PLANNING SCHEME AMENDMENT C190:
BULLA BYPASS (BB5) AND
MELBOURNE AIRPORT LINK (MAL)

EXPERT WITNESS STATEMENT
OF ALAN BRENNAN

VicRoads

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March 2015
Report No. 11138 (5.1)
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1. WITNESS INFORMATION

1.1. Expert witness information

1.1.1. Name and address

Alan Patrick Brennan
Brett Lane & Associates Pty Ltd
Suite 5, 61-63 Camberwell Road
Hawthorn East, VICTORIA 3123

1.1.2. Area of expertise

Alan Brennan has extensive expertise in terrestrial ecology and related legislation and policies. His qualifications and experience are summarised in Appendix 1.

1.2. Information about other significant contributors

The names, addresses and areas of expertise of other significant contributors to this report, and associated background reports, are presented in Table 1.

Table 1: Details of other significant contributors

<table>
<thead>
<tr>
<th>Name of contributor</th>
<th>Address</th>
<th>Area of Relevant Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davide Coppolino</td>
<td>Brett Lane &amp; Associates P/L</td>
<td>Terrestrial ecology and related legislation and policies.</td>
</tr>
<tr>
<td>Brett Macdonald</td>
<td>Suite 5, 61-63 Camberwell Road, Hawthorn East, VIC. 3123</td>
<td>Terrestrial zoology and related legislation and policies.</td>
</tr>
<tr>
<td>Khalid Al Dabbagh</td>
<td></td>
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<tr>
<td>Curtis Doughty</td>
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<td>Peter Lansley</td>
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<tr>
<td>Mahsa Ghasemi</td>
<td></td>
<td>GIS Analyst</td>
</tr>
<tr>
<td>Shannon Le Bel</td>
<td></td>
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<tr>
<td>Rachel Omodei</td>
<td></td>
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<tr>
<td>Bill Wallach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teisha Lay (nee Sloane)</td>
<td>Former employees (no longer at Brett Lane &amp; Associates P/L)</td>
<td>Terrestrial zoology and related legislation and policies.</td>
</tr>
<tr>
<td>Lachlan Marshall</td>
<td></td>
<td>Terrestrial ecology and related legislation and policies.</td>
</tr>
<tr>
<td>John McGuckin</td>
<td>Streamline Research P/L 83 Orchard Avenue, Eltham Nth VIC 3095</td>
<td>Aquatic ecology and related legislation and policies.</td>
</tr>
<tr>
<td>Dave Lucas</td>
<td></td>
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</tbody>
</table>

1.3. Instructions

Alan Brennan of Brett Lane and Associates Pty Ltd (BL&A) was engaged by VicRoads to prepare an expert witness statement relating to Planning Scheme Amendment C190: Bulla Bypass and Melbourne Airport Link.

BL&A were instructed in this matter by Russell Kennedy Lawyers, on behalf of VicRoads, in a letter dated 28 January 2015. Broadly the task included:

- Review of material;
Meetings with VicRoads other parties;
Preparation of a written report appropriate for presentation at the Panel Hearing; and
Appearance at the Panel Hearing.

1.4. **Scope of this statement**

This statement addresses the instructions provided by Russell Kennedy Lawyers and includes:

- Witness information:
- A statement of the work undertaken, methods used and sources of information for the investigation, including any limitations, where applicable;
- The findings of the work undertaken, documenting the native vegetation and fauna habitat on the site;
- A determination of the extent of any proposed native vegetation removal based on the development layout (as provided by VicRoads);
- Determination of the risk-based assessment pathway (i.e. low, moderate or high) under the Biodiversity Assessment Guidelines (Guidelines);
- The biodiversity impact and offset requirements for the proposed use of the land under the Guidelines;
- Explanation of the differences in the assessment results undertaken under the Framework and the Guidelines;
- Discussion of the implications of the findings for the proposed use of the land, specifically addressing relevant legislative and policy requirements;
- Responses to submissions; and
- Recommendations for mitigation and management strategies, as well as any further investigation, if required.

The findings in this statement have been prepared based on a combination of previous field surveys and assessments undertaken by a team from BL&A between October 2011 and February 2015, under my supervision and guidance. Full details of the assessments undertaken for this project are provided in the following reports:

- Flora, Fauna & Net Gain Assessment (BL&A Report 11138 [1.6] – May 2013);
- Net Gain Analysis and Flora, Fauna and OBEM Assessment (BL&A Report 11138 [4.1] – August 2013); and
- Biodiversity impact and offset requirements report (DELWP Report, February 2015).
2. WORK UNDERTAKEN

Brett Lane & Associates Pty Ltd undertook the following investigations for the Bulla Bypass (BB5) and Melbourne Airport Link (MAL) project:

- Development of Objective Based Evaluation Matrix;
- Flora, Fauna & Net Gain Assessment (BL&A Report 11138 [1.6] – May 2013);
- Net Gain Analysis and Flora, Fauna and OBEM Assessment (BL&A Report 11138 [4.1] – August 2013); and
- Calculation of biodiversity impact and offset requirements under the current Biodiversity Assessment Guidelines (Guidelines) (DELWP February 2015).

These investigations involved the scopes of work described below.

2.1. Development of Objective Based Evaluation Matrix (OBEM)

An Objective Based Evaluation Matrix (OBEM) was used to help assess and present the performance of the proposed alignments based on impacts on biodiversity. An overall project objective was provided by VicRoads. This overall project objective was as follows:

- To minimise impacts on biodiversity, including catchment values / waterways

A series of suitable project sub-objectives were determined by BL&A in conjunction with VicRoads. The sub-objectives were as follows:

- Minimise impacts on listed threatened flora species;
- Minimise impacts on listed threatened fauna species;
- Minimise impacts on vegetation communities;
- Minimise impacts on Large Old Trees, Very Large Old Trees and Scattered Trees; and
- Minimise isolating and/or fragmenting habitat in a landscape context.

A detailed matrix was developed that assessed the proposed alignment options against each of the above five project sub-objectives for specific ecological matters (e.g. flora species, fauna species, vegetation communities, etc.). Based on the extent to which each specific ecological matter met its relevant sub-objective, all ecological matters were then assigned a score of 1 to 5, based on the following criteria:

- Very Well (i.e. best practice, strong level of compliance, major positive impact) — 5 points;
- Well (i.e. improved practice, good policy compliance, positive impact) — 4 points;
- Moderately Well (i.e. partial policy compliance, no distinct positive or negative impact) — 3 points;
- Poor (i.e. policy non-compliance and negative impact) — 2 points; and
- Very Poor (i.e. major policy non-compliance and major negative impact) — 1 point.

The scores for each ecological matter were then averaged to produce an overall score for each sub-objective (i.e. matter A = Poor [Score of 2] and matter B = Well [score of 4]; therefore overall sub-objective score = 3 [Moderately Well]). These overall scores for each of the five sub-objectives of the project were then averaged to produce an overall score for each alignment option against the overall project objective.

Methods, analyses and results of the OBEM are provided in each of the background reports discussed below.

2.2. Melbourne Airport Link to Outer Metropolitan Ring & Bulla Bypass Planning Study, Flora, Fauna & Net Gain Assessment — Report No. 11138 (1.6)

This investigation involved:
- Characterisation and mapping of remnant native vegetation within the study area including identification of non-indigenous species which may pose a threat to the indigenous vegetation. Native vegetation was recorded using a GPS.
- An assessment of native vegetation in accordance with Victoria’s Native Vegetation Management Framework (including habitat hectare assessment and/or Scattered Tree assessment). This was undertaken in consultation with the Department of Sustainability and Environment (DSE; now the Department of Environment, Land, Water and Planning). Note: Victoria’s Native Vegetation Management Framework has been replaced by the current Biodiversity Assessment Guidelines since this investigation.
- An assessment of the nature and quality of native fauna habitat and use of the available habitats as a wildlife corridor. All fauna habitat types were recorded using a GPS.
- An assessment of the likelihood of occurrence of threatened flora and fauna in the area.
- Compilation of flora and fauna species lists for the study area. All listed species identified in the study area were recorded using GPS.
- Targeted survey for Brown Toadlet using best-practice methods (including call playback, spotlighting and active searches) to determine whether the species was present in areas potentially impacted upon by the proposed development.
- An assessment of alignment options across Deep Creek. Aquatic species present in this waterway were assessed. This included water quality, flow regimes, in-stream barriers and stream ecology. The habitat values of the waterway have been discussed in the context of the proposed development.
- Preparation of maps showing the results of the assessment. This includes details of the habitat hectare assessment, such as the EVC recorded, extent, and location of Scattered Trees.
- A Net Gain Analysis (impact assessment) of potential alignments. Offset targets were identified and preliminary options for minimising impacts were discussed with VicRoads.

- Determination of the impact of the proposed route alignments on flora and fauna (including aquatic fauna) in the route corridor and on adjacent land.

- An impact assessment of direct and indirect impacts which may occur during construction and operation of the proposed route alignment.

- A comparison of alignment options to determine which best met the project objective.

This investigation was undertaken by a team from BL&A, comprising Shannon LeBel (Botanist), Rachel Omodei (Botanist), Bill Wallach (Botanist), Curtis Doughty (Zoologist), Peter Lansley (Zoologist), Khalid Al Dabbagh (Zoologist), Teisha Sloane (Zoologist), Lachlan Marshall (Ecologist), Davide Coppolino (Senior Botanist), Mahsa Ghasemi (GIS Analyst) and Alan Brennan (Senior Ecologist & Project Manager). A team from Streamline Research, comprising John McGuckin and Dave Lucas, undertook the aquatic ecology assessment.

This investigation covered a 650 hectare study. Impacts of the following were determined:

- One proposed alignment for the MAL;

- A proposed duplication of Oaklands Road (being an interim connection);

- Four proposed alignment options for the BB5, comprising the BB1 North, BB1 South, BB2 and BB3 options. and

- A proposed alignment option for the BB5, comprising the BB4 option which was dropped for further assessment.

The initial field survey was undertaken in spring. The targeted survey for Brown Toadlet was undertaken over three nights during the species’ active period — 14th, 21st and 25th June 2012.

Report No. 1138 (1.6), documenting the above, was produced in August 2013.

### 2.3. Bulla Bypass Planning Study: Alignment Option BB5, Net Gain Analysis and Flora, Fauna and OBEM Assessment — Report No. 11138 (4.1)

Existing field data was used to determine impacts and regulatory implications for alignment option BB5 which was developed to minimise project impacts.

This analysis was undertaken by a team from BL&A, comprising Brett Macdonald (Senior Ecologist), Mahsa Ghasemi (GIS Analyst) and Alan Brennan (Senior Ecologist & Project Manager).

Report 11138 (4.1), documenting the above, was produced in November 2013.

### 2.4. Biodiversity Impact and Offset Requirements for BB5 and MAL

Since August 2013, the proponent has made five minor changes to Alignment option BB5 as a result of more detailed planning. These changes are as follows:

- Widening of the alignment to the south just east of Deep Creek;
Extending the alignment further to the east along Somerton Road, east of Oaklands Road;

Inclusion of two areas near where the MAL meets the Outer Metropolitan Ring Road corridor; and

Extending the alignment further to the north along Oaklands Road, north of Somerton Road.

The resulting preferred alignment for the Bulla Bypass — known as BB5 — was assessed under the Guidelines using the existing field data. This investigation involved the work presented below.

- A review of DELWP’s Native Vegetation Information Management system (NVIM).
- A site inspection by the expert witness to confirm whether the findings of our previous assessments remained current under the Guidelines.
- Overlaying the current proposed development footprint of BB5 over native vegetation mapping data using GIS software (ArcGIS) to determine proposed native vegetation removal. Resulting shapefiles were then provided to DELWP to enable calculation of the biodiversity impact and offset requirements.
- Summarisation of impact assessment results (setting out offsets) in accordance with the Guidelines.

This investigation was undertaken in February 2015 by a team from BL&A comprising Davide Coppolino (Senior Ecologist), Mahsa Ghasemi (GIS Analyst) and Alan Brennan (Senior Ecologist & Project Manager).

A Biodiversity Impact and Offset Requirements Report (DELWP 2014) was produced using information provided by BL&A in February 2015.
3. FINDINGS

Summaries of BL&A’s findings to date are presented below. These summaries have been compiled from the reports outlined above.

3.1. Flora, Fauna & Net Gain Assessment – Report No. 11138 (1.6)

3.1.1. Site description

The study area occurred within the Victorian Volcanic Plain and Central Victorian Uplands bioregions and fell within the Port Phillip and Westernport catchment. It was subjected to an Environmental Significance Overlay and was zoned as follows in the Hume Planning Scheme:

- Public Parks and Recreation Zone and Public Conservation and Resource Zone – in parkland and recreation areas;
- Township Zone – across much of the Bulla Township; and
- Green Wedge Zone – remainder of the study area.

3.1.2. Native vegetation

Native vegetation, including remnant patches and Scattered Trees, were concentrated in three main locations – around Deep Creek, in the central part of the study area and along the western side of Woodlands Historic Park (including remnant patch native vegetation and numerous Large Old Trees).

Some 27 Habitat Zones, totalling 39.76 hectares (11.39 habitat hectares) of native vegetation, were recorded in the study area. This comprised the vegetation listed below.

- 3.15 habitat hectares (11.65 hectares) of high conservation significance Creekline Grassy Woodland (EVC 68)
- 2.56 habitat hectares (5.42 hectares) of very high conservation significance Hills Herb-rich Woodland (EVC 71)
- 0.16 habitat hectares (0.50 hectares) of high conservation significance Hills Herb-rich Woodland (EVC 71)
- 0.89 habitat hectares (3.23 hectares) of medium conservation significance Hills Herb-rich Woodland (EVC 71)
- 1.76 habitat hectares (9.94 hectares) of high conservation significance Plains Woodland (EVC 803)
- 1.32 habitat hectares (3.78 hectares) of very high conservation significance Stream Bank Shrubland (EVC 851)
- 1.54 habitat hectares (5.24 hectares) of high conservation significance Stream Bank Shrubland (EVC 851)
- 159 Large/Very Large Trees within habitat zones
- Six very large, 21 large, 23 medium and 30 small Scattered Trees
Creekline Grassy Woodland (EVC 68) and Hills Herb-rich Woodland (EVC 71) were recorded within the Central Victorian Uplands bioregion while Hills Herb-rich Woodland (EVC 71), Stream Bank Shrubland (EVC 851) and Plains Woodland (EVC 803) were recorded within the Victorian Volcanic Plain bioregion.

No forms of Degraded Treeless Vegetation (a vegetation category set out by the now defunct Native Vegetation Management Framework) were recorded, suggesting that no additional areas were likely to be regarded as remnant patch native vegetation under the Guidelines.

### 3.1.3. Flora

A total of 115 flora species were recorded, 56 (49%) of which were indigenous and 59 (51%) were non-indigenous.

Three listed rare or threatened flora species were recorded — Melbourne Yellow-gum (near Deep Creek), Fragrant Saltbush and Austral Tobacco. No flora species listed as threatened under the EPBC Act or FFG Act was recorded in the study area nor were any considered likely to occur. Three species listed as rare or threatened on DELWP's Advisory List were considered to potentially occur — Arching Flax-lily, Branching Groundsel and Yellow Star.

### 3.1.4. Fauna

The following six fauna habitat types were identified in the study area:

- Grassy Woodland (three communities, dominated by either River Red-gum, Grey Box or Yellow Gum);
- Rocky Escarpment;
- Aquatic habitat;
- Scattered Trees;
- Planted Trees; and
- Pasture/crop.

The Deep Creek gully was considered to provide an important wildlife corridor.

A total of 100 fauna species were recorded, including 72 bird (eight introduced), 12 mammal (four introduced), five reptile, five frog and six fish species (two introduced).

The following listed threatened (or near threatened) fauna species and migratory birds were considered to be potentially susceptible to significant impacts from the proposed development:

- Black-chinned Honeyeater;
- Black-eared Cuckoo;
- Brown Treecreeper;
- Brown Quail;
- Diamond Firetail;
- Nankeen Night Heron;
• Swift Parrot; and
• Growling Grass Frog.

Australian Grayling and Yarra Pygmy Perch are also considered susceptible to impacts if crossings over Deep Creek were not designed and constructed appropriately.

Although no Brown Toadlets were recorded during the targeted survey, it was considered possible that the species could reach the area of concern, particularly after periods of high rainfall when frogs may disperse to colonise new areas.

3.1.5. Threatened ecological communities

Habitat Zone W met the criteria for the EPBC Act listed community Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia and the FFG Act listed community Grey Box – Buloke Grassy Woodland.

None of the alignments were proposed to impact upon these listed threatened ecological communities.

One additional community listed as threatened under the FFG Act — the Victorian Temperate Woodland Bird Community — was considered to potentially occur in the study area.

3.1.6. Objective Based Evaluation Matrix (Options Analysis) results

The MAL, Oaklands Road duplication and BB1 South option were considered to meet the project objective (i.e. minimise impacts on biodiversity, including catchment values and waterways) very well, when implemented with recommended mitigation measures. Alignment option BB1 North met the objective well while the remaining alignment options — BB2 and BB3 — met the objective moderately well.

BB1 South, subject to some modification where it crossed Deep Creek, was recommended as the preferred alignment option from an environmental perspective.

3.2. Net Gain Analysis, Flora & Fauna Assessment and OBEM of BB5 – Report No. 11138 (4.1)

Existing field data was used to determine impacts and regulatory implications for alignment option BB5 which was developed to minimise project impacts.

3.2.1. Native vegetation impacts

Alignment option BB5 was determined to result in the removal of the following native vegetation:

• 0.02 Habitat Hectares (0.009 hectares) of high conservation significance Creekline Grassy Woodland (EVC 68) from habitat zones D and G. This includes the removal of one Large/Very Large Old Tree from Habitat Zone G.

• 0.10 Habitat Hectares (0.306 hectares) of high conservation significance Hills Herb-rich Woodland (EVC 71) from Habitat Zone O. This includes the removal of four Large/Very Large Old Trees.
0.09 Habitat Hectares (0.210 hectares) of very high conservation significance Stream Bank Shrubland (EVC 851) from Habitat Zone P. This includes the removal of five Large/Very Large Old Trees.

0.17 Habitat Hectares (0.539 hectares) of very high conservation significance Hills Herb-rich Woodland (EVC 71) from Habitat Zone Q. This includes the removal of three Large/Very Large Old Trees.

0.33 Habitat Hectares (1.40 hectares) of high conservation significance Plains Woodland (EVC 803) from Habitat Zones S, U and V. This includes the removal of seven Large/Very Large Old Trees from Habitat Zones U and S.

0.11 Habitat Hectares (0.302 hectares) of high conservation significance Stream Bank Shrubland (EVC 851) from Habitat Zone Z.

The removal of 12 Scattered Trees, 3 of which are large or very large.

This resulted in a total offset target of 1.38 habitat hectares for the removal of 2.843 hectares of remnant patch vegetation as well as the protection of 112 Large Old Trees and recruitment of 560 new trees for the removal of 20 Large Old Trees from habitat zones. In addition, 13 Large Old Trees would need to be protected and 218 new plants recruited (or 538 new plants recruited) for the proposed removal of 12 Scattered Trees.

3.2.2. Flora impacts

No listed rare or threatened flora species would be impacted upon by the BB5 alignment.

3.2.3. Fauna impacts

The Growling Grass Frog was considered to be susceptible to impacts by the BB5 alignment. Australian Grayling and Yarra Pygmy Perch were also considered susceptible to impacts if crossings over Deep Creek were not designed and constructed appropriately. Potential impacts were considered likely if bridge piers were to be placed in or in close proximity to Deep Creek as this would cause disturbance to the ecology of the waterway and habitat connectivity.

3.2.4. Impacts upon threatened ecological communities

Impacts upon the Victorian Temperate Woodland Bird Community could not be determined during this investigation. However, this community, if present, would be restricted to private land and therefore is not directly subject to the provisions of the FFG Act, which applies only to public land.

However, the potential impacts of the development on this FFG Act listed ecological community would be addressed within the incorporated document.

No other listed communities were considered to be susceptible to impacts.

3.2.5. OBEM results

The BB5 alignment was determined to achieve the relevant project objectives moderately well with or without the adoption of mitigation measures.
3.2.6. **Other regulatory requirements**

The following implications were determined for the BB5 alignment:

- Approvals are proposed to be obtained via a Planning Scheme Amendment process through the inclusion of an incorporated document to exempt the Project from permit requirements.
- An application to remove native vegetation would be referred to DSE (now DELWP);
- Ministerial approval would be required for the proposed removal of vegetation with very high conservation significance;
- A Referral under the EPBC Act would be required for potential significant impacts to the Growling Grass Frog; and
- A Protected Flora Licence under the FFG Act would not be required. However, the impacts of the development on the FFG Act listed Growling Grass Frog and the listed ecological community (Victorian Temperate Woodland Bird Community) would be considered by the Responsible Authority.

*Note: Implications assessed under the P&E Act at the time of this investigation are no longer current due to the replacement of Victoria’s Native Vegetation management Framework with the current Biodiversity Assessment Guidelines and related changes to Victoria’s Planning Provisions. Implications under the Biodiversity Assessment Guidelines are addressed in Section 3.3 of this Witness Statement. Similarly, implications assessed under the FFG Act for values located on private land at the time of this investigation are no longer current. Since December 2013, the Responsible Authority does not need to consider impacts on FFG listed values.*

3.3. **Biodiversity Impact and Offset Requirements for BB5 and MAL**

Alignment option BB5 underwent further minor iterations since the preceding investigation. The proposed development footprint, as provided by VicRoads for the current analysis, incorporated alignment option BB5 and MAL.

Impact assessment and offset requirements under the Guidelines for the current proposed development footprint are summarised below and detailed in Appendix 2. The development footprint and associated native vegetation impacts are shown in Figure 1.

All significant biodiversity impacts were found to be restricted to the BB5 alignment. The extent risk of the current proposed development is 3.936 hectares, comprising 2.953 hectares (0.853 habitat hectares) of remnant patch native vegetation and 14 Scattered Trees.
The native vegetation to be removed in the central and eastern parts of the study area occurs within areas mapped as Risk Location B while the remainder occurs within Risk Location A.

Based on the above considerations, the project will be assessed under the **high** risk assessment pathway.

The proposed development will result in the loss of 0.705 *general* biodiversity equivalence units (BEUs). This results in an offset requirement of 1.057 General Biodiversity Equivalence Units within the Port Phillip and Westernport CMA or within the Hume Municipal District. Offsets must have a minimum strategic biodiversity score of 0.530.

An offset strategy should be prepared to in accordance with the guidelines, or any other appropriate requirement at the time. In accordance with the Guidelines, the offset strategy must include the following:

- An explanation of how native vegetation removal was minimised;
- A summary of the native vegetation losses and required offset targets; and
- An indication of the likely project staging and the timing of native vegetation removal.

Under the Guidelines *all* offsets must be secured prior to the removal of native vegetation. Offsets cannot occur within 150 metres of any dwellings and associated buildings on land covered by a Bushfire Management Overlay or within 50 metres of these structures on all other land occurring within Bushfire Prone Areas.
4. RESPONSES TO SUBMISSIONS

Table 2 below presents BL&A’s responses to submissions presented to the Panel.

Table 2: BL&A’s response to submissions

<table>
<thead>
<tr>
<th>Submission No.</th>
<th>Location of relevant text</th>
<th>Discussion points</th>
<th>BL&amp;A Response</th>
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</thead>
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<tr>
<td>1</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>4</td>
<td>Page 4, Paragraph 1</td>
<td>Extent of impacts has been defined as 2.8 hectares (0.82 habitat hectares) of native vegetation and 12 Scattered Trees. It is unclear if the proposal seeks to timestamp the native vegetation identified within the project area to ensure that the offsets are known for the life of the project.</td>
<td>The extent of impacts of BB5 and MAL has been determined to be 2.953 hectares (0.853 habitat hectares) of remnant patch native vegetation and 14 Scattered Trees. Time-stamping was a one-off approach taken to assess vegetation in growth areas to facilitate a strategic assessment under the EPBC Act. It is not considered necessary or appropriate to timestamp the native vegetation within the project area. The vegetation has been subject to the same habitat hectare assessment methodology used in time-stamping. The background reports effectively accomplish time-stamping by mapping and quantifying native vegetation at a point in time and determining the offsets required by the proposal.</td>
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<td>Submission No.</td>
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|               | Page 4, Paragraph 2        | It was submitted that impacts to movement corridors and habitat should be considered for a broader range of aquatic and terrestrial species, with Growling Grass Frog being noted as the only species for which mitigation was suggested. | A broader range of aquatic and terrestrial species have indeed been considered. Section 5.2.3 of BL&A Report 11138 (4.1) identified the following other threatened and/or migratory fauna species as being potentially impacted upon as a result of inappropriate design of the Deep Creek crossing or disturbance to the Deep Creek corridor:  
  - Brown Quail  
  - Nankeen Night Heron  
  - Australian Grayling  
  - Yarra Pygmy Perch.  
All other listed threatened or migratory species were considered to either be unlikely to utilise the corridor, were mobile enough to avoid impacts and/or did not depend upon the corridor as core habitat.  
Point 5 in Section 8.2 of BL&A Report 11138 (4.1) recommends that impacts upon the Deep Creek should be avoided. It is understood that impacts within the creek corridor will be minimised by locating piers outside of the waterway. |
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<tr>
<td>6</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>7</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>8</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>9</td>
<td>Paragraph 5</td>
<td>Recommendation to realign the Bulla Bypass into the northern edge of the Woodlands Historic Park.</td>
<td>Realignment of the Bulla Bypass (or any other part of the project) into the northern part of Woodlands Historic Park would result in substantial additional impacts upon biodiversity. This area supports remnant native vegetation including numerous Large Old Trees. It is recommended that the alignment avoid this area. This area also has the potential to support the FFG Act-listed Victorian Temperate Woodland Bird Community and Brown Toadlet. Historic records exist for Brown Toadlet within the park.</td>
</tr>
<tr>
<td>10</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>11</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>12</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>13</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
<tr>
<td>Submission No.</td>
<td>Location of relevant text</td>
<td>Discussion points</td>
<td>BL&amp;A Response</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------</td>
<td>-------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>14</td>
<td>Page 2, Paragraph 2-4</td>
<td>Failure of background reports to address impacts of the project upon macropod movements across the landscape and issues between vehicles and macropods on Sunbury Road, Oaklands Road and Somerton Road. Potential containment of macropods within Woodlands HP, creating a captive population and placing on-going pressure on the park’s vegetation. Grade separation and macropod management is suggested, to address what is described as unacceptable impacts.</td>
<td>BL&amp;A agrees that a detailed macropod survey should be undertaken to ascertain macropod movements (including across existing roads for which increased traffic has been modelled) and habitat utilisation across the broader landscape. This would allow for appropriate project planning and design modifications (if required) to ensure that the project is designed and constructed in a way that is sympathetic to macropod land use and movement in the region as well as reduces the risk of collisions with traffic. Responses and required surveys could be suitably captured in an Environmental Management Plan (EMP) that addresses flora and fauna issues, weeds and pest animals as well as other considerations such as sediment and erosion control.</td>
</tr>
<tr>
<td></td>
<td>Page 2, Paragraph 8</td>
<td>The Flora, Fauna and Net Gain Assessment refers to the old vegetation removal framework. An updated assessment of proposed native vegetation losses will need to be submitted that reflects the Victorian Planning Provisions and Clause 52.17 “Permitted clearing of native vegetation – Biodiversity assessment guidelines” (BAG).</td>
<td>The exhibited reports were produced prior to the Guidelines being introduced. Native vegetation losses and associated offset targets under “Permitted clearing of native vegetation – Biodiversity assessment guidelines” (Guidelines) are presented in Section 3.3 of this Witness Statement.</td>
</tr>
<tr>
<td></td>
<td>Page 2, Paragraph 9</td>
<td>Requirement for Offset Strategy in accordance with the</td>
<td>BL&amp;A agrees that offsets must be provided in accordance with the Guidelines, or any other</td>
</tr>
<tr>
<td>Submission No.</td>
<td>Location of relevant text</td>
<td>Discussion points</td>
<td>BL&amp;A Response</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------</td>
<td>-------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>to Page 3, Paragraph 1 (incl. Points a-d)</td>
<td>Guidelines prior to native vegetation removal. Content of Offset Strategy has been suggested in Points a to d.</td>
<td>appropriate requirement at the time. This is stated in Section 3.3 of this Witness Statement. BL&amp;A agrees that any EMP must include details of the matters listed at Point d.</td>
<td></td>
</tr>
<tr>
<td>Page 3, Paragraph 1, Points b &amp; c</td>
<td>It has been requested that the Offset Strategy include: ▪ A summary of estimated native vegetation losses and offset targets and any implications with OMR Melbourne Strategic Assessment offset obligations. ▪ Information relating to the staging of works and the need to secure/initiate offsets within 12 months of vegetation removal or as otherwise directed.</td>
<td>Section 3.3 of this witness statement presents a summary of estimated targets. It is BL&amp;A’s understanding that the Melbourne Strategic Assessment (MSA) as it relates to the OMR, does not cover linking roads (except on-ramps) such as the proposed MAL. Offsets calculated for the OMR under the MAL therefore only provide for the OMR’s main alignment. It is therefore considered that MSA would not have any implications upon the current project before the Panel. That is, the native vegetation removal and associated offsets for the current project would be considered separately to the OMR project. Consideration should be given to including an unambiguous allowance for the staging of offsets (i.e. security/initiation) as per the staging of works. The offset strategy should also allow for the assessment of native vegetation impacts immediately following the completion of project stages and adjustment of offset targets where</td>
<td></td>
</tr>
<tr>
<td>Submission No.</td>
<td>Location of relevant text</td>
<td>Discussion points</td>
<td>BL&amp;A Response</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------</td>
<td>-------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>15</td>
<td>N/A</td>
<td>Not relevant to ecological investigations.</td>
<td>None required.</td>
</tr>
</tbody>
</table>

vegetation removal is found to have deviated from the estimated removal.
5. 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.

Signed:

Alan Patrick Brennan
Senior Ecologist & Project Manager
Brett Lane & Associates Pty Ltd
Suite 5, 61-63 Camberwell Road
Hawthorn East, VIC. 3123
6. REFERENCES


Appendix 1: Qualifications and experience of Alan Patrick Brennan
Profile

Alan Brennan joined Brett Lane and Associates Pty Ltd, Melbourne in 2007. Alan’s role involves developing solutions for projects experiencing issues with ecological matters. During his career in the biological sciences Alan has developed specialised skills and abilities in vegetation and land management along with a sound knowledge of relevant policies and legislation. Since 2000, he has worked to ensure sustainable development outcomes are achieved across a range of industry sectors.

Biography

Working in industry since 1988

Qualifications
Graduate Diploma in Land Rehabilitation University of Ballarat
BAs (Applied Biology) RMIT University

Certificates and Licenses
Management Authorisation – Salvage and Translocation
DSE Certificate of Competency in Vegetation Quality
Assessments Registration No. HH168
Victorian Animal Ethics Approval

Employment History
2007 – Present
Senior Ecologist / Project Manager, BL&A, Australia
2005 – 2007
Manager City Environment, Hume City Council, Australia
2000 – 2005
Environmental Services Manager, Melton Shire Council, Australia
2000 – 2000
Catchment Management Project Co-ordinator, Melton Shire Council, Australia
1998 – 2000
Grassland Project Officer, Victorian DNRE (now DSE), Australia
1997 – 1998
Catchment Management Officer, Victorian DNRE (now DSE), Australia
1992 – 1995
Cell Physiologist, Monash IVF, Australia
1988 – 1992
Plant Pathologist, Department of Agriculture, Australia

Key Skills

• Project Manager including budgeting, staffing, client liaison, production of high quality technical reports
• Flora and Fauna Assessments
• Habitat hectare assessments
• Net gain analyses
• Expert witness for VCAT
• Constraints analysis
• Scoping assessments
• Management plan preparation for listed fauna and flora values and offset sites
• Impact assessment
• Project design recommendation
• Preparation of mitigation measures
• EPBC Act and EES Referrals
• Preparation of assessment reports (preliminary documentation, public environmental report and environmental impact statement)
• Offset site selection
Project Examples

Property Development


River Valley Estate, Sunshine North — 100+ hectare site adjacent to the Maribyrnong River, Initial flora and fauna assessments, multiple targeted flora surveys, net gain analysis and offset search (2008 to 2012)

Chesterfield Estate, Melton South, Victoria, Development of an offset management plan and a Striped Legless Lizard Translocation & Salvage Plan

Hodgkins Road, Hastings, Victoria, Initial and targeted flora and fauna assessments, net gain assessments, preparation of Expert Witness Statement of Evidence for VCAT, provision of evidence at VCAT, development of an offset management plan and a conservation management plan, assessment of and assistance with Planning Scheme infringements

Renewable Energy


Crookwell Wind Farm, Crookwell, New South Wales, flora and fauna assessment along with community consultation (2009)

Road and Rail Infrastructure


Avalon Airport rail link, Victoria, Spiny Rice-Flower and Striped Legless Lizard surveys, net gain assessments of three potential alignments and Department of Transport liaison (2012)

Bulla Bypass and Melbourne Airport Link to OMR, Victoria, overview flora and fauna assessments for multiple routes, impact assessment, threatened flora and fauna species targeted surveys, advice on preparation of EES Referral, development of mitigation measures and managing sub-contracting of aquatic surveys (2011- 2012)


Ecosystem Monitoring and Management

DSE Bushfire Vegetation Assessments, Victoria, undertook rapid field assessments of public and private land across large areas at a high risk from bushfire.

Deep Lead, Victoria, provision of advice on EPBC Act, assessment of impacts from rail rehabilitation project, preparation of weed management plan, implementation of weed management plan, search for offsets (2010 – 2013)

Maidstone Street Altora, Victoria, Spiny Rice-flower salvage and translocation plan preparation and development of an offset and conservation management plan

Atherstone Estate, Melton South, Victoria, Preparation and Implementation of a Striped Legless Lizard salvage and translocation plan

Northern Highway, Wallan to Kilmore, Victoria, Preparation and implementation of a fauna management plan

City of Greater Geelong Review of environmental programs, Victoria, Review of land and waterway programs involving review of existing information, staff interviews and benchmarking with other Councils.

Appendix 2: Biodiversity Impact and Offset Requirements Report (DELWP 2015)
Biodiversity impact and offset requirements report

This report does not represent an assessment by DELWP of the proposed native vegetation removal. It provides additional biodiversity information to support moderate and high risk-based pathway applications for permits to remove native vegetation under clause 52.16 or 52.17 of planning schemes in Victoria.

Summary of marked native vegetation

<table>
<thead>
<tr>
<th>Risk-based pathway</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total extent</td>
<td>3.936 ha</td>
</tr>
<tr>
<td>Remnant patches</td>
<td>2.952 ha</td>
</tr>
<tr>
<td>Scattered trees</td>
<td>14 trees</td>
</tr>
<tr>
<td>Location risk</td>
<td>B</td>
</tr>
<tr>
<td>Strategic biodiversity score of all marked native vegetation</td>
<td>0.683</td>
</tr>
</tbody>
</table>

Offset requirements if a permit is granted

If a permit is granted to remove the marked native vegetation, a requirement to obtain a native vegetation offset will be included in the permit conditions. The offset must meet the following requirements:

<table>
<thead>
<tr>
<th>Offset type</th>
<th>General offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>General offset amount (general biodiversity equivalence units)</td>
<td>1.057 general units</td>
</tr>
<tr>
<td>General offset attributes</td>
<td>Port Phillip and Westernport Catchment Management Authority (CMA) or the Local Municipal District where clearing takes place</td>
</tr>
<tr>
<td>Minimum strategic biodiversity score</td>
<td>0.530 (^1)</td>
</tr>
</tbody>
</table>

See Appendices 1 and 2 for details on how offset requirements were determined.
NB: values presented in tables throughout this document may not add to totals due to rounding.

---

\(^1\) Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required
Biodiversity impact and offset requirements report

Next steps

Any proposal to remove native vegetation must meet the application requirements of the high risk-based pathway and it will be assessed under the high risk-based pathway.

If you wish to remove the marked native vegetation you are required to apply for a permit from your local council. Council will then refer your application to DELWP for assessment, as required. This report is not a referral assessment by DELWP.

The biodiversity assessment report from NVIM and this biodiversity impact and offset report should be submitted with your application for a permit to remove native vegetation you plan to remove, lop or destroy.

The Biodiversity assessment report generated by the tool within NVIM provides the following information:
- The location of the site where native vegetation is to be removed;
- The area of the patch of native vegetation and the number of any scattered trees to be removed;
- Maps or plans containing information set out in the Permitted clearing of native vegetation – Biodiversity assessment guidelines;
- The risk-based pathway of the application for a permit to remove native vegetation.

This report provides the following information to meet application requirements for a permit to remove native vegetation:
- Confirmation of the risk-based pathway of the application for a permit to remove native vegetation;
- The strategic biodiversity score of the native vegetation to be removed;
- Information to inform the assessment of whether the proposed removal of native vegetation will have a significant impact on Victoria’s biodiversity, with specific regard to the proportional impact on habitat for any rare or threatened species;
- The offset requirements should a permit be granted to remove native vegetation.

Additional application requirements must be provided with an application for a permit to remove native vegetation in the moderate or high risk-based pathways. These include:
- A habitat hectare assessment report of the native vegetation that is to be removed;
- A statement outlining what steps have been taken to ensure that impacts on biodiversity from the removal of native vegetation have been minimised;
- An offset strategy that details how a compliant offset will be secured to offset the biodiversity impacts of the removal of native vegetation.

Refer to the Permitted clearing of native vegetation – Biodiversity assessment guidelines and for a full list and details of application requirements.
## Appendix 1 – Biodiversity impact of removal of native vegetation

### Habitat hectares

Habitat hectares are calculated for each habitat zone within your proposal using the extent and condition scores in the GIS data you provided.

<table>
<thead>
<tr>
<th>Habitat zone</th>
<th>Site assessed condition score</th>
<th>Extent (ha)</th>
<th>Habitat hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>0.200</td>
<td>0.650</td>
<td>0.130</td>
</tr>
<tr>
<td>U</td>
<td>0.200</td>
<td>0.647</td>
<td>0.188</td>
</tr>
<tr>
<td>Q</td>
<td>0.320</td>
<td>0.306</td>
<td>0.096</td>
</tr>
<tr>
<td>V</td>
<td>0.120</td>
<td>0.069</td>
<td>0.012</td>
</tr>
<tr>
<td>D</td>
<td>0.290</td>
<td>0.001</td>
<td>0.000</td>
</tr>
<tr>
<td>Q</td>
<td>0.320</td>
<td>0.686</td>
<td>0.219</td>
</tr>
<tr>
<td>P</td>
<td>0.420</td>
<td>0.210</td>
<td>0.088</td>
</tr>
<tr>
<td>Z</td>
<td>0.350</td>
<td>0.302</td>
<td>0.106</td>
</tr>
<tr>
<td>Q</td>
<td>0.240</td>
<td>0.051</td>
<td>0.012</td>
</tr>
<tr>
<td>62</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>223</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>224</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>230</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>232</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>225</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>233</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>226</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>227</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>228</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>234</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>229</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>269</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td>270</td>
<td>0.200</td>
<td>0.070</td>
<td>0.014</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>1.050</strong></td>
<td></td>
</tr>
</tbody>
</table>
Biodiversity impact and offset requirements report

Impacts on rare or threatened species habitat above specific offset threshold

The specific-general offset test was applied to your proposal. The test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the specific offset threshold. The threshold is set at 0.005 per cent of the total habitat for a species. When the proportional impact is above the specific offset threshold a specific offset for that species’ habitat is required.

The specific-general offset test found your proposal does not have a proportional impact on any rare or threatened species’ habitats above the specific offset threshold. No specific offsets are required. A general offset is required as set out below.

Clearing site biodiversity equivalence score(s)

The general biodiversity equivalence score for the habitat zone(s) is calculated by multiplying the habitat hectares by the strategic biodiversity score.

<table>
<thead>
<tr>
<th>Habitat zone</th>
<th>Habitat hectares</th>
<th>Strategic biodiversity score</th>
<th>General biodiversity equivalence score (GIBES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>0.130</td>
<td>0.717</td>
<td>0.093</td>
</tr>
<tr>
<td>U</td>
<td>0.186</td>
<td>0.726</td>
<td>0.136</td>
</tr>
<tr>
<td>O</td>
<td>0.098</td>
<td>0.782</td>
<td>0.076</td>
</tr>
<tr>
<td>V</td>
<td>0.012</td>
<td>0.757</td>
<td>0.009</td>
</tr>
<tr>
<td>D</td>
<td>0.000</td>
<td>0.557</td>
<td>0.000</td>
</tr>
<tr>
<td>Q</td>
<td>0.219</td>
<td>0.708</td>
<td>0.155</td>
</tr>
<tr>
<td>P</td>
<td>0.088</td>
<td>0.676</td>
<td>0.060</td>
</tr>
<tr>
<td>Z</td>
<td>0.106</td>
<td>0.612</td>
<td>0.065</td>
</tr>
<tr>
<td>G</td>
<td>0.012</td>
<td>0.377</td>
<td>0.005</td>
</tr>
<tr>
<td>62</td>
<td>0.014</td>
<td>0.597</td>
<td>0.006</td>
</tr>
<tr>
<td>223</td>
<td>0.014</td>
<td>0.501</td>
<td>0.007</td>
</tr>
<tr>
<td>224</td>
<td>0.014</td>
<td>0.512</td>
<td>0.007</td>
</tr>
<tr>
<td>230</td>
<td>0.014</td>
<td>0.556</td>
<td>0.008</td>
</tr>
<tr>
<td>232</td>
<td>0.014</td>
<td>0.566</td>
<td>0.008</td>
</tr>
<tr>
<td>225</td>
<td>0.014</td>
<td>0.490</td>
<td>0.007</td>
</tr>
<tr>
<td>233</td>
<td>0.014</td>
<td>0.613</td>
<td>0.009</td>
</tr>
<tr>
<td>226</td>
<td>0.014</td>
<td>0.512</td>
<td>0.007</td>
</tr>
<tr>
<td>227</td>
<td>0.014</td>
<td>0.541</td>
<td>0.006</td>
</tr>
<tr>
<td>228</td>
<td>0.014</td>
<td>0.556</td>
<td>0.006</td>
</tr>
<tr>
<td>234</td>
<td>0.014</td>
<td>0.622</td>
<td>0.009</td>
</tr>
<tr>
<td>229</td>
<td>0.014</td>
<td>0.556</td>
<td>0.008</td>
</tr>
<tr>
<td>269</td>
<td>0.014</td>
<td>0.425</td>
<td>0.006</td>
</tr>
<tr>
<td>270</td>
<td>0.014</td>
<td>0.425</td>
<td>0.006</td>
</tr>
</tbody>
</table>
### Mapped rare or threatened species’ habitats on site

This table sets out the list of rare or threatened species’ habitats mapped at the site beyond those species for which the impact is above the specific offset threshold. These species habitats do not require a specific offset according to the specific-general offset test.

<table>
<thead>
<tr>
<th>Species number</th>
<th>Species common name</th>
<th>Species scientific name</th>
</tr>
</thead>
<tbody>
<tr>
<td>10009</td>
<td>Red-chested Button-quail</td>
<td>Turnix pyrrothorax</td>
</tr>
<tr>
<td>10045</td>
<td>Lewin’s Rail</td>
<td>Lewinia pectoralis pectoralis</td>
</tr>
<tr>
<td>10059</td>
<td>Baiton’s Crane</td>
<td>Porzana puella palustris</td>
</tr>
<tr>
<td>10154</td>
<td>Wood Sandpiper</td>
<td>Tringa glareola</td>
</tr>
<tr>
<td>10170</td>
<td>Australian Painted Snipe</td>
<td>Rostratula benghalensis australis</td>
</tr>
<tr>
<td>10174</td>
<td>Bush Stone-curlew</td>
<td>Burhinus grallarius</td>
</tr>
<tr>
<td>10196</td>
<td>Intermediate Egret</td>
<td>Ardea intermedia</td>
</tr>
<tr>
<td>10187</td>
<td>Eastern Great Egret</td>
<td>Ardea modesta</td>
</tr>
<tr>
<td>10195</td>
<td>Little Bittern</td>
<td>Ixobrychus minutus dubius</td>
</tr>
<tr>
<td>10197</td>
<td>Australasian Bittern</td>
<td>Botaurus poioptilus</td>
</tr>
<tr>
<td>10212</td>
<td>Australasian Shoveler</td>
<td>Anas rhynchos</td>
</tr>
<tr>
<td>10215</td>
<td>Hardhead</td>
<td>Aythya australis</td>
</tr>
<tr>
<td>10216</td>
<td>Blue-billed Duck</td>
<td>Oxyura australis</td>
</tr>
<tr>
<td>10217</td>
<td>Musk Duck</td>
<td>Biziura lobata</td>
</tr>
<tr>
<td>10220</td>
<td>Grey Goshawk</td>
<td>Accipiter novaehollandiae novaehollandiae</td>
</tr>
<tr>
<td>10226</td>
<td>White-bellied Sea-Eagle</td>
<td>Haiaetus leucogaster</td>
</tr>
<tr>
<td>10230</td>
<td>Square-tailed Kite</td>
<td>Lophoictina isura</td>
</tr>
<tr>
<td>10238</td>
<td>Black Falcon</td>
<td>Falco subniger</td>
</tr>
<tr>
<td>10246</td>
<td>Barking Owl</td>
<td>Ninox connivens connivens</td>
</tr>
<tr>
<td>10498</td>
<td>Chestnut-rumped Heathwren</td>
<td>Calamanthus pyrhopygius</td>
</tr>
<tr>
<td>10504</td>
<td>Speckled Warbler</td>
<td>Chthonicola sagittatus</td>
</tr>
<tr>
<td>10598</td>
<td>Painted Honeyeater</td>
<td>Grantiella picta</td>
</tr>
<tr>
<td>10603</td>
<td>Regent Honeyeater</td>
<td>Anthochaera phrygia</td>
</tr>
<tr>
<td>11061</td>
<td>Common Dunnart</td>
<td>Smirnophylus murina murina</td>
</tr>
<tr>
<td>12159</td>
<td>Striped Legless Lizard</td>
<td>Delma impar</td>
</tr>
<tr>
<td>12177</td>
<td>Bearded Dragon</td>
<td>Pogona barbata</td>
</tr>
<tr>
<td>12283</td>
<td>Lace Monitor</td>
<td>Varanus varius</td>
</tr>
<tr>
<td>13117</td>
<td>Brown Toadlet</td>
<td>Pseudophryne bititronii</td>
</tr>
<tr>
<td>13207</td>
<td>Growing Grass Frog</td>
<td>Litoria raniformis</td>
</tr>
<tr>
<td>15021</td>
<td>Golden Sun Moth</td>
<td>Synemon plana</td>
</tr>
</tbody>
</table>
## Biodiversity impact and offset requirements report

<table>
<thead>
<tr>
<th>Species number</th>
<th>Species common name</th>
<th>Species scientific name</th>
</tr>
</thead>
<tbody>
<tr>
<td>501456</td>
<td>Clover Glycine</td>
<td>Glycine istrobeanica</td>
</tr>
<tr>
<td>502746</td>
<td>Snowy Mint-bush</td>
<td>Prostanthera nivea var. nivea</td>
</tr>
<tr>
<td>502773</td>
<td>Small Scurf-pea</td>
<td>Cullen parvum</td>
</tr>
<tr>
<td>503455</td>
<td>Rye Beetle-grass</td>
<td>Tripsogon loliiformis</td>
</tr>
<tr>
<td>503624</td>
<td>Plump Swamp/Wallaby-grass</td>
<td>Amphibromus pithoagnostus</td>
</tr>
<tr>
<td>504006</td>
<td>Rosemary Grevillea</td>
<td>Grevillea rosmarinifolia subsp. rosmarinifolia</td>
</tr>
<tr>
<td>504206</td>
<td>Purple Blown-grass</td>
<td>Lachnagrostis punicea subsp. punicea</td>
</tr>
<tr>
<td>506655</td>
<td>Pale Swamp Everlasting</td>
<td>Coronidium scopioides 'aff. rutidoepis (Lowland Swampy) 'variant</td>
</tr>
<tr>
<td>505084</td>
<td>Matted Flax-ily</td>
<td>Dianella amoena</td>
</tr>
<tr>
<td>505337</td>
<td>Austral Crane's-bill</td>
<td>Geranium solanderi var. solanderi s.s.</td>
</tr>
<tr>
<td>505560</td>
<td>Arching Flax-ily</td>
<td>Dianella sp. aff. longifolia (Benambra)</td>
</tr>
</tbody>
</table>
Appendix 2 – Offset requirements detail

If a permit is granted to remove the marked native vegetation the permit condition will include the requirement to obtain a native vegetation offset.

To calculate the required offset amount required the biodiversity equivalence scores are aggregated to the proposal level and multiplied by the relevant risk multiplier.

Offsets also have required attributes:
- General offsets must be located in the same Catchment Management Authority (CMA) boundary or Local Municipal District (local council) as the clearing and must have a minimum strategic biodiversity score of 50 per cent of the clearing.¹

The offset requirements for your proposal are as follows:

<table>
<thead>
<tr>
<th>Offset type</th>
<th>Clearing site biodiversity equivalence score</th>
<th>Risk multiplier</th>
<th>Offset requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>0.705 GBES</td>
<td>1.5</td>
<td>1.057 general units Offset must be within Port Philip and Westernport CMA or the same Municipal District as the vegetation removal. Offset must have a minimum strategic biodiversity score of 0.530</td>
</tr>
</tbody>
</table>

¹ Strategic biodiversity score is a weighted average across habitat zones where a general offset is required
Appendix 3 – Images of marked native vegetation

Image 1. Native vegetation location risk map

Image 2. Strategic biodiversity score map

Image 3. Aerial photograph showing marked native vegetation
## Biodiversity impact and offset requirements report

### Glossary

**Condition score**
This is the site-assessed condition score for the native vegetation. Each habitat zone in the clearing proposal is assigned a condition score according to the habitat hectare assessment method. This information has been provided by or on behalf of the applicant in the GIS file.

**Dispersed habitat**
A dispersed species habitat is a habitat for a rare or threatened species whose habitat is spread over a relatively broad geographic area greater than 2,000 hectares.

**General biodiversity equivalence score**
The general biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to Victoria’s biodiversity. The general biodiversity equivalence score is calculated as follows:

\[
\text{General biodiversity equivalence score} = \text{habitat hectares} \times \text{strategic biodiversity score}
\]

**General offset amount**
This is calculated by multiplying the general biodiversity equivalence score of the native vegetation to be removed by the risk factor for general offsets. This number is expressed in general biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

\[
\text{Risk adjusted general biodiversity equivalence score} = \text{general biodiversity equivalence score clearing} \times 1.5
\]

**General offset attributes**
General offset must be located in the same Catchment Management Authority boundary or Municipal District (local council) as the clearing site. They must also have a strategic biodiversity score that is at least 80 per cent of the score of the clearing site.

**Habitat hectares**
Habitat hectares is a site-based measure that combines extent and condition of native vegetation. The habitat hectares of native vegetation is equal to the current condition of the vegetation (condition score) multiplied by the extent of native vegetation. Habitat hectares can be calculated for a remnant patch or for scattered trees or a combination of these two vegetation types. This value is calculated for each habitat zone using the following formula:

\[
\text{Habitat hectares} = \text{total extent (hectares)} \times \text{condition score}
\]

**Habitat importance score**
The habitat importance score is a measure of the importance of the habitat located on a site for a particular rare or threatened species. The habitat importance score for a species is a weighted average value calculated from the habitat importance map for that species. The habitat importance score is calculated for each habitat zone where the habitat importance map indicates that species habitat occurs.

**Habitat zone**
Habitat zone is a discrete contiguous area of native vegetation that:
- is of a single Ecological Vegetation Class
- has the same measured condition.
### Biodiversity impact and offset requirements report

**Highly localised habitat**  
A highly localised habitat is habitat for a rare or threatened species that is spread across a very restricted area (less than 2,000 hectares). This can also be applied to a similarly limited sub-habitat that is disproportionately important for a wide-ranging rare or threatened species. Highly localised habitats have the highest habitat importance score (1) for all locations where they are present.

**Minimum strategic biodiversity score**  
The minimum strategic biodiversity score is an attribute for a general offset. The strategic biodiversity score of the offset site must be at least 80 per cent of the strategic biodiversity score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic value that is comparable to, or better than, the native vegetation to be removed. Where a specific and general offset is required, the minimum strategic biodiversity score relates only to the habitat zones that require the general offset.

**Offset risk factor**  
There is a risk that the gain from undertaking the offset will not adequately compensate for the loss from the removal of native vegetation. If this were to occur, despite obtaining an offset, the overall impact from removing native vegetation would result in a loss in the contribution that native vegetation makes to Victoria’s biodiversity. To address the risk of offsets failing, an offset risk factor is applied to the calculated loss to biodiversity value from removing native vegetation.

\[
\text{Risk factor for general offsets} = 1.5 \\
\text{Risk factor for specific offset} = 2
\]

**Offset type**  
The specific-general offset test determines the offset type required. When the specific-general offset test determines that the native vegetation removal will have an impact on one or more rare or threatened species habitat above the set threshold of 0.005 per cent, a specific offset is required. This test is done at the permit application level. A general offset is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have an impact on any habitat for any rare or threatened species above the set threshold of 0.005 per cent. All habitat zones that do not require a specific offset will require a general offset.

**Proportional impact on species**  
This is the outcome of the specific-general offset test. The specific-general offset test is calculated across the entire proposal for each species on the native vegetation permitted clearing species list. If the proportional impact on a species is above the set threshold of 0.005 per cent then a specific offset is required for that species.

**Specific offset amount**  
The specific offset amount is calculated by multiplying the specific biodiversity equivalence score of the native vegetation to be removed by the risk factor for specific offsets. This number is expressed in specific biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

\[
\text{Risk adjusted specific biodiversity equivalence score} = \frac{\text{specific biodiversity equivalence score clearing}}{2}
\]
## Biodiversity impact and offset requirements report

**Specific offset attributes**
Specific offsets must be located in the modelled habitat for the species that has triggered the specific offset requirement.

**Specific biodiversity equivalence score**
The specific biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to the habitat of the relevant rare or threatened species. It is calculated for each habitat zone where one or more species habitats require a specific offset as a result of the specific-general offset test as follows:

\[
\text{Specific biodiversity equivalence score} = \text{habitat hectares} \times \text{habitat importance score}
\]

**Strategic biodiversity score**
This is the weighted average strategic biodiversity score of the marked native vegetation. The strategic biodiversity score has been calculated from the Strategic biodiversity map for each habitat zone.

The strategic biodiversity score of native vegetation is a measure of the native vegetation’s importance for Victoria’s biodiversity, relative to other locations across the landscape. The Strategic biodiversity map is a modelled layer that prioritises locations on the basis of rarity and level of depletion of the types of vegetation, species habitats, and condition and connectivity of native vegetation.

**Total extent (hectares) for calculating habitat hectares**
This is the total area of the marked native vegetation in hectares.

The total extent of native vegetation is an input to calculating the habitat hectares of a site and in calculating the general biodiversity equivalence score. Where the marked native vegetation includes scattered trees, each tree is converted to hectares using a standard area calculation of 0.071 hectares per tree. This information has been provided by or on behalf of the applicant in the GIS file.

**Vicinity**
The vicinity is an attribute for a general offset.

The offset site must be located within the same Catchment Management Authority boundary or Local Municipal District as the native vegetation to be removed.