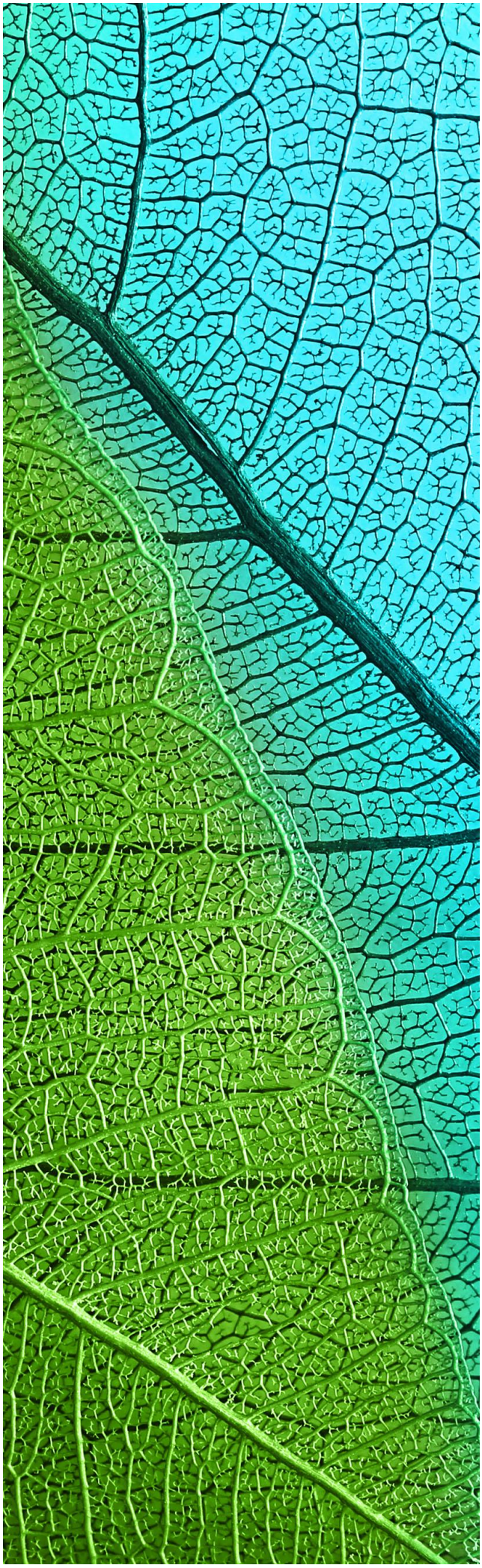

96-166 Centre Road, Narre Warren – Dwarf Galaxias habitat buffer

Year 3 Vegetation Monitoring

Prepared for
Narre Warren Central Pty Ltd
c/- The Fidus Group

December 2020
Report No. 14090 (15.0)

Nature Advisory
(Formerly Brett Lane & Associates Pty Ltd)
5/61-63 Camberwell Road
Hawthorn East, VIC 3123
PO Box 337, Camberwell VIC 3124
(03) 9815 2111
www.natureadvisory.com.au

Contents

1. Introduction 1
2. Methods 3
3. Limitations 4
4. Results 5
5. Discussion and recommendations 8

Tables

Table 1: Qualitative vegetation quadrat data – Year 3 5

Figures

Figure 1: Site and monitoring locations 7

Appendices

Appendix 1: Representative photos of general quadrat locations 10
Appendix 2: General photos taken within the survey site 13

1. Introduction

Nature Advisory (formerly Brett Lane & Associates) were engaged by Fidus Group, on behalf of Narre Warren Central Pty Ltd, to conduct vegetation monitoring within Dwarf Galaxias habitat buffer areas at 96-166 Centre Road, Narre Warren, approximately 37 kilometres south-east of Melbourne's CBD. The buffers of native vegetation have been retained for the purpose of protecting drainage channels known to support a population of Dwarf Galaxias from neighbouring construction. Dwarf Galaxias is listed as critically endangered under the commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The vast majority of the property has been approved for a residential subdivision, with construction having commenced in November 2016. Condition 4 of the EPBC Act approval for the project (EPBC 2014-7380) requires that buffer areas around Dwarf Galaxias habitat (Figure 1) are revegetated within 2 years of the commencement of construction and that vegetation cover is retained until the expiry of the approval.

The following targets were set to achieve this objective:

- Less than 10% weed cover 6 months from the commencement of construction; and
- Less than 5% weed cover and at least 90% native vegetation cover 2 years from the commencement of construction.

The following monitoring timeline was set in order to determine if these targets are being met:

- Prior to the commencement of construction to gain baseline data;
- Six months after the commencement of construction;
- Twelve months after the commencement of construction; and
- Two, three, five, seven, 10 and 15 years after the commencement of construction.

A baseline study was conducted in October 2016, before construction started in November 2016, during which 15 x 1m^2 quadrats were established within representative areas of the habitat buffers for future monitoring. The quadrats were surveyed again in September 2017 to collect monitoring data at six months post the commencement of construction, but it was actually undertaken 10 months after construction commenced. The twelve months survey (November 2017) was missed and the two-year survey (scheduled for November 2019) was delayed by six months (May 2020). This report presents the year three monitoring data which was collected in November 2020.

This report is divided into the following sections:

Section 2 describes the methods used for the field survey.

Section 3 describes the limitations of the assessment.

Section 3 describes the results of the field survey.

Section 4 provides a review of the monitoring program and makes alternative recommendations for the management of the habitat buffers.

This investigation was undertaken by a team at Nature Advisory comprising Annette Cavanagh (Botanist), Verity Fyfe (Senior Ecologist) and Inga Kulik (Senior Ecologist and Project Manager).

2. Methods

The field assessment was conducted on the 24th November 2020. During this assessment, the study area was surveyed on foot and the 16 of the 20 previously established quadrats/quadrat locations within the Dwarf Galaxias habitat buffer areas (Figure 1) were assessed.

During the baseline survey, quadrats were established in the following vegetation types:

- Swamp Scrub (EVC 53) – nine quadrats (1, 3, 4, 6, 7, 9, 10, 16, 19 & 20)
- Swampy Riparian Woodland (EVC 83) vegetation – two quadrats (11 & 15)
- Non-native vegetation – four quadrats (2, 5, 13 & 17)
- Quadrats 12, 14 and 18 are not to be surveyed anymore as it was decided during the 6-month assessment that they were too close to other monitoring quadrats and would not add any additional information. Quadrat 8 was removed after the area was disturbed and the marking stake lost.

Under Condition 4 of the EPBC Act, areas of non-native vegetation were required to be revegetated with indigenous species.

At the time of establishment, each quadrat was marked with a single wooden stake in the north-west corner and positioned along a north-south to east-west axis.

A photograph was taken at the north-west corner of the accessible quadrats at a height of approximately 1.3 metres, looking south-east over the quadrat, and the following data was collected:

- Total vegetation cover;
- Native vegetation cover;
- Weed cover;
- Cover of bryophytes, bare ground and litter; and
- Each flora species recorded.

This methodology was repeated during the current survey, however as is explained in the following section, there were significant limitations which prevented the quadrats from being accessed and assessed.

3. Limitations

Of the 16 quadrats, none were able to be accessed and surveyed directly during the current survey, due to being surrounded by water and/or because of impenetrable vegetation.

The habitat buffer which ran alongside Centre Road to the west of Billy Button Drive was unable to be accessed due to being surrounded by water, as both the drainage channel to the south of the habitat buffer and the swale that was present immediately north of the buffer, were full of water. This habitat buffer to the east of Billy Button Drive was also inaccessible due to the deep water present in the drainage channel and impenetrable vegetation.

The buffer which ran between Centre Road and the Packenham Railway line – which supported quadrats 11, 13, 15, 16 & 17 – was unable to be accessed due to the east side being impenetrable from dense vegetation, and the large swale drain that ran immediately alongside it on the western side being filled with water.

Even though the same methodology that was applied during previous assessments (quadrat survey including cover estimates) could not be applied during this site assessment, a qualitative assessment of these locations was undertaken from across the drains and photos taken to support the qualitative description of the condition of the vegetation at the sites.

4. Results

A qualitative assessment of the approximate quadrat locations was undertaken as none of the sixteen quadrats were able to be surveyed directly due to access constraints.

The current level of native vegetation was mostly very high, up to 90%, and was mostly attributable to Swamp Paperbark (which was heavily recruiting), Narrow-leaf Cumbungi, Common Reed and to a lesser extent, Slender Knotweed, Black Wattle and Rush.

Overall, weed cover was medium to high throughout the habitat buffers (20-50%) and was mostly attributable to the high threat species Blackberry and Flax-leaf Broom. Other high threat weeds included Hawthorn, Spear Thistle, Desert Ash and Montpelier Broom.

According to the site supervisor, recent weed spraying had occurred. This was evident along the southern edge of the drainage channel along Centre Road to the east of Billy Button Drive, as well as on the northern edge of the swale to the west of Billy Button Drive. This spraying appeared to be effective at killing herbaceous and grassy weeds in these areas. No other weed management was obvious.

A significant amount of hard rubbish was observed within or close to the buffer areas, including polystyrene, dumped timber, car tyres, general construction refuse and plastic bottles. This was both from construction within the site as well as from the public using the road to the south of the site. Habitat destruction was present in one location to the west of Billy Button Drive where several Swamp Paperbark plants had been knocked over. In addition, sediment fencing between the habitat buffers and swales had collapsed and fallen, and in many cases, was breaking up. In particular, where construction was currently occurring in the very west of the site, sediment fencing had collapsed under the weight of recent sediment runoff, and erosion channels had occurred underneath the existing sediment fence. This has resulted in sediment build-up in the water near the edge of the drain and amongst the native Common Reed.

Observations made within the general quadrat locations are provided in Table 1 and photos are provided in Appendix 1. In addition, general photos of the site are provided in Appendix 2.

Table 1: Qualitative vegetation quadrat data – Year 3

Quadrat No.	Vegetation Type	Description	Weed cover (estimated)	Native vegetation cover (estimated)
1	Swamp Scrub	Swamp Paperbark dominated. Blackberry present	30	60
2	Non-native	Co-dominated by Common Reed and Blackberry	50	50
3	Swamp Scrub	Co-dominated by Swamp Paperbark and Blackberry	50	40

Quadrat No.	Vegetation Type	Description	Weed cover (estimated)	Native vegetation cover (estimated)
4	Swamp Scrub	Very dense, dominated by Swamp Paperbark, with some Slender Knotweed and Rush on water's edge	0	80
5	Non-native	Co-dominated by Swamp Paperbark, Narrow-leaf Cumbungi and Slender Knotweed. Toowoomba Canary-grass and Drain Flat-sedge on water's edge	20	70
6	Swamp Scrub	Dominated by Swamp Paperbark	10	80
7	Swamp Scrub	Co-dominated by Swamp Paperbark and Blackberry	50	40
9	Swamp Scrub	Dominated by Swamp Paperbark. Blackberry and Hawthorn present	30	60
10	Swamp Scrub	Swamp Paperbark dominated. Some Blackberry present	20	60
11	Swampy Riparian Woodland	Very dense, dominated by Swamp Paperbark, high cover of Blackberry, with Hawthorn nearby	40	60
13	Non-native	Co-dominated by Swamp Paperbark and Black Wattle, high cover of Blackberry	40	60
15	Swampy Riparian Woodland	Very dense, dominated by Swamp Paperbark, with some Black Wattle	10	90
16	Swamp Scrub	Co-dominated by Swamp Paperbark and Black Wattle, moderate cover of Blackberry	30	70
17	Non-native	Dominated by Swamp Paperbark. Blackberry present	10	90
19	Swamp Scrub	Swamp Paperbark, Common Reed and Blackberry present	30	70
20	Swamp Scrub	Dominated by Swamp Paperbark, with a low cover of Common Reed	10	80

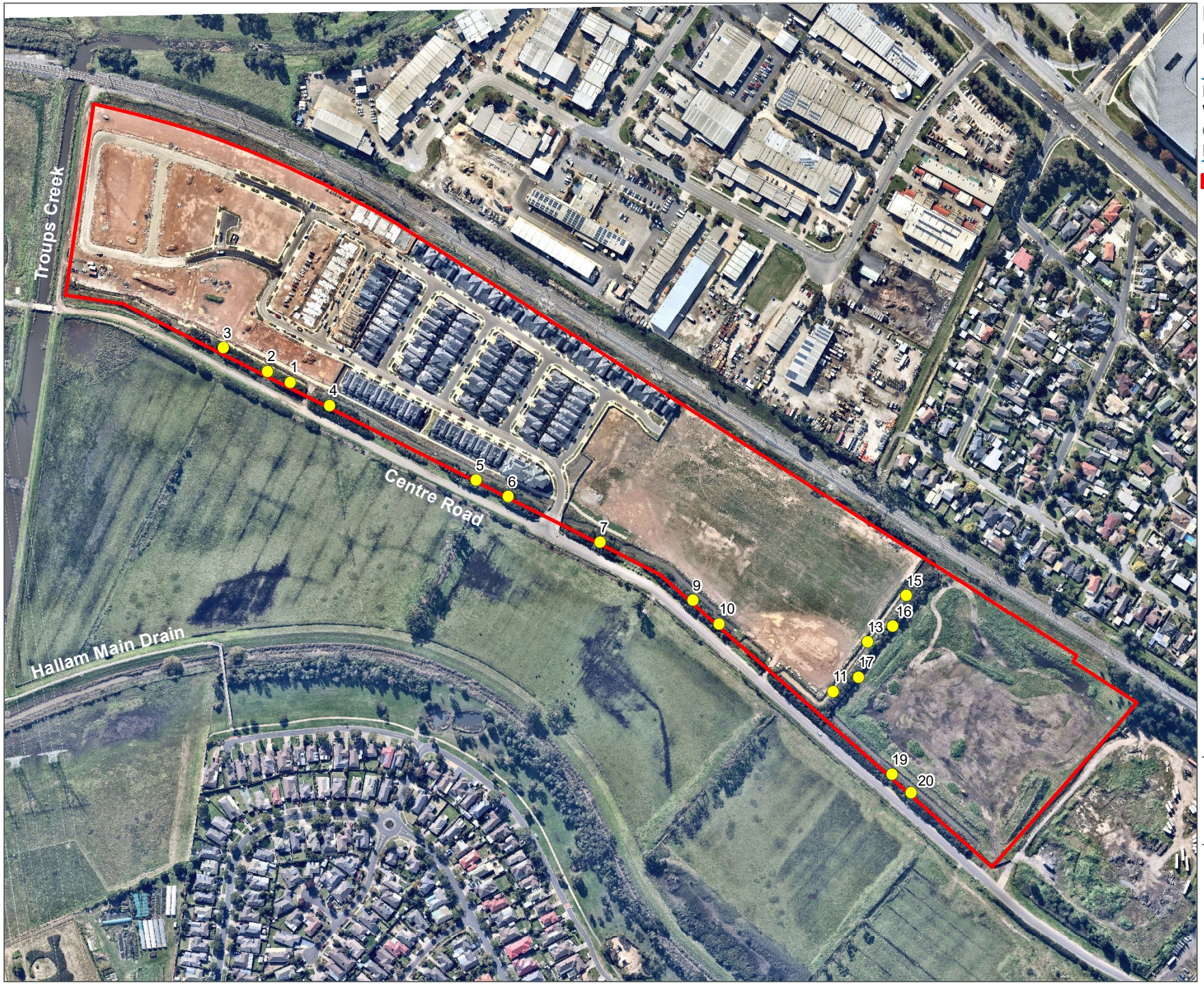

Figure 1: Site and monitoring locations

Project: 96-166 Centre Road, Narre Warren
Client: Narre Warren Central Pty Ltd
Date: 14/12/2020

Property boundary
Quadrat locations

N

Metres
0 75

Nature Advisory
PO Box 337, Camberwell, VIC 3124, Australia
www.natureadvisory.com.au
03 9815 2111 - info@natureadvisory.com.au

5. Discussion and recommendations

The following EPBC Benchmarks were to be met:

- Ensure that buffer areas are revegetated within 2 years of commencement of construction; and
- Less than 5% weed cover and at least 90% native vegetation cover 2 years from the commencement of construction.

Active revegetation through planting was not undertaken due to the dense vegetation cover and difficulties in managing the blackberries. However, the current level of native vegetation was mostly very high, up to 90%, and was mostly attributable to Swamp Paperbark (which was heavily recruiting). In the western part of the site, Common Reed was successfully recruiting and dominating some areas. Further revegetation is not considered to be required along the habitat buffers as natural recruitment is considered to be successful and is likely to occur in areas where weeds are removed.

As described in the results, the current level of weeds on the site indicates that the EPBC Act approval benchmark has not been met as weed cover was as high as 50% in some areas of the habitat buffers. Some weed management has been undertaken and evidence on site shows treatment of herbaceous and grassy weeds along the edge of some sections of the drainage channels. Weed management within the buffer areas would be difficult to achieve given the access issues and weed management required to be undertaken by boat.

Nature Advisory recommends reconsidering whether this target is still viable for the site. This is mainly due to the high prevalence of Blackberry throughout the site. Unlike other woody weeds, Blackberry cannot be easily treated with herbicide via the cut and paste method, due to its scrambling habit and the fact that a single plant has many main stems. Although Blackberry can be sprayed with herbicide, this is not advised for the following reasons:

- The buffers are surrounded by a sensitive aquatic environment and the amount of herbicide that would need to be sprayed to effectively kill Blackberry could be harmful to aquatic and semi aquatic life, including Dwarf Galaxias.
- The Blackberry is intertwined with native vegetation and spraying it would cause a significant amount of off-target damage to native plants.
- The vegetation that the Blackberry is growing in is too dense and much of the Blackberry would not be able to be accessed.
- Blackberry provides protective habitat for wildlife, such as small birds and mammals, which is particularly important in heavily developed areas such as Narre Warren.

Alternatively, Nature Advisory recommend that weed control efforts should focus on the other woody weeds on the site, namely Montpelier Broom, Flax-leaf Broom, Hawthorn and Desert Ash, that can be easily treated via the cut and paint method, providing they can be

accessed. The high-threat herbaceous weed Spear Thistle, common throughout the site, should also be treated via spot-spraying.

All rubbish should be removed from the site as soon as possible. This is to be undertaken by the proponent within private land and by Council along Centre Road. Signage should be employed along the drainage channels to deter rubbish dumping.

Collapsed sediment fencing along the northern edge of the swale drain in the west of the site is to be repaired to prevent further sedimentation into the drains. Where required, sediment fencing must be replaced before construction begins. Any sediment fencing that is no longer serving its purpose it to be removed to avoid it becoming litter.

Appendix 1: Representative photos of general quadrat locations

Quadrat 1 (Swamp Scrub)

Quadrat 2

Quadrat 3 (Swamp Scrub)

Quadrat 4

Quadrat 5 (Swamp Scrub)

Quadrat 6 (Swamp Scrub)

Quadrat 7 (Swamp Scrub)

Quadrat 9 (Swamp Scrub)

Quadrat 10 (Swamp Scrub)

Quadrat 11 (Swampy Riparian Woodland)

Quadrat 13

Quadrat 15 (Swampy Riparian Woodland)

Quadrat 16 (Swamp Scrub)

Quadrat 17

Quadrat 19 (Swamp Scrub)

Quadrat 20 (Swamp Scrub)

Appendix 2: General photos taken within the survey site

The drainage channel along Centre Road was full of water

Swamp Scrub vegetation along the southern bank of the drainage channel west of Billy Button Drive

Narrow-leaf Cumbungi and Rush present in the drainage channel

Common Reed dominating large areas along the drainage channel in the west

The high-threat weed species Spear Thistle was common along the southern bank of the drainage channel west of Billy Button Drive and must be controlled

Habitat destruction where Swamp Paperbark plants have been knocked over

Montpelier Broom at the very western end of the drainage channel is to be removed

Sediment fencing has collapsed, with erosion channels running beneath the fencing, along the northern edge of the swale in the west of the site. Sedimentation of the water can be seen.
This fencing must be rectified as soon as possible

Excessive amounts of hard rubbish were present throughout the survey site and is to be removed

Flax-leaf Broom was abundant along the western edge of the drainage channel running from Centre Road to the Pakenham Railway line. This is to be removed.