

Final Expert Evidence Report

# Beveridge North West Precinct Structure Plan, Amendment C158

Expert Evidence Report of Aaron Kenneth Organ – Ecology

Prepared for

**Crystal Creek Properties Pty Ltd**

April 2022



**Ecology and Heritage Partners Pty Ltd**

MELBOURNE: 292 Mt Alexander Road, Ascot Vale VIC 3032 GEELONG: 230 Latrobe Terrace, Geelong West VIC 3218

BRISBANE: Level 22, 127 Creek Street, Brisbane QLD 4000 ADELAIDE: 78 Edmund Avenue, Unley SA 5061

CANBERRA: 19-23 Moor Street, Turner ACT 2612 SYDNEY: Level 5, 616 Harris Street, Ultimo NSW 2007

[www.ehpartners.com.au](http://www.ehpartners.com.au) | 1300 839 325

## 1 AUTHOR'S EXPERTISE

---

I am a Director and Principal Ecologist at Ecology and Heritage Partners Pty Ltd (herein referred to as Ecology and Heritage Partners) and work from 292 Mt Alexander Road, Ascot Vale, Victoria. I have a Masters of Social Science (Environment and Planning), RMIT University, Graduate Certificate in Applied Science (Natural Resource Management), Deakin University, Bachelor of Applied Science (Natural Resource Management), Deakin University, Associate Diploma in Applied Science (Natural Resource Management).

I have 25 years' experience working in the environmental field, including 21 years in an environmental consultant capacity. I have previously worked as a field ecologist in East Gippsland Victoria and have worked as a ranger in Queensland and Victoria, having extensive experience in National Park and Reserve management throughout Australia. I have an extensive working knowledge of terrestrial ecology throughout Victoria and have either managed or played an important role in providing environmental advice on over 100 major infrastructure projects such as proposed pipelines, and road and rail developments, many throughout East Gippsland. I have been a lead author and/or co-author for over 500 projects and have provided expert advice to a range of clients. Some of these projects include over 30 proposed wind farms in Victoria, South Australia and Tasmania, long-term flora and fauna monitoring throughout the Illawarra escarpment New South Wales. Aaron has undertaken projects throughout Melbourne's northern growth areas, including involvement in several Precinct Structure Plans throughout northern Melbourne.

## 2 AUTHOR'S STATEMENT

---

I, Aaron Organ of Ecology and Heritage Partners Pty Ltd, have prepared this Statement of Expert Evidence pertaining to the ecological considerations for the former Hanna Swamp located within both the Wallan South PSP and Beveridge North West PSP, Beveridge, Victoria.

The proceeding statement is based on a review of the previous ecological assessment and background research, and the findings of a recent site inspection undertaken by myself on 8 March 2022.

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

## 3 INTRODUCTION

---

### 3.1 Background

I was engaged by Rigby Cooke Lawyers on behalf of Crystal Creek Properties Pty Ltd (Crystal) to provide evidence in relation to the ecological considerations for the proposed Beveridge North West Precinct Structure Plan (BNWPSP), Beveridge, Victoria.

I have been instructed to review the BNWPSP and the Amended BNWPSP material and consider the following matters to provide an opinion:

1. The ecological values of the former Hanna Swamp in both:
  - (a) the northern portion in the Crystal Land/WSPSP area; and
  - (b) the southern portion within the BNWPSP;
2. Whether the former Hanna Swamp qualifies as a *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (SHW)* which is a listed ecological community under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in the southern portion and/or in the northern portion;
3. If the southern portion of the former Hanna Swamp qualifies as a SHW, whether this classification automatically applies or captures the balance of the historical mapped area of the former Hanna Swamp (regardless of its current condition);
4. The implications of farming, approved vegetation removal and general degradation from channelling and other activities on the restoration or rehabilitation of the northern portion of the former Hanna Swamp;
5. If the southern portion of the former Hanna Swamp is to be restored or rehabilitated, the appropriate area of land required in the northern portion; and
6. If the former Hanna Swamp is to be restored or rehabilitated, the appropriate size of the Hanna Swamp overall.

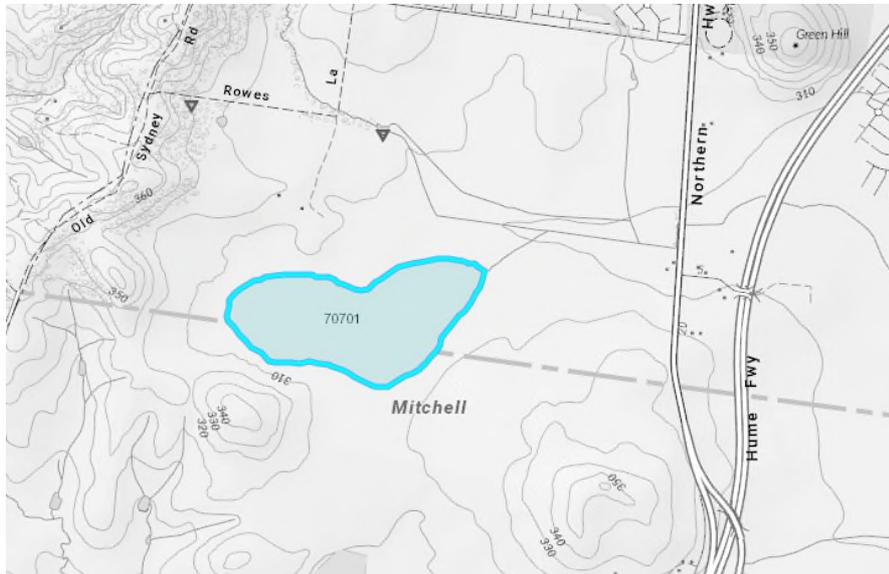
#### 3.1.1 Hanna Swamp

The (former) Hanna Swamp is located on the southern boundary of the Wallan South PSP (WSPSP) area between Northern Highway and Old Sydney Road, Wallan. The Hanna Swamp comprises an area of approximately 60 hectares and has been artificially drained. The Hanna Swamp extends into both the WSPSP area and the BNWPSP area.

I understand that a submitter to the Panel considering Amendment C106 made submissions that the retention of the Hanna Swamp in a restored form would greatly contribute to the diversity of the landscape in the landscape values area and contribute to the amenity and biodiversity of a future regional park. It is understood that in the Part A and Part B submission to the Panel, the Victorian Planning Authority (VPA) advised the Panel that it did not propose changes to Amendment C106 to retain or restore the Hanna Swamp primarily due to the lack of identified biodiversity values within the former swamp, lack of identification in the Taylors Creek Drainage Service Scheme and associated role in the drainage system, and the absence of an identified land manager or purchaser. Despite the VPA's position at the Panel hearing, the Panel included Recommendation 17, relating to the Hanna Swamp (outlined below).

### 3.1.2 Native Vegetation

A Biodiversity Assessment Report (Biodiversity Report) dated 16 June 2017 was commissioned by Crystal and undertaken by Biosis Pty Ltd to inform the preparation of a Native Vegetation Precinct Plan (Biosis 2017). The Assessment considers the entire WSPSP area. The Biodiversity Assessment Report maps the Hanna Swamp as Plains Grassy Wetland EVC 125 (Plate 1).



**Plate 1.** The modelled wetland 70701, the northern section of which is located within the Wallan South PSP (DELWP 2020a)

Planning Permit PLP319/17 was issued by Mitchell Shire Council allowing native vegetation removal in the area of the Swamp. An Offset Management Plan dated 31 January 2020 was prepared by Paul Kelly & Associates Ecological Services in satisfaction of Condition 5 of the planning permit. An offset area of approximately 13 hectares adjoining Old Sydney Road was selected and the offset secured on this offset site (the relevant title affected by the offsets is Vol 10685 Fol 321).

On or around 9 December 2020, Ecology and Heritage Partners lodged a 'Wetland Assessment for Modelled Wetland 70701' report which sought to exclude the Hanna Swamp wetland from the 'Current Wetlands' layer on the DELWP Native Vegetation Information Management Tools mapping (Ecology and Heritage Partners 2021).

On 7 May 2021, DELWP agreed to the exclusion of the Hanna Swamp from the DELWP Native Vegetation Information Management Tools mapping.

## 3.2 Study Area

The study area comprises the following:

- 558 hectares (approx.) to the south of Wallan township bound by the Northern Highway to the east and Old Sydney Road to the west (Crystal Land), forming the majority of the WSPSP area, which comprises a total area of 806 hectares; and,
- 50 hectares (approx.) at 175 Northern Highway, Wallan (Quarry Land) immediately south of the WSPSP area and Crystal Land with a works approval for stone extraction (WA1473). The Quarry Land is in the north west corner of the BNWPSP area. The BNWPSP area applies to approximately 1,279 hectares of land.

According to the Victorian Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management (NVIM) Tool (DELWP 2022a), the study area occurs within the Victorian Volcanic Plain bioregion. It is located within the jurisdiction of the Port Phillip and Western Port Catchment Management Authority (CMA) and the Mitchell Shire Council municipality.

The study area also falls within the Melbourne Strategic Assessment (MSA) area, and as such is subject to the assessment process and offset obligations under the Biodiversity Conservation Strategy (DEPI 2013a). In this instance the ecological values present on site have been determined based on time-stamped data (vegetation mapping) completed by DELWP [formerly the Department of Environment and Primary Industries (DEPI)].

The study area is currently zoned Farming Zone and is affected by the following overlays in the Mitchell Planning Scheme:

- Floodway Overlay (in part – the eastern portion of the Crystal Land);
- Bushfire Management Overlay (in part – the north western corner of the Crystal Land);
- Vegetation Protection Overlay – Schedule 1 (in part – along the western boundary of the Crystal Land);
- Erosion Management Overlay (in part – along the western boundary of the Crystal Land);
- Land Subject to Inundation Overlay (in part – the eastern portion of the Crystal Land holding adjoining the Northern Highway); and
- Salinity Management Overlay (a small part of the Crystal Land adjoining Indigo Street/Taylors Lane).

## 4 METHODS

---

### 4.1 Desktop Assessment

Relevant literature, online-resources and databases were reviewed to provide an assessment of flora and fauna values associated with the study area. The following information sources were reviewed:

- The DELWP NatureKit Map (DELWP 2022a) and Native Vegetation Information Management (NVIM) Tool (DELWP 2022b) for:
  - Modelled data for location risk, native vegetation patches, scattered trees and habitat for rare or threatened species; and,
  - The extent of historic and current Ecological Vegetation Classes (EVCs).
- The Victorian Biodiversity Atlas (VBA) for previously documented flora and fauna records within the project locality (DELWP 2021b);
- The Illustrated Flora Information System of Victoria (IFLISV) (Gullan 2017) and Atlas of Living Australia (ALA) (ALA 2021) for assistance with the distribution and identification of flora species;
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DAWE 2022);
- Relevant listings under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened List (DELWP 2021a);
- The online VicPlan Map (DELWP 2022d) to ascertain current zoning and environmental overlays in the study area;
- Amendment C106 and Amendment C158 exhibited material;
- Aerial photography of the study area; and
- Previous assessments and correspondence relevant to the study area and broader area, including:
  - The impact of Melbourne’s growth on ‘seasonal herbaceous wetlands (freshwater) of the temperate lowland plains’ Melbourne Strategic Assessment (DEPI 2013d);
  - Biodiversity Assessment Report prepared by Biosis (16 June 2017);
  - Offset Management Plan prepared by Paul Kelly & Associates (30 January 2020);
  - Wetland Assessment for Modelled Wetland 70701, Wallan South Precinct Structure Plan (9 December 2020);
  - Wetland Assessment for Modelled Wetland 70701, Wallan South Precinct Structure Plan, Wallan prepared by Ecology and Heritage Partners (February 2021);
  - DELWP approval of request to exclude mapped wetland 70701 (7 May 2021).
  - Hanna Swamp Investigation prepared by Alluvium (June 2021); and,

- o Stormwater Management Issues Associated with the Proposed Development of Beveridge NW (PSP) and associated Wallan South PSP – Expert Witness Statement prepared by Christopher Beardshaw (26 April 2022).

## 4.2 Field Assessment

A field assessment was undertaken on 8 March 2022 to obtain information on the ecological values within the study area. The study area was walked, with all commonly observed vascular flora and fauna species, and overall condition of vegetation and habitats noted. Ecological Vegetation Classes (EVCs) were determined with reference to DELWP pre-1750 and extant EVC mapping (DELWP 2022a) and their published descriptions (DELWP 2022c). A previous detailed Index of Wetland Condition assessment was undertaken by Pathways Bushland and Environment and included in the wetland assessment for the modelled wetland 70701, WSPSP report (Ecology and Heritage Partners 2021).

## 5 RESULTS

---

### 5.1 Vegetation Condition

As outlined in the previous assessment (Ecology and Heritage Partners 2021), the former Hanna Swamp is split into two main sections, these being a larger section to the north and a smaller section to the south. The study area, located within the WSPSP, primarily comprises open paddocks and has historically been used for cultivation. Species present within this section include pasture grasses such as Perennial Rye-grass *Lolium perenne* and other introduced species such as White Clover *Trifolium repens* and Balansa Clover *Trifolium michelianum*. Evidence of grazing and pugging by cattle is consistent across this area. The majority of the study area was dry at the time of the former assessment (Ecology and Heritage Partners 2021) and during my recent site assessment on 8 March 2022, indicating that historical and current agricultural land uses have altered the hydrological characteristics of the area, favouring a drier landscape, and preventing native wetland species from establishing. The only area to be inundated within the study area was an area of shallow drains.

Indigenous species within the study area were mostly confined to these shallow drain areas. Indigenous species recorded include Common Tussock-grass *Poa labillardierei* within the eastern fringes of the wetland, opportunistic herbs such as Common Woodruff *Asperula conferta*, Lesser Loosestrife *Lythrum hyssopifolia* and Spreading Crassula *Crassula decumbens*, and native grasses and rushes such as Common Wheat-grass *Anthosachne scabra*, Common Swamp Wallaby-grass *Amphibromus nervosus* and Common Spike-rush *Eleocharis acuta*. Introduced and non-indigenous species recorded within the study area included Tall Fescue *Festuca arundinacea*, Floating Pigmyweed *Crassula natans* and Common Starwort *Callitriche stagnalis*.

The current condition of the northern portion of the former Hanna Swamp area indicates that what was previously mapped as a wetland by DELWP in 2014 based on historical information, has been modified significantly for agricultural purposes and only supports scattered occurrences of native vegetation within the internal artificial drains. Approval to remove the scattered indigenous species present within the drainage line was granted on 27 June 2019 (Permit No. PLP319/17, Appendix 2, *current Landowner Agreement FP\_CFL-3707\_01*) by Mitchell Shire Council, and the required offsets for this removal were sought. Indigenous species are no longer evident within the majority of the area and the existing land uses, such as cropping and continual pugging and grazing by cattle, prevent the wetland-associated species from re-establishing (i.e. lack of native seedbank).

## 6 RELEVANT LEGISLATION AND POLICY CONTEXT

---

### 6.1 Delivering Melbourne's Newest Sustainable Communities: Program Report (DSE 2009)

The *Delivering Melbourne's newest sustainable communities: program report* (DSE 2009) ('the program report') provides for urban development in four growth corridors within Melbourne's expanded 2010 Urban Growth Boundary and in 28 existing precincts within the 2005 Urban Growth Boundary. It also provides for the development of the Regional Rail Link (west of Werribee to Deer Park) and the Outer Metropolitan Ring Transport Corridor/ E6 Road Reservation.

The Melbourne Strategic Assessment required the State Government to make commitments to the Commonwealth Government in relation to conservation outcomes and measures to protect matters of national environmental significance. These commitments are outlined in the program report and include the preparation of the Biodiversity Conservation Strategy (DEPI 2013a) and Sub-regional Species Strategies.

### 6.2 Delivering Melbourne's Newest Sustainable Communities. Background Technical Report 2b: Biodiversity Assessment of Melbourne's Northern Investigation Area (SMEC 2009)

The Background Technical Report 2b examines biodiversity restraints associated with nine investigation areas located outside Melbourne's current Urban Growth Boundary. In particular, the report aims to (1) identify areas to be retained due to their biodiversity significance, and (2) to assess potential changes to the Urban Growth Boundary and Urban Growth Zone under the EPBC Act.

The property falls within Area 3a of the report. Up to one third of the area was found to have the potential to support high ecological values, particularly in association with the endangered Plains Grassland or Plains Grassy Woodland EVC, as well as Biosites and Stony Rises of State and National significance (SMEC 2009). In addition, mapped vegetation could provide habitat for up to 19 flora species and 28 fauna species of State or National significance.

However, there were no Stony Rises, Biological Constraints or Strategic Habitat Links associated with the study area (see Figure 40 in the report). Surveys were recommended across the entire extent of Area 3a to identify the extent and quality of native vegetation, as well as targeted surveys for Basalt Peppercreess and Plump Swamp Wallaby-grass. It is important to note that no patches of native vegetation, including Plains Grassy Wetland were mapped across the former Hanna Swamp (SMEC 2009).

### 6.3 Growth Corridor Plans: North Growth Corridor Plan (GAA 2012)

The Growth Corridor Plans aims to provides a framework to assist the planning of new communities, with a substantial portion of new housing and industrial developments expected to occur in four distinct growth corridors in the next 3-4 decades (GAA 2012). In particular, the North Growth Corridor Plan includes most of the new industrial land for the northern metropolitan region. The Outer Metropolitan Ring/ E6 road reservation will help facilitate the economic operation of the corridor and is part of the road network planned to carry freight.

The plan also seeks to preserve and enhance significant landscape and biodiversity values present within the corridor. It outlines areas of biodiversity value that have been excluded from development, major waterways

(Merri, Darebin and Kalkallo Creek) which contain areas of cultural heritage and provide valuable habitat for a diverse range of native flora and fauna species, and areas of formal open space which will be integrated into the landscape plan.

The study area lies to the north of the North Growth Corridor Plan (GAA 2012) and the former Hanna Swamp and biodiversity values within the study area are not identified in this document.

## 6.4 Modelled Extent and Condition of Native Vegetation (DELWP 2022b)

Modelled extant (2005) mapping on DELWP's MSA MapShare (DELWP 2022b) reveals that the southern portion of the former Hanna Swamp lacks native vegetation (only contains modelled Growling Grass Frog habitat that would need to be offset should this area be impacted). Given that there is no native vegetation modelled to occur within the study area no native vegetation offsets area required for proposed impacts to this area.

## 6.5 Biodiversity Conservation Strategy (DEPI 2013a)

The Biodiversity Conservation Strategy (BCS) was finalised and published June 2013 (DEPI 2013a). The BCS was publicly exhibited and subject to consultation prior to being finalised. The BCS applies to a sub-set of the area covered by the MSA, including the OMR Transport Corridor/E6 Road Reservation. It was endorsed by the Victorian Government in 2013.

The BCS is the overarching strategy for the protection of biodiversity in Melbourne's growth corridors. It sets out all the conservation measures required for matters of National Environmental Significance (NES) and to meet State requirements. The BCS was informed by the sub-regional species strategies.

As outlined in DEPI (2013a):

*The purpose of the Biodiversity Conservation Strategy is:*

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

*The conservation measures in the BCS include:*

- *The protection and management of land of high biodiversity value within 36 new conservation areas;*
- *Requirements to provide fees and offsets for removal or native vegetation and threatened species habitat on land not required for conservation and suitable for urban development;*
- *Requirements to salvage and translocate certain threatened species prior to removal of habitat on land not required for conservation and suitable for urban development.*

## 6.6 Growling Grass Frog Sub-regional Species Strategy (DEPI 2013b)

The Growling Grass Frog Sub-regional Species Strategy was published by the Victorian Government in May 2013 (DEPI 2013b). A public consultation process was run in November and December 2011. The Growling Grass Frog Sub-regional Species Strategy was prepared to meet the commitments outlined in the State Government's program *Delivering Melbourne's newest sustainable communities* in relation to conservation outcomes and measures to protect matters of national environmental significance.

The program provides for urban development in four growth corridors within Melbourne's expanded 2010 Urban Growth Boundary and in 28 existing precincts within the 2005 Urban Growth Boundary. It also provides for the development of the Regional Rail Link (west of Werribee to Deer Park) and the Outer Metropolitan Ring Transport Corridor/E6 Road Reservation.

As outlined in DEPI (2013b):

*This strategy sets out all the requirements for the Growling Grass Frog in the growth corridors to satisfy the commitments in the program report. The strategy is a key mechanism to deliver the conservation outcomes for Growling Grass Frog in the program report. These are:*

- *Functioning sustainable populations of Growling Grass Frog with connectivity between populations*
- *Protection and enhancement of important populations.*

*The strategy identifies land in the growth corridors that is suitable habitat for the Growling Grass Frog, and designates this land into two categories:*

- *Habitat that will be protected and managed for the conservation of the Growling Grass Frog (Category 1 habitat)*
- *Habitat that can be cleared for urban development, but for which compensatory habitat is required (Category 2 habitat).*

Within the northern growth corridor, important populations are known to occur in Darebin, Merri and Kalkallo Creek, and their tributaries. According to Figure 1c (Page 17), the study area is not mapped to have Category 1 habitat (DEPI 2013b).

## 6.7 Growling Grass Frog Masterplan for Melbourne's Growth Corridors: Melbourne Strategic Assessment (DELWP 2017)

The purpose of the Growling Grass Frog Masterplan (DELWP 2017) is to provide guidance on the implementation of habitat protection measures outlined in the Sub-regional Species Strategy for the Growling Grass Frog, and to provide strategic direction relating to where investment should be made in creating and enhancing habitat within Growling Grass Frog conservation areas. The Masterplan identifies Merri, Kalkallo and Darebin Creek as Areas of Strategic Importance within the northern corridor (Page 25-26 of DELWP 2017), together with high priority areas for the future investment (i.e. creation of habitat) for the species. No areas of Growling Grass Frog strategic importance have been identified within the study area.

## 6.8 Golden Sun Moth Sub-regional Species Strategy (DEPI 2013c)

The Golden Sun Moth Sub-regional Species Strategy was published by the Victorian Government in May 2013 (DEPI 2013c). A public consultation process was run in November and December 2011. The Golden Sun Moth Sub-regional Species Strategy was prepared to meet the commitments outlined in the State Government's

program *Delivering Melbourne's newest sustainable communities* in relation to conservation outcomes and measures to protect matters of national environmental significance.

As outlined in DEPI (2013c):

*The purpose of this strategy is to:*

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

There are no Golden Sun Moth records or priority habitat in the study area or the broader Beveridge surrounds, with the closest records located north-west of the township of Kalkallo (Figure 4; DEPI 2013c).

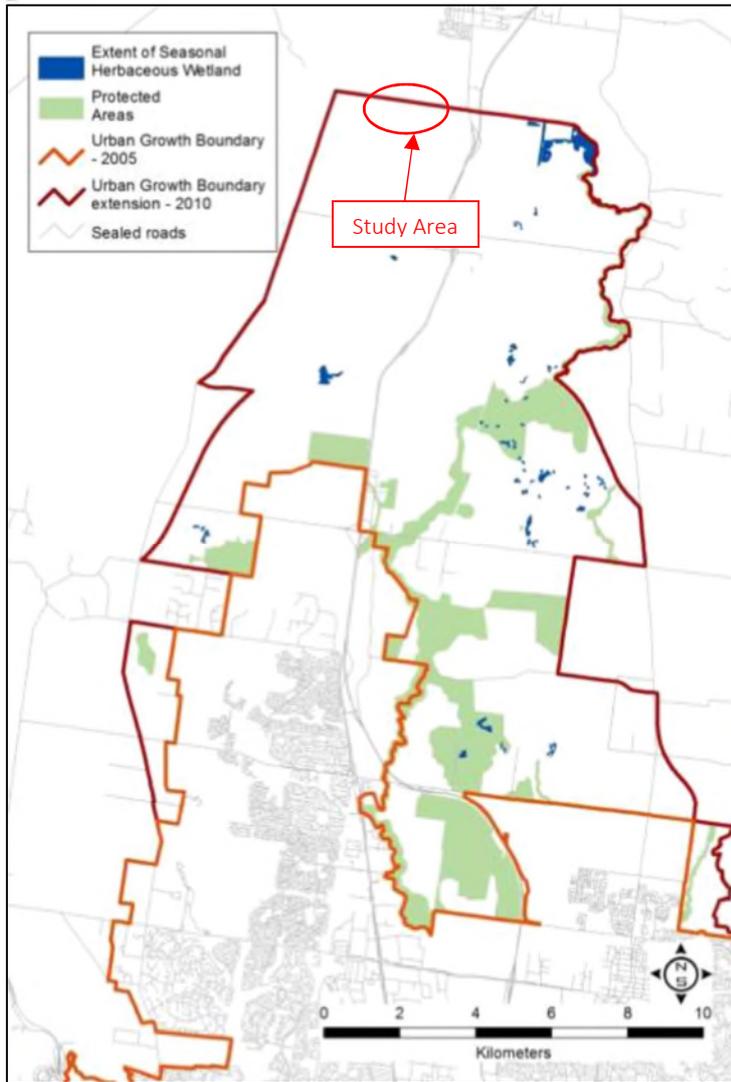
## **6.9 The Impact of Melbourne's Growth on 'Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains' (DEPI 2013d)**

The EPBC Act-listed ecological community, *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* (SHW), was listed as critically endangered under the EPBC Act on 27 March 2012. Given the timing of the listing, areas of SHW were not included in the time-stamped mapping under the MSA program (DSE 2009, DEPI 2013a, DELWP 2022b).

After the listing of the SHW ecological community, a report was commissioned by DELWP, titled *The impact of Melbourne's growth on 'seasonal herbaceous wetlands (freshwater) of the temperate lowland plains'* (DEPI 2013d). In relation to SHW, the report outlines the following with respect to whether a wetland is protected or not:

*'Areas are considered 'protected' only if they are located within an existing Nature Conservation reserve (NCR), within the WGR or within a designated Conservation Area (CA) in the Biodiversity Conservation Strategy (BCS; DEPI 2013a). Areas that may afford some lower level of incidental 'protection' are not considered 'protected' in this report (e.g. Urban Flood Zone, Rural Conservation Zone). Areas not protected are considered either 'lost and offset', if they are captured as native vegetation (of any sort) in 'Time-stamping'; or 'lost' altogether if they are unprotected and not covered by Timestamping (DEPI 2013d).'*

Furthermore, areas mapped as Plains Grassy Wetland ... in Time-stamping are considered to correspond to SHW (DEPI 2013d). In terms of the study area, the report (DEPI 2013d) does not identify any SHW across the former Hanna Swamp area (Plate 2).



**Plate 2.** The distribution of SHW in the Northern Growth Corridor (DEPI 2013d).

## 6.10 Beveridge North West PSP Panel Report

In considering the status of Hanna Swamp, the BNWPSP Panel Report recommended that:

*‘further consideration of the protection of Hanna Swamp is required’.*

In discussing future options for integrating Hanna Swamp into the landscape, Mitchell Shire Council noted that:

*‘the portion of Hanna Swamp located between the SR-01 and Hadfield Road has the potential to be integrated with the open space area, albeit in modified form’.*

The panel agreed that the expansion of SR-01 could be positive for reasons including the retention of a portion of Hanna Swamp. The panel concluded that:

*‘not being identified in the Melbourne Strategic Assessment does not provide sufficient justification (for the removal of the swamp) given the broad range of state, regional and local planning policy that points to wetland protection and restoration’, recommending that ‘further investigation as to how Hanna Swamp might be protected’.*

Any retention and restoration of the former Hanna Swamp is likely to be a substantial undertaking, particularly in an area identified for urban development.

## 7 RESPONSES TO QUESTIONS IN LETTER OF INSTRUCTION

### 7.1 The Ecological Values of the Former Hanna Swamp in the Northern Portion in the Crystal Land/WSPSP Area

No native vegetation (including time-stamped native vegetation) covers the northern portion of the former Hanna Swamp (SMEC 2009, DEPI 2013a, DELWP 2022b). However, based on recent site assessments of the area, small degraded patches of native vegetation were mapped within the northern portion of Hanna Swamp, comprising moderate to low quality Plains Grassy Wetland (EVC 125) (Biosis 2017; Ecology and Heritage Partners 2021). The distribution of the native vegetation patches was restricted to one main drainage line running north east/south west through the swamp, and a small area in the south east corner (Biosis 2017; Ecology and Heritage Partners 2021). Biosis (2017) maps three separate patches of Plains Grassy Wetland (i.e. HZ\_13.A, HZ\_13.B and HZ\_15.A) within the northern portion of Hanna Swamp, one of moderate condition and two of low condition based on the results of the Habitat Hectares Assessment (Biosis 2017) (Plate 3). Note that condition is based off the Assessors Handbook description in Appendix 1D, where a score between 0 – 0.3 is low, 0.3-0.6 is moderate and 0.6-1 is high (DELWP 2018).



**Plate 3.** Extent of native vegetation mapped in the biodiversity assessment prepared for the Wallan South Precinct Structure Plan (WSPSP) (Biosis 2017).

A description of flora species present within the Plains Grassy Wetland patches is not provided in Biosis (2017), and therefore this information is based on the species provided in Ecology and Heritage Partners (2021). Common native species observed included Common Swamp Wallaby-grass *Amphibromus nervosus*, Common Spike-sedge *Eleocharis acuta* and Water-milfoil *Myriophyllum* sp.

As a consequence of historical native vegetation removal, drainage works, and the ongoing use of the land for agricultural activities, the remainder of the northern portion of the former Hanna Swamp is essentially cropped and grazed paddocks that are devoid of native vegetation and important fauna habitat (i.e. highly modified

and supports no significant ecological values) (Biosis 2017; Ecology and Heritage Partners 2021) (Plate 4). This is consistent with the current aerial imagery available (DELWP 2022a).

## 7.2 The Ecological Values of the Former Hanna Swamp in the Southern Portion within the BNWPSP

The ecological values within the southern portion of Hanna Swamp were assessed through the completion of an Indication of Wetland Condition (IWC) assessment (Ecology and Heritage Partners 2021). This assessment mapped five different areas of Plains Grassy Wetland, supporting an array of native species associated with wetland communities, including the FFG Act-listed Pale Swamp Everlasting *Coronidium gunnianum*. No formal habitat hectare assessment was undertaken within the southern portion, so a comparison of condition to the northern patches can only be generally made based on the diversity of native species present and extent of native vegetation patches. Based on this, several significant wetland species were identified in the southern portion that were not observed in the northern portion, and the size of the patches are generally larger than those mapped in the north (Ecology and Heritage Partners 2021). However, all of the patches of Plains Grassy Wetland are highly degraded and have been subject to historical and current land use practices (e.g. grazing).

These low-lying wetland areas identified in Ecology and Heritage Partners (2021) support habitat for common fauna species, and while this small area may occasionally be used by significant bird species such as Latham's Snipe, the area does not provide high quality or limiting habitat for any significant fauna species. There areas do not provide suitable breeding habitat for the nationally significant Growling Grass Frog *Litoria raniformis*, or any other significant fauna species. The areas of modified Plains Grassy Wetland are of local significance, and not significant on a regional, State or National context. The extent of varying condition Plains Grassy Wetland compared with the absence of native vegetation across the former Hanna Swamp in the north is provided below (Plate 4).

## 7.3 Whether the Former Hanna Swamp Qualifies as the EPBC Act-listed *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* in the Southern Portion and/or in the Northern Portion

### 7.3.1 *Description of Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains*

As outlined in the approved Conservation Advice (DSEWPaC 2012), the Seasonal Herbaceous Wetlands EPBC Act-listed ecological community occurs on poorly defined seasonal drainage lines and depressions or terrain characterised by gilgais. They are temporary freshwater wetlands that typically fill after winter-spring rains, and then drying out. This contrasts with permanent or semi-permanent wetlands that do not dry out regularly, and with episodic and intermittent wetlands where the wet/dry cycles typically occur at irregular intervals, or at a lower frequency than seasonally (DSEWPaC 2012).

The vegetation is generally treeless and dominated by a herbaceous ground layer, often with a considerable graminoid component and with forbs present. The herbaceous species present are characteristic of wetter locations and are typically absent or uncommon in any adjoining dryland grasslands and woodlands.

#### Key diagnostic characteristics

Key diagnostic characteristics are outlined in both the Listing Advice (TSSC 2012) and the conservation advice (DSEWPaC 2012) for the SHW ecological community, and provided:

*Landscape:*

- Limited to the temperate zone of mainland south-eastern Australia. The ecological community occurs in south-east SA, Victoria and southern NSW.
- On flat plains grading into slopes, below 500 m above sea level.
- Associated soils are generally fertile but poorly draining clays derived from a range of geologies.
- Typically in rainfall zones with a winter seasonal rainfall pattern, extending into a uniform seasonal rainfall pattern at the edge of its range. The average annual rainfall is usually 400 to 800 mm/year but can be lower at the northern edge of its range.

*Hydrology:*

- On isolated drainage lines or depressions which are seasonally inundated (typically during winter-spring) and subsequently dry (typically by late summer).
- Rainfall is the main water source. These wetlands are not dependent on overbank flooding from riverine systems.
- Salinity of the water is fresh to slightly brackish. Salinity mostly lies within the range, 0 to 1000 mg/L but can be up to 3000 mg/L, typically exhibiting a progressive increase in salinity as wetlands dry.

*Biota:*

- Trees and shrubs are sparse to absent. When present, they mostly occur as fringing or scattered individuals. The cover of woody species accounts for no more than 10% projective foliage cover across the wetland.
- The vegetative cover of the ecological community is dominated by a ground layer of native wetland graminoids and/or native wetland forbs.
- A range of graminoids is often present and typically includes one or more of the following taxa (note underlined taxa are present at the Property): *Amphibromus* spp., *Carex tereticaulis*, *Deyeuxia* spp., *Glyceria* spp., *Lachnagrostis* spp., *Poa labillardieri*, and *Rytidosperma duttonianum*. The Listing Advice (TSSC 2012).

Condition thresholds

The Seasonal Herbaceous Wetlands ecological community is highly variable because it is strongly influenced by seasonal factors, particularly rainfall patterns, as well as historic inundation patterns. A four-part process is used for determining condition and the following condition thresholds need to be met for the vegetation to be considered the threatened ecological community:

*Part A – Condition during ‘typical’ wet cycles*

- Step A1) Is the wetland consistent with the key diagnostic characteristics, noted above?
- Step A2) Is 50% or more of the total cover of plants in the ground layer of the wetland dominated by native species characteristic of the Seasonal Herbaceous Wetlands ecological community?

*Part B - For dry conditions (e.g. drought):*

The presence of the wetland ecological community may be difficult to determine when dry and especially during drought. At these times, the above-ground wetland vegetation may be reduced to small desiccated tussocks or shoots. The bulk of the living biomass is likely to survive underground as perennating organs (e.g. rhizomes, rootstocks, bulbs) and seed banks. Techniques such as seed bank germination studies or seed

identification may help determine what native wetland flora are present. Where possible, environmental assessments should not be undertaken during a drought. However, it is acknowledged that delays in assessments are not always practical.

During a drought, there are three steps that may help to indicate if the ecological community is likely to be present. These steps are not included here as there are not relevant in the current context (i.e. the site assessment was not undertaken during drought conditions).

*Part C – Minimum wetland size*

- If the wetland occurs as a single isolated wetland, then it must be 0.5 ha or larger in size

*Part D – Very high-quality wetlands*

- Are three or more native plant taxa listed in Table 1 of the listing advice present within the wetland?

### 7.3.2 *Northern portion*

Biosis (2017) identifies three patches of Plains Grassy Wetland within the northern portion, identified as habitat zones HZ\_13.A, HZ\_13.B and HZ\_15.A. The Alluvium (2021) report states that Biosis (2017) recorded a high weed cover (>50%) within the Plains Grassy Wetland mapped to occur within the drainage line (HZ15A). The Biosis (2017) report states that the weed cover VQA score within this area is 9/15 (5-25%, and of that <50% of the weeds were regarded as high threat) and scores the overall habitat zone site condition as 34/75.

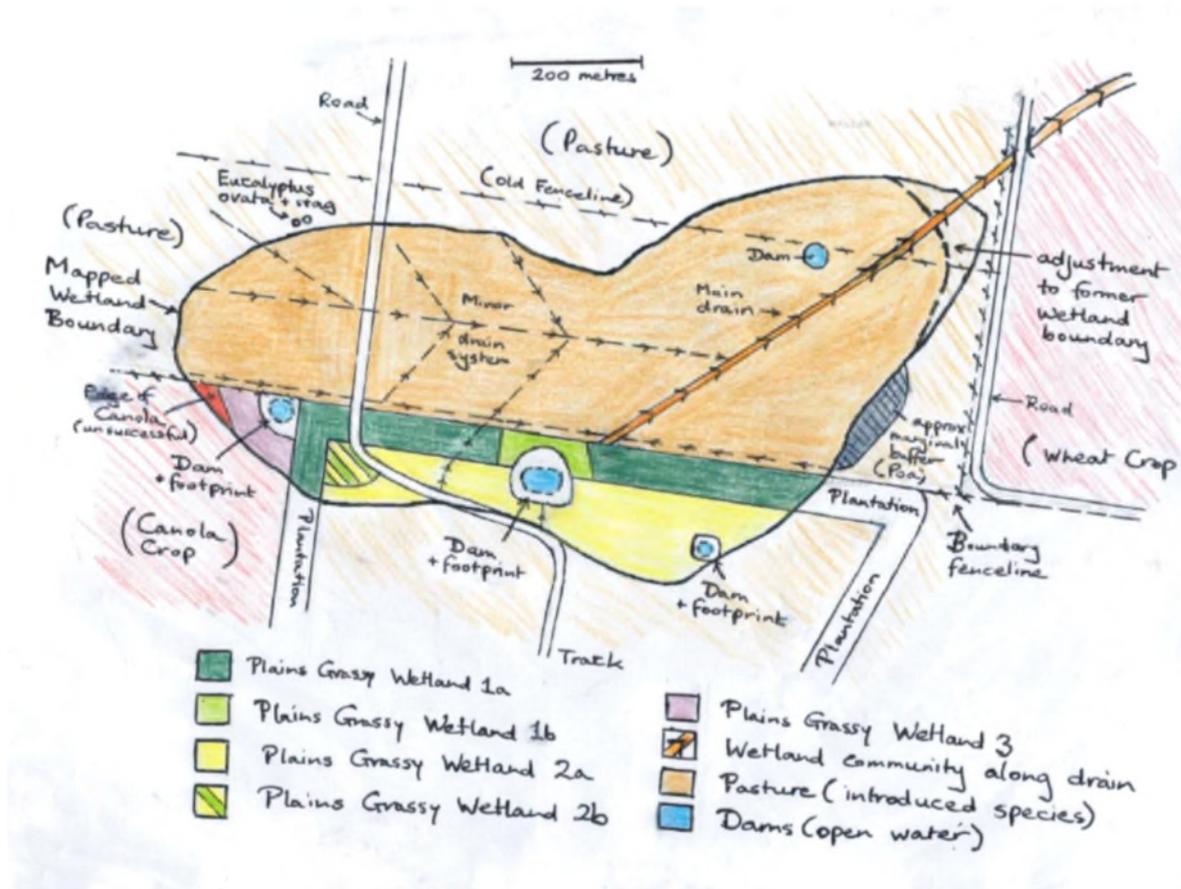
Similar to the Biosis (2017) report, the IWC assessment outlined in Ecology and Heritage Partners (2021) does not specifically clarify if SHW is present or absent (i.e. not the scope of the assessment) in the northern portion of former Henna Swamp within the areas mapped to contain Plains Grassy Wetland.

However, based on my recent site assessment (8 March 2022) there is the potential for small and degraded patches of Plains Grassy Wetland that are restricted to the edges and within the artificial drainage lines that are inundated periodically to meet the condition threshold (i.e. 50% or more of the total cover of plants in the ground layer of the wetland dominated by native species characteristic of the Seasonal Herbaceous Wetlands ecological community) to qualify as EPBC Act-listed SHW. However, mapped Plains Grassy Wetland patches across the former Hanna Swamp (Plate 3) are likely to be smaller than the 0.5 hectare threshold to constitute the EPBC Act-listed community (see required condition thresholds provided in Section 7.3.1).

In addition, to confirm the presence or absence of SHW, the dominance of Common Spike-sedge within the native vegetation patches is required, as a cover of greater than 25% of this species would indicate that the community is not present, due to being a contra-indicator species (TSSC 2012).

### 7.3.3 *Southern Portion*

SHW is present within the southern portion of Hanna Swamp (Ecology and Heritage Partners 2021) (Plate 4). The exact location and extent are not confirmed but is restricted to the mapped extent of Plains Grassy Wetland patches. These areas meet the condition and size threshold to constate the EPBC Act-listed community. That is, they support 50% or more of the total cover of plants in the ground layer of the wetland dominated by native species characteristic of the Seasonal Herbaceous Wetlands ecological community, contain three or more native plant taxa listed in Table 1 of the listing advice present within the wetland, and have a combined area of greater than 0.5 hectares (TSSC 2012).



**Plate 4.** Extent of Plains Grassy Wetland and other features mapped across the former Hanna Swamp (Ecology and Heritage Partners 2021).

#### 7.4 If the Southern Portion of the former Hanna Swamp qualified as SHW, whether this Classification Automatically Applies or Captures the Balance of the Historical Mapped Area of the former Hanna Swamp (regardless of its current condition)

Although the previous IWC assessment (Ecology and Heritage Partners 2021) mapped area of varying quality Plains Grassy Wetland (Plate 4), and Alluvium (2021) states that the southern portion of the former Hanna Swamp maintains a portion of Plains Grassy Wetland that qualifies as a very high quality SHW based on containing at least 3 of the flora species listed in Part D, Table 1 of the listing advice (TSSC 2012), there is no definitive mapping that shows the on-ground extent of SHW within the southern portion of the former Hanna Swamp.

However, as outlined above, if areas of Plains Grassy Wetland met the condition thresholds to constitute the EPBC Act-listed community, this classification doesn't automatically apply or captures the balance of the historical mapped area of the former Hanna Swamp (regardless of its current condition). That is, areas within the northern portion of the former Hanna Swamp would need to meet the required condition thresholds as outlined in the listing advice for the ecological community (TSSC 2012) to qualify as the listed ecological community (Section 7.3.1), which based on the current lack of high quality patches of Plains Grassy Wetland (that are smaller than 0.5 hectares) SHW is not present in the north.

## 7.5 The Implications of Farming, Approved Vegetation Removal and General Degradation from Channelling and other Activities on the Restoration or Rehabilitation of the Northern Portion of the former Hanna Swamp

The farming practices, including the previous vegetation removal, in the northern portion of the former Hanna Swamp has meant that the only small areas of highly degraded native vegetation persist through this area (i.e. confined to artificial drainage lines). As outlined in Alluvium (2021):

*'The north portion is currently managed for intensive agriculture and has been deep ripped to ~600mm and sprayed out with selective and non-selective herbicides 4-5 times over the past 14-15 years. It receives annual fertiliser top ups and is intensively grazed. The history of cultivation, intensive pasture management and grazing reduces the current suitability of this area to sustain a diverse range of indigenous species. This area would require much higher inputs than the southern portion for rehabilitation to occur. Hanna Swamp north is now largely a very well managed pasture of high quality and agriculture productivity'.*

Indeed, this is consistent with the previous ecological assessments of the area (Biosis 2017; Ecology and Heritage Partners 2021) and as observed during my recent site assessment on 8 March 2022.

In addition, it is highly unlikely given the long history of intense agricultural use that the northern portion supports a substantial seedbank for which the area can be restored or rehabilitated. I agree with the statement provided in Alluvium (2012):

*'One of the key assumptions of the NGT proposal appears to be that there will be a substantial seedbank of wetland flora at the site, and that restoration of hydrological levels is all that is required to 'restore' a wetland. While the drains within the northern portion of Hanna Swamp support some species indicative of Plains Grassy Wetland, this is a very species-poor assemblage. The native wetland plant species recorded from these drains are Amphibromus nervosus, Eleocharis acuta, a couple of Myriophyllum spp. and some species of Juncus.*

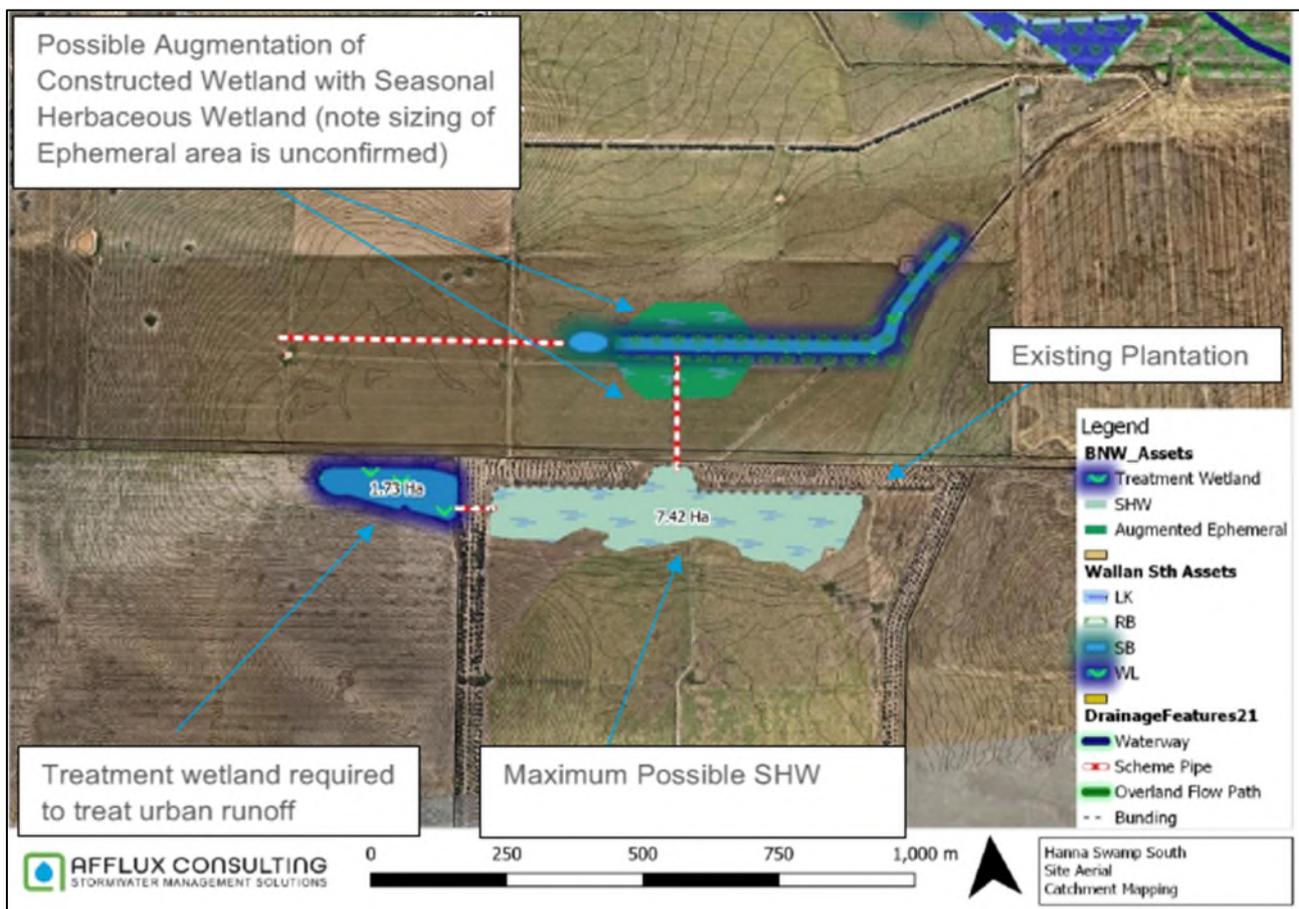
*This vegetation lacks the diverse herbaceous flora indicative of more intact examples of the EPBC listed ecological community Seasonal Herbaceous Wetland (SHW). The eastern flank of this section of the wetland retains an area of grassland with a substantial component of the tussock grass Poa labillardierei, characteristic of damp grasslands on the fringes of some variants of SHW, but otherwise extremely poor in native plant species.*

*It would be easy to over-emphasise the importance of the persistence of a few more resilient/opportunistic species in the drains and on the margins of this area in relation to the potential for recovery of the prior wetland vegetation community'.*

Based on the current land use practices and the absence of ecological values (including the lack of native vegetation) across most of the northern portion of the former Hanna Swamp, it would be extremely difficult to restore or rehabilitate any areas, particularly given the lack of a native seedbank for species reestablishment. Any wetland restoration / reinstatement in this area would require significant intervention and intensive land management over many years, if not decades.

## 7.6 If the Southern Portion of the former Hanna Swamp is to be Restored or Rehabilitated, the Appropriate Area of land required in the Northern portion

If all, or part of the southern portion of the former Hanna Swamp is to be restored or rehabilitated, the total area required to be resorted in the northern portion of the former swamp would predominately be influenced by the hydrological and drainage requirements of the area as part of the future development of the precincts. The minimum size threshold for any area of retention and rehabilitation for the wetland to qualify as SHW would need to be at least 0.5 hectares. A plan that shows the possible augmentation of the constructed wetland with SHW is provided in Christopher Beardshaw's evidence (Afflux Consulting 2022) (Plate 4), and this plan appropriately encapsulates mapped patches of Plains Grassy Wetland (Figure 3) and if adopted would result in the protection and reinstatement of parts of the former Hanna Swamp, thus resulting in a better ecological outcome than the current site conditions. This balances the proposed future development, stormwater treatment requirements and the persistence of SHW and other wetlands habitats (i.e. permanent wetlands) in this area.



**Plate 4.** Possible Augmentation of the Constructed Wetland with Seasonal Herbaceous Wetland (Afflux Consulting 2022).

It is important to reiterate that under the BCS (DEPI 2013a) and the more recent investigation of the extent of the SHW throughout Melbourne's Growth Areas, including the northern growth area (DEPI 2013d) does not identify the former Hanna Swamp as supporting SHW and as an area designated for future protection and management.

Information relating to the management and restoration of SHW throughout Melbourne's Growth Areas is provided on Page 36 of DEPI (2013d), and states the following:

*'Management*

*As a general principle it is preferable to conserve and manage larger sites and those sites that are surrounded by a buffer that retains native habitat. Smaller wetlands within urban systems are less likely to be manageable in the longer term. This principle reflects basic biogeographic patterns related to extinction probabilities in areas of different sizes. Many of the threats listed above can be controlled. For example, access can be restricted and weeds can be treated and removed. Flooding, stormwater input and nutrient input can also be avoided by design. Other threats such as increased weed invasion, increased domestic animal activity can be mitigated or tolerated. Perhaps the most difficult threats to manage are those that have widespread, diffuse origins, most notably altered catchment hydrology. An important mechanism to minimise impacts on catchment hydrology is to impose a buffer zone around SHW. This approach is advocated by the TSSC (2012), and has many benefits as it assists in managing weeds, pests, water inputs, etc. However, it must be recognised that a 'one-size fits all' approach is not appropriate. The catchments of SHW vary greatly in size and shape. Some SHWs (notably those formed by lava barriers) have very small catchments in one direction, and very large catchments in others; others have catchments which extend a long way in all directions. Some are steep, some are flat. Some SHWs have single points of inflow, some have many. Due to the irregular and subtle terrain of the basalt plains, the nature of the catchment may not be immediately obvious, and requires subtle hydrological interpretation. Furthermore, some threatening processes are related to the wetland catchment (e.g. hydrological influences) while others may not be (e.g. public access)'.*

Furthermore, DEPI (2013d) provide information regarding the challenges associated with the restoration of SHW in an urban context:

*'Restoration*

*In many cases shallow wetlands are relatively easy to restore. Native plant species are able to quickly colonise restoration sites and most of the naturally abundant native species are easy to propagate and source. Weed invasion is generally low and can be controlled.*

*However, there are some problems with wetland restoration. A widely documented issue (Zedler 2000) is the tendency to create attractive, 'generic' wetlands that fail to collectively provide the subtle range of niches to allow the full suite of wetland species to survive. Most restored wetlands are permanent wetlands, not SHW.*

*There is still scientific uncertainty regarding the best process for wetland restoration, and it is difficult to create the exact regime that favours a predetermined suite of species. For example, although there may be a desire to create a wetland dominated by *Glyceria* or *Amphibromus*, environmental factors may result in a wetland where some other species has come to dominate.*

*For these reasons the protection of existing sites is a higher priority than the creation of new sites.*

*Measures*

- *The following principles have been developed for the protection of SHW in an urbanised landscape:*
- *Prioritise the protection of existing sites.*
- *Prioritise large sites.*

- Prioritise large buffers and preserve existing native vegetation around the wetlands where possible.
- Control weeds using a targeted approach.
- Prevent or minimise soil disturbance (particularly during development).
- Prevent or minimise vehicle and foot access to the wetland.
- Prevent or minimise stormwater inputs.
- Retain seasonal wetlands (do not convert into permanent wetlands).
- Communicate to the public that drying is a natural part of the SHW cycle, and that dry wetlands are neither 'failed', nor 'degraded'.
- Minimise hydrological change. This will require a detailed hydrological assessment. .
- Consider enrichment planting with site-appropriate species, but only after the natural former species composition of the individual wetland had been investigated in detail.

It would be extremely difficult to restore or rehabilitate any areas throughout the northern portion of the former Hanna Swamp, and potentially to maintain the current hydrological regime that has led to the persistence of Plains Grassy Wetland / SHW in the south, as it is highly likely that the area lacks suitable native seedbank for the area to re-establish, or for it to be reinstated without significant intervention and intensive management over many years to attempt to rehabilitate the former Hanna Swamp in this area. It would require an appropriate hydrological regime (i.e. an ephemeral wetland system that floods and dries periodically) and substantial revegetation efforts to attempt to rehabilitate the northern portion of the former Hanna Swamp.

Alluvium (2021) correctly states that:

*'Research has shown that agricultural cropping decreases diversity and density of wetland plants in reflooded swamps, shown in seedbank testing and field surveys after reflooding of cropped areas (Casanova 2012). If the seed bank is severely impacted and no longer contains amphibious/wetland species, then the recovery capacity of a site will be impaired and intervention would likely be needed for regeneration (TSSC 2012). Data is currently not available on the state of the seedbank in the northern portion of Hanna Swamp, but it is reasonable to assume the seedbank is no longer fully intact in this area. The degree to which plant species could return is unclear and would depend on reinstated seasonal hydrology and appropriate water quality, connectivity with the southern high values area and other local wetlands, and management of other threats such as invasive weeds, grazing, and elevated nutrient levels (Casanova 2012).'*

Therefore, the prospect of an effective and efficient restoration / rehabilitation of the former Hanna Swamp through the reinstatement of the hydrological regime of the area alone is considered low, particularly in an urban context where there are multiple threatening processes (e.g. changed hydrology and poor stormwater quality requiring flow management and treatment) and often a higher level of active management and intervention to maintain, and where required, enhance the ecological values. There would be a comparatively large investment of resources through extensive revegetation and ongoing weed control over many years for the successful rehabilitation of the swamp.

## **7.7 If the former Hanna Swamp is to be Restored or Rehabilitated, the Appropriate Size of the Hanna Swamp Overall**

There is no standard or appropriate size of a wetland should the former Hanna Swamp is proposed to be restored or rehabilitated (i.e. no guidelines on the minimum size of a wetland in the growth areas). However, from an ecological perspective the larger the wetland and more diverse it is, the higher the value for flora and fauna species, and the ecological values overall.

If any areas of the EPBC Act-listed SHW are proposed to be protected (not disturbed) and incorporated into the future development of the BNWPSP, as a minimum, the Plains Grassy Wetland areas mapped in the southern portion of the former Hanna Swamp should be prioritised over any reinstatement of a wetland system in the north (i.e. in the WSPSP). Although there is no minimum area that would result in a viable wetland system that supports a diversity of ecological values, the provision of seasonally inundated wetlands as shown in Christopher Beardshaw's evidence (Afflux Consulting 2022) (Plate 4) is an option that appropriately encompasses mapped patches of Plains Grassy Wetland (i.e. in the south) that the Committee may consider.

Four future options for the protection of the former Hanna Swamp are provided in Alluvium (2021), and the option provided in Mr Beardshaw's evidence (Plate 4 above) is similar to Future 3# option, where areas in the south and north are retained for wetland protection (i.e. in the south) and rehabilitated / restored (i.e. in the north). However, although Mr Beardshaw's option results in less area retained in the north, I believe this option is satisfactory given the area is devoid of ecological values (i.e. absence of extensive areas of Plains Grassy Wetland / SHW), and that it would presumably meet the hydrological / water treatment requirements for the future development of the precincts.

## 8 REQUIRED INFORMATION

---

### Name and Address

This report has been prepared by Aaron Organ, Director of Ecology and Heritage Partners, 292 Mt Alexander Road, Ascot Vale, Ph: (03) 9377 0100, aorgan@ehpartners.com.au

### Area of Expertise

Aaron Organ is an expert ecologist, with skills in all the major ecological environments of south-eastern Australia. He has expertise in the workings of ecological systems, both under natural conditions and when affected by unnatural disturbance regimes such as weed invasion and impacts of development projects. He has also considerable experience in the application and practical implementation of current Commonwealth and State environmental legislation and Government Policy.

### Expertise to make the Report

Aaron Organ has considerable knowledge of the native flora and fauna in south eastern Australia, including in areas throughout central Victoria. Relevant experience includes:

- Completed over 500 flora and fauna investigations/assessments.
- Aaron has also prepared over 200 ecological assessment reports for residential development throughout Victoria.

A selection of past VCAT and Panel appearances include:

- 2022: Ecological Evidence of the threatened Tree Geebung. VicForests/Warburton Environment Inc. — Supreme Court of Victoria: Proceeding S ECI 2020 002461 (Supreme Court)
- 2022: Proposed Residential Dwelling at 3 Beaufort Rise, Warrandyte, Victoria (VCAT)
- 2022: Proposed Development at 82 Kirwans Bridge Road, Nagambie, Victoria (VCAT)
- 2022: Proposed Development of Group Accommodation and Associated Works, 1518 Timboon-Peterborough Road, Peterborough, Victoria (VCAT)
- 2022: Proposed Development at 3233-3235 Point Nepean Road, Sorrento, Victoria (VCAT)
- 2021: Proposed three lot residential subdivision at 26 Warringah Crescent, Eltham (VCAT)
- 2021: Proposed Golf Driving Range development at 112 Sandy Point Road, Balnarring (VCAT)
- 2021: Proposed Residential Hotel at Cape Bridgewater, Blowholes Road, Cape Bridgewater, Victoria (Amendment C107 Glenelg) (Advisory Committee)
- 2021: Proposed Fingerboard Sand Mine (Environment Effects Statement) (Inquiry and Advisory Committee)
- 2021: Proposed Aged Care Facility and Retirement Village in association with a Place of Worship: 60-70 Kunyung Road, Mt Eliza, Victoria (VCAT)
- 2021: Proposed Grantville Quarry Extension, Bass Highway, Grantville, Victoria (Panel)
- 2020: Proposed Addition of Nine Dwellings to the Existing Development at 114 Hanna Street, Noble Park, Victoria (VCAT)

- 2019: Proposed Emergency Fire Station at 109-115A Yan Yean Road, Plenty, Victoria (VCAT)
- 2019: Proposed telecommunication tower at 20 Settlement Road, Wesburn (VCAT)
- 2019: Proposed residential development at 22 Wood Street, Preston (VCAT)
- 2019: Proposed Inverleigh Wind and Solar Farm (Panel)
- 2018: Proposed residential development at 11 Tarella Drive, Chelsea (Panel)
- 2017: Proposed retirement development at 527 Stoney Point Road and 182 Wooleys Road, Bittern (VCAT)
- 2015: Amendment C187 to the Whittlesea Planning Scheme. Wollert Precinct Structure Plan (PSP 1070) (Panel)
- 2015: Yaringa Boat Harbour Expansion, Yaringa, Victoria – (Panel)
- 2015: Proposed residential development at 134-166 Aspinall Street, Golden Square, Victoria – (VCAT)
- 2015: Amended Permit Associated with the use and development of the land for a Place of Worship – 171 – 197 Harkness Road, Melton West, Victoria – (VCAT)
- 2014: Proposed Development Plan Overlay and Planning Permit Applications for a Proposed Residential Development at 370A Riddell Road, Sunbury, Victoria – (VCAT).
- 2014: Proposed Kilmore – Wallan Bypass. VicRoads (Panel)
- 2014: Proposed residential development at 107 Gipps Street, Port Fairy (VCAT)
- 2014: NBN Fixed Wireless Telecommunications Facility at 49D Eddy Avenue, Mt Helen, Victoria – Clayton Utz Lawyers (VCAT)
- 2014: Proposed residential development at 10 Fullarton Drive, Paynesville, Victoria – Hall & Wilcox Pty Ltd (VCAT)
- 2013: Statement of Expert Evidence: 1 Hobbs Road Wyndham Vale, Victoria. Amendment C171 - Ballan Road Precinct Structure Plan (PSP 40)
- 2013: Statement of Expert Evidence: Review of time stamped data for Amendment C172 - Ballan Road, Wyndham Vale (PSP 92)
- 2013: Statement of Expert Evidence: 305-315 Craigieburn Road East, Wollert, Victoria. Wollert Developments Pty Ltd. (VCAT)
- 2013: Proposed Planning Scheme Amendment C164 - 275 Racecourse Road, Sunbury – Hume City Council (Panel)
- 2013: Western Highway Duplication - Section 3, Ararat to Stawell, Victoria – DLA Phillip Piper (Panel).
- 2013: Cherry Tree Wind Farm – Maddocks Lawyers (VCAT)
- 2012: Western Highway Duplication - Section 2, Beaufort to Ararat, Victoria – DLA Phillip Piper (Panel).
- 2012: Proposed Peninsula Link Freeway Service Centres, 83 Sages Road Baxter, Victoria – Rigby Cook Lawyers Pty Ltd (VCAT)
- 2011: Western Highway Duplication - Section 1, Burrumbeet to Beaufort, Victoria – DLA Phillip Fox (Panel)

- 2011: Old Warrandyte Road, flora and fauna review and Panel hearing, Donvale – Norton Rose Australia Pty Ltd. (Panel)
- 2010: Marquands Road and Leakes Road (Lot 9), Truganina, Truganina South Precinct Structure Plan – Stockland (Panel)
- 2010: Proposed Eastern Golf Course relocation to ‘Windsor Park’, 215–217 Victoria Road, Yering, Victoria – for Best Hooper (VCAT)
- 2010: Truganina South Community Precinct Structure Plan – for Central Equity and Stockland Limited (Panel)
- 2010: Craigieburn R2 Precinct Structure Plan – for Peet Limited (Panel)
- 2010: Proposed Mortlake Wind Farm – for Accionia Oceania Limited (Panel)
- 2009: Grenda Vehicle Storage Depot, Springvale Road, Keysborough - for Urbis Pty. Ltd. (VCAT)
- 2009: 1280 Boneo Road, Cape Schanck, development a proposed barn – for Hansen Planning Services (VCAT)
- 2008: Proposed Donald Mineral Sands Project. Donald Mineral Sands (Panel)
- 2009: Melton Planning Scheme Amendment C65 – 489-555 Robinsons Road South Precinct (Marksx Property), Truganina (Panel)
- 2008: Amendment C88 to the Bass Coast Shire Planning Scheme - Silverleaves, Phillip Island (Panel)
- 2008: Proposed residential subdivision at 30-80 Seymour Road, Viewbank – for local landowner (VCAT)
- 2008: Proposed medium density development located on the corner of 1587-1589 Point Nepean Road and 1-1A Chatfield Avenue, Rosebud – for Fulcrum Town Planning Pty. Ltd. (VCAT)
- 2008: Residential development at 2 Rowe Street, Alphington – for Rob Wignall Architects (VCAT)
- 2008: Officer Service Centres, Officer – for Clayton UTZ Pty. Ltd. (VCAT)
- 2007: Anglesea Golf Club proposed Amendment C32 – for TGM Group Pty. Ltd. (Panel)
- 2007: Medium density housing at 2 Ramptons Road, Eltham – for Nillimbik Shire Council (VCAT)
- 2007: Medium density unit development in Frankston (adjacent to Kananook Creek) – for Gary Testro Lawyer (VCAT)
- 2007: Single dwelling development at 683 Great Ocean Road, Eastern Views, Victoria – for SJB Planning Pty. Ltd (VCAT)
- 2006: Constructio02n of a dwelling at 8 Charlotte Court, Warrandyte - for Glossop Town Planning Pty. Ltd. (VCAT)
- 2005: Dollar Wind Farm, Gippsland – for Freehills Lawyers (Panel)

#### Author’s Declaration

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



----- Date: 28/04/2022

## REFERENCES

---

- Afflux Consulting 2022. Stormwater Management Issues Associated with the Proposed Development of Beveridge NW (PSP) and associated Wallan South PSP – Expert Witness Statement Prepared by Christopher Beardshaw (26 April 2022).
- Alluvium 2021. Hanna Swamp Investigation Report 0120263 by Alluvium Consulting Australia for the Victorian Planning Authority.
- Biosis 2017. Wallan South Precinct Structure Plan: Biodiversity Assessment Report. Report for Crystal Creek Properties Pty Ltd. Authors: Nerenberg S, Gilmore D, Hollier C & Stoot L, Biosis Pty Ltd, Melbourne. Project no. 23811
- DELWP 2017. Growling Grass Frog Masterplan for Melbourne’s Growth Corridors. Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2021a. Flora and Fauna Guarantee Act 1988 Threatened List – August 2021 [www Document]. URL: [https://www.environment.vic.gov.au/\\_\\_data/assets/pdf\\_file/0031/536089/FFG-Threatened-List-August-2021-v2.pdf](https://www.environment.vic.gov.au/__data/assets/pdf_file/0031/536089/FFG-Threatened-List-August-2021-v2.pdf). Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2021b. Victorian Biodiversity Atlas. Sourced from GIS layers: “VBA\_FLORA25”, “VBA\_FLORA100”, “VBA\_FAUNA25”, “VBA\_FAUNA100”. September 2021. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2022a. NatureKit Map [www Document]. URL: <https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit>. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2022b. Melbourne Strategic Assessment MapShare Interactive Tool [www Document]. URL: <https://mapshare.vic.gov.au/msa/>. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2022c. Ecological Vegetation Class (EVC) Benchmarks for each Bioregion [www Document]. URL: <https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks>. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2022d. VicPlan Map [www Document]. URL: <https://mapshare.maps.vic.gov.au/vicplan/>. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2022e. Search the Native Vegetation Credit Register [www Document]. URL: <https://nvcr.delwp.vic.gov.au/Home/Index>. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DELWP 2021. Letter from DELWP regarding the approval of request to exclude mapped wetland 70701. Letter dated 7 May 2021.
- DEPI 2013a. Biodiversity Conservation Strategy for Melbourne’s Growth Corridors. Department of Environment and Primary Industries, Melbourne, Victoria.
- DEPI 2013b. Sub-regional Species Strategy for the Growling Grass Frog. Department of Environment and Primary Industries, Melbourne, Victoria.
- DEPI 2013c. Sub-regional Species Strategy for the Golden Sun Moth. Department of Environment and Primary Industries, Melbourne, Victoria.

- DEPI 2013d. The impact of Melbourne's growth on 'seasonal herbaceous wetlands (freshwater) of the temperate lowland plains'. Department of Environment and Primary Industries, East Melbourne.
- DPCP 2009. Delivering Melbourne's Newest Sustainable Communities. Report for Public Consultation: Urban Growth Boundary Review. Victorian Government Department of Planning and Community Development, June 2009.
- DSE 2009. Delivering Melbourne's Newest Sustainable Communities. Strategic Impact Assessment Report for the *Environment Protection and Biodiversity Conservation Act 1999*. Victorian Government Department of Sustainability and Environment, October 2009.
- DSEWPac 2012. Approved Conservation Advice for the Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains. Department of Sustainability, Environment, Water, Population and Communities, Canberra, ACT.
- Ecology and Heritage Partners 2021. Wetland Assessment for Modelled Wetland 70701, Wallan South Precinct Structure Plan, Wallan. Unpublished report by Ecology and Heritage Partners for Crystal Group (February 2021)
- Growth Areas Authority 2012. Growth Corridor Plans: Managing Melbourne's Growth. Growth Areas Authority, June 2012.
- Paul Kelly & Associates 2020. First Party Offset Management Plan, 175 Northern Highway, Wallan. 31 January 2020.
- TSSC 2012. Commonwealth Listing Advice on Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains. Threatened Species Scientific Committee, Department of Sustainability, Environment, Water, Population and Communities. Canberra, ACT.