assessments and specific management plans for a range of vertebrate species.

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 in a range of environments for more than 15 years, conducting flora and fauna surveys and providing specialist advice on ecological matters and ecological management within these areas.

I have provided advice and led large and extensive field surveys within the Victorian Volcanic Plain. This work has been undertaken predominantly on private land and has included assessments for Melbourne's expanded urban growth areas.

4. Other Contributors to this Report and their Expertise

I, Daniel Gilmore, have researched and written this expert evidence report with the assistance of colleagues from Biosis Pty Ltd. Although I have not been involved in previous field investigations into the ecological values of the areas that are the subject of this report, I have undertaken recent field assessments of a number of the waterways identified in the report. All ecology projects previously conducted within the PSP areas have been led by my colleagues, who contributed to the Alluvium (2014) report. I have therefore relied on input from current colleagues and written reports produced by current and former colleagues in preparing this expert evidence report.

In particular, I have relied on the work of the following current and former colleagues at Biosis:

- Steve Mueck – Senior Consultant Botanist
- Matt Dell – Botanist

However, having now reviewed that work and undertaken my own surveys, the opinions described in this report are my own.

5. Scope of this Report

The instructions I received from Harwood Andrews Lawyers on behalf of the Victorian Planning Authority were to:

- Review the enclosed documents (relevant to my area of expertise) provided with initial brief on 14 July 2017 and with supplementary brief on 19 July 2017;
- With respect to the report titled 'Riparian vegetation and geomorphology in the Sunbury Growth Area' (October 2014) summarise:
  - A. the vegetation assessment methodology used to describe and map the vegetation and assign an ecological value to the waterways in that report; and
  - B. the key vegetation findings, including identification of Ecological Vegetation Classes and their extent, the quality and conservation value of vegetation patches, and the identification of rare or threatened flora species.
- Conduct site-specific vegetation assessments of a number of waterways likely to be the subject of submissions and evidence at the Panel hearing (as identified in the supplementary brief).
- In relation to the site-specific assessments, inspect the relevant waterways and undertake any ground-truthing work to form an independent and up-to-date opinion on those waterways and any submissions relevant to those waterways.
- Prepare an expert report considering these matters; and
- Appear at the Panel hearing of this matter to give evidence on behalf of the VPA.

6. Facts and Assumptions

6.1 Location of the Investigation Area

The study area is located approximately 43 km north-west of Melbourne in the Upper Maribyrnong Catchment. It encompasses 43 km of waterways that drain into Jacksons and Emu Creeks. Jacksons and Emu Creeks were not included in this study. The investigated waterways were nominated by Melbourne Water in order to provide information relevant to design a Development Services Scheme (DSS) for the Sunbury area. The location of all surveyed waterways is shown in the Alluvium (2014) report.

7. Documents and Materials Considered

The following is a list of the documents and materials that I have been instructed to consider or otherwise used in preparing this report.

7.1 Reports assignment briefs

- Melbourne Water (2014). Riparian vegetation and geomorphic assessment: Assignment Brief April 2014.
- Alluvium (2014). Final Assessment: Riparian vegetation and geomorphology in the Sunbury Growth Area. Report by Alluvium Consulting Australia and Biosis Pty Ltd for Melbourne Water.

7.2 Other Materials

Documents supplied with the initial and supplementary briefs provided by Harwood Andrews.

8. Summary of Expert Opinion

8.1 Vegetation Assessment

In mid-2014, Melbourne Water commissioned Alluvium to undertake a riparian vegetation and geomorphology assessment of waterways draining into Jacksons and Emu Creeks in Sunbury. Alluvium undertook the geomorphology assessments and subcontracted Biosis Pty Ltd to undertake the riparian vegetation assessments and assign ecological values to the waterways. The purpose of this assessment was to 'identify major constraints and opportunities with regards to the development and the potential DSS works' (Melbourne Water 2014).

The objectives of the vegetation and ecology assessment were as follows:

- Compile lists of all flora species observed.
- Identify, map and discuss riparian vegetation ecological vales including flora and fauna species, habitat values and vegetation communities and evaluate their type, condition and conservation significance.
- Determine how these values can be protected from changes in hydrology and modification for drainage as part of the urban development.
- Consider the implications of national, state and local legislation and policy relevant to the ecological values of the waterways.

8.1.1 Vegetation assessment methodology

The riparian vegetation assessment methodology is outlined in Appendix C of the report (Alluvium 2014). The method involved a desktop investigation which interrogated relevant databases and a field assessment component.

8.1.1.1 Database interrogation and field map creation

As part of the investigation relevant biological databases were interrogated and relevant literature was reviewed including:

- The Victorian Biodiversity Atlas maintained by the Department of Environment, Land, Water and Planning (DELWP).
- The (now defunct) Biodiversity Interactive Map maintained by DELWP.
- DEPI's Bio sites database a former DSE database which housed spatial information on sites of biological significance (BioSite),
- Lists of rare and threatened plants and animals maintained by DELWP and the Department of the Environment and Energy (species of State and National significance).
- The *Environment Protection and Biodiversity Conservation Act 1999* Protected Matters Search Tool.
- Relevant Planning Overlays that have an environmental focus.
- Aerial photo interpretation was used to assist with the identification of likely areas with natural values (native vegetation, wetlands, key fauna habitat) and areas where these values are likely to have been lost (e.g. due to clearing, cropping, rock removal and ploughing).

- The aerial photo interpretation and database research was used to prepare hard copy field maps with high resolution aerial photographs, the locations of previously recorded threatened flora and fauna, waterways and other features. These field maps were used to aid in the identification of areas of likely native vegetation and habitat for rare and threatened flora and fauna.

8.1.1.2 Field assessment

- The fieldwork was undertaken by Biosis between 19 June and 16 July 2014.
- Within each property, flora species lists were compiled and Ecological Vegetation Class (EVC) polygons were mapped within the catchments of all waterways using hand-held GPS units combined with aerial photo interpretation.
- Vegetation was defined and mapped in accordance with Biodiversity Assessment Guidelines (DEPI 2013) and EVCs were assigned based on the composition of the native vegetation, its landscape location, underlying geology and soil type.
- Ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act) and *Flora and Fauna Guarantee Act 1988 (Vic)* (FFG Act) were identified using the skill of expert botanists familiar with these communities and by using guides produced by the Commonwealth of Australia and DELWP that describe their diagnostic features.
- Rare and threatened plants and animals encountered during the survey were identified.
- Consideration was given of the potential for works associated with Melbourne Water's DSS or the subsequent development of the investigation area to impact on the ecological values identified and options to mitigate these impacts.

Over 70 properties were identified across the study area where a field inspection was considered necessary. Where access to a property was not possible, ecological values were determined on the basis of a reconnaissance type survey which involved looking at the property from accessible areas nearby, including from the fence line of an adjacent property where access had been granted or from roadsides. This was coupled with information in biodiversity databases to provide an assessment of the property's values.

8.1.2 Vegetation quality

For patches of native vegetation within properties, vegetation quality was ranked as low, moderate or high based on a subjective assessment of its condition as described in Appendix C of Alluvium (2014) and summarised as follows:

- **Low**: Patches with low cover of native species that are generally common in disturbed environments (for this assessment only Wetland Formation was ranked as low).
- **Moderate**: Patches in poor condition with a low to moderate potential to support threatened species.
- **High**: Patches with a high cover of native species, with known occurrences or potential to support rare or threatened species.

8.1.3 Ecological value

Ecological values were assigned at the property scale. For each property assessed, factors considered were the presence or likely presence of native vegetation, its condition, extent and potential to support populations of rare and threatened species. On this basis, a rating of high, medium or low was ascribed to each property. Although ecological values have been attributed at the property scale for the purposes of map presentation, it does not infer that the entire property has the attributed ecological values.

8.1.4 Site inspection

I undertook a site inspection of a subset of the waterways on 28 July 2017. These waterways were inspected because they are likely to be the subject of submissions and evidence at the Panel hearing. These are shown on the map in Appendix 2 and are summarised as follows:

- Tributaries 69, 70, 71, 72 and 73 – Property No. 30 in the Sunbury South PSP;
- Tributaries 87, 98 and 99 – Property No. 2 in the Lancefield Road PSP;
- Tributaries 118, 119, 128, 129, 144, 145 and 146 – Property No. 24 in the Lancefield Road PSP;
- Tributaries 117, 127, 148, 149 and 150 – Property No. 23 in the Lancefield Road PSP;
- Tributaries 130 and 131 – Property No. 8 in the Lancefield Road PSP; and
- Tributaries 126 and 147 – Property No. 19 and 23 in the Lancefield Road PSP.

8.2 Key findings

8.2.1 Summary of ecological values

In general, the waterways as inspected during 2014 supported very little native vegetation, much of it having been cleared for agriculture. Scattered patches occurred along some of the waterways and scattered indigenous trees were also present. Larger patches of vegetation (mostly Plains Grassland and Grassy Woodland occurred away from the waterways.

8.2.2 Flora species

In total, 221 plant species (106 exotic and 115 indigenous) were recorded from the waterways during the field assessment.

8.2.3 Native Vegetation and Ecological Vegetation Classes

Within those properties accessed, 50 patches of native vegetation were identified totaling 69.324 hectares. Seven EVCs were identified, all of which are classified as endangered in the Victorian Volcanic Plain bioregion. Descriptions of these EVCs are provided in Appendix F of the Alluvium (2014) report. In addition to patches of native vegetation, scattered trees were recorded at many locations throughout the study area.

8.2.4 EPBC Act and FFG Act listed species and communities

Two EPBC-listed ecological communities were identified. All 13 patches of Plains Grassland mapped during the assessment met the definition of Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) ecological community. Areas of Creekline Grassy Woodland and Grassy Woodland identified at property 28 met the definition of the Grassy Eucalypt Woodland of the Victorian Volcanic Plain ecological community. Two additional EPBC-listed ecological communities are known to occur in the region but these were not observed.

One FFG-listed ecological community was identified in the study area. Patches of Plains Grassland correspond to the Western (Basalt) Plains Grassland Community.

No EPBC or FFG-listed threatened plants or animals were recorded from any of the surveyed properties during the vegetation assessment.

Lists of significant species previously recorded within the surveyed properties or predicted to occur within 5 km of the broader study area are provided in appendices D and H of Alluvium (2014). An assessment of the likelihood of these species occurring in the study area and an indication of where within the study area (i.e. which habitats or features of relevance to the species) is also included in that report. A summary of those species recorded or with a medium or higher likelihood of occurring within the study area is provided in the table below.

Summary of EPBC and FFG Act significant species most likely to occur within the study area

Species name	Area of value within the study area
EPBC Act listed species	
Matted Flax-lily	Better quality native vegetation patches, particularly rocky sites.
River Swamp Wallaby-grass	Drainage lines and farm dams
Grey-headed Flying-fox	Planted and indigenous trees (feeds on nectar and pollen)
Swift Parrot	Areas of woodland with Melbourne Yellow Gum provide likely foraging habitat

Species name	Area of value within the study area
Striped Legless Lizard	Plains Grassland and potentially exotic grassland
Growling Grass Frog *Litoria raniformis*	This species is known to occur in Jacksons and Emu Creeks and its tributaries.
Golden Sun Moth	Areas of grassland and grassy woodland habitat.
FFG Act	
Austral Moonwort	Riparian environments
Small Scurf-pea	Rocky slopes adjacent to drainage lines
Tough Scurf-pea	Rocky slopes adjacent to drainage lines
Brush-tailed Phascogale	Potential to occur in woodlands
Eastern Great Egret	Drainage lines and dams provide foraging habitat.
Freckled Duck	Dams and wetlands (permanent waterbodies)
Speckled Warbler	Woodland remnants in the study area
Diamond Firetail	Woodland remnants in the study area
Brown Toadlet	Drainage lines and soaks

8.2.5 Other rare or threatened flora

Two species listed as rare (Pale-flower Crane's-bill, Fragrant Saltbush) and two species listed as vulnerable (Melbourne Yellow Gum, Austral Cranes-bill) on the Advisory List of rare or threatened plants in Victoria – 2014 were recorded during the surveys.

8.2.6 Ecological significance

The ecological values of properties assessed is shown in Figure A of Alluvium (2014), reproduced below. The conservation value of the native vegetation patches mapped by Biosis is shown in Figure 4.2 of Alluvium (2014), reproduced below.

8.2.7 Site assessment

I inspected the waterways identified by Melbourne Water as shown in Appendix 2. This inspection confirmed the results of the original assessment of those waterways carried out by Biosis in 2014 in terms of presence of native vegetation and overall ecological value. In my opinion, no changes are required to the original assessment.

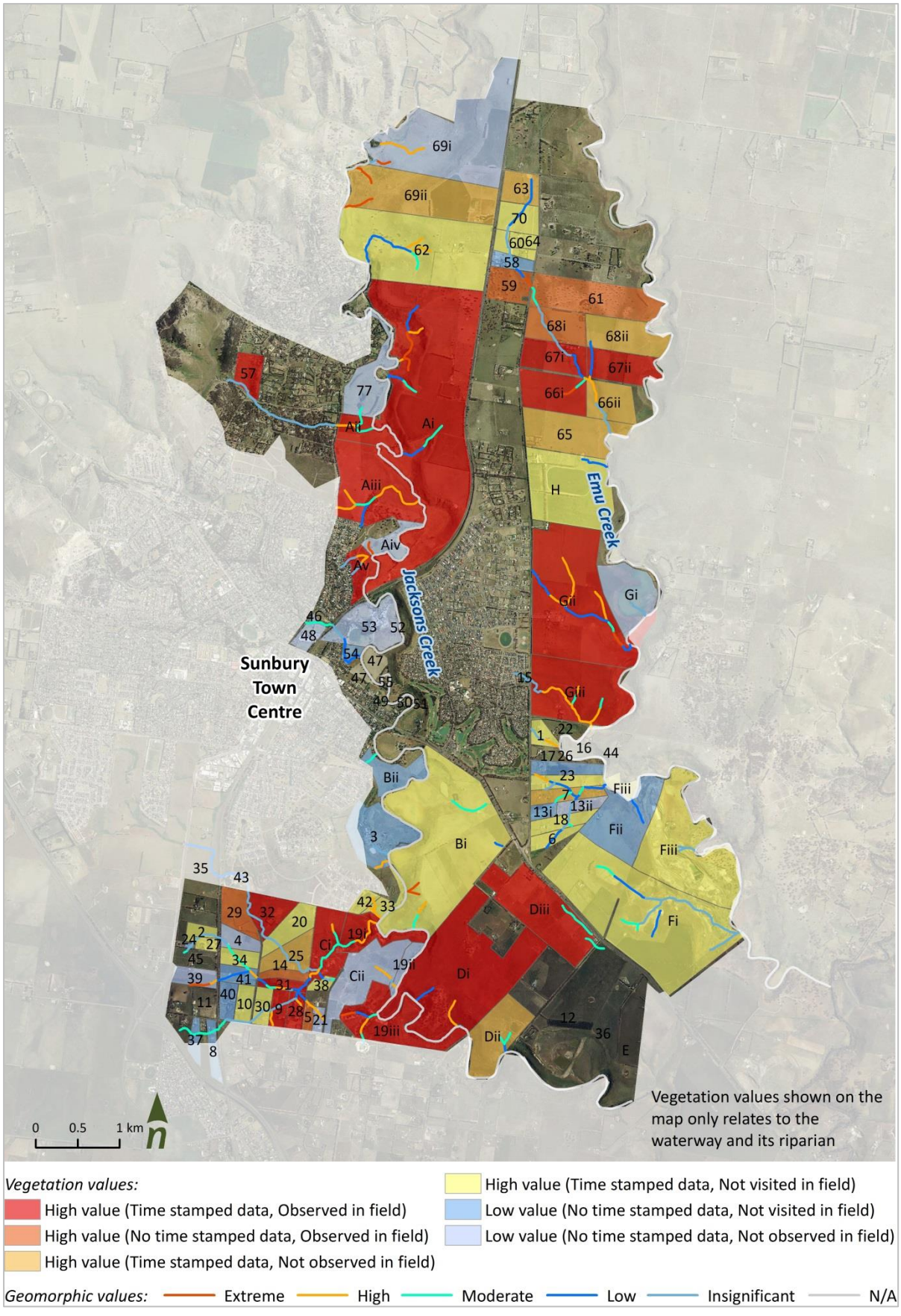


Figure A. *Geomorphic and ecological values for waterways in the study area*

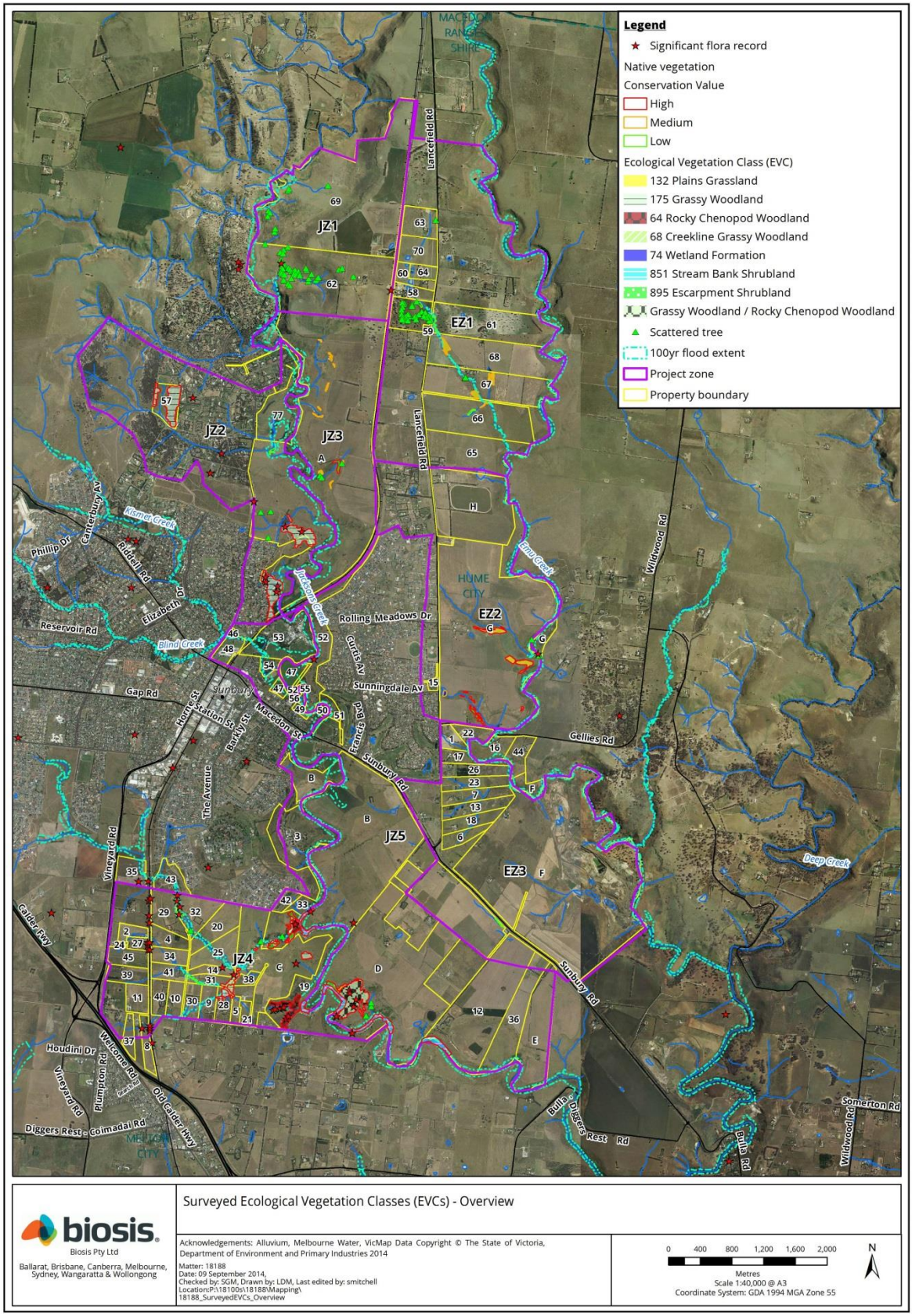


Figure 4-2. *Overview of surveyed Ecological Vegetation Classes (EVCs)*

9. Limitations and Qualifications

9.1.1 Provisional Opinions

In relation to the vegetation assessment of the investigated waterways, I have not provided any provisional opinions that have not been fully researched.

9.1.2 Questions

In relation to the vegetation assessment development, I have no questions that fall outside my area of expertise.

9.1.3 Inaccuracies

To the best of my knowledge, this report is complete and accurate.

10. Declaration

I have made all the 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.

Daniel Gilmore

14 August 2017

Appendices

Appendix 1: Curriculum Vitae D. Gilmore

Position

Senior Consultant Zoologist

Qualifications

Bachelor of Conservation Ecology

Professional experience

Daniel has 20 years experience as an ecologist and zoologist and specialises in the ecology, conservation and management of the vertebrate fauna of south-eastern Australia. Daniel commenced his career with Biosis in 2001 as a zoologist in our Melbourne office.

Daniel has extensive experience in coordinating and conducting vertebrate fauna surveys and has worked in a range of ecological communities in Victoria, Tasmania New South Wales and Queensland. He has high level skills in vertebrate identification. Daniel has provided sound ecological advice to a range of clients on a diverse range of development proposals as well as strategic advice to government and community-based organisations on wildlife survey and management. Through his work, Daniel has developed an excellent working knowledge of Australian and Victorian biodiversity legislation, particularly the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. He has authored and/or co-authored over 300 consultant reports, including flora and fauna assessments, Environment Effects Statements (EES), targeted fauna surveys, significance assessments and species management plans.

Daniel has a proven track record of managing large and complex projects and has excellent report writing skills.

Key project experience

Project Manager/Zoologist	Melbourne Markets Project, Epping: Comprehensive ecological assessment of the Melbourne Markets site including impact assessment and EPBC referral.
Project Manager/Zoologist	Revision of Growling Grass Frog habitat corridors for the Melbourne Strategic Assessment: Detailed study and mapping of conservation areas for Growling Grass Frog in Melbourne's urban growth zones.
Project Manager/Zoologist	Melbourne Golden Sun Moth survey: Targeted survey of the critically endangered Golden Sun Moth throughout the Melbourne region.

Other project experience:

Project Manager	Mount Hotham Threatened Fauna Management Plan: Preparation of a threatened vertebrate fauna management plan for the Mount Hotham Alpine Resort.
Project Manager/Zoologist	Drysdale Bypass Growling Grass Frog survey: Managed and conducted a targeted survey for the Growling Grass Frog in the vicinity of the proposed Drysdale Bypass.
Project Manager	Powerful Owl impact investigation: Advice to Yarra Ranges Shire in relation to lighting and noise impacts to Powerful Owls.
Project Manager	Places Victoria EPBC Compliance: EPBC compliance assessment for three greenfield development sites for Places Victoria.
Project Manager/Zoologist	Wallan Wastewater Discharge Peer Review: Peer review and advice relating to the impact of proposed wastewater discharge into Merri Creek on the vulnerable Growling Grass Frog.
Zoologist	Growling Grass Frog Technical Advisory Group: Ongoing advice to the Department of Environment, Land, Water and Planning in relation to the conservation management of Growling Grass Frog in Melbourne's four growth areas.
Project Manager/Zoologist	Pakenham Bypass Growling Grass Frog advice: advice to VicRoads in relation to the Growling Grass Frog drift fencing along the Pakenham Bypass.
Subject Matter Expert	Provision of advice the Department of Environment, Land, Water and Planning on the management of Striped Legless Lizard in Melbourne's growth zones.
Project Manager / Zoologist	Aurora Growling Grass Frog Management: Advice to Places Victoria and Lend Lease in relation to the management of Aurora's Growling Grass Frog population at Epping, Victoria.
Project Manager / Zoologist	Southern Brown Bandicoot advice for Peninsula Link: Advice on alternative strategies to achieve conservation outcomes for Southern Brown Bandicoot in relation to the Peninsula Link Freeway.
Project Manager / Zoologist	Pines Flora and Fauna Reserve monitoring: Monitoring the use of crossing structures and retained habitat by mammals within the Pines Flora and Fauna Reserve.
Project Manager / Zoologist	Merrifield Kangaroo management plan: preparation of an Eastern Grey Kangaroo Management Plan for MAB's Merrifield development in Donnybrook.
Project Manager / Zoologist	Ravenswood Interchange Project fauna salvage: provision of advice and documentation to VicRoads for the salvage of vertebrate fauna from the area affected by the Ravenswood Interchange upgrade.

Other qualifications and training

Senior First Aid – St Johns Ambulance

SafeTrek Four Wheel Drive, Driver Training Program

Professional affiliations and memberships

Growling Grass Frog Technical Advisory Group member

Society for the Study of Amphibians and Reptiles (SSAR)

Wildlife and Small Institutions Animal Ethics Committee Category B Member

Australian Mammal Society

Birdlife Australia

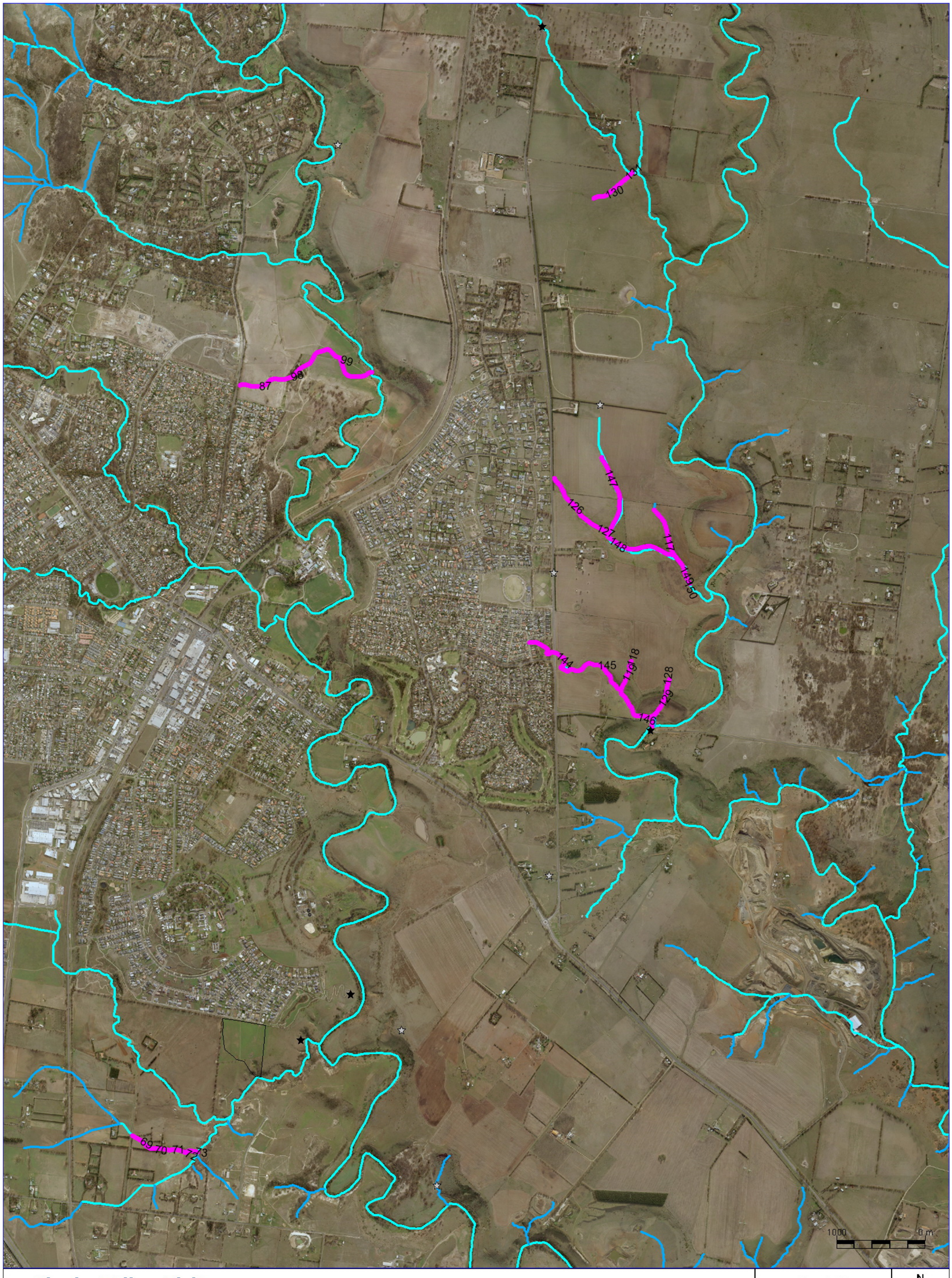
Publications:

Koehler, S. and **Gilmore, D.** 2014. First documented use of underpass culverts by the endangered Growling Grass Frog (*Litoria raniformis*) in Australia. *Herpetological Review* **45**(3): 404–408.

Van der Ree, R., Bennett, A.F. and **Gilmore, D**.C. 2004. Gap-crossing by gliding marsupials: thresholds for use of isolated woodland patches in an agricultural landscape. Biological Conservation. 115, 241‑249

Gilmore, D., Koehler, S., O'Dwyer, C. and Moore, W. 2008. Golden Sun Moth *Synemon plana* (Lepidoptera Castniidae): results of a broad survey of populations around Melbourne. *The Victorian Naturalist* **125**(2), 39-46

Appendix 2: Site-specific vegetation assessments



Biosis_Tribs_Visit

- Borehole
- Natural waterway
- Water supply main
- Sewer main
- Drain alignment
- Drainage and waterways boundary
- Storage reservoir
- MWC owned land

Map at A3
Scale 1: 25,632
18/07/2017

N
MGA55

Melbourne Water