



Modeina Estate Precinct 2 (EPBC 2011/6063)

Compliance Report – Year 8

**Prepared for DFC (Project
Management) Pty Ltd**

December 2025
Report No. 7045.71 (1.0)



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1. Introduction

This Compliance Report addresses the conditions of approval 2011/6063 under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) held by the approval holder – DFC (Project Management) Pty Ltd ('DFC') – for the Modeina Precinct 2 residential development. The Approval was dated 25 July 2015; a Consolidated Variation Notice was issued by the Department of the Environment and Energy on 9 November 2018. This Compliance Report refers to this current Notice and is referred to herein as the 'Approval'.

Construction activities commenced within Precinct 2 as defined in Appendix 1 of the approval on 9 October 2018. To date, construction activities are completed in Project Areas A1 and B, while ongoing in A2 and C2, with commencement in D as of 16 September 2022. This report provides evidence of compliance with the conditions of the approval relevant to these three project areas, in particular:

- Condition 1 – construction activities contained to the overall project area
- Condition 2 – the implementation of sediment and erosion control measures during construction activities
- Conditions 3 & 4 – Growling Grass Frog Management Plan
- Condition 5 – no more than eleven (11) Spiny Rice-flower impacted in Project Areas A1 and A2
- Condition 6 – offsets secured and offset management implemented for Project Area A1
- Condition 6A – offsets for impacts associated with Project Area A2
- Conditions 7 & 8 – offsets secured and offset management implemented for Project Area B
- Conditions 13, 14, 16 & 17 – construction activities not undertaken in Project Areas C1, C2 & D and the Grassland Reserve
- Condition 14A – Grassland Reserve Management Plan
- Condition 18 – offset shapefiles and attributes provided to the Department
- Condition 19 – advising the Minister within 30 days of commencement of construction
- Condition 21 – preparation of this Compliance Report
- Condition 26 – approved management plans published on the approval holder's website within 1 month of approval

This compliance report draws together information from the following sources:

- Reporting, correspondence and mapping files compiled by Nature Advisory (formerly Brett Lane and Associates (BL&A)) on behalf of DFC (Project Management) Pty Ltd
- Grassland Reserve monitoring undertaken on 7 August 2025 and onsite compliance monitoring undertaken on 12 November 2025 by botanists from Nature Advisory
- Weed management reporting provided by Australian Ecosystems
- Offset landowner monitoring reports

This report was prepared by a team from Nature Advisory comprising Ezra Janetzki (Botanist), Cody Hajnal (Botanist) and Suzie Moss (Botanist and Project Manager) with additional information supplied by the approval holder. Sources of information and observations are indicated throughout.

2. Onsite monitoring

2.1. Compliance monitoring – November 2025

An onsite compliance monitoring inspection was conducted on 12 November 2025. During this assessment, all areas of Precinct 2 were inspected on foot, including the interfaces of areas currently undergoing construction works and surrounding land currently protected as ‘No Go’ areas and the Growling Grass Frog Management Buffer. Prior to this assessment, monitoring of the Grassland Reserve was conducted on 7 August 2025.

Information relevant to the conditions of the approval was gathered throughout Precinct 2 to supplement information provided by the approval holder. This included information on the following:

- Precinct 2 development area:
 - The presence of ‘No Go’ fencing and sediment/erosion control measures on the boundaries between construction areas and ‘No Go’ areas
 - The extent of noxious and high threat weeds and evidence of weed control
- Grassland Reserve:
 - Weed cover estimates for each weed species
 - Overall weed cover estimate
 - Information on the status and health of Spiny Rice-flower plants
 - Assessment of biomass
 - Monitoring of evidence of pest animals
 - Assessment of the integrity of fencing around the perimeter of the reserve
- Growling Grass Frog Management Buffer:
 - Evidence of personnel briefing
 - Overall weed cover estimate and evidence of weed control
 - Evidence of the removal of pest animal harbour
 - Status of any seeding/revegetation works

2.2. Growling Grass Frog monitoring

Pre-construction Growling Grass Frog population and habitat monitoring commenced in January 2017 during the November 2016–February 2017 breeding season. A further eight annual breeding season population and habitat monitoring events were undertaken in November 2017 (one month following commencement of construction (Year 1), December 2018/January 2019 (Year 2), November 2019 (Year 3), November 2020 (Year 4), December 2021 (Year 5), December 2022 (Year 6), December 2023 (Year 7), December 2024 (Year 8) and November/December 2025 (Year 9).

A summary of the monitoring methods and outcomes is provided in Section 3.2.

3. Compliance with approval conditions

The Approval conditions relate to the protection of the following Matters of National Environmental Significance (MNES) listed under the EPBC Act and located across six project areas within the precinct – Project Areas A1, A2, B, C1, C2 & D:

- The grassland ecological community *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) – located in discreet patches across the precinct
- Striped Legless Lizard (*Delma impar*) habitat – coinciding with all areas of mapped NTGVVP
- Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*) plants

The definitions from the Approval that apply to the terms shown in bold throughout this document are listed in Appendix 1 of this report.

3.1. Conditions 1 and 2 – construction activities

Conditions 1 and 2 of the Approval read as follows:

1. The **approval holder** must ensure that **construction activities** do not occur outside of the **project area** as illustrated at [Appendix 1](#).
2. The **approval holder** must implement sediment and erosion control measures consistent with **best practice pollution, sediment and erosion control guideline(s)** for the duration of **construction activities**.

Condition 1 compliance

Construction activities were underway at the time of the Year 4 (October 2021) assessment, with a combination of temporary construction fencing and post-and-wire fencing installed around areas of Project Areas A1, A2 and C2 where works were occurring.

During the Year 5 (October 2022) assessment, construction was occurring in Project Areas A2, C2 and D. Appropriate construction and post-and-wire fencing were in place, in good condition and kept closed to prevent activities occurring outside the Project Area.

During the Year 6 (October 2023) assessment, construction was occurring in Project Areas A2, C1, C2 and D. Temporary construction and post-and-wire fencing were in place and generally in good condition. Some areas of temporary construction fencing had openings that need to be closed to prevent activities occurring outside the Project Area. These areas were address following the survey.

During the Year 7 (September 2024) assessment, construction continued to occur in Project Areas A2, C1 and D. Temporary construction and post-and-wire fencing were in place and generally in good condition.

During the current Year 8 (November 2025) assessment, construction was in its final stages in Project Area D, while it continued in areas A2 and C1. Temporary construction and post-and-wire fencing were in place and generally in good condition. No construction was occurring outside the project area. As such, the project is currently compliant with this condition.

Condition 2 compliance

Prior to continued construction, sediment fencing is required to be installed between construction zones and the Kororoit Creek environs and retained native vegetation.

At the time of the Year 4 (October 2021) assessment, suitable sediment fencing was in place to protect the Grassland Reserve and wherever construction was occurring. No stockpiles, machinery/equipment laydown or washdown areas were observed within the Growling Grass Frog Management Buffer.

The Year 5 (October 2022) assessment recorded that the sediment fencing was mostly appropriately placed and in good condition. No stockpiles, machinery/equipment laydown or washdown areas were observed within the Growling Grass Frog Management Buffer.

Flooding of the creek line had left some of the sediment fencing in a state of disrepair in areas where revegetation work had commenced; this was rectified, however, the location of sediment fencing here is not achieving any practical purpose now that the jute matting has been laid, therefore it should be removed.

Sediment fencing and trapped sediment remaining in place since earlier construction works, and therefore no longer required, should be removed before it deteriorates to the point where the trapped sediment breaches the fabric barrier and washes into Kororoit Creek, as well as becoming plastic litter.

At the time of the Year 6 (October 2023) assessment, the majority of sediment fencing observed was in poor condition. Sediment fencing was repaired in areas following the survey. No stockpiles, machinery/equipment laydown or washdown areas were observed within the Growling Grass Frog Management Buffer.

The Year 7 (September 2024) assessment observed that most of the sediment fencing present around the construction area was variable from non-existent, to poor and adequate. It was later repaired in the required areas between construction zones and the Kororoit Creek environs.

The current Year 8 (November 2025) assessment found that where sediment fencing had been installed it was generally in good condition. Project Area A2 was under construction and sediment control fencing was mostly present between construction areas and Kororoit Creek. However, this was in need of repair in some sections in the eastern portion of Project Area A2 and appeared to be absent from some sections in the north of Project Area A2. DFC has advised that rectification of missing/damaged sediment fencing will occur as early as practicable at the beginning of January 2026.

3.2. Conditions 3 and 4 – Growling Grass Frog Management Plan

Conditions 3 and 4 of the Approval read as follows:

3. The **approval holder** must prepare a site-specific **Growling Grass Frog Management Plan**; which is required to be consistent with **best practice Growling Grass Frog management guidelines**. The plan must outline how significant impacts to **Growling Grass Frogs** will be avoided or mitigated and as a minimum must include:
 - a. Management measures demonstrating how the **Growling Grass Frog buffer zone** will be demarcated to minimise vehicle access;
 - b. Details of revegetation, **environmental weed** control measures and other management activities within the **Growling Grass Frog buffer zone**;
 - c. Details of any **construction activities** and management measures to avoid **significant impacts** during construction; and
 - d. Measures to ensure any on-site personnel will be informed of their obligations under the **Growling Grass Frog Management Plan**.
4. **Construction activities** must not commence in **Project Areas A1, A2, C1, C2 and D** until the site specific **Growling Grass Frog Management Plan** has been approved by the **Minister** in writing. Construction in **Project Area B** can proceed prior to approval of the site-specific **Growling Grass**

Frog Management Plan. The site specific **Growling Grass Frog** Management Plan must be implemented.

Conditions 3 and 4 compliance

BL&A Report 7045 (29.7) *Growling Grass Frog Management Plan* (GGFMP) was approved by the Minister in writing on 20 September 2017 and is available for viewing on the proponent's website at <https://www.denniscorp.com.au/about-dennis-family/initiatives-and-awards/sustainability/>. Of the project areas listed above, construction commenced in Project Area A1 (only) on 9 October 2017.

This compliance reporting is made against the construction phase management and monitoring actions for the Growling Grass Frog Management Buffer (GGFMB) outlined in Tables 6 and 7 of the GGFMP. These actions and the relevant section of the GGFMP are listed below under the four core requirements of the Plan outlined in Condition 3:

- Demarcation of GGFMB – Condition 3a:
 - Staged construction and temporary access restrictions (GGFMP Section 5.2.2)
- Weed control measures and revegetation – Condition 3b:
 - Weed management (GGFMP Sections 5.2.3 and 6.2)
 - Revegetation (GGFMP Section 6.4)
- Construction management measures to avoid significant impacts – Condition 3c:
 - Temporary access restrictions (GGFMP Section 5.2.2)
 - Sediment control (GGFMP Section 5.2.4)
 - Works within the GGFMB (GGFMP Section 5.2.5)
- On-site personnel informed of their obligations – Condition 3d:
 - Personnel briefing (GGFMP Section 5.2.1)

A summary of the outcomes of Growling Grass Frog habitat quality monitoring and population monitoring (Section 6.6.2 and Table 7 of the GGFMP) is also provided.

Personnel briefing

A briefing was provided by BL&A on 26 September 2017 to all key personnel on the presence of occurrence of Growling Grass Frog (GGF) in the Kororoit Creek environs and the emergency protocols in the event that the species is encountered during construction. Key personnel present included DFC (Project Management) Pty Ltd project managers, as well as all construction site managers.

Information brochures on this species were provided for display in all site offices, providing a physical description of the species, their population distribution, habitat and similar species. Construction site managers have included this briefing in the environmental briefing for all construction personnel.

Staged construction and temporary access restrictions

As outlined in the compliance reporting against Condition 1, 'No Go' construction fencing was inspected by BL&A in November 2018 and found to restrict the construction of lots and roads associated with residential stages to land comprising Project Areas A1 and B. These project area boundaries fall on the development side of the boundary of the GGFMB in all cases.

During the Nature Advisory November 2020 inspection, a combination of temporary construction fencing and post-and-wire fencing was installed around Project Area A1 to restrict construction to this area. Wire mesh farm fencing was appropriately installed around all areas of retained native vegetation.

During the Nature Advisory October 2021 inspection, a similar combination of fencing was installed around Project Areas A1, A2, C2 and small areas of C1 to restrict construction to these areas and protect areas of retained native vegetation including the Grassland Reserve. In addition to this, as of January 2023, construction fencing was also installed around Project Area D.

At the time of the Year 6 (October 2023) assessment, a combination of temporary construction fencing and post-and-wire fencing was installed around Project Areas A1, A2, C1, C2 and parts of Project area D. The placement and integrity of temporary construction fencing around the works area was found to be mostly appropriate and sound. Some stretches of fence were found to be leaning causing gaps to occur. Additionally, two larger gaps were observed at either end of a temporary fence where they had not been affixed to adjacent fences. Furthermore, the temporary construction fencing used to surround the works associated with the drainage outfalls is of insufficient height, stability, and gauge. In particular, the fencing used allows access for native wildlife (i.e., Eastern Grey Kangaroo) to enter the works area and become trapped or injured. These issues were brought to the attention of the approval holder. Action was immediately taken by repairing construction fencing and installing temporary kangaroo fencing around revegetation and works area to deter Kangaroos from entering and getting trapped.

The Year 7 (September 2024) assessment had temporary construction fencing installed throughout Project Areas A2, C1 and D. The quality and integrity of the construction fencing was in good condition overall and appropriately placed.

The current Year 8 (November 2025) assessment found that temporary construction fencing was appropriately installed around Project Areas A2, C1 and D. Fencing was in good condition overall and placed appropriately.

[Weed management](#)

2017/2018: Greening Australia weed management actions

Weeds across Precinct 2 were mapped by Greening Australia in August 2017 as part of their Weed Management Strategy. Weed management across Precinct 2 and including the GGFMB was then undertaken by Greening Australia between September 2017 and October 2018.

Within the GGFMB this included:

- Removal, consolidation and burning of woody weeds (African Boxthorn and Sweet Briar)
- Brush cutting of dead biomass
- Herbicide treatment of grassy and herbaceous weeds – up to eight (8) visits
- Biomass reduction burns – up to six (6) burns

In particular, the following three high-threat weeds that were found to be of greatest threat to environmental values were targeted:

- African Boxthorn (a woody weed)
- Artichoke Thistle (a herbaceous weed)
- Serrated Tussock (a herbaceous/grassy weed)

During herbaceous weed control visits, the following additional high-threat weeds were also targeted (all but one herbaceous weeds):

- Chilean Needle Grass
- Fennel
- Paterson's Curse
- Scotch Thistle
- Spear Thistle
- Sweet Briar

2017/2018: Greening Australia weed management outcomes

Weed survey reports from Greening Australia have been prepared for August 2017, February 2018 and June 2018. They document an overall reduction in extent and cover of the three highest threat weed species.

The monitoring inspection undertaken by BL&A in November 2018 of the GGFMB generally concur with the survey results provided by Greening Australia (with minor exceptions), as follows:

- African Boxthorn – in August 2017 found in extremely high numbers within the GGFMB; now observed to be largely eradicated – i.e. less than 1% cover;
- Artichoke Thistle – in August 2017 found in large swathes in and adjacent to the GGFMB in its northern section and at the top of the escarpment near the eastern section at up to 30% cover, including pocket outbreaks with up to 70% cover; now reduced to an overall cover of approximately 20%, with an area in the southeast section exhibiting approximately 30% cover and smaller pocket outbreaks of up to 60% cover; and
- Serrated Tussock – in August 2017 occurring within the GGFMB at cover levels of between 60–100% in all sections except for the southeast corner; now largely controlled to less than 10% cover in the northwest and reduced to 20% cover on the eastern flank of the GGFMB, it still exhibits very high cover (up to 100%) in a narrow band at the bend in the GGFMB previously described as 'the Point'.

An infestation of Fennel previously recorded in the eastern flank of the GGFMB has also been eradicated.

It is understood that ongoing weed control focused on these remaining outbreaks of Artichoke Thistle and Serrated Tussock within the GGFMB (along with the broader precinct), as well as the remaining target weeds listed above.

2019: Australian Ecosystems weed management outcomes

A weed survey report from Australian Ecosystems has been prepared in October 2019. It documents an overall reduction in extent and cover of the high threat weed species, with the exception of Artichoke Thistle which is germinating readily in areas of exposed soil due to the control of other weeds, namely Serrated Tussock and Twiggy Turnip.

2020: Australian Ecosystems weed management outcomes

Weed survey reports from Australian Ecosystems were prepared in April 2020, June 2020, October 2020 and December 2020. They document an overall reduction in extent and cover of the high threat weed species, mainly due to the targeted and effective control of Artichoke Thistle. However, it states that ongoing management is required, as weed species such as Twiggy Turnip and Artichoke Thistle will take advantage of bare ground areas where previous weed control has taken place.

2021: Australian Ecosystems weed management outcomes

Weed survey reports from Australian Ecosystems were prepared in April, August, October, and December 2021. The reports document low prevalence of some high threat herbaceous weed species (Spear Thistle, Fennel, Cape weed and Paterson's Curse). However, the resulting increase in space has led to increases in high threat weedy grass species (Toowoomba Canary Grass, Chilean Needle Grass and Serrated Tussock) as well as lower threat species such as Wild Oat. The reports state that many Toowoomba Canary Grass plants along the creek have remained untreated so as to reduce erosion concerns. Going forward, the future treatment regime will aim to reduce widespread herbicide treatment where individuals are close to high-value vegetation. Instead, slashing regimes interspersed with selective treatments may be preferred.

2022: Australian Ecosystems weed management outcomes

Weed survey reports from Australian Ecosystems were prepared in March, June and September 2022. The reports document significant overall reduction in extent and cover of the high threat weed species in 2022, mainly driven by removal of woody and herbaceous high-threat weeds. However, whilst management of woody and herbaceous weeds such as African Boxthorn, Bridal Creeper, Artichoke Thistle and Serrated Tussock have been largely successful, cover of Great Brome significantly increased. This latter increase is likely a result of the extended, extremely wet spring growing period rather than an indicator of inadequate management. Future actions should focus on treatments of invasive annual grasses, particularly in proximity to area of retained native vegetation and revegetation works.

The compliance monitoring inspection undertaken by Nature Advisory in October 2022 generally concurs with the 2022 weed survey results provided by Australian Ecosystems. However, it should be noted that two new emergent or newly widespread species were recorded, being Desert Ash along the creekline and Great Brome in vast areas of the precinct including the Grassland Reserve; there was no documentation of this weed by Australian Ecosystems or the 2021 monitoring report.

2023: Australian Ecosystems weed management outcomes

Weed survey reports from Australian Ecosystems were prepared in March, June and September 2023. The reports document significant overall reduction in extent and cover of the high threat weed species in 2023, mainly driven by removal of woody and herbaceous high-threat weeds. However, whilst management of woody and herbaceous weeds such as African Boxthorn, Bridal Creeper, Artichoke Thistle and Serrated Tussock have been largely successful, cover of Great Brome significantly increased. This latter increase is likely a result of the extended, extremely wet spring growing period rather than an indicator of inadequate management. Future actions should focus on treatments of invasive annual grasses, particularly in proximity to area of retained native vegetation and revegetation works.

The compliance monitoring inspection undertaken by Nature Advisory in October 2023 generally concurs with the 2023 weed survey results provided by Australian Ecosystems. Additionally, the two emergent species recorded by Nature Advisory in 2022 (Desert Ash and Great Brome) were still present. Since the October assessment Australian Ecosystems has agreed to expand their targeted weed management to include these species over the next 12 months.

2024: Australian Ecosystems weed management outcomes

Weed survey reports from Australian Ecosystems were prepared in March, June, and September 2024. The reports document a general reduction in extent and cover of high threat weed species in 2024, which have been the key focus of elimination.

The compliance monitoring inspection undertaken by Nature Advisory on 30 September 2024 somewhat concurs with the 2024 weed survey results provided by Australian Ecosystems.

Whilst the management of woody and herbaceous weeds such as African Box-thorn and Horehound have been overall successful. There have been some increases in cover of other high threat weeds such as Artichoke Thistle, particularly in the development zones and Grassland Reserve. This has been attributed to the extended Spring like weather of the 2024 summer as well as the continued development works within the development zone allowing for the colonisation of the opportunistic species.

Australian Ecosystems target weed species have been reported to decline across the site between management events. However, several emerging high threat species such as Bridal Creeper, Desert Ash and Sweet Briar were observed scattered in moderate quantities throughout the site. It is understood over the next 12 months Australian Ecosystems will increase management efforts to further control target species and expand management efforts to include new and re-emerging threats to remain compliant with the Management Plan.

Furthermore, weeds within the Grassland Reserve require continued monitoring and management, particularly Wild Oat and Ribwort and Serrated Tussock. Artichoke establishing within the Grassland reserve has largely been treated and controlled since feedback was provided after the last site survey in September.

[2025: Australian Ecosystems weed management outcomes](#)

Weed survey reports from Australian Ecosystems were prepared in March, June, and September 2025 and are provided in Appendix 6. The reports document a general reduction in extent and cover of high threat weed species in 2025, which have been the key focus of elimination.

The compliance monitoring inspection undertaken by Nature Advisory on 12 November 2025 somewhat concurs with the 2025 weed survey results provided by Australian Ecosystems. However, a notable differences in reporting include the reported coverage of both Toowoomba Canary-grass (*Phalaris aquatica*) and Chilean Needle-grass (*Nassella neesiana*) which were documented as being effectively eliminated (i.e. 0%) in all management zones during 2025 by Australian Ecosystems, but were found to still be significant high threat weed in the non-construction areas of Precinct 2 (Toowoomba Canary-grass at 10% cover and Chilean Needle-grass at 3% cover), mostly observed within the Kororoit Creek environs. Similarly, Serrated Tussock (*Nassella trichotoma*) was recorded between 0–2% in March and June of 2025 and was documented as being effectively eliminated (i.e. 0%) in all management zones in the September 2025 report by Australian Ecosystems. Nature Advisory recorded Serrated Tussock as being prevalent throughout the entire non-construction areas of Precinct 2 (15% cover), primarily adjacent to the waterway, with many individuals in seed. Desert Ash, first documented in 2022, is still prevalent along Kororoit Creek in management zones 3 and 5 and requires ongoing control to achieve effective elimination (i.e. <1% cover with no mature individuals present).

DFC is currently addressing and undertaking adaptive weed management and is committed to weed control. Differences in weed covers observed may be due to seasonal variation and timing of surveys, survey method differences and differences between observers. Weed control is an ongoing challenge considering the urban setting and presence of weeds in adjacent areas outside of DFC control. To achieve better weed control outcomes, DFC has advised that they will liaise with Melbourne Water regarding weed management activities within areas adjacent to DFC control along the Kororoit Creek corridor.

[Revegetation](#)

In 2018, large-scale revegetation of the GGFMB had not yet commenced, with the exception of landscaping works associated with a drainage swale constructed within the GGFMB in its northern section. Typical sedge and rush plantings were in good health in this area, and weed cover was negligible due to effective weed-matting.

As of November 2020, revegetation and landscaping works have occurred in the GGFMB in areas adjacent to the recent development in the north-west and the south-east of the precinct. Native grasses, sedges, prostrate shrubs and eucalypts have been planted, and jute mat has been used for weed suppression and erosion control (Photo 1). Supplementary planting has also occurred within retained native vegetation areas that were adjacent to these recently developed areas.



Photo 1: Revegetation works in the south-east portion of the GGFMB

As of October 2021, no further revegetation had occurred. The majority of planted species have survived, grown and began to colonise areas of the jute matting that have degraded (Photo 2). Scattered weeds such as Sow Thistle, Giant Mustard, Wild Oat and Toowoomba Canary-grass were dispersed throughout the revegetation areas at low cover, but are being controlled as evidenced by a number of sprayed and dead individuals.



Photo 2: Well-established grassland revegetation in the north-west of the GGFMB, showing high cover and diversity of native species, and control of Toowoomba Canary-grass

As of October 2022, additional revegetation has occurred within the GGFMB, with jute matting appropriately installed for weed suppression and soil stabilisation. Previously revegetated areas have established well, with most planted species having survived, grown and began to colonise. Native grass species diversity is high and forbs frequently occupying inter-tussock spaces. Weeds such as Sow Thistle, Wild Oat and Toowoomba Canary-grass were scattered throughout the established revegetation areas at low covers.

As of October 2023, revegetation and jute matting was present along much of the GGFMB and adjacent recent development. No additional revegetation was apparent and while some areas are establishing well, much of the GGFMB revegetation areas in the east had been degraded (Photo 3) with low establishment of planted species, damage to jute matting, weed invasion and moderate damage from rabbits. Furthermore, bare ground caused by previous drainage outfalls works has created an optimal site for weed invasion. These issues were brought to the attention of the approval holder for immediate rectification in July 2023. It is understood repair and continued revegetation of this site is planned for autumn 2024. Revegetation in the northwest remains well established.



Photo 3: Evidence of degraded revegetation works along the GGFMB in the east of the study area.

As of September 2024, repair and revegetation had occurred in compliance with the plan and additional revegetation of the Kororoit Creek environs had occurred adjacent to developed areas in the north-west and the south-east of the precinct as detailed in the revegetation plan. The majority of planted species in these areas had survived, grown and colonised each area.

Additional areas of revegetation in Zones 2, 3 and 4 had been planted with a base of jute matting as of September 2024. These recently revegetated areas were found to still be slow in establishing or individuals missing which is likely due to previous rabbit activity recorded within the precinct. Furthermore, many weeds had colonised the spaces in the jute matting intended for planted species.

DFC continues to invest great efforts with the revegetation however, it is understood there are some continued issues including low seedling success, weed management, herbivory and flooding events. The appointed landscaping contractors have continued to address these issues throughout the contract. Although revegetation is not occurring at the expected rate observed success of the revegetation is starting to develop throughout the earlier established revegetation zones.

As of September 2024, the most recent revegetation to have occurred within the precinct was to the east of the Grassland Reserve, within Zone 5. Given how recent the revegetation works in Zone 5 are, it is too early to comment on the success and recommendations for this area.



Photo 4: Well established revegetation and scattered weeds in northwest of the GGFMB (2024).



Photo 5: Recent revegetation works within Zone 5 (2024).

The current survey (November 2025) observed that repair and revegetation continues to occur in compliance with the plan and additional revegetation of the Kororoit Creek environs had occurred within Zone 4 of the precinct. It was too early at the time of assessment to determine the status of the revegetation success in Zone 4.

Areas of revegetation in Zones 2, 3 and 5 that had been planted in the preceding years with a base of jute matting were at different stages of establishment. Recent weed control works in these areas have provided ideal conditions for the plantings to become established. The majority of planted species in these areas have survived, grown and colonised each area. While some areas of low survival were observed, these were minor and considered likely to be improve as adjacent plants continue to grow and establish. Weed control is required to ensure these areas do not become dominated by weeds.



Photo 6: Newly established revegetation area within Zone 4 (2025).

Sediment control

As outlined in the compliance reporting against Condition 2 of the Approval, appropriate sediment and erosion control fencing was observed in 2018 in conjunction with construction fencing on sections of the boundaries of construction areas that occurred on an uninterrupted upslope from Kororoit Creek.

At the three locations where one or more of the fencing panels had fallen, sediment fencing was affected and was not providing an effective barrier. These were brought to the attention of the approval holder for immediate rectification.

No stockpiles, machinery/equipment laydown or washdown areas were observed within the Growling Grass Frog Management Buffer – i.e. within 35 metres of the Kororoit Creek.

DFC had advised that sediment/erosion control fencing installation was completed by a civil contractor by 6 October 2017. Construction commenced within Project Area A1 on 9 October 2017. (Note: Project Area B construction has now been completed and is addressed in Section 3.6).

At the time of monitoring in November 2020, sediment fencing was not evident outside of completed construction areas. Sediment fencing must be installed to protect areas abutting future construction works prior to their commencement and must be constructed according to the requirements of Construction Environmental Management Plans approved by Melton City Council – the Responsible Authority for State approvals.

At the time of monitoring in October 2021 and October 2022, appropriate sediment fencing was in place where construction activities are occurring. As noted in 2020, such fencing must be installed to protect areas abutting future construction works prior to their commencement.

During the Year 6 monitoring (October 2023) sediment fencing was not present around all areas of construction (Photo 7). Sediment fencing was present around some areas of construction and revegetation however this was damaged and had collapsed in many areas therefore not providing an appropriate barrier to Kororoit Creek from adjacent construction works (Photo 8). These issues were brought to the attention of the approval holder for immediate rectification in July and October 2023.



Photo 7: Sediment fencing not present around areas of earthworks



Photo 8: Collapsed and damaged sediment fencing.

During the Year 7 monitoring (September 2024) sediment fencing was not present around all areas of construction (Photo 9). Sediment fencing was present around some areas of construction and revegetation however this was damaged and had collapsed in many areas therefore not providing an appropriate barrier to Kororoit Creek from adjacent construction works (Photo 10). These issues were brought to the attention of the approval holder for immediate rectification in October 2024 and have since been repaired in compliance with the EMP.



Photo 9: Sediment fencing not present around areas of earthworks



Photo 10: repaired sediment fencing. Provided by DFC Oct 2024.

During the Year 8 monitoring (November 2025) sediment fencing around the construction area was mostly present however this varied from non-existent to adequate. Sediment fencing was absent in sections of the western interface between construction areas and Zone 4 (Photo 11), while sediment fencing in the eastern section of Zone 4 required repair. An area of defunct sediment fencing in the west of Zone 4 along the bank of Kororoit Creek must be decommissioned and removed. DFC has advised that rectification of sediment fencing will occur as early as practicable at the beginning of January 2026.



Photo 11: Sediment fencing not present around areas of earthworks

Works in the GGFMB

The November 2018 BL&A inspection noted the recent construction of a sewer connection and drainage outfall within the GGFMB in the northwest of the Precinct 2 project area. It was further observed that temporary construction fencing and sediment/erosion control fencing had been erected around the perimeter of these works, providing a continuous barrier between the works and the Kororoit Creek.

An area of land in the far western section of the GGFMB was observed in November 2018 to be clear of vegetation in preparation for landscaping works. It was understood that silt fencing would be installed along the margin of Kororoit Creek in this area prior to any earthworks, if required.

It was also understood that direct seeding of this area and revegetation works would commence in this area in early 2019.

As of November 2020, revegetation and landscaping works have occurred in the GGFMB in areas adjacent to the recent development in the north-west and the south-east of the precinct. Native grasses, sedges, prostrate shrubs and Eucalypts have been planted, and jute mat has been used for weed suppression and erosion control. A bioswale and drainage outlet into the Kororoit Creek has also been constructed in the south-east portion of the GGFMB.

As of October 2021, no new works have taken place within the GGFMB since the previous monitoring in November 2020. It was evident that weed control had been undertaken across broad sections of the GGFMB area. This weed control had targeted high threat weeds, namely Serrated Tussock and Artichoke Thistle. Wild Oat and Toowoomba Canary-grass were in abundance in the GGFMB. It is understood that these weeds are being retained for the time being to maintain bank stability and avoid erosion. However, these weeds should be slashed as vegetation fringing the creek is currently too dense and tall to be suitable for GGF (Photo 12), as well as to prevent further spread of seed.

As of October 2022, additional works have taken place within the GGFMB since the monitoring in October 2021. It was evident that weed control had been undertaken across broad sections of the GGFMB area. This had targeted high threat weeds, namely Artichoke Thistle and Serrated Tussock. Great Brome, Wild Oat, Chilean Needle-grass and Toowoomba Canary-grass were in abundance in the GGFMB. As noted in 2021, while Toowoomba Canary-grass is being retained for the time being to aid soil stability prior to revegetation works, slashing is required to regularly keep biomass low and impede seed dispersal. At the time of the assessment, rapid spring growth had occurred, and slashing should be undertaken prior to seed set.



Photo 12: High density weed cover adjacent to Kororoit Creek in the GGFMB

During the year 6 monitoring (October 2023) vegetation within the Growling Grass Frog Buffer zone was largely found to be unsuitable due to excessive growth, and should be maintained as low, grassy vegetation up to 10 centimetres high. In addition, the fence delineating the Growling Grass Frog buffer zone was damaged, broken or loose in numerous areas. These issues were brought to the attention of the approval holder for immediate rectification in July and October 2023. As noted in 2021, while Toowoomba Canary-grass is being retained for the time being to aid soil stability prior to revegetation works, slashing is required to regularly keep biomass low and impede seed dispersal. At the time of the assessment, rapid spring growth had occurred, and slashing should be undertaken prior to seed set (Photo 13). The approval holder has since provided evidence that slashing has taken (October 2023) place within the GGFMB and biomass appears to be maintained to suitable levels for GGF (Photo 14).



Photo 13: Tall dense vegetation along Kororoit Creek within the GGFMB as of October 2023



Photo 14: Evidence of slashing within GGFMB as of December 2023

During the year 7 monitoring (September 2024) fencing around the GGFMB had been rectified in compliance with the plan and vegetation within the GGFMB zone was largely found to be maintained as low, grassy vegetation. Few areas of tall, dense grassy vegetation were present within the GGFMB zone. Most areas, grass height and density were largely appropriate at the time of the assessment, regular ongoing slashing is required to keep biomass levels low and impede seed dispersal of Toowoomba Canary-grass and maintaining low biomass levels during the GGF active period.

During the current year 8 monitoring (November 2025) fencing around the GGFMB was in a sound condition and compliant with the plan. Vegetation within the GGFMB zone was largely found to be maintained as low, grassy vegetation. However, few areas of tall, dense grassy vegetation were present. In most areas grass height and density were largely appropriate. Regular ongoing slashing is required to keep biomass levels low and impede seed dispersal of Toowoomba Canary-grass and Serrated Tussock and maintain low biomass levels during the GGF active period to remain compliant with the plan.



Photo 15: Evidence of slashing within GGFMB as of December 2025

[Habitat and population monitoring](#)

Pre-construction Growling Grass Frog population and habitat monitoring commenced in January 2017 during the November 2016–February 2017 breeding season. A further four annual breeding season population and habitat monitoring events were undertaken in November 2017 (one month following commencement of construction (Year 1), December 2018/January 2019 (Year 2), November 2019 (Year 3), November 2020 (Year 4), December 2021 (Year 5), December 2022 (Year 6), December 2023 (Year 7), December 2024 (year 8) and December 2025 (year 9). The reporting for the Year 9 monitoring event is provided in Appendix 2 and a summary provided below.

During each monitoring event, the following was undertaken:

- A habitat assessment was conducted with photographs and habitat notes taken at three survey sites from 2017 to 2020, with a fourth survey site added in 2021. Particular attention was paid to the presence of in-stream and fringing creek-edge vegetation as well as other fauna in and surrounding the creek; and

- Call playback and visual search surveys were conducted over two nights during appropriate weather conditions at each of the survey sites after dusk for each monitoring event.

A habitat assessment, call playback and visual search surveys were conducted by Nature Advisory at the four survey sites on the 25th November & 17th December 2025. Weather conditions leading up to and during the surveys were considered optimal to detect Growling Grass Frog. The Year 9 monitoring survey did not detect the presence of Growling Grass Frog within the study area. Absence of Growling Grass Frog for the fifth season in a row suggests that Growling Grass Frog have been displaced from the study area. Given the high rainfall during spring and early summer 2025, it suggests either the area is too isolated to allow repopulation from other nearby sites or this section of the Kororoit Creek is no longer suitable/preferred habitat.

Potential contributing factors to this displacement include the flooding of local waterways and the construction a stormwater basin outside the DFC development area, which may have impacted water quality and habitat suitability during construction. The persistent presence of mosquito fish, a known predator of GGF tadpoles, has also likely hindered GGF recovery.

Based on the ongoing site observations and monitoring, apart from the disrepair of a section of the erosion control fence (now corrected), and grass biomass levels, it is likely that any alteration to water quality, including sedimentation, nutrients, incursion of predatory species, chemical residue and gross pollutant volume are a result of factors beyond the control of DFC and are unrelated to compliance issues under the Growling Grass Frog Management Plan.

In accordance the with the Modeina Precinct 2 Growling Grass Frog Management Plan (GGFMP), failure to detect Growling Grass Frog over the course of two annual rounds of population monitoring is a trigger which requires corrective action. To address this, testing of water quality upstream and downstream of outfalls (beyond mixing zone) was conducted in May 2023 and again in September 2025. The May 2023 sampling found water quality in the three Kororoit sites and one constructed wetland were all within the range typically observed in urban waterways with few minor exceedances. The September 2025 sampling results are provided in Appendix 10 and summarised below:

- In-situ water quality in the three Kororoit sites and one constructed wetland were all within the range typically observed in urban waterways and within ERS and DELWP objectives and consistent with the GGFMP goal to maintain water quality supportive of GGF habitat during the 2025 sampling. Comparatively, the 2023 sampling event showed exceedances in dissolved oxygen and turbidity.
- Nutrient and E. coli monitoring indicated that site 2 and 4 were within ERS and DELWP objectives and consistent with the GGFMP goal to maintain water quality supportive of GGF habitat. However, sites 3 and 5 both showed exceedances in the ERS Objectives and DELWP Standards. Site 5, the constructed wetland, and site 3, the most downstream site, both showed exceedances in both the ERS Objectives and DELWP Standards for total Nitrogen and total Phosphorus and exceedances in the DELWP Standards for E. coli, it should be noted that there is no listed objective for E. coli under the ERS Objectives. Comparatively, the 2023 sampling event showed no exceedances of ERS or DELWP 2017 objectives for nutrient or E. coli monitoring, indicating that the water quality at the time of the 2025 sampling event has declined in multiple nutrient and microbial parameters.

In compliance with the GGFMP it is recommended that continued corrective action is taken within the next 12 months to better understand the absence of GGF. This includes:

- Increased maintenance of biomass levels of grass within the GGFMB. For example, in addition to the regular management, extra slashing of grass should occur in September to ensure it is cut low (particularly Toowoomba Canary-grass) prior to the GGF active season.

- Additional weed control, particularly within the waterway corridor and around GGF survey sites is recommended to be undertaken by the responsible parties. To achieve better weed control outcomes, DFC has advised that they will liaise with Melbourne Water regarding weed management activities within areas adjacent to DFC control along the Kororoit Creek corridor.
- Undertake comprehensive water quality testing in 2026 and follow recommendations for management as per the results of the 2025 water quality report.

3.3. Condition 5 – Spiny Rice-flower impacts in Project Area A1

Condition 5 of the Approval reads:

5. The **approval holder** must ensure that the action does not impact more than eleven (11) individual **Spiny Rice-flower** plants within the combined area of **Project Areas A1** and **A2**.

As of November 2020, construction has commenced in Project Area A1 only.

A survey of Spiny Rice-flower in Project Areas A1 and A2 was undertaken by BL&A on 8 August 2016. This survey recorded a total of eleven (11) Spiny Rice-flower plants compared to the seven (7) Spiny Rice-flower previously approved for removal in these project areas. Of these previously identified plants, some were found to be still present whilst others had since died.

An application for a variation to the Approval was made by the proponent and the Approval was varied by the Department in January 2017 to allow for the removal of these eleven plants.

The eleven plants recorded in 2016 were separated spatially across the combined area of Project Areas A1 and A2 (approximately 35 hectares in area), with most occurring as isolated individuals. Given the large combined area of Project Areas A1 and A2 and the isolated nature of many of the records from August 2016 leading to a reduced likelihood of recruitment and an increased likelihood of plant attrition, it is considered unlikely that this number will have increased prior to the commencement of construction in October 2017.

No additional surveys were conducted into the status of these plants. This condition is now satisfied.

3.4. 'Condition 6 – Project Area A1 offsets secured and implemented

Condition 6 of the Approval reads:

6. The approval holder must not commence **construction activities** in **Project Area A1** until the following are met:
 - a. A direct offset, consistent with the **EPBC Act Environmental Offsets Policy**, has been secured to compensate for the impacts to 6.053 hectares of **NTGWV** and 6.053 hectares of **Striped Legless Lizard habitat**;
 - i. An **offset management plan** has been prepared and submitted to the **Minister** for approval, and the **approval holder** has received written confirmation that the **offset management plan** has been approved. The approved **offset management plan** must be implemented by the **approval holder**; and
 - ii. The **Department** has been provided with written confirmation and supporting evidence demonstrating that the offset has been secured.

BL&A Report 7045 (46.2) *Modeina Estate Project Area A1 EPBC Act Offset Management Plan* was approved by the Minister on 20 September 2017. Written evidence of the securing of the Karabeal offset site by way of a Section 69 Agreement under the *Conservation, Forests and Lands Act 1987* (Vic.) had been provided to the Department via email on 12 May 2017. Construction activities commenced in Project Area A1 on 9 October 2017.

The EPBC Act offsets for impacts to 6.053 hectares of *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) and 6.053 hectares of Striped Legless Lizard habitat were secured across part of a property in Karabeal in Victoria's west.

Implementation of the offset had commenced immediately following the execution of the Section 69 Agreement on 3 April 2017. The first annual monitoring report was provided to the Victorian Department of Environment, Land, Water and Planning (DELWP) on 21 April 2018.

Work undertaken in the first year (2018) included the following actions:

- Ongoing monitoring of boundary fencing – continued to be in stock-proof condition
- Ongoing monitoring for woody weeds – little or no cover of woody weeds identified
- Quarterly monitoring for pest animals – little to no activity identified.

Works undertaken in the second year (2019) included the following actions:

- Ongoing monitoring of woody weeds and eradication where identified
- Control of herbaceous weeds including Toowoomba Canary-grass, Yorkshire Fog, Paspalum, Spear Thistle and South African Orchid
- Fox shooting as required
- Monitoring for rabbit warrens and removal as required
- Ecological burning as required
- Strategic grazing as required (following formal approval from DELWP for this activity – not currently included in the Management Plan for the site).

A site inspection by DELWP on 13 August 2019 determined that deeming of compliance was reliant on the meeting the following obligations:

- Woody weeds – ensure all woody weeds are cut and painted as per the Management Plan.
- Herbaceous weed control – ensure high threat weeds are controlled.
- Fencing – realign the northern boundary fence to match the site area.
- Rubbish – remove old internal fencing wire and any rubbish from the sites.

The following were also noted:

- Ecological burning was recommended as an additional weed control measure.
- Burrows are to be monitored to determine the species responsible and eradication action taken if resulting from pest presence.
- No evidence of Red Fox was found.

Works undertaken by the landholder in the third year (2020) included the following actions:

- Firebreaks prepared and cool burning of areas 2 and 3
- Lopping and chemical treatment of Cypress and Ash trees
- Removal of corrugated iron and posts in the creek areas

Works undertaken by the landholder in the fourth year (2021) included the following actions:

- Cool burning of site 4/mosaic burn in June
- Burning dead Cypress trees

- Weed control works such as spraying grassy weeds and cut-and-pasting woody weeds
- Commenced removal of old fence in the creek area (75%)

The 2022 management practices within the Karabeal offset site included the following actions:

- Maintained existing and install additional fencing (stockproof)
- Control of wood and herbaceous weeds
- Pest animal control (rabbits and foxes)
- Biomass control with grazing and controlled burning

The 2023 management practices within the Karabeal offset site included the following actions:

- Maintained existing and install additional fencing (stockproof)
- Control of wood and herbaceous weeds
- Pest animal control (rabbits and foxes)
- Biomass control with grazing and controlled burning

The 2024 management practices within the Karabeal offset site included the following actions:

- Maintained perimeter fencing (stockproof)
- Relocation of fencing in wrong location
- Control of woody and herbaceous weeds, specifically:
 - 2023 actions
 - 240 young River Red-trees were removed to thin out the site to allow remaining trees to grow to maximum height. This was done via cut and paste.
 - Phalaris Scotch Thistle in the southern area of site 5, western end of site 4, eastern end of site 3, both sides of the Creek area, small triangular northern paddock and left of the creek.
 - Bed Straw/ Cleavers will be monitored amongst the treed areas and treated as needed.
 - 2024 actions
 - Spot spraying of invasive weeds over entire property focusing on Stink Wort, Scotch Thistle and Whip Thistle. Timing was planned to avoid seeding of these weeds
- Control of foxes using bait in winter and spring 2023.
- Biomass control with grazing and controlled burning of Site 3.

The 2025 management practices within the Karabeal offset site are provided in Appendix 8, and included the following actions:

- Maintained existing and install additional fencing (stockproof)
- Control of wood and herbaceous weeds
- Pest animal control (rabbits and foxes)
- Biomass control with grazing and controlled burning

3.5. Condition 6A – Project Area A2 offsets secured

Condition 6A of the Approval reads:

- 6A. The approval holder must not commence **construction activities** in **Project Area A2** until either 6A(a) or 6A(b) are met:
- a. A direct offset, consistent with the **EPBC Act Environmental Offsets Policy**, has been secured to compensate for the impacts to 4.277 hectares of **NTGVVP** and 4.277 hectares of **Striped Legless Lizard habitat**:
 - i. An **offset management plan** has been prepared and submitted to the **Minister** for approval, and the **approval holder** has received written confirmation that the **offset management plan** has been approved. The approved **offset management plan** must be implemented by the **approval holder**; and
 - ii. The **Department** has been provided with written confirmation and supporting evidence demonstrating that the offset has been secured;
- OR
- b. In a manner consistent with the **Melbourne Urban Development Policy**, secure an offset for impacts to 4.277 hectares of **NTGVVP** and 4.277 hectares of **Striped Legless Lizard habitat** associated with **Project Area A2**. Documentary evidence that the offset has been secured must be provided to the **Department** with 14 days of being secured.

Condition 6A compliance

MUD Policy payment

The proponent has made payment under the Melbourne Urban Development Policy for offsets under the MUD Policy to compensate for the impacts to 4.277 hectares of NTGVVP and 4.277 hectares of Striped Legless Lizard habitat. Proof of this payment has been provided to the Department.

Therefore, the required offsets for Condition 6A have been secured, the condition met, and works may commence in Project Area A2.

3.6. Conditions 7 & 8 – Project Area B offsets secured and implemented

Conditions 7 and 8 of the Approval read:

7. The **approval holder** must not commence **construction activities** in **Project Area B** until either 7(a) or 7(b) are met:
- a. A direct offset containing a minimum of 100 **Spiny Rice-flower** plants has been secured;
 - i. An **offset management plan** has been prepared and submitted to the **Minister** for approval, and the **approval holder** has received written confirmation that the **offset management plan** has been approved. The approved **offset management plan** must be implemented by the **approval holder**; and
 - ii. The **Department** has been provided with written confirmation and supporting evidence that demonstrate the offset has been secured.
 - b. The **Minister** agrees in writing that condition 15 (a–e) has been satisfied.
8. The **approval holder** must not commence **construction activities** in **Project Area B** until the following are met:
- c. A direct offset, consistent with the **EPBC Act Environmental Offsets Policy**, has been secured to compensate for the impacts to 1.824 hectares of **NTGVVP** and 1.824 hectares of **Striped Legless Lizard habitat**;

- i. An **offset management plan** has been prepared and submitted to the **Minister** for approval, and the **approval holder** has received written confirmation that the **offset management plan** has been approved. The approved **offset management plan** must be implemented by the **approval holder**; and
- ii. The **Department** has been provided with written confirmation and supporting evidence that demonstrate the offset has been secured.

Conditions 7 & 8 compliance

BL&A Report 7045 (35.4) *Modeina Estate Precinct 2 – Project Area B (School Site) EPBC Act Offset Management Plan* was approved by the Minister on 7 March 2017 and written evidence of the securing of two offset sites (Campbelltown and Karabeal) by way of a Section 69 Agreement under the *Conservation, Forests and Lands Act 1987* (Vic.) provided to the Department via email on 12 May 2017. Native vegetation removal and construction of the school site within Project Area B was undertaken in January 2018.

The EPBC Act direct offset of 100 Spiny Rice-flower was secured on the Campbelltown offset site in Victoria's west; the direct offset for impacts to 1.824 hectares of *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) and 1.824 hectares of Striped Legless Lizard habitat were secured across part of the Karabeal property.

Implementation of the offset across both sites had commenced immediately following the execution of the Section 69 Agreements on 3 April 2017. The first annual monitoring report was provided to the Victorian Department of Environment, Land, Water and Planning (DELWP) on 21 April 2018.

Work to be undertaken by the landholder in the first year 2018 included the actions outlined below.

Campbelltown

- Fencing of individual offset sites within the broader property by July 2017
- Limited eradication of woody weeds in Spring and Autumn 2017
- Fox shooting undertaken

Karabeal

- Ongoing monitoring of boundary fencing – continued to be in stock-proof condition
- Ongoing monitoring for woody weeds – little or no cover of woody weeds identified
- Quarterly monitoring for pest animals – little to no activity identified

Work to be undertaken by the landholder in the second year 2019 included the actions outlined below.

Campbelltown

- Ongoing eradication of woody weeds
- Control of herbaceous weeds including Toowoomba Canary Grass, Spear Thistle and St John's Wort
- Fox shooting as required
- Monitoring for rabbit warrens and removal as required
- Strategic grazing as required
- Ecological burning as required

Karabeal

- Ongoing monitoring of woody weeds and eradication where identified

- Control of herbaceous weeds including Toowoomba Canary Grass, Yorkshire Fog, Paspalum, Spear Thistle and South African Orchid
- Fox shooting as required
- Monitoring for rabbit warrens and removal as required
- Ecological burning as required
- Strategic grazing as required (following formal approval from DELWP for this activity – not currently included in the Management Plan for the site).

Work to be undertaken by the landholder in the third year 2020 included the actions outlined below.

Campbelltown

- Fumigation and collapsing of burrow of European Rabbit recorded just outside the site's southern boundary.
- Control of all woody weeds including Sweet Briar regrowth and Plum and remove all fruits and cut branches.
- Control of herbaceous weeds including Toowoomba Canary Grass, St John's Wort, Bulbous Meadow-grass, Cat's Ear, Cocksfoot, Spear Thistle, Ribwort, Dock and Brown-top Bent.
- Remove wire from internal fencing.
- Monitoring for any impacts to growth of seeding of native grasses by kangaroos and control if required.
- Strategic grazing as required.
- Ecological burning as required.

Karabeal

- Re-align fencing to the east to match site area.
- Remove unused fencing, wire and old iron.
- Remove internal fencing unless pulse grazing is to be implemented.
- Monitor small burrows to determine species responsible and control if required.
- Control of all woody weeds including Boxthorn and non-indigenous species including Blue Gum, Spotted Gum, Cypress and Ash.
- Introduce higher level of weed control than originally prescribed in the Management Plan, incorporating spot spraying and burning and consider addition of strategic pulse grazing to reduce weed cover.
- Liaise with local CMA to control erosion along drainage line and continue to monitor for any increase.
- Assign names to paddocks to allow for greater clarity of management action requirements and accuracy of specific practices.

Work to be undertaken by the landholder in the fourth year 2021 included the actions outlined below.

Campbelltown

- Fumigation of European Rabbit burrows.
- Cutting and pasting of Sweet Briar plants, burning of Blackberry bushes and control of Artichoke Thistle and non-native Dock.

- Monitoring for any other weeds and vermin.

Karabeal

- Firebreaks prepared and cool burning of areas 2 and 3
- Lopping and chemical treatment of Cypress and Ash trees
- Removal of corrugated iron and posts in the creek areas

Work to be undertaken by the landholder in the fifth year 2022 included the actions outlined below.

Campbelltown

- Maintained perimeter fencing (stockproof)
- Monitoring and control of woody and herbaceous weeds
- Monitoring and control of pest animals (rabbits and foxes)
- Biomass control with grazing, noted that a controlled burn had been undertaken in Year 4

Karabeal

- Maintained perimeter fencing (stockproof)
- Relocation of fencing that was positioned incorrectly
- Monitoring and control of woody weeds
- Pest animal control (rabbits and foxes)
- Noted that a mosaic burn had been undertaken in Year 4

Work to be undertaken by the landholder in the sixth 2023 year included the actions outlined below.

Campbelltown

- Maintained existing and install additional fencing (stockproof)
- Monitoring and control of woody and herbaceous weeds
- Monitoring and control of pest animals (rabbits and foxes)
- Biomass

Karabeal

- Maintained existing and install additional fencing (stock/vermin proof)
- Control of wood and herbaceous weeds
- Pest animal control (rabbits and foxes)
- Install grazing prevention enclosures to reduce pressure from Macropod grazing
- Biomass control with grazing and controlled burning

Work to be undertaken by the landholder in the seventh year 2024 included the actions outlined below.

Campbelltown

- Maintained existing and install additional fencing (stockproof)
- Monitoring and control of woody and herbaceous weeds
- Monitoring and control of pest animals (rabbits and foxes) as well as overgrazing from macropods

- Ecological Biomass Burning

Karabeal

- Maintained existing and install additional fencing (stock/vermin proof)
- Control of wood and herbaceous weeds
- Pest animal control (rabbits and foxes)
- Install grazing prevention enclosures to reduce pressure from Macropod grazing
- Biomass control with grazing and controlled burning

Work to be undertaken by the landholder in the eighth year 2025 included the actions outlined below.

Campbelltown

- Maintained existing and install additional fencing (stockproof)
- Monitoring and control of woody and herbaceous weeds
- Monitoring and control of pest animals (rabbits and foxes) as well as overgrazing from macropods
- Biomass control with grazing, noted that a controlled burn had been undertaken in Year 7

Karabeal

- Maintained existing fencing (stock/vermin proof)
- Control of wood and herbaceous weeds
- Pest animal control (rabbits and foxes)
- Install grazing prevention enclosures to reduce pressure from Macropod grazing
- Biomass control with grazing and controlled burning

Annual monitoring reports conducted by the landowner are provided for Karabeal and Campbelltown in Appendix 8 and Appendix 9 respectively.

3.7. Conditions 13, 14, 16 & 17 – no construction activities in Project Areas C1, C2 & D

Conditions 13, 14, 16 and 17 of the Approval read (in part, paraphrased):

13. The **approval holder** must not commence **construction activities** in **Project Area C2** until... [direct offsets are secured for impacts to NTGVVP, Striped Legless Lizard habitat and Spiny Rice-flower].

14. The **approval holder** must not undertake **construction activities** within the Grassland Reserve, to be located in **Project Area B** as per Appendix 1.

16. The **approval holder** must not commence **construction activities** in **Project Area D** until... [a direct offset is secured for impacts to NTGVVP, Striped Legless Lizard habitat].

17. If condition 15 (a–d) cannot be met in full:

- a. the **approval holder** must not commence **construction activities** within **Project Area D**; until the following are met:
 - i. Adequately compensate for impacts to **Spiny Rice-flower** plants located within **Project Area D** with an alternative offset. This offset strategy must be prepared following consultation with the **Department**; and
 - ii. The **Minister** has provided written notification to the **approval holder** that conditions 14 and 15 no longer apply.

[Conditions 13, 14 & 16 compliance](#)

[Offsets secured for Project Areas C1, C2 & D](#)

The Nature Advisory November 2021 site inspection determined that no construction had commenced in Project Area D (including the Grassland Reserve), but that construction had commenced in Project Area C1 and C2. Evidence that an appropriate offset has been secured has been provided (Cressy Offset Site). The perimeter of the Grassland Reserve was fenced with a wire mesh fence in February 2017 and remains in place and is of suitable design. The 2020 monitoring report recommended that the gate in the south-eastern corner be made rabbit-proof, and appropriate modifications have since been made.

The Nature Advisory November 2022 site inspection determined that construction had commenced within Project Area D and C2 (including the Grassland Reserve) in September 2022, but no construction had commenced within Project Area C1.

The Nature Advisory November 2023 site inspection determined that construction has commenced in Project Areas C1, C2 and D and the condition is now satisfied.

A site inspection was not undertaken in 2024 or 2025 as the condition was satisfied in the November 2023 site inspection.

[Condition 17 compliance](#)

[Alternative offset](#)

BL&A Report 7045 (51.4) *Modeina Precinct 2 – Spiny Rice-Flower Alternative Offset Strategy* was approved by the Minister on 9 November 2018.

[Project Areas C1, C2 & D Offset Management Plan](#)

BL&A Report 7045 (55.2) *Modeina Precinct 2, Project Areas C1, C2 & D – Cressy Offset Management Plan* was approved by the Minister on 9 November 2018.

Implementation of the offset had commenced immediately following the execution of the TFN Covenant on 20 March 2019. The fifth annual monitoring report is provided as Appendix 7.

Construction may now commence in Project Area C1.

[Evidence that Condition 15 no longer applies](#)

Written notification that Condition 15 no longer applies was provided by the Department by email on 28 November 2018 (Appendix 4).

3.8. Condition 14A – Grassland Reserve Management Plan

Condition 14A of the Approval reads:

14A. The **approval holder** must, in consultation with a **suitably qualified ecologist**, develop a **Grassland Reserve Management Plan** for the protection and management of **protected matters** within the **Grassland Reserve**. The **Grassland Reserve Management Plan** must be submitted to the **Minister** for approval 6 months prior to the commencement of **construction activities** within 100 metres of **Project Area D**. The approved **Grassland Reserve Management Plan** must be implemented.

The **Grassland Reserve Management Plan** must:

- a. include existing baseline data and other supporting evidence that documents the baseline conditions of **protected matters** within the **Grassland Reserve**;
- b. outline specific management actions to protect and maintain **protected matters** within the **Grassland Reserve**; and

- c. outline annual monitoring and reporting on the condition of **protected matters** within the **Grassland Reserve** for a period of 10 years from the commencement of the Plan.

Condition 14A compliance

BL&A Report 7045 (43.4) *Modeina Estate, Burnside – Grassland Reserve Management Plan* was submitted to the Minister for approval on 8 May 2018 and was approved by the Minister on 9 November 2018 and is available for viewing on the proponent's website at <https://www.denniscorp.com.au/about-dennis-family/initiatives-and-awards/sustainability/>. Construction activities were found not to have occurred within 100 metres of either Project Area D or the Grassland Reserve during the November 2020 Nature Advisory inspection.

This compliance reporting is made against the construction phase management and monitoring actions outlined in Appendix 4 of the GRMP. These actions and the relevant section of the GRMP are listed below under the three core requirements of the Plan outlined in Condition 14A:

- Baseline data – Condition 14A (a) (GRMP Section 3.4.1)
- Construction and 10-year management actions – Condition 14A (b) (GRMP Sections 3.3 & 3.4)
- Monitoring and reporting – Condition 14A (c) (GRMP Section 3.5)

Vegetation overview

Baseline data

Baseline data on the condition, overall weed cover and individual high-threat weed covers was collected during the November 2018 BL&A site inspection.

As of November 2018, the Grassland Reserve was considered to comprise the following:

- 65% cover of native flora;
- 20% cover of introduced flora (weeds); and
- 15% cover of organic matter (leaf litter) and inter-tussock spaces.

Monitoring and reporting – Year 2

Year 2 assessment on the condition, overall weed cover and individual high-threat weed covers was collected during the December 2019 Nature Advisory site inspection.

As of December 2019, the Grassland Reserve was considered to comprise the following:

- 70% cover of native flora;
- 15% cover of introduced flora (weeds); and
- 15% cover of organic matter (leaf litter) and inter-tussock spaces.

A 5% increase in cover of native flora and consequently a 5% reduction in introduced species cover has been recorded since the previous monitoring report in November 2018.

Kangaroo Grass was the dominant grass species in the reserve. While grassy cover was high, a suitable amount of inter-tussock space was present allowing for a diversity of other native flora to occur including Spiny Rice-flower (*Pimelea spinescens subsp. spinescens*), Pink Bindweed (*Convolvulus sp.*), Common Fireweed (*Senecio quadridentatus*), Black Cottonbush (*Maireana decalvans*), Kidney Weed (*Dichondra repens*), Black-anther Flax-lily (*Dianella revoluta*) and Narrow Plantain (*Plantago gaudichaudii*).

Archiving Flax-lily (*Dianella longifolia* var. *grandis*), listed as vulnerable on the DELWP Advisory List of Threatened Plants in Victoria (DELWP Advisory list) was known to occur in the reserve, and was still present during the December 2019 monitoring.

Fragrant Saltbush (*Rhagodia parabolica*), listed as rare on the DELWP Advisory List, was also re-recorded in the reserve during the December 2019 monitoring.

A reduction in cover of Wild Oat from 12% to 6% is likely attributed to well-timed and managed environmental burns, reducing the biomass before the grass sets seed, creating inter-tussock space for a suite of native species to recruit. This is also likely the reason for the emergence of new weeds such as Galenia, Onion Grass and Delicate Hair-grass, and the increase in cover of other weed species such as Squirrel-tail Fescue and Large Quaking Grass.

Selective herbicide control has seen the reduction and potential eradication of a range of exotic species, namely; Serrated Tussock, Artichoke Thistle, Ox-tongue and Big Heron's-bill.

Monitoring and reporting – Year 3

Year 3 assessment on the condition, overall weed cover and individual high-threat weed covers was collected during the November 2020 Nature Advisory site inspection.

As of November 2020, the Grassland Reserve was considered to comprise the following:

- 80% cover of native flora;
- 10% cover of introduced flora (weeds); and
- 17% cover of organic matter (leaf litter) and inter-tussock spaces.

A 10% increase in cover of native flora and consequently a 5% reduction in introduced species cover has been recorded since the previous monitoring report in December 2019, continuing the trend of an increase in quality since the baseline report in 2018.

Kangaroo Grass continues to be the dominant grass species in the reserve. While grass cover was high, a suitable amount of inter-tussock space was present in the most recently burnt area, allowing for a diversity of other native flora to occur, including Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*), Pink Bindweed (*Convolvulus angustissimus*), Common Fireweed (*Senecio quadridentatus*), Blue Grass-lily (*Caesia calliantha*), Kidney Weed (*Dichondra repens*), Black-anther Flax-lily (*Dianella revoluta*) and Yellow Rush-lily (*Tricoryne elatior*). In areas which were not recently burnt, inter tussock spacing was low, subsequently resulting in less native flora diversity.

Archiving Flax-lily (*Dianella longifolia* var. *grandis*), listed as vulnerable on the DELWP Advisory List of Threatened Plants in Victoria (DELWP Advisory list) was known to occur in the reserve, and was still present during the November 2020 monitoring.

Fragrant Saltbush (*Rhagodia parabolica*), listed as rare on the DELWP Advisory List, was also re-recorded in the reserve during the most recent visit.

A reduction in overall weed cover is likely attributed to well-timed and managed environmental burns and selective weed control, reducing the biomass before the grass sets seed, enabling native grasses to dominate. However, this is also likely the reason for the emergence of new weeds such as Sow Thistle, Prickly Lettuce and Cocksfoot; the re-emergence of Artichoke Thistle, Red Brome and Serrated Tussock; and the increase in cover of other weed species such as Pimpernel and Rye Grass (Table 1). These species have all readily recruited on exposed ground from weed control. It is recommended that indigenous grass species such as Kangaroo Grass or Spear Grasses are planted into areas which have been subject to weed control, primarily along the eastern edge of the reserve.

Concerningly, the following high threat weeds have emerged within the reserve; Paterson's Curse, South African Orchid and Gazania. These species are currently at a negligible cover, but are required to be controlled immediately. During the assessment, individual plants were hand removed.

Additionally, Drooping Cassinia, previously considered native, is now considered an invasive weed. Five individual plants were recorded within the grassland reserve. This species can rapidly colonise an area and is therefore required to be eradicated.

An estimate of cover for weed species in the grassland reserve against estimates in 2018 and 2019 are presented in Table 1. Plants highlighted in grey are considered to be weeds which must be a priority in future weed management of the reserve. Green indicated a reduction in cover, while orange indicates an increase.

Monitoring and reporting – Year 4

Year 4 assessment on the condition, overall weed cover and individual high-threat weed covers was collected during the October 2021 Nature Advisory site inspection.

As of October 2021, the Grassland Reserve was considered to comprise the following:

- 75% cover of native flora;
- 15% cover of introduced flora (weeds); and
- 16% cover of organic matter (leaf litter) and inter-tussock spaces.

The cover of native and introduced flora has remained relatively stable since the last monitoring survey in December 2020. Native flora cover decreased by 5% and weed cover increased by 5%.

The combined cover of organic matter and inter-tussock spaces has remained relatively stable with a slight (1%) decline. The changes in covers observed are within normal limits.

Kangaroo Grass continues to be the dominant grass species in the reserve. A diverse range of indigenous species occurred in inter-tussock spaces including Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*), Black-anther Flax-lily (*Dianella revoluta*), Sheep's Burr (*Acaena echinata*), Blue Grass-lily (*Caesia calliantha*), Grassland Wood-sorrel (*Oxalis perennans*), Common Woodruff (*Asperula conferta*) and Kidney Weed (*Dichondra repens*) amongst others. These species were largely confined to parts of the reserve which had been burnt in 2019.

The presence of Spiny Rice-flower, listed as Critically Endangered under both the EPBC Act and the FFG Act, is discussed in greater detail below.

Three Arching Flax-lily (*Dianella longifolia* var. *grandis*) were found within the reserve. This species is listed as Critically Endangered under the FFG Act.

One Fragrant Saltbush (*Rhagodia parabolica*), listed as Vulnerable under the FFG Act, was also detected in the reserve.

High-threat weeds detected and removed during the monitoring survey in 2020, namely Paterson's Curse, South African Orchid and Gazania, were not observed during the recent site assessment. Five additional weed species were detected since the previous monitoring survey including one Horehound plant.

The increase in weed cover observed is largely due to an increase in the cover of Serrated Tussock, Wild Oat, Drooping Cassinia and Ribwort. Of these species, Drooping Cassinia and Serrated Tussock are considered to be of most concern, with the capacity to outcompete even perennial native species. Weed cover remains high towards the northern and eastern boundaries of the reserve and control efforts should focus on these areas.

Monitoring and reporting – Year 5

Year 5 assessment on the condition, overall weed cover and individual high-threat weed covers was collected during the October 2022 Nature Advisory site inspection.

As of October 2022, the Grassland Reserve was considered to comprise the following:

- 58% cover of native flora
- 35% cover of introduced flora
- 6% cover of organic matter (leaf litter)
- 18% cover of inter-tussock spaces and
- 15% cover of bare ground

This represents a 17% decrease in cover of native flora since the previous monitoring. It should be noted that this decrease is in the relative proportion of area covered by native species, and does not necessarily correlate with a decline in the amount of native vegetation present. Kangaroo Grass continues to be the dominant grass species in the reserve.

The overall weed cover in the grassland reserve was estimated to be 35%, which is 20% more than the previous monitoring. The main factor driving this increase is likely the extended, mild spring weather with continuous high rainfall, with such conditions particularly conducive to enhanced growth of annual exotic grasses. This likely also coincided with bare ground made available following the ecological burn.

The presence of Spiny Rice-flower, listed as Critically Endangered under both the EPBC Act and the FFG Act, is discussed in greater detail below.

Two Arching Flax-lily (*Dianella longifolia* var. *grandis*) were found within the reserve. This species is listed as Critically Endangered under the FFG Act.

One Fragrant Saltbush (*Rhagodia parabolica*), listed as Vulnerable under the FFG Act, was also detected in the reserve as per previous surveys. This species does not naturally occur within grasslands and has likely arisen from bird distribution from local landscaping planting.

Introduced species were evenly distributed throughout the recently burnt area with Squirrel-tail Fescue, Pimpernel and Wild Oat being the most dominant species. The cover of weeds in the unburnt area was low in the western section and high in the eastern section near the boundary. A high cover of Wild Oats was the dominant weed within this area (Photo 16). In addition, the perimeter of the entire reserve had a high cover of weeds, including species such as Wild Oats, Squirrel-tail Fescue and Giant Mustard. Individuals of the high threat weed, Artichoke Thistle *Cynara cardunculus* subsp. *flavescens*, were also observed scattered within the unburnt area.



Photo 16: Weed cover is high near the eastern boundary

Monitoring and reporting – Year 6

Year 6 assessment on the condition, overall weed cover and individual high-threat weed covers was collected during the October 2023 Nature Advisory site inspection.

As of October 2023, the Grassland Reserve was considered to comprise the following:

- 60% cover of native flora
- 35% cover of introduced flora
- 5% cover of organic matter (leaf litter)
- 15% cover of inter-tussock spaces and
- 10% cover of bare ground

The cover of native and introduced flora has remained relatively stable since the last monitoring survey in October 2022. Native flora cover increased by 2% and weed cover remained at 35%. Organic matter has remained similarly stable decreasing by 1%. Inter-tussock spaces decreased by 3% and bare ground decreased by 5%. Overall, the condition of the grassland reserve has had little to no improvement in response to the controlled burning in year 5 from the annual monitoring assessment in 2022.

Weed cover remains high primarily due to an abundance of annual grasses, which includes Wild Oat and Squirrel-tail Fescue. These species are most likely responding to the extended, mild spring weather with continuous high rainfall and limited post fire weed control of which being particularly conducive to enhanced growth of annual exotic grasses. The previous report in 2022 also stated that the unburnt areas in the western section had a higher cover of native vegetation and a low cover of weeds compared to the eastern aspect of the site. In-field observations in 2023 suggest that this has been exacerbated over time with little management and mitigation actions to limit the spread of the Wild Oat and other introduced grass species. The effect of annual grass domination limits the ability of grassland species to persist and colonise bare ground.

Introduced species were unevenly distributed throughout the reserve, however, Squirrel-tail Fescue, Wild Oat, Ribwort, Red Brome were consistently the most dominant species. Other weeds that could pose a threat in future include Large Quaking-grass, Lesser Quaking-grass and Great Brome. These species should be managed to reduce their increasing cover so that native species can regenerate in these areas.

The presence of Spiny Rice-flower, listed as Critically Endangered under both the EPBC Act and the FFG Act, is discussed in greater detail below. One individual of Fragrant Saltbush, listed as Vulnerable under the FFG Act, was also detected in the reserve. This species does not naturally occur within grasslands and has likely arisen from bird distribution from local landscaping planting. It should be removed from the reserve as it will displace native species.



Photo 17: Area of high weed cover in the east of the Grassland Reserve

Monitoring and reporting – Year 7

Year 7 assessment on the condition, overall weed cover and individual high-threat weed covers was collected during the September 2024 Nature Advisory site inspection.

As of September 2024, the Grassland Reserve was considered to comprise the following:

- 65% cover of native flora
- 40% cover of introduced flora
- 8% cover of organic matter (leaf litter)
- 6% cover of inter-tussock spaces and
- 2% cover of bare ground

The cover of native and introduced flora has both increased since the last monitoring survey in October 2023. Native and introduced cover both increased by 5%. Organic matter has remained stable with a

slight increase by 3%. Inter-tussock spaces decreased by 9% and bare ground decreased by 8%. This is expected with increased time since fire.

Control of high threat weeds has largely been successful as showing in Table 1, with most target species reducing or stabilising over the management period. Emerging infestations have also been managed, for example, an infestation of Artichoke Thistle was observed in the winter audit and promptly managed over the following quarter. Weed cover remains high primarily due to an abundance of annual grasses, which includes Wild Oat and Squirrel-tail Fescue. The 2022 report stated that the burnt areas in the western section had a higher cover of native vegetation and a low cover of weeds compared to the eastern unburnt aspect of the site. In-field observations in 2023 and 2024 suggest that this pattern has continued over time despite management actions taken in accordance with the GRMP.

The Grassland Reserve Management Plan states that biomass management includes burning at least every 2-3 years. The last burn within the reserve occurred on the western half in 2022. As now the eastern half is has high biomass and annual weeds, DFC has indicated a burn will be scheduled at the appropriate time next year (2025) followed by chemical control of emergent weeds which is compliant with this management action.

Introduced species were unevenly distributed throughout the reserve, however, Squirrel-tail Fescue, Wild Oat and Ribwort were consistently the most dominant species. Other weeds that could pose a threat in future include Large Quaking-grass, Lesser Quaking-grass and Great Brome. Extra management of these species is recommended to reduce their increasing cover so that native species can regenerate in these areas. The prescribed burn followed by weed control mentioned above is expected to contribute to the reduction of this threat.

Monitoring and reporting – Year 8

Year 8 assessment on the condition, overall weed cover and individual high-threat weed covers was collected during the August 2025 Nature Advisory site inspection and verified at the November 2025 inspection.

As of November 2025, the Grassland Reserve was considered to comprise the following:

- 70% cover of native flora
- 20% cover of introduced flora
- 3% cover of organic matter (leaf litter)
- 25% cover of inter-tussock spaces and
- <1% cover of bare ground

The cover of native and introduced flora has slightly increased since the last monitoring survey in September 2024 (65% native and 40% introduced in 2024). Native vegetation cover increased by 5%, while weed cover reduced by 20%. The cover of inter-tussock spaces increased considerably following a prescribed burn in April 2025, from 6% to 25%. Many native herb species were observed in the inter-tussock spaces.

The overall weed cover in the grassland reserve was estimated to have halved from 40% in 2024 to 20% in 2025. This change was largely attributed to the management burn implemented across the reserve in April 2025. Weed cover was concentrated in the eastern portion of the reserve. High threat weeds such as Serrated Tussock and Chilean Needle-grass were also present within this area.

Future weed management should focus on the Wild Oat infestation in the east of the reserve, Serrated Tussock, the reinfestation of Chilean Needle-grass, the new infestation of Toowoomba Canary-grass and

any other weeds becoming established near the perimeter. DFC has advised that a round of follow-up additional weed control occurred at the start of December 2025, following the November 2025 survey, to target priority weeds within the Grassland Reserve and that high-threat grasses will be controlled as a high-priority as soon as practicable.

Biomass levels in the Grassland Reserve during the current monitoring were found to be low. All areas appeared to have reduced biomass levels following the burn, in particular areas of native vegetation.

The presence of Spiny Rice-flower, listed as Critically Endangered under both the EPBC Act and the FFG Act, is discussed in greater detail below and detailed weed covers within the grassland reserve are provided in the table below.

Table 1: Weed cover estimates – Grassland Reserve

Common name	Species name	Cover estimate 2018	Cover estimate 2019	Cover estimate 2020	Cover estimate 2021	Cover estimate 2022	Cover estimate 2023	Cover estimate 2024	Cover estimate 2025	Notes 2025
African Box-thorn	<i>Lycium ferocissimum</i>	<1%	<1%	<1%	<1%	0%	0%	0%	0%	Not observed
Artichoke Thistle	<i>Cynara cardunculus</i> subsp. <i>flavescens</i>	<1%	0%	<1%	<1%	<1%	<1%	<1%	<1%	All had been sprayed
Big Heron's-bill	<i>Erodium botrys</i>	<1%	0%	<1%	<1%	<1%	0%	<1%	<1%	Few individuals observed
Black Medic	<i>Medicago lupulina</i>	0%	0%	<1%	<1%	<1%	0%	0%	0%	Not observed
Black Nightshade	<i>Solanum nigrum</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Burr Medic	<i>Medicago polymorpha</i>	0%	0%	0%	<1%	<1%	0%	<1%	0%	Appears no longer present
Charlock	<i>Sinapis arvensis</i>	0%	0%	0%	0%	<1%	0%	0%	0%	Not observed
Chilean Needle-grass	<i>Nassella neesiana</i>	<1%	0%	0%	<1%	0%	0%	0%	<1%	New infestation in north-east corner
Cleavers	<i>Galium aparine</i>	0%	0%	<1%	0%	<1%	<1%	<1%	0%	Appears no longer present
Cocksfoot	<i>Dactylis glomerata</i>	0%	0%	<1%	<1%	0%	0%	0%	0%	Not observed
Common Centaury	<i>Centaureum erythraea</i>	0%	0%	0%	<1%	0%	<1%	<1%	<1%	Scattered throughout
Common Vetch	<i>Vicia sativa</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Delicate Hair-grass	<i>Aira elegantissima</i>	0%	<1%	1%	1%	<1%	5%	5%	1%	Present throughout the reserve
Drooping Cassinia	<i>Cassinia sifton</i>	*	*	<1%	1%	0%	0%	0%	0%	Not observed
Flatweed	<i>Hypochaeris radicata</i>	0%	0%	<1%	<1%	0%	<1%	<1%	<1%	Few individuals observed
Galenia	<i>Galenia pubescens</i> var. <i>pubescens</i>	0%	<1%	0%	0%	0%	0%	0%	0%	Not observed
Garden Dandelion	<i>Taraxacum officinale</i> spp. <i>agg.</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Gazania	<i>Gazania linearis</i>	0%	0%	<1%	0%	0%	0%	0%	0%	Not observed
Giant Mustard	<i>Rapistrum rugosum</i>	0%	0%	0%	0%	1%	0%	2%	2%	Present primarily within the eastern half of the reserve
Great Brome	<i>Bromus diandrus</i>	0%	0%	0%	0%	<1%	3%	0%	0%	Not observed
Hogweed	<i>Polygonum aviculare</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present

Common name	Species name	Cover estimate 2018	Cover estimate 2019	Cover estimate 2020	Cover estimate 2021	Cover estimate 2022	Cover estimate 2023	Cover estimate 2024	Cover estimate 2025	Notes 2025
Horehound	<i>Marrubium vulgare</i>	0%	0%	0%	<1%	0%	0%	0%	0%	Not observed
Large Quaking-grass	<i>Briza maxima</i>	2%	3%	<1%	<1%	<1%	2%	2%	<1%	Present throughout the reserve
Lesser Quaking-grass	<i>Briza minor</i>	0%	0%	0%	<1%	<1%	2%	2%	<1%	Present throughout the reserve
Narrow-leaved Clover	<i>Trifolium angustifolium</i>	<1%	<1%	<1%	0%	<1%	<1%	0%	0%	Not observed
Onion Grass	<i>Romulea rosea</i>	0%	2%	<1%	<1%	1%	<1%	1%	1%	Present throughout the reserve
Ox-tongue	<i>Helminthotheca echioides</i>	<1%	0%	0%	<1%	<1%	0%	<1%	<1%	Few individuals observed
Paterson's Curse	<i>Echium plantagineum</i>	0%	0%	<1%	0%	0%	0%	0%	0%	Not observed
Perennial Veldt-grass	<i>Ehrharta calycina</i>	0%	0%	0%	<1%	0%	0%	0%	0%	Not observed
Pimpernel	<i>Lysimachia arvensis</i>	<1%	<1%	1%	1%	1%	<1%	1%	<1%	Present throughout
Prickly Lettuce	<i>Lactuca serriola</i>	0%	0%	<1%	<1%	<1%	<1%	<1%	<1%	Present primarily along the reserve boundary
Red Brome	<i>Bromus rubens</i>	<1%	0%	<1%	<1%	0%	10%	0%	0%	Not observed
Soft Brome	<i>Bromus hordaceus</i>	-	-	-	-	-	2%	2%	2%	Scattered throughout
Ribwort	<i>Plantago lanceolata</i>	3%	1%	<1%	1%	1%	5%	3%	1%	Scattered throughout
Rye Grass	<i>Lolium sp.</i>	1%	<1%	<1%	0%	0%	<1%	<1%	<1%	Scattered throughout
Serrated Tussock	<i>Nassella trichotoma</i>	<1%	0%	1%	3%	1%	1%	2%	3%	Evidence of weed control but patchy
Small-flowered Mallow	<i>Malva parviflora</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Soursob	<i>Oxalis pes-caprae</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
South African Orchid	<i>Disa bracteata</i>	0%	0%	<1%	0%	0%	0%	0%	0%	Not observed
Sow Thistle	<i>Sonchus spp.</i>	0%	0%	1%	<1%	1%	1%	1%	1%	Present primarily along the reserve boundary
Squirrel-tail Fescue	<i>Vulpia bromoides</i>	1%	2%	1%	1%	8%	10%	2%	1%	Scattered throughout
Toowoomba Canary-grass	<i>Phalaris aquatica</i>	-	-	-	-	-	-	-	<1%	Newly recorded species
Twiggy Turnip	<i>Brassica fruticulosa</i>	<1%	<1%	<1%	<1%	0%	1%	1%	<1%	Present primarily along the reserve boundary

Common name	Species name	Cover estimate 2018	Cover estimate 2019	Cover estimate 2020	Cover estimate 2021	Cover estimate 2022	Cover estimate 2023	Cover estimate 2024	Cover estimate 2025	Notes 2025
Wall Fumitory	<i>Fumaria muralis</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Wall Pellitory	<i>Parietaria judaica</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Wild Oat	<i>Avena</i> sp.	12%	6%	5%	6%	11%	15%	20%	12%	Dominant within the eastern half of the reserve
Wild Sage	<i>Salvia verbenaca</i>	-	-	-	-	-	-	<1%	<1%	Present along eastern boundary
Total weed cover in Grassland Reserve		~ 20%	~ 15%	~ 10%	~ 15%	~ 35%	~ 35%	~ 40%	~ 20%	

Notes: Grey = Weeds in the Grassland Reserve that are considered to be a priority for weed control. Green = A reduction in cover. Orange = An increase in cover. * = Species not considered a weed at time of assessment.

[Spiny Rice-flower](#)

[Baseline data](#)

Several Spiny Rice-flower (SRF) plants occur within the Grassland Reserve. As per the ongoing research being undertaken in this area by Debbie Reynolds, some plants are in cages. All SRF plants recorded during an updated targeted survey of the reserve in 2016 were tagged with metal tags/rings and have unique identification numbers.

During the November 2018 monitoring, 29 SRF plants were selected at random and notes were recorded on their status and health. Of the 29 SRF plants assessed, 25 were in good health, while two were reduced to a mass of woody stems, and the remaining two were reduced to dead material above ground.

In addition to the 29 tagged plants assessed, six SRF recruits (small plants without tags) were recorded in the north-west of the reserve. These six plants are expected to be new plants that have recruited following recent biomass control burns in the reserve.

[Monitoring and reporting – Year 2](#)

179 Spiny Rice-flowers (SRF) have been recorded within the Grassland Reserve during a detailed targeted survey in 2016. All SRFs were tagged with metal tags/rings and have unique identification numbers.

During the December 2019 monitoring, all SRF plants were attempted to be located and notes were recorded on their status and health. Of the 179 SRFs assessed, 162 were re-recorded in good health, while seven were not found, and the remaining ten, only the tags were found with no plants observed. It can be assumed that these plants are either dormant or dead.

In addition to the tagged plants, 35 new SRF plants were recorded (plants without tags) throughout the reserve. Of these 35 plants, seven of them may be the remaining tagged plants which were not found, while the remaining 28 plants are small and likely to be new recruits that have emerged following management of biomass through ecological burns and weed control.

[Monitoring and reporting – Year 3](#)

Of the total of 197 plants recorded in November 2019, 106 (53.8%) were re-recorded during November 2020. The low number of re-detection has been attributed to the high cover of biomass making visual detection of the plants difficult. The majority of the recorded plants were large individuals which grew above the dense cover of grasses. When smaller plants were located, they were typically hidden beneath a dense cover of vegetation. In contrast, last year's survey was conducted after a recent prescribed burn, reducing biomass and enabling plants to be readily detected, particularly smaller individuals which were difficult to detect during the recent survey.

The low number of individuals recorded creates difficulty in accurately assessing the health of the population. In subsequent years, monitoring must be undertaken only after prescribed burns to enable optimal conditions for SRF detection, which in turn will provide a greater insight into the stability of the SRF population within the reserve. It was noted that the individuals which were found were in good health, with no dead plants observed, suggesting that the overall population of SRF is likely stable.

[Monitoring and reporting – Year 4](#)

Prior to the survey, DFC informed of an especially high biomass accumulation in the reserve. This was primarily due to excessive growth of introduced grass species in response to unusually long-term, favourable growing conditions for these threats. In order ensure visibility of Spiny Rice-flower

and therefore detection during the survey, it was recommended that slashing to above 15cm be conducted beforehand. This management action was undertaken approximately one week before the survey and resulted in a potentially more accurate assessment of the occurrence of Spiny Rice-flower in the reserve, which were in full flower at the time.

A total of 222 Spiny Rice-flower plants were recorded within the reserve during the June 2021 targeted survey. This was an increase of 25 (13%) and 116 (109%) on that found in 2020 and 2019 respectively, and included numerous young plants indicating that the species was successfully recruiting. Most of the individuals observed were in good health, except for three dead specimens located in the translocation area, however, it is likely that these were identified as failed translocations as indicated in previous surveys, as each had a marker and only rotted main stems remained suggesting that the loss was not recent.

Due to the density of plants, unstable GPS accuracy during the survey (as a result of heavily overcast, rainy conditions), and the problems with identifying individual records evident from previous survey efforts (partly from the loss of tags), no attempt was made to match observations with existing datapoints. The general distribution, however, remained similar but with clear expansion of the population into previously unestablished areas of the reserve. There was also a notable increase in the number of plants recorded in the translocation site, indicating stabilisation of the transplants and successful recruitment of this sub-population. Eighteen plants were found at this location, which is a 100% increase on then number recorded in 2020.

Monitoring and reporting – Year 5

A total of 145 Spiny Rice-flower plants were recorded within the reserve during the August 2022 targeted survey (as mapped in Figure 1), in comparison to the 106 plants recorded in 2020 and 222 in 2021. The age of plants, and therefore recruitment, could not be determined this year because plant emerging post-burn would in some cases have had the appearance of recruits. All individuals observed were in good health.

The fluctuation in numbers through the years is most likely a result of recruitment resulting in higher numbers and failure to detect due to difficulty locating individuals because of high biomass levels.

Due to the density of plants, unstable GPS accuracy during the survey, and the problems with identifying individual records evident from previous survey efforts, no attempt was made to match observations with existing datapoints. The general distribution, however, remained similar but with clear expansion of the population into previously unestablished areas of the reserve.

Monitoring and reporting – Year 6

A total of 233 Spiny Rice-flower were recorded within the reserve during the targeted survey in May 2023. This corresponded to a 60% increase from the previous year (145 individuals). Although fluctuating, population numbers appear to be stable over monitoring years with 222 plants recording in 2021, 106 in 2020 and 197 in 2019.

The observed records included numerous young plants indicating that the species was successfully recruiting. All individuals observed were in good health. The fluctuation in numbers through the years may a response to burn regimes or seasonal climate resulting in individuals remaining dormant some years or mass recruiting after fire. Furthermore, survey efforts may have affected in the eastern half of the reserve due to a high biomass of Kangaroo Grass, limiting species detection.

Prior to the survey, a controlled burn was operated in the western half of the reserve in Autumn 2022. The controlled burn was undertaken in accordance with the approved *Grassland Reserve Management Plan* (BL&A 2018). As a result, biomass levels in the western half of the Grassland

Reserve were low, revealing high exposure of inter-tussock space and therefore, visibility to detect the target species. In contrast, very low bare ground was observed on the eastern side due to a thick cover of Kangaroo Grass. This may explain variation in species found during survey efforts between the west and east section.

Due to the density of plants, unstable GPS accuracy during the survey, and the problems with identifying individual records evident from previous survey efforts (partly from the loss of tags), no attempt was made to match observations with existing datapoints. Additionally, delineation of what constitutes an individual plant can be subjective, and because the plants in the burnt area had only relatively recently begun resprouting, many that were yet to emerge may have been undetectable. The general distribution, however, remained similar but with clear expansion of the population into previously unestablished areas of the reserve.

An increase in the number of plants recorded was observed in the translocation site. Due to the stable numbers of individuals recorded in previous years, these plants have been shown to have successfully established. The lower numbers detected in this area in the previous year is either a result of a failure to detect due to high biomass levels or surface material removed by planned burns.

Monitoring and reporting – Year 7

A total of 89 Spiny Rice-flower (SRF) were recorded within the reserve during the targeted survey in July 2024. This corresponded to a 62% decrease from the previous year (233 individuals). Although fluctuating, population numbers appear to be variable but stable over monitoring years with 145 plants recorded in 2022, 222 plants recording in 2021, 106 in 2020 and 197 in 2019.

The observed fluctuation in SRF records following targeted surveys may be attributed to the species' unique response to fire and other disturbances. After a fire event, the underground rootstock of SRF can regenerate, producing a large number of above-ground shoots. This phenomenon can create the appearance of mass recruitment, where what seems to be multiple individuals are actually shoots originating from the same rootstock. In subsequent years, as the above-ground material grows and merges, several individuals previously recorded merge to a single interconnected plant. This natural growth pattern often results in a reduction in the number of individuals counted during follow-up surveys.

Furthermore, this year the survey effort is likely to have been affected across the reserve due to the high biomass of grasses, limiting species detection.

Although observations are lower, the general distribution of Spiny Rice-flower within the reserve has remained similar to previous monitoring events. Additionally, all individuals recorded appeared to be in good health with no evidence of disease or herbivory.

Management actions have remained compliant with the GRMP. A burn is planned for Autumn next year in 2025 to control weeds, reduce biomass and may increase detectability for the following targeted survey.

Monitoring and reporting – Year 8

A total of 69 Spiny Rice-flower (SRF) were recorded within the reserve during the targeted survey in August 2025. This corresponded to a 22% decrease from the previous year (89 individuals).

The low number of individuals observed during the targeted survey is likely due to the planned ecological burn approximately four months prior (April 2025) to the August survey which meant that SRF individuals were either beginning to resprout or had yet to resprout. It is expected that the number of individuals in the following years will return to levels recorded previously.

Due to the density of plants, GPS accuracy during the survey, and the problems with identifying individual records evident from previous survey efforts, no attempt was made to match observations with existing datapoints. The general distribution remained similar to previous years. All observed plants were healthy with no obvious disease or herbivory and appear to all be resprouting successfully following the prescribed burn.

Management actions have remained compliant with the GRMP.

Biomass

Baseline data

Biomass levels in the Grassland Reserve differed based on recent burning in particular sections of the reserve. In areas of the reserve that had been recently burned, biomass was low, with large inter-tussock spaces between the dominant Kangaroo Grass. In the areas not subject to recent burning, biomass levels were high, with limited space between tussocks.

Monitoring and reporting – Year 2

Biomass levels in the Grassland Reserve differed based on recent burning in particular sections of the reserve. In the eastern half of the reserve that had been recently burnt, biomass was low, with large inter-tussock spaces between the dominant Kangaroo Grass. In areas where grass had been slashed, biomass was high. In the areas not subject to recent burning or slashing, biomass levels were moderate, with more limited space between tussocks. An overall assessment of the organic litter cover was estimated at 20%.

Monitoring and reporting – Year 3

Biomass levels in the Grassland Reserve differed across the site. In areas that had been burnt in the previous year, biomass was moderate, however in areas which had not been burnt, biomass was high. The majority of these burnt areas had moderate inter-tussock spaces between the dominant Kangaroo Grass, enabling the growth of forbs such as Spiny Rice-flower, Blue Grass-lily and Yellow Rush-lily. In the areas not subject to recent burning, biomass levels were high, with more limited space between tussocks. An overall estimate of leaf litter was 10% cover, with bare ground estimated at approximately 7% overall, and absent in some areas.

Monitoring and reporting – Year 4

Biomass levels in the Grassland Reserve were moderate and within the normal range expected of Plains Grassland vegetation. On average, biomass was higher in parts of the reserve which had not been burnt in 2019. Slashing undertaken in June 2021 had resulted in a moderate cover of leaf litter (15%) across the reserve. This, combined with the very low cover of bare ground (1%) may limit forb recruitment in the short term until litter decomposition and/or a controlled burn occurs. This slashing was undertaken at the recommendation of Nature Advisory in lieu of a controlled burn in autumn 2021 to improve accuracy of Spiny Rice-flower population data. Controlled burns must therefore be undertaken in autumn 2022, particularly in the south-eastern corner of the reserve which was not burnt in 2019 and along the eastern boundary where weed cover is high.

Monitoring and reporting – Year 5

Biomass levels in the Grassland Reserve varied based on time elapsed since areas was burnt. On average, biomass was low within the recently burnt area (Photo 18), high in the west of the unburnt area (Photo 19) and moderate in the east of the unburnt area. The unburnt area with a high cover of biomass may limit forb recruitment.

The recent ecological burn in the western half of the site has reduced the biomass and increased inter-tussock spaces, potentially enabling the recruitment of a greater diversity of native flora species in the reserve. However, as well as promoting the regeneration of native species, it has also led to the germination establishment of introduced species: primarily annual grasses. An ecological burn should therefore be followed up with prescribed weed control for any new weeds.



Photo 18: Grass biomass in the burnt area



Photo 19: Grassland in the unburnt area where biomass is very high, predominantly due to an overabundance of Kangaroo Grass.

Monitoring and reporting – Year 6

Kangaroo Grass continues to be the dominant grass species in the reserve. Other native grasses observed include Long-hair Plume-grass, Rigid Panic and Tussock Grass. A diverse range of indigenous species occurred in inter-tussock spaces including Spiny Rice-flower, Smooth Rice-flower, Black-anther Flax-lily, Sheep's Burr, Grassland Wood-sorrel, Cottony Fireweed, Slender Speedwell, Common Woodruff, Varied Raspwort, and Kidney Weed.

Biomass levels had increased in the burnt area compared to 2022 levels as demonstrated by the decrease in both bare ground and inter-tussock space compared with the 2022 survey. Biomass was higher in the east in areas of high weed cover (Photo 17) and lower in the west where weed cover was lower (Photo 20).



Photo 20: Typical biomass level in the west of the grassland reserve as of October 2023

Monitoring and reporting – Year 7

Biomass levels in the Grassland Reserve during the year 7 monitoring was found to be very high (Photo 21). Areas of both native and introduced vegetation within the Grassland Reserve had increased biomass levels which is expected with increased time since fire.

The current EMP/Grassland Reserve Management Plan currently states that ecological burning should be undertaken at least every 2-3 years at the prescribed time (autumn). As such, an ecological burn will be undertaken in accordance with the EMP to reduce biomass across the Grassland Reserve next year (2025). An ecological burn is to be followed by increased weed management to prevent weed recruitment after fire.

Kangaroo Grass continues to be the dominant grass species in the reserve. Other native grasses observed include Long-hair Plume-grass, Rigid Panic and Tussock Grass. A diverse range of indigenous species occurred in inter-tussock spaces including Spiny Rice-flower, Smooth Rice-flower, Black-anther Flax-lily, Sheep's Burr, Grassland Wood-sorrel, Cottony Fireweed, Slender Speedwell, Common Woodruff, Varied Raspwort, and Kidney Weed.



Photo 21: Typical biomass level in the west of the grassland reserve as of September 2024

Monitoring and reporting – Year 8

Biomass levels in the Grassland Reserve during the year 8 monitoring was found to be low. All areas appeared to have reduced biomass levels following the ecological burn conducted in April 2025.

In areas of the reserve that had been recently burned, biomass was low, with large inter-tussock spaces between the dominant Kangaroo Grass providing good open space for native herbs to establish.



Photo 22: High inter-tussock space and native herb diversity in the west of the grassland reserve as of August 2025

[Evidence of pest animals](#)

[Baseline data](#)

No evidence of pest animals was recorded in the grassland reserve.

[Monitoring and reporting – Year 2](#)

No evidence of pest animals was recorded in the grassland reserve. As such, no pest animal control is currently required.

[Monitoring and reporting – Year 3](#)

No evidence of pest animals was recorded in the grassland reserve. As such, no pest animal control is currently required.

[Monitoring and reporting – Year 4](#)

During the site assessment, one inactive rabbit burrow was found within the reserve. No rabbit scats were detected within the reserve. Evidence of warren ripping and the presence of rabbit scats in land adjacent to the eastern boundary of the reserve suggest that rabbits have been frequenting the locality. Rabbit proof fencing has been fixed to the bottom of the gate in the southeastern corner of the reserve to prevent rabbits from entering the site.

[Monitoring and reporting – Year 5](#)

During the site assessment, rabbit activity was detected within the reserve (Photo 23). With the integrity of the fencing intact, it is likely that rabbit-proofing measures on the gate require further review and additional mitigation measures may be required.



Photo 23: Rabbit activity within the reserve

Monitoring and reporting – Year 6

While there was evidence of substantial European Rabbit activity adjacent to the reserve no rabbit activity was detected within the reserve. Diggings were found within the Grassland Reserve; these were potentially from bush rats or similar native fauna as no rabbit scats were found, however, the high population of rabbits outside the reserve greatly increases the likelihood of access and destruction within protected areas. In November fencing around the grassland reserve was upgraded to permanent, post and wire rabbit proof fencing as part of stage 33, however the reserve should continue to be monitored for rabbit activity.

Monitoring and reporting – Year 7

While there was evidence of substantial European Rabbit activity adjacent to the reserve, no rabbit activity was detected within the reserve. No rabbit scats were found within the Grassland Reserve. The permanent post and wire rabbit proof fencing surrounding the grassland reserve installed during the previous year has so far been effective at excluding rabbits.

Monitoring and reporting – Year 8

No evidence of pest animals was detected in the grassland reserve. As such, no pest animal control is currently required. The permanent post and wire rabbit proof fencing surrounding the grassland reserve continues to provide effective rabbit exclusion.

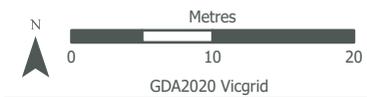
Figure 1: Threatened species and weeds within the Grassland Reserve

Project No: 7045.71
Project: Modena Estate
Date: 18/11/2025

-  Study area (Grassland Reserve)
-  Parcel boundary
-  High weed cover
- Weed species**
 -  Chilean Needle-grass
- Threatened species**
 -  Pale Flax-lily
 -  Spiny Rice Flower



Aerial imagery: Nearmap (15/10/2025)



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Construction and 10-year management actions

Integrity of fencing

At the time of the previous monitoring, fencing integrity around the reserve was sound and 'No-Go Zone' signage was in place at 30 metre intervals.

The Year 3 annual monitoring report recommended that the gate in the south-eastern corner be made rabbit-proof and, at the time of the October 2021 (Year 4) assessment, appropriate modifications to this gate have been made.

At the time of the October 2022 (Year 5) assessment, the integrity of the fencing, gate and signage were checked around the entire reserve and were found to be in good condition. However, the evidence of recent rabbit activity within the reserve indicates that access is still being achieved somewhere. This is most likely at the gate, suggesting the current rabbit-proofing measure requires assessment and appropriate adaptive action taken to mitigate potential impacts.

During the Year 6 monitoring (October 2023) the integrity of the fencing, gate, and signage were checked around the entire reserve and were found to be in good condition. Observed slack in fencing adjacent to the reserve (Photo 24) has since been repaired as part of the Stage 33 development works in November. Previous years have mentioned the presence of rabbit activity within the reserve; however, these were not observed in the 2023 assessments, suggesting that appropriate adaptive action has been taken to mitigate potential impacts.



Photo 24: Permanent fencing upgrade around grassland reserve as part of stage 33.

As of October 2023, there has been an increased occurrence of litter within the reserve. The fence along the western boundary of the reserve is limiting blow in from surrounding areas and work sites, however many fragments are still scattered throughout the reserve. One concern in particular is the inappropriate dumping of mulch within the Grassland Reserve. Dumping of material from outside the reserve increases the risk of introduction of pathogens and additional weed species, which could be detrimental to the protected native vegetation within the reserve.

Since the assessment was conducted it has been reported that regular monitoring of litter has been undertaken and disposed as required.

During the Year 7 monitoring (September 2024), the integrity of the fencing, gate and signage were checked around the entire reserve and were found to be in excellent condition. Since the previous monitoring event in October 2023, the fence has been upgraded to a permanent post and wire rabbit proof fence and the gate has been moved to the northern boundary (along Havana Circuit) of the grassland reserve. Occurrence of litter within the grassland reserve has decreased since the previous assessment likely due to the upkeep of the fencing, reduction of construction in areas directly adjacent to the grassland reserve and regular monitoring and disposal of litter.

As of November 2025 (Year 8), the integrity of the fencing, gate and signage were checked around the entire reserve and were found to be in good condition. No damage to the fencing was observed and it continues to provide effective rabbit exclusion. The reserve was appropriately signed as an environmental no-go zone. Scattered litter was observed around the fence, which has likely blown in and became trapped in the fence. Litter should be managed through regular rubbish pick-ups.

Sediment and surface water control

At the time of the October 2021 (Year 4) assessment, sediment fencing in Stage 21 upslope of the Grassland Reserve was appropriately installed. The October 2022 (Year 5) assessment did not add further comment.

As of October 2023, sediment fencing was only partially present around the reserve and was not present adjacent all areas of earthworks (Photo 25).



Photo 25: No sediment fencing adjacent areas of construction and earthworks.

As of September 2024, no sediment fencing was present around the areas adjacent to the grassland reserve which is primarily due to the completion of earthworks and no commencement of construction (Photo 26). Once future earthworks and construction commences on the land to the west of the grassland

reserve along Melrose Close and Star Mews (Stage C2 and D), sediment fencing will be reinstated along the western boundary of the grassland reserve prior to the commencement of said works.



Photo 26: Western boundary of the grassland reserve.

As of November 2025, no sediment fencing was present around the areas adjacent to the grassland reserve, as no ongoing earthworks or construction was occurring sediment fencing is no longer required in this area.

Weed control

Weed control actions in 2025 have been undertaken in the Grassland Reserve by Australian Ecosystems, the results of which are summarised here and presented in the reports in Appendix 6.

A burn completed in April 2025 also helped to reduce weed cover in the reserve.

- African Boxthorn:
 - January 2017 (GRMP) – a number of large individuals near the eastern boundary
 - November 2018 – no mature individuals observed
 - December 2019 – no mature individuals observed, small emergent plants recorded
 - November 2020 – no large individuals observed, small emergent plants recorded
 - October 2021 – no large individuals observed, medium-sized emergent plants recorded
 - October 2022 – no living individuals observed, one dead individual detected
 - October 2023 – no individuals observed
 - September 2024 – no individuals observed
 - November 2025 – no individuals observed

- **Artichoke Thistle:**
 - January 2017 (GRMP) – an infestation recorded in northern section
 - November 2018 – less than 1% cover with only a small number of recruits
 - December 2019 – no individuals observed
 - November 2020 – immature plants observed in disturbed ground
 - October 2021 – small plants observed, most of which had been recently sprayed
 - October 2022 – A number of plants observed in the unburnt section, less than 1% cover
 - October 2023 – A number of individuals present along eastern boundary, including new recruits
 - September 2024 – less than 1% cover with few recruits observed
 - November 2025 – less than 1% cover and all individuals had been sprayed
- **Serrated Tussock:**
 - January 2017 (GRMP) – large infestations and spreading
 - November 2018 – less than 1% cover with only a small number of individuals
 - December 2019 – no individuals observed
 - November 2020 – many immature plants observed along the southern edge (1% cover)
 - October 2021 - many plants observed near eastern and northern boundary (3% cover)
 - October 2022 – scattered throughout, with more in the unburnt area (2% cover) than burnt area (1% cover)
 - October 2023 – scattered throughout (1% cover)
 - September 2024 – Scattered throughout (2% cover) , with evidence of weed control
 - November 2025 – Scattered primarily in the east of the reserve (3% cover) – evidence of weed control but patches appeared to have been missed.

Weed outbreaks previously recorded adjacent to the grassland reserve were controlled as follows:

- **Fennel:**
 - January 2017 (GRMP) – a large infestation of Fennel occurred immediately to the east of the reserve boundary, on the eastern side of the existing dirt track
 - November 2018 – infestation eradicated
 - December 2019 – evidence of individuals recently sprayed
 - November 2020 – no individuals observed
 - October 2021 – no individuals observed
 - October 2022 – not documented; assumed no individuals observed
 - October 2023 – no individuals observed
 - September 2024 – no individuals observed

- November 2025 – no individuals observed

Revegetation

Revegetation works are not required to occur in the Grassland Reserve.

Landscape planting

Adjacent landscape plantings have been completed to the north, south and east of the Grassland Reserve.

3.9. Conditions 18, 19, 21 & 26

Conditions 18, 19, 21 & 26 read as follows:

18. The **approval holder** must ensure that **offset attributes** and **shapefiles** for all offset sites are provided to the **Department** at the timing of submitting their corresponding **offset management plan**.
19. Within 30 days after the commencement of **construction activities**, the **approval holder** must advise the **Minister** in writing of the actual date of commencement of **construction activities**.
21. Within three months of every 12-month anniversary of the commencement of **construction activities**, the **approval holder** must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the **Department** at the same time as the compliance report is published. Compliance reports must remain on the approval holder's website for 12 months from the date of publishing. The requirement to submit compliance reports will cease following written agreement with the **Minister**.
26. Unless otherwise agreed to in writing by the **Minister**, the **approval holder** must publish all management plans referred to in these conditions of approval on the approval holder's website. Each management plan must be published on the website within 1 month of being approved. The **approval holder** must notify the **Department** within 5 days of publishing the plan on the website. The management plans must remain on the website for the period this approval has effect.

Condition 18 compliance

Shapefiles and offset attributes of the following have been provided to the Department corresponding with the submission of each offset plan:

- Karabeal offset site – corresponding to the Project Area B Offset Management Plan (OMP) and the Project Area A1 OMP;
- Campbelltown offset site – corresponding to the Project Area B OMP; and
- Cressy offset site – corresponding to the Project Areas C1, C2 & D OMP.

Condition 19 compliance

The proponent advised the Minister in writing within 30 days of the commencement of construction, commencing 9 October 2017. Evidence of this is provided in Appendix 5.

Condition 21 compliance

As required in the written advice from the Department (Appendix 5) this Compliance Report is to be published on the approval holder's website before 9 January 2026.

Condition 26 compliance

All management plans relating to construction activities that have commenced are published on the approval holder's website at <https://www.denniscorp.com.au/about-dennis-family/initiatives-and-awards/sustainability>.

End of Year 8 Compliance Report

[Appendix 1: Approval 2011/6063 – Consolidated Variation Notice dated 9/11/2018](#)



VARIATION OF CONDITIONS ATTACHED TO APPROVAL Burnside Development – The Point, Victoria (EPBC 2011/6063)

This decision to vary conditions of approval is made under section 143 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Approved action

Person to whom the approval is granted	DFC (Project Management) Pty Ltd ABN: 83 161 448 139
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Approved action	To develop Modeina Estate Precinct 2, a residential housing development in the Melbourne suburb of Burnside, Victoria [see EPBC Act referral 2011/6063 and variation to proposal dated 26 March 2015].
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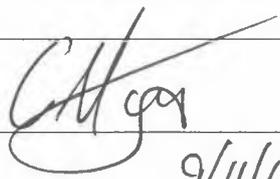
Variation

Variation of conditions attached to approval	The variations are: Revoke conditions 9, 10, 11 and 12. Delete conditions 13, 14, 15, 16,17 and Appendix A attached to the approval dated 20 July 2015 and substitute with the conditions specified below. Add Appendix B, condition 14A and definitions for 'Grassland Reserve' and 'Grassland Reserve Management Plan' as specified below.
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Date of effect	This variation has effect on the date the instrument is signed
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Person authorised to make decision

Name and position	Greg Manning Assistant Secretary Assessments (WA, SA, NT) & Post Approvals Branch
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Signature	
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Date of decision	9/11/18
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Date of decision	Conditions attached to approval
Original approval dated 20/07/2015	To minimise impacts of the action on listed threatened species and ecological communities: 1. The approval holder must ensure that construction activities do not occur outside of the project area as illustrated at <u>Appendix A</u> .
Original approval dated 20/07/2015	2. The approval holder must implement sediment and erosion control measures consistent with best practice pollution, sediment and erosion control guideline(s) for the duration of construction activities .
Original approval dated 20/07/2015	3. The approval holder must prepare a site specific Growling Grass Frog Management Plan; which is required to be consistent with best practice Growling Grass Frog management guidelines . The plan must outline how significant impacts to Growling Grass Frogs will be avoided or mitigated and as a minimum must include: a. Management measures demonstrating how the Growling Grass Frog buffer zone will be demarcated to minimise vehicle access; b. Details of revegetation, environmental weed control measures and other management activities within the Growling Grass Frog buffer zone ; c. Details of any construction activities and management measures to avoid significant impacts during construction; and d. Measures to ensure any on-site personnel will be informed of their obligations under the Growling Grass Frog Management Plan.
Variation dated 04/08/2017	4. Construction activities must not commence in Project Areas A1, A2, C1, C2 and D until the site specific Growling Grass Frog Management Plan has been approved by the Minister in writing. Construction in Project Area B can proceed prior to approval of the site-specific Growling Grass Frog Management Plan must be implemented.
Variation dated 04/08/2017	<i>Project Area A1 and A2</i> 5. The approval holder must ensure that the action does not impact more than eleven (11) individual Spiny Rice-flower plants within the combined area of Project Areas A1 and A2 .
Variation dated 04/08/2017	6. The approval holder must not commence construction activities in Project Area A1 until the following are met: a. A direct offset, consistent with the EPBC Act Environmental Offsets Policy , has been secured to compensate for the impacts to 6.053 hectares of NTGVVP and 6.053 hectares of Striped Legless Lizard habitat ; i. An offset management plan has been prepared and submitted to the Minister for approval, and the approval holder has received written confirmation that the offset management plan has been approved. The approved offset management plan must be implemented by the approval holder ; and ii. The Department has been provided with written confirmation and supporting evidence demonstrating that the offset has been secured.
Variation dated 04/08/2017	6A. The approval holder must not commence construction activities in Project Area A2 until either 6A(a) or 6A(b) are met: a. A direct offset, consistent with the EPBC Act Environmental Offsets Policy , has been secured to compensate for the impacts to

Date of decision	Conditions attached to approval
	<p>4.277 hectares of NTGVVP and 4.277 hectares of Striped Legless Lizard habitat;</p> <p>i. An offset management plan has been prepared and submitted to the Minister for approval, and the approval holder has received written confirmation that the offset management plan has been approved. The approved offset management plan must be implemented by the approval holder; and</p> <p>ii. The Department has been provided with written confirmation and supporting evidence demonstrating that the offset has been secured;</p> <p>OR</p> <p>b. In a manner consistent with the Melbourne Urban Development Policy, secure an offset for impacts to 4.277 hectares of NTGVVP and 4.277 hectares of Striped Legless Lizard habitat associated with Project Area A2. Documentary evidence that the offset has been secured must be provided to the Department with 14 days of being secured.</p>
Variation dated 04/08/2017	<p><i>Project Area B</i></p> <p>7. The approval holder must not commence construction activities in Project Area B until either 7(a) or 7(b) are met:</p> <p>a. A direct offset containing a minimum of 100 Spiny Rice-flower plants has been secured;</p> <p>i. An offset management plan has been prepared and submitted to the Minister for approval, and the approval holder has received written confirmation that the offset management plan has been approved. The approved offset management plan must be implemented by the approval holder; and</p> <p>ii. The Department has been provided with written confirmation and supporting evidence that demonstrate the offset has been secured;</p> <p>OR</p> <p>b. The Minister agrees in writing that condition 15 (a–e) has been satisfied.</p>
Variation dated 04/08/2017	<p>8. The approval holder must not commence construction activities in Project Area B until the following are met:</p> <p>a. A direct offset, consistent with the EPBC Act Environmental Offsets Policy, has been secured to compensate for the impacts to 1.824 hectares of NTGVVP and 1.824 hectares of Striped Legless Lizard habitat;</p> <p>i. An offset management plan has been prepared and submitted to the Minister for approval, and the approval holder has received written confirmation that the offset management plan has been approved. The approved offset management plan must be implemented by the approval holder; and</p> <p>ii. The Department has been provided with written confirmation and supporting evidence that demonstrate the offset has been secured.</p>
As varied on the date this instrument was signed	9. Revoked
As varied on the date this instrument was signed	10. Revoked

Date of decision	Conditions attached to approval
As varied on the date this instrument was signed	11. Revoked
As varied on the date this instrument was signed	12. Revoked
As varied on the date this instrument was signed	<p><i>Project Area C1, C2 and D</i></p> <p>13. The approval holder must not commence construction activities in Project Area C2 until the following are met.</p> <p>a. A direct offset, consistent with the EPBC Act Environmental Offsets Policy, has been secured to compensate for the impacts to 3.283 hectares of NTGVVP and 3.283 hectares of Striped Legless Lizard habitat;</p> <p>i. An offset management plan has been prepared and submitted to the Minister for approval, and the approval holder has received written confirmation that the offset management plan has been approved. The approved offset management plan must be implemented by the approval holder; and</p> <p>ii. The Department has been provided with written confirmation and supporting evidence that demonstrate the offset has been secured.</p> <p>b. A direct offset is secured containing a minimum of 60 Spiny Rice-flower plants. An offset management plan must be prepared and submitted to the Minister for approval. The approved offset management plan must then be implemented by the approval holder.</p>
As varied on the date this instrument was signed	14. The approval holder must not undertake construction activities within the Grassland Reserve , to be located in Project Area D as per <u>Appendix B</u> .
As added on the date this instrument was signed	<p>14A. The approval holder must, in consultation with a suitably qualified ecologist, develop a Grassland Reserve Management Plan for the protection and management of protected matters within the Grassland Reserve. The Grassland Reserve Management Plan must be submitted to the Minister for approval 6 months prior to the commencement of construction activities within 100 metres of Project Area D. The approved Grassland Reserve Management Plan must be implemented. The Grassland Reserve Management Plan must:</p> <p>a. include existing baseline data and other supporting evidence that documents the baseline conditions of protected matters within the Grassland Reserve;</p> <p>b. outline specific management actions to protect and maintain protected matters within the Grassland Reserve ; and</p> <p>c. outline annual monitoring and reporting on the condition of protected matters within the Grassland Reserve for a period of 10 years from commencement of the Plan.</p>
As varied on the date this instrument was signed	<p>15. The approval holder must not commence construction activities within Project Area D and Project Area C1 until the Minister agrees in writing that the following are met:</p> <p>a. A suitably qualified ecologist has confirmed in writing that each transplant site is demonstrating recruitment by propagated plants;</p>

Date of decision	Conditions attached to approval
	<ul style="list-style-type: none"> b. A suitably qualified ecologist has prepared a report to peer review the results of the Spiny Rice-flower Propagation Project; c. The approval holder has submitted the peer review report to the Minister for review; and d. The Minister has reviewed the report and determined it demonstrates the Spiny Rice-flower Propagation Project has resulted in a viable and self sustaining Spiny Rice-flower population at each transplant recipient site, and supports the target number of established Spiny Rice-flower plants across the sites; <p>Note: Condition 15e was revoked on the date this instrument was signed.</p>
As varied on the date this instrument was signed	<p>16. The approval holder must not commence construction activities in Project Area D until the following are met.</p> <ul style="list-style-type: none"> a. A direct offset, consistent with the EPBC Act Environmental Offsets Policy, has been secured to compensate for the impacts to 3.963 hectares of NTGVVP and 3.963 hectares of Striped Legless Lizard habitat; <ul style="list-style-type: none"> i. An offset management plan has been prepared and submitted to the Minister for approval, and the approval holder has received written confirmation that the offset management plan has been approved. The approved offset management plan must be implemented by the approval holder; and ii. The Department has been provided with written confirmation and supporting evidence that demonstrate the offset has been secured. b. Condition 15 has been satisfied.
As varied on the date this instrument was signed	<p>17. If condition 15 (a–d) cannot be met in full:</p> <ul style="list-style-type: none"> a. the approval holder must not commence construction activities within Project Area D and Project Area C1; until the following are met: <ul style="list-style-type: none"> i. Adequately compensate for impacts to Spiny Rice-flower plants located within Project Area D and Project Area C1 with an alternative offset. This offset strategy must be prepared following consultation with the Department; and ii. The Minister has provided written notification to the approval holder that condition 15 no longer applies <p>Note: Condition 17b was revoked on the date this instrument was signed.</p>
Original approval dated 20/07/2015	<p><i>Administrative Conditions</i></p> <p>18. The approval holder must ensure that offset attributes and shapefiles for all offset sites are provided to the Department at the timing of submitting their corresponding offset management plan.</p>
Original approval dated 20/07/2015	<p>19. Within 30 days after the commencement of construction activities, the approval holder must advise the Minister in writing of the actual date of commencement of construction activities.</p>
Original approval	<p>20. The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval,</p>

Date of decision	Conditions attached to approval
dated 20/07/2015	including measures taken to implement the management plans, and make them available upon request to the Department . Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act , or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.
Original approval dated 20/07/2015	21. Within three months of every 12 month anniversary of the commencement of construction activities , the approval holder must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published. Compliance reports must remain on the approval holder's website for 12 months from the date of publishing. The requirement to submit compliance reports will cease following written agreement with the Minister .
Original approval dated 20/07/2015	22. Upon the direction of the Minister , the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister . The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister .
Variation dated 04/08/2017	23. If the approval holder wishes to carry out any activity otherwise than in accordance with management plans as specified in the conditions, the approval holder must submit to the Department for the Minister's written approval a revised version of that management plan. The varied activity shall not commence until the Minister has approved the revised management plan in writing. The Minister will not approve a revised management plan unless the revised management plan will result in an equivalent or improved environmental outcome over time. If the Minister approves the revised management plan, then it must be implemented in place of the management plan originally approved.
Original approval dated 20/07/2015	24. If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and ecological communities to do so, the Minister may request that the approval holder make specified revisions to the management plans specified in the conditions and submit the revised management plan for the Minister's written approval. The approval holder must comply with any such request. The revised approved management plans must be implemented. Unless the Minister has approved the revised management plans then the approval holder must continue to implement the management plan originally approved, as specified in the conditions.
Original approval dated 20/07/2015	25. If, at any time after 5 years from the date of this approval, the approval holder has not substantially commenced the action, then the approval holder must not substantially commence the action without the written agreement of the Minister .
Original approval	26. Unless otherwise agreed to in writing by the Minister , the approval holder must publish all management plans referred to in these conditions of approval on the approval holder's website. Each management plan

Date of decision	Conditions attached to approval
dated 20/07/2015	must be published on the website within 1 month of being approved. The approval holder must notify the Department within 5 days of publishing the plan on the website. The management plans must remain on the website for the period this approval has effect.

Date of decision	Definitions attached to approval
Original approval dated 20/07/2015	Approval holder - the person undertaking the action who holds the project approval.
Original approval dated 20/07/2015	Best practice Growling Grass Frog management guidelines - these include the most recent versions of <i>Guidelines for managing the endangered Growling Grass Frog in urbanising landscapes (Victorian Department of Sustainability and Environment, 2010)</i> , <i>Procedure statement for translocation of threatened native vertebrate fauna in Victoria (Victorian Department of Sustainability and Environment, 2013)</i> , <i>Bellarine Peninsula Ramsar Site Strategic Management Plan (DEPI, 2003)</i> , <i>Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO, 1999)</i> , <i>Constructed Wetlands Guidelines (Victorian Government and Melbourne Water Corporation, 2010)</i> and <i>Water Sensitive Urban Design Guidelines (Victorian Government and Melbourne Water Corporation, 2013)</i> .
Original approval dated 20/07/2015	Best practice pollution, sediment and erosion control guidelines - the most recent version of relevant guidelines on pollution, sediment and erosion control, such as the <i>Construction Techniques for Sediment Pollution Control (EPA Publication No. 275, 1991)</i> ; and <i>Environmental Guidelines for Major Construction Sites (EPA Publication No. 480, 1996)</i> .
Original approval dated 20/07/2015	Construction activities - includes but is not limited to clearing of vegetation, the erection of any onsite temporary structures and the use of heavy duty equipment for the purpose of breaking the ground for infrastructure or earthworks. This does not include maintenance or use of existing access tracks, erection or construction of security fencing and signage, or investigative activities such as accessing the site for surveying or planning purposes.
Original approval dated 20/07/2015	Department - the Australian Government Department administering the EPBC Act .
Original approval dated 20/07/2015	Environmental Management Plan - the document developed by a suitably qualified ecologist to the satisfaction of the Department , detailing the long-term management of protected matters within Project Area D and Project Area C1 .
Original approval dated 20/07/2015	Environmental weeds - invasive native and non-native plants including: i. listed Victorian Declared Noxious Weeds, including Artichoke Thistle (<i>Cynara cardunculus</i>), Fennel (<i>Foeniculum vulgare</i>) and Spiny Rush (<i>Juncus acutus</i>); ii. listed Victorian Invasive Plants, including Mirror Bush (<i>Coprosma repens</i>), Pampas grass (<i>Cortaderia sp.</i>), Italian buckthorn (<i>Rhamnus alaternus</i>) and Spartina/Cord Grass (<i>Spartina anglica</i> and <i>Spartina x townsendii</i>); and

Date of decision	Definitions attached to approval
	<p>iii. listed Weeds of National Significance, including Madeira vine (<i>Anredera cordifolia</i>), Asparagus weeds / Bridal Creeper (<i>Asparagus aethiopicus</i>, <i>A. africanus</i>, <i>A. asparagoides</i>, <i>A. asparagoides</i> Western Cape form, <i>A. declinatus</i>, <i>A. plumosus</i>, <i>A. scandens</i> [excluding <i>A. officinalis</i> and <i>A. racemosus</i>]), Brooms including Flax-leaf Broom (<i>Cytisus scoparius</i>, <i>Genista monspessulana</i> and <i>G. linifolia</i>), African boxthorn (<i>Lycium ferocissimum</i>), Chilean needle grass (<i>Nassella neesiana</i>), Serrated tussock (<i>Nassella trichotoma</i>), Blackberry (<i>Rubus fruticosus</i> agg.), Silverleaf nightshade (<i>Solanum elaeagnifolium</i>), Willows (<i>Salix</i> spp. [excluding <i>S. Babylonica</i>, <i>S. Calodendron</i> and <i>S. reichardtii</i>]), Gorse (<i>Ulex europaeus</i>).</p>
Original approval dated 20/07/2015	EPBC Act - the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
Original approval dated 20/07/2015	EPBC Act Environmental Offsets Policy - the Australian Government policy document titled: <i>EPBC Act environmental offsets policy, Department of the Environment, 2013 Policy guiding the use of offsets under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i> .
Original approval dated 20/07/2015	<p>Established Spiny Rice-flower – A Spiny-Rice flower plant that meets the following:</p> <p>i. was introduced into the area through the Spiny Rice-flower Propagation Project; and</p> <p>ii. is at least 2 years old.</p>
As added on the date this instrument was signed	Grassland Reserve – the area of NTGVVP within Project Area D set aside as a permanent reserve, identified in <u>Appendix B</u> .
As added on the date this instrument was signed	Grassland Reserve Management Plan - specific management plan for the Grassland Reserve.
Original approval dated 20/07/2015	Growling Grass Frog – the frog species <i>Litoria raniformis</i> , protected under the EPBC Act .
Original approval dated 20/07/2015	Growling Grass Frog buffer zone - the area identified as Growling Grass Frog Buffer in <u>Appendix A</u> .
Original approval dated 20/07/2015	<p>Melbourne Urban Development Policy - the document <i>Policy Statement for Melbourne urban development proposals needing consideration under Parts 7, 8 and 9 of the EPBC Act</i>, Department of the Environment, February 2014, online: http://www.environment.gov.au/system/files/resources/dc154fd1-d526-4e7d-9a8e-bd17f8ceac15/files/melbourne-urban-development_1.pdf</p>
Original approval dated 20/07/2015	Minister - the Australian Government Minister administering the <i>EPBC Act</i> and includes a delegate of the Minister.
Original approval dated 20/07/2015	NTGVVP – is the threatened ecological community <i>Natural Temperate Grassland of the Victorian Volcanic Plain</i> , protected under the EPBC Act .

Date of decision	Definitions attached to approval
Original approval dated 20/07/2015	Offset attributes – an '.xls' file capturing relevant attributes of the offset site, including the EPBC reference ID number, the physical address of the offset site, coordinates of the boundary points in decimal degrees, the EPBC Act protected matters that the offset compensates for, any additional EPBC Act protected matters that are benefiting from the offset, and the size of the offset in hectares.
Original approval dated 20/07/2015	Offset management plan - an offset management plan must: <ul style="list-style-type: none"> • include baseline information for the offset site(s); • include details of how the offset(s) are consistent with the EPBC Act Environmental Offsets Policy; • demonstrates how the offset site(s) will be protected for long term conservation purposes; • include details of short and long term management measures, include timeframes for management measures for the site(s); • and identify the short and long term arrangements and responsibilities of parties in the management of the site(s).
Variation dated 04/08/2017	Project Area A1 - the area identified as Project Area A1 in Appendix A .
Variation dated 04/08/2017	Project Area A2 - the area identified as Project Area A2 in Appendix A .
Original approval dated 20/07/2015	Project Area B – the area identified as Project Area B in Appendix A .
Original approval dated 20/07/2015	Project Area C1 – the area identified as Project Area C1 in Appendix A .
Original approval dated 20/07/2015	Project Area C2 – the area identified as Project Area C2 in Appendix A .
Original approval dated 20/07/2015	Project Area D – the area identified as Project Area D in Appendix A .
Original approval dated 20/07/2015	Project area – the area contained within the Proposed Residential Stage Boundaries, identified by a dashed red line in Appendix A .
Original approval dated 20/07/2015	Protected matters – NTGVVP, Spiny Rice-flower, Striped Legless Lizard and Growling Grass Frog.
Original approval dated 20/07/2015	Security fencing - a fence with locked gated access that prevents access by the public, while allowing dispersal of Striped Legless Lizard .
Original approval dated 20/07/2015	Shapefile - an ESRI Shapefile containing '.shp', '.shx' and '.dbf' files and other files capturing attributes including at least the EPBC reference ID number and EPBC protected matters present at the relevant site. Attributes should also be captured in '.xls' format.
Original approval dated 20/07/2015	Significant impact - as described in Significant Impact Guidelines 1.1 – Matter of National Environmental Significance (Department of the Environment, 2013) and any specific significant impact guidelines.
Original approval dated 20/07/2015	Spiny Rice-flower - the plant species <i>Pimelea spinescens subsp. spinescens</i> , protected under the EPBC Act .

Date of decision	Definitions attached to approval
Original approval dated 20/07/2015	Spiny Rice-flower Propagation Project - refers to the Spiny Rice-flower Propagation Project prepared by BL&A 2013.
Original approval dated 20/07/2015	Striped Legless Lizard - the lizard species <i>Delma impar</i> , protected under the EPBC Act
Original approval dated 20/07/2015	Striped Legless Lizard habitat - is any grassland (exotic and native) that may be utilised by the Striped Legless Lizard for breeding, sheltering, foraging or ranging.
Original approval dated 20/07/2015	Substantially commenced - means the installation of any permanent infrastructure associated with the action.
Original approval dated 20/07/2015	Suitably qualified ecologist - a person with relevant tertiary qualifications in ecology, botany or environmental science and at least 5 years of experience in surveying and field work relevant to the relevant Protected Matter , or any other person agreed to in writing by the Department .
Original approval dated 20/07/2015	Target number - refers to the target total of 800 individual plants as set out in the Spiny Rice Flower Propagation Project . In the event the person taking the action secures direct offsets for Spiny Rice-flower to compensate for impacts in the project area , the target number will be reduced on a 1:1 basis following written confirmation from the Minister .
Original approval dated 20/07/2015	Trust for Nature - meaning the organisation Trust for Nature (http://www.trustfornature.org.au/).
Original approval dated 20/07/2015	Viable and self-sustaining - means that the specified Spiny Rice-flower population demonstrates: <ul style="list-style-type: none"> <li data-bbox="325 1088 1264 1155">i. Numbers of annually flowering male and female plants in proportions similar to that in natural populations; <li data-bbox="325 1184 1200 1252">ii. That new germinants are recruiting in numbers similar to that in natural populations; and <li data-bbox="325 1281 1270 1348">iii. A growing population where recruitment exceeds mortality to a similar extent as other managed populations

Date of decision	<u>Appendix A</u>
As varied on the date this instrument was signed	Modeina Estate Stage Development Plan, showing boundaries of Project Areas A1, A2, B, C1, C2 and D

Date of decision	<u>Appendix B</u>
As added on the date this instrument was signed	Grassland Reserve, located within Project Area D

APPENDIX A



Stage Comparison Plan Concept Plan Precinct 2

LEGEND:

- Precinct 2
65.49ha
- Growing Grass Frog Habitat
35m from centreline of Kororoit Creek
- Existing Sewerage and/or Drainage Easements
- Retained Native Vegetation
- Spiny Rice Flowers
- Spiny Rice Flowers to be Retained
- Growing Grass Frog Buffer
- Reserve
- Project Areas
- Grassland Reserve
- Project Area A1
- Project Area A2
- Project Area B
- Project Area C1
- Project Area C2
- Project Area D



scale 1:2500 @ A1
 DATE: 28 June 2018
 REF: 29743 001
 DWG: 29743002C

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DEVELOP WITH CONFIDENCE



- i. Numbers of annually flowering male and female plants in proportions similar to that in natural populations;
 - ii. That new germinants are recruiting in numbers similar to that in natural populations;
and
 - iii. A growing population where recruitment exceeds mortality to a similar extent as other managed populations.
-



Legend

- Precinct 2
- Grassland Reserve
- NTGVVP
- Spiny Rice-flower

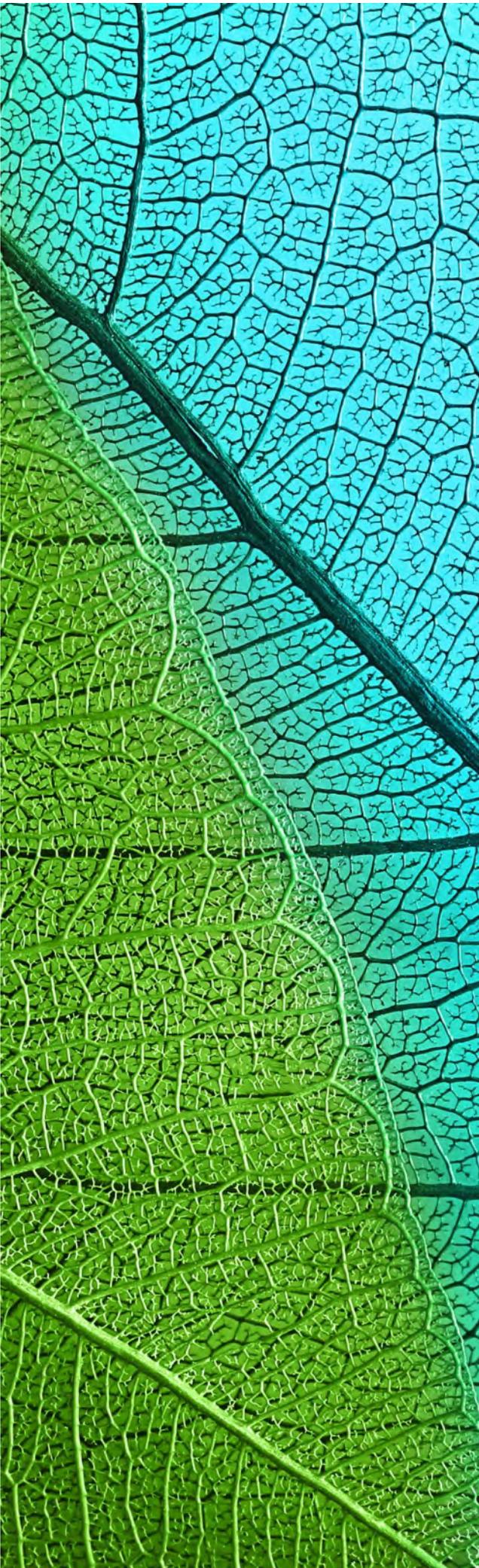


Modeina Precinct 2 - Grassland Reserve		
Project: Modeina Estate		
Client: DFC (Project Management) Pty Ltd		
Project No.: 7045	Date: 14/06/2018	Created By: N. May / M. Wright
BL&A Brett Lane & Associates Pty. Ltd <small>Ecological Research & Management</small>		
<ul style="list-style-type: none"> ● Experience ● Knowledge ● Solutions 	Suite 5, 41 - 63 Camberwell Road Hawthorn East, VIC 3123 PO Box 337, Camberwell, VIC 3164, Australia	Ph (03) 9815 2111 / Fax (03) 9815 2665 enquiries@ecologicalresearch.com.au www.ecologicalresearch.com.au

APPENDIX B



[Appendix 2: Growling Grass Frog monitoring report – Year 9](#)



Modeina Estate Precinct 2

Growing Grass Frog Monitoring – Year 9

Prepared for DFC (Project
Management) Pty Ltd

December 2025
Report No. 7045.71 (1.0)



**Nature
Advisory**

(Formerly Brett Lane & Associates Pty Ltd)

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1. Introduction

DFC (Project Management) Pty Ltd engaged Nature Advisory to undertake annual monitoring for Growling Grass Frog (*Litoria raniformis*) in the environs of Kororoit Creek adjacent to the Modeina Precinct 2 development, Burnside. In the Modeina Precinct 2 Growling Grass Frog Management Plan (GGFMP; BL&A 2017) – prepared to address Condition 3 of the EPBC Act approval 2011/6063 – DFC has committed to undertaking this annual monitoring during the construction of Modeina Precinct 2 and for two years post-construction.

The scope of the monitoring program includes:

- A targeted survey for Growling Grass Frog conducted over a minimum of two evenings during optimal weather conditions (i.e., warm, and windless nights) during the breeding season (November to February) at three locations along Kororoit Creek adjacent to Precinct 2, including:
 - Visual encounter surveys involving spotlighting in areas of suitable habitat, such as along vegetated margins; and
 - Call playback at three locations – each location within close proximity of existing wetlands along the creek.
- Characterisation and photographing of habitats at each location in daylight hours and evening weather conditions recorded.

This report is divided into the following sections:

Section 2 describes the methods used and sources of information for the investigation, including any limitations, where applicable.

Section 3 provides the results of each survey, documenting the location and abundance of Growling Grass Frog along this section of the creek.

The Year 9 monitoring and reporting was undertaken by Danielle Eastick (Senior Zoologist), Alice Ewing (Zoologist), Kat Scully (Zoologist & Project Officer), Liz Browne (Zoologist & Project Manager) and Suzie Moss (Botanist & Project Manager).

2. Existing Information and Methods

2.1. Existing information

Growling Grass Frog is known to be present in this section of the Kororoit Creek based on historic survey data, including Victorian Biodiversity Atlas records from nine separate occasions between 1998-2017 (DELWP 2025). In addition, there are numerous VBA records prior to 2019 within Caroline Springs Lake, which is located approximately 200 m north of Kororoit Creek and 850 m to the west of the study area, and more recent records from 2022–2024 in the Atlas of Living Australia (ALA 2025). The Kororoit Creek corridor is also identified as important for the conservation of Growling Grass Frog within the Melbourne Growth Area (Biosis Research 2012)

Koroit Creek has been identified as supporting an important population under the federal *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999* (EHP 2011).

2.2. Methods

2.2.1. Survey site selection

Three sites were selected in the original pre-construction surveys in January 2017 along the Kororoit Creek adjacent to Modeina Precinct 2 (Sites 1 – 3) and were surveyed in the subsequent surveys in 2017/18 (Year 1 monitoring) and 2018/19 (Year 2 monitoring). These were in suitable breeding habitat for Growling Grass Frog (larger pools of deep water with instream and fringing vegetation) and in some cases coinciding with previous records (Sites 1 & 2).

An additional site was added to replace Site 1 in 2019/20 (Year 3 monitoring) due to the lack of detection and incompatible habitat characteristics (Site 4).

Growling Grass Frog had since been recorded in a reconstructed wetland to the south-east of the Modeina Precinct, which had been revegetated and provided suitable Growling Grass Frog habitat. This site was added as a fifth site (Site 5) in the 2021/22 (Year 5) monitoring season.

2.2.2. Habitat assessment

The habitat assessment was conducted by two zoologists during the afternoon of the 25th November 2025. Habitat notes were taken at each survey site, including percentage of open water, floating, emergent and fringing vegetation, presence of rocks and terrestrial habitat structure.

2.2.3. Call playback and visual searches

Surveys for Growling Grass Frog were undertaken in accordance with the survey guidelines outlined in the *Significant impact guidelines for the vulnerable Growling Grass Frog (Litoria raniformis)* (DEWHA 2009), the *Survey guidelines for Australia's threatened frogs* (DEWHA 2010), and the *Biodiversity Precinct Planning Kit* (DSE 2010).

Call playback and visual search surveys were conducted by two zoologists at four sites on the 25th November & 17th December 2025. Each site was surveyed twice over a period of two nights when weather conditions were considered appropriate to detect Growling Grass Frog – i.e., warm evenings with an air temperature of 15 °C or more, and moderate to no wind. Under these conditions frogs are more likely to be calling and active. Caroline Springs Lake, a reference site close to the study area where GGF are known to occur, was checked for GGF activity on the 17th of December 2025. GGF responded to call playback and indicated that survey conditions were suitable and GGF are active in the area.

Field surveys took place between 20:50 (30 minutes after sunset, almost dark) and 13:30 Australian Eastern Daylight time (AEDT). A survey effort of 90-minutes per survey site was undertaken (DSE 2012). This was achieved by having two people simultaneously undertake surveys involving a 15-minute call playback and 30-minute spotlighting.

The call playback protocol including the following:

- 4 minutes of active listening
- 1 minute call playback of a recorded male Growling Grass Frog advertisement call.

This was repeated three times, for a total of 15 minutes.

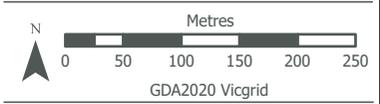
Following call playback and listening, each site was systematically searched for frogs with a spotlight for 30 minutes. The species and number of frog species seen and/or heard at each survey site and notes on the nature and quality of habitat were also recorded.

At Sites 4 & 5, visual inspection of the water's edge was hindered due to dense vegetation, but listening was not impacted.

Figure 1: Growling Grass Frog survey locations - Year 9 monitoring

Project No: 7045.71
 Project: Modena Estate, VIC
 Date: 9/12/2025

- GGF Management buffer
- Waterway
- 2025 GGF monitoring site
- Previous GGF monitoring site
- Rock platforms
- ▲ 2018 Growling Grass Frog observation
- ▲ 2019 Growling Grass Frog observation
- ▲ 2020 Growling Grass Frog observation



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3. Results

3.1. Habitat assessment

Habitat within the study area was found to be like previous years, however vegetation biomass and weed density has increased in areas. DFC is currently addressing and undertaking adaptive weed management in accordance with the GGFMP and is committed to controlling weeds in this area. Weed control is an ongoing challenge considering the urban setting and presence of weeds in adjacent areas outside of DFC control. To achieve better weed control outcomes, DFC has advised that they will liaise with Melbourne Water regarding weed management activities within areas adjacent to DFC control along the Kororoit Creek corridor. The creek's water levels were also much higher and faster moving than the previous year's monitoring period.

The habitat assessment results for all sites are displayed in Table 1.

Table 1: Habitat assessment results 2025

Habitat feature	Site 2a	Site 2b	Site 3	Site 4	Site 5
Type	Creek	Pond (x2)	Creek	Creek	Wetland (x3)
Surface water cover (%)	70	70	80	20	15
Floating veg cover (%)	2	1	1	2	3
Emerging veg cover (%)	28	29	19	78	82
Fringing veg cover (%)	90	98	100	100	99
Drought affected	No	No	No	No	No

3.1.1. Site 2

Site 2 was located in the central part of the study area, at a distinct bend in the creek (Site 2a) which supported abundant emergent vegetation (28% cover) dominated by various rushes (*Juncus* spp.), Common Water-ribbons and Broadleaf Cumbungi. Fringing vegetation (90% cover) also included Slender Knotweed, Tall Club-sedge, Curled Dock, and Kikuyu. The western bank contains occasional overhang of branches from the canopy of River Red Gum. Large boulders featured on the edge of the creek, with abundant smaller rocks throughout the water and fringing edges, creating many cavities.

North of the creek were two artificial dams fed by stormwater runoff to the north (Site 2b). These dams were constructed by Melbourne Water and are outside of the DFC management area. These were separated by an earth-covered, dry, rocky causeway. The revegetation from 2023 had established around the southern dam, creating tall fringing vegetation, improving the habitat which is now potentially suitable habitat for Growling Grass Frog. The west side of the dams was dominated by weeds including Toowoomba Canary-grass, Wild Oat, and Curled Dock at the water's edge. The eastern side was primarily Rushes, Broadleaf Cumbungi, Tall Club-sedge, Slender Knotweed and Pale Knotweed. Large flat rocks were present around the wetland and throughout the connecting causeway. Terrestrial habitat was freshly mowed around the southern dam.

There was limited floating vegetation in both the creek and the dams at Site 2.



Figure 2: Northern bend in Kororoit creek and the adjacent wetlands, Site 2.

3.1.2. Site 3

Site 3 was located toward the eastern end of the study area at a natural basalt rock bridge platform. Vegetation was dominated by Narrowleaf Cumbungi, which was present as fringing vegetation. Other common fringing species included Tall Club-sedge, Slender Knotweed, Spike Rush and other rushes (100% cover; Table 1 & Figure 3). Some instream vegetation including Common Water-ribbons was present (<5%). Many instream rocks were present in this section of Kororoit Creek.

Revegetation works are established on the western bank above the survey site, however, these areas are becoming overgrown by weeds, particularly Toowoomba Canary Grass. The eastern side of the creek is primarily mowed for pedestrian walking tracks.



Figure 3: Rock platforms, fringing/emergent vegetation (top) and terrestrial habitat (bottom), Site 3.

3.1.3. Site 4

Site 4 was located toward the north-western region of the study area, near an existing steep rock escarpment. Vegetation was dominated by Broadleaf Cumbungi and Common Reed, and Slender Knotweed was also present within the fringing vegetation (100% cover). Submerged vegetation was present in the form of Water Ribbons. The creek had a River Red Gum canopy with some fallen logs and debris scattered on the edges of the banks and caught among the in-stream vegetation.

The surrounding banks were dominated by dense infestations of introduced Chilean Needle-grass and Toowoomba Canary-grass which did not look as though it had been recently slashed. Additional weed control should prioritise reducing and limiting further any spread of Chilean Need-grass and ensuring all areas of the GGFMB are kept slashed low as required in the GGFMP. Revegetation works have been undertaken on the slope between the creek and the development, which has grown however this was being overgrown by weeds in some sections. Additionally, the erosion control fence had been and broken and flattened in areas, now revegetation is complete the sediment fencing must be removed. DFC have advised they have notified the contractor and sediment fencing will be removed as soon as practicable. A fox den was observed nearby to Site 4 (photo below), DFC has advised that corrective action to eradicate the den will be taken as soon as practicable.



Figure 4: Creek with aquatic and emergent vegetation (top), adjacent revegetation that is overgrown with weeds (bottom R) and nearby foxes den (bottom L), Site 4

3.1.4. Site 5

Site 5 was a series of artificial wetlands associated with the recreation areas of the adjacent housing estate. The site comprised several small to medium areas of open water with dense emergent and fringing vegetation dominated by native rushes, Tall Club-sedge, and Leafy Twig-rush. Areas of open water appeared to hold more water than the 2024 surveys and were connected to drainage lines at either end, including a dry rocky outfall area leading to Kororoit Creek. Floating aquatic vegetation and algae was present but was unable to be identified from a distance.

Terrestrial habitat included dense plantings of Tall Sedge, Common Tussock-grass and Spiny-headed Mat-rush surrounding the wetland, and, similar to 2024, these areas are beginning to be encroached by weeds, such as Blackberry, and large amounts of rubbish. Large boulders were placed throughout the terrestrial habitat. Beyond the wetland area is a paved footpath, and to the southern end was a cleared grassy field which had been slashed.



Figure 5: Large southern-most wetland with emerging and fringing vegetation (top L), dense terrestrial vegetation (top R), footpath and mowed lawn (bottom left) and rocky drain line to creek (bottom R) wetland, Site 5

3.2. Growling Grass Frog survey

During the November & December 2025 surveys, no Growling Grass Frogs were detected. Other frog species were detected at all survey sites at varying densities (Table 2). Species detected were common, widespread species: Common Eastern Froglet, Eastern Banjo Frog, and Spotted Marsh Frog.

Table 2: Growling Grass Frog survey results 2025

Date	Site	Start time	Temp (°C)	Wind (KPH)	Frog Species observed	Count
25/11/2025	2	23:30	14.7	9	Common Eastern Froglet	>5
					Eastern Banjo Frog	>10
					Spotted Marsh Frog	>2
	3	20:50	18.3	13	Common Eastern froglet	2
	4	22:47	16.2	7	Common Eastern Froglet - upstream	3
	5	21:42	17	7	Common Eastern Froglet	>20
					Eastern Banjo Frog	>15
Spotted Marsh Frog					>10	
17/12/2025	2	21:53	20.9	9	Common Eastern Froglet	2
					Eastern Banjo Frog	1
					Spotted Marsh Frog	1
17/12/2025	3	23:45	18.8	0	Eastern Banjo Frog	1
					Common Eastern Froglet	3
17/12/2025	4	22:50	19.9	0	Nil	N/A
18/12/2025	5	0:30	18.7	0	Eastern Banjo Frog	>10
					Spotted Marsh Frog	1
					Common Eastern Froglet	1

3.2.1. Other species

Three mammal species were recorded during GGF surveys: an Eastern Grey Kangaroo and a pair of foxes (and a fox den) were observed at Site 4, and Grey-headed Flying-foxes flying close overhead at all sites. DFC has advised that corrective action to eradicate the fox den will be undertaken as soon as practicable. Grey-headed Flying Fox are an EPBC Act listed species, and it is positive to observe them foraging in the retained River Red Gums lining the creek.

Several small fish (2-6cm), potentially mosquito fish were observed at site 2a, 2b and 3.

4. Discussion and recommendations

The Year 9 monitoring survey did not detect the presence of Growling Grass Frog within the study area. Absence of Growling Grass Frog for the fifth season in a row suggests that Growling Grass Frog have been displaced from the study area. Given the high rainfall during spring and early summer 2025, it suggests either the area is too isolated to allow repopulation from other nearby sites or this section of the Kororoit Creek is no longer suitable/preferred habitat.

Potential contributing factors to this displacement include the flooding of local waterways and the construction of a stormwater basin outside the DFC development area, which may have impacted water quality and habitat suitability. The persistent presence of mosquito fish over the past few survey seasons, a known predator of GGF tadpoles, and foxes has also likely hindered GGF recovery. Additionally, the potential presence of Chytrid fungus in the Kororoit Creek river could also be impacting GGF populations.

The threats mentioned above are common to urban and peri-urban waterways and as such may have been present prior to the commencement of development. With the exception of high grass biomass levels and weed encroachment (which are being addressed in accordance with the management plan), vegetation and structural characteristics of habitat at the survey site locations was comparable with previous assessments and considered to be of suitable, high quality for Growling Grass Frog.

In accordance with the Modeina Precinct 2 Growling Grass Frog Management Plan (GGFMP), failure to detect Growling Grass Frog over the course of two annual rounds of population monitoring is a trigger which requires corrective action. To address this, testing of water quality upstream and downstream of outfalls (beyond mixing zone) was conducted in May 2023. The May 2023 sampling found water quality in the three Kororoit sites and one constructed wetland were all within the range typically observed in urban waterways with few minor exceedances. Additional water quality assessment was undertaken in 2025. The September 2025 sampling results are provided in Appendix 1 and summarised below:

- In-situ water quality in the three Kororoit sites and one constructed wetland were all within the range typically observed in urban waterways and within ERS and DELWP objectives and consistent with the GGFMP goal to maintain water quality supportive of GGF habitat during the 2025 sampling. Comparatively, the 2023 sampling event showed exceedances in dissolved oxygen and turbidity.
- Nutrient and E. coli monitoring indicated that sites 2 and 4 were within ERS and DELWP objectives and consistent with the GGFMP goal to maintain water quality supportive of GGF habitat. However, sites 3 and 5 both showed exceedances in the ERS Objectives and DELWP Standards. Site 5, the constructed wetland, and site 3, the most downstream site, both showed exceedances in both the ERS Objectives and DELWP Standards for total Nitrogen and total Phosphorus and exceedances in the DELWP Standards for E. coli, it should be noted that there is no listed objective for E. coli under the ERS Objectives. Comparatively, the 2023 sampling event showed no exceedances of ERS or DELWP 2017 objectives for nutrient or E. coli monitoring, indicating that the water quality at the time of the 2025 sampling event has declined in multiple nutrient and microbial parameters.

In compliance with the GGFMP it is recommended that continued corrective action is taken within the next 12 months to better understand the absence of GGF. This includes:

- Increased maintenance of weeds and biomass levels of grass within the GGFMB. For example, in addition to the regular management, extra slashing of grass should occur in September to ensure it is cut low (particularly Toowoomba Canary-grass) prior to the GGF active season. Management of high threat weeds around GGF survey sites should also increase.

- Undertake comprehensive water quality testing in 2026 and follow recommendations for management as per the results of the 2025 water quality report.

Based on the ongoing site observations and monitoring, apart from the minor observations of disrepair of the erosion control fence, and grass biomass levels, no evidence indicating alteration to water quality, including sedimentation, nutrients, incursion of predatory species, chemical residue and gross pollutant volume have been observed as a result of DFC management. Given the urban setting and high level of development in the surrounding area, the failure to locate GGF may be a result of factors beyond the control of DFC and unrelated to compliance issues under the Growling Grass Frog Management Plan. Additional detailed water testing in 2026 is recommended, as outlined in the 2025 water sampling report, to determine if the decline in water quality observed in 2025 was a singular instance. Additional weed control, particularly within the waterway corridor is recommended to be undertaken by the responsible parties. To achieve better weed control outcomes, DFC has advised that they will liaise with Melbourne Water regarding weed management activities within areas adjacent to DFC control along the Kororoit Creek corridor.

5. References

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[Appendix 1. Water Quality Monitoring report, Aquatica Environmental, 2025](#)

15 October 2025

Dennis Family Corporation (Project Management) Pty Ltd
Attention: Shweta Thadani
Level 1, 863 High St
Armadale VIC 3143

Via email: shweta.thadani@denniscorp.com.au

Dear Shweta

RE: Water Quality Monitoring of Kororoit Creek for Modeina Estate Growling Grass Frog Management Plan

Aquatika Environmental was engaged by Dennis Family Corporation (Project Management) Pty Ltd (DFC) to conduct an additional round of water quality sampling as a requirement under the Growling Grass Frog Management Plan (*Litoria raniformis*, GGFMP; Nature Advisory 2017, approved by the Minister under EPBC 2011/6063) for Modeina Estate development, at Burnside, Victoria.

Condition 3 of the EPBC approval requires that the GGFMP detail measures to assess water-quality effects on GGF habitat. The following statement outlines that requirement:

“Testing of water quality upstream and downstream of outfalls (beyond mixing zone) to determine the influence of stormwater inputs and whether water quality meets the objectives for water quality in the catchments of Port Phillip Bay as per the SEPP (Waters of Victoria) guidelines.” (Nature Advisory 2017).

Note: Since 2017 the State Environmental Protection Policy (i.e. SEPP), as referenced in the GGFMP, has been replaced by the Environmental Reference Standard (ERS, EPA 2021). The ERS (2021) objectives for the ‘Urban Segment’ of the Port Phillip Bay catchment were applied for comparison.

This report represents the results and findings of sampling undertaken on 25 September 2025.

1. BACKGROUND

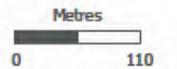
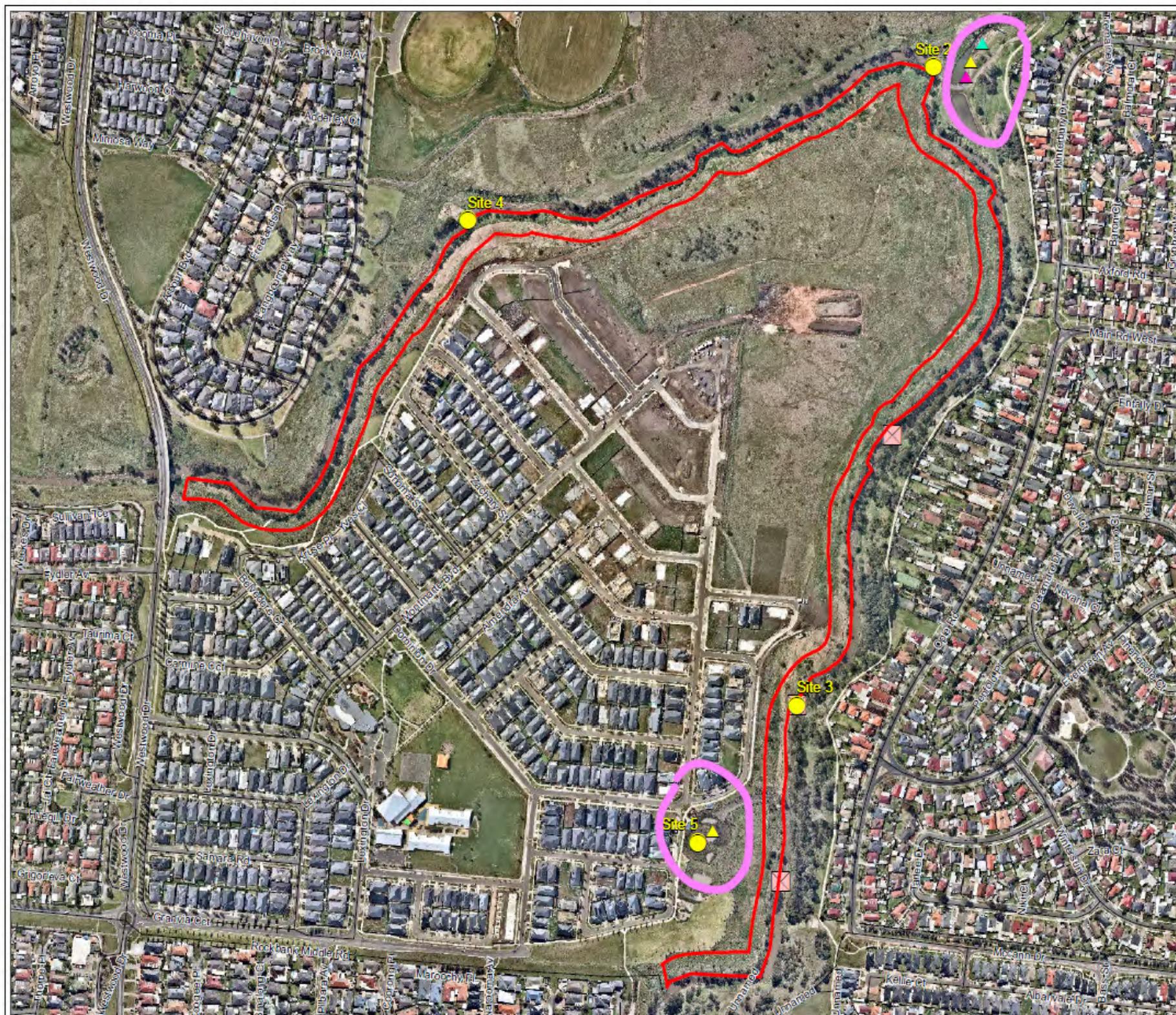
DFC originally engaged Aquatica Environmental in 2023 to scope and implement water quality sampling in broad accordance with parameters detailed in the Victorian Department of Energy, Environment and Climate Action’s (DEECA) Growling Grass Frog Habitat Design Standards (DELWP 2017). Parameters assessed included in situ water quality measurements (pH, salinity, turbidity, dissolved oxygen, temperature) and laboratory analysis of water samples (E. coli, ammonia, total nitrogen, total phosphorus, etc.).

The results from the 2023 monitoring indicated that water quality in the three Kororoit Creek sites and one constructed wetland site ([Figure 1](#)) was generally within the range typically observed in urban waterways. Minor exceedances of the ERS objectives for dissolved oxygen and turbidity were recorded at Site 5, and ammonia concentrations exceeded the GGF habitat standards at all four sites. However, none of these results were considered to represent an ecologically significant threat to the species. Nonetheless, the GGFMP (Section 6.6.2) identifies water-quality decline as a potential trigger for management review, reinforcing the need for periodic testing.

Figure 1: Survey site locations

Project: GGF Monitoring Program
Client: DFC (Project Management) Pty Ltd
Date: 22/12/2022

-  GGF Management buffer
-  Rock platforms
-  Monitoring sites
-  2018 Growing Grass-frog observation
-  2019 Growing Grass-frog observation
-  2020 Growing Grass-frog observation



2. METHODOLOGY

2.1 In-situ Water Quality Monitoring

Where surface water was present, water quality data was collected using a calibrated YSI ProDSS multiparameter water quality meter. Sampling locations aligned with the same four sites previously used during the 2023 sampling event, originally stipulated by Nature Advisory ([Figure 1](#)). Sites 2–5 correspond to those identified in the Growling Grass Frog Management Plan (Brett Lane & Associates 2017, Figures 1–4) and confirmed in the Nature Advisory (2023) EPBC Act Compliance Report. Water quality sampling was undertaken in accordance with the Environmental Protection Authority’s (EPA) “A Guide to The Sampling and Analysis of Waters, Wastewaters, Soils and Wastes”, Publication 441. (EPA 2000).

Along with GPS coordinates and upstream/downstream photographs at each site, the following parameters were collected:

- Turbidity;
- pH;
- Temperature;
- Electrical conductivity; and
- Dissolved oxygen.

2.2 Nutrient and E. coli Monitoring

Nutrient and E. coli monitoring included the collection of water samples for laboratory analysis by a National Association of Testing Authorities (NATA) accredited laboratory. Samples were placed in ice filled eskies after collection and submitted, on the day of collection, to the laboratory under a completed Chain of Custody (CoC) process.

The water samples were analysed by NATA-accredited laboratory, ALS, for the following parameters:

- E. coli;
- Nitrite (NO₂);
- Nitrate (NO₃);
- Total Kjeldahl Nitrogen (TKN);
- Total Nitrogen (as N); and
- Total Phosphorus (as P).

2.3 Assumptions and Limitations

The report and the results provided herein were based on the following assumptions and limitations:

- The comparison of results against the ERS objectives is based on a single round of sampling, rather than the minimum 12 monthly samples required to calculate 25th and 75th percentiles (EPA 2021). Accordingly, the data provide a contextual indication only of compliance with ERS objectives, not a statistically valid assessment
- Conclusions are derived from a single monitoring event and therefore represent a snapshot of water quality and stream conditions at the time of sampling.
- Monitoring was confined to the four sites specified in the original GGFMP (Nature Advisory 2017) and did not include additional locations upstream or downstream of those sites.

- While exceedances and spatial trends in nutrient or microbial concentrations may suggest potential localised inputs, the monitoring design and scope do not enable identification or confirmation of specific point sources contributing to those results.

3 RESULTS

3.1 Survey Conditions

The survey was undertaken on 25 September 2025 by Aquatica Environmental’s project ecologist Connor Donnelly. Conditions on the day were overcast and mild, with temperatures ranging between a night-time low of 9.9°C and daytime high of 16.5°C during the survey (BOM 2025). No rainfall had occurred in the preceding 72 hours (BOM 2025), reducing the likelihood of stormwater-related turbidity.

3.2 Sampling Sites

All sampling sites corresponded with those detailed in the GGFMP (Nature Advisory 2017) and previously sampled by Aquatica Environmental (2023), comprising three sites along Kororoit Creek (Sites 2 – 4) and one site within the constructed wetland in Modeina Estate (Site 5). Upstream and downstream site photographs are provided below. Side by side 2023 / 2025 site photographs are provided in Attachment A to illustrate site condition and habitat changes over time.



Photo 1 Constructed wetland (Site 5)



Photo 2 Kororoit Creek (Site 3)



Photo 3 Kororoit Creek (Site 4)



Photo 4 Kororoit Creek (Site 2)

3.3 In-situ Water Quality

The results of the in-situ water quality sampling are presented in [Table 1](#). Results of the 2023 sampling are provided in Attachment B for comparison.

Water temperature was relatively consistent across all sites (13.5–14.3 °C), reflecting cool seasonal conditions typical of early spring.

pH values were slightly above neutral at all sites (7.87–8.18) and remained within the ERS objective range (6.5–8.2). These values are indicative of slightly alkaline conditions that are typical of lowland freshwater systems.

Dissolved oxygen (DO) concentrations met the ERS objectives at all sites, with values ranging from 60.8 % to 77.1 %.

Electrical conductivity (EC) varied between sites, ranging from low salinity in the constructed wetland (71.9 $\mu\text{S}/\text{cm}$) to moderately elevated readings in Kororoit Creek (up to 1965 $\mu\text{S}/\text{cm}$). All sites remained well below the ERS objective threshold of 3000 $\mu\text{S}/\text{cm}$, suggesting that salinity levels were consistent with freshwater ecosystems in urban environments.

Turbidity levels were low at all sites (9.3–22.1 NTU) and below the ERS objective of ≤ 30 NTU. These results indicate mostly clear water conditions and minimal suspended sediment load at the time of sampling, likely reflecting limited surface runoff and stable flow conditions at the time of the sampling.

Overall, the 2025 data indicate that in-situ parameters were within ERS objectives, consistent with the GGFMP goal to maintain water quality supportive of GGF habitat (Section 5.3.2).. Compared to the 2023 sampling event, the results were largely similar, with the only exceedances in 2023 observed for dissolved oxygen (%) and turbidity at Site 5.

Table 1 September 2025 in-situ water quality results

Parameter	Units	ERS Objectives	DELWP 2017 Standards	Site			
				5	3	4	2
Temperature	°C	NA	NA	14.33	13.80	13.50	13.63
pH	pH units	≥6.5*, ≤8.2**	6.0 - 8.5	7.87	7.93	8.01	8.18
Dissolved Oxygen	%DO	≥60, 130max	NA	75.67	60.80	77.10	72.00
	mg/L	NA	NA	7.74	6.28	7.97	7.42
Electrical Conductivity	µS/CM	≤3,000	>5,000	71.93	856.00	1,936.67	1,964.67
Turbidity	NTU	≤30	>40	22.11	14.25	9.34	11.47

* 25th percentile; ** 75th percentile.

3.4 Nutrient and E. coli Monitoring

The results of the laboratory analysed are provided in [Table 2](#). Results of the 2023 sampling are provided in Attachment B for comparison.

Total Nitrogen (TN) concentrations were highest at the constructed wetland (Site 5; 1.8 mg N/L) and the most downstream site (Site 3; 1.3 mg N/L), exceeding the ERS objective and the DELWP 2017 standard. Sites 4 (most upstream; 0.43 mg N/L) and 2 (0.65 mg N/L) remained within both standards.

Total Phosphorus (TP) was elevated at Site 5 (0.19 mg P/L), exceeding both the ERS and DELWP 2017 objectives. Site 3 was at the ERS threshold and slightly above the DELWP guideline.

E. coli concentrations were markedly elevated at Site 5 (1,200 MPN/100 mL) and even higher at Site 3 (>2,400 MPN/100 mL), exceeding both primary (<150 MPN/100 mL) and secondary (<1,000 MPN/100 mL) contact standards. Sites 4 and 2 were within guideline ranges. The elevated result of >2,400 MPN/100 mL at Site 3, is likely due to a combination of factors such as downstream accumulation, and potential local point sources.

Overall, the highest nutrient and microbial concentrations occurred at the constructed wetland and downstream site, while the upstream (Site 4) and Site 2 reaches generally met both ERS objectives and DELWP 2017 standards. Results from the original sampling in May 2023 showed no exceedances of ERS or DELWP 2017 objectives, indicating that the water quality at the time of this sampling event has declined in multiple nutrient and microbial parameters in comparison.

Table 2 September 2025 nutrient and E. coli results

Analyte	Units	ERS Objectives	DELWP 2017 Standards	Site			
				Site 5	Site 3	Site 4	Site 2
Total Nitrogen, as N (TN/TP LL)	mg N / L	<1.2**	<1	1.8	1.3	0.43	0.65
Phosphorus, total as P (TN/TP LL)	mg P / L	<0.11**	<0.1	0.19	0.11	0.034	0.03
TKN (via Calculation)	mg/L	-	-	1.5	0.69	0.35	0.63
E. coli (Colilert 2000)	MPN/100mL	-	<150 [#] <1,000 ^{##}	1200	>2400	110	63
Nitrate + Nitrite, as N (NOX as N LL)	mg N / L	-	-	0.28	0.6	0.082	0.02

Yellow highlighting indicates parameter failed to meet the ERS objective.

Orange highlighting indicates parameter failed to meet the DELWP 2017 objective.

Red highlighting indicates parameter failed to meet both the ERS and DELWP 2017 objectives

** 75th percentile; [#]Primary contact; ^{##}Secondary contact. orange highlight = exceeds objective and/or standard

4 CONCLUSION

The 2025 water quality monitoring of Kororoit Creek and the constructed wetland at Modeina Estate demonstrated compliance with ERS and GGFMP objectives for in-situ parameters across all four sampling locations. Water temperature, pH, dissolved oxygen, electrical conductivity, and turbidity remained within acceptable ranges for urban waterway segments, indicating generally adequate conditions at the time of sampling. These results fulfil the monitoring commitment outlined in the GGFMP (Section 6.6.2) and respond to the trigger identified in the Year 5 EPBC Act Compliance Report (Section 3.2) to undertake water-quality testing following two years of GGF non-detection.

However, laboratory analysis revealed elevated nutrient and microbial concentrations at Site 5 (constructed wetland) and Site 3 (downstream Kororoit Creek). Total nitrogen and total phosphorus exceeded both ERS objectives and DELWP (2017) standards at the constructed wetland, whilst the downstream site exhibited marginal exceedances for total phosphorus and pronounced *E. coli* contamination (> 2,400 MPN/100 mL). This represents exceedance of both primary and secondary contact criteria under the ERS, indicating potential public-health and ecological concerns requiring follow-up sampling. These results suggest localised point-source inputs or downstream accumulation of nutrients and faecal indicator bacteria. Potential sources may include stormwater drain outfalls or organic runoff from adjacent residential areas, which should be assessed against GGFMP post-construction stormwater management requirements (Section 5.3.2). In contrast, Sites 2 and 4 generally met water-quality objectives, indicating spatial variability in water quality along the creek system.

The observed exceedances, whilst concerning from a water quality perspective, do not appear to represent an immediate ecological threat to growing grass frog populations, given the species' tolerance to moderately degraded urban waterway conditions. Nevertheless, sustained nutrient enrichment and microbial contamination will likely have adverse effects on the species, and the downstream receiving environments.

Recommendations:

- **Investigate elevated *E. coli* results:** Further investigation is recommended to determine the cause of the high *E. coli* concentrations observed at Site 3 and within the constructed wetland (Site 5). This should establish whether the elevated levels represent a persistent trend or an isolated event. The investigation should be undertaken in consultation with Nature Advisory to align with ongoing GGF monitoring cycles and to determine whether corrective actions under the GGFMP (Table 5; post-construction phase) are required.
- **Undertake seasonal sampling:** Implement additional sampling at different times of the year, particularly during the GGF breeding season (December – February), to capture potential seasonal variation in nutrient and microbial levels. This monitoring should, where practicable, coincide with annual GGF surveys to provide concurrent ecological and water-quality data.
- **Maintain methodological consistency:** Ensure that all future monitoring follows the methodology described in this report, including calibration procedures, analytical parameters, and laboratory QA/QC protocols, to enable valid temporal comparison between sampling rounds.
- **Retain fixed sampling locations:** Use the same four established monitoring sites (Sites 2 – 5; GGFMP 2017) for all future events to maintain spatial consistency and comparability of results

If you have any questions or would like to discuss this report or any other matter further, please do not hesitate to call me on 0408 558 534. We look forward to the opportunity of continuing to work with DFC and Nature Advisory on this project.

Kind Regards,



Connor Donnelly
Project Ecologist



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ATTACHMENT A Site Comparison Photos

Site 5 2025



Site 5 2023



Site 3 2025



Site 3 2023



Site 4 2025



Site 4 2023



Site 2 2025



Site 2 2023



ATTACHMENT B 2023 Water Quality Results

2023 In-situ water quality results

Parameter	Units	ERS Objectives (EPA 2021)	GGF Water Quality Standards (DELWP 2017)	Site 2	Site 3	Site 4	Site 5
pH	pH units	≥6.5*, ≤8.2**	6.0 – 8.5	7.77	7.86	7.91	7.76
Dissolved Oxygen (DO)	%	≥60*, <130#	-	66.4	65.5	71.2	26.4
	ppm	-	-	7.25	7.16	7.78	2.85
Salinity / Electrical Conductivity (EC)	µS/cm	≤3,000	<5,000	1,160	1,155	1,143	232
	ppm	-	-	580	577	572	116
	PSU	-	-	0.58	0.58	0.57	0.11
Turbidity	NTU	≤30	<40	17.0	14.4	16.0	31.2
Temperature	Deg. Celsius	-	-	11.69	11.61	11.67	12.22

2023 Laboratory results

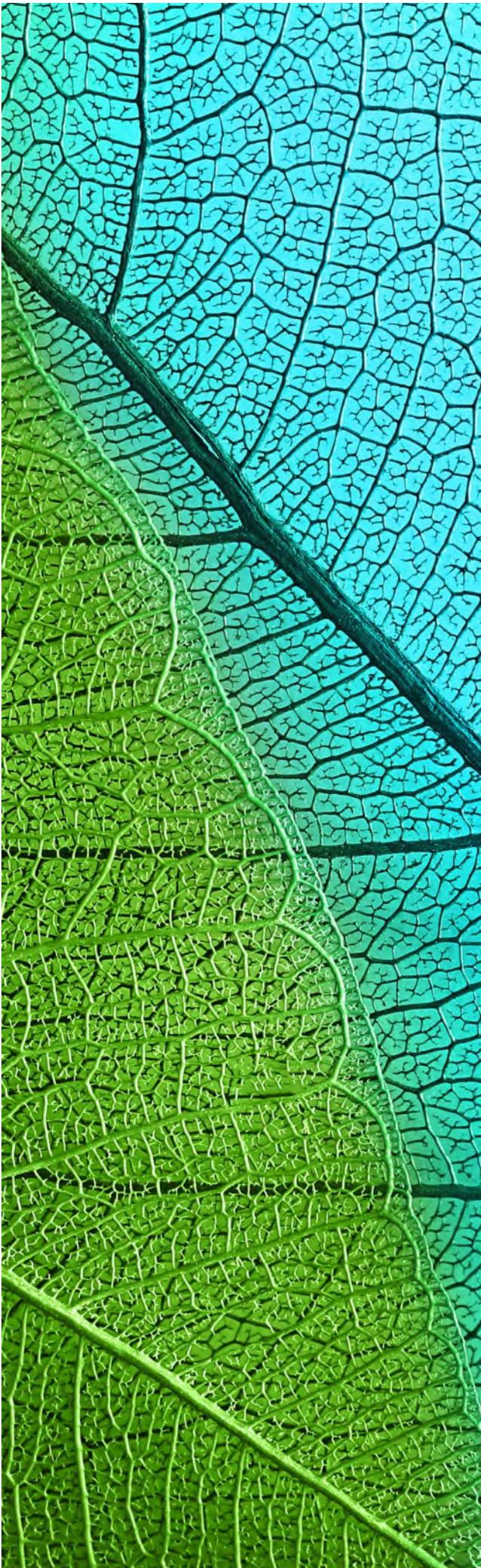
Parameter	Units	ERS Objectives (EPA 2021)	GGF Water Quality Standards (DELWP 2017)	Site 2	Site 3	Site 4	Site 5
<i>E.coli</i>	Orgs/100mL	-	<150##, <1,000^	280	160	250	41
Ammonia (NH ₃)	mg/L	-	<0.010	0.049	0.031	0.026	0.15
Nitrite (NO ₂)	mg/L	-	-	0.002	0.004	0.003	0.014
Nitrate (NO ₃)	mg/L	-	-	0.051	0.068	0.045	0.13
Total Kjeldahl Nitrogen	mg/L	-	-	0.69	0.51	0.62	0.73
Total nitrogen	mg/L	<1.2**	<1	0.75	0.58	0.67	0.87
Total phosphorus	mg/L	<0.11**	<0.1	0.071	0.052	0.06	0.10

Yellow highlighting indicates parameter failed to meet the ERS objective.

Orange highlighting indicates parameter failed to meet the DELWP 2017 objective.

* 25th percentile; ** 75th percentile; # Maximum

Appendix 3. Grassland Monitoring Report, year 8 (2025)



Modeina Estate, Precinct 2, Burnside

Grassland Reserve Annual Monitoring – Year 8

**Prepared for DFC (Project
Management) Pty Ltd**

December 2025
Report No. 7045.71 (1.1)



**Nature
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1. Introduction

DFC (Project Management) Pty Ltd engaged Nature Advisory Pty Ltd to undertake annual monitoring of the Grassland Reserve in Precinct 2 of Modeina Estate, Burnside. This is Year 8 of annual monitoring which is a requirement of the 10-year management plan outlined in *Modeina - Grassland Reserve Management Plan* (BL&A 2018).

A survey of the grassland reserve was undertaken on 12 November 2025, to determine the following:

- The cover of native vegetation within the reserve
- The cover of weeds within the reserve
- Biomass levels within the reserve
- Weed cover estimates for each weed species
- Monitoring of pest animals to determine the need for pest animal control
- Visual checks to determine any grassland reserve maintenance that may be required

A separate survey targeting Spiny Rice-flower (SRF) was also undertaken on 7 August 2025, to determine the abundance and health of the species during the flowering period of the species. This survey was conducted approximately four months after the site had been burnt for management purposes, meaning many individuals had only just started resprouting after the fire.

This information provides an assessment of the outcomes based on the current management actions as well as guiding adaptation to future management of the site.

This report was prepared by a team from Nature Advisory comprising Ezra Janetzki (Botanist), Declan Blackburn (Botanist), and Suzie Moss (Botanist and Project Manager).

2. Management Actions Completed

Management of the grassland reserve was undertaken by Australian Ecosystems in Year 8 and includes the following:

- A burn in April 2025, to reduce biomass and weed cover levels, and encourage establishment of native species
- Control of weeds within the reserve
- Maintenance of fencing, signage and rabbit proofing

Data from the monitoring assessment in 2022 was separated into burnt (west) and unburnt (east) areas to gain a better understanding of the quality of vegetation following a controlled burning. The assessments conducted in 2023 aimed to gauge its effects on native and introduced vegetation over time and whether it was beneficial for the native population. This was further assessed in the 2024 field surveys and the results will help tailor management actions and improve outcomes for the reserve in future. In April 2025 almost the entire site was burnt to promote Spiny Rice-flower, biodiversity and control biomass. Dry seasonal conditions supported an April burn, as opposed to a summer burn, in line with prescribed management for the species which recommends burning from November-April (DCCEEW 2024). A survey was conducted following this to determine the effect of the burn on the health of the Spiny Rice-flower population and the effect on weeds present within the site. Data was not divided into east and west for this assessment.

3. Monitoring Results

The results of the monitoring assessment are outlined in Table 1.

Overall, the condition of the grassland reserve has seen significant improvement in response to the previous controlled burning conducted in year 5 (2022) on the western half and again after the current controlled burning of almost the entire grassland in year 8 (2025). The cover of native vegetation has increased slightly to 70% (from 65% in 2024), whereas the cover of weeds has significantly decreased from 40% in 2024 to 20% in 2025 (Table 1).

The vast majority of the site which had been burnt was dominated by native grasses and herbs in the inter-tussock spaces, and had a relatively low weed cover. The dominant grass species were Tussock Grass, Spear Grass, Kangaroo Grass and Long-hair Plume-grass. Many herbs were thriving in the inter-tussock spaces. Some common species were Spiny Rice-flower, Smooth Rice-flower, Blushing Bindweed, Black-anther Flax-lily, Cottony Fireweed, Kidney Weed, Sheep's Burr and Grassland Wood-sorrel. The increase in native vegetation coverage can be largely attributed to the burn earlier in the year. Biomass levels are significantly lower than in 2024, with many inter-tussock spaces. Where inter-tussock spaces occurred amongst native grasses and herbs, they were considered to form part of the native vegetation cover, as such spaces are ideal for many native herbs to colonise (see Photo 1).



Photo 1: Blushing Bindweed growing in inter-tussock spaces between native grasses.

Weed cover was highest in the eastern portion of the site, as well as along the borders with the fence. An infestation of Wild Oat in the eastern part of the reserve was clearly the area with the highest weed cover. It also served as a harbour for most other weed species that were present within the site. Most weeds occurred at the edge of the grassland, especially along the eastern border (adjacent Kororoit Creek),

which is probably because of blow-in from nearby weedy areas. Many weed species that emerged in 2024 were not detected in the grassland in 2025. This is likely because of the burn early in the year.

Previous reports in 2022, 2023 and 2024 stated that the unburnt areas in the western section had a higher cover of native vegetation and a low cover of weeds compared to the eastern section of the reserve. In-field observations in 2025 suggests that this trend continues, although the burn implemented in April 2025 appears to have significantly reduced weed cover and forced the Wild Oat infestation to retract.

Spiny Rice-flower numbers were lower in the 2025 monitoring than in 2024. However, this is because many individuals of the species were resprouting following the burn which was four months previous at time of the August SRF survey. The burn has created better conditions for the species, with many inter-tussock spaces to resprout, grow and potentially colonise. It is expected that Spiny Rice-flower numbers will increase in 2026.

Table 1: Cover estimates within the grassland reserve.

% Cover	Overall cover 2024	Overall cover 2025
Native vegetation	65%	70%
Introduced vegetation	40%	20%
Organic matter	8%	3%
Bare ground	2%	<1%
Inter-tussock spaces	6%	25%

3.1. Assessment of biomass

Biomass levels in the Grassland Reserve during the 2025 monitoring event were found to have significantly reduced compared to 2024, because of the burn implemented across the whole site. Only the area in the eastern part of the reserve which is dominated by Wild Oat had high biomass, but even this had decreased since the previous year.

The EMP currently states that ecological burning should be undertaken at least every 2-3 years at the prescribed time (autumn). This year's burn appears to have had a positive effect. It appears that the eastern section of the reserve may be ready for another burn soon, as biomass is still relatively high.

Native grasses like Kangaroo Grass, Spear Grass and Tussock Grass were dominant, especially in the western and central parts of the reserve. They appear to have responded well to the burn. Native herbs are abundant in the inter-tussock spaces that have been created by the burn (Photo 2).

The presence of Spiny Rice-flower, listed as Critically Endangered under both the *Environmental Protection and Biodiversity Act 1999* ('EPBC Act') and the *Flora and Fauna Guarantee Act 1988* ('FFG Act'), is discussed in greater detail in Section 3.2.

Arching Flax-lily individuals were still present within the reserve (Figure 1). This species is listed as Critically Endangered under the FFG Act.



Photo 2: High native herb diversity where biomass levels were low.

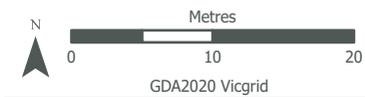
Figure 1: Threatened species and weeds within the Grassland Reserve

Project No: 7045.71
Project: Modena Estate
Date: 18/11/2025

-  Study area (Grassland Reserve)
-  Parcel boundary
-  High weed cover
- Weed species**
 -  Chilean Needle-grass
- Threatened species**
 -  Pale Flax-lily
 -  Spiny Rice Flower



Aerial imagery: Nearmap (15/10/2025)



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3.2. Spiny Rice-flower

A targeted survey of Spiny Rice-flower was conducted in accordance with the methods outlined in the *Significant Impact Guidelines for the critically endangered Spiny Rice-flower Pimelea spinescens subsp. spinescens* (DEWHA 2009), on 7 August 2025.

A total of 69 Spiny Rice-flower were recorded within the reserve during this survey (Figure 1). This corresponded to a 22% decrease from the previous year (89 individuals), although this number is likely to have been influenced by the fact some Spiny Rice-flower individuals may not have resprouted yet after the fire in April.

- 2016: 179 individuals
- 2019: 197 individuals
- 2020: 106 individuals
- 2021: 222 individuals
- 2022: 145 individuals
- 2023: 233 individuals
- 2024: 89 individuals
- 2025: 69 individuals

All individuals observed were resprouting following fire and were very small (Photo 3). Only one individual was flowering. It is likely that many individuals have not resprouted yet following fire. Visibility was good, however, so individuals that were resprouting would have had a high detection rate.

No attempt was made to match observations with existing datapoints, since the vegetation was in quite a different state to last year. Some individuals would not have been detectable due to not having resprouted yet after fire, whereas others that may have been smothered by vegetation last year would have easily been detected this year. Additionally, delineation of what constitutes an individual plant can be subjective as the plant is known to resprout via underground stems, making it difficult to determine different individuals from resprouts of the same individual, leading to potential difficulties with consistency between surveys. The general distribution of Spiny Rice-flower within the reserve has remained similar to previous monitoring events, most of them being in the north-west of the grassland reserve.

A decrease in the number of plants recorded was observed in the reserve during the current year. This is likely due to some individuals not having resprouted yet after the site was burnt in April 2025. It is expected that there will be an increase in the number of individuals detected in the 2026 monitoring event.



Figure 2: Spiny Rice-flower Monitoring 2025

Project No: 7045.71 **Project:** Grassland Reserve Monitoring **Date:** 8/08/2025

- Grassland Reserve
- Spiny Rice Flower location
- 1 Number of Spiny Rice Flower individuals

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0 ————— 10

GDA2020 Vicgrid



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Photo 3: Resprouting Spiny Rice-flower.

3.3. Weed cover estimates

Weed cover estimates for 2018, 2019, 2020, 2021, 2022, 2023, 2024 and 2025 are presented in Table 2. Species highlighted in grey indicate weeds considered to be a priority for future weed management within the reserve. Cells highlighted in green indicate a reduction in cover from the previous year, while cells highlighted in orange indicate an increase in cover.

Introduced species were unevenly distributed throughout the reserve, most occurring along the eastern boundary within the infestation of Wild Oat (Photo 4). In addition, the perimeter of the entire reserve had a high cover of weeds, including species such as Wild Oats, Giant Mustard and Squirrel-tail Fescue. These infestations also harbour other weed species. Weed control efforts should focus on these areas and grass species to prevent weeds from spreading further into the reserve.

Control of the Wild Oat infestation should be a priority. Another high threat species that must be controlled is Serrated Tussock. There was clear evidence that this has recently been sprayed, but there were patches that appeared to have been missed (Photo 5). Continued control efforts are required for this species, as it can quickly become dominant if allowed to seed. Two grass species that were not recorded in 2024 were recorded in 2025. These were Chilean Needle-grass (Figure 1) and Toowoomba Canary-grass. Both these species have the ability to completely dominate grasslands, and their control should be prioritised while the infestation is relatively minor.

Other high-threat weed species to control include Artichoke Thistle (which appears to have been sprayed recently), Giant Mustard, Ox-tongue, Squirrel-tail Fescue, Pimpernel and Ribwort. These species have relatively high cover compared to other species and their control should be prioritised.

The burn in April 2025 appears to have been effective in irradiating species that appeared to be establishing in 2024. Many of these species were observed in the nearby Kororoit Creek corridor but not within the grassland reserve itself.



Photo 4: Wild Oat infestation in the eastern part of the reserve.



Photo 5: Patchy spraying of Serrated Tussock.

Table 2: Weed cover estimates – Grassland Reserve

Common name	Species name	Cover estimate 2018	Cover estimate 2019	Cover estimate 2020	Cover estimate 2021	Cover estimate 2022	Cover estimate 2023	Cover estimate 2024	Cover estimate 2025	Notes 2025
African Box-thorn	<i>Lycium ferocissimum</i>	<1%	<1%	<1%	<1%	0%	0%	0%	0%	Not observed
Artichoke Thistle	<i>Cynara cardunculus</i> subsp. <i>flavescens</i>	<1%	0%	<1%	<1%	<1%	<1%	<1%	<1%	All had been sprayed
Big Heron's-bill	<i>Erodium botrys</i>	<1%	0%	<1%	<1%	<1%	0%	<1%	<1%	Few individuals observed
Black Medic	<i>Medicago lupulina</i>	0%	0%	<1%	<1%	<1%	0%	0%	0%	Not observed
Black Nightshade	<i>Solanum nigrum</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Burr Medic	<i>Medicago polymorpha</i>	0%	0%	0%	<1%	<1%	0%	<1%	0%	Appears no longer present
Charlock	<i>Sinapis arvensis</i>	0%	0%	0%	0%	<1%	0%	0%	0%	Not observed
Chilean Needle-grass	<i>Nassella neesiana</i>	<1%	0%	0%	<1%	0%	0%	0%	<1%	New infestation in north-east corner
Cleavers	<i>Galium aparine</i>	0%	0%	<1%	0%	<1%	<1%	<1%	0%	Appears no longer present
Cocksfoot	<i>Dactylis glomerata</i>	0%	0%	<1%	<1%	0%	0%	0%	0%	Not observed
Common Centaury	<i>Centaureum erythraea</i>	0%	0%	0%	<1%	0%	<1%	<1%	<1%	Scattered throughout

Common name	Species name	Cover estimate 2018	Cover estimate 2019	Cover estimate 2020	Cover estimate 2021	Cover estimate 2022	Cover estimate 2023	Cover estimate 2024	Cover estimate 2025	Notes 2025
Common Vetch	<i>Vicia sativa</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Delicate Hair-grass	<i>Aira elegantissima</i>	0%	<1%	1%	1%	<1%	5%	5%	1%	Present throughout the reserve
Drooping Cassinia	<i>Cassinia sifton</i>	*	*	<1%	1%	0%	0%	0%	0%	Not observed
Flatweed	<i>Hypochaeris radicata</i>	0%	0%	<1%	<1%	0%	<1%	<1%	<1%	Few individuals observed
Galenia	<i>Galenia pubescens</i> var. <i>pubescens</i>	0%	<1%	0%	0%	0%	0%	0%	0%	Not observed
Garden Dandelion	<i>Taraxacum officinale</i> spp. <i>agg.</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Gazania	<i>Gazania linearis</i>	0%	0%	<1%	0%	0%	0%	0%	0%	Not observed
Giant Mustard	<i>Rapistrum rugosum</i>	0%	0%	0%	0%	1%	0%	2%	2%	Present primarily within the eastern half of the reserve
Great Brome	<i>Bromus diandrus</i>	0%	0%	0%	0%	<1%	3%	0%	0%	Not observed
Hogweed	<i>Polygonum aviculare</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Horehound	<i>Marrubium vulgare</i>	0%	0%	0%	<1%	0%	0%	0%	0%	Not observed

Common name	Species name	Cover estimate 2018	Cover estimate 2019	Cover estimate 2020	Cover estimate 2021	Cover estimate 2022	Cover estimate 2023	Cover estimate 2024	Cover estimate 2025	Notes 2025
Large Quaking-grass	<i>Briza maxima</i>	2%	3%	<1%	<1%	<1%	2%	2%	<1%	Present throughout the reserve
Lesser Quaking-grass	<i>Briza minor</i>	0%	0%	0%	<1%	<1%	2%	2%	<1%	Present throughout the reserve
Narrow-leaved Clover	<i>Trifolium angustifolium</i>	<1%	<1%	<1%	0%	<1%	<1%	0%	0%	Not observed
Onion Grass	<i>Romulea rosea</i>	0%	2%	<1%	<1%	1%	<1%	1%	1%	Present throughout the reserve
Ox-tongue	<i>Helminthotheca echioides</i>	<1%	0%	0%	<1%	<1%	0%	<1%	<1%	Few individuals observed
Paterson’s Curse	<i>Echium plantagineum</i>	0%	0%	<1%	0%	0%	0%	0%	0%	Not observed
Perennial Veldt-grass	<i>Ehrharta calycina</i>	0%	0%	0%	<1%	0%	0%	0%	0%	Not observed
Pimpernel	<i>Lysimachia arvensis</i>	<1%	<1%	1%	1%	1%	<1%	1%	<1%	Present throughout
Prickly Lettuce	<i>Lactuca serriola</i>	0%	0%	<1%	<1%	<1%	<1%	<1%	<1%	Present primarily along the reserve boundary
Red Brome	<i>Bromus rubens</i>	<1%	0%	<1%	<1%	0%	10%	0%	0%	Not observed
Soft Brome	<i>Bromus hordaceus</i>	-	-	-	-	-	2%	2%	2%	Scattered throughout
Ribwort	<i>Plantago lanceolata</i>	3%	1%	<1%	1%	1%	5%	3%	1%	Scattered throughout

Common name	Species name	Cover estimate 2018	Cover estimate 2019	Cover estimate 2020	Cover estimate 2021	Cover estimate 2022	Cover estimate 2023	Cover estimate 2024	Cover estimate 2025	Notes 2025
Rye Grass	<i>Lolium sp.</i>	1%	<1%	<1%	0%	0%	<1%	<1%	<1%	Scattered throughout
Serrated Tussock	<i>Nassella trichotoma</i>	<1%	0%	1%	3%	1%	1%	2%	3%	Evidence of weed control but patchy
Small-flowered Mallow	<i>Malva parviflora</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Soursob	<i>Oxalis pes-caprae</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
South African Orchid	<i>Disa bracteata</i>	0%	0%	<1%	0%	0%	0%	0%	0%	Not observed
Sow Thistle	<i>Sonchus spp.</i>	0%	0%	1%	<1%	1%	1%	1%	1%	Present primarily along the reserve boundary
Squirrel-tail Fescue	<i>Vulpia bromoides</i>	1%	2%	1%	1%	8%	10%	2%	1%	Scattered throughout
Toowoomba Canary-grass	<i>Phalaris aquatica</i>	-	-	-	-	-	-	-	<1%	Newly recorded species
Twiggy Turnip	<i>Brassica fruticulosa</i>	<1%	<1%	<1%	<1%	0%	1%	1%	<1%	Present primarily along the reserve boundary
Wall Fumitory	<i>Fumaria muralis</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present

Common name	Species name	Cover estimate 2018	Cover estimate 2019	Cover estimate 2020	Cover estimate 2021	Cover estimate 2022	Cover estimate 2023	Cover estimate 2024	Cover estimate 2025	Notes 2025
Wall Pellitory	<i>Parietaria judaica</i>	-	-	-	-	-	-	<1%	0%	Appears no longer present
Wild Oat	<i>Avena</i> sp.	12%	6%	5%	6%	11%	15%	20%	12%	Dominant within the eastern half of the reserve
Wild Sage	<i>Salvia verbenaca</i>	-	-	-	-	-	-	<1%	<1%	Present along eastern boundary
Total weed cover in Grassland Reserve		~ 20%	~ 15%	~ 10%	~ 15%	~ 35%	~ 35%	~ 40%	~ 20%	

Notes: Grey = Weeds in the Grassland Reserve that are considered to be a priority for weed control. Green = A reduction in cover. Orange = An increase in cover. * = Species not considered a weed at time of assessment.

3.4. Fencing

New permanent fencing and gates have been installed recently. The integrity of the fencing, gate, and signage were checked around the entire reserve and were found to be in excellent condition (Photo 6).

No rabbit activity was recorded within the reserve, suggesting that the fencing is adequately excluding rabbits from the reserve.

3.5. Litter

Occurrence of litter within the reserve was primarily around the perimeter of the reserve, where it was being blown into the fencing from the surround area (Photo 7). Removal of litter is undertaken regularly and continues to be managed accordingly.



Photo 6: Fencing in good condition in the south-east of the reserve.



Photo 7: Rubbish along the perimeter of the reserve.

4. Actions required

Based on the results of the Year 8 annual monitoring survey, it appears that management actions have been undertaken appropriately for Year 8 and it is recommended that management actions continue as outlined in the *Grassland Reserve Management Plan*. These include the following:

- Ensure that signage to the public is maintained, the gate remains closed and padlocked at all times.
- Maintain the existing rabbit-proofing measure with the weighted meshing at the bottom so that no gaps are able to be created and rabbits are unable to push through, or by the fixed base of mesh running along the bottom of the gate entrance and buried to 30 centimetres, so that the gate sits flush when closed with no gap underneath.
- Monitor regularly for rubbish and remove when observed.
- Check the integrity of fences and signage regularly, and maintain in good condition.
- Undertake weed control within the reserve at regular intervals, prioritising species highlighted in grey in Table 2.
- Undertake increased weed control within the eastern half and perimeter of the reserve to reduce the cover of the dominant Wild Oat, Squirrel-tail Fescue and Ribwort that have persisted following the burns in Year 5 (2022) and Year 8 (2025).
- Undertake regular slashing of the Wild Oats in the eastern section of the unburnt area, to prevent seed set.
- Undertake weed control in a 10-metre buffer around the perimeter of the reserve to reduce the likelihood of weed propagules entering the reserve from surrounding land.
- Control the new infestations of Chilean Needle-grass and Toowoomba Canary-grass, to prevent further spread within the grassland.

5. References

- Australian Ecosystems Pty Ltd 2025a, *Weed Survey Report – Modeina Estate – Phase 2 – March 2025*. Australian Ecosystems, South Melbourne, prepared for DFC.
- Australian Ecosystems Pty Ltd 2025b, *Weed Survey Report – Modeina Estate – Phase 2 – June 2025*. Australian Ecosystems, South Melbourne, prepared for DFC.
- Australian Ecosystems Pty Ltd 2025c, *Weed Survey Report – Modeina Estate – Phase 2 – September 2025*. Australian Ecosystems, South Melbourne, prepared for DFC.
- Brett Lane & Associates (BL&A) 2018, *Modeina Estate Grassland Reserve Management Plan* - Report no. 7045 (43.4), Brett Lane & Associates Pty Ltd, Hawthorn East, consultant report prepared for DFC.
- DCCEEW 2024, National Recovery Plan for the Spiny Rice-flower *Pimelea spinescens* subspecies *spinescens*, Department of Climate Change, Energy, the Environment and Water, Canberra, October. CC BY 4.0.
- DEWHA 2009, *Background Paper to EPBC Act Policy Statement 3.11 - Nationally Threatened Species and Ecological Communities: Significant Impact Guidelines for the Critically Endangered Spiny Rice-flower (Pimelea spinescens subspecies spinescens)*. Available from: <http://www.environment.gov.au/resource/significant-impact-guidelines-critically-endangered-spiny-rice-flower-pimelea-spinescens>.
- Nature Advisory 2020, *Modeina Estate Grassland Reserve – Annual Monitoring Year 3* – Report No. 7045.64 (1.0), prepared for DFC.
- Nature Advisory 2021, *Modeina Estate Grassland Reserve – Annual Monitoring Year 4* – Report No. 7045.65 (1.2), prepared for DFC.
- Nature Advisory 2022, *Modeina Estate Grassland Reserve – Annual Monitoring Year 5* – Report No. 7045.66 (2.1), prepared for DFC.
- Nature Advisory 2023, *Modeina Estate Grassland Reserve – Annual Monitoring Year 6* – Report No. 7045.68 (1.0), prepared for DFC.
- Nature Advisory 2024, *Modeina Estate Grassland Reserve – Annual Monitoring Year 7* – Report No. 7045.70 (1.1), prepared for DFC.

Appendix 4: Written notification that Condition 15 no longer applies

From: Ruth Crabb <email address redacted >
Sent: Wednesday, 28 November 2018 11:11 AM
To: Tess Trewin < email address redacted >
Cc: Hagen Ganahl < email address redacted >
Subject: RE: EPBC 2011/6063 Burnside Development Modeina [SEC=UNCLASSIFIED]

Hi Tess,

Thank you for your email, and apologies for the delay in responding.

Condition 17 of EPBC approval 2011/6063 is intended to apply if condition 15 cannot be met in full. The Alternative Offset Strategy approved on 9 November 2018 sets out adequate compensation for impacts to Spiny Rice-Flower plants within Project Areas C1 and D, through the provision of direct offsets within the Cressy offset property. The Offset Management Plan for the Cressy property was also approved on 9 November 2018, and contains the necessary direct environmental offsets for impacts within Project Areas C1, C2 and D.

It is the Department's view that condition 17 is satisfied by the attached approval letter, as the Alternative Offset Strategy and Cressy Offset Management Plan for Project Areas C1, C2 and D would not have been approved against this condition had DFC not tabled the inability to meet the requirements of condition 15 in terms of the Spiny Rice-Flower Propagation Project.

I have also spoken with the Office of Compliance regarding this matter, and they have recommended that you retain and attach this email to your annual compliance report so that documentation is obvious.

Kind regards,

Ruth Crabb

Senior Project Officer
Post Approvals Section
Assessments (WA, SA, NT) and Post Approvals Branch
Environment Standards Division
Department of the Environment and Energy

Appendix 5: Acknowledgement of commencement of action



Contact Officer: Keith Horwood
Telephone: (02) 6274 1933
Email: epbcmonitoring@environment.gov.au

Mr Mal Wright
Senior Ecologist
Brett Lane & Associates Pty Ltd
PO Box 337
CAMBERWELL VIC 3124

Dear Mr Wright

Commencement of the Action, Burnside Development – The Point, VIC, EPBC 2011/6063

I am writing to you about the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval 2011/6063.

In accordance with the condition 19, you were required to notify the Department of the action's commencement date. Thank you for notifying the Department that the action commenced on 9 October 2017. Because the action commenced on this date, please complete the following tasks in accordance with the approval conditions by the mentioned due dates.

Condition 21 - Annual Compliance Report

The Annual Compliance Report for the period 9 October 2017 to 8 October 2018 must be published and submitted to the Department before 9 January 2019. The Annual Compliance Report must continue to be published and submitted to the Department until the expiry of the project 31 February 2035.

Please email the Annual Compliance Report, and the details of its publication, to epbcmonitoring@environment.gov.au

Please maintain accurate records of all activities associated with, or relevant to, the approval conditions so that they can be made available to the Department on request. These documents may be subject to audit and be used to verify compliance. Summaries of audits may be published by the Department.

For information about the Monitoring and Audit program, see the Department's website at <http://www.environment.gov.au/topics/about-us/legislation/environment-protection-and-biodiversity-conservation-act-1999/complian-2>

If you would like to discuss this matter further, please contact Keith Horwood on (02) 6274 1933.

Yours sincerely

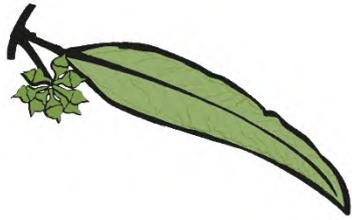
Shonelle Meagher
Assistant Director
Environmental Audit Section
Office of Compliance

13 October 2017

[Appendix 6: 2025 Australian Ecosystems weed survey reports](#)

Weed Survey Report

Modeina Estate - Phase 2



AUSTRALIAN ECOSYSTEMS
Building sustainable landscapes for the future

March 2025

Submitted by Matthew Rizza

Australian Ecosystems Pty Ltd

Phone: 0448 204 420

Email: Matthewrizzar@australianecosystems.com.au

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1.0 Introduction

Australian Ecosystems (AE) has prepared this report for Dennis Family Corporation (Project Management) Pty Ltd. This report details the results of weed surveys conducted in March 2025 within the area described as 'Stage 2 Modeina'. This report should be read in conjunction with, 'Modeina Weed Management Strategy' that Greening Australia prepared in 2017.

2.0 Weeds Surveyed

This survey has captured these weed species listed below:

- African Boxthorn (*Lycium ferocissimum*)
- Artichoke Thistle (*Cynara cardunculus*)
- Spear Thistle (*Cirsium vulgare*)
- Bridal Creeper (*Asparagus asparagodies*)
- Cape weed (*Arctotheca calendula*)
- Century Plant (*Agave Americana*)
- Fennel (*Foeniculum vulgare*)
- Galenia (*Galenia pubescens*)
- Horehound (*Marrubim vulgare*)
- Paterson's Curse (*Echium plantagineum*)
- Prickly Pear (*Opuntia spp.*)
- Sweet Briar (*Rosa rubiginosa*)
- Chilean Needle Grass *Nassella neesiana*)
- Toowoomba canary grass (*Phalaris aquatica*)
- Serrated Tussock (*Nassella trichotoma*)

Determined by:

The weeds detailed within this report have been taken from the Modeina Weed Management Strategy that Greening Australia prepared in 2017. Only species that are widespread and/or have a high level of risk have been chosen to be controlled within these areas.

3.0 Survey Methodology

The above-mentioned species were surveyed using the Random Quadrant Sampling Method. Within each zone, four quadrants 5-meter X 5-meter were used to measure the current number of weed species present and then converted to a percentage cover. The results from these quadrants were then extrapolated to obtain a percentage cover across each of the zones. The results of these surveys are displayed over the following pages of the report.

3.1 Woody weeds

For this survey woody weeds are classified as African Boxthorn (*Lycium ferocissimum*), Century Plant (*Agave Americana*), Fennel (*Foeniculum vulgare*), Prickly Pear (*Opuntia spp.*) and Sweet Briar (*Rosa rubiginosa*).

As a result of the extremely low abundance of all species in each zone, individual counts were undertaken, with each individual being assigned a percentage cover value of 1% as the observed species were primarily in their juvenile stages. Prickly Pear (*Opuntia* spp.) has been eliminated through out all zones and no new growth sited. Similarly, in Zone 2, two patches of the Century Plant (*Agave Americana*) have been treated and there is no regrowth.

3.2 Herbs and Grass Weeds

Efforts are clearly being made to minimize or control the presence of herb and grass weeds in all areas. These weeds include Artichoke Thistle (*Cynara cardunculus*), Scotch Thistle (*Onopordum acanthium*), Spear Thistle (*Cirsium vulgare*), Bridal Creeper (*Asparagus asparagoides*), Horehound (*Marrubium vulgare*), Paterson's Curse (*Echium plantagineum*), Chilean Needle Grass (*Nassella neesiana*), Toowoomba canary grass (*Phalaris aquatica*), and Serrated Tussock (*Nassella trichotoma*). Significant progress has been made in reducing the presence of Toowoomba canary grass (*Phalaris aquatica*) in several areas, and further reductions are expected during future maintenance visits. There has been minimal Artichoke Thistle (*Cynara cardunculus*) in the Development Zone, however this was targeted in a recent visit and is under control.

3.3 Changes

Construction is still ongoing in the development zone, which has decreased the weed load by 90%. Zone 2 and 3 works have been completed, resulting in a decreased weed load by 98%. Zone 4 has been completed as well with a weed reduction of 80% (however this area is not managed by AE).

4.0 Details of Surveyed Weeds

4.1 African Boxthorn - *Lycium ferocissimum*

Regionally Controlled & Weed of National Significance

Target coverage <1%

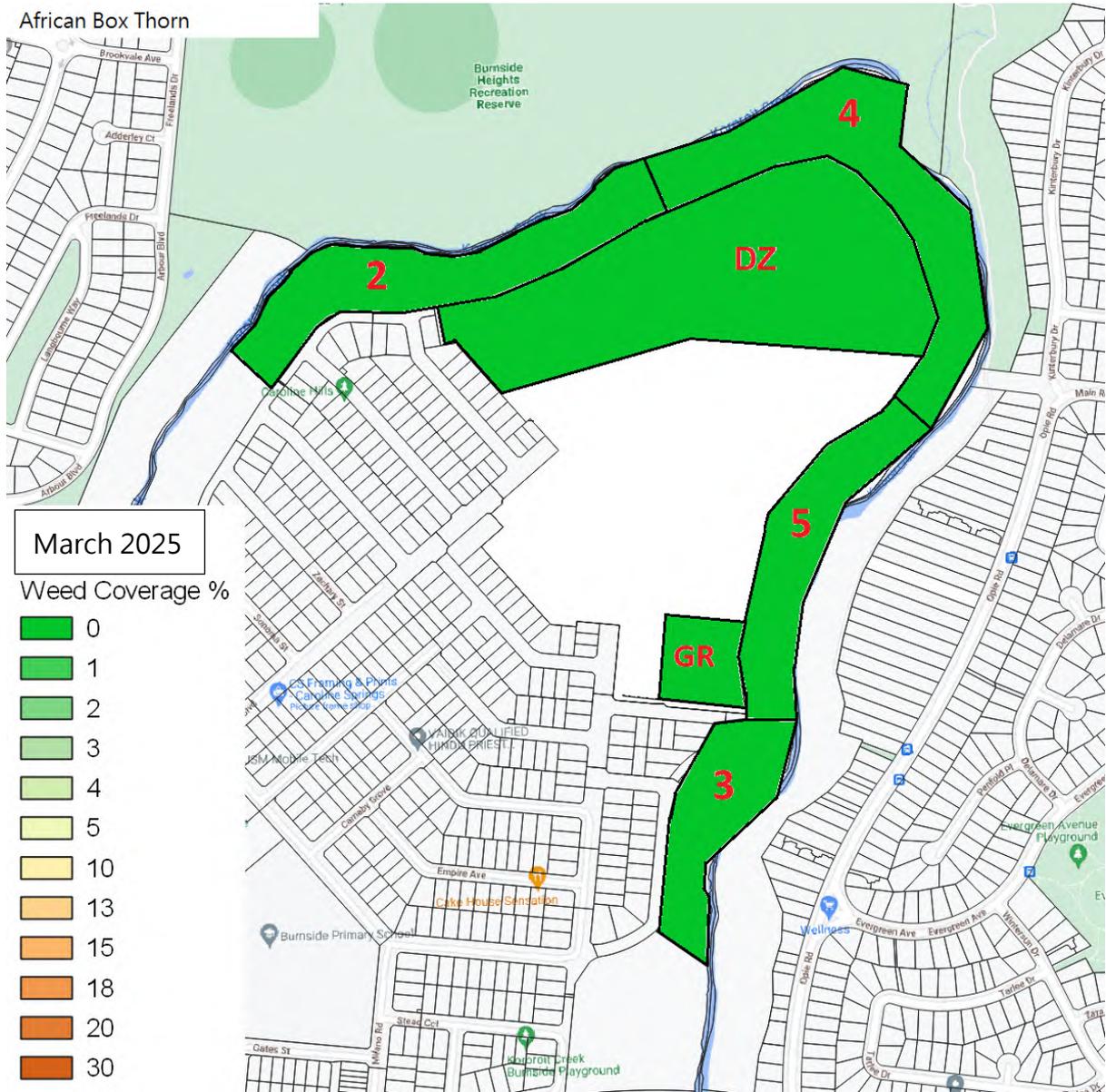
Current coverage

Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	2%	0%	0%	2%	NA
June 2024	0%	2%	0%	2%	4%	0%
March 2024	2%	0%	0%	0%	0%	NA
December 2023	2%	0%	0%	0%	0%	NA
September 2023	0%	2%	0%	0%	0%	NA
June 2023	0%	1%	0%	2%	0%	0%
March 2023	0%	0%	0%	2%	2%	NA
September 2022	0%	0%	0%	1%	1%	NA
June 2022	0%	0%	0%	1%	1%	0%
March 2022	0%	1%	0%	0%	1%	NA
December 2021	0%	0%	0%	0%	1%	NA
October 2021	0%	0%	0%	0%	1%	NA
August 2021	1%	1%	1%	1%	2%	NA
April 2021	1%	1%	1%	1%	1%	NA
Dec 2020	0%	1%	1%	0%	1%	NA
Oct 2020	0%	1%	1%	0%	1%	NA
June 2020	0%	1%	1%	0%	1%	0%

African boxthorn is a rounded, woody, densely branched and very thorny large shrub up to 5 metres high. African boxthorn reproduces exclusively by seed, which is commonly eaten by birds, seed is viable when excreted. These plants are often found near places where birds have perched such as trees, poles, and powerlines. It was widely planted as a hedge plant before its weedy potential was realised. Spread also occurs from contaminated produce and materials. African boxthorn is a fast-growing invasive species that, if untreated, spreads quickly. Seeds may germinate year-round and early root growth is rapid, ensuring young plants are competitive. Plants take at least two years to flower, producing flowers and fruit mostly in summer. Some flowering and fruit production occurs at other times of year. Sometimes deciduous in winter, with new leaves and active growth in spring. Broken roots and cut stumps can sprout regrowth.



African Box Thorn



4.2 Artichoke Thistle - *Cynara cardunculus*

Regionally Controlled

Target coverage < 5%

Current coverage

Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	1%	0%
September 2024	0%	0%	0%	1%	0%	NA
June 2024	1%	3%	1%	0%	3%	3%
March 2024	0%	1%	1%	1%	5%	NA
December 2023	0%	1%	2%	2%	4%	NA
September 2023	1%	1%	2%	3%	3%	NA
June 2023	2%	1%	2%	2%	4%	0%
March 2023	3%	1%	0%	3%	4%	NA
September 2022	1%	0%	0%	1%	4%	NA
June 2022	1%	0%	0%	1%	10%	0%
March 2022	2%	0%	0%	2%	2%	NA
December 2021	0%	0%	0%	0%	5%	NA
October 2021	0%	0%	0%	0%	10%	NA
August 2021	5%	2%	15%	15%	10%	NA
Apr 2021	15%	2%	2%	2%	5%	NA
Dec 2020	5%	2%	5%	2%	5%	NA
Oct 2020	5%	5%	2%	2%	10%	NA
June 2020	2%	10%	5%	5%	10%	0%

A perennial or biennial spiny thistle with annual tops and a cluster of large bright purple flowers that are 5-8 cm in diameter during summer. The mature plant is erect, with stems 1- 2 m tall arising from a bushy rosette up to 2 m wide and tall. The stem is strongly ribbed and covered with downy grey hairs and usually single at the base and branched towards the top. The large, grey green leaves are deeply lobed and spiny with woolly hairs underneath.



4.4 Spear Thistle - *Cirsium vulgare*

Regionally Controlled Weeds

Target coverage <5%

Current coverage

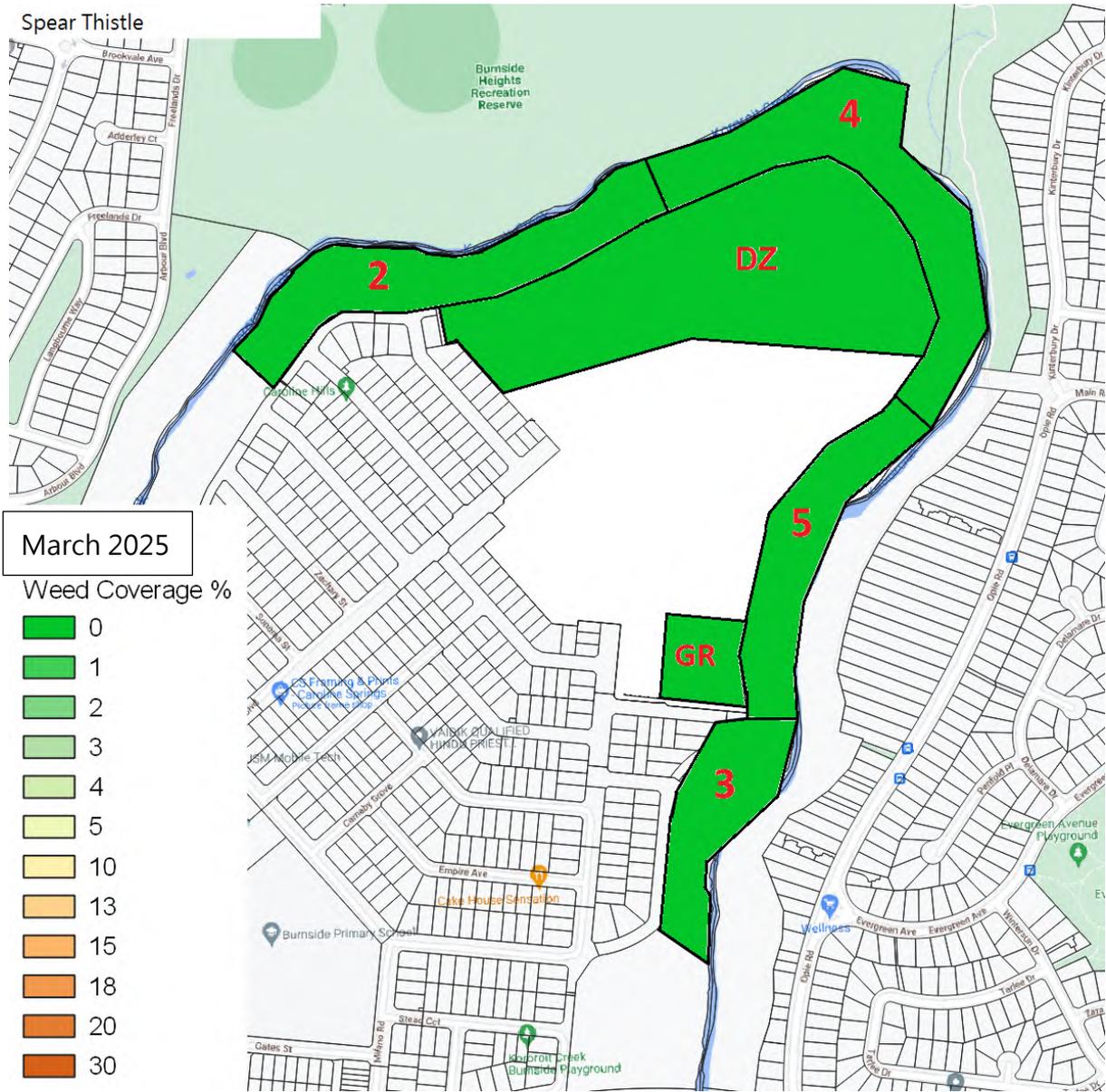
Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	1%	1%	0%	0%	0%	NA
June 2024	1%	1%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	1%	0%	0%	0%	1%	NA
Oct 2020	1%	0%	0%	0%	1%	NA
June 2020	1%	0%	0%	0%	1%	0%

An annual or short-term perennial herb with erect growth to 1.5 m tall. Stems have spiny wings and are cobwebby. Upper leaf surface is dark green and rough while the lower surface is white with short, matted hairs.

A common species of wet or summer-moist land, including swamps, depressions, drains, wasteland, pastures, and cultivated soils. Prefers open, non-shaded environments, heavy textured soils, and good fertility.



Spear Thistle



4.5 Bridal Creeper - *Asparagus asparagoides*

Regionally Controlled - Weed of National Significance

Target coverage < 1%

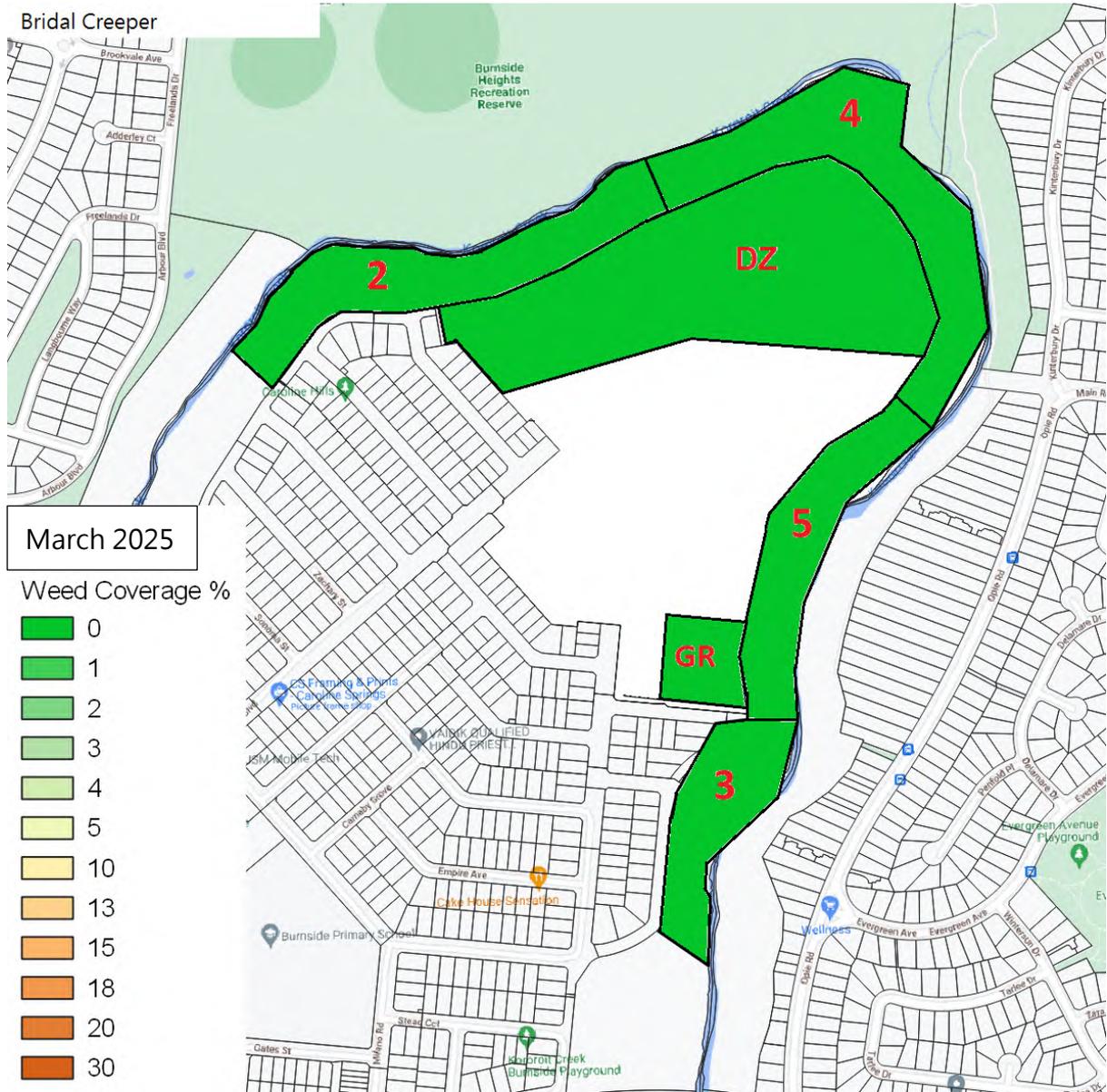
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	1%	0%	NA
June 2024	0%	1%	0%	2%	0%	0%
March 2024	0%	1%	0%	1%	0%	NA
December 2023	1%	1%	0%	0%	0%	NA
September 2023	1%	1%	0%	0%	0%	NA
June 2023	1%	1%	0%	0%	0%	0%
March 2023	1%	1%	0%	0%	0%	NA
September 2022	1%	1%	0%	0%	0%	NA
June 2022	1%	1%	0%	0%	0%	0%
March 2022	2%	1%	0%	0%	0%	NA
December 2021	2%	2%	2%	0%	0%	NA
October 2021	3%	3%	2%	0%	0%	NA
August 2021	5%	4%	3%	0%	0%	NA
Apr 2021	1%	1%	1%	0%	0%	NA
Dec 2020	0%	1%	1%	0%	0%	NA
Oct 2020	0%	0%	1%	0%	0%	NA
June 2020	0%	0%	1%	0%	0%	0%

It is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts. Bridal creeper entered the country as a garden plant and is now a major weed of bushland in southern Australia, where its climbing stems and foliage smother native plants. It forms a thick mat of underground tubers which impedes the root growth of other plants and often prevents seedling establishment. Rare native plants, such as the rice flower *Pimelea spinescens*, are threatened with extinction by Bridal Creeper.



Bridal Creeper



4.6 Cape weed - *Arctotheca calendula*

Not declared or considered noxious

Target coverage < 5%

Current Coverage

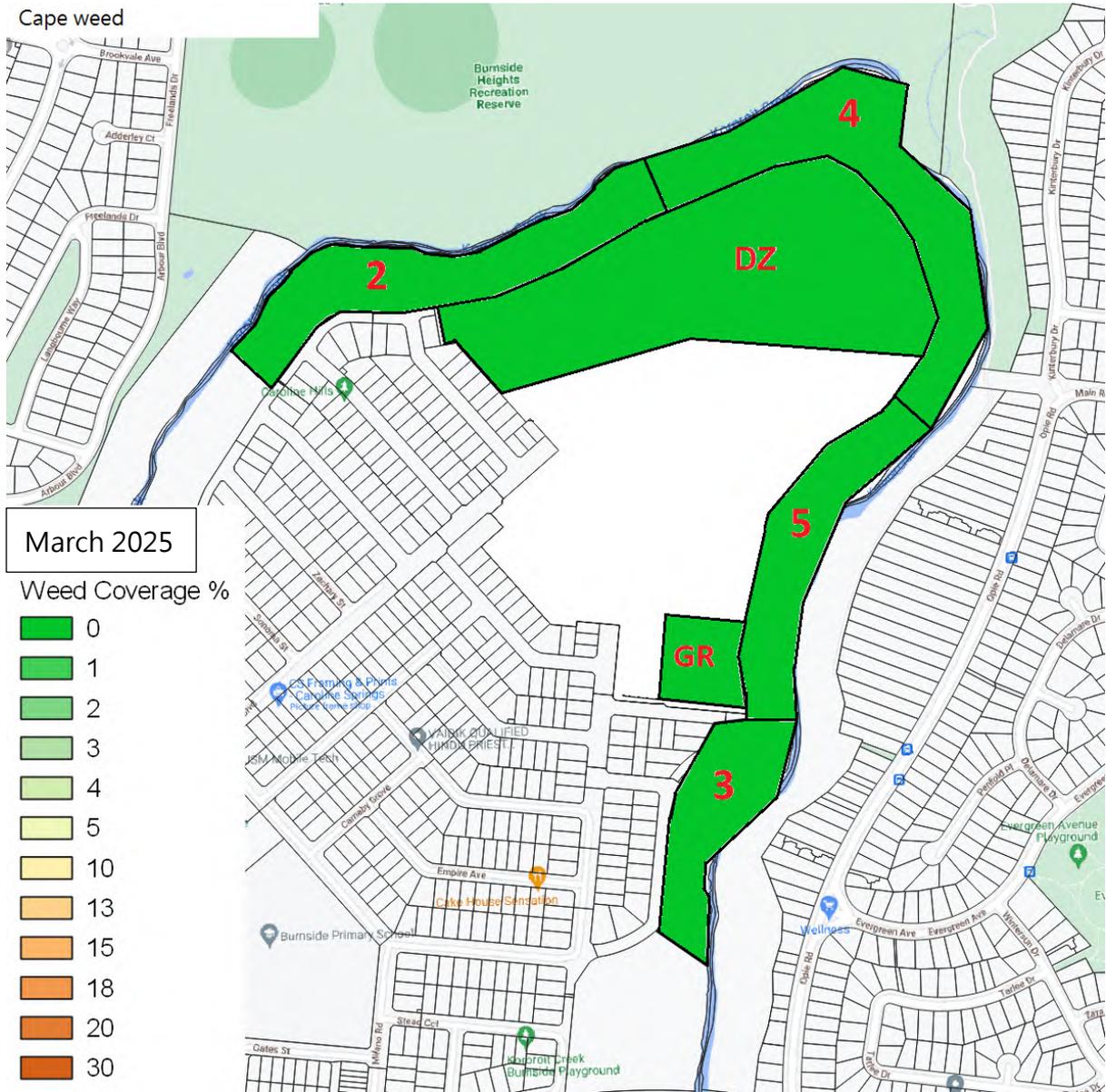
Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	2%	2%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	0%	0%	0%	0%	0%	NA
Oct 2020	0%	1%	1%	1%	0%	NA
June 2020	2%	2%	0%	2%	0%	0%

This plant is widespread and common weed in pastures, lawns, cultivation, and waste areas across Victoria. Typically, a plant of fresh-water habitats but may occur on the fringes of saline swamps and flats during wetter periods.

It is stemless or shortly stemmed, herb, 80 cm wide and 30 cm high, with a taproot and a basal rosette of leaves. Leaves are 5-25 cm long and 2-6 cm wide.



Cape weed



4.7 Century Plant - *Agave americana*

Not declared or considered noxious

Target coverage < 1%

Current Coverage

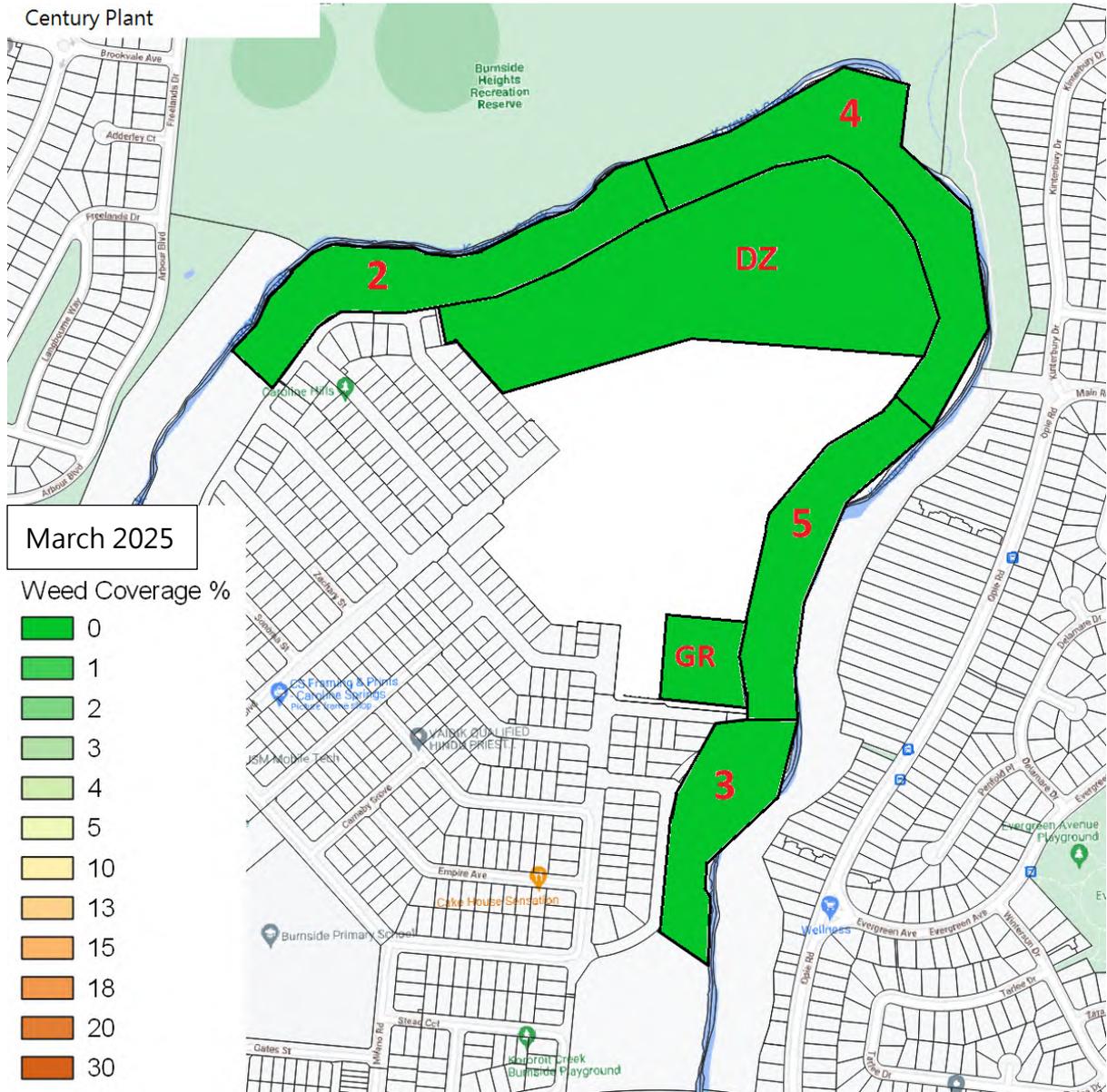
Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	2%	0%	0%	0%	0%	0%
March 2024	0%	2%	0%	0%	0%	NA
December 2023	0%	2%	0%	0%	0%	NA
September 2023	0%	2%	0%	0%	0%	NA
June 2023	0%	2%	0%	0%	0%	0%
March 2023	0%	2%	0%	0%	0%	NA
September 2022	0%	1%	0%	0%	0%	NA
June 2022	1%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	1%	0%	0%	0%	0%	NA
Dec 2020	1%	0%	0%	0%	0%	NA
Oct 2020	1%	0%	0%	0%	0%	NA
June 2020	1%	0%	0%	0%	0%	0%

A very large and long-lived rosette-forming plant, growing 1-2 m high and 2-4 m across.

Older individuals may sometimes develop a short woody stem at the base of the plant and commonly produces numerous suckers which form a large clump or colony. When fully mature this plant will develop a massive flower cluster on a robust flowering stem 6-12 m tall.



Century Plant



4.8 Fennel - *Foeniculum vulgare*

Restricted Weeds noxious

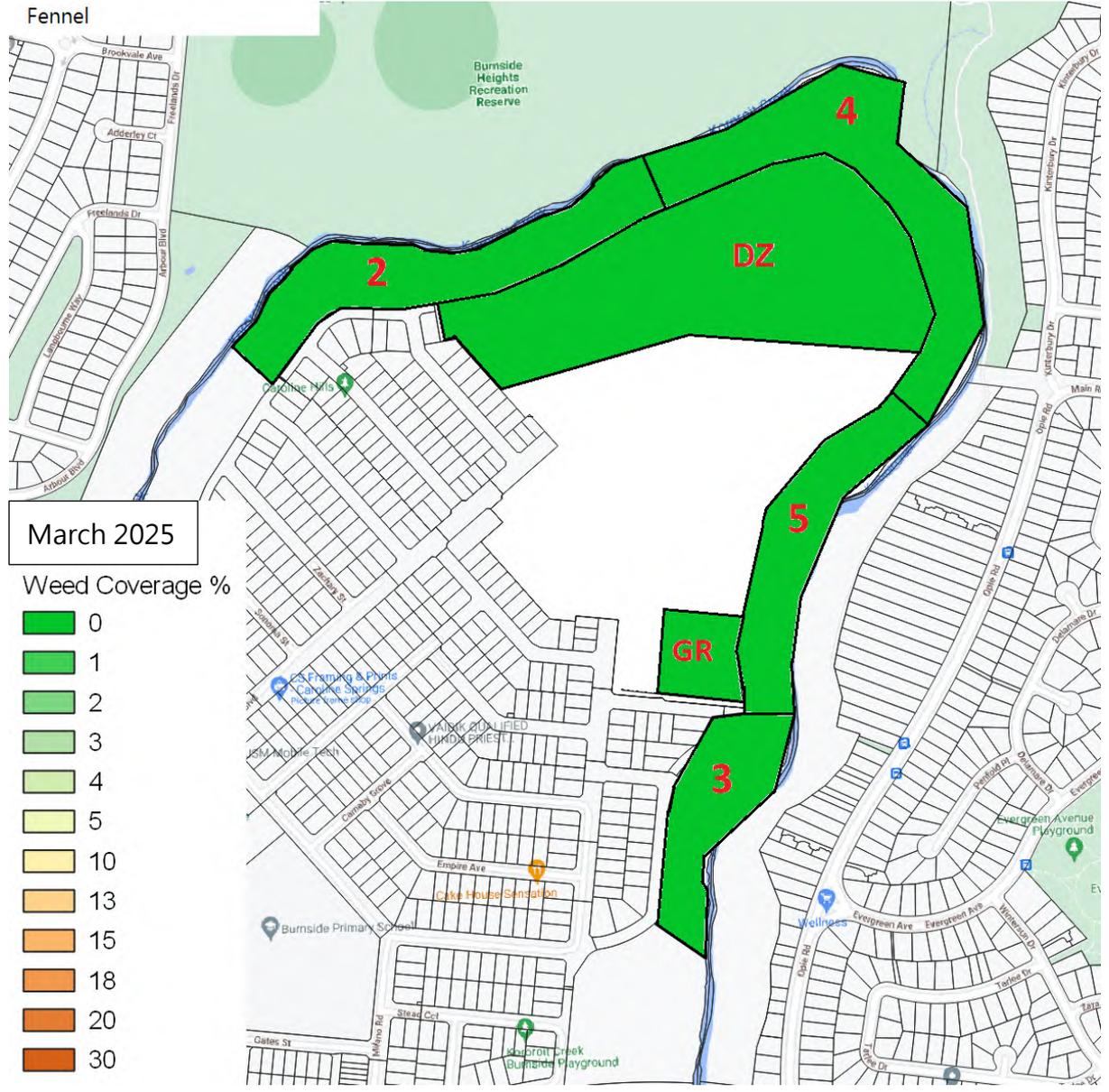
Target coverage < 1%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	1%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	1%	0%	0%	1%	0%	NA
Oct 2020	0%	0%	0%	0%	0%	NA
June 2020	0%	0%	0%	0%	0%	0%

An erect multi-stemmed perennial herb commonly 1.5 to 2.0 metres high. It is found along waterways, drainage lines and in seasonally moist locations within grasslands and woodlands. Dense infestations may restrict access to waterways. A soft, herbaceous plant the high growth of the plant may be a nuisance to people.





4.9 Galenia - Galenia pubescens

Not declared or considered noxious

Target coverage < 5%

Current Coverage

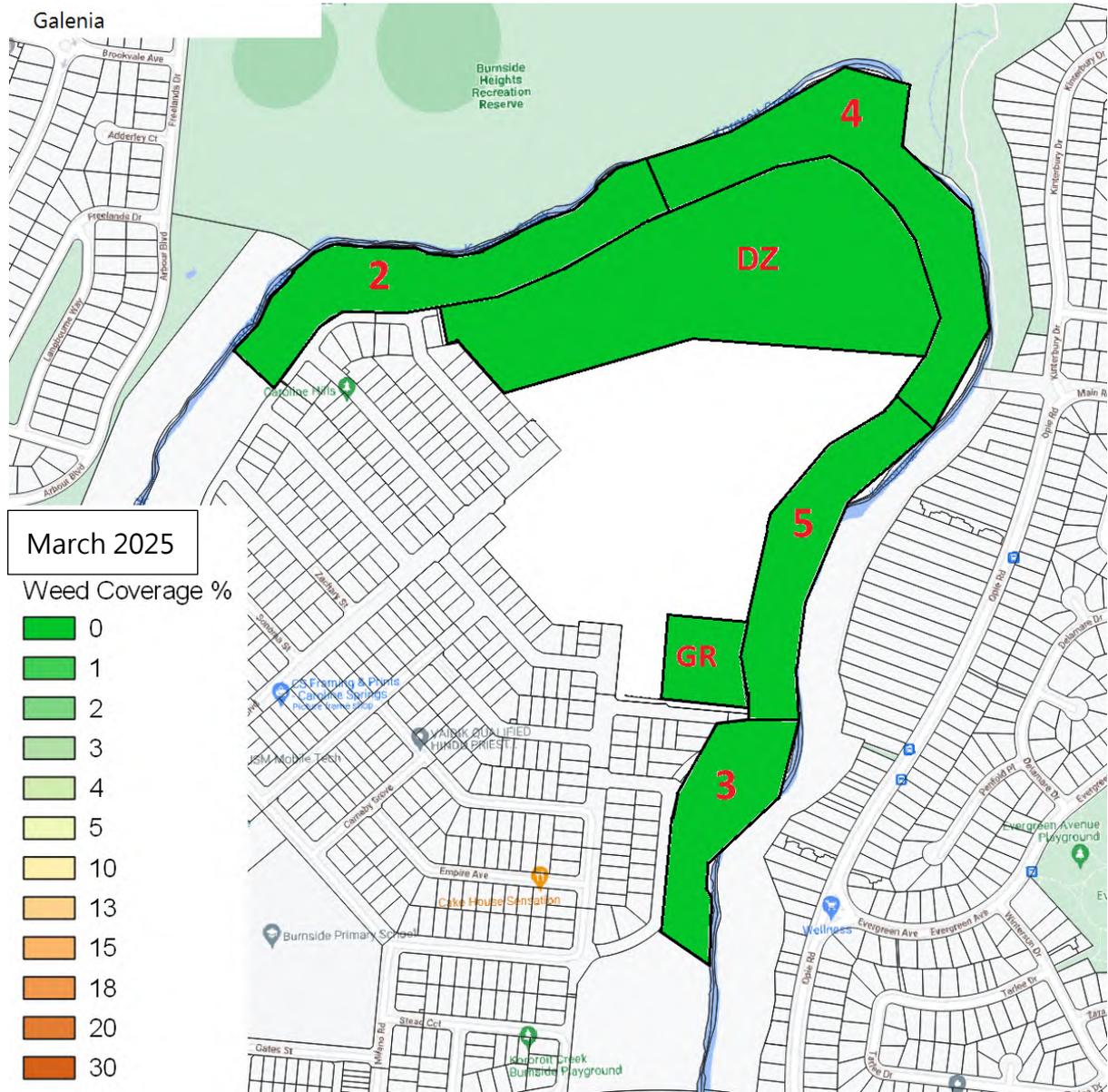
Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	0%	0%	0%
March 2024	0%	1%	1%	0%	1%	NA
December 2023	0%	1%	1%	0%	1%	NA
September 2023	0%	1%	1%	0%	1%	NA
June 2023	0%	1%	1%	0%	1%	0%
March 2023	1%	0%	1%	0%	1%	NA
September 2022	1%	0%	1%	0%	1%	NA
June 2022	1%	0%	1%	0%	2%	0%
March 2022	2%	0%	1%	1%	4%	NA
December 2021	1%	1%	1%	1%	5%	NA
October 2021	1%	1%	1%	1%	10%	NA
August 2021	1%	1%	1%	1%	0%	NA
Apr 2021	1%	1%	1%	1%	0%	NA
Dec 2020	1%	1%	0%	1%	0%	NA
Oct 2020	0%	0%	0%	1%	0%	NA
June 2020	1%	0%	1%	0%	0%	0%

This perennial creeping, herbaceous plant growing to about 60 cm high and 1–2 m wide.

It is deep rooted and flowers from late spring to early autumn. Galenia reproduces by seed. Most dispersal of seed occurs by wind, water, birds and livestock. Movement of contaminated soil by vehicles and equipment can also contribute to its spread.

Drought and salt tolerant, galenia grows over and smothers existing vegetation by forming a thick dense mat. It invades coastal dunes, pastures, disturbed areas, lawns, roadsides and rocky outcrop vegetation. Galenia is known to produce nitrates that can be toxic to stock.





4.10 Horehound - *Marrubim vulgare*

Not declared or considered noxious

Target coverage <5%

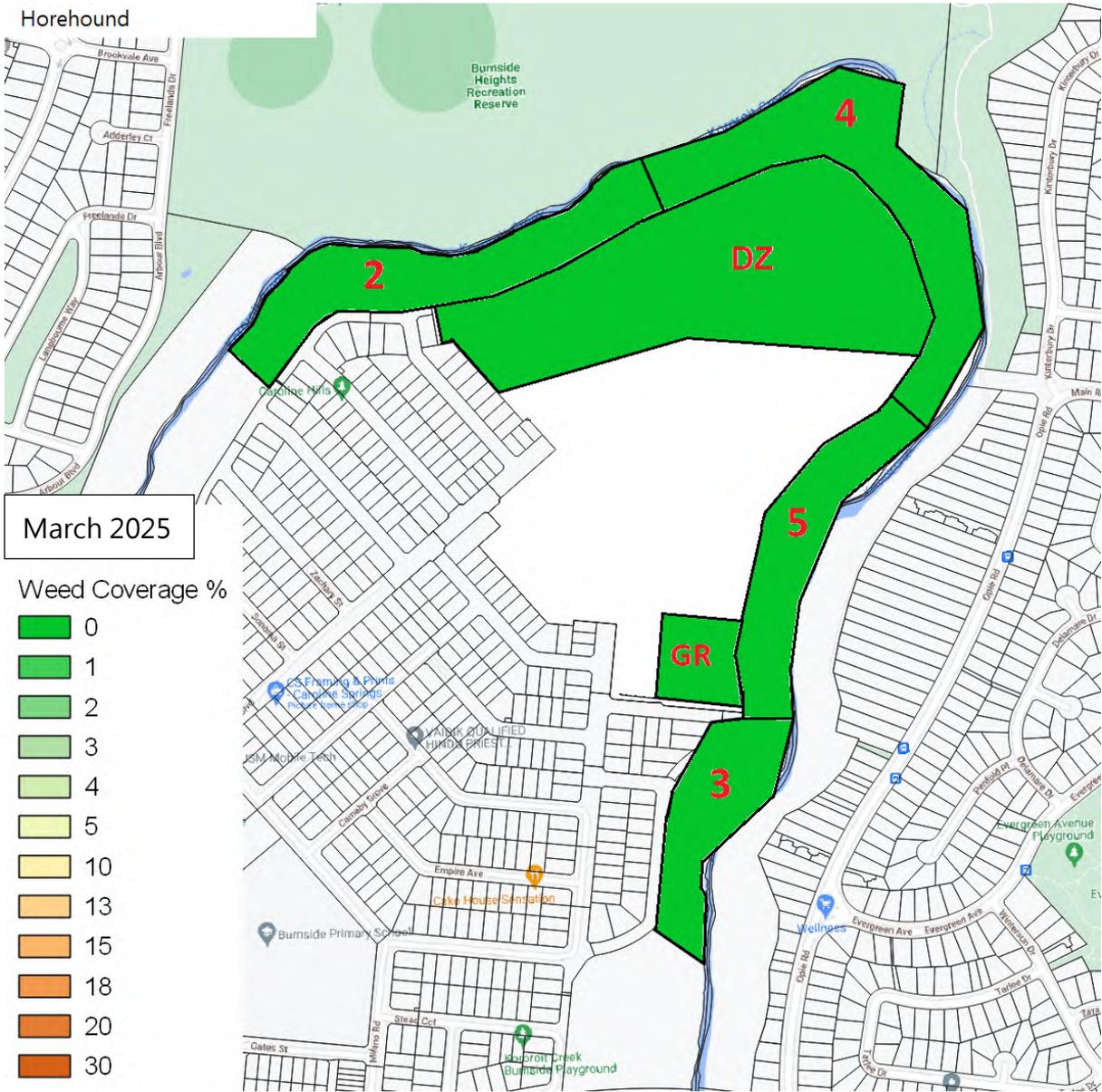
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	1%	0%	0%	1%	NA
June 2024	0%	1%	0%	0%	1%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	1%	0%	0%	0%	0%	NA
September 2022	1%	0%	0%	0%	0%	NA
June 2022	1%	0%	0%	0%	0%	0%
March 2022	0%	1%	1%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	1%	0%	4%	3%	NA
August 2021	0%	1%	0%	1%	0%	NA
Apr 2021	0%	1%	0%	1%	0%	NA
Dec 2020	0%	1%	1%	1%	0%	NA
Oct 2020	1%	0%	1%	0%	0%	NA
June 2020	0%	1%	0%	1%	0%	0%

A bushy perennial plant, 30 to 80 cm high, sharply aromatic when crushed, covered with dense whitish hairs. Horehound thrives on poor soil and in waste places. It invades poor pastures which provide little competition. Horehound contains a bitter alkaloid which makes it unpalatable for grazing livestock. As well as being an agricultural weed of pastures horehound has become an important environmental weed because of its ability to invade disturbed native vegetation.



Horehound



4.11 Paterson's Curse - *Echium plantagineum*

Regionally controlled

Target coverage < 5%

Current Coverage

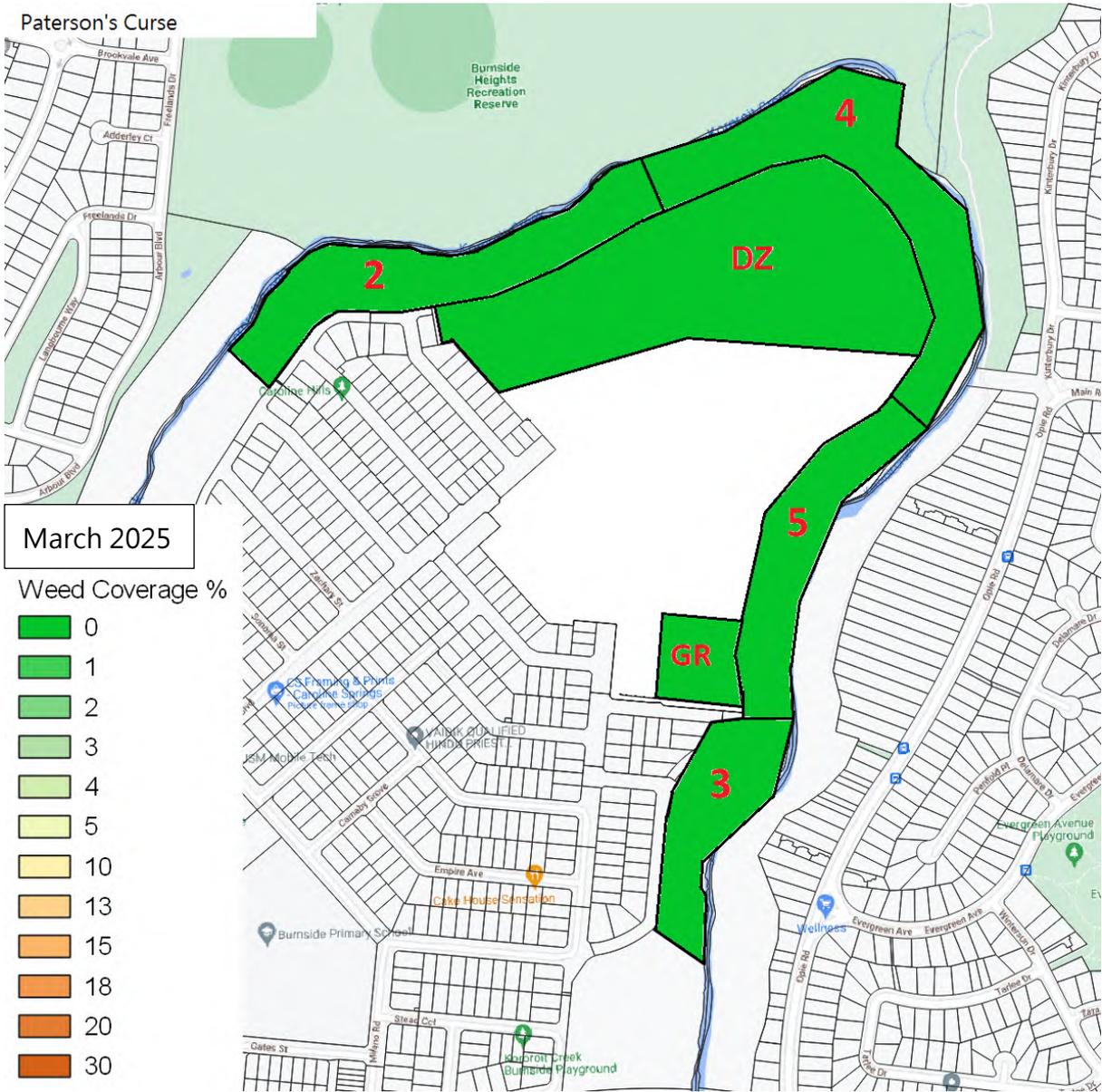
Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	1%	0%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	2%	0%	0%	2%	2%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	10%	NA
August 2021	0%	0%	0%	2%	10%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	1%	1%	1%	1%	2%	NA
Oct 2020	2%	1%	1%	2%	2%	NA
June 2020	2%	2%	5%	5%	5%	0%

Paterson's curse is an annual, occasionally biennial, herb that grows as a rosette in autumn and winter and produces flowering stalks in spring and early summer. The rosette usually grows parallel to the ground; however, the leaves may be erect in dense vegetation.

Plants begin to produce flowering stalks in late winter, commence flowering in early spring and die in summer. The flowers are usually purple but may be blue or pink. The first mature seeds are produced four to six weeks after flowering commences.



Paterson's Curse



4.12 Prickly Pear - *Opuntia* spp.

Regionally controlled

Target coverage <5%

Current Coverage

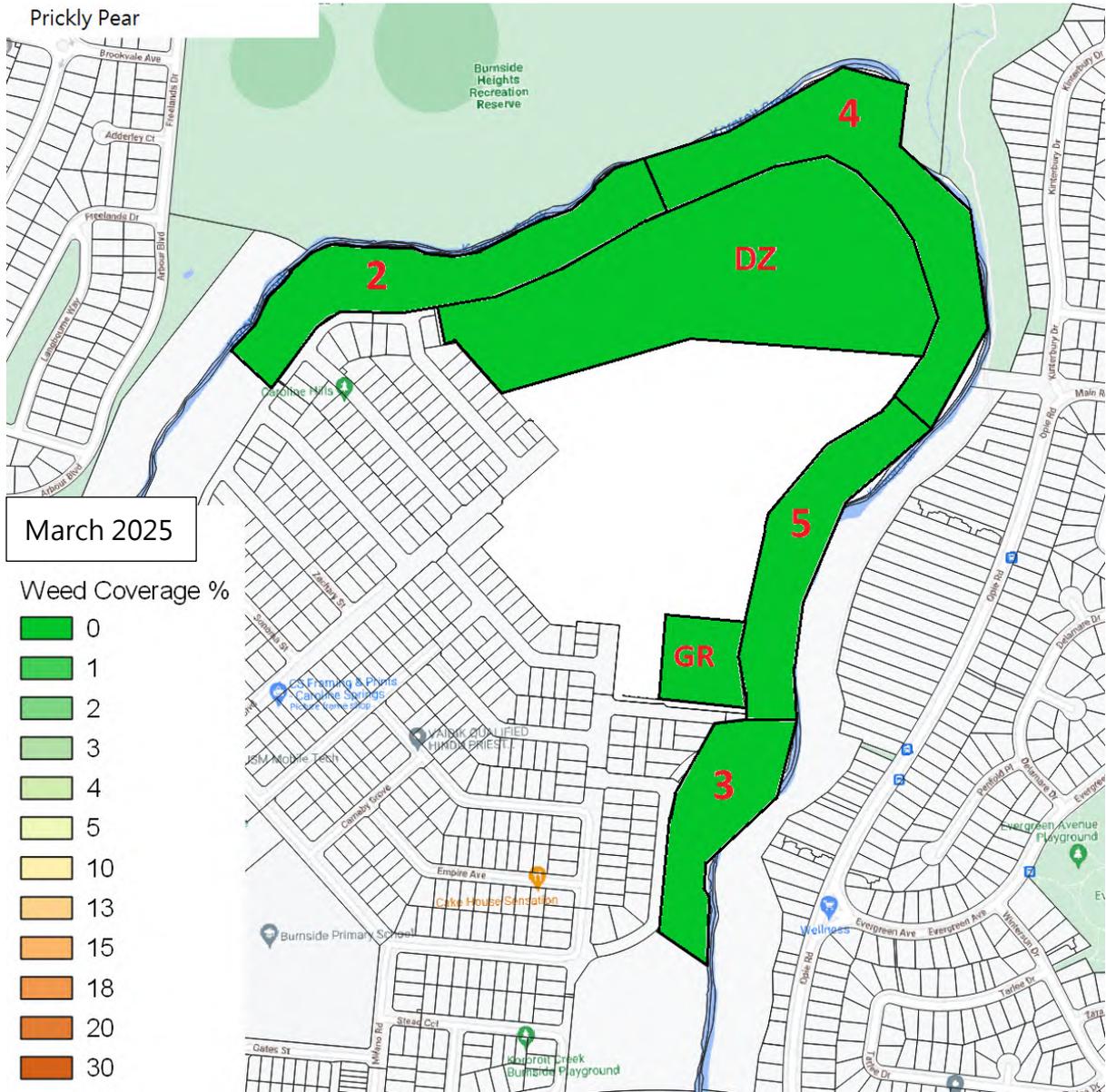
Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	2%	0%	NA
September 2023	0%	0%	0%	2%	0%	NA
June 2023	0%	1%	0%	2%	0%	0%
March 2023	0%	0%	0%	2%	0%	NA
September 2022	0%	0%	0%	1%	0%	NA
June 2022	0%	0%	0%	1%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	1%	0%	NA
August 2021	0%	1%	0%	1%	0%	NA
Apr 2021	0%	1%	0%	1%	0%	NA
Dec 2020	0%	1%	0%	1%	0%	NA
Oct 2020	0%	1%	0%	1%	0%	NA
June 2020	0%	1%	0%	0%	0%	0%

Prickly pear is an erect succulent shrub which can grow to a height of 5 m. The stems of prickly pear are commonly grey green to light green. The plant usually has one main woody stem with dense prickles, which gives way to several side branches made up of fleshy segments. The segments are approximately 45 cm long, 15 cm wide and 1-2 cm thick, with the upper segments appearing to droop.



Each plant segment has areoles, which are growing points where new segments, flowers or roots can be produced. Each areole has short tufts of finely barbed bristles and sometimes one to five sharp, 5 cm long spines. Spines are more common on segments that are older and lower on the plant.

Prickly Pear



4.13 Sweet Briar - *Rosa rubiginosa*

Regionally Controlled

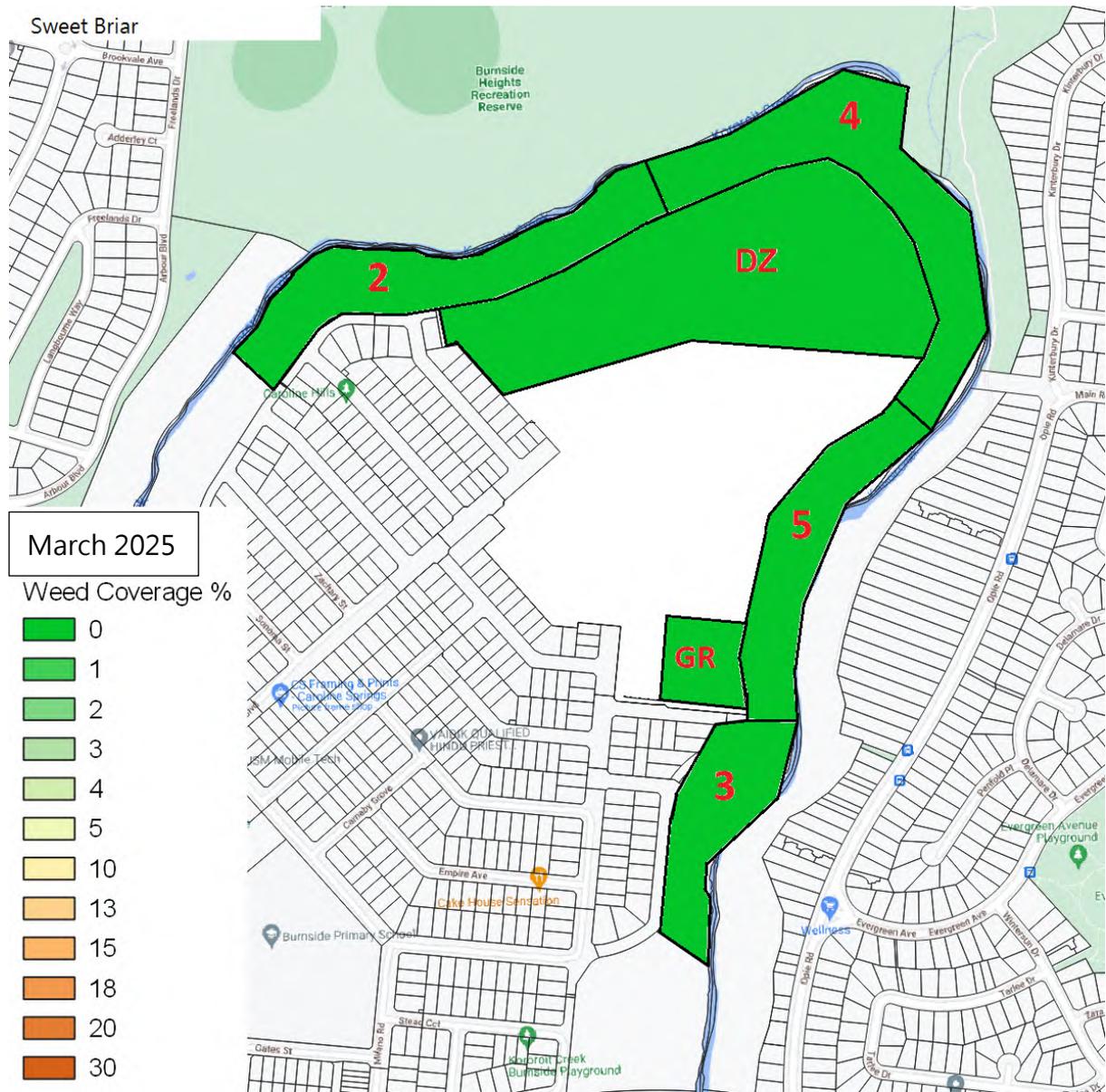
Target coverage <1%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	2%	0%	0%
March 2024	2%	2%	0%	0%	0%	NA
December 2023	2%	2%	0%	0%	0%	NA
September 2023	2%	2%	0%	0%	0%	NA
June 2023	2%	1%	0%	0%	0%	0%
March 2023	2%	2%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	2%	0%	0%	1%	NA
December 2021	0%	0%	0%	0%	1%	NA
October 2021	1%	1%	1%	1%	1%	NA
August 2021	1%	1%	1%	1%	1%	NA
Apr 2021	1%	1%	1%	1%	1%	NA
Dec 2020	1%	1%	0%	0%	0%	NA
Oct 2020	1%	1%	0%	0%	0%	NA
June 2020	1%	1%	1%	0%	0%	0%

Sweet briar is a perennial woody shrub up to 3m tall. The stem is usually many (and can be up to several hundred) stems arising from the rootstock; erect or scrambling, up to 3 metres high, green and smooth to brown and somewhat roughened, woody, branched, spreading and sometimes trailing, heavily covered with down-curved prickles up to 1.5 cm long.





4. 14 Chilean Needle Grass - *Nassella neesiana*

Regional restricted

Target coverage < 5%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	1%	0%	0%	2%	NA
June 2024	0%	1%	0%	0%	1%	0%
March 2024	1%	1%	1%	0%	3%	NA
December 2023	1%	2%	1%	0%	3%	NA
September 2023	1%	2%	1%	0%	3%	NA
June 2023	2%	1%	1%	0%	4%	0%
March 2023	2%	1%	1%	0%	4%	NA
September 2022	2%	1%	0%	0%	4%	NA
June 2022	2%	1%	0%	0%	5%	0%
March 2022	5%	10%	5%	5%	15%	NA
December 201	5%	5%	5%	5%	20%	NA
October 2021	5%	3%	5%	5%	15%	NA
August 2021	5%	3%	5%	5%	15%	NA
Apr 2021	2%	2%	5%	5%	2%	NA
Dec 2020	0%	0%	2%	2%	2%	NA
Oct 2020	0%	0%	2%	5%	2%	NA
June 2020	0%	0%	2%	1%	2%	0%

Chilean needle grass is a tussocky perennial in the Spear grass group of grasses growing to about 1 m high. It leaves are hairless and are normally grow to 30 cm long and 5 mm wide. With the flowering head being to 40 cm long.



4.15 Toowoomba canary grass - *Phalaris aquatica*

Not declared and considered noxious

Target coverage < 5%

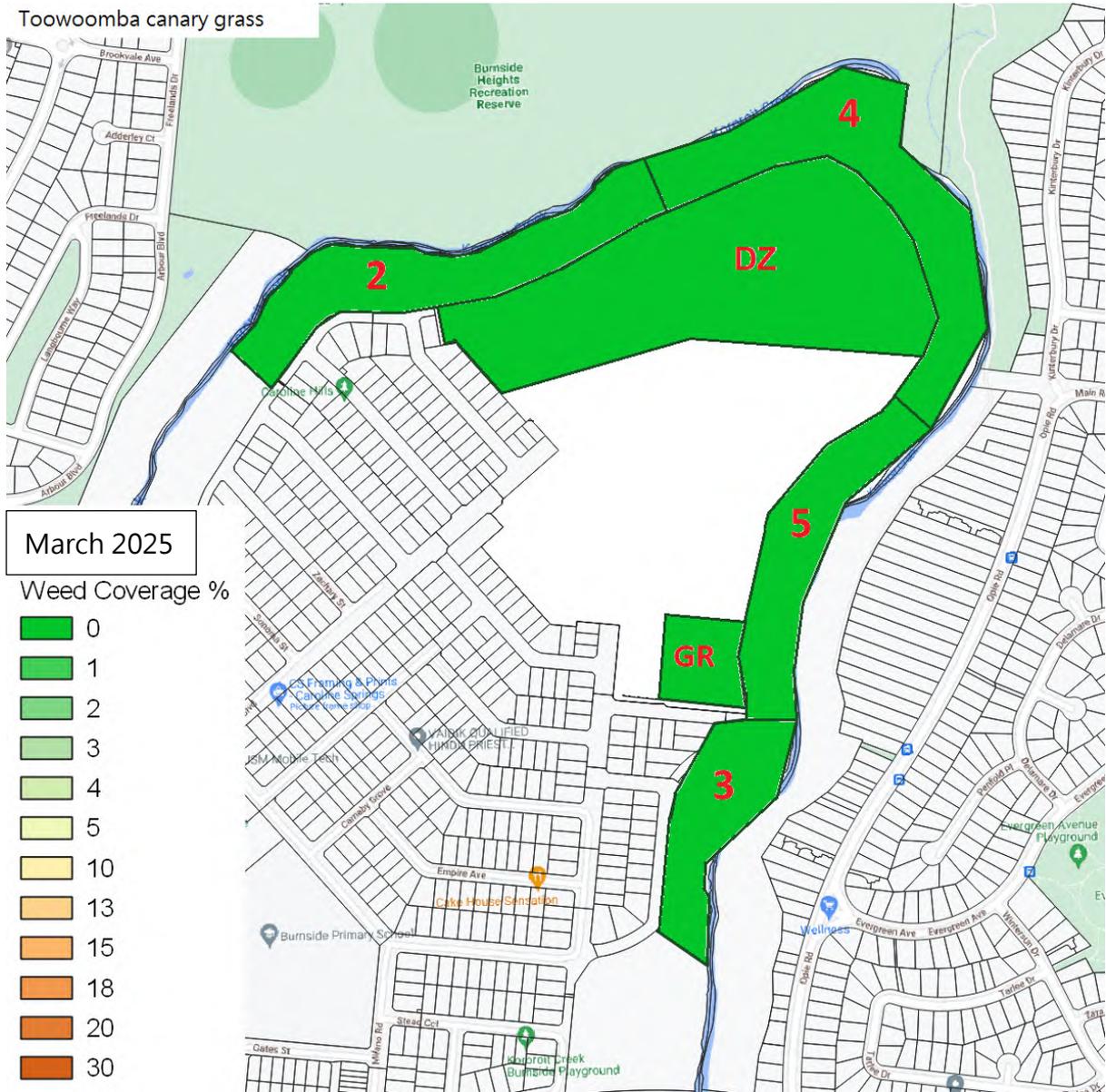
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
March 2025	0%	0%	0%	0%	0%	0%
September 2024	4%	10%	3%	3%	2%	NA
June 2024	5%	10%	4%	3%	5%	0%
March 2024	4%	10%	5%	4%	10%	NA
December 2023	4%	10%	10%	4%	10%	NA
September 2023	4%	10%	15%	4%	10%	NA
June 2023	5%	15%	25%	5%	10%	0%
March 2023	5%	10%	20%	5%	10%	NA
September 2022	10%	10%	15%	5%	10%	NA
June 2022	10%	15%	20%	10%	15%	0%
March 2022	20%	20%	20%	20%	20%	NA
December 2021	25%	25%	20%	25%	30%	NA
October 2021	15%	20%	20%	20%	4%	NA
August 2021	13%	18%	20%	20%	4%	NA
Apr 2021	5%	5%	5%	5%	2%	NA
Dec 2020	2%	2%	2%	2%	0%	NA
Oct 2020	5%	5%	5%	5%	0%	NA
June 2020	2%	2%	2%	2%	0%	0%

Widely used as a pasture species where annual rainfall exceeds 450 mm. It prefers fertile, seasonally moist sites. Commonly spreads from pastures, road verges and drainage ditches to adjacent indigenous vegetation. Toowoomba canary grass invades dry coastal vegetation, heathland and heathy woodland, lowland grassland and grassy woodland, dry sclerophyll forest and woodland, damp sclerophyll forest, riparian vegetation, and freshwater wetlands.



Toowoomba canary grass



4.16 Serrated Tussock - *Nassella trichotoma*

Regionally Controlled - *Weed of National Significance*

Target coverage < 5%

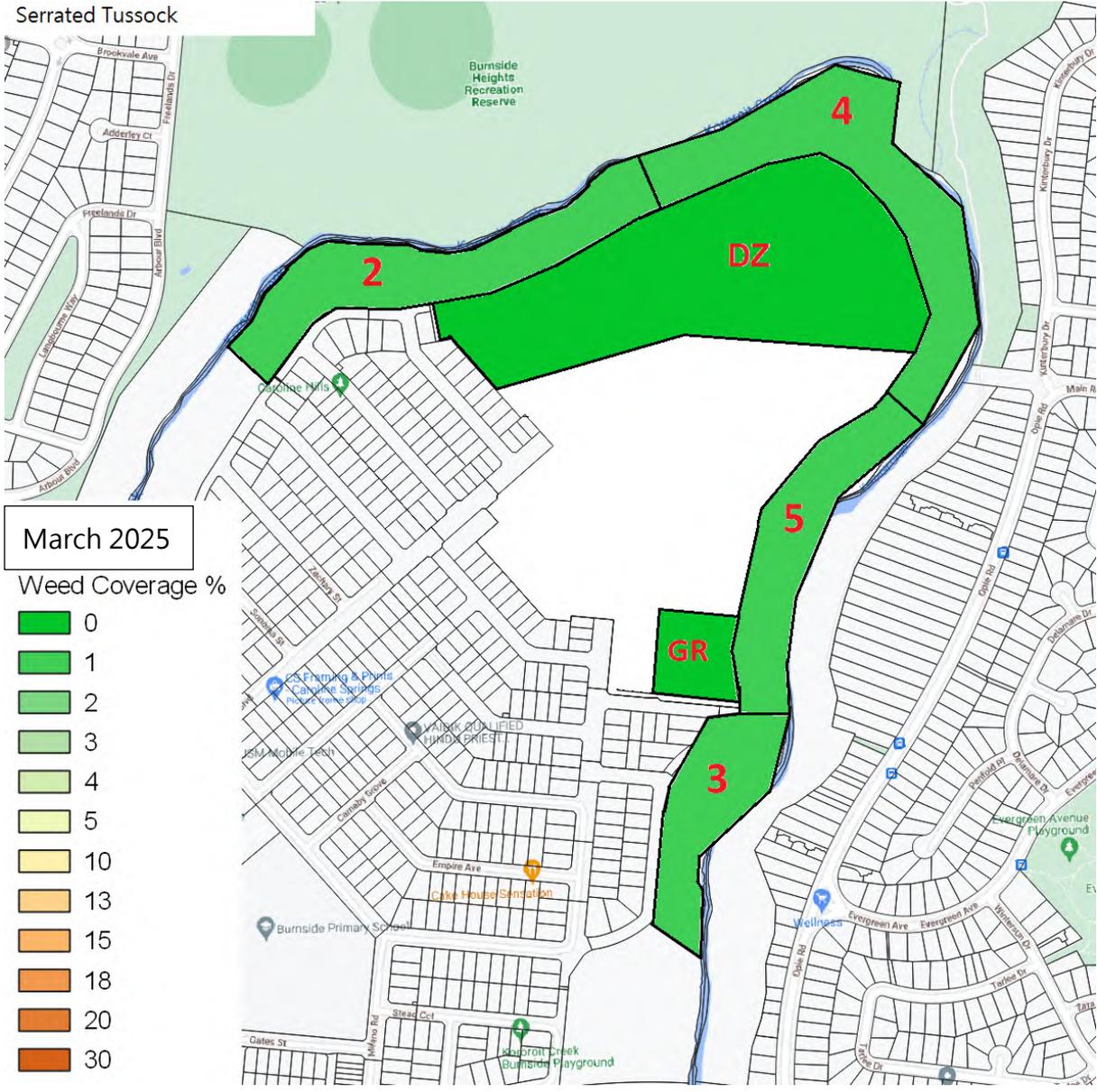
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
March 2025	1%	1%	0%	0%	1%	NA
September 2024	1%	3%	0%	0%	3%	NA
June 2024	2%	2%	2%	0%	3%	0%
March 2024	0%	2%	1%	0%	2%	NA
December 2023	0%	4%	2%	1%	2%	NA
September 2023	0%	4%	2%	1%	2%	NA
June 2023	0%	3%	3%	2%	3%	0%
March 2023	0%	3%	3%	1%	3%	NA
September 2022	0%	1%	1%	1%	3%	NA
June 2022	2%	5%	2%	2%	10%	0%
March 2022	2%	10%	5%	5%	10%	NA
December 2021	5%	10%	5%	5%	15%	NA
October 2021	10%	15%	5%	10%	30%	NA
August 2021	5%	15%	5%	10%	13%	NA
Apr 2021	5%	5%	5%	5%	10%	NA
Dec 2020	2%	2%	2%	2%	2%	NA
Oct 2020	5%	5%	5%	2%	5%	NA
June 2020	5%	5%	5%	2%	5%	0%

Serrated tussock is a long-lived perennial grass growing up to 60cm in height with a base of 25cm in diameter. Plant size varies with soil fertility and location. In infertile conditions plants may only reach a height of 15cm. Serrated tussock is shallow rooted with an extensive network of fibrous roots occurring predominantly in the top 20cm of soil. The roots are dense, wiry, and fibrous making serrated tussock very difficult to pull out, even when small. Flowering stems emerge from the base of the plant. They are multi-branched and up to 35cm long. The purple colour of the small seeds produces an overall purplish haze to the serrated tussock seed head. Once the seeds have formed, the entire seed head will 'droop' over the tussock towards the ground. Flowering takes place as early as late winter (August) and will continue throughout the spring (September – November). Autumn flowering has been known to occur. Seeds take 8 – 10 weeks to mature, normally occurring throughout the spring and summer months. Once seeds are ripe, the whole flowering stem detaches from the base of the plant and is dispersed by the wind. Seed is dormant and will not germinate for about 6 months.



Serrated Tussock

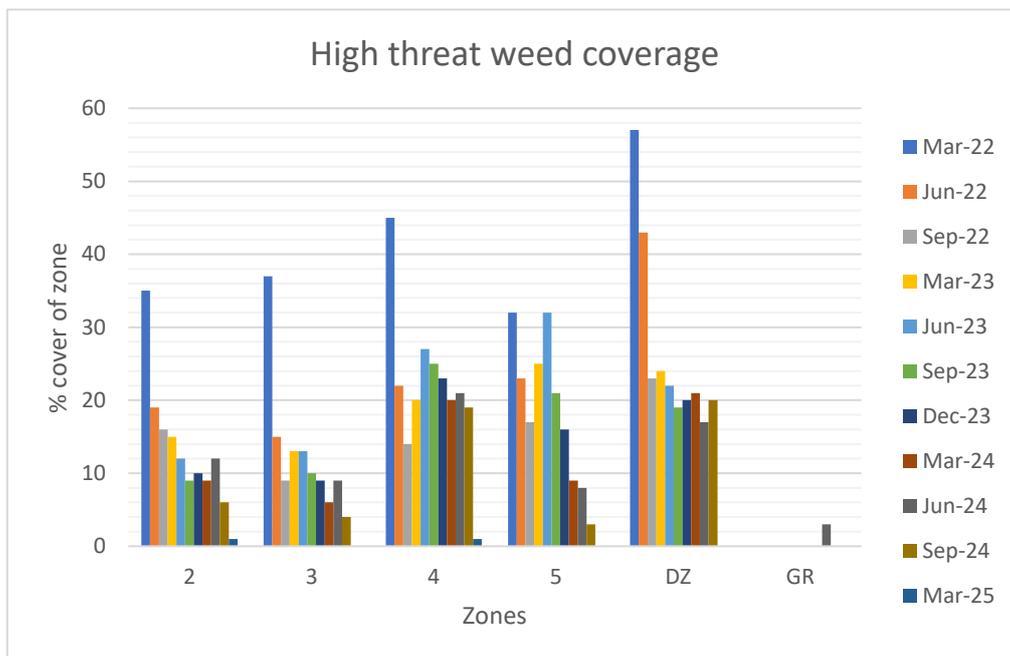


6.0 Summary

6.1 Overview

The below table displays the total percentage coverage in each zone of high-threat weeds. Since the previous report, there has been the substantial decrease in the overall coverage of high-threat weeds across all zones. During this visit, it was noted that *Nassella trichotoma* (Serrated Tussock) is still the most dominant species throughout most zones.

All of the development zone is under construction and the area has been scraped and leveled by the civil contractor on-site.



6.2 Zone 2

The site has undergone significant landscape modification, resulting in a 75% reduction in area. Active management interventions are ongoing to suppress the prevalence of the highly invasive species *Nassella trichotoma*, with the objective of facilitating passive natural regeneration of native vegetation communities. Strategic, staged removal of *N. trichotoma* is being implemented, prioritising zones of higher conservation value to enhance ecological resilience while mitigating the risk of soil destabilisation and erosion. All woody weed species have been successfully eradicated, and targeted herbicidal treatment of *Agave americana* (Century Plant) has achieved complete desiccation. Post-treatment monitoring is required to detect and manage potential regrowth or recruitment.

6.3 Zone 4

The site is currently undergoing active construction works, during which substantial progress has been made in the suppression of invasive flora, with the majority of non-native species effectively eradicated. Nonetheless, *Nassella trichotoma*, a Weed of National Significance (WoNS) and a species of high ecological threat, continues to exhibit persistent and widespread presence within the treatment area.

Future control efforts targeting *Nassella trichotoma* should employ a phased, ecologically sensitive management strategy, commencing within areas of highest floristic and conservation value and progressively extending to peripheral zones. This approach is designed to facilitate the passive regeneration of native vegetation communities while minimising soil disturbance and the subsequent risk of secondary invasion by other opportunistic weed species, including additional *Nassella* taxa previously recorded on site.

Furthermore, the majority of woody weed infestations have been effectively controlled, with residual occurrences limited to isolated specimens. A small number of juvenile *Lycium ferocissimum* (African Boxthorn) individuals have been identified and earmarked for follow-up treatment. In addition, a minor infestation of *Asparagus asparagoides* (Bridal Creeper) located along the riparian corridor has been chemically treated, with monitoring scheduled to assess treatment efficacy and potential regrowth.

6.4 Zone 5

Phalaris aquatica has been successfully eradicated from the site. Additionally, the population density of *Nassella trichotoma* (Serrated Tussock), a highly invasive species, has undergone a marked decline. This reduction is attributed to effective pre-seeding biomass removal in conjunction with a decreased habitat footprint resulting from recent construction activities.

In contrast to persistent herbaceous threats, the complete absence of woody weed species observed during the most recent survey represents a highly favourable outcome. This indicates a high level of efficacy in the implemented control measures, with no regrowth or residual individuals detected across the treatment area.

6.5 Zone 3

The highly invasive perennial grass *Phalaris aquatica* currently exhibits a cover of less than 1% across the site, reflecting successful suppression efforts. However, the progressive removal of *P. aquatica* has inadvertently facilitated the opportunistic establishment of secondary, less aggressive weed species, including *Plantago lanceolata* (Ribwort Plantain), *Helminthotheca echioides* (Bristly Oxtongue), and *Lolium* spp. (Ryegrass).

In addition, a discrete infestation of *Asparagus asparagoides* (Bridal Creeper) located within the *Bursaria spinosa* (Sweet Bursaria) understory has been subjected to targeted herbicide treatment.

6.7 Development zone

Since early 2025, this area has experienced substantial landscape alteration as a result of ongoing civil works, leading to the widespread removal of existing vegetation. The associated soil disturbance has facilitated the emergence of *Cynara cardunculus* (Artichoke Thistle) in isolated patches, replacing the previously dominant infestations of *Lycium ferocissimum* (African Boxthorn) and *Nassella trichotoma* (Serrated Tussock), both of which were chemically treated and subsequently removed during civil operations.

Continued implementation of targeted weed management strategies, in conjunction with the progressive reduction of the Development Zone, is expected to significantly limit further weed establishment. A small number of juvenile Artichoke Thistle individuals have recently emerged, however herbicide application has been applied prior to this edition of the report. It is important to note that there is a large seedbank of artichoke thistle in the DZ zone.

6.8 Grass Reserve

N/A Not part of this report.

7.0 Conclusion

The occurrence of herbaceous high-threat weed species—including *Cirsium vulgare* (Spear Thistle), *Phalaris aquatica*, *Foeniculum vulgare* (Fennel), *Arctotheca calendula* (Capeweed), *Echium plantagineum* (Paterson's Curse), and *Marrubium vulgare* (Horehound)—is currently very low to non-existent across the site. In contrast, *Nassella trichotoma* (Serrated Tussock) remains prevalent in several zones, though its overall density is exhibiting a downward trend due to ongoing control measures.

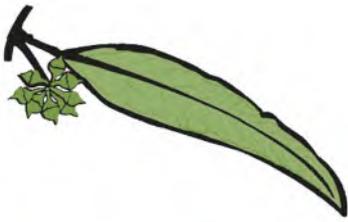
Emergent populations of *Cynara cardunculus* (Artichoke Thistle) have been detected within the Development Zone; however, current infestations are limited in both size and density and are considered manageable at this stage.

As the majority of the Development Zone has been mechanically cleared to bare soil, the primary management objective moving forward will involve targeted spot-spraying of residual and emerging invasive species—particularly during the high-risk spring growth period—to prevent further spread. Zones 2 through 5 are demonstrating strong native vegetation reestablishment, which is expected to reduce the need for herbicidal intervention and allow for selective mechanical weed removal.

Given recent weed treatment successes in surrounding zones, the Development Zone should now be prioritised for intensive management, with a focus on suppressing *N. trichotoma* and preventing further establishment of *C. cardunculus*.

Weed Survey Report

Modeina Estate - Phase 2 -



AUSTRALIAN ECOSYSTEMS
Building sustainable landscapes for the future

June 2025

Submitted by Matthew Rizza

Australian Ecosystems Pty Ltd

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1.0 Introduction

Australian Ecosystems (AE) has prepared this report for Dennis Family Corporation (Project Management) Pty Ltd. This report details the results of weed surveys conducted in June 2025 within the area described as 'Stage 2 Modeina'. This report should be read in conjunction with, 'Modeina Weed Management Strategy' that Greening Australia prepared in 2017.

2.0 Weeds Surveyed

This survey has captured these weed species listed below:

- African Boxthorn (*Lycium ferocissimum*)
- Artichoke Thistle (*Cynara cardunculus*)
- Spear Thistle (*Cirsium vulgare*)
- Bridal Creeper (*Asparagus asparagodies*)
- Cape weed (*Arctotheca calendula*)
- Century Plant (*Agave Americana*)
- Fennel (*Foeniculum vulgare*)
- Galenia (*Galenia pubescens*)
- Horehound (*Marrubim vulgare*)
- Paterson's Curse (*Echium plantagineum*)
- Prickly Pear (*Opuntia spp.*)
- Sweet Briar (*Rosa rubiginosa*)
- Chilean Needle Grass *Nassella neesiana*)
- Toowoomba canary grass (*Phalaris aquatica*)
- Serrated Tussock (*Nassella trichotoma*)

Determined by:

The weeds detailed within this report have been taken from the Modeina Weed Management Strategy that Greening Australia prepared in 2017. Only species that are widespread and/or have a high level of risk have been chosen to be controlled within these areas.

3.0 Survey Methodology

The above-mentioned species were surveyed using the Random Quadrant Sampling Method. Within each zone, four quadrants 5-meter X 5-meter were used to measure the current number of weed species present and then converted to a percentage cover. The results from these quadrants were then extrapolated to obtain a percentage cover across each of the zones. The results of these surveys are displayed over the following pages of the report.

3.1 Woody weeds

For this survey woody weeds are classified as African Boxthorn (*Lycium ferocissimum*), Century Plant (*Agave Americana*), Fennel (*Foeniculum vulgare*), Prickly Pear (*Opuntia spp.*) and Sweet Briar (*Rosa rubiginosa*).

As a result of the extremely low abundance of all species in each zone, individual counts were undertaken, with each individual being assigned a percentage cover value of 1% as the observed species were primarily in their juvenile stages. Prickly Pear (*Opuntia* spp.) has been eliminated through out all zones and no new growth sited. Similarly, in Zone 2, two patches of the Century Plant (*Agave Americana*) have been treated and there is no regrowth to date.

3.2 Herbs and Grass Weeds

Efforts are clearly being made to minimize or control the presence of herb and grass weeds in all areas. These weeds include Artichoke Thistle (*Cynara cardunculus*), Scotch Thistle (*Onopordum acanthium*), Spear Thistle (*Cirsium vulgare*), Bridal Creeper (*Asparagus asparagoides*), Horehound (*Marrubium vulgare*), Paterson's Curse (*Echium plantagineum*), Chilean Needle Grass (*Nassella neesiana*), Toowoomba canary grass (*Phalaris aquatica*), and Serrated Tussock (*Nassella trichotoma*). Significant progress has been made in reducing the presence of Toowoomba canary grass (*Phalaris aquatica*) in several areas, and further reductions are expected during future maintenance visits. There has been minimal Artichoke Thistle (*Cynara cardunculus*) in the Development Zone, however this was targeted in a recent visit and is under control.

To date, the application of herbicides has resulted in the successful eradication of the majority of invasive weed species. Nevertheless, ongoing monitoring is necessary to ensure early detection of any resurgence, as a dormant soil seed bank may still persist.

3.3 Changes

Construction is still ongoing in the development zone, which has decreased the weed load by 90%. Zone 2 and 3 works have been completed, resulting in a decreased weed load by 98%. Zone 4 has been completed as well with a weed reduction of 80% (however this area is not managed by AE).

4.0 Details of Surveyed Weeds

4.1 African Boxthorn - *Lycium ferocissimum*

Regionally Controlled & Weed of National Significance

Target coverage <1%

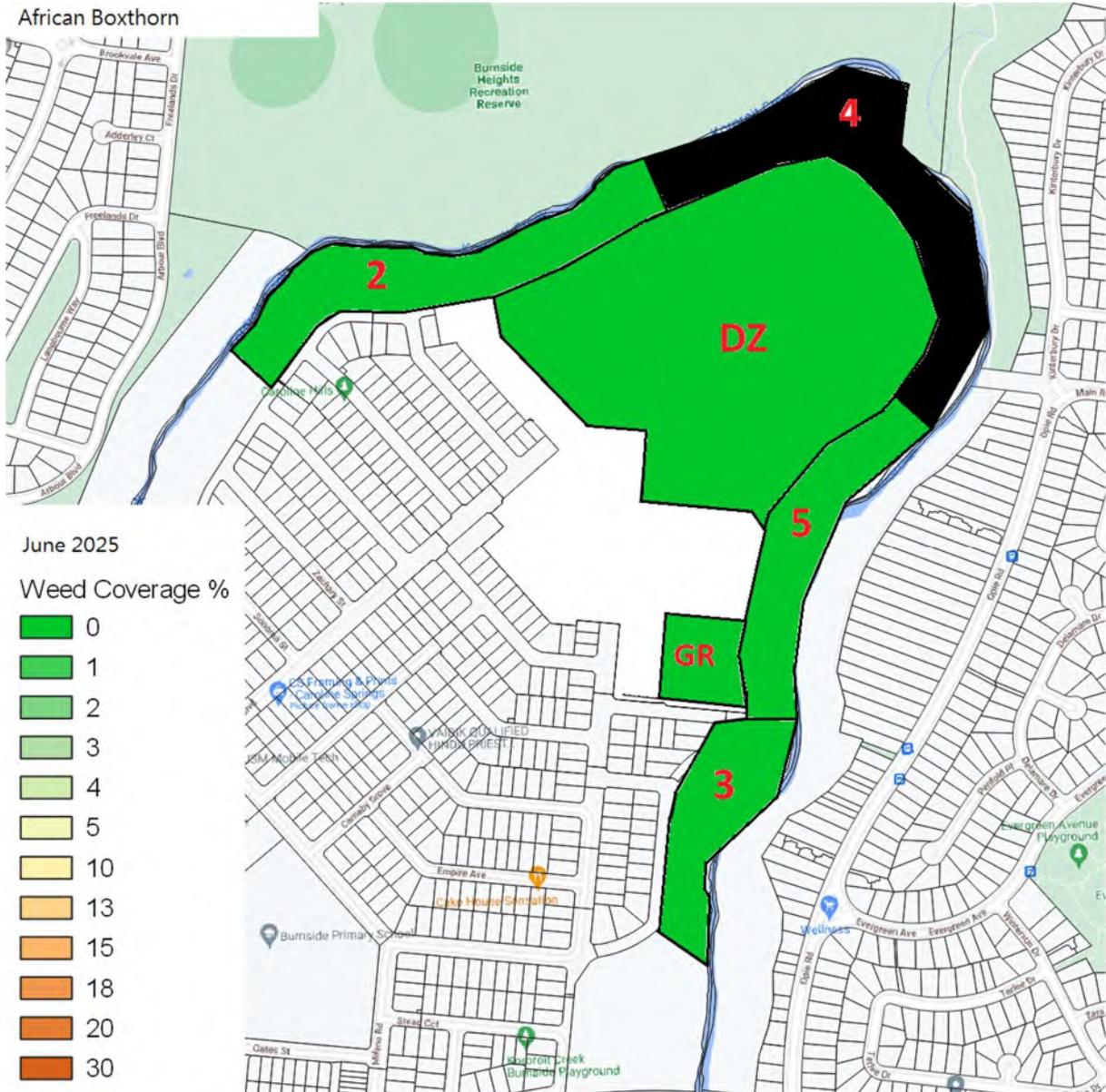
Current coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	2%	0%	0%	2%	NA
June 2024	0%	2%	0%	2%	4%	0%
March 2024	2%	0%	0%	0%	0%	NA
December 2023	2%	0%	0%	0%	0%	NA
September 2023	0%	2%	0%	0%	0%	NA
June 2023	0%	1%	0%	2%	0%	0%
March 2023	0%	0%	0%	2%	2%	NA
September 2022	0%	0%	0%	1%	1%	NA
June 2022	0%	0%	0%	1%	1%	0%
March 2022	0%	1%	0%	0%	1%	NA
December 2021	0%	0%	0%	0%	1%	NA
October 2021	0%	0%	0%	0%	1%	NA
August 2021	1%	1%	1%	1%	2%	NA
April 2021	1%	1%	1%	1%	1%	NA
Dec 2020	0%	1%	1%	0%	1%	NA
Oct 2020	0%	1%	1%	0%	1%	NA
June 2020	0%	1%	1%	0%	1%	0%

African boxthorn is a rounded, woody, densely branched and very thorny large shrub up to 5 metres high. African boxthorn reproduces exclusively by seed, which is commonly eaten by birds, seed is viable when excreted. These plants are often found near places where birds have perched such as trees, poles, and powerlines. It was widely planted as a hedge plant before its weedy potential was realised. Spread also occurs from contaminated produce and materials. African boxthorn is a fast-growing invasive species that, if untreated, spreads quickly. Seeds may germinate year-round and early root growth is rapid, ensuring young plants are competitive. Plants take at least two years to flower, producing flowers and fruit mostly in summer. Some flowering and fruit production occurs at other times of year. Sometimes deciduous in winter, with new leaves and active growth in spring. Broken roots and cut stumps can sprout regrowth.



African Boxthorn



4.2 Artichoke Thistle - *Cynara cardunculus*

Regionally Controlled

Target coverage < 5%

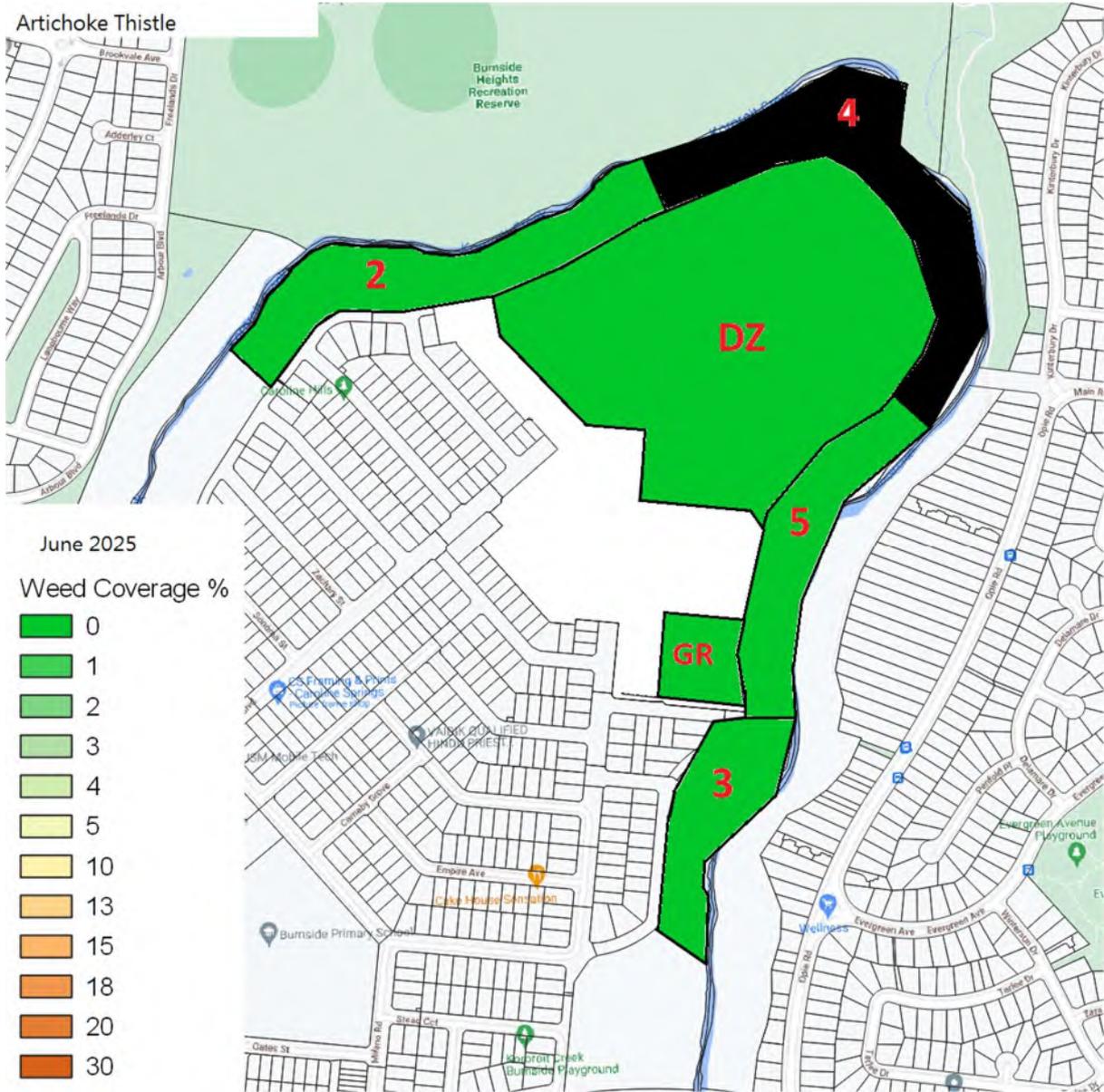
Current coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	1%	0%
September 2024	0%	0%	0%	1%	0%	NA
June 2024	1%	3%	1%	0%	3%	3%
March 2024	0%	1%	1%	1%	5%	NA
December 2023	0%	1%	2%	2%	4%	NA
September 2023	1%	1%	2%	3%	3%	NA
June 2023	2%	1%	2%	2%	4%	0%
March 2023	3%	1%	0%	3%	4%	NA
September 2022	1%	0%	0%	1%	4%	NA
June 2022	1%	0%	0%	1%	10%	0%
March 2022	2%	0%	0%	2%	2%	NA
December 2021	0%	0%	0%	0%	5%	NA
October 2021	0%	0%	0%	0%	10%	NA
August 2021	5%	2%	15%	15%	10%	NA
Apr 2021	15%	2%	2%	2%	5%	NA
Dec 2020	5%	2%	5%	2%	5%	NA
Oct 2020	5%	5%	2%	2%	10%	NA
June 2020	2%	10%	5%	5%	10%	0%

A perennial or biennial spiny thistle with annual tops and a cluster of large bright purple flowers that are 5-8 cm in diameter during summer. The mature plant is erect, with stems 1- 2 m tall arising from a bushy rosette up to 2 m wide and tall. The stem is strongly ribbed and covered with downy grey hairs and usually single at the base and branched towards the top. The large, grey green leaves are deeply lobed and spiny with woolly hairs underneath.



Artichoke Thistle



4.4 Spear Thistle - *Cirsium vulgare*

Regionally Controlled Weeds

Target coverage <5%

Current coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	1%	1%	0%	0%	0%	NA
June 2024	1%	1%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	1%	0%	0%	0%	1%	NA
Oct 2020	1%	0%	0%	0%	1%	NA
June 2020	1%	0%	0%	0%	1%	0%

An annual or short-term perennial herb with erect growth to 1.5 m tall. Stems have spiny wings and are cobwebby. Upper leaf surface is dark green and rough while the lower surface is white with short, matted hairs.

A common species of wet or summer-moist land, including swamps, depressions, drains, wasteland, pastures, and cultivated soils. Prefers open, non-shaded environments, heavy textured soils, and good fertility.



4.5 Bridal Creeper - *Asparagus asparagoides*

Regionally Controlled - Weed of National Significance

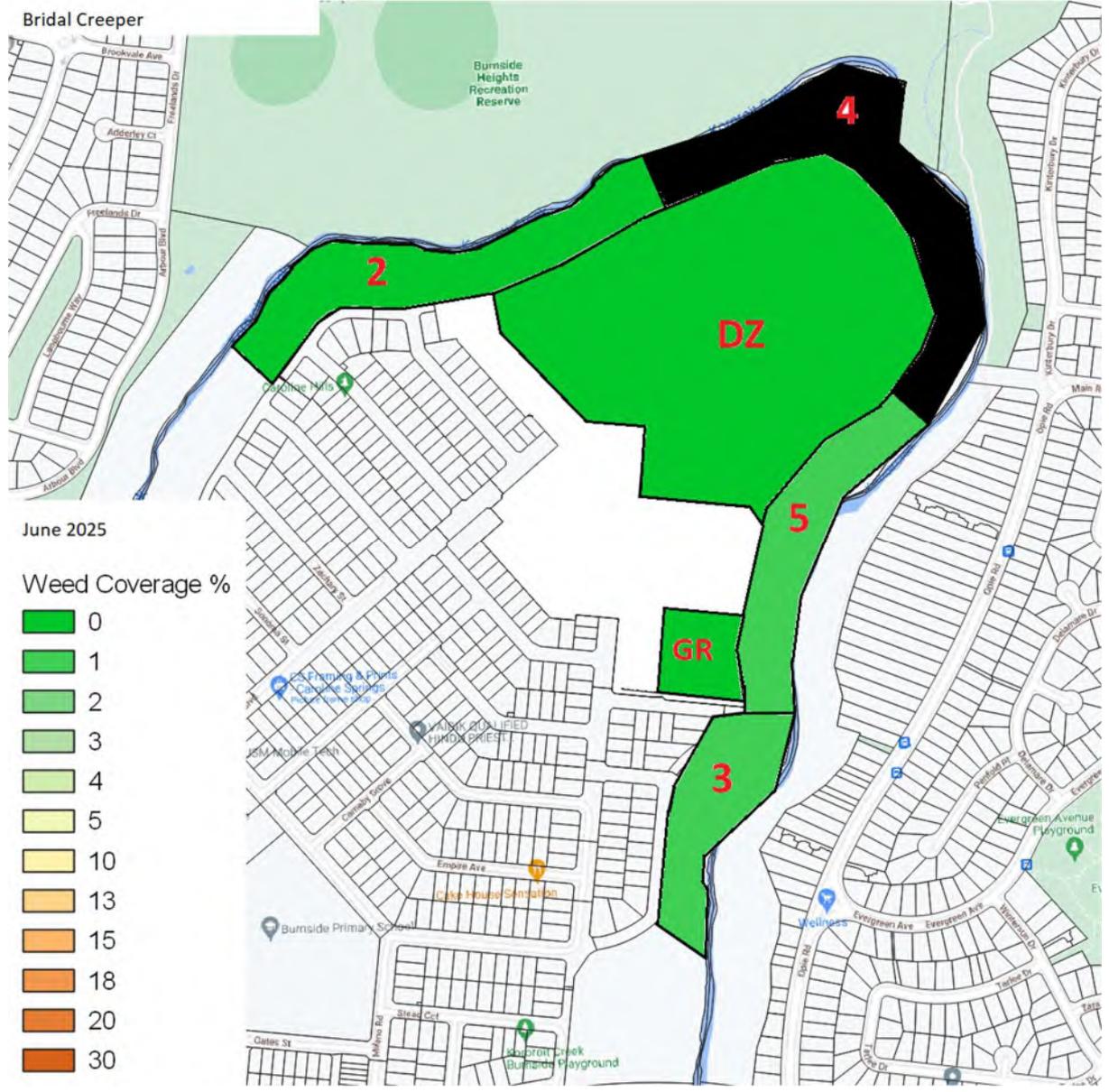
Target coverage < 1%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	1%	1%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	1%	0%	NA
June 2024	0%	1%	0%	2%	0%	0%
March 2024	0%	1%	0%	1%	0%	NA
December 2023	1%	1%	0%	0%	0%	NA
September 2023	1%	1%	0%	0%	0%	NA
June 2023	1%	1%	0%	0%	0%	0%
March 2023	1%	1%	0%	0%	0%	NA
September 2022	1%	1%	0%	0%	0%	NA
June 2022	1%	1%	0%	0%	0%	0%
March 2022	2%	1%	0%	0%	0%	NA
December 2021	2%	2%	2%	0%	0%	NA
October 2021	3%	3%	2%	0%	0%	NA
August 2021	5%	4%	3%	0%	0%	NA
Apr 2021	1%	1%	1%	0%	0%	NA
Dec 2020	0%	1%	1%	0%	0%	NA
Oct 2020	0%	0%	1%	0%	0%	NA
June 2020	0%	0%	1%	0%	0%	0%

It is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts. Bridal creeper entered the country as a garden plant and is now a major weed of bushland in southern Australia, where its climbing stems and foliage smother native plants. It forms a thick mat of underground tubers which impedes the root growth of other plants and often prevents seedling establishment. Rare native plants, such as the rice flower *Pimelea spinescens*, are threatened with extinction by Bridal Creeper.





4.6 Cape weed - *Arctotheca calendula*

Not declared or considered noxious

Target coverage < 5%

Current Coverage

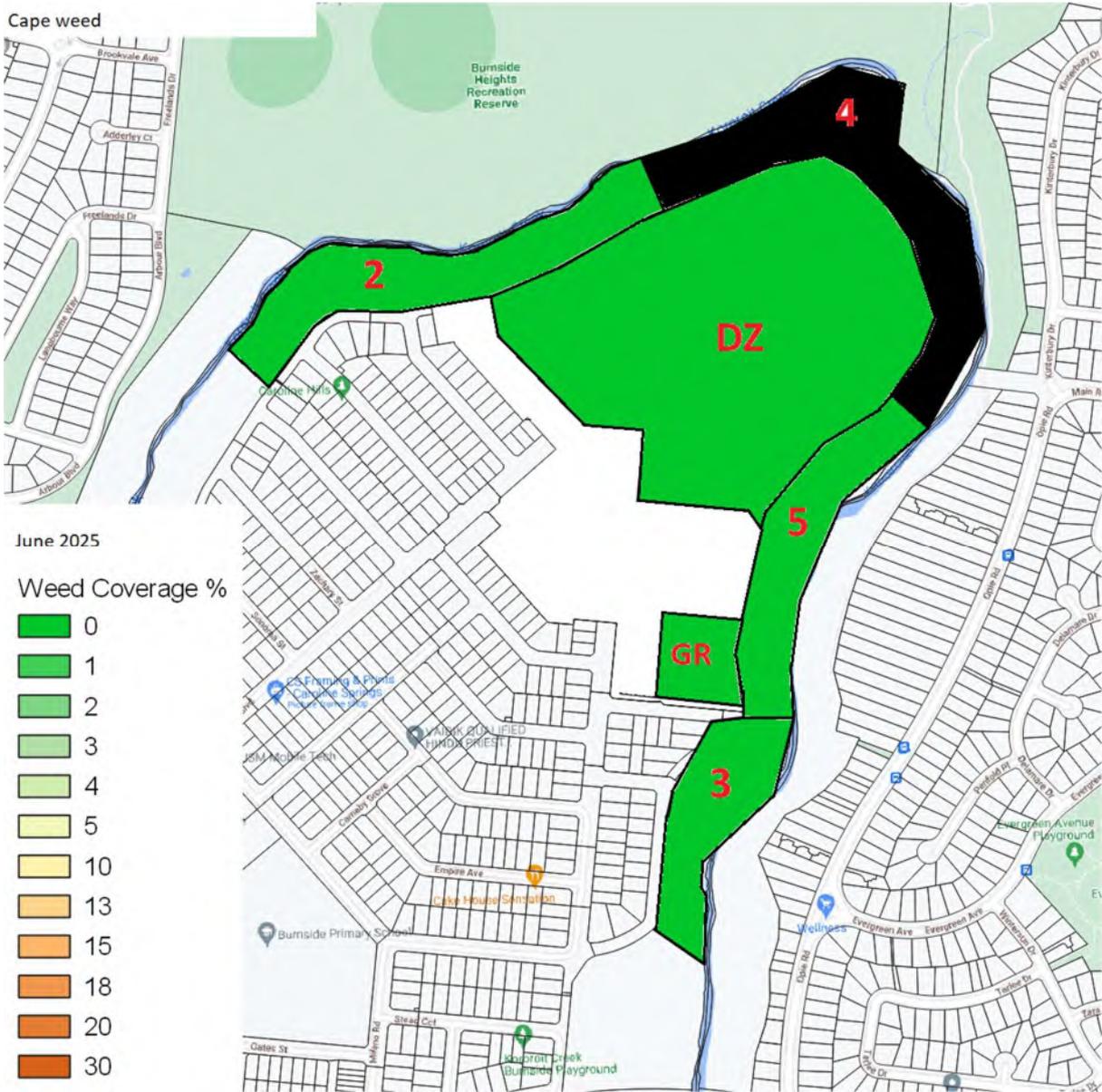
Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	2%	2%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	0%	0%	0%	0%	0%	NA
Oct 2020	0%	1%	1%	1%	0%	NA
June 2020	2%	2%	0%	2%	0%	0%

This plant is widespread and common weed in pastures, lawns, cultivation, and waste areas across Victoria. Typically, a plant of fresh-water habitats but may occur on the fringes of saline swamps and flats during wetter periods.

It is stemless or shortly stemmed, herb, 80 cm wide and 30 cm high, with a taproot and a basal rosette of leaves. Leaves are 5-25 cm long and 2-6 cm wide.



Cape weed



4.7 Century Plant - *Agave americana*

Not declared or considered noxious

Target coverage < 1%

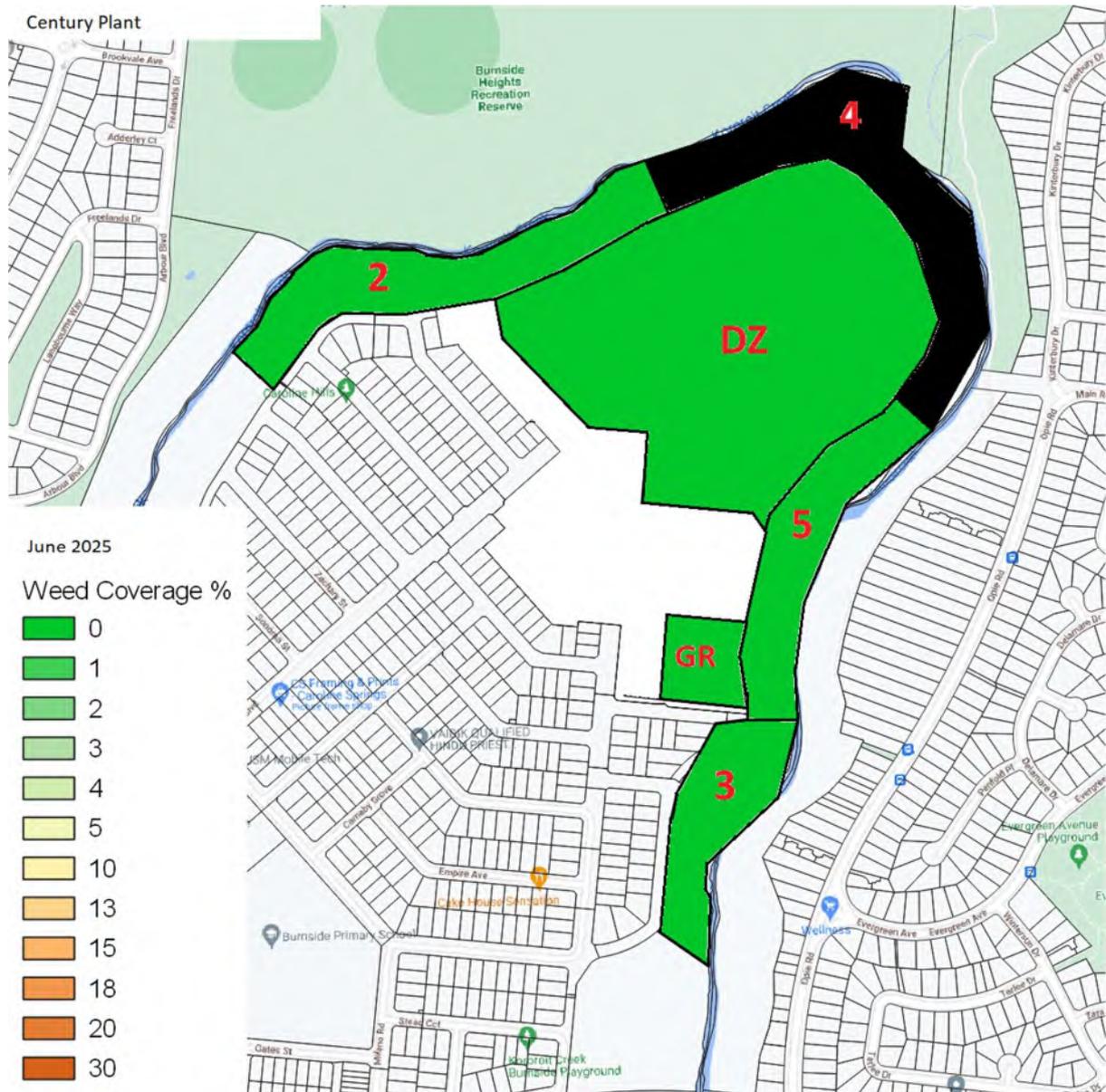
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	2%	0%	0%	0%	0%	0%
March 2024	0%	2%	0%	0%	0%	NA
December 2023	0%	2%	0%	0%	0%	NA
September 2023	0%	2%	0%	0%	0%	NA
June 2023	0%	2%	0%	0%	0%	0%
March 2023	0%	2%	0%	0%	0%	NA
September 2022	0%	1%	0%	0%	0%	NA
June 2022	1%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	1%	0%	0%	0%	0%	NA
Dec 2020	1%	0%	0%	0%	0%	NA
Oct 2020	1%	0%	0%	0%	0%	NA
June 2020	1%	0%	0%	0%	0%	0%

A very large and long-lived rosette-forming plant, growing 1-2 m high and 2-4 m across.

Older individuals may sometimes develop a short woody stem at the base of the plant and commonly produces numerous suckers which form a large clump or colony. When fully mature this plant will develop a massive flower cluster on a robust flowering stem 6-12 m tall.





4.8 Fennel - *Foeniculum vulgare*

Restricted Weeds noxious

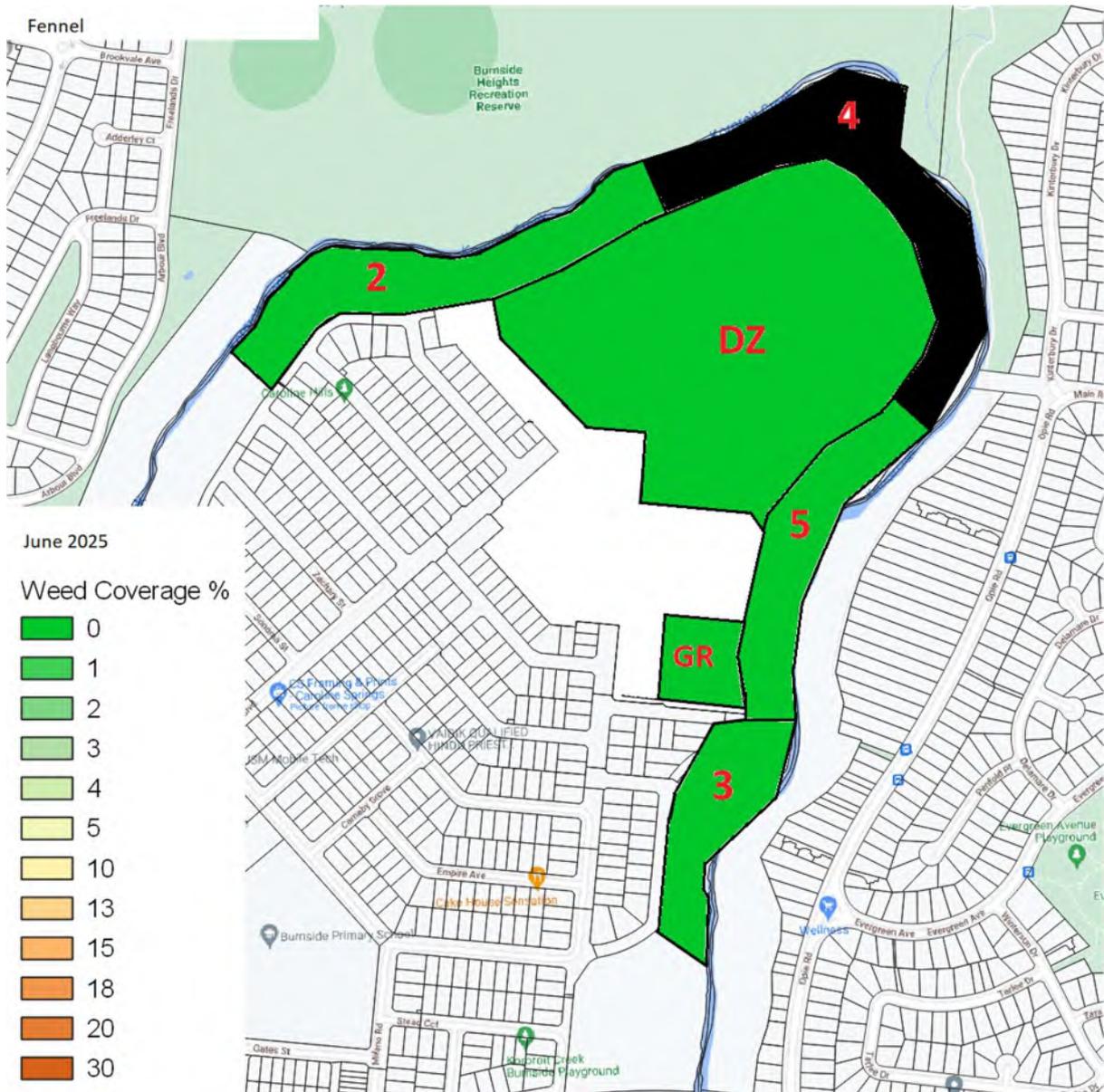
Target coverage < 1%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	1%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	1%	0%	0%	1%	0%	NA
Oct 2020	0%	0%	0%	0%	0%	NA
June 2020	0%	0%	0%	0%	0%	0%

An erect multi-stemmed perennial herb commonly 1.5 to 2.0 metres high. It is found along waterways, drainage lines and in seasonally moist locations within grasslands and woodlands. Dense infestations may restrict access to waterways. A soft, herbaceous plant the high growth of the plant may be a nuisance to people.





4.9 Galenia - Galenia pubescens

Not declared or considered noxious

Target coverage < 5%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	0%	0%	0%
March 2024	0%	1%	1%	0%	1%	NA
December 2023	0%	1%	1%	0%	1%	NA
September 2023	0%	1%	1%	0%	1%	NA
June 2023	0%	1%	1%	0%	1%	0%
March 2023	1%	0%	1%	0%	1%	NA
September 2022	1%	0%	1%	0%	1%	NA
June 2022	1%	0%	1%	0%	2%	0%
March 2022	2%	0%	1%	1%	4%	NA
December 2021	1%	1%	1%	1%	5%	NA
October 2021	1%	1%	1%	1%	10%	NA
August 2021	1%	1%	1%	1%	0%	NA
Apr 2021	1%	1%	1%	1%	0%	NA
Dec 2020	1%	1%	0%	1%	0%	NA
Oct 2020	0%	0%	0%	1%	0%	NA
June 2020	1%	0%	1%	0%	0%	0%

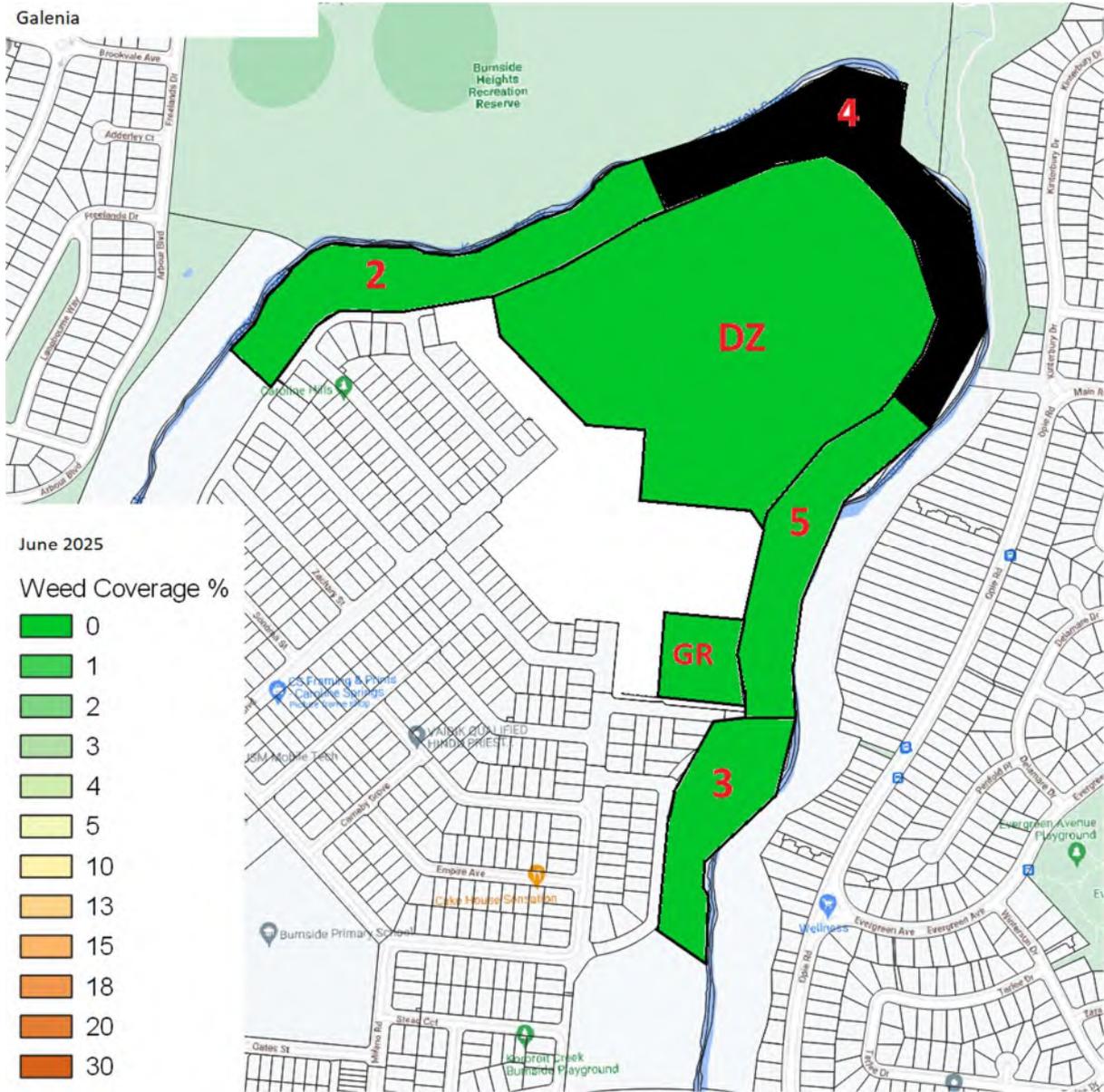
This perennial creeping, herbaceous plant growing to about 60 cm high and 1–2 m wide.

It is deep rooted and flowers from late spring to early autumn. Galenia reproduces by seed. Most dispersal of seed occurs by wind, water, birds and livestock. Movement of contaminated soil by vehicles and equipment can also contribute to its spread.

Drought and salt tolerant, galenia grows over and smothers existing vegetation by forming a thick dense mat. It invades coastal dunes, pastures, disturbed areas, lawns, roadsides and rocky outcrop vegetation. Galenia is known to produce nitrates that can be toxic to stock.



Galenia



4.10 Horehound - *Marrubim vulgare*

Not declared or considered noxious

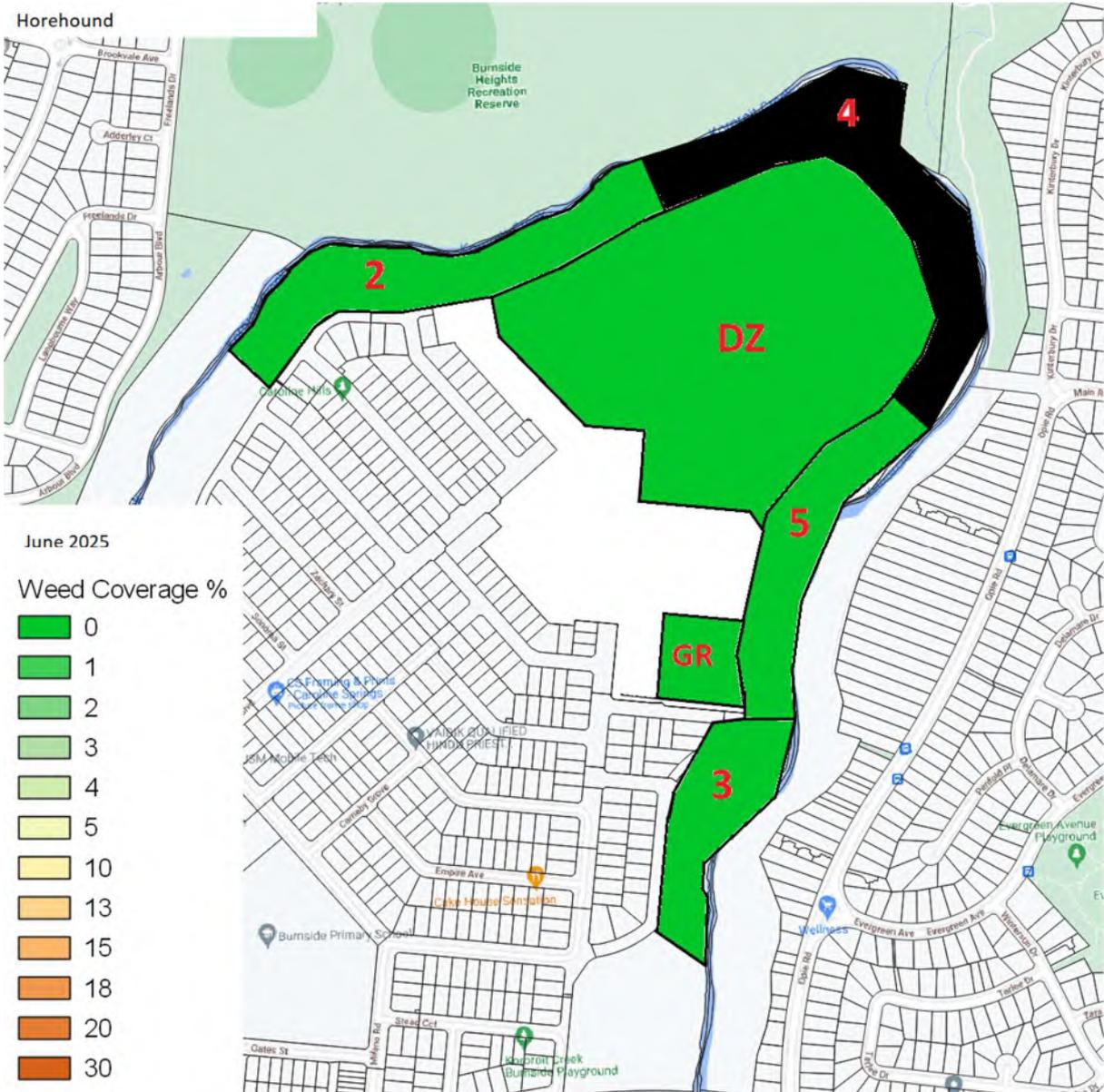
Target coverage <5%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	1%	0%	0%	1%	NA
June 2024	0%	1%	0%	0%	1%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	1%	0%	0%	0%	0%	NA
September 2022	1%	0%	0%	0%	0%	NA
June 2022	1%	0%	0%	0%	0%	0%
March 2022	0%	1%	1%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	1%	0%	4%	3%	NA
August 2021	0%	1%	0%	1%	0%	NA
Apr 2021	0%	1%	0%	1%	0%	NA
Dec 2020	0%	1%	1%	1%	0%	NA
Oct 2020	1%	0%	1%	0%	0%	NA
June 2020	0%	1%	0%	1%	0%	0%

A bushy perennial plant, 30 to 80 cm high, sharply aromatic when crushed, covered with dense whitish hairs. Horehound thrives on poor soil and in waste places. It invades poor pastures which provide little competition. Horehound contains a bitter alkaloid which makes it unpalatable for grazing livestock. As well as being an agricultural weed of pastures horehound has become an important environmental weed because of its ability to invade disturbed native vegetation.





4.11 Paterson's Curse - *Echium plantagineum*

Regionally controlled

Target coverage < 5%

Current Coverage

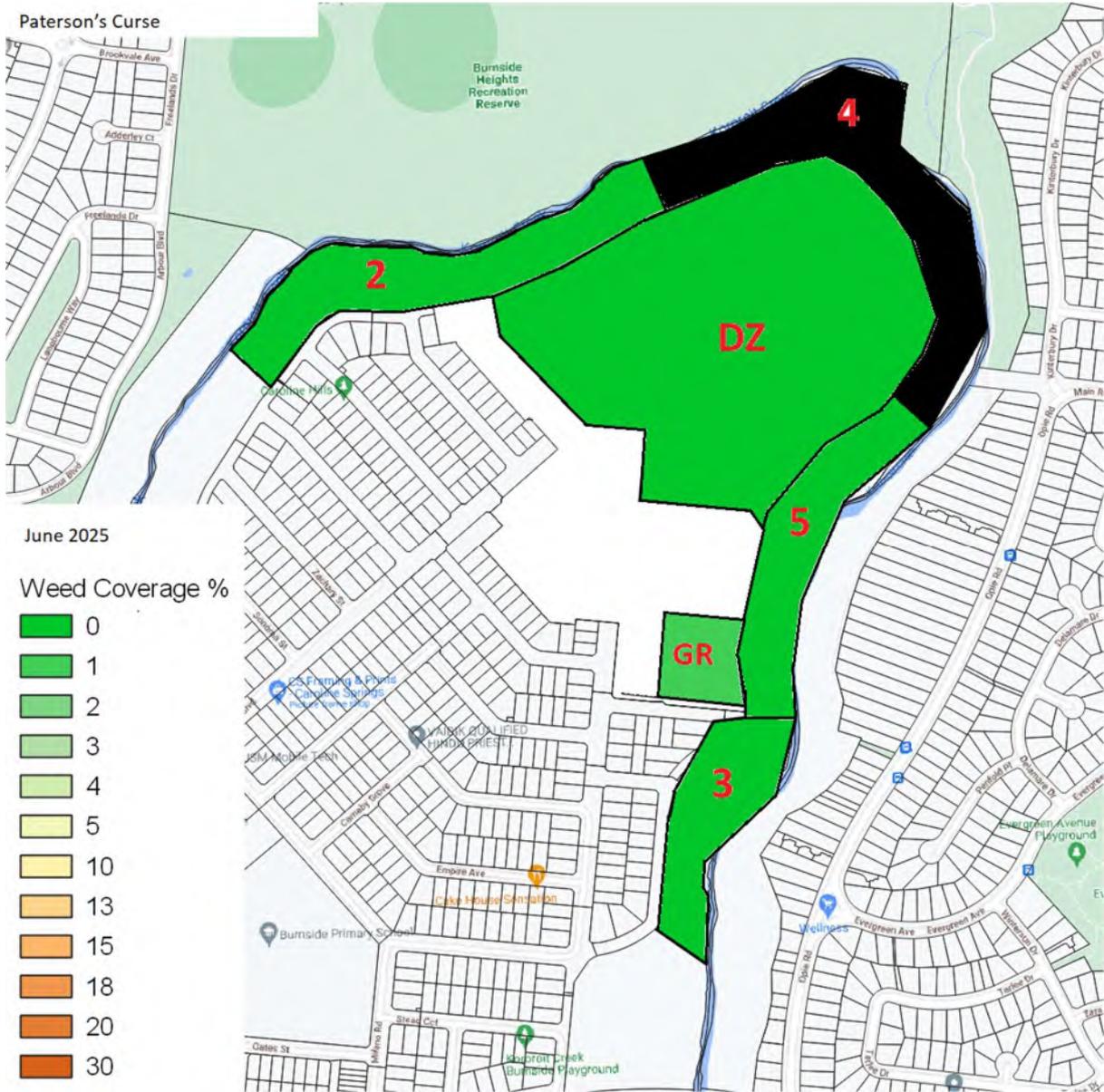
Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	N/A
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	1%	0%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	2%	0%	0%	2%	2%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	10%	NA
August 2021	0%	0%	0%	2%	10%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	1%	1%	1%	1%	2%	NA
Oct 2020	2%	1%	1%	2%	2%	NA
June 2020	2%	2%	5%	5%	5%	0%

Paterson's curse is an annual, occasionally biennial, herb that grows as a rosette in autumn and winter and produces flowering stalks in spring and early summer. The rosette usually grows parallel to the ground; however, the leaves may be erect in dense vegetation.

Plants begin to produce flowering stalks in late winter, commence flowering in early spring and die in summer. The flowers are usually purple but may be blue or pink. The first mature seeds are produced four to six weeks after flowering commences.



Paterson's Curse



4.12 Prickly Pear - *Opuntia* spp.

Regionally controlled

Target coverage <5%

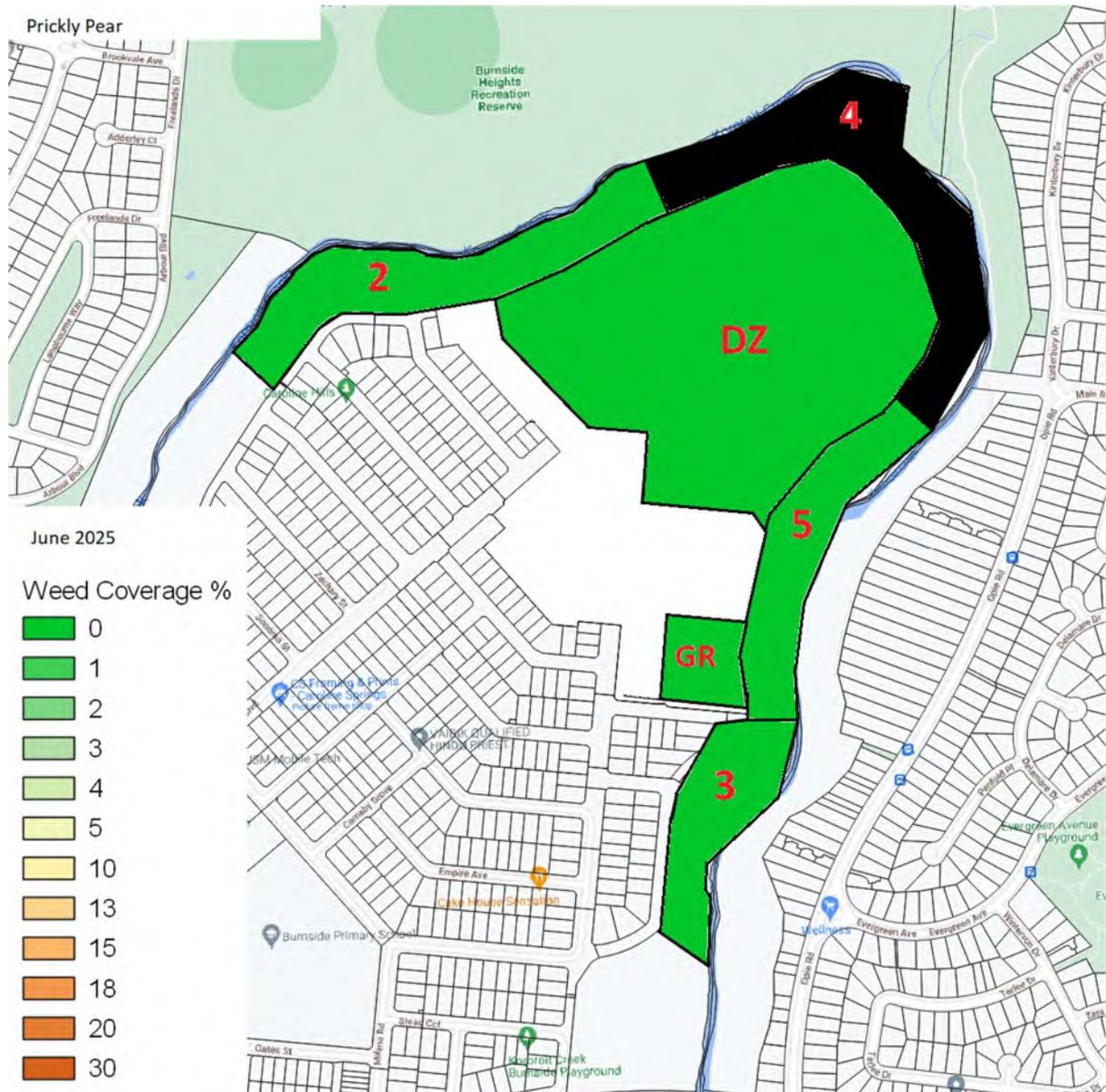
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	2%	0%	NA
September 2023	0%	0%	0%	2%	0%	NA
June 2023	0%	1%	0%	2%	0%	0%
March 2023	0%	0%	0%	2%	0%	NA
September 2022	0%	0%	0%	1%	0%	NA
June 2022	0%	0%	0%	1%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	1%	0%	NA
August 2021	0%	1%	0%	1%	0%	NA
Apr 2021	0%	1%	0%	1%	0%	NA
Dec 2020	0%	1%	0%	1%	0%	NA
Oct 2020	0%	1%	0%	1%	0%	NA
June 2020	0%	1%	0%	0%	0%	0%

Prickly pear is an erect succulent shrub which can grow to a height of 5 m. The stems of prickly pear are commonly grey green to light green. The plant usually has one main woody stem with dense prickles, which gives way to several side branches made up of fleshy segments. The segments are approximately 45 cm long, 15 cm wide and 1-2 cm thick, with the upper segments appearing to droop.



Each plant segment has areoles, which are growing points where new segments, flowers or roots can be produced. Each areole has short tufts of finely barbed bristles and sometimes one to five sharp, 5 cm long spines. Spines are more common on segments that are older and lower on the plant.



4.13 Sweet Briar - *Rosa rubiginosa*

Regionally Controlled

Target coverage <1%

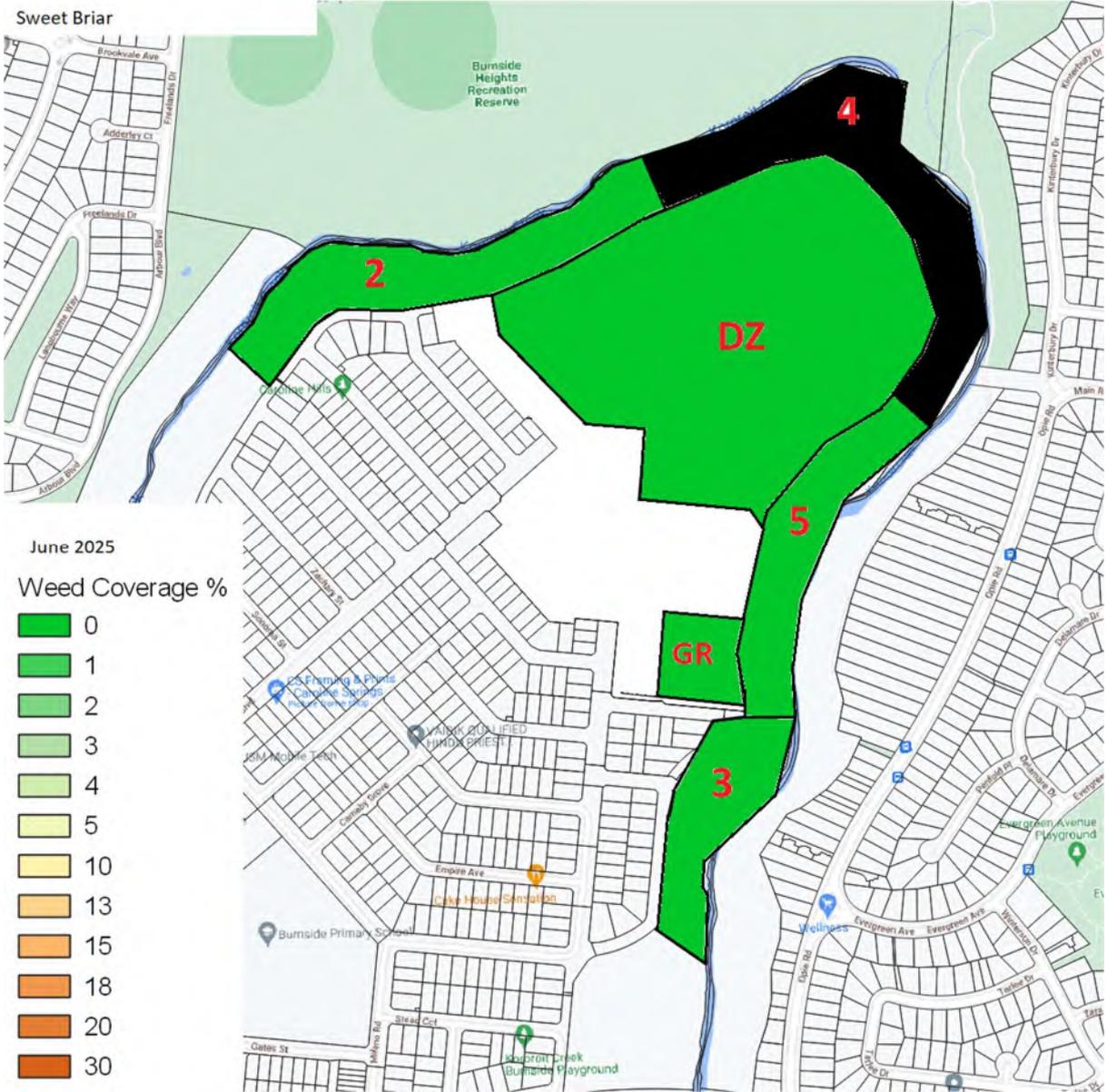
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	2%	0%	0%
March 2024	2%	2%	0%	0%	0%	NA
December 2023	2%	2%	0%	0%	0%	NA
September 2023	2%	2%	0%	0%	0%	NA
June 2023	2%	1%	0%	0%	0%	0%
March 2023	2%	2%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	2%	0%	0%	1%	NA
December 2021	0%	0%	0%	0%	1%	NA
October 2021	1%	1%	1%	1%	1%	NA
August 2021	1%	1%	1%	1%	1%	NA
Apr 2021	1%	1%	1%	1%	1%	NA
Dec 2020	1%	1%	0%	0%	0%	NA
Oct 2020	1%	1%	0%	0%	0%	NA
June 2020	1%	1%	1%	0%	0%	0%

Sweet briar is a perennial woody shrub up to 3m tall. The stem is usually many (and can be up to several hundred) stems arising from the rootstock; erect or scrambling, up to 3 metres high, green and smooth to brown and somewhat roughened, woody, branched, spreading and sometimes trailing, heavily covered with down-curved prickles up to 1.5 cm long.



Sweet Briar



4. 14 Chilean Needle Grass - *Nassella neesiana*

Regional restricted

Target coverage < 5%

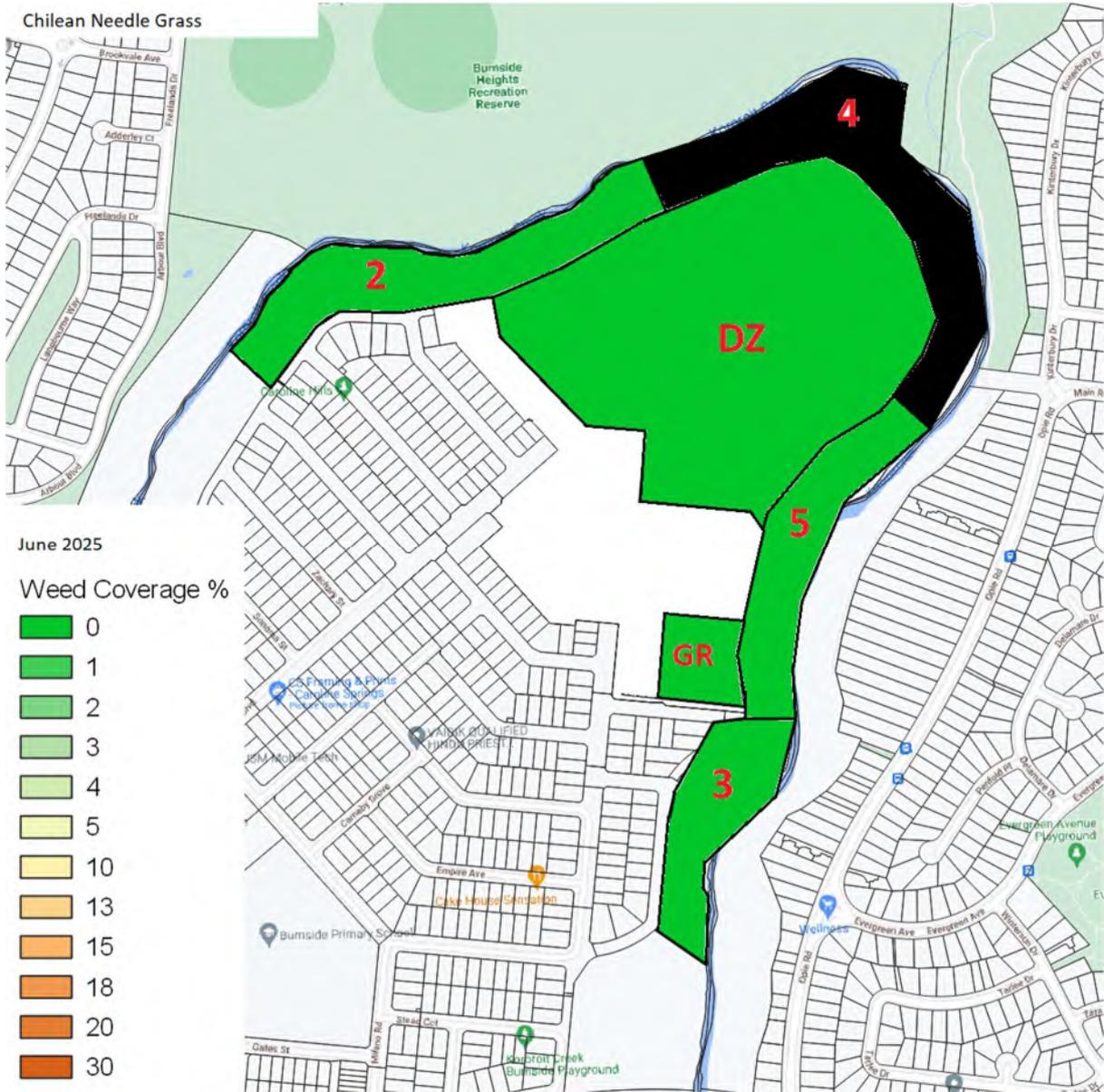
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	1%	0%	0%	2%	NA
June 2024	0%	1%	0%	0%	1%	0%
March 2024	1%	1%	1%	0%	3%	NA
December 2023	1%	2%	1%	0%	3%	NA
September 2023	1%	2%	1%	0%	3%	NA
June 2023	2%	1%	1%	0%	4%	0%
March 2023	2%	1%	1%	0%	4%	NA
September 2022	2%	1%	0%	0%	4%	NA
June 2022	2%	1%	0%	0%	5%	0%
March 2022	5%	10%	5%	5%	15%	NA
December 201	5%	5%	5%	5%	20%	NA
October 2021	5%	3%	5%	5%	15%	NA
August 2021	5%	3%	5%	5%	15%	NA
Apr 2021	2%	2%	5%	5%	2%	NA
Dec 2020	0%	0%	2%	2%	2%	NA
Oct 2020	0%	0%	2%	5%	2%	NA
June 2020	0%	0%	2%	1%	2%	0%

Chilean needle grass is a tussocky perennial in the Spear grass group of grasses growing to about 1 m high. It leaves are hairless and are normally grow to 30 cm long and 5 mm wide. With the flowering head being to 40 cm long.



Chilean Needle Grass



4.15 Toowoomba canary grass - *Phalaris aquatica*

Not declared and considered noxious

Target coverage < 5%

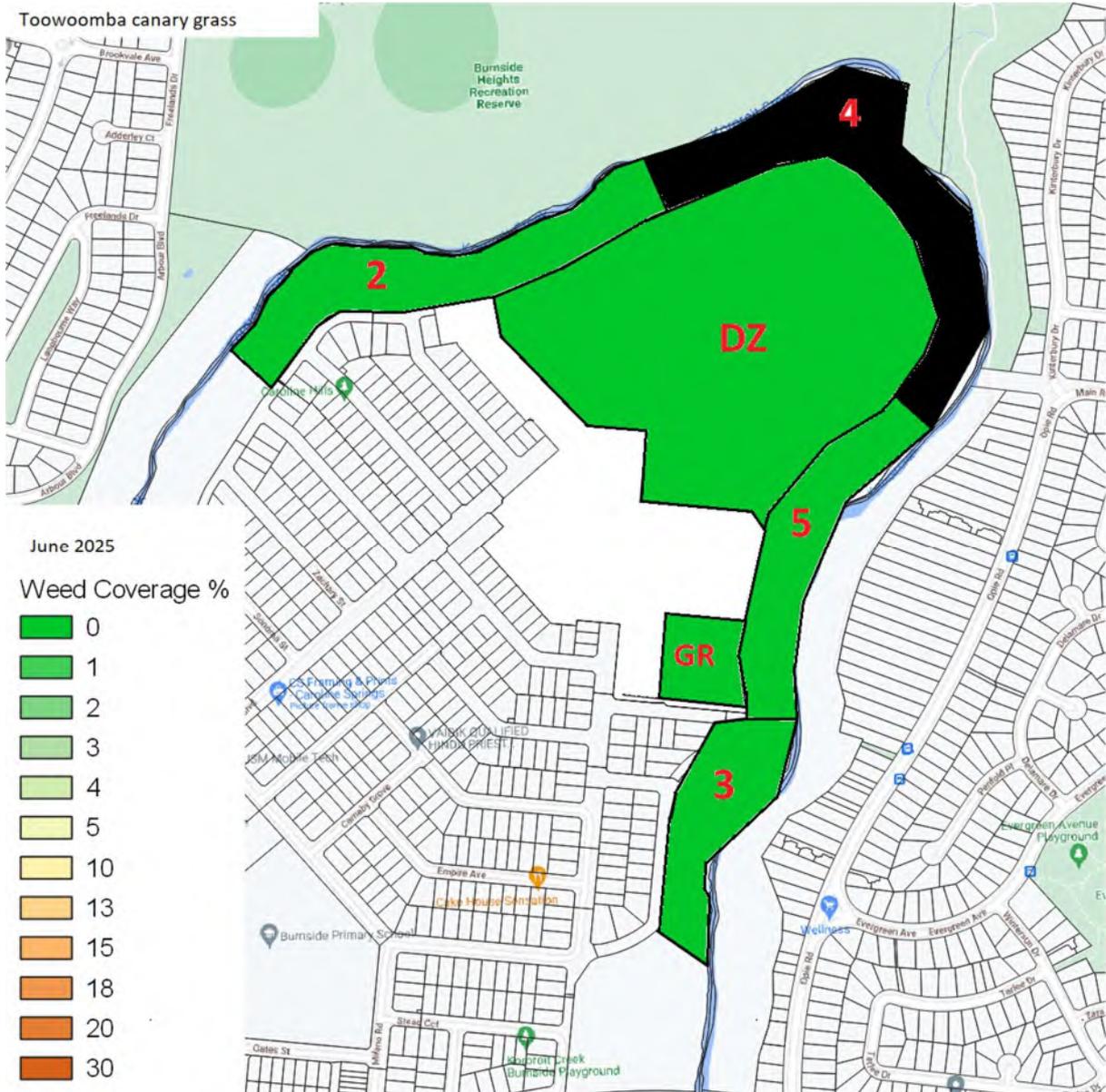
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	4%	10%	3%	3%	2%	NA
June 2024	5%	10%	4%	3%	5%	0%
March 2024	4%	10%	5%	4%	10%	NA
December 2023	4%	10%	10%	4%	10%	NA
September 2023	4%	10%	15%	4%	10%	NA
June 2023	5%	15%	25%	5%	10%	0%
March 2023	5%	10%	20%	5%	10%	NA
September 2022	10%	10%	15%	5%	10%	NA
June 2022	10%	15%	20%	10%	15%	0%
March 2022	20%	20%	20%	20%	20%	NA
December 2021	25%	25%	20%	25%	30%	NA
October 2021	15%	20%	20%	20%	4%	NA
August 2021	13%	18%	20%	20%	4%	NA
Apr 2021	5%	5%	5%	5%	2%	NA
Dec 2020	2%	2%	2%	2%	0%	NA
Oct 2020	5%	5%	5%	5%	0%	NA
June 2020	2%	2%	2%	2%	0%	0%

Widely used as a pasture species where annual rainfall exceeds 450 mm. It prefers fertile, seasonally moist sites. Commonly spreads from pastures, road verges and drainage ditches to adjacent indigenous vegetation. Toowoomba canary grass invades dry coastal vegetation, heathland and heathy woodland, lowland grassland and grassy woodland, dry sclerophyll forest and woodland, damp sclerophyll forest, riparian vegetation, and freshwater wetlands.



Toowoomba canary grass



4.16 Serrated Tussock - *Nassella trichotoma*

Regionally Controlled - *Weed of National Significance*

Target coverage < 5%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
June 2025	2%	N/A	0%	0%	0%	0%
March 2025	1%	1%	0%	0%	1%	NA
September 2024	1%	3%	0%	0%	3%	NA
June 2024	2%	2%	2%	0%	3%	0%
March 2024	0%	2%	1%	0%	2%	NA
December 2023	0%	4%	2%	1%	2%	NA
September 2023	0%	4%	2%	1%	2%	NA
June 2023	0%	3%	3%	2%	3%	0%
March 2023	0%	3%	3%	1%	3%	NA
September 2022	0%	1%	1%	1%	3%	NA
June 2022	2%	5%	2%	2%	10%	0%
March 2022	2%	10%	5%	5%	10%	NA
December 2021	5%	10%	5%	5%	15%	NA
October 2021	10%	15%	5%	10%	30%	NA
August 2021	5%	15%	5%	10%	13%	NA
Apr 2021	5%	5%	5%	5%	10%	NA
Dec 2020	2%	2%	2%	2%	2%	NA
Oct 2020	5%	5%	5%	2%	5%	NA
June 2020	5%	5%	5%	2%	5%	0%

Serrated tussock is a long-lived perennial grass growing up to 60cm in height with a base of 25cm in diameter. Plant size varies with soil fertility and location. In infertile conditions plants may only reach a height of 15cm. Serrated tussock is shallow rooted with an extensive network of fibrous roots occurring predominantly in the top 20cm of soil. The roots are dense, wiry, and fibrous making serrated tussock very difficult to pull out, even when small. Flowering stems emerge from the base of the plant. They are multi-branched and up to 35cm long. The purple colour of the small seeds produces an overall purplish haze to the serrated tussock seed head. Once the seeds have formed, the entire seed head will 'droop' over the tussock towards the ground. Flowering takes place as early as late winter (August) and will continue throughout the spring (September – November). Autumn flowering has been known to occur. Seeds take 8 – 10 weeks to mature, normally occurring throughout the spring and summer months. Once seeds are ripe, the whole flowering stem detaches from the base of the plant and is dispersed by the wind. Seed is dormant and will not germinate for about 6 months.

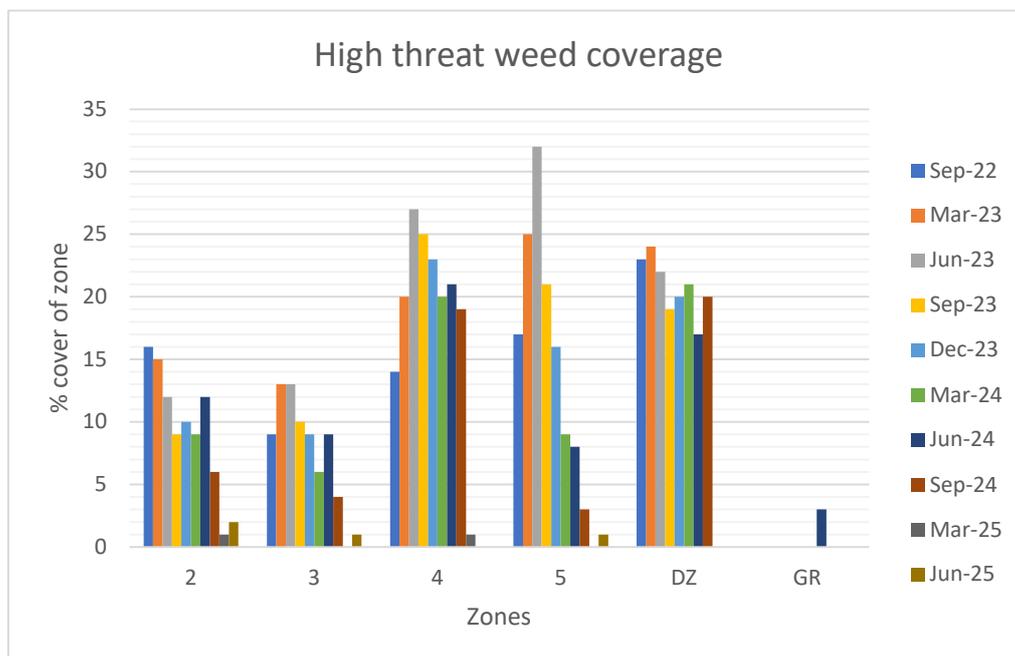


6.0 Summary

6.1 Overview

The below table displays the total percentage coverage in each zone of high-threat weeds. Since the previous report, there has been a substantial decrease in the overall coverage of high-threat weeds across all zones. During this visit, it was noted that *Nassella trichotoma* (Serrated Tussock) is still the most dominant species throughout zone 2.

Most of the development zone is under construction and the small balance is used for ancillary purposes (stockpile storage etc.)



6.2 Zone 2

The site has undergone extensive landscape modification, resulting in an estimated 85% reduction in its overall area. This significant alteration has reshaped much of the existing vegetation structure and accessibility. Following the submission of the previous report, a prescribed gas burn was implemented within the conservation area situated in Zone 2. The primary objective of this burn was the targeted control of two high-priority invasive species: *Nassella trichotoma* (Serrated Tussock) and *Nassella neesiana* (Chilean Needle Grass), both of which have been persistent within this zone.

Preliminary post-burn assessments indicate that the treatment has been effective, with no immediate evidence of regrowth from either species in the treated area. While these initial results are encouraging and suggest that the eradication measures have been successful, it is important to note that the potential presence of a residual seedbank within the soil remains a concern. As such, continued monitoring and follow-up assessments will be undertaken to ensure that any latent germination is promptly detected and managed, thereby supporting the long-term restoration objectives for the site."

6.3 Zone 4

This area was not assessed during the June site inspection, as it was rendered inaccessible *due to* ongoing construction works (*inter alia*). Although *Nassella trichotoma* (Serrated Tussock) and *Asparagus asparagoides* (Bridal Creeper) are extant within this locality, their prevalence remains *de minimis*, falling below the prescribed 1% eradication threshold.

6.4 Zone 5

Asparagus asparagoides (Bridal Creeper) has exhibited signs of regrowth along the riparian margins of Zone 5, an area with a documented history of infestation by this invasive species. The recent cooler climatic conditions appear to have contributed to its resurgence, with new growth observed in proximity to native vegetation and along the creek line. In response, a more intensive and targeted control program will be implemented to address this re-infestation, with the objective of achieving complete eradication and preventing further spread.

It is important to note that, while Bridal Creeper has re-established in the area, no evidence of regrowth of *Nassella trichotoma* (Serrated Tussock) has been observed within Zone 5 to date.

6.5 Zone 3

Consistent with the positive outcomes recorded in Zone 5, Zone 3 has demonstrated a substantial decline in the presence of invasive weed species since the last assessment conducted in March. This reduction reflects the effectiveness of recent management interventions implemented across the site. The only remaining concern within Zone 3 is the regrowth of *Asparagus asparagoides* (Bridal Creeper), which has been observed emerging between the rock formations located at the base of the conservation zone.

At this stage, the infestation is relatively limited in scope, and the individual plants remain at a size that is considered manageable from a control perspective. To prevent further establishment and suppress the risk of spread, a targeted herbicide treatment will be applied in accordance with best-practice environmental guidelines. This control measure forms part of an integrated weed management strategy aimed at achieving long-term eradication of invasive species and supporting the restoration of native vegetation within the conservation zone. Ongoing monitoring will be conducted to evaluate treatment effectiveness and ensure timely response to any future regrowth.

6.7 Development zone

Access to this zone was substantially restricted at the time of the site assessment. However, observations made from the vantage point of Zone 2 indicated that the area had been comprehensively cleared. Consequently, the weed species previously identified as problematic in the preceding report are, at present, not evident and do not constitute an issue

6.8 Grass Reserve

N/A Not part of this report.

7.0 Conclusion

The presence of herbaceous high-threat weed species—namely *Cirsium vulgare* (Spear Thistle), *Phalaris aquatica*, *Foeniculum vulgare* (Fennel), *Arctotheca calendula* (Capeweed), *Echium plantagineum* (Paterson’s Curse), and *Marrubium vulgare* (Horehound)—is currently minimal to non-existent across the site. In contrast, *Nassella trichotoma* (Serrated Tussock) has been detected exclusively within Zone 2. However, its population density continues to decline as a result of sustained and effective control measures

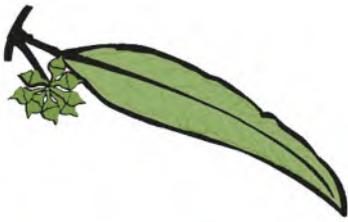
Following the site preparation works conducted within the development zone, *Cynara cardunculus* (Artichoke Thistle) has been effectively eradicated above ground. Nevertheless, continued monitoring remains essential to identify any potential regrowth, as a residual seed bank may persist within the recently disturbed soil

As construction in the development zone progresses towards completion, the primary management objective moving forward will focus on the targeted spot-spraying of residual and emerging invasive species—particularly *Nassella trichotoma* (Serrated Tussock) and *Asparagus asparagoides* (Bridal Creeper). This will be especially critical during the high-risk spring growth period to prevent further establishment and spread. Concurrently, Zones 2 through 5 are exhibiting strong reestablishment of native vegetation, which is anticipated to reduce the reliance on herbicidal treatments over time and facilitate a gradual shift toward selective mechanical weed control methods.

Given that the development zone is currently being managed by a third party, the immediate focus has shifted to Zones 3 and 5 for the targeted management of *Asparagus asparagoides* (Bridal Creeper), and to Zone 2 for the control of *Nassella trichotoma* (Serrated Tussock). These efforts are being prioritised ahead of the spring season, when conditions become favourable for seed establishment and significantly increase the risk of germination in the following growth cycle.

Weed Survey Report

Modeina Estate - Phase 2 -



AUSTRALIAN ECOSYSTEMS
Building sustainable landscapes for the future

September 2025

Submitted by Matthew Rizza

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1.0 Introduction

Australian Ecosystems (AE) has prepared this report for Dennis Family Corporation (Project Management) Pty Ltd. This report details the results of weed surveys conducted in September 2025 within the area described as 'Stage 2 Modeina'. This report should be read in conjunction with, 'Modeina Weed Management Strategy' that Greening Australia prepared in 2017.

2.0 Weeds Surveyed

This survey has captured these weed species listed below:

- African Boxthorn (*Lycium ferocissimum*)
- Artichoke Thistle (*Cynara cardunculus*)
- Spear Thistle (*Cirsium vulgare*)
- Bridal Creeper (*Asparagus asparagodies*)
- Cape weed (*Arctotheca calendula*)
- Century Plant (*Agave Americana*)
- Fennel (*Foeniculum vulgare*)
- Galenia (*Galenia pubescens*)
- Horehound (*Marrubim vulgare*)
- Paterson's Curse (*Echium plantagineum*)
- Prickly Pear (*Opuntia spp.*)
- Sweet Briar (*Rosa rubiginosa*)
- Chilean Needle Grass *Nassella neesiana*)
- Toowoomba canary grass (*Phalaris aquatica*)
- Serrated Tussock (*Nassella trichotoma*)

Determined by:

The weeds detailed within this report have been taken from the Modeina Weed Management Strategy that Greening Australia prepared in 2017. Only species that are widespread and/or have a high level of risk have been chosen to be controlled within these areas.

3.0 Survey Methodology

The above-mentioned species were surveyed using the Random Quadrant Sampling Method. Within each zone, four quadrants 5-meter X 5-meter were used to measure the current number of weed species present and then converted to a percentage cover. The results from these quadrants were then extrapolated to obtain a percentage cover across each of the zones. The results of these surveys are displayed over the following pages of the report.

3.1 Woody weeds

For this survey woody weeds are classified as African Boxthorn (*Lycium ferocissimum*), Century Plant (*Agave Americana*), Fennel (*Foeniculum vulgare*), Prickly Pear (*Opuntia spp.*) and Sweet Briar (*Rosa rubiginosa*).

As a result of the extremely low abundance of all species in each zone, individual counts were undertaken, with each individual being assigned a percentage cover value of 1% as the observed species were primarily in their juvenile stages. Prickly Pear (*Opuntia spp.*) has been eliminated through out all zones and no new growth sited. Similarly, in Zone 2, two patches of the Century Plant (*Agave Americana*) have been treated and there is no regrowth to date.

3.2 Herbs and Grass Weeds

Efforts are clearly being made to minimize or control the presence of herb and grass weeds in all areas. These weeds include Artichoke Thistle (*Cynara cardunculus*), Scotch Thistle (*Onopordum acanthium*), Spear Thistle (*Cirsium vulgare*), Bridal Creeper (*Asparagus asparagoides*), Horehound (*Marrubium vulgare*), Paterson's Curse (*Echium plantagineum*), Chilean Needle Grass (*Nassella neesiana*), Toowoomba canary grass (*Phalaris aquatica*), and Serrated Tussock (*Nassella trichotoma*). Significant progress has been made in reducing the presence of Toowoomba canary grass (*Phalaris aquatica*) in several areas, and further reductions are expected during future maintenance visits. There has been minimal Artichoke Thistle (*Cynara cardunculus*) in the Development Zone, however this was targeted in a recent visit and is under control.

To date, the application of herbicides has resulted in the successful eradication of the majority of invasive weed species. Nevertheless, ongoing monitoring is necessary to ensure early detection of any resurgence, as a dormant soil seed bank may still persist.

3.3 Changes

Construction is still ongoing in the development zone, which has decreased the weed load by 90%. Zone 2 and 3 works have been completed, resulting in a decreased weed load by 98%. Zone 4 has been completed as well with a weed reduction of 80% (however this area is not managed by AE).

4.0 Details of Surveyed Weeds

4.1 African Boxthorn - *Lycium ferocissimum*

Regionally Controlled & Weed of National Significance

Target coverage <1%

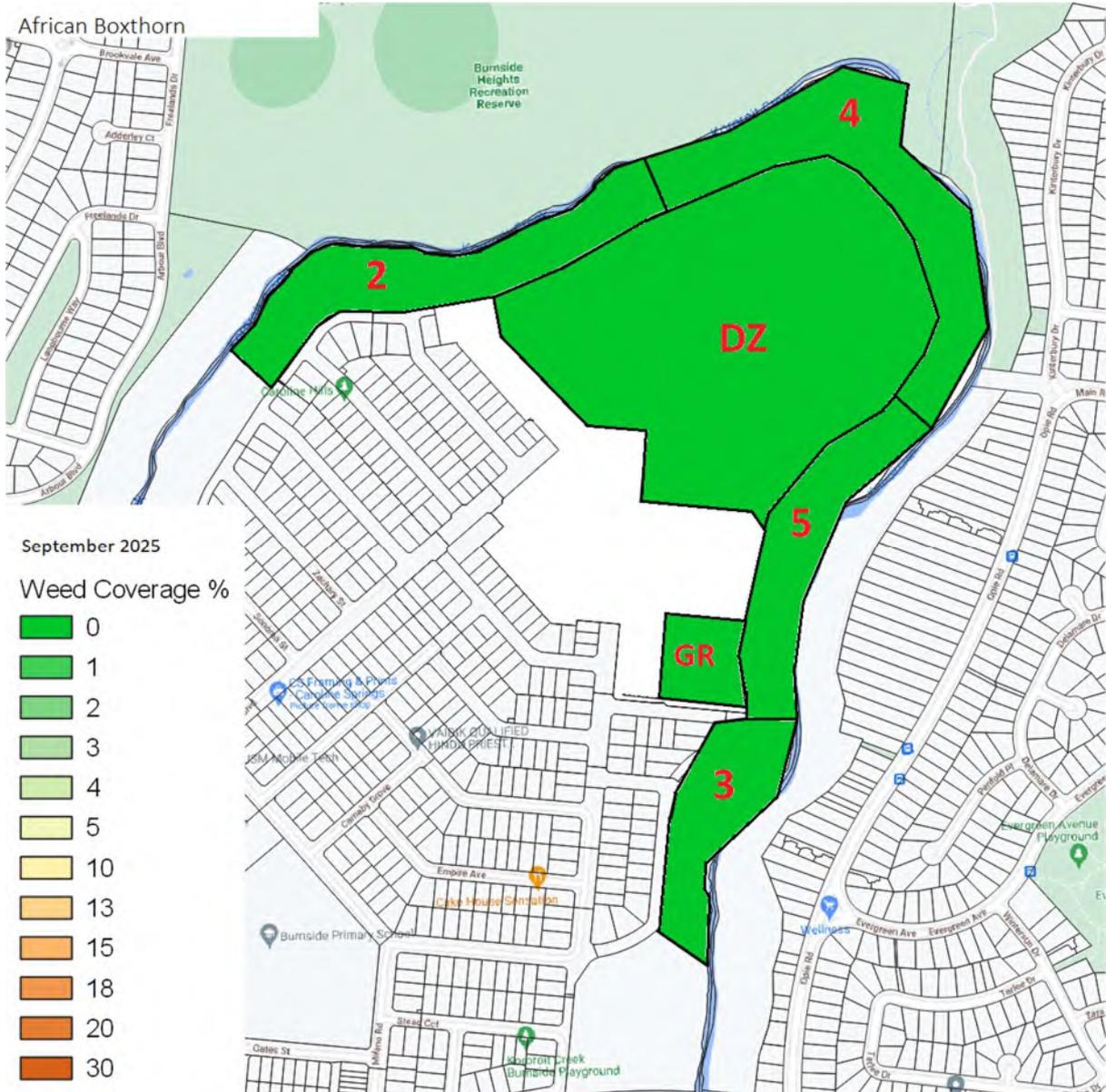
Current coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	2%	0%	0%	2%	NA
June 2024	0%	2%	0%	2%	4%	0%
March 2024	2%	0%	0%	0%	0%	NA
December 2023	2%	0%	0%	0%	0%	NA
September 2023	0%	2%	0%	0%	0%	NA
June 2023	0%	1%	0%	2%	0%	0%
March 2023	0%	0%	0%	2%	2%	NA
September 2022	0%	0%	0%	1%	1%	NA
June 2022	0%	0%	0%	1%	1%	0%
March 2022	0%	1%	0%	0%	1%	NA
December 2021	0%	0%	0%	0%	1%	NA
October 2021	0%	0%	0%	0%	1%	NA
August 2021	1%	1%	1%	1%	2%	NA
April 2021	1%	1%	1%	1%	1%	NA
Dec 2020	0%	1%	1%	0%	1%	NA
Oct 2020	0%	1%	1%	0%	1%	NA
June 2020	0%	1%	1%	0%	1%	0%

African boxthorn is a rounded, woody, densely branched and very thorny large shrub up to 5 metres high. African boxthorn reproduces exclusively by seed, which is commonly eaten by birds, seed is viable when excreted. These plants are often found near places where birds have perched such as trees, poles, and powerlines. It was widely planted as a hedge plant before its weedy potential was realised. Spread also occurs from contaminated produce and materials. African boxthorn is a fast-growing invasive species that, if untreated, spreads quickly. Seeds may germinate year-round and early root growth is rapid, ensuring young plants are competitive. Plants take at least two years to flower, producing flowers and fruit mostly in summer. Some flowering and fruit production occurs at other times of year. Sometimes deciduous in winter, with new leaves and active growth in spring. Broken roots and cut stumps can sprout regrowth.



African Boxthorn



4.2 Artichoke Thistle - *Cynara cardunculus*

Regionally Controlled

Target coverage < 5%

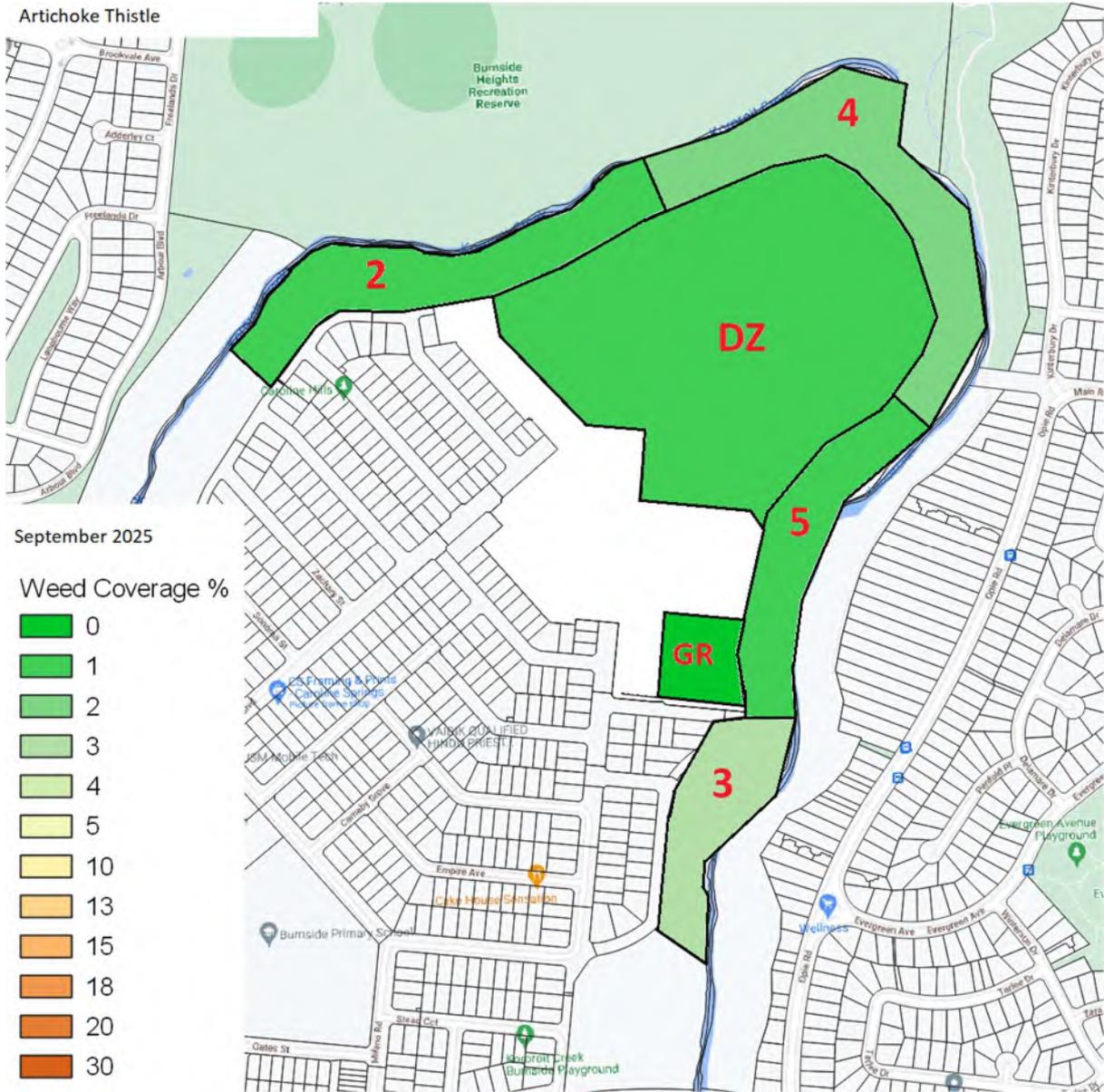
Current coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	1%	3%	1%	3%	1%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	1%	0%
September 2024	0%	0%	0%	1%	0%	NA
June 2024	1%	3%	1%	0%	3%	3%
March 2024	0%	1%	1%	1%	5%	NA
December 2023	0%	1%	2%	2%	4%	NA
September 2023	1%	1%	2%	3%	3%	NA
June 2023	2%	1%	2%	2%	4%	0%
March 2023	3%	1%	0%	3%	4%	NA
September 2022	1%	0%	0%	1%	4%	NA
June 2022	1%	0%	0%	1%	10%	0%
March 2022	2%	0%	0%	2%	2%	NA
December 2021	0%	0%	0%	0%	5%	NA
October 2021	0%	0%	0%	0%	10%	NA
August 2021	5%	2%	15%	15%	10%	NA
Apr 2021	15%	2%	2%	2%	5%	NA
Dec 2020	5%	2%	5%	2%	5%	NA
Oct 2020	5%	5%	2%	2%	10%	NA
June 2020	2%	10%	5%	5%	10%	0%

A perennial or biennial spiny thistle with annual tops and a cluster of large bright purple flowers that are 5-8 cm in diameter during summer. The mature plant is erect, with stems 1- 2 m tall arising from a bushy rosette up to 2 m wide and tall. The stem is strongly ribbed and covered with downy grey hairs and usually single at the base and branched towards the top. The large, grey green leaves are deeply lobed and spiny with woolly hairs underneath.



Artichoke Thistle



4.4 Spear Thistle - *Cirsium vulgare*

Regionally Controlled Weeds

Target coverage <5%

Current coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	1%	1%	0%	0%	0%	NA
June 2024	1%	1%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	1%	0%	0%	0%	1%	NA
Oct 2020	1%	0%	0%	0%	1%	NA
June 2020	1%	0%	0%	0%	1%	0%

An annual or short-term perennial herb with erect growth to 1.5 m tall. Stems have spiny wings and are cobwebby. Upper leaf surface is dark green and rough while the lower surface is white with short, matted hairs.

A common species of wet or summer-moist land, including swamps, depressions, drains, wasteland, pastures, and cultivated soils. Prefers open, non-shaded environments, heavy textured soils, and good fertility.



4.5 Bridal Creeper - *Asparagus asparagoides*

Regionally Controlled - Weed of National Significance

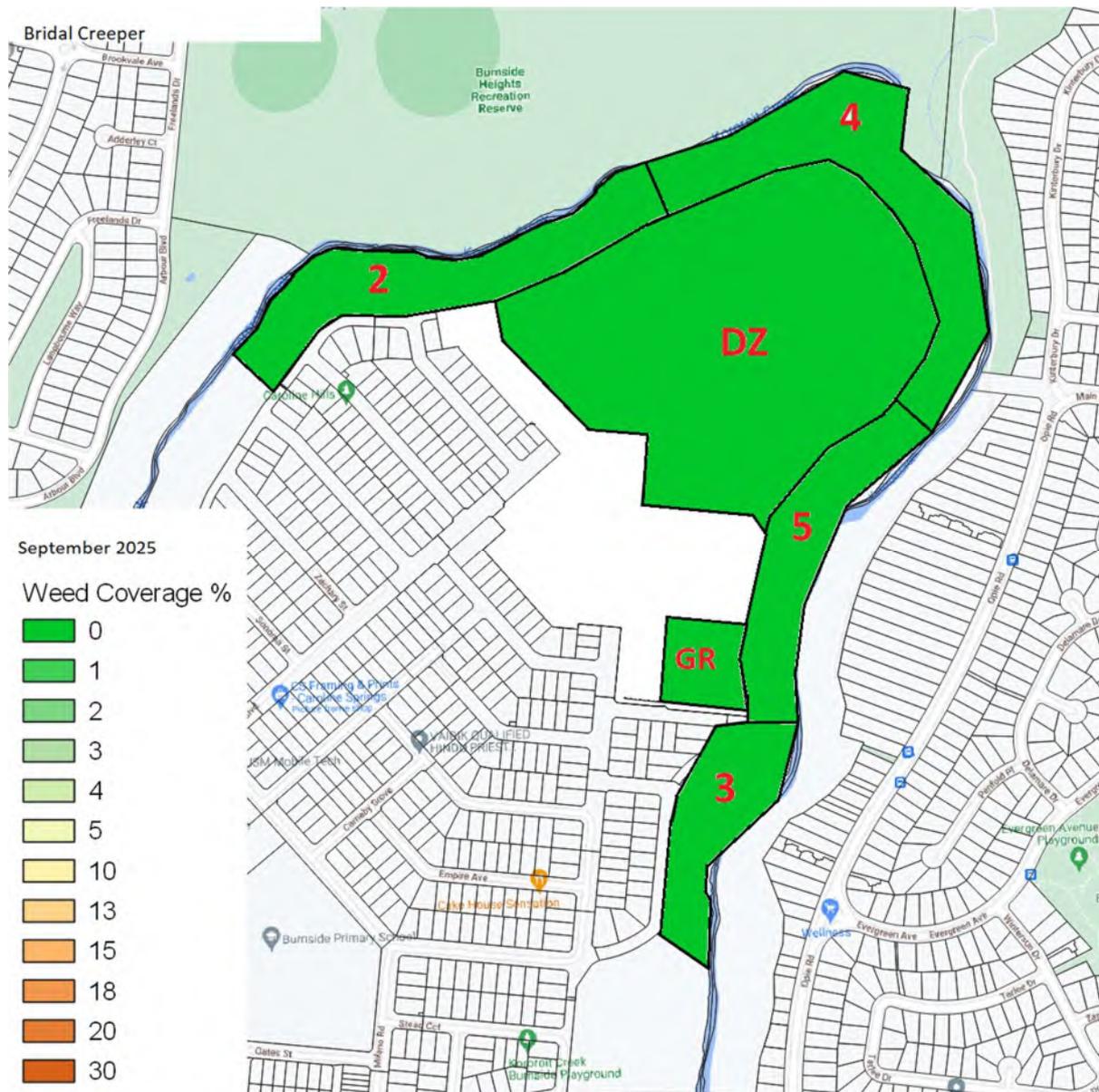
Target coverage < 1%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	0%	N/A	1%	1%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	1%	0%	NA
June 2024	0%	1%	0%	2%	0%	0%
March 2024	0%	1%	0%	1%	0%	NA
December 2023	1%	1%	0%	0%	0%	NA
September 2023	1%	1%	0%	0%	0%	NA
June 2023	1%	1%	0%	0%	0%	0%
March 2023	1%	1%	0%	0%	0%	NA
September 2022	1%	1%	0%	0%	0%	NA
June 2022	1%	1%	0%	0%	0%	0%
March 2022	2%	1%	0%	0%	0%	NA
December 2021	2%	2%	2%	0%	0%	NA
October 2021	3%	3%	2%	0%	0%	NA
August 2021	5%	4%	3%	0%	0%	NA
Apr 2021	1%	1%	1%	0%	0%	NA
Dec 2020	0%	1%	1%	0%	0%	NA
Oct 2020	0%	0%	1%	0%	0%	NA
June 2020	0%	0%	1%	0%	0%	0%

It is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts. Bridal creeper entered the country as a garden plant and is now a major weed of bushland in southern Australia, where its climbing stems and foliage smother native plants. It forms a thick mat of underground tubers which impedes the root growth of other plants and often prevents seedling establishment. Rare native plants, such as the rice flower *Pimelea spinescens*, are threatened with extinction by Bridal Creeper.





4.6 Cape weed - *Arctotheca calendula*

Not declared or considered noxious

Target coverage < 5%

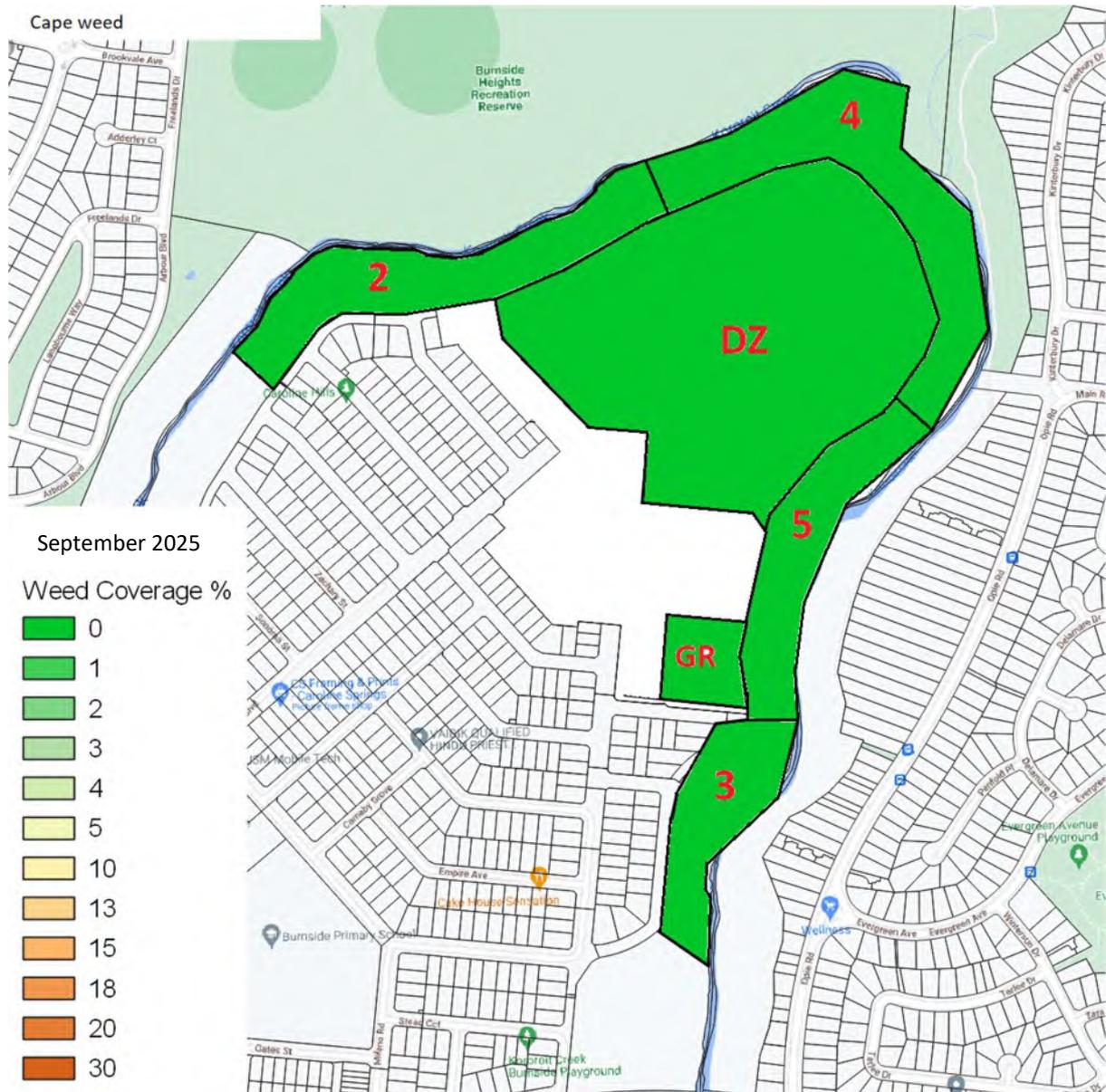
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	2%	2%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	0%	0%	0%	0%	0%	NA
Oct 2020	0%	1%	1%	1%	0%	NA
June 2020	2%	2%	0%	2%	0%	0%

This plant is widespread and common weed in pastures, lawns, cultivation, and waste areas across Victoria. Typically, a plant of fresh-water habitats but may occur on the fringes of saline swamps and flats during wetter periods.

It is stemless or shortly stemmed, herb, 80 cm wide and 30 cm high, with a taproot and a basal rosette of leaves. Leaves are 5-25 cm long and 2-6 cm wide.





4.7 Century Plant - *Agave americana*

Not declared or considered noxious

Target coverage < 1%

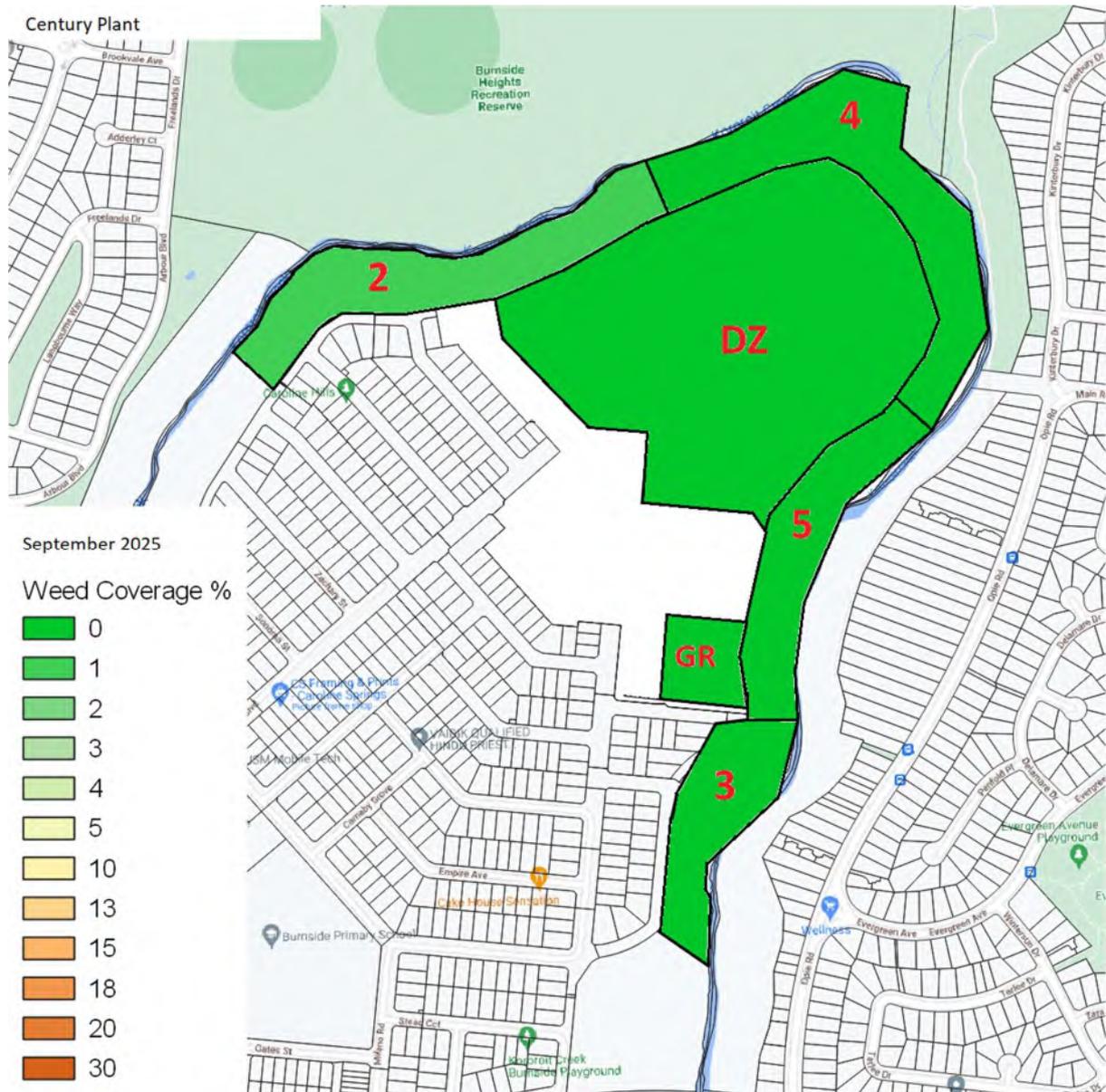
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	1%	0%	0%	0%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	2%	0%	0%	0%	0%	0%
March 2024	0%	2%	0%	0%	0%	NA
December 2023	0%	2%	0%	0%	0%	NA
September 2023	0%	2%	0%	0%	0%	NA
June 2023	0%	2%	0%	0%	0%	0%
March 2023	0%	2%	0%	0%	0%	NA
September 2022	0%	1%	0%	0%	0%	NA
June 2022	1%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	1%	0%	0%	0%	0%	NA
Dec 2020	1%	0%	0%	0%	0%	NA
Oct 2020	1%	0%	0%	0%	0%	NA
June 2020	1%	0%	0%	0%	0%	0%

A very large and long-lived rosette-forming plant, growing 1-2 m high and 2-4 m across.

Older individuals may sometimes develop a short woody stem at the base of the plant and commonly produces numerous suckers which form a large clump or colony. When fully mature this plant will develop a massive flower cluster on a robust flowering stem 6-12 m tall.





4.8 Fennel - *Foeniculum vulgare*

Restricted Weeds noxious

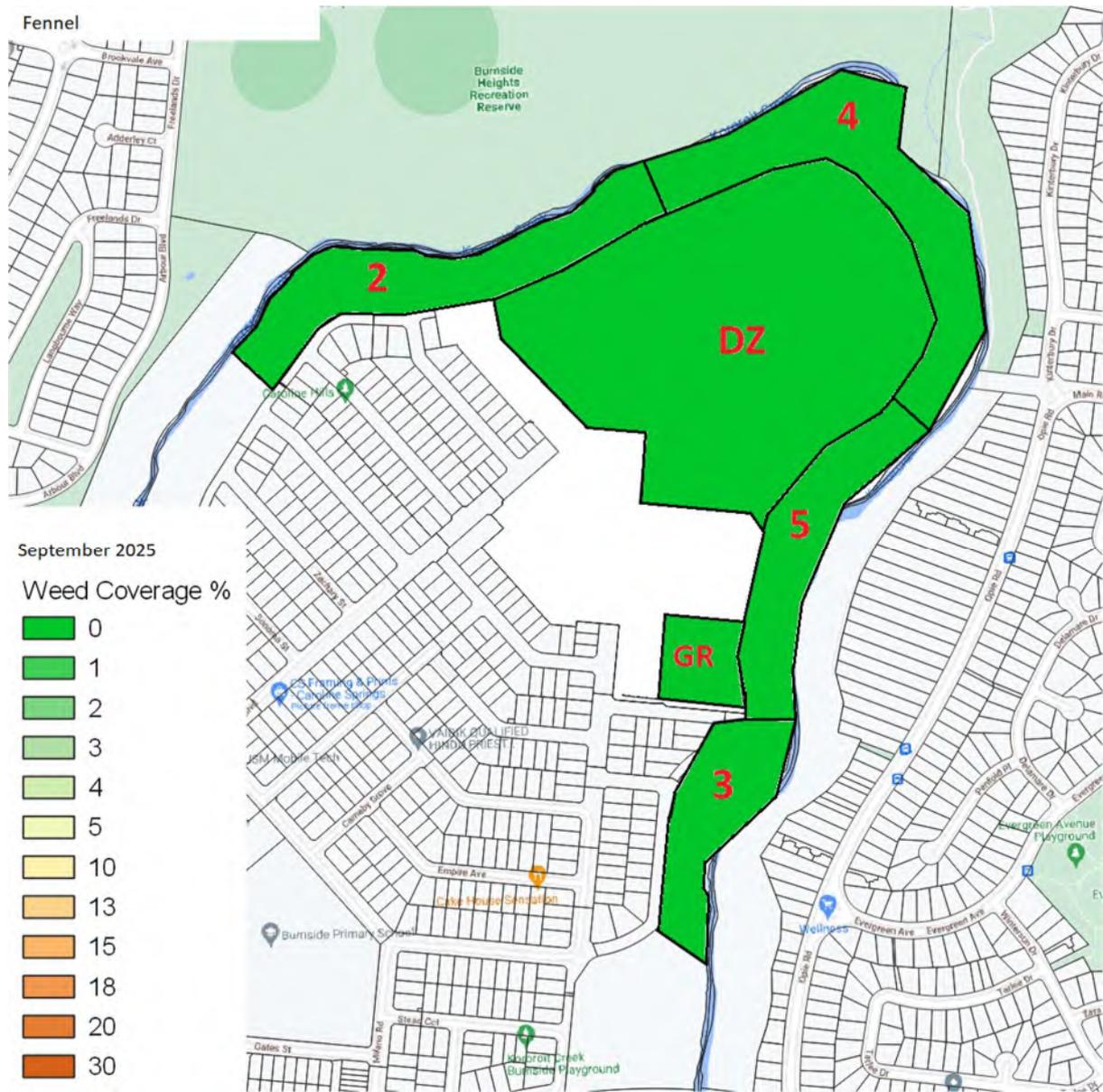
Target coverage < 1%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	1%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	0%	NA
August 2021	0%	0%	0%	0%	0%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	1%	0%	0%	1%	0%	NA
Oct 2020	0%	0%	0%	0%	0%	NA
June 2020	0%	0%	0%	0%	0%	0%

An erect multi-stemmed perennial herb commonly 1.5 to 2.0 metres high. It is found along waterways, drainage lines and in seasonally moist locations within grasslands and woodlands. Dense infestations may restrict access to waterways. A soft, herbaceous plant the high growth of the plant may be a nuisance to people.





4.9 Galenia - Galenia pubescens

Not declared or considered noxious

Target coverage < 5%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	1%	1%	1%	1%	1%	1%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	0%	0%	0%
March 2024	0%	1%	1%	0%	1%	NA
December 2023	0%	1%	1%	0%	1%	NA
September 2023	0%	1%	1%	0%	1%	NA
June 2023	0%	1%	1%	0%	1%	0%
March 2023	1%	0%	1%	0%	1%	NA
September 2022	1%	0%	1%	0%	1%	NA
June 2022	1%	0%	1%	0%	2%	0%
March 2022	2%	0%	1%	1%	4%	NA
December 2021	1%	1%	1%	1%	5%	NA
October 2021	1%	1%	1%	1%	10%	NA
August 2021	1%	1%	1%	1%	0%	NA
Apr 2021	1%	1%	1%	1%	0%	NA
Dec 2020	1%	1%	0%	1%	0%	NA
Oct 2020	0%	0%	0%	1%	0%	NA
June 2020	1%	0%	1%	0%	0%	0%

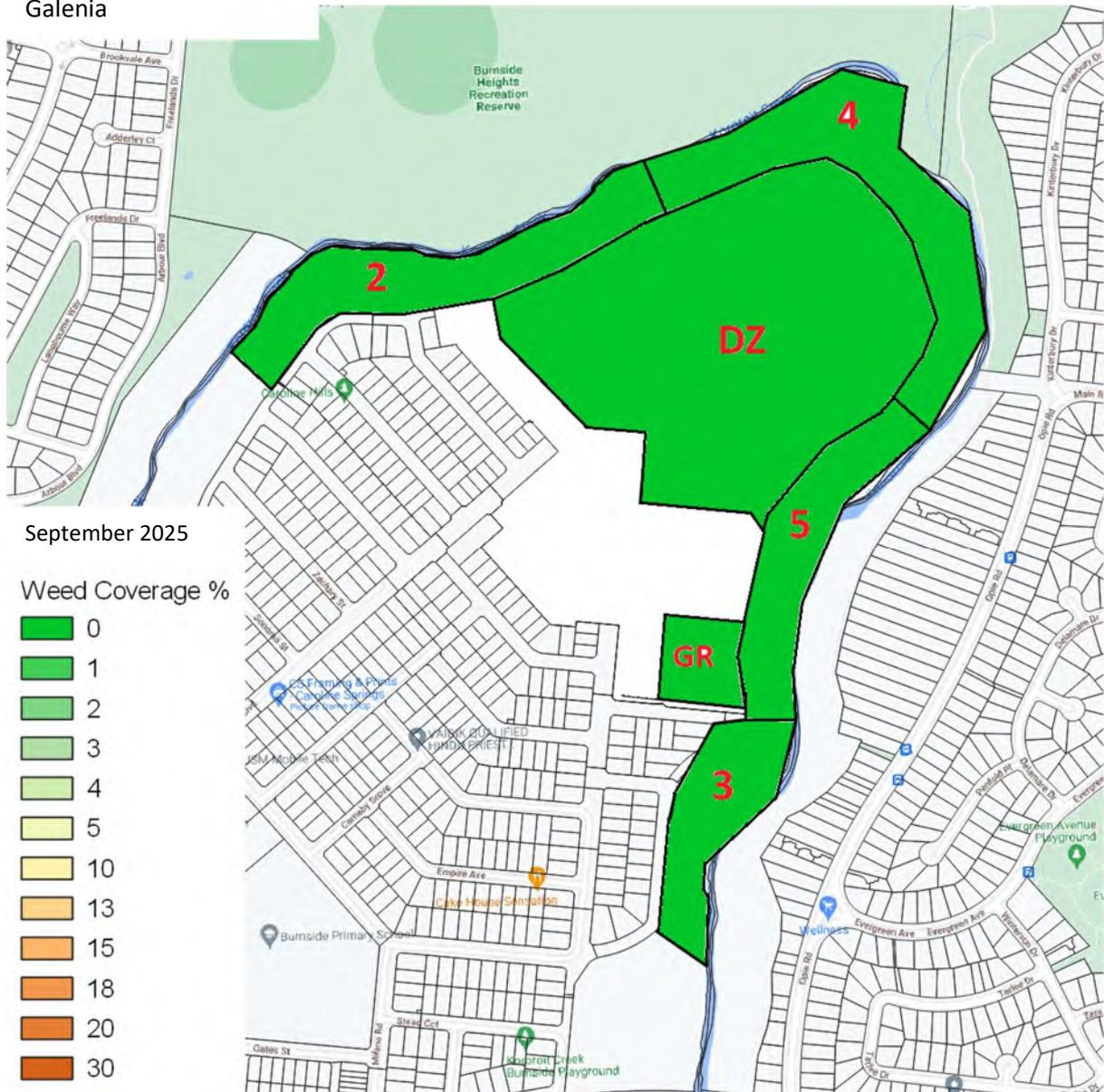
This perennial creeping, herbaceous plant growing to about 60 cm high and 1–2 m wide.

It is deep rooted and flowers from late spring to early autumn. Galenia reproduces by seed. Most dispersal of seed occurs by wind, water, birds and livestock. Movement of contaminated soil by vehicles and equipment can also contribute to its spread.

Drought and salt tolerant, galenia grows over and smothers existing vegetation by forming a thick dense mat. It invades coastal dunes, pastures, disturbed areas, lawns, roadsides and rocky outcrop vegetation. Galenia is known to produce nitrates that can be toxic to stock.



Galenia



4.10 Horehound - *Marrubim vulgare*

Not declared or considered noxious

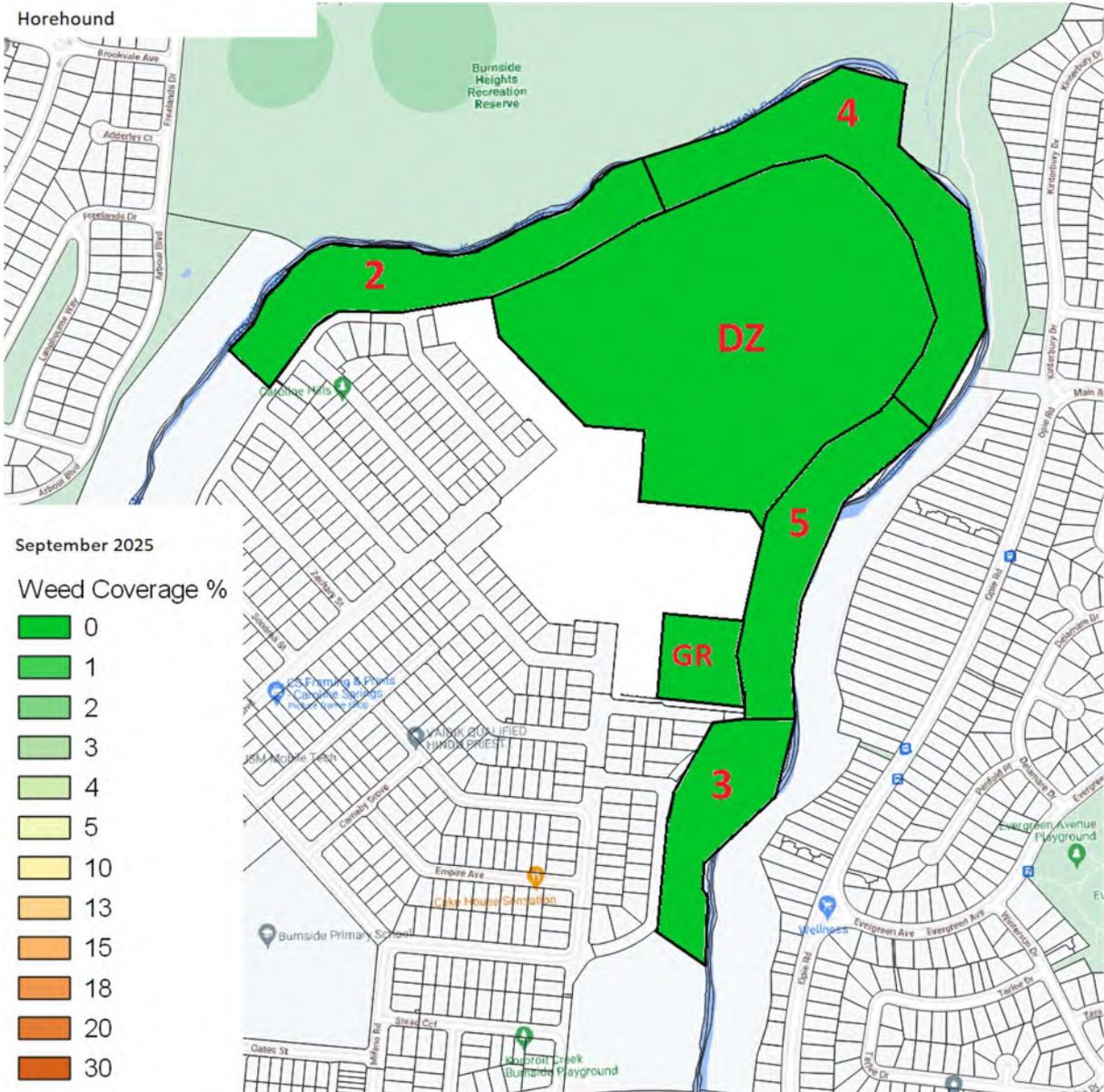
Target coverage <5%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	1%	0%	0%	1%	NA
June 2024	0%	1%	0%	0%	1%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	1%	0%	0%	0%	0%	NA
September 2022	1%	0%	0%	0%	0%	NA
June 2022	1%	0%	0%	0%	0%	0%
March 2022	0%	1%	1%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	1%	0%	4%	3%	NA
August 2021	0%	1%	0%	1%	0%	NA
Apr 2021	0%	1%	0%	1%	0%	NA
Dec 2020	0%	1%	1%	1%	0%	NA
Oct 2020	1%	0%	1%	0%	0%	NA
June 2020	0%	1%	0%	1%	0%	0%

A bushy perennial plant, 30 to 80 cm high, sharply aromatic when crushed, covered with dense whitish hairs. Horehound thrives on poor soil and in waste places. It invades poor pastures which provide little competition. Horehound contains a bitter alkaloid which makes it unpalatable for grazing livestock. As well as being an agricultural weed of pastures horehound has become an important environmental weed because of its ability to invade disturbed native vegetation.





4.11 Paterson's Curse - *Echium plantagineum*

Regionally controlled

Target coverage < 5%

Current Coverage

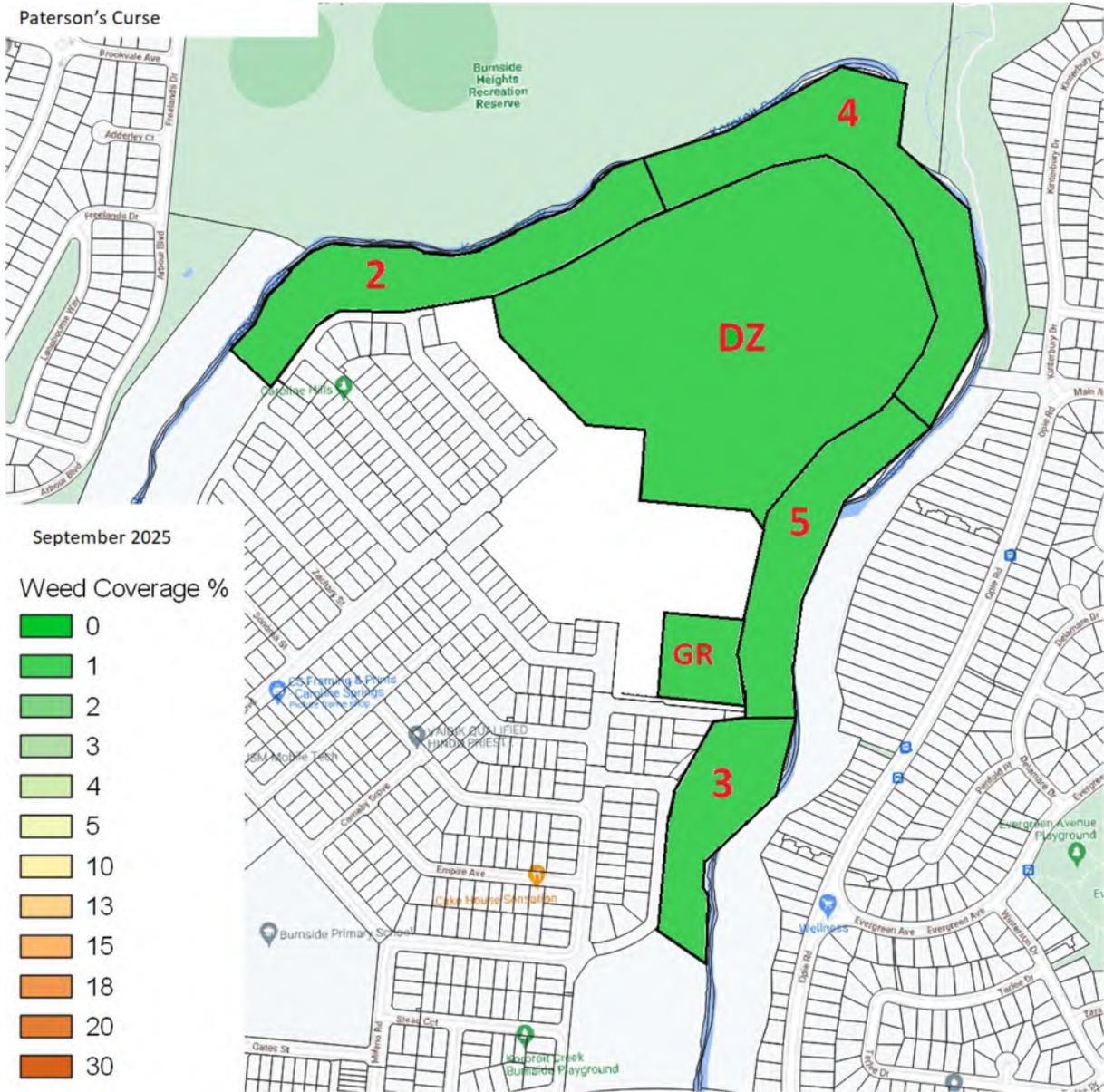
Mgt Zone	2	4	5	3	DZ	GR
September 2025	1%	1%	1%	1%	1%	1%
June 2025	0%	N/A	0%	0%	0%	N/A
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	1%	0%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	0%	0%	NA
September 2023	0%	0%	0%	0%	0%	NA
June 2023	0%	0%	0%	0%	0%	0%
March 2023	0%	0%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	2%	0%	0%	2%	2%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	0%	10%	NA
August 2021	0%	0%	0%	2%	10%	NA
Apr 2021	0%	0%	0%	0%	0%	NA
Dec 2020	1%	1%	1%	1%	2%	NA
Oct 2020	2%	1%	1%	2%	2%	NA
June 2020	2%	2%	5%	5%	5%	0%

Paterson's curse is an annual, occasionally biennial, herb that grows as a rosette in autumn and winter and produces flowering stalks in spring and early summer. The rosette usually grows parallel to the ground; however, the leaves may be erect in dense vegetation.

Plants begin to produce flowering stalks in late winter, commence flowering in early spring and die in summer. The flowers are usually purple but may be blue or pink. The first mature seeds are produced four to six weeks after flowering commences.



Paterson's Curse



4.12 Prickly Pear - *Opuntia* spp.

Regionally controlled

Target coverage <5%

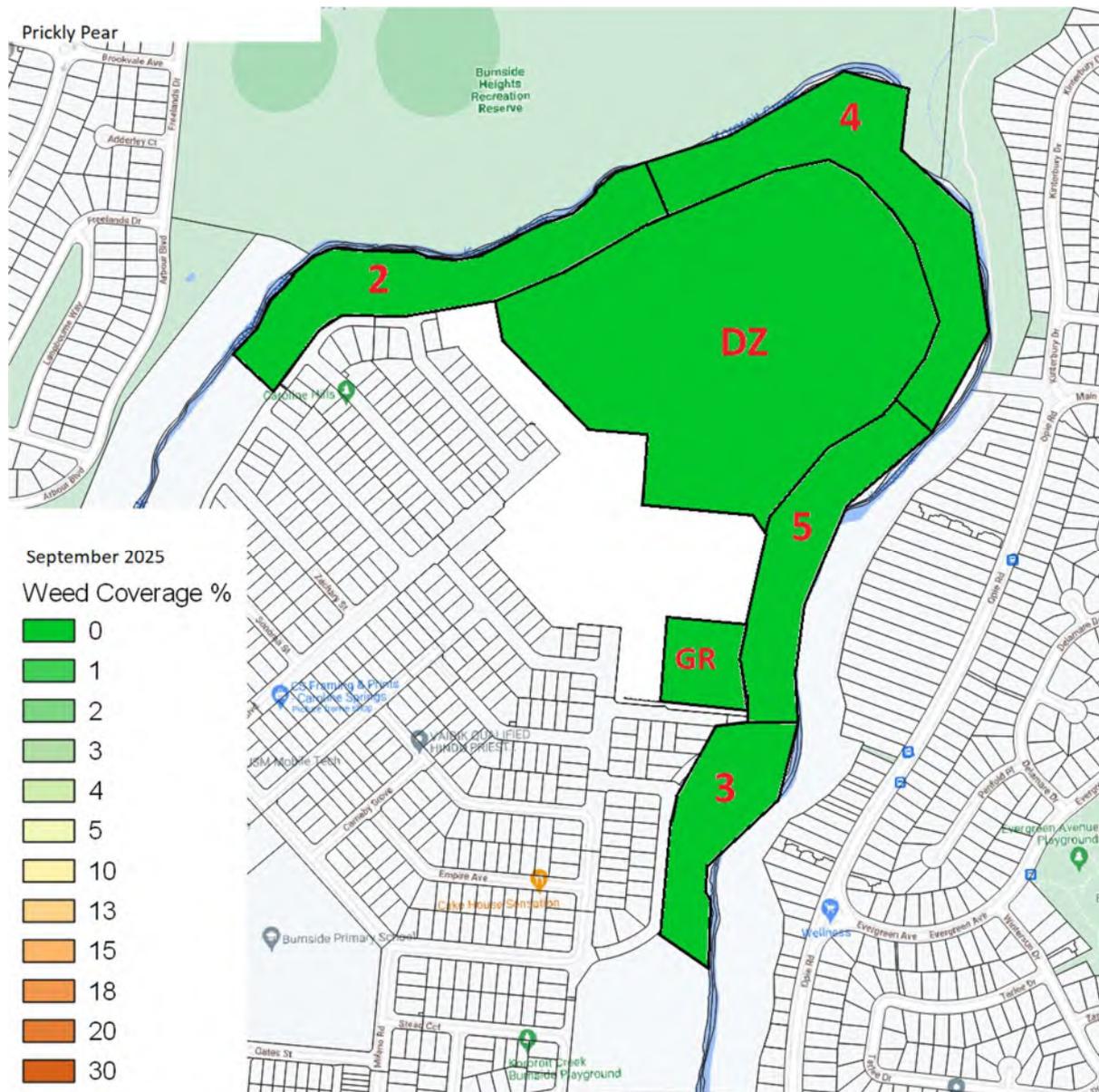
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	0%	0%	0%
March 2024	0%	0%	0%	0%	0%	NA
December 2023	0%	0%	0%	2%	0%	NA
September 2023	0%	0%	0%	2%	0%	NA
June 2023	0%	1%	0%	2%	0%	0%
March 2023	0%	0%	0%	2%	0%	NA
September 2022	0%	0%	0%	1%	0%	NA
June 2022	0%	0%	0%	1%	0%	0%
March 2022	0%	0%	0%	0%	0%	NA
December 2021	0%	0%	0%	0%	0%	NA
October 2021	0%	0%	0%	1%	0%	NA
August 2021	0%	1%	0%	1%	0%	NA
Apr 2021	0%	1%	0%	1%	0%	NA
Dec 2020	0%	1%	0%	1%	0%	NA
Oct 2020	0%	1%	0%	1%	0%	NA
June 2020	0%	1%	0%	0%	0%	0%

Prickly pear is an erect succulent shrub which can grow to a height of 5 m. The stems of prickly pear are commonly grey green to light green. The plant usually has one main woody stem with dense prickles, which gives way to several side branches made up of fleshy segments. The segments are approximately 45 cm long, 15 cm wide and 1-2 cm thick, with the upper segments appearing to droop.



Each plant segment has areoles, which are growing points where new segments, flowers or roots can be produced. Each areole has short tufts of finely barbed bristles and sometimes one to five sharp, 5 cm long spines. Spines are more common on segments that are older and lower on the plant.



4.13 Sweet Briar - *Rosa rubiginosa*

Regionally Controlled

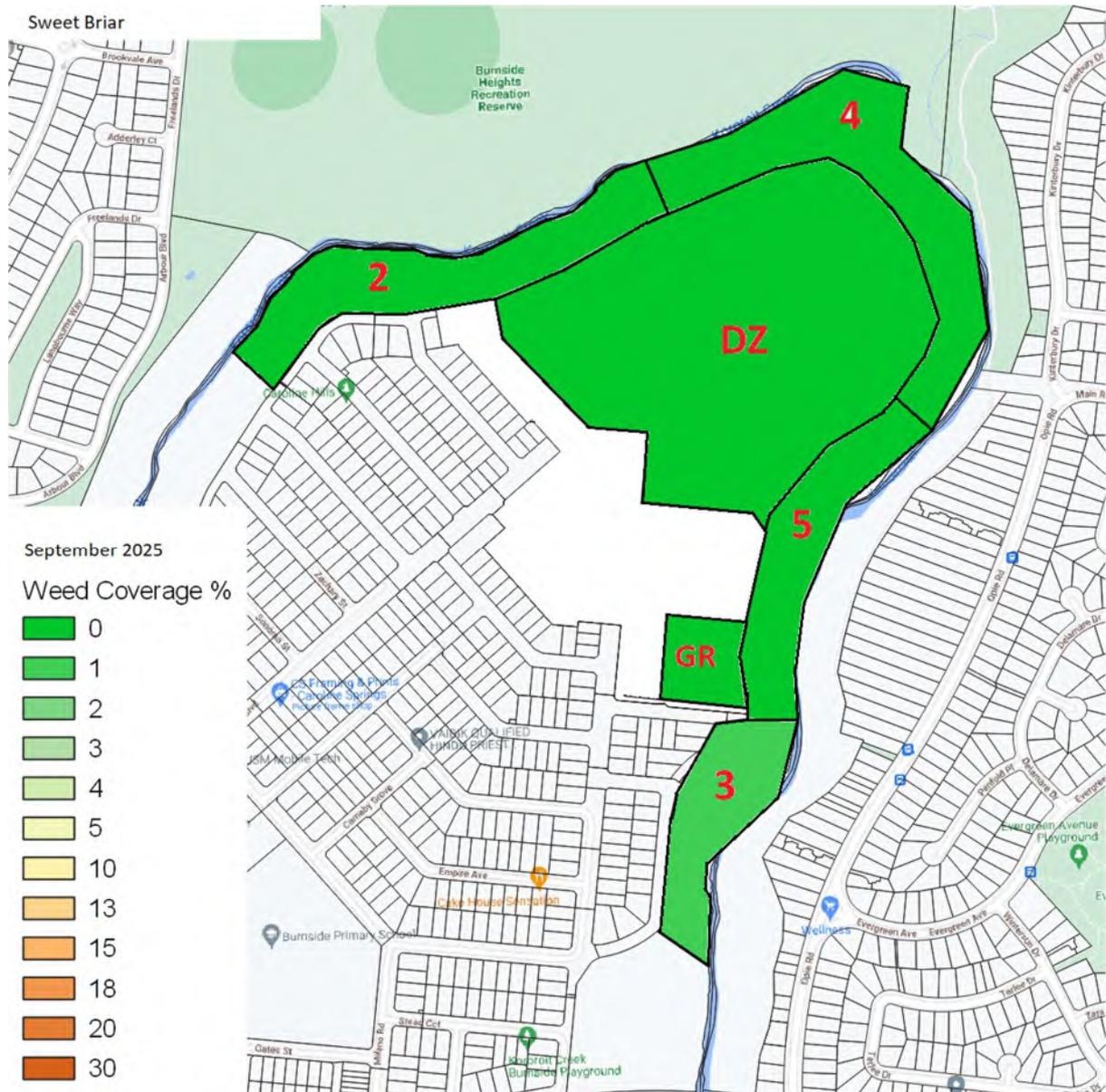
Target coverage <1%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	1%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	0%	0%	0%	0%	NA
June 2024	0%	0%	0%	2%	0%	0%
March 2024	2%	2%	0%	0%	0%	NA
December 2023	2%	2%	0%	0%	0%	NA
September 2023	2%	2%	0%	0%	0%	NA
June 2023	2%	1%	0%	0%	0%	0%
March 2023	2%	2%	0%	0%	0%	NA
September 2022	0%	0%	0%	0%	0%	NA
June 2022	0%	0%	0%	0%	0%	0%
March 2022	0%	2%	0%	0%	1%	NA
December 2021	0%	0%	0%	0%	1%	NA
October 2021	1%	1%	1%	1%	1%	NA
August 2021	1%	1%	1%	1%	1%	NA
Apr 2021	1%	1%	1%	1%	1%	NA
Dec 2020	1%	1%	0%	0%	0%	NA
Oct 2020	1%	1%	0%	0%	0%	NA
June 2020	1%	1%	1%	0%	0%	0%

Sweet briar is a perennial woody shrub up to 3m tall. The stem is usually many (and can be up to several hundred) stems arising from the rootstock; erect or scrambling, up to 3 metres high, green and smooth to brown and somewhat roughened, woody, branched, spreading and sometimes trailing, heavily covered with down-curved prickles up to 1.5 cm long.





4. 14 Chilean Needle Grass - *Nassella neesiana*

Regional restricted

Target coverage < 5%

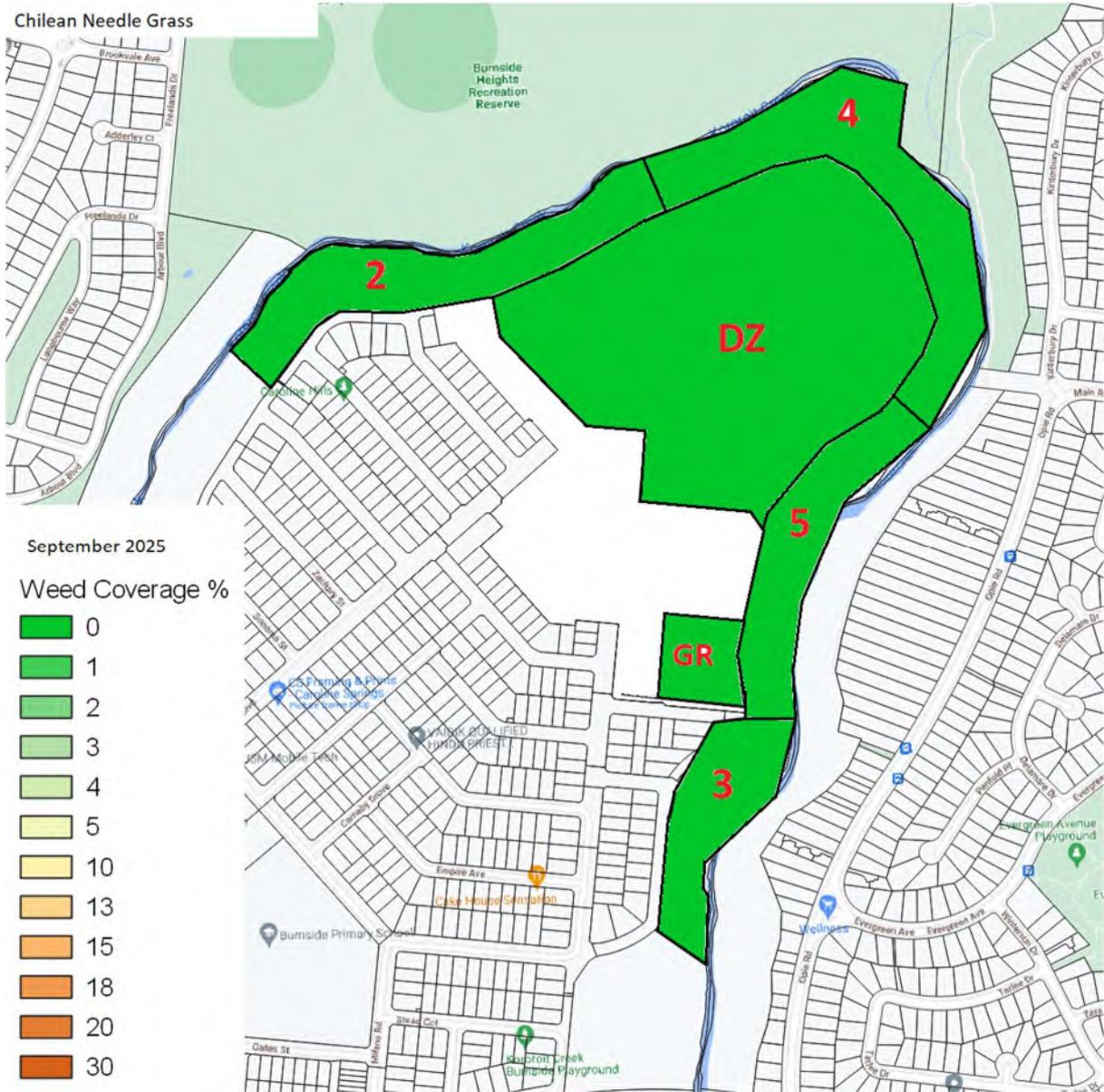
Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	0%	1%	0%	0%	2%	NA
June 2024	0%	1%	0%	0%	1%	0%
March 2024	1%	1%	1%	0%	3%	NA
December 2023	1%	2%	1%	0%	3%	NA
September 2023	1%	2%	1%	0%	3%	NA
June 2023	2%	1%	1%	0%	4%	0%
March 2023	2%	1%	1%	0%	4%	NA
September 2022	2%	1%	0%	0%	4%	NA
June 2022	2%	1%	0%	0%	5%	0%
March 2022	5%	10%	5%	5%	15%	NA
December 201	5%	5%	5%	5%	20%	NA
October 2021	5%	3%	5%	5%	15%	NA
August 2021	5%	3%	5%	5%	15%	NA
Apr 2021	2%	2%	5%	5%	2%	NA
Dec 2020	0%	0%	2%	2%	2%	NA
Oct 2020	0%	0%	2%	5%	2%	NA
June 2020	0%	0%	2%	1%	2%	0%

Chilean needle grass is a tussocky perennial in the Spear grass group of grasses growing to about 1 m high. It leaves are hairless and are normally grow to 30 cm long and 5 mm wide. With the flowering head being to 40 cm long.



Chilean Needle Grass



4.15 Toowoomba canary grass - *Phalaris aquatica*

Not declared and considered noxious

Target coverage < 5%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	0%	N/A	0%	0%	0%	0%
March 2025	0%	0%	0%	0%	0%	0%
September 2024	4%	10%	3%	3%	2%	NA
June 2024	5%	10%	4%	3%	5%	0%
March 2024	4%	10%	5%	4%	10%	NA
December 2023	4%	10%	10%	4%	10%	NA
September 2023	4%	10%	15%	4%	10%	NA
June 2023	5%	15%	25%	5%	10%	0%
March 2023	5%	10%	20%	5%	10%	NA
September 2022	10%	10%	15%	5%	10%	NA
June 2022	10%	15%	20%	10%	15%	0%
March 2022	20%	20%	20%	20%	20%	NA
December 2021	25%	25%	20%	25%	30%	NA
October 2021	15%	20%	20%	20%	4%	NA
August 2021	13%	18%	20%	20%	4%	NA
Apr 2021	5%	5%	5%	5%	2%	NA
Dec 2020	2%	2%	2%	2%	0%	NA
Oct 2020	5%	5%	5%	5%	0%	NA
June 2020	2%	2%	2%	2%	0%	0%

Widely used as a pasture species where annual rainfall exceeds 450 mm. It prefers fertile, seasonally moist sites. Commonly spreads from pastures, road verges and drainage ditches to adjacent indigenous vegetation. Toowoomba canary grass invades dry coastal vegetation, heathland and heathy woodland, lowland grassland and grassy woodland, dry sclerophyll forest and woodland, damp sclerophyll forest, riparian vegetation, and freshwater wetlands.



4.16 Serrated Tussock - *Nassella trichotoma*

Regionally Controlled - *Weed of National Significance*

Target coverage < 5%

Current Coverage

Mgt Zone	2	4	5	3	DZ	GR
September 2025	0%	0%	0%	0%	0%	0%
June 2025	2%	N/A	0%	0%	0%	0%
March 2025	1%	1%	0%	0%	1%	NA
September 2024	1%	3%	0%	0%	3%	NA
June 2024	2%	2%	2%	0%	3%	0%
March 2024	0%	2%	1%	0%	2%	NA
December 2023	0%	4%	2%	1%	2%	NA
September 2023	0%	4%	2%	1%	2%	NA
June 2023	0%	3%	3%	2%	3%	0%
March 2023	0%	3%	3%	1%	3%	NA
September 2022	0%	1%	1%	1%	3%	NA
June 2022	2%	5%	2%	2%	10%	0%
March 2022	2%	10%	5%	5%	10%	NA
December 2021	5%	10%	5%	5%	15%	NA
October 2021	10%	15%	5%	10%	30%	NA
August 2021	5%	15%	5%	10%	13%	NA
Apr 2021	5%	5%	5%	5%	10%	NA
Dec 2020	2%	2%	2%	2%	2%	NA
Oct 2020	5%	5%	5%	2%	5%	NA
June 2020	5%	5%	5%	2%	5%	0%

Serrated tussock is a long-lived perennial grass growing up to 60cm in height with a base of 25cm in diameter. Plant size varies with soil fertility and location. In infertile conditions plants may only reach a height of 15cm. Serrated tussock is shallow rooted with an extensive network of fibrous roots occurring predominantly in the top 20cm of soil. The roots are dense, wiry, and fibrous making serrated tussock very difficult to pull out, even when small. Flowering stems emerge from the base of the plant. They are



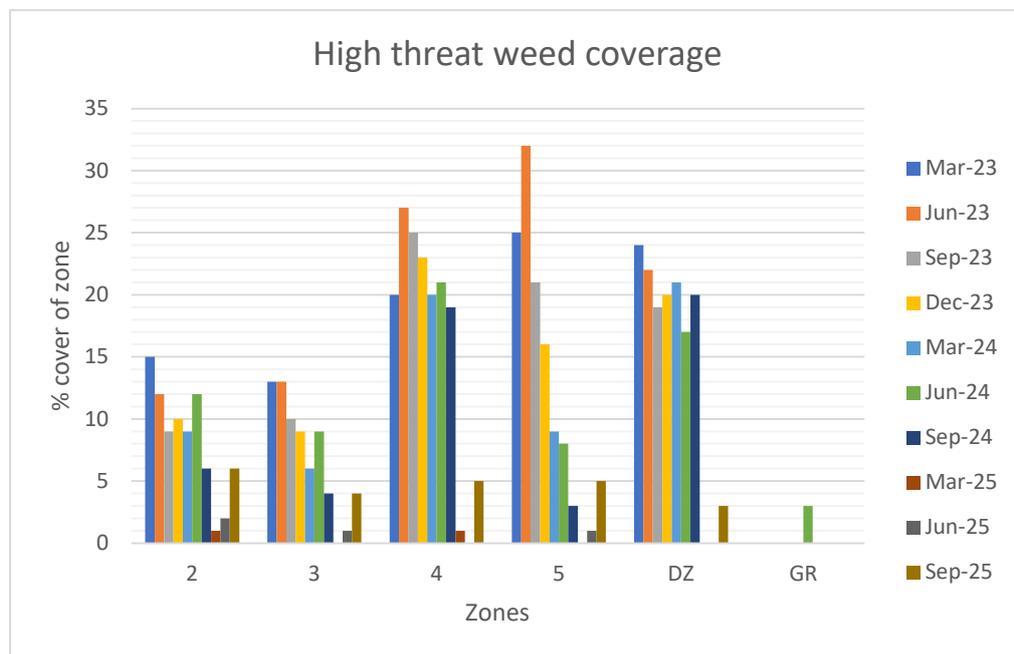
multi-branched and up to 35cm long. The purple colour of the small seeds produces an overall purplish haze to the serrated tussock seed head. Once the seeds have formed, the entire seed head will 'droop' over the tussock towards the ground. Flowering takes place as early as late winter (August) and will continue throughout the spring (September – November). Autumn flowering has been known to occur. Seeds take 8 – 10 weeks to mature, normally occurring throughout the spring and summer months. Once seeds are ripe, the whole flowering stem detaches from the base of the plant and is dispersed by the wind. Seed is dormant and will not germinate for about 6 months.

6.0 Summary

6.1 Overview

The below table displays the total percentage coverage in each zone of high-threat weeds. Since the previous report, there has been a substantial decrease in the overall coverage of high-threat weeds across all zones. During this visit, it was noted that *Cynara cardunculus* (Artichoke Thistle) and *Galenia pubescens* (Galenia) were the most dominant of the list of weeds in this report in all zones.

All of the development zone is under construction and the small balance is used for ancillary purposes (stockpile storage etc.), with only a handful of houses beginning to be built.



6.2 Zone 2

Following the completion of the prescribed burn in Zone 2, a comprehensive program of post-burn maintenance has been implemented to manage and suppress the emergence of invasive weed species, particularly those with a well-established seed bank in the soil. This proactive approach is essential to mitigate the resurgence of undesirable vegetation and to promote the recovery of native flora.

As the region transitions into the spring season, a number of opportunistic weed species have begun to emerge, taking advantage of the favourable climatic conditions and disturbed soil environment. Notable among these are artichoke thistle (*Cynara cardunculus*), Gaelina, Patterson’s curse (*Echium plantagineum*), and century plant (*Agave americana*). These species are known for their aggressive growth habits and potential to outcompete native vegetation, thereby posing a significant threat to the ecological integrity of the area.

6.3 Zone 4

This area has seen significant construction progress with the addition of footpaths and rockwalls, ready for planting. The section adjacent to the creekline has experienced only a minor infestation of invasive species, which has recently been addressed through the application of mechanical control methods. While the overall weed density in this area has been assessed as ranging from low to moderate, it remains under active observation to ensure continued suppression and ecological stability.

However, it has been noted that there has been a noticeable increase in the volume of illegally dumped waste within the vicinity. This accumulation of rubbish poses potential environmental and aesthetic concerns and will be addressed as a priority. Remedial action is scheduled to be undertaken prior to the submission of the next scheduled report to ensure the area remains in a managed and presentable condition.

6.4 Zone 5

Zone 5 has been reduced in size due to the expansion of the DZ zone into its boundaries. To prevent the spread of known weed species and seed banks from the DZ zone, silt fencing has been installed as a precautionary measure. Surrounding areas of the conservation zone have also been cleared to improve access for ongoing management.

Previous sightings of artichoke thistle (*Cynara cardunculus*) in this zone have been addressed, though continued monitoring and potential follow-up control will be required to ensure effective suppression.

6.5 Zone 3

This zone has experienced a noticeable reduction in the prevalence of most invasive weed species, with sweet briar (*Rosa rubiginosa*) now remaining as the dominant weed. Due to its woody nature, this species will require targeted and more direct control measures to ensure effective management.

Observations indicate that the presence of bridal creeper (*Asparagus asparagoides*) has declined following recent maintenance visits, reflecting positive progress in its suppression. Additionally, Patterson's curse (*Echium plantagineum*) has begun to flower, and its emergence has been documented for comprehensive control efforts to be carried out in the upcoming management cycle.

6.7 Development zone

This zone has experienced a noticeable reduction in the prevalence of most invasive weed species, with sweet briar (*Rosa rubiginosa*) now remaining as the dominant weed. Due to its woody nature, this species will require targeted and more direct control measures to ensure effective management.

Observations indicate that the presence of bridal creeper (*Asparagus asparagoides*) has declined following recent maintenance visits, reflecting positive progress in its suppression. Additionally, Patterson's curse (*Echium plantagineum*) has begun to flower, and its emergence has been documented for comprehensive control efforts to be carried out in the upcoming management cycle.

6.8 Grass Reserve

N/A Not part of this report.

7.0 Conclusion

Across all zones, the most prevalent invasive weed species currently include artichoke thistle (*Cynara cardunculus*), Patterson's curse (*Echium plantagineum*), and Gaelina, with smaller occurrences of century plant (*Agave americana*) and sweet briar (*Rosa rubiginosa*) observed in specific locations. Given the current seasonal conditions, populations of these weeds are expected to increase. However, a range of appropriate control measures will be implemented to manage their spread effectively.

Control methods will include, but are not limited to:

- Cut and paste techniques
- Brush cutting and targeted spraying (via knapsack or quick-spray application)

The primary focus at this stage is to suppress these weed populations across all zones using the spot-spray technique, which is designed to minimize off-target damage and preserve surrounding native vegetation. Encouragingly, native plant populations have shown signs of regeneration along the creekline in Zone 5, following recent landscaping works. This increase in native vegetation is a positive indicator of ecological recovery.

Provided that all control measures are implemented correctly and in a timely manner, a reduction in the listed weed species is anticipated before they can establish seed banks for the following growth season. Concurrently, further increases in native vegetation are expected as restoration efforts continue.

[Appendix 7: Cressy offset site, Year 6 \(2025\) annual report](#)



BushBlocks

Annual Management Report

(EPBC 2011/6063)

Central Eastern Grassland

Long Paddock Offset Site

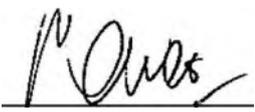
6165 Hamilton Highway, Cressy

Year 6: February 2024 - February 2025

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Landowner Reporting Form

Landowner of offset site	Deep Lead Property Pty Ltd
Location and address of offset site	6165 Hamilton Highway, Cressy, Vic
Offset site number (if applicable)	C2017_2(A)
Offset plan reference number	EPBC 2011/6063
Responsible Authority	Trust for Nature, DCCEEW (formerly DoEE), Dennis Family Corporation
Report #	Year 6
Signature	Paul Guest – Director- Deep Lead Property Ltd 
Date	15/04/2025

1. INTRODUCTION

This document addresses the requirements for Offset management/landowner reporting for offsets located at 6151 Hamilton Highway, Cressy. The broader 75ha site is the location of Offset areas for 5 separate Offset Agreements.

This report presents information relating to offset management for **Year 6** of a 10-year management plan for the relevant Offset Area - **Offset Management Zone 5 (OMZ-2A)** named the **Central Eastern Grassland**. The following page presents a map of the site, highlighting the relevant offset areas to this reporting.

The offset was created as part of infrastructure works undertaken by **Dennis Family Corporation**, which resulted in impacts to matters of National Environmental Significance under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) in relation to **EPBC referral 2011/6063**, including;

- Natural Temperate Grassland of the Victorian Volcanic Plains (NTGVVP) ecological community
- Spiney Rice-flower (SRF) *Pimelea spinescens* subs. *spinescens*

The date of legal execution for the Offset Agreement and commencement of the Offset Management Plan (OMP) (Brett Lane and Associates, 2018) for this area is **17th April 2019**.

Reporting requirements for this offset area include an **annual management report**, (this document), to be completed by **February** each year, and to contain details of management actions, including.

- Details of management actions, including on groundwork, undertaken within the reporting period
- Results of monitoring activities, including fence condition, weeds, pest animals, and ground cover/biomass accumulation/cover of open ground
- Site photographs including from 5 defined monitoring points
- Details of compliance and non-compliance with the schedule of management actions

Table 1. Offset Areas located at the property of 6165 Hamilton Hwy, Cressy

Tier	Zone Name	Offset Management Zone	Size	Date of Legal Execution
Tier 1	Northwest Grassland (NWG)	OMZ-01	5 ha	4th October 2018
Tier 2A	Central East Grassland (CEG)	OMZ -2A	29.1 ha	17 th April 2019
Tier 2B	Seasonal Herbaceous Wetland Two (SHW2)	OMZ -2B	11.86 ha	17 th April 2019
Tier 2C	Seasonal Herbaceous Wetland One (SHW1)	OMZ -2C	2.52 ha	17 th April 2019
Tier 3	Southwest Grassland (SWG)	OMZ -03	16 ha	26 th Sept 2020
	Far East Grassland (FEG)			

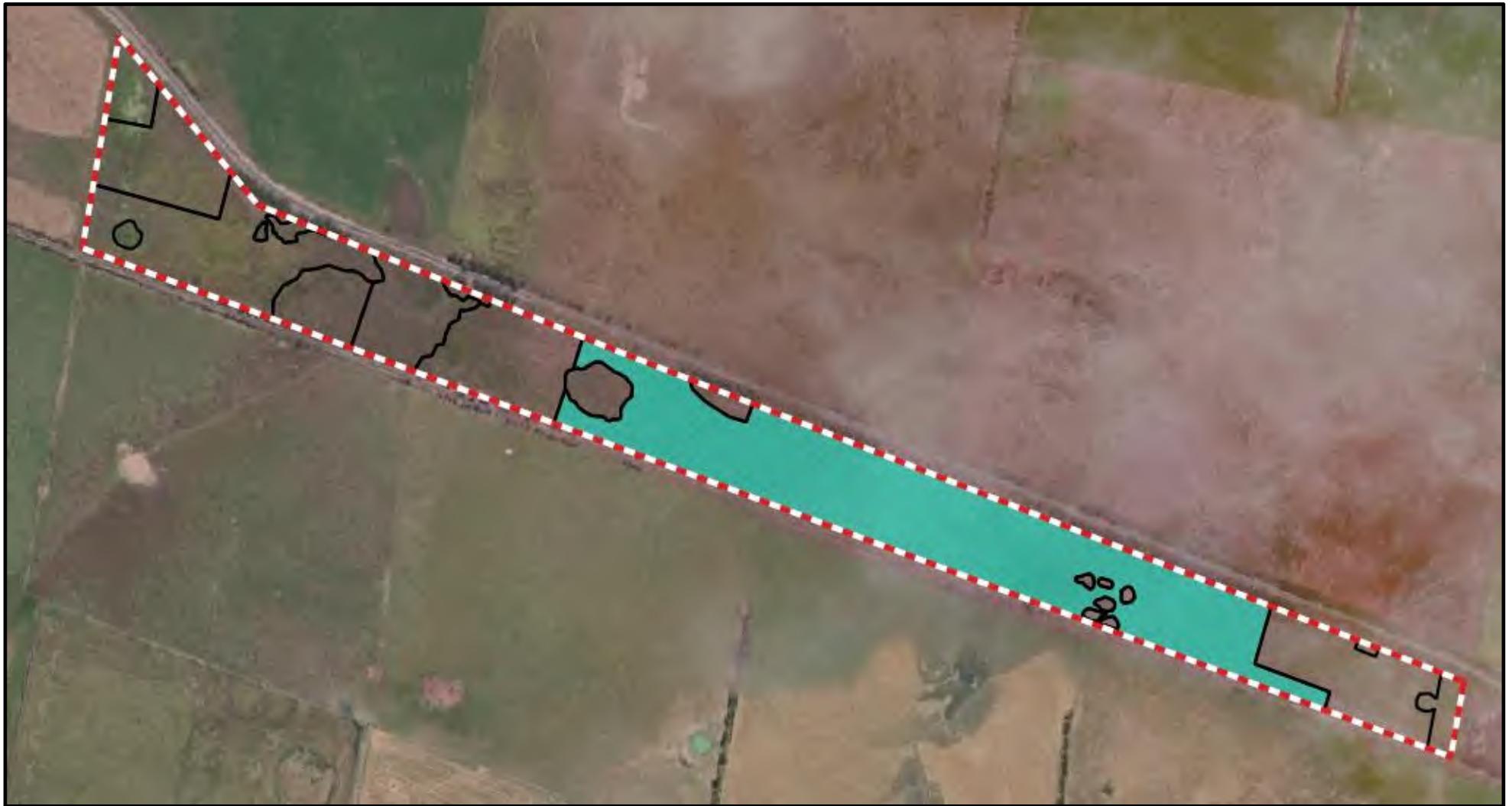


Figure 1. Management areas pursuant to Offset Agreement [EPBC 2011/6063]. OMZ-2A

2. Completed Works

2.1 Record keeping

- The site logbook in an online record of times and dates that landowners/land managers, contractors, consultants, or other relevant parties have visited the site for the purposes of management or monitoring actions
- The logbook is maintained by the land manager through regular correspondence with contractors to record important information relating to site management or monitoring.
- Typical entries include date, name of personnel on site, activities being completed, general observations of flora or fauna, weather, presence of standing water, comment on biomass etc.
- Evidence of each site visits is usually in the form of photos, GPS tracklogs/waypoints, site notes and daily works records
- A summary of Property Logbook for Year 6 is provided in Appendix 2, and links to all site information collected during site visits will be provided on request.

2.1.1 Quarterly Site visits

The offset area is required to be visited at least quarterly by the landowner. The following activities are undertaken at each quarterly visit;

- walk of boundary fencing to assess any signs of damage or unauthorised entry of people or stock
- general observations. This includes locations and notes as appropriate in relation to;
 - woody or herbaceous weed infestations- species and location
 - estimates of percentage cover of inter-tussock space
 - signs of pest animals, or other tracks scats, or signs of predation
 - signs of erosion, pugging, damage to vegetation
- Detailed observations from quarterly site visits are available on request

2.2 Fence Condition

2.2.1 Offset demarcation

- The numerous Management Zones within the site are not individually fenced. The intersections of the OMZs with boundary fencing have been marked with short (approx. 30 cm high) star pickets for identification.
- Yellow safety caps identify the boundaries visually; tags are also attached to indicate the offset area.

2.2.2 Additional Internal Fencing

- Internal fencing was installed in 2022 to create smaller paddocks/cells for rotational grazing in line with the OMP and other offset agreements within the property
- The property has been sectioned into 4 large grazing cells, and a smaller domestic zone.
 - **Cell 1-** Domestic Zone (non-covenanted area)
 - **Cell 2–** Features generally higher biomass, higher weed-cover.
 - **Cell 3-** Includes small portion of OMZ-05 (higher quality), and seasonal herbaceous wetland areas with stricter grazing restrictions.
 - **Cell 4-** Includes portion of OMZ-05, includes larger, high quality grassland area, moderate biomass, lower weed-cover.
 - **Cell 5-** Includes portion of OMZ-05, features generally higher biomass, higher weed-cover.

2.3 Weed Monitoring and Control

2.3.1 Site Walkover – Spring 2024

- Weed monitoring is conducted annually in Spring and involves inspection of the entire offset area for woody weeds, by foot.
- All infestations or individual woody weeds are identified to species level and mapped with a GPS. Locations of woody weeds are then supplied to the weed management contractor/landholder for treatment.
- Subsequent monitoring revisits previously mapped infestations to evaluate the success of weed control, as well as inspecting the entire offset site for new infestations.
- During the survey, information on herbaceous weed species is also recorded, including the mapping of species and areas suitable for targeted treatment.

Results

Assessment was conducted in Spring 2024 by land manager Emma Wilkin, on behalf of the landowner. Refer to Table 2, Table 3 and Table 4 on the following page for assessment results, including current percentage cover for each weed species listed in the OMP.

Collected data are provided to site contractors and incorporated into an annual works plan for Year 7. Annual works plans for the property include consideration and planning for works with each of the five separate offset agreements, and are completed in collaboration with TfN at the end of each calendar year.

Annual Management Report – Year 6 (EPBC2011/6063)

Table 2. Woody weeds species – targets and control

Scientific Name	Common Name	Threat level	Baseline cover (Year 0)	Interim target (Year 4)	Current cover (Year 6)	Target (Year 10)	Treatment in Year 6	Timing/Method of Treatment
<i>Eucalyptus spathulata</i>	Swamp Mallet	High	1%	<1%	<1%	<1%	No	No plants identified for treatment
<i>Lycium ferocissimum</i>	African Boxthorn	High	<1%	<1%	<1%	<1%	Yes	Foliar spot/spray of regrowth

Table 3. Herbaceous weeds species – targets and control

Scientific Name	Common Name	Threat level	Baseline cover (Year 0)	Interim target (Year 4)	Current cover (Year 6)	Target (Year 10)	Treatment in Year 6	Timing (Method) of Treatment
<i>Dactylus glomerata</i>	Cocksfoot	High	2%	1%	1%	5% combined cover or less	Yes	Grazing (refer Section 5.2.1)
<i>Holchus lanatus</i>	Yorkshire Fog	High	1%	1%	2%		Yes	Spot spray (Spring)/Grazing
<i>Phalaris aquatica</i>	Toowoomba Canary-grass	High	3%	2%	5%		Yes	Spot spray (Spring)/Grazing
<i>Phalaris arundinacea</i>	Reed Canary-grass	High	1%	1%	<1%		Yes	Spot spray (Spring)/Grazing
<i>Cirsium vulgare</i>	Spear Thistle	High	1%	1%	<1%		Yes	Spot Spray (Spring) Refer Logbook summary
<i>Romulea rosea</i>	Onion grass	Low	3%	2%	3%	Combined cover does not increase above (16%) Aim for 8%	Yes	Grazing
<i>Annual grasses</i> (<i>Vulpia</i> , <i>Briza</i> , <i>Bromus</i> , <i>Aira</i> , <i>Lagurus ovatus</i>)	Fescue, Quaking-grass, Brome, Hair-grass, Hare's-tail grass	Low	10%	7%	10%		Yes	Grazing
<i>Broadleaf</i> (<i>Hypo rad</i> , <i>Leon tarax</i> , <i>Lactuca serriola</i>)	Flatweed, Hairy Hawkbit, Prickly Lettuce	Low	3%	2%	5%		Yes	Spot spray (Spring)/Grazing

Table 4. New and emerging weed species – targets and control

Scientific Name	Common Name	Threat level	Baseline cover (Year 0)	Interim target (Year 4)	Current cover (Year 6)	Target (Year 10)	Treatment in Year 6	Timing/Method of Treatment
<i>Rosa rubiginosa</i>	Sweet Briar	High	na	na	<1%	<1%	Yes	Cut/paint – occurs on fence line, northern boundary Hamilton Highway
<i>Conyza sumatrensis</i>	Fleabane	High	na	na	<1%	<1%	Yes	Very few individuals, hand-pulled on observation

2.4 Pest Animals

- There were no recorded sightings of pest animals within the Offset Area in Year 6 management period.
- Individual hares are sometimes sighted in the area but are not found to be creating disturbance on site. There were no signs of active or inactive rabbit warrens, or areas that could be seen as intensely browsed by rabbits or hares. There are also no areas of rubbish, or surface harbour within the site.
- No foxes have been observed within the property boundary. Foxes continue to be observed within the neighbouring area, and occasionally as roadkill on the Hamilton Highway within 10k of the property.
- There has been no evidence of any other pest animal species occurring on site.

2.5 Biomass Management

2.5.1 Grazing

- Site is checked regularly at times where stock is present on site. Notes are taken regarding general site condition, grazing progress, signs of trampling, selective or overgrazing, pugging etc.
- Photos are also used as documentation of site condition during time of grazing, though the key measure of grazing success is through of review of biomass monitoring results from across the extent of the offset property each year.

Table 5. Grazing Rotations: Offset Area (2A)– Year 6

Cell	Rotation	Grazing period	Weeks	Number of sheep
C3	-	No grazing – excluded after fire	-	-
C4	1	24/6/2024 - 21/7/2024	4	220
		Rest period	3	
	2	12/8/2024 - 25/8/2024	2	220
		Rest period	5	
C5	3*	30/9/2024 - 31/11/2024	5	220
	1	22/7/2024 – 11/8/2024	3	220
		Rest period	4	
	2*	9/9/20234 – 29/9/2023	3	220

*Indicates grazing through exclusion period and adaptive management for biomass control

2.5.2 Ecological Burning

- No ecological burning was conducted in the Year 6 management period

2.6 Biomass Monitoring

2.6.1 Annual Biomass monitoring – Spring 2024

- This methodology is additional to that outlined in the OMP. This survey utilises over 100 (2x2 meter) quadrats that are placed at 50m intervals along entire length the 75ha property. A total of 47 biomass monitoring quadrats are located within or on the boundaries of the Offset Area (OMZ-05) .
- The objective is to gain a clear picture of how the wider offset site is changing and if management goals are fulfilling their objectives. These results are used to inform the proposed grazing strategy for the property.
- There are two systems in place to measure biomass at each quadrat, the use of both giving more depth to the data collected.

Indicator species (Lunt 2003)

The presence of these species is used to determine that native and exotic grasses have not out-competed native herbs. The three species chosen species all occur within the offset sites, these are

- Lemon Beauty-head *Calocephalus citreus*,
- Common Everlasting *Chrysocephalum apiculatum*, and
- Scaly Buttons *Leptorhynchus squamatus*,

Inter-tussock space

- The percentage of bare ground present is separated into the following categories: 0%, 1-20%, 20-40%, 40-60%, 60-80%, and 80-100%.
- The objective range that must be maintained across the grassland over time is 20-40% bare ground with closer to 40% being the desirable goal. If the amount of bare ground reaches 50% pulse grazing should halt.
- This measurement of bare ground provides a clearer assessment of what areas should be targeted for biomass reduction and when mapped can show areas where controlled burns are a higher priority.

Biomass Monitoring Results

- Biomass is considered acceptable if indicator species are present, and/or percentage or bare ground is at least 20-40%
- Assessment was conducted in late Spring 2024 by Emma Wilkin
- Results demonstrate an increase in acceptable biomass levels compared to the previous reporting period.
- Offset Area (2A) results show a higher biomass levels than that of the broader offset site, with approximately 35% acceptable (see fig.2), compared to 45% (see fig.1).

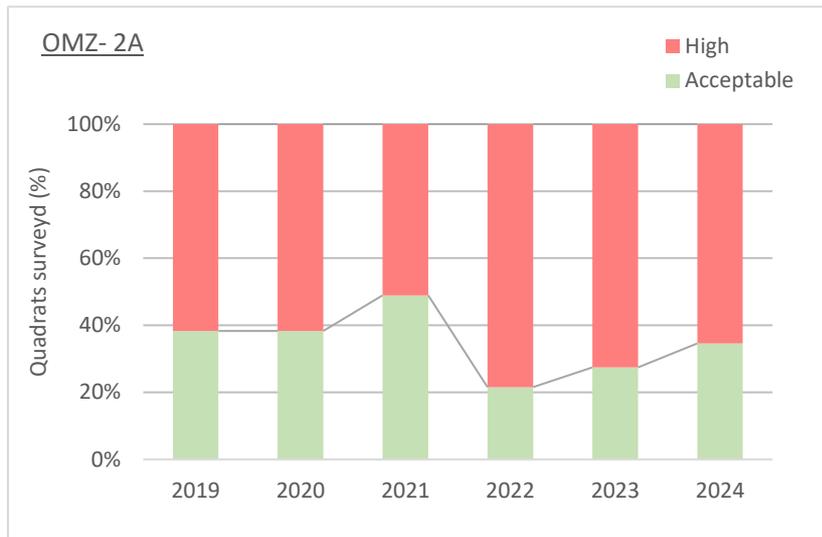


Figure 1: Biomass monitoring results for Offset Area (2A) across monitoring years

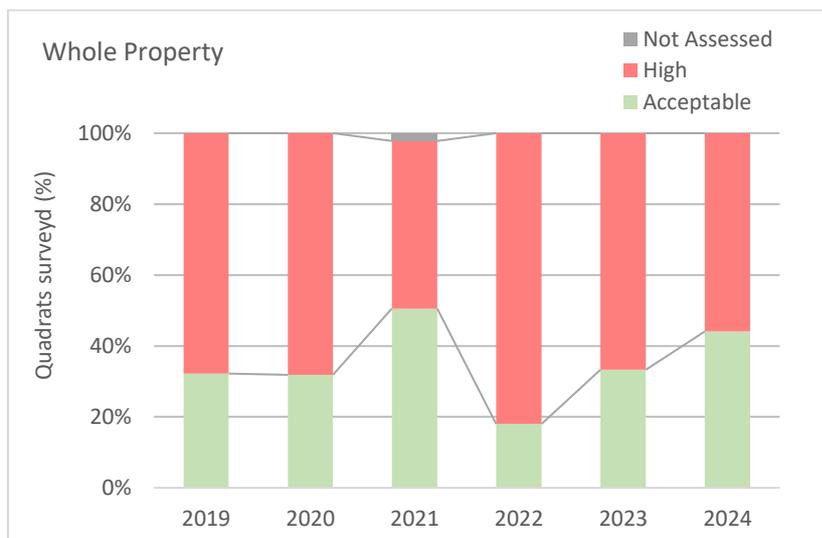


Figure 2: Biomass monitoring results for whole property across monitoring years

2.7 Photo points

- Photo points are located at the boundaries and at the junction of offset management areas
- Photo point monitoring is conducted in Spring each year
- Results of Year 6 Photo points monitoring are provided in Appendix 4

2.8 Annual Works Plan

A detailed annual works plan for the entire site will be provided to Trust for Nature in January of each year, in response to review of results of all management and monitoring actions.

A summary of Annual Works relating to the Offsets Area for Year 7 is as follows:

- Prioritise ecological burn to reduce biomass associated with kangaroo grass and increase species diversity within Grazing Cell 4
- Reduce extent of weedy patches of annual grasses Phalaris and Fog grass, and occurrence of prickly lettuce using targeted herbicide application in Spring
- Prioritise ecological burn in Cell 3 to reduce biomass in areas adjacent to wetland (sensitive areas)

Appendix 1. Summary of required management actions – Year 6

Management Actions Years 2-9	Timing	Target to be achieved	Actions completed	Month completed	Comments
Landowner to Liaise with TfN and develop annual works plan	Within 3 months of (Feb) each year	Annual Works Plan is prepared	Y-	Feb	Agreed approach moving forward is for an Annual Work Plans for the broader 75 Ha site to be provided at the beginning of each calendar Year (Jan)
Monitor weeds and implement control if required: <ul style="list-style-type: none"> - Ecological grazing to reduce biomass of introduced species and prevent seed set - Herbicide and/or flame weeding use as required 	March to May or September to November As required as per optimal time for each species (herbicide and/or flame weeding)	See section 3.4.2, Table 5.	Y	General observations recorded throughout Year Weed monitoring conducted in Spring	Monitoring conducted and information provided to nominated contractor or completed by the landowners/managers
Map rabbit warrens using a GPS until and implement control Monitor fox populations and implement control if required	Autumn (or at commencement)	Pest animals controlled	Y	Ongoing	Site visits and monitoring found no signs of established pest animals – pest animal controlled deemed unnecessary
Biomass reduction through ecological burning or ecological grazing if required	February – May (Burning) End of January to end of September (grazing)	Grassy Biomass layer reduced Inter-tussock spaces maintained to optimise ecological function	Y	Ongoing	Additional fences installed to allow for rotational grazing as per management plan, and to address problem areas of the site
Weed and Biomass monitoring	September to November	Results will inform management approaches and techniques	Y	Nov 2024	Spring monitoring detected higher levels of biomass in previous years
Site quality audit (Qualified ecologist engaged by the land owner)	Late Spring to early Summer Years 1, 4, 7, 10	Results will inform management approaches and techniques	NA		
Monitoring to determine fencing integrity and timeliness of management actions	Boundary fencing formally inspected every three months each management action monitored	Boundary fencing effective and management actions undertaken on time	Y	Fencing monitored at quarterly site inspections	Grazing checks completed regularly when sheep are on site, and include check of fence condition
Report to be prepared documenting management actions undertaken and monitoring results	No later than three months after the anniversary of commencement (ie July)	Report delivered to DFC, TfN and DoEE no later than three months after the anniversary of commencement	N	October	Agreed submission date to TfN is Feb each year. Report not submitted by due date
(TfN) -Monitoring of the offset site to determine whether the prescribed management actions are resulting in the desired outcomes outlined in this plan	Three times over the life of the (OMP)	Feedback delivered to Landowner and DFC	Y	Ongoing	TfN Audit occurred on 9 th Feb 2024 Compliance Letter attached – Appendix 5

Appendix 2. Property Log Book

Please refer next page

Property Management

Emma Wilkin

1 Feb 2024 - 1 Mar 2025

<input type="checkbox"/>	Start ↑	Title	Company	Zone	Proof of visit
<input type="checkbox"/>	02/02/2024	Weed Control	Bush Blocks	OMZ-01	GPS tracklog Daily Works Record (DWR)
<input type="checkbox"/>	07/02/2024	Cressy Site Audit Biosis	Biosis	OMZ-01	Email
<input type="checkbox"/>	09/02/2024	Cressy TFN site visit	Bush Blocks, Trust for Nature	All	Site Notes
<input type="checkbox"/>	09/02/2024	Weed Control	Bush Blocks	All	GPS tracklog
<input type="checkbox"/>	27/03/2024	Pre grazing site check	Bush Blocks	All	Photos GPS tracklog
<input type="checkbox"/>	18/05/2024	Ecological Burn	Bush Blocks, Practical Ecology	OMZ 3-1, 2B-1, 2B-2	Photos
<input type="checkbox"/>	23/05/2024	Burn Prep	Bush Blocks	2A	Site Notes
<input type="checkbox"/>	25/05/2024	Ecological Burn	Bush Block, Practical Ecology	OMZ 3-1	Photos
<input type="checkbox"/>	27/05/2024	Sheep trucked to Site (220)	Bush Blocks		Invoice
<input type="checkbox"/>	01/07/2024	Site Visit	Bush Blocks	All	Photos GPS tracklog
<input type="checkbox"/>	07/08/2024	Site Visit - Grazing Check	Bush Blocks	All	Photos GPS tracklog
<input type="checkbox"/>	03/09/2024	Grazing Check	Bush Blocks	ALL	Photos GPS tracklog
<input type="checkbox"/>	17/09/2024	SLL 1/6	Ecoairal Environmental Consulting	OMZ 1, OMZ 3	Monitoring Data Text
<input type="checkbox"/>	23/09/2024	Grazing Check	Bush Blocks	ALL	Photos GPS tracklog
<input type="checkbox"/>	23/09/2024	SLL 2/6	Ecoairal	OMZ 1, OMZ 3	GPS tracklog Monitoring Data

<input type="checkbox"/>	02/10/2024	Weed Control	Bush Blocks	OMZ C5	Photos	Daily Works Record (DWR)
<input type="checkbox"/>	03/10/2024	SLL 3/6	Ecoairial	OMZ 1, OMZ 3	GPS tracklog	Monitoring Data
<input type="checkbox"/>	09/10/2024	SLL 4/6	Ecoairial	OMZ 1, OMZ 3	Photos	Monitoring Data
<input type="checkbox"/>	16/10/2024	Monitoring Quadrats & Hab Hectare Assessment	Ecocentric	OMZ 3-4	Photos	GPS tracklog Monitoring Data
<input type="checkbox"/>	30/10/2024	SLL 5/6	Ecoairial	OMZ 1, OMZ 3	Photos	Monitoring Data
<input type="checkbox"/>	07/11/2024	SLL 6/6	Ecoairial	OMZ 1, OMZ 3	GPS tracklog	Monitoring Data
<input type="checkbox"/>	20/11/2024	Weed Control	Bush Blocks	OMZ-01, OMZ-3-1, OMZ-3-4, OMZ-2A	Photos	Daily Works Record (DWR)
<input type="checkbox"/>	26/11/2024	Biomass quadrats/Weed Monitoring	Bush Blocks	All	Photos	GPS tracklog Monitoring Data
<input type="checkbox"/>	26/11/2024	Boundary Photopoints	Bush Blocks	All	Photos	GPS tracklog
<input type="checkbox"/>	13/12/2024	Monitoring Quadrats & Hab Hectare Assessment	Ecocentric	OMZ 1, OMZ 3-1	Photos	GPS tracklog Monitoring Data
<input type="checkbox"/>	18/12/2024	Biomass quadrats/Weed Monitoring	Bush Blocks	All	Photos	GPS tracklog Daily Works Record (DWR)
<input type="checkbox"/>	17/02/2025	Grazing Check	Bush Blocks	All	Site Notes	

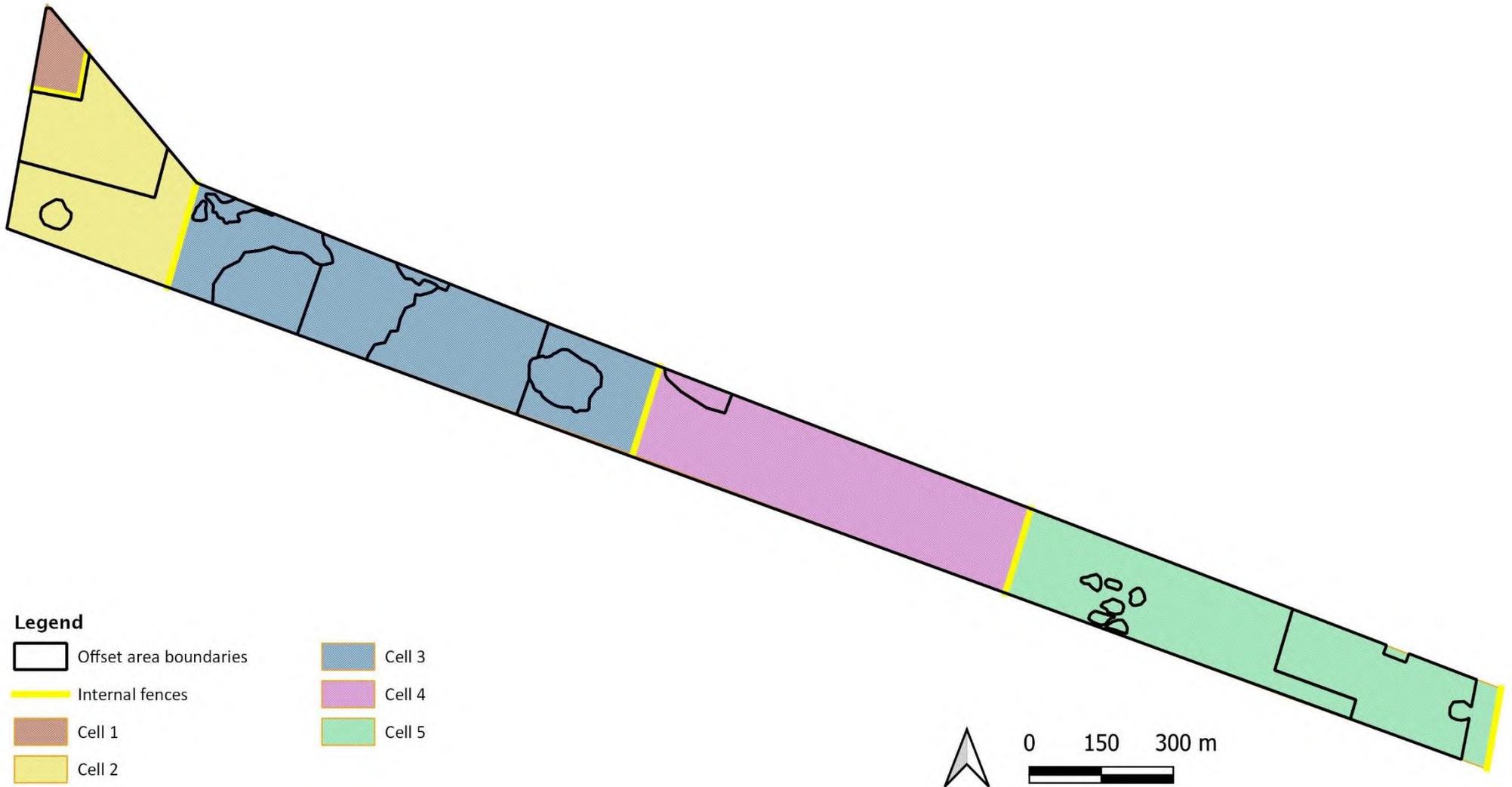
Appendix 3. Maps

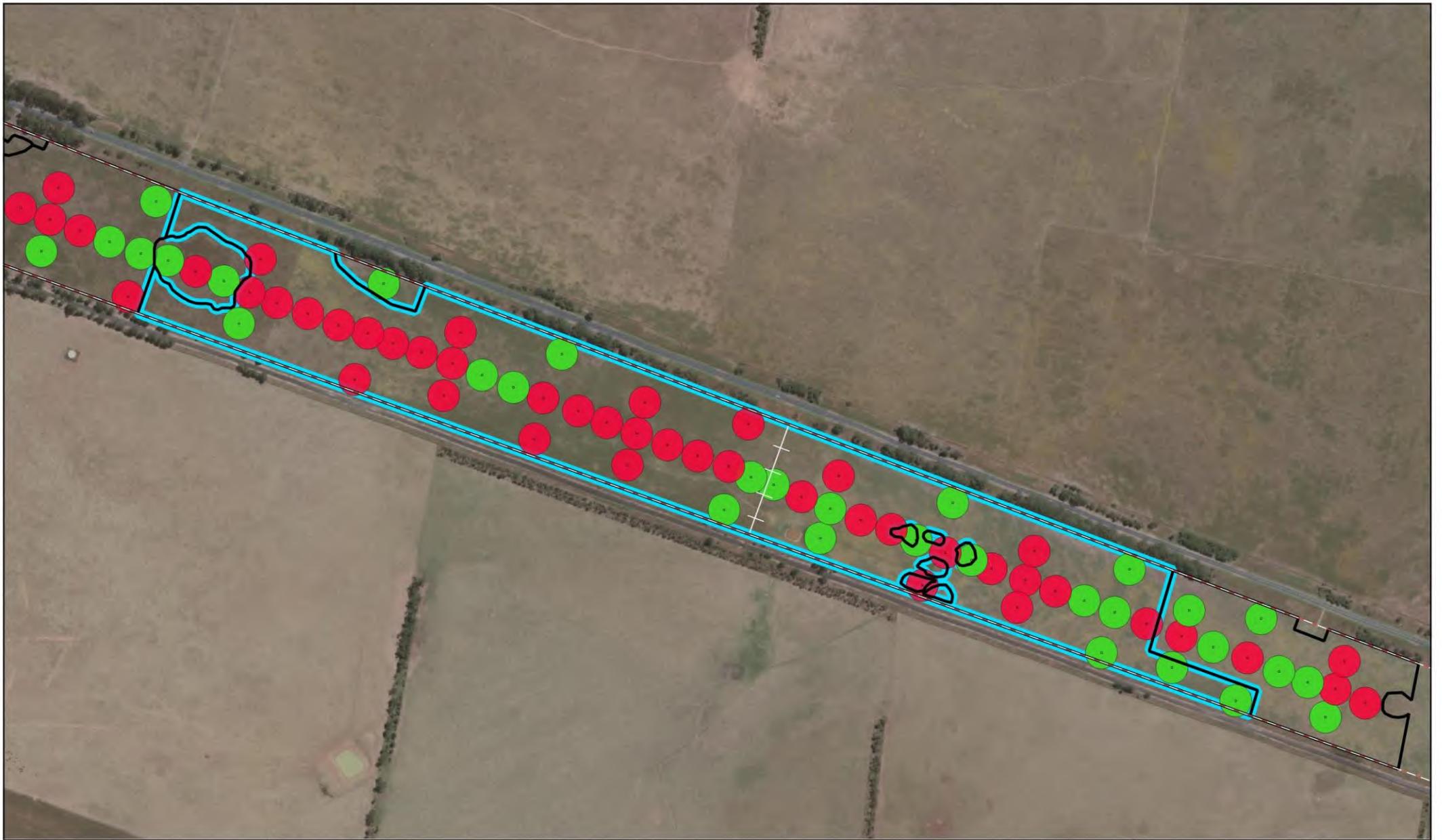
Map 1– Grazing Cells

Map 2– Biomass Monitoring 2024

Map 3– Photopoint Monitoring

Map 1 - Grazing Cells





Biomass Monitoring
Spring 2024

Long Paddock Offset Site
6165 Hamilton Hwy, Cressy

Legend

-  Offset Management Zones
-  Offset Tier 2A (EPBC2011/6063)

-  High biomass
-  Acceptable biomass

Details

Date: 06 March 2025
Version: 1
Created by: Emma Wilkin

Data Source:
Aerial Photography from Esri Satellite



BushBlocks

0 100 200 m



(page size A4)





Photopoint Monitoring

Long Paddock Offset Site
6165 Hamilton Hwy, Cressy

Legend

-  Property Boundary
-  Offset Management Areas

-  Offset_edge
-  OMZ-05

Details

Date: 30 August 2022
Version: 1
Created by: Emma Wilkin

Data Source:
Aerial Photography from Esri Satellite



BushBlocks



Appendix 4. Photo Points - Spring 2024



OE1 - W



OE2 - E



OE3 - S



OE3 - W



OE4 - E



OE19 - E



OE20 - W



OE21 - E



OE22 - W

Appendix 5. TfN Compliance Letter

Refer next page

Our Ref: C2017_2 (A, B & C)/KT



**TRUST FOR
NATURE**

22 February 2024

Mr Paul Guest
Mr Lincoln Kern
Deep Lead Property Pty Ltd
PO Box 228
Preston, Victoria, 3072

Address 5/379 Collins Street
Melbourne VIC 3000, Australia
Phone +61 (0)3 8631 5888
Freecall 1800 99 99 33 (Aus only)
Email trustfornature@tfn.org.au
Web www.trustfornature.org.au
ABN 60 292 993 543

Via email: paul@bushblocks.net.au; lincolnk@practicalecology.com.au

Dear Paul & Lincoln,

Native Vegetation Offset monitoring results for Year 4
C2017_2(A) Central East Grassland Off-INT5829-6165 Hamilton Highway-Cressy
C2017_2(B) Seasonal Herbaceous Wetland 2 Off-INT5829-6165 Hamilton Highway-Cressy
C2017_2(C) Seasonal Herbaceous Wetland 1 Off-INT5829-6165 Hamilton Highway-Cressy
– Volume 5736 Folio 059

Thank you for the opportunity for Jo Day from Trust for Nature to visit your property on 9/2/2024. The purpose of this letter is to inform you of the outcomes of the monitoring for year 4 of your agreement and the discussions on the day.

Compliance status

I am pleased to inform you that to date you have met your Year 4 obligations under your agreement registered on title Volume 5736 Folio 059 dealing number AS099601N. We acknowledge a noticeable improvement in management activity of the covenant since the last stewardship visit. Infrastructure is in place to assist with strategic grazing, mosaic burning is being implemented and targeted weed control is being undertaken.

Monitoring report and ongoing actions to continue to remain compliant

Please read the attached the monitoring report which is a record of the observations and discussions with Jo on the day. The monitoring report outlines what has been agreed upon by yourself and Trust for Nature to continue to achieve positive biodiversity outcomes within your site.

Any actions outlined in your monitoring report will need to be actioned and reported on as part of your reporting requirements to ensure you remain compliant with your agreement.

If you have any questions arising from your native vegetation management commitments, please contact me on 0417 327 514 or email on offsetsreporting@tfn.org.au.

Yours Sincerely

Karen Tymms
Offset Program Stewardship Coordinator
Ph: 0417 327 514 | Email: offsetsreporting@tfn.org.au



Offset Assessment Form

File Number	C2017_1 & C2017_2 (A,B & C) (Off-INT5829-6165 Hamilton Highway-Cressy) C2017_3 (Off-INT9363-6165 Hamilton Highway-Cressy)	Visit date:	9/2/2024
Title holder	Deep Lead Property Pty Ltd	Visited by:	Jo Day
Main contact	Emma Wilkin Lincoln Kern / Paul Guest	Initial Stewardship visit?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Property Address	6165 Hamilton Highway-Cressy	Triennial assessment visit yr 1, 4, 7 or 10?	Year 5 – C2017_1 Year 4 – C2017_2 (A,B &C) Year 3- C2017_3
Postal Address	PO Box 228, Preston		
Telephone (home):			
Telephone (other):	0437 509 535 – Emma Wilken		
Email:	projects@bushblocks.net.au Emma		
Can we correspond with you by email?	Yes <input type="checkbox"/> No <input type="checkbox"/> Not on email <input type="checkbox"/>		
Do you already have a TFN covenant sign?	Yes <input type="checkbox"/> No <input type="checkbox"/> No signs displayed		
If no do you want a TFN sign?	Yes <input type="checkbox"/> No <input type="checkbox"/>		
Compliance with covenant restrictions			
Fences	<p>2021-Boundary fencing exists around the broader property, not around individual offset sites. No internal fencing currently. Not applicable to have fencing around each offset site, but applicable to have internal fencing to facilitate the use of livestock for biomass management. Landholder indicated that internal fencing will likely be installed in the next few years.</p> <p>2024 – Internal fencing, gates and waterpoints installed. Land manager indicated potential to install some temporary fencing within to graze more strategically.</p>		
Non-habitable structures	N/A		
Dams	1 dam on the property		
Dwellings	N/A		
Other	N/A		
Comments:			

2021-The numerous offset sites across the property, and the variable respective offset standards to be achieved makes managing and stewarding this site very difficult. Being the first stewardship visit, it is recommended herein that:

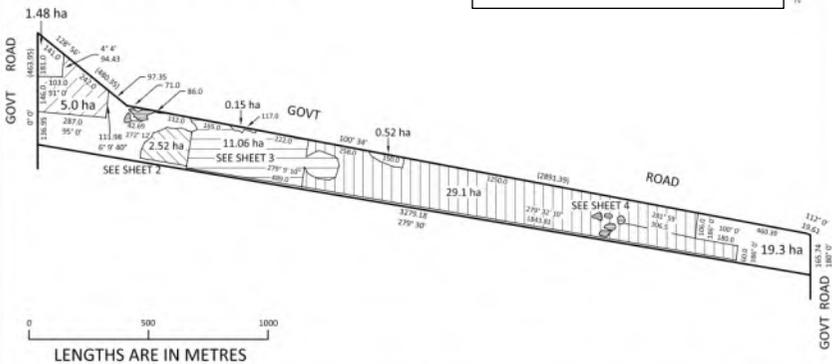
- 1) Specific monitoring and reporting requirements for each individual offset site remain; and
- 2) it is acceptable and practical that management practices are planned and coordinated across all the sites i.e. the whole of the property, provided that that landholder can be confident that each of the offset site standards to be achieved can be.

At Year 1 for all offset sites it is recommended that the following 1- 2 years' management (in addition to respective data and reporting requirements) focuses on:

- a) development of burn plan for the site;
- b) development of infrastructure and planning for effective grazing;
- c) hand remove/selectively spray Toowoomba Canary-grass, Yorkshire Fog, Paspalum, Cocksfoot and Spear Thistle; and
- d) development of pest animal control program.

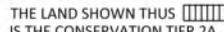
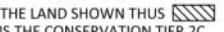
2024 – A noticeable improvement in management proactivity of the covenants since the last stewardship visit. Infrastructure is in place to assist with strategic grazing, mosaic burning is being implemented and targeted weed control is being undertaken.

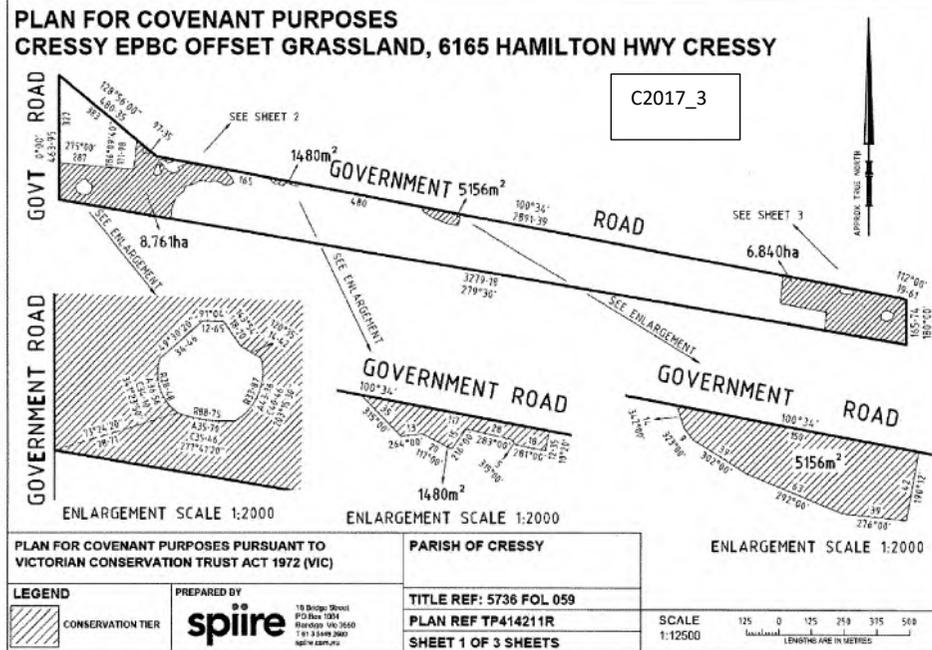
**PLAN FOR COVENANT PURPOSES
LOTS 1,2,3,4,5,6,7 AND 8 ON
TITLE PLAN 414211R**

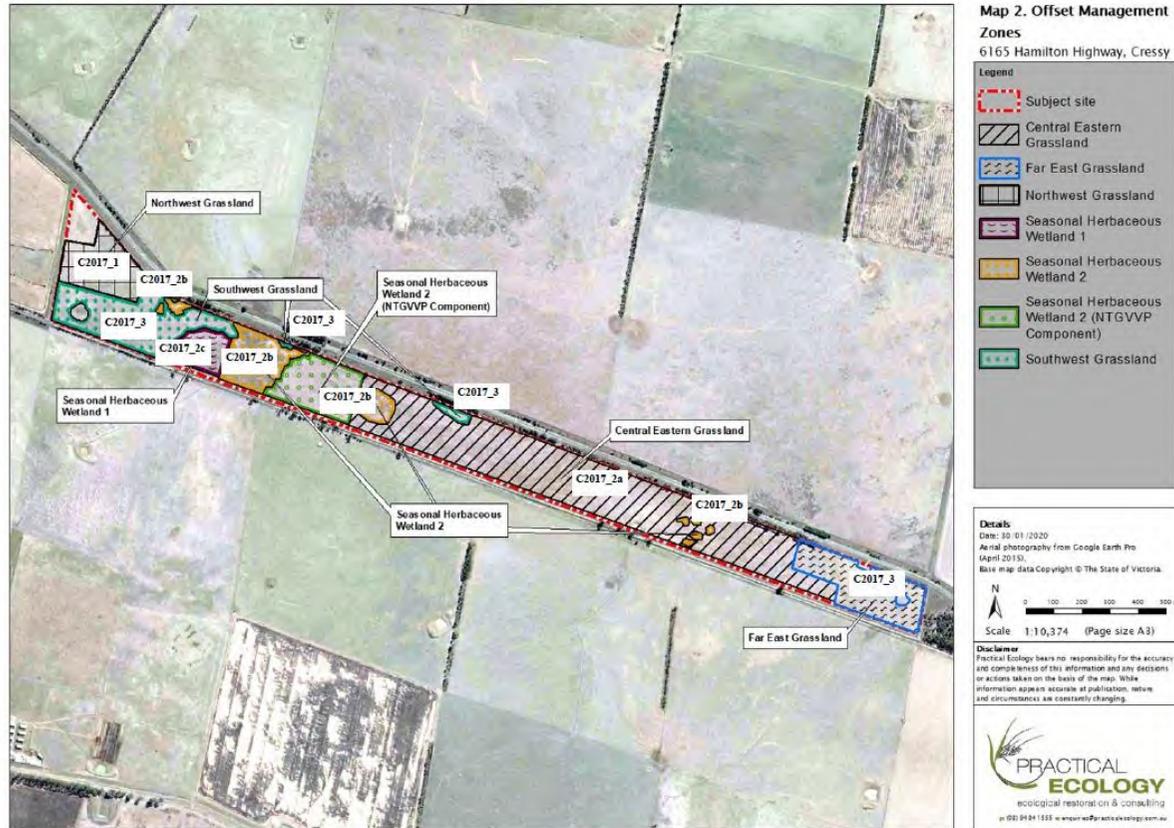


C2017_1 & C2017_2 (A, B & C)
Tier 1-C2017_1
Tier 2A- C2017_2 (A)
Tier 2B- C2017_2 (B)
Tier 2C- C2017_2(C)

SHEET 1 OF 4

C/T VOL: 05736 FOL: 059	THE LAND SHOWN THUS  IS THE CONSERVATION TIER 1	THE LAND SHOWN THUS  IS THE CONSERVATION TIER 2B
	THE LAND SHOWN THUS  IS THE CONSERVATION TIER 2A	THE LAND SHOWN THUS  IS THE CONSERVATION TIER 2C





<p>Landholder observations</p>	<p>Note any changes in fauna & flora, species which may have disappeared or reappeared; changes in population sizes; successful breeding; significant events such as fire, floods, storms etc.</p>
<p>Native Animals</p> <ul style="list-style-type: none"> Monitoring of animal presence/absence Record keeping e.g. unusual sightings. 	<p>2024- Nothing new to add.</p>



<p>Threatened species</p> <ul style="list-style-type: none"> • Identification and records of threatened species • Specific management actions for threatened species 	<p><i>2021-Golden Sun Moth <i>Synemon plana</i> and Striped Legless Lizard <i>Delma impar</i> are the basis of the offset sites.</i></p> <p><i>There is a large population of Spiny Rice-flower <i>Pimelea spinescens</i> subsp. <i>spinescens</i> across the property, as well as scattered Small Milkwort <i>Comesperma polygaloides</i> (To be confirmed with Chris L).</i></p> <p>2024- Land manager reports that GSM numbers have been very low over the past few years, including this year. Spiny Rice-flower still appears to be in good numbers.</p>
<p>Other (e.g. erosion works, habitat enhancement, grazing management etc.)</p>	<p><i>2021-Landholder reported some grazing has occurred to date, and plans for livestock to be introduced to the property in the coming weeks. As there is no internal fencing to support cell-grazing or pulse grazing, and sheep flock numbers will be relatively low, this is mostly a maintenance practice rather than concentrated biomass management practice at this point.</i></p> <p>2024- Strategic grazing and ecological burning are underway, and continue to be planned for the year ahead.</p>

Management Actions

Year	Site and Zone(s)	Management Actions to be completed	Description of Action (as per Deed of Covenant / OMP)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
1	C2017_1 C2017_2a, 2b & 2c C2017_3	Photopoints C2017_1 – 5 photopoints submitted C2017_2 (A) – 6 photopoints submitted C2017_2 (B) – 12 photopoints submitted C2017_2 (C) – 2 photopoints submitted	5 permanent photo points to be established (in each) C2017_3 10 permanent photo points to be established	2024-Photopoint have been set up for each offset as per the OMP requirements and photos submitted in annual reports	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
1	C2017_1 C2017_2a, 2b & 2c C2017_3	Fencing	Ensure appropriate fencing is established. Needs to be noted that for C2017_2b & 2c , there are prescriptions for temporary fencing should livestock be on the property during the respective site's 'grazing exclusion' periods. Standard to be achieved: Sites isolated from activities excluded by the respective OMPs	<i>2021-Boundary fencing exists around the broader property, not around individual offset sites. No internal fencing currently. Not applicable to have fencing around each offset site, but applicable to have internal fencing to facilitate the use of livestock for biomass management. Landholder indicated that internal fencing will likely be installed in the next few years.</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>



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Year	Site and Zone(s)	Management Actions to be completed	Description of Action (as per Deed of Covenant / OMP)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
				2024- Internal fencing, gates and waterpoints installed. Land manager indicated potential to install some temporary fencing within to graze more strategically.	
1	C2017_1 C2017_2a, 2b & 2c C2017_3	Site delineation	Establish markers to identify boundary of the offset site. Standard to be achieved: Markers established to identify the boundary of the offset site.	2021-Saw evidence of markers to identify offsets sites on site. 2024- as above.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
1	C2017_1 C2017_2a, 2b & 2c C2017_3	Contractor engagement	Identify a person/company to control pest plants and animals. Standard to be achieved: Appropriate personnel appointed to conduct works.	2021-Landholder mentioned engagement of Practical Ecology personnel for works 2024- Bush Blocks now have designated resources to manage offset sites, including this site.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
1	C2017_1 C2017_2a, 2b & 2c C2017_3	Baseline monitoring (vegetation and Striped Legless Lizard)	Qualified ecologist to undertake baseline vegetation monitoring. C2017_1 Two SLL monitoring grids established C2017_3 Four SLL monitoring grids established Standard to be achieved: Prepare standard report and confirm agreed performance measures.	2021-Vegetation monitoring points and Striped Legless Lizard monitoring grids were observed across the broader property. Need to cross reference specific SLL grid details from landholder reporting to confirm four grids set up in C2017_3 and two in C2017_1 specifically.	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
1	C2017_3 C2017_1	Golden Sun Moth baseline survey	Conduct GSM baseline surveys and document results. Standard to be achieved: Documented data.	2021-Not sure if this has been done – need to check reporting? 2024- Baseline survey submitted	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
1 -10	C2017_1 C2017_2a C2017_3	Annual works plan	Landowner to develop annual works plan in consultation with TfN based on site inspections.	2021-Landholder has prepared property-scale management and monitoring plan – still in draft.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>



TRUST FOR
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Year	Site and Zone(s)	Management Actions to be completed	Description of Action (as per Deed of Covenant / OMP)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
			<p>Standard to be achieved: Annual works plan prepared and approved for implementation by TfN.</p>	<p>2024-Annual works planning meeting to be scheduled when GSM report is received most likely March 2024</p>	
1 - 10	C2017_1 C2017_2a, 2b & 2c C2017_3	Biomass control (pulse grazing)	<p>Undertake pulse grazing to reduce biomass in accordance with the respective OMP prescriptions.</p> <p>C2017_2b & 2c Stock exclusion between 1 June and 1 Jan within SHWTLP areas and 1 June and 1 October with NTGVVP areas.</p> <p>Standard to be achieved: Maintain open tussock grassland with 20 – 40% cover of inter-tussock space.</p>	<p>2021-Landholder reported some grazing has occurred to date, and plans for livestock to be introduced to the property in the coming weeks. As there is no internal fencing to support cell-grazing or pulse grazing, and sheep flock numbers will be relatively low, this is mostly a maintenance practice rather than concentrated biomass management practice at this point.</p> <p>2024- Very apparent on site that strategic grazing is being implemented. The eastern paddock containing part of C2017_2a, 2b and 3 had a heavy graze during 2023, and biomass levels are very good. The centre paddock containing part of C2017_2a,2b and 3 had a light graze 2023, with targeted burning and grazing planned for 2024. The western paddock containing C2017_1 and 2c, and part of 2b and 3, had a moderate graze 2023 and biomass levels are good.</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/></p>
1 -10	C2017_1 C2017_2a, 2b & 2c C2017_3	Ecological Burning	<p>Develop burn plan and undertake ecological burns in accordance with the respective OMP prescriptions.</p> <p>C2017_1 & C2017_3 Standard to be achieved: Medium intensity burn over 20% of the area. C2017_2a, 2b & 2c Standard to be achieved: Sufficient bare ground (20-40% cover across site); no loss of plant diversity due to burning regimes.</p>	<p>2021-On site: no burning has occurred to date. There are some legitimate issues that the landholder reported in getting a burn implemented; the most pressing being those related to getting insurance to cover the activity/personnel. Landholder has the expertise to conduct the burn and reported intention to work through the insurance issue and get some burning done, but will take some time.</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/></p>



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Year	Site and Zone(s)	Management Actions to be completed	Description of Action (as per Deed of Covenant / OMP)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
				<p>2024- Small patches throughout the covenant have clearly had ecological burning applied, and have responded very well. Planning is underway for ecological burning this year.</p>	
1-10	<p>C2017_1 C2017_2a, 2b & 2c C2017_3</p>	<p>Pests (Animals)-Rabbits, hares, foxes, cats)</p>	<p>Control pest animals within the offset (and surrounding area where possible). Standard to be achieved: No obvious ground disturbance by pest animals, no active warrens, dens or artificial harbor for pest animals.</p>	<p><i>2021-No apparent rabbit burrows or harbour observed during site visit; although it is likely that rabbits have some impact now or in the future. No apparent fox dens or harbour observed during site visit; although foxes (and cats) are assumed to visit and/or have some impact. A proper ty-scale pest animal program is required.</i></p> <p>2024- Nothing new to add.</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/></p>
1-10	<p>C2017_1 C2017_2a, 2b & 2c C2017_3</p>	<p>Pests (Plants)</p>	<p>Minimise occurrence of weeds, with a reduction in total cover across the offset site.</p> <p>C2017_1& C2017_3 Standard to be achieved: total perennial weed cover of no more than 2% with reduced cover of high threat weeds (listed); <1% perennial grassy weeds; no more than 2% broadleaf weeds; new and emerging weeds and woody weeds to <1% cover,</p> <p>C2017 2b & 2c Standard to be achieved: no increase in perennial grass and herbaceous (combined) weed cover (cover at inception 35%), woody weeds and new and emerging weeds to <1% cover.</p> <p>C2017_ 2a Standard to be achieved: <5% combined cover of high threat weeds; no increase in combined cover of low threat weeds (3%).</p>	<p>2021-All sites: Minimal weed control has been undertaken to date. Some thistle control was evident during site assessment. Refer to table below for further detail. Recommended priority weed control actions in the short term are: Hand remove/selectively spray Toowoomba Canary-grass, Yorkshire Fog, Paspalum, Cocksfoot and Spear Thistle.</p> <p>2024 C2017_1 & 3 – Observed perennial weed cover still greater than 2%, and perennial gassy weeds still greater than 1% but apparent improvement from last stewardship visit. Broadleaf weeds present include Salsify <i>Tragopogon porrifolius</i> Spear Thistle <i>Cirsium vulgare</i>, Prickly Lettuce <i>Lactuca serriola</i> and Flatweed <i>Hypochaeris radicata</i> – above 2%. Woody, and new and emerging <1%. C2017_2b&2c – Observed perennial grass and herbaceous weed cover combined was less</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/></p>



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Year	Site and Zone(s)	Management Actions to be completed	Description of Action (as per Deed of Covenant / OMP)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
				<p>than 35%; some patches are likely a little higher, other patches are much lower. Woody and new and emerging <1%.</p> <p>C2017_2a- Weed cover variable across this large area, which spans two paddocks and as such is subject to different grazing regimes. There are areas with high cover of 'high threat weeds' Yorkshire Fog, Phalaris and Flatweed (30%+-) but other areas with low cover (<5%). Overall, currently still above the desired target of <5%. Cover of low threat weeds is currently 3%+- and includes Prickly Lettuce (many individuals) and annual grasses. Some regenerating African Boxthorn in one discrete area, actively being managed. New and emerging – Fleabane <i>Conyza bonariensis</i> possibly brought in with sheep.</p>	
		<p>Other threat amelioration actions (e.g. erosion, soil disturbance, recreational damage, salinity etc.)</p>	<p>n/a</p>	<p>2021-n/a</p> <p>2024- nothing to add.</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>N/A <input checked="" type="checkbox"/></p>
<p>1 -10</p>	<p>C2017_1 C2017_2a, 2b & 2c C2017_3</p>	<p>Site Inspections</p>	<p>Conduct regular site inspections at a frequency to ensure management activities are conducted as prescribed.</p> <p>Standard to be achieved: Reporting of management activities as agreed.</p>	<p>2021-Met with landholder on site. Landholder obviously inspects site and is present often.</p> <p>2024- Met with land manager and another staff member on site. Land manager knows the site very well. Both were undertaking weed control at the time.</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>N/A <input type="checkbox"/></p>



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Year	Site and Zone(s)	Management Actions to be completed	Description of Action (as per Deed of Covenant / OMP)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
2 -10	C2017_1 C2017_2a, 2b & 2c C2017_3	Vegetation and Striped Legless Lizard (SLL) monitoring	Undertake vegetation (and SLL for C2017_1 & C2017_3) monitoring and refine management actions based on results. Standard to be achieved: Results and agreed performance measures reported.	2021-Not up to year 2 yet, still in baseline data collection and monitoring set up. 2024-KT requested copy of Vegetation and SSL report from Emma, log book shows these actions were completed by EcoAerial Environmental Consulting on 26/09/2022, 12/10/2022, 19/10/2022 03/11/2022 ,18/11/2022, 30/11/2022 & 08/12/2022	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
2 - 10	2017_3 C2017_1	Golden Sun Moth monitoring	Zoologist to conduct monitoring surveys in year 2, 4, 6, 8, 10. Standard to be achieved: Results documented.	2021-Not up to year 2 yet, still in baseline data collection and monitoring set up. 2024- 2017_1 - This is Year 5 GSM monitoring not required 2027_3 – This is Year 3 GSM monitoring not required	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>

Introduced Plant Species

New and emerging weeds should also be documented here

*The targets of either to control or eliminate should be reached by the end of the 10 year offset period

Cover Abundance (CA)

Where it is necessary to indicate the area of covenant covered by a feature, use the following scale:

- cover = <1%, eliminated
- + cover = <5%, few individuals
- 1 cover = <5%, several to many individuals
- 2 cover = 5 - 20%, any number of individuals
- 3 cover = >20 - <50%, any number of individuals
- 4 cover = 50 - <75%, any number of individuals
- 5 cover = 75-100%, any number of individuals

Year	Site and Zone(s)	Species	Baseline Cover Abundance	Description of Action (as per Deed of Covenant)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
1 – 10	C2017_1 C2017_2a, 2b & 2c C2017_3	Annual grasses <i>Vulpia sp.</i> , <i>Briza sp.</i> , <i>Bromus sp.</i> , <i>Aira sp.</i> <i>Lagurus sp.</i>	10% (combined)	Controlled pulse grazing by sheep to prevent seed set. Spot spraying appropriate herbicide. Use of weed burners when/where appropriate. Standard to be achieved: <5% cover by year 10 (less than 10% for C2017_2a).	2021-Annual grasses were notable the site. At this early stage in the management agreement, concentrated effort on high threat perennial grasses and thistles, and biomass management is a priority rather than annual grasses. 2024- Much of the annual grasses had died off being late summer, however much of the organic matter could be identified as annual grasses. Likely to still be above 5% and 10% respectively. Strategic grazing and ecological mosaic burning is clearly being carried out, and this can be refined to target the annuals once the more high threat perennials are under control.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
1-10	C2017_3 C2017_1 C2017_2b & 2c	Perennial grasses <i>Canary-grass Phalaris sp.</i> <i>Canary-grass Phalaris sp.</i> <i>Cocksfoot Dactylis glomerata</i>	2% 5% 5% <1%	Spot spraying with appropriate herbicide and /or use pulse grazing to prevent seed set and spread. C2017_3, C2017_1 Standard to be achieved: <1% cover by year 10.	2021-Scattered individuals and small patches of Canary-grass, Yorkshire Fog and Cocksfoot were observed during the site visit. Recommend that these are a priority for control over next 1 – 2 years (as well as Chilean Needle-grass in 2b). 2024	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>



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Year	Site and Zone(s)	Species	Baseline Cover Abundance	Description of Action (as per Deed of Covenant)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
	C2017_2a	Chilean Needle-grass <i>Nassella neesiana</i> (2b only) Canary-grass <i>Phalaris sp.</i> Cocksfoot <i>Dactylis glomerata</i> Yorkshire Fog <i>Holcus lanatus</i> Brown-top Bent <i>Agrostis capillaris</i> Canary-grass <i>Phalaris sp.</i> Cocksfoot <i>Dactylis glomerata</i> Yorkshire Fog <i>Holcus lanatus</i>	8% 1% 10% 5% 4% 2% 1%	C2017_2b & 2c Standard to be achieved: No increase in perennial grass and herbaceous (combined) weed cover from inception (inception being 35%) C2017_2a Standard to be achieved: <5% combined cover (including Spear Thistle – below)	C2017_3, C2017_1 – Observed Phalaris cover was 5-10%, Cocksfoot <5%. C2017_2b & 2c – Observed cover of perennial grassy weeds not greater than each species' respective cover at inception. C2017_2a - Observed cover of Phalaris and Yorkshire Fog notably higher than 5%, particularly the Yorkshire Fog.	
1-10	C2017_3 C2017_1 C2017_2b & 2c C2017_2a	Herbaceous Spear Thistle <i>Cirsium vulgare</i> Spear Thistle <i>Cirsium vulgare</i> Spear Thistle <i>Cirsium vulgare</i> Ribwort <i>Plantago lanceolata</i> Spear Thistle <i>Cirsium vulgare</i> Onion Grass <i>Romulea rosea</i> Flatweed <i>Hypochaeris radicata</i> Hairy Hawkbit <i>Leontodon taraxacoides</i> Prickly Lettuce <i>Lactuca serriola</i>	1% <1% <1% 2% 1% 3% (combined)	Spot spraying with appropriate herbicide (chipping out is also an option). C2017_3, C2017_1 Standard to be achieved: <1% cover by year 10. C2017_2b & 2c Standard to be achieved: No increase in perennial grass and herbaceous (combined) weed cover from inception (inception being 35%) C2017_2a Standard to be achieved: Spear Thistle <5% combined cover (including perennial grasses above) Others no increase in combined cover (i.e. 3%)	<i>2021-Some Spear Thistle had been treated prior to the site visit, but many had already, or continued to flower and / or new plants had emerged. Recommend that this is a priority for control over next 1-2 years.</i> <i>Ribwort, Onion Grass, Flatweed, Hairy Hawkbit and Prickly Lettuce were all observed during visit.</i> 2024 C2017_3, C2017_1 – Spear Thistle is common throughout, although not high in cover (1-2%+-). Spear Thistle has clearly been targeted for control but continues to emerge. Flatweed is very high in the eastern C2017_3 (10%+-). Salsify and Prickly Lettuce also occur: Salsify is low in abundance, Prickly Lettuce is high (but cover is likely to still be low).	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>



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Year	Site and Zone(s)	Species	Baseline Cover Abundance	Description of Action (as per Deed of Covenant)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
					<p>C2017_2b & 2c - As above.</p> <p>C2017_2a – Also as above with addition of Fleabane – a number of individuals, cover low.</p>	
1-10	C2017_1 C2017_2a, 2b & 2c C2017_3	Woody weeds C2017a Swamp Mallet <i>Eucalyptus spathulata</i> African Box-thorn <i>Lycium ferocissimum</i>	n/a 1% <1%	Standard to be achieved: Eliminate woody weeds	<i>2021-No woody weeds observed during site visit.</i> 2024 African Boxthorn in one discrete area in C2017a , actively being managed, less than 1% cover.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
1-10	C2017_1 C2017_2a, 2b & 2c C2017_3	New and emerging weeds	n/a	Standard to be achieved: <1% of new and emerging weeds.	<i>2021-Very unlikely to be new or emerging, rather more likely to have been omitted from the respective offset site ecological reports/OMP, the following weed species are obviously present and require proactive management across the property:</i> <ul style="list-style-type: none"> • <i>Paspalum</i> 2024- Paspalum still present, but proactively being controlled. Prickly Lettuce is present across more than just C2017_2a, sometimes in high numbers, but arguably still low cover. Salsify and Fleabane are newly noted high threat weeds. As well as a small incursion of South African	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>



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Year	Site and Zone(s)	Species	Baseline Cover Abundance	Description of Action (as per Deed of Covenant)	Comments and Observations	Has the action been satisfactorily undertaken? (Office use only)
					Weed-orchid, which is marked out and being actively controlled.	

[Appendix 8: Karabeal offset site, Year 8 \(2025\) annual report](#)

Department of Environment Land, Water & Planning Annual Report Form

Enter Landowner name(s) here:
M.G. Pastoral Co.P/L

Enter management year here: Year 8

Management Agreement: **BB- 3005 LA0 1**

Site Code: **Karabeal Sites : 1 & 2**

Site-Zone	Standard to be achieved	Management action description	Timing	Action Completed (Yes/No)	Description of Actions and observed outcomes (Include or attach evidence of actions completed / comments / observed outcomes)
All Sites	Maintain boundary fences to stockproof condition.	Regular visual inspections throughout the year of the boundary fences to maintain good stockproof condition.	Ongoing	Yes	Contractor and Land Owner regularly inspect the boundary fences. Minor repairs continue to be undertaken as required on some older sections of the boundary fences. There was no visual evidence of any livestock breaching / entering the offset sites throughout Yr. 8
All Sites	Erect a stockproof fence around the 'non-BB offset' site approx. 50 m's from the top of the creek bank for approx. 750 m's as depicted on the approved BB site plan.	A fence consisting of star pickets, 5 x plain wires and 'ring lock' sheep meshing, approx. 750 m's in length is to be constructed in accordance with the dimensions and bearings depicted on the approved BB site plan – site 1.	Year 1 & 2	Yes	GPS'd (surveyed) and pegging completed in Year 1. Fence was erected in totality in year 2. Nth. / Sth. Section running up to McIntyres Crossing Road was dismantled and re-built on GPS marks in Feb. '22.
Sites 1 & 2	Woody weeds to be eliminated	Cut & paint adult plants and spot spray seedlings with approved herbicides and monitor for new emerging weeds.	Ongoing, autumn and Spring	Yes, but ongoing	Woody weeds continue to be monitored and where present eradicated with cut and paste method with suitable herbicides. There were some remnant Honey Bracelet Myrtles with the creek area - 1M. These trees were removed with chainsaws and stumps immediately painted with suitable herbicides. The debris were removed from the offset site. We have all but got on top of the African Boxthorn with no shrubs visible this year.
Sites 1 & 2	Control of herbaceous weeds to be lesser level than when the BB agreement was executed.	Monitor and control new and emerging herbaceous weeds in both sites and treat weeds before the plant has flowered and set seed.	Autumn & Spring (early Summer)	Yes, but requires ongoing attention and action	Continuous work of spraying Yorkshire Fog, Phalaris and other visible herbaceous weeds was undertaken, using back pack spot spraying on foot, by contractors.

Site-Zone	Standard to be achieved	Management action description	Timing	Action Completed (Yes/No)	Description of Actions and observed outcomes (include or attach evidence of actions completed / comments / observed outcomes)
Sites 1 & 2	Pest animals (rabbits & foxes) to be monitored and controlled	Regular visual inspections across the entirety of the sites for evidence of pest animal presence; control and eradication where required.	Ongoing	Yes,	Contractor and Land Owner regularly inspected both sites throughout the year. There were visible 'new' rabbit warrens or fox dens. There were no visible rabbit or fox droppings within the sites.
Sites 1 & 2	Biomass management for high rainfall plains grasslands.	All areas except 11M, to be burnt in a mosaic pattern, with one third to one fifth of the site to be burnt annually, in accordance with BB info. sheet # 14.	Ongoing	Yes,	This year the Stn. West corner of the property was burnt, on 27/5/24. The contractor reported a good burn; see pictures attached. 6 m protection firebreaks were mown within the setback of the offset site, inside the fence line, prior to burning.
Site 1 & 2	General	Noticeable soil disturbance, in various sections of the overall property.	Ongoing	TBC	There has been soil disturbance of topsoil in sections of both sites by a ground based rodent. It is still unclear if it is native bush or swamp rats. Previous advice from Nature Advisory's, Chris Dunk, suggested that this may be beneficial as the disturbance / eating of onion grass orbs / corns. We continue to monitor and if required will install 'trail cans' to identify. This will be a project for '25-26.
Sites 1 & 2	General	Following discussion with the Dept. in June, '22, the LO engaged Nature Advisory to undertake a field inspection & provide a 'review / status' report of both sites. The report (finally received in March '23) was quite extensive and provided direction and advice for future actions.	Ongoing	TBC	Work continues with this 'review' both with advice from Nature Advisory and input / feedback and approval from DEECA.

Site-Zone	Management Action	Management action description	Timing	Completed (Yes/No)	Include or attach supporting evidence of actions completed / comments / observations
All	<p>Annual reporting</p> <p>Annual report is signed, dated and submitted by the landowner at least 1 month before the anniversary date of the agreement</p> <p>The annual report is a useful opportunity to make comprehensive comments and observations, giving a picture of the current condition of the site(s), issues identified, works undertaken and actions still required. You are encouraged to create a separate report to include in your annual reporting each year that captures this detailed information. The benefits of monitoring your vegetation condition and identifying issues and management undertaken, is that it aids you to gauge the success of management on the condition of native vegetation over time.</p> <p>The Department is also able to use this information to assist with the assessment of your compliance with the agreement and provides us with useful information and data for future management advice.</p> <p>Obligations of the landowner (compliance with section 6 of the Landowner Agreement) have been met, and I have read, signed, dated and submitted the obligations form with the annual report.</p>	<p>Prepare and submit an annual report providing evidence of works carried out.</p> <p>Where the actions were not carried out provided evidence as to the reason why.</p> <p>Include supporting evidence by:</p> <ul style="list-style-type: none"> ↑ detailed written observations & additional report ↑ photo point monitoring ↑ map of zones & photo points ↑ photographs of works undertaken ↑ receipts/invoices for materials & works carried out, including by contractors ↑ log books of works carried out ↑ obligations of the landowner form ↑ payment method is correct ↑ Receipts of seeds / seedlings ordered or purchased including a table/list of the species, numbers of each species (can estimate if using seeds), provenance ↑ Site log - table/list of numbers of species planted/recruiting or germinated, including: numbers of each species by life form that are present/survived and/or were replaced for that year 	<p>Submit at least 1 month prior to agreement anniversary date</p>		<p>obligations of the landowner form</p> <p>where applicable: payment method is correct</p> <p>detailed written observations & additional report</p> <p>photo point monitoring</p> <p>map of zones & photo points</p> <p>photographs of works undertaken</p> <p>receipts/invoices for works carried out, including by contractors</p> <p>log books of works carried out</p> <p>Receipts seeds/seedlings, provenance, table of species list & numbers</p> <p>Site log / table of plantings/germination & survival numbers by life form</p>

I hereby declare that the supplied information is accurate and complies with reporting requirements under General Conditions under the Second Schedule of the DELWP Management Agreement.

Signed:



Date: 18 / 12 / 25

G. R. Hewitt trading as

Small Farm Contracting Pty Ltd

A.B.N.: 30 608 262 942

POSTAL ADDRESS:
P.O. BOX 61, LEOPOLD 3224

TRADING ADDRESS:
30 Como Road, LEOPOLD 3224

Tax Invoice

Ph: (03) 5250 1693
Mob: 0417 044 464
Fax: (03) 5250 2743

Online:
www.smallfarmcontracting.com.au
Email: grahamrhewitt@gmail.com

Bill To:

MG Pastoral Co.Pty Ltd DFC#041
Level 4,
863 High Street
Armadale Vic 3143

Invoice #: 00002938
Date: 29/05/2024

Page: 1

COMMERCIAL OPERATORS REGISTERED LICENCE NO. 126

DATE	DESCRIPTION	AMOUNT	CODE
27/05/2024	<p>MG Pastoral Co.Pty.Ltd DFC #041 Completion date of burning program of the south western paddock at 'Karabeal', services supplied by the Small Farm Contracting team. Work involved, after an aborted attempt due to intense fog, involved Registration again with State Emergency services, ESTA, Ref. No.14595; creation of safe firebreaks on south-eastern boundaries; management of safe burning project with team and securing of extinguished site following. Photographs have been forwarded to Marshall Dennis.</p> <p>Always committed to best practice and optimal outcomes, Small Farm Contracting works tirelessly on your important and significant projects.</p> <p>Kind regards, Graham Hewitt Manager</p>	\$8,668.00	GST
Payment by Cheque to Postal Address or Electronic Funds Transfer (EFT) ***PLEASE NOTE: NEW BANK DETAILS BELOW***		GST:	\$788.00
EFT DETAILS:		Total Inc GST:	\$8,668.00
Account Name: Small Farm Contracting		Amount Applied:	\$0.00
Bank: Bendigo Bank		Balance Due:	\$8,668.00
BSB: 633-108			
ACCOUNT NUMBER 1559 - 95590			

G. R. Hewitt trading as

Small Farm Contracting Pty Ltd

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Online:
www.smallfarmcontracting.com.au
Email: grahamrhewitt@gmail.com

Bill To:

MG Pastoral Co.Pty Ltd DFC#041
Level 4,
863 High Street
Armadale Vic 3143

Invoice #: 00002934
Date: 12/05/2024

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COMMERCIAL OPERATORS REGISTERED LICENCE NO. 126

DATE	DESCRIPTION	AMOUNT	CODE
29/04/2024	<p>MG PASTORAL Co. Pty.Ltd DFC#041 Firebreaks at 'Karabeal' Property prior to planned burn. Work involved mowing 6 metre breaks around site at south-western corner, services supplied by the Small Farm Contracting team.</p> <p>Always committed to best practice and positive outcomes, the Small Farm Contracting team values the opportunities to contribute to the management of "karabeal" .</p> <p>Kind regards, Graham Hewitt Manager</p>	\$1,782.00	GST
Payment by Cheque to Postal Address or Electronic Funds Transfer (EFT) ***PLEASE NOTE: NEW BANK DETAILS BELOW***		GST:	\$162.00
EFT DETAILS: Account Name: Small Farm Contracting Bank: Bendigo Bank BSB: 633-108 ACCOUNT NUMBER 1559 - 95590		Total Inc GST:	\$1,782.00
		Amount Applied:	\$0.00
		Balance Due:	\$1,782.00

Marshall G. Dennis

From: Marshall G. Dennis
Sent: Thursday, 18 December 2025 10:36 AM
To: Marshall G. Dennis



Sent from my iPhone



Marshall G. Dennis

From: Marshall G. Dennis
Sent: Thursday, 18 December 2025 10:37 AM
To: Marshall G. Dennis



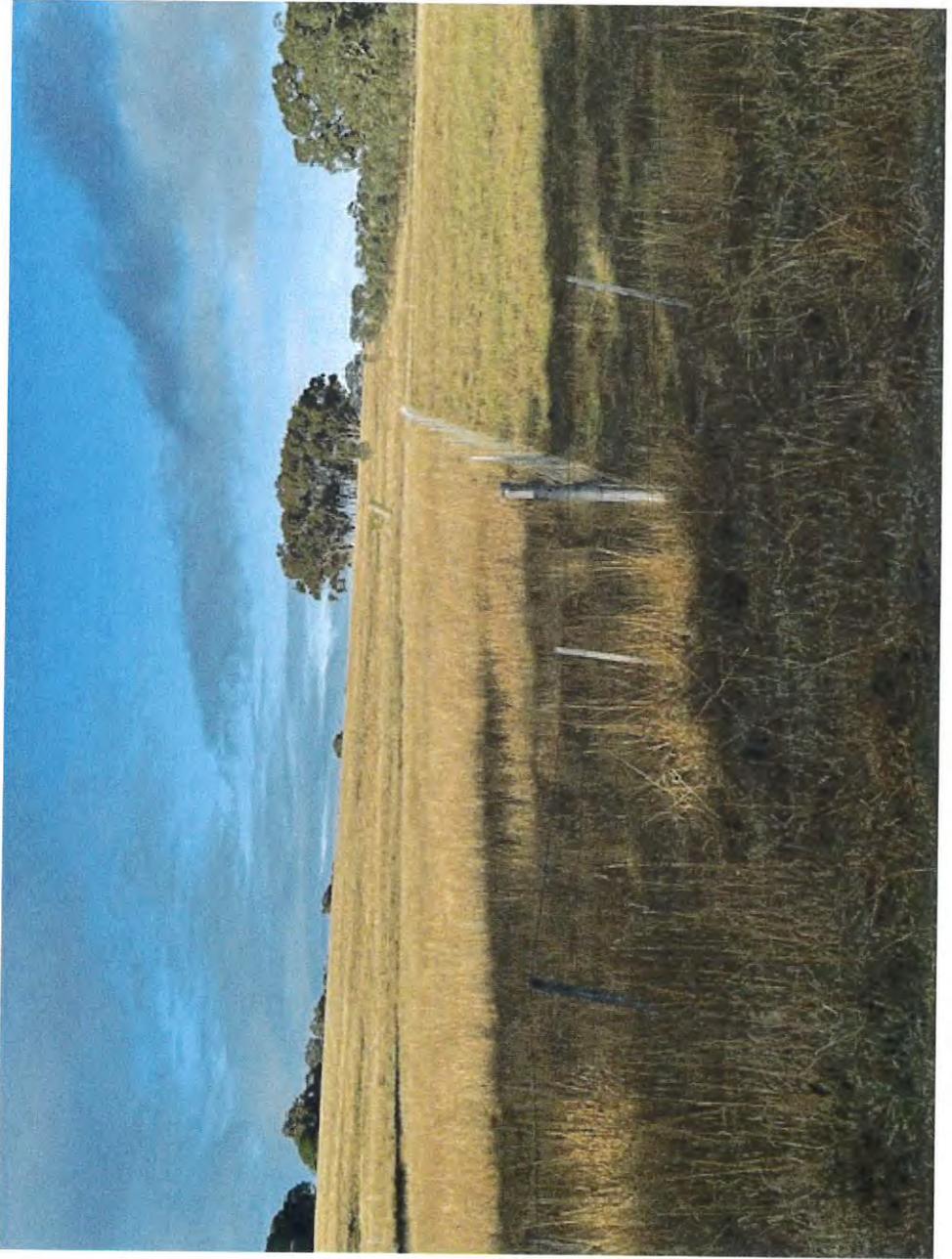
Sent from my iPhone

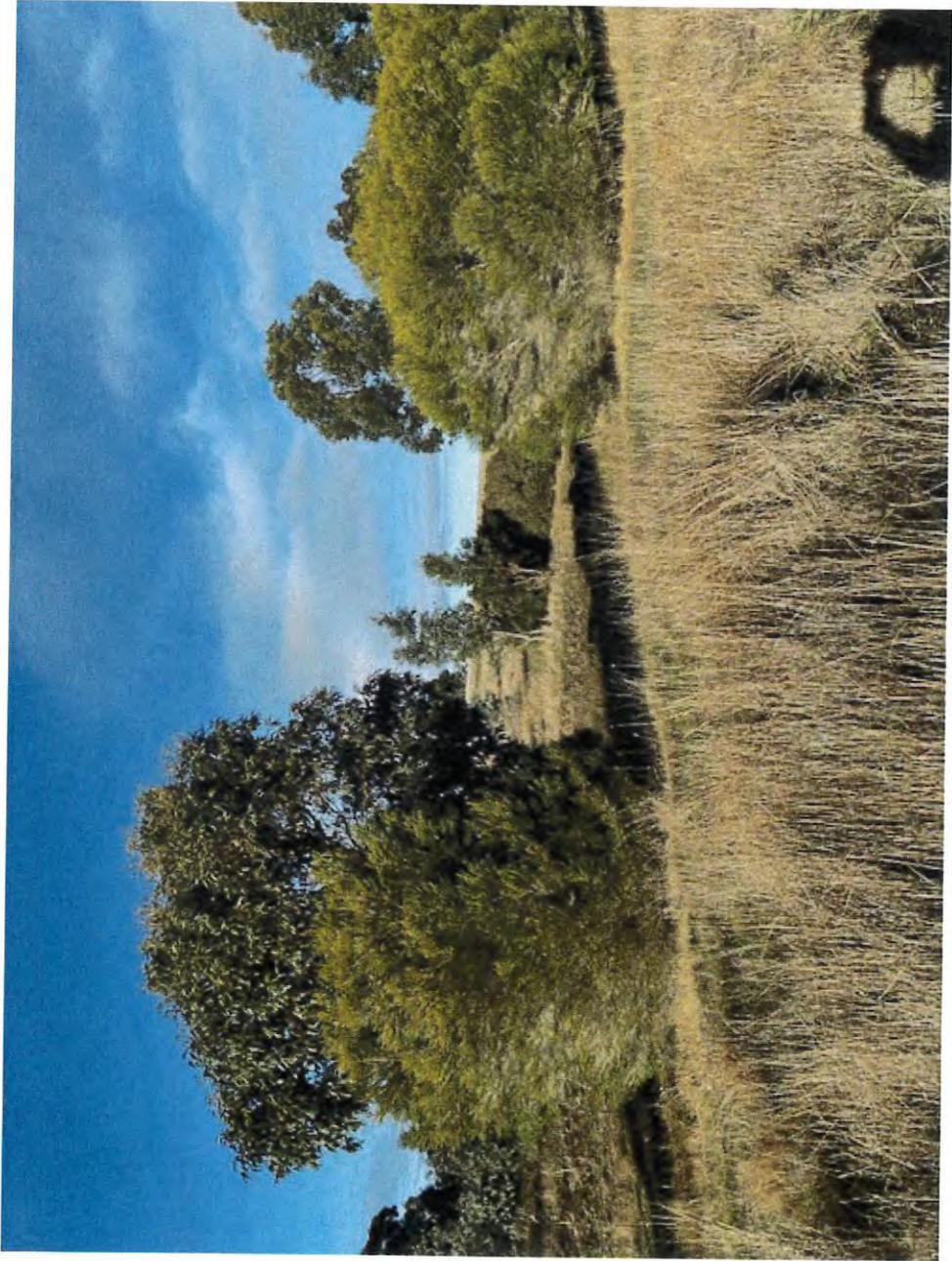
Marshall G. Dennis

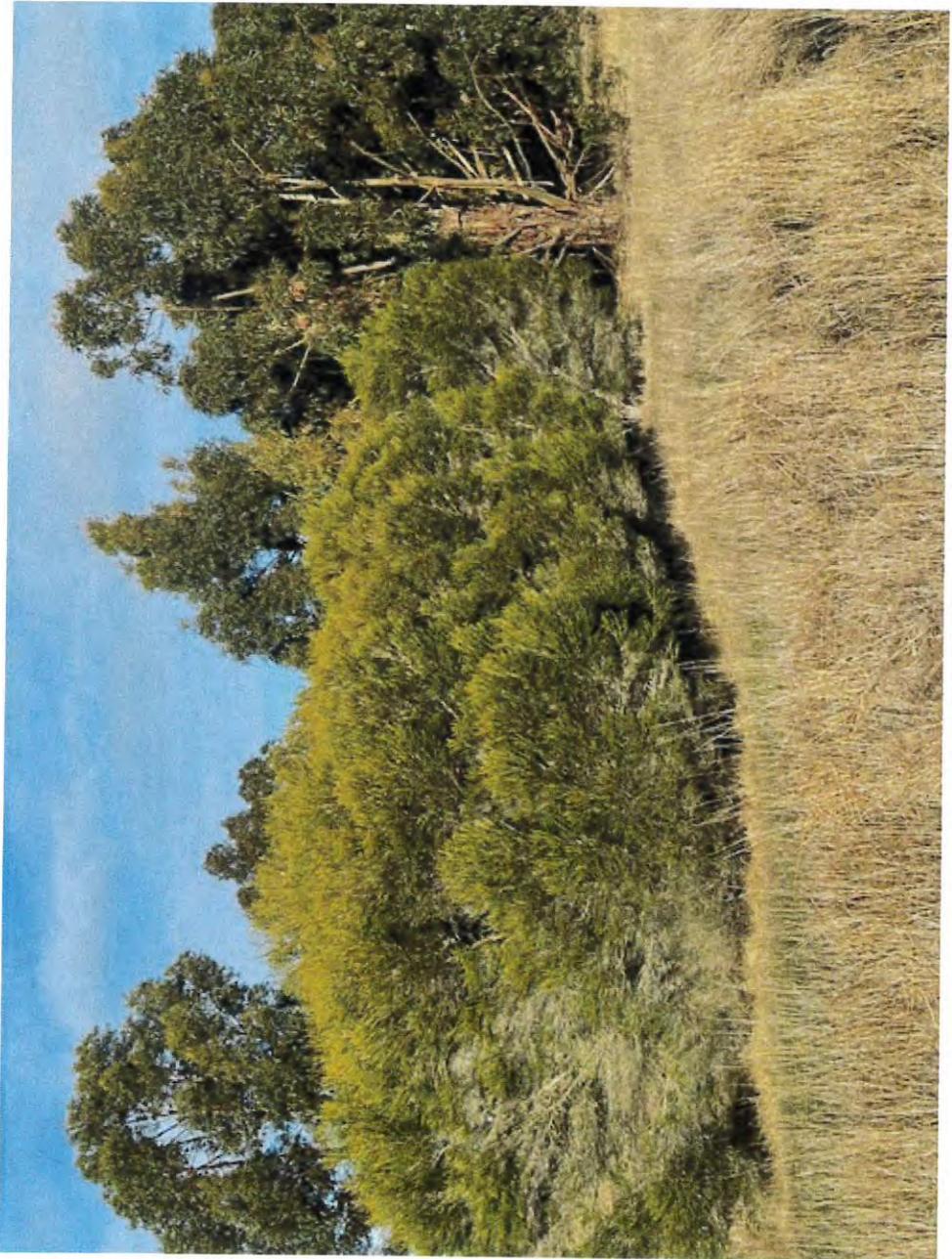
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To: Marshall G. Dennis

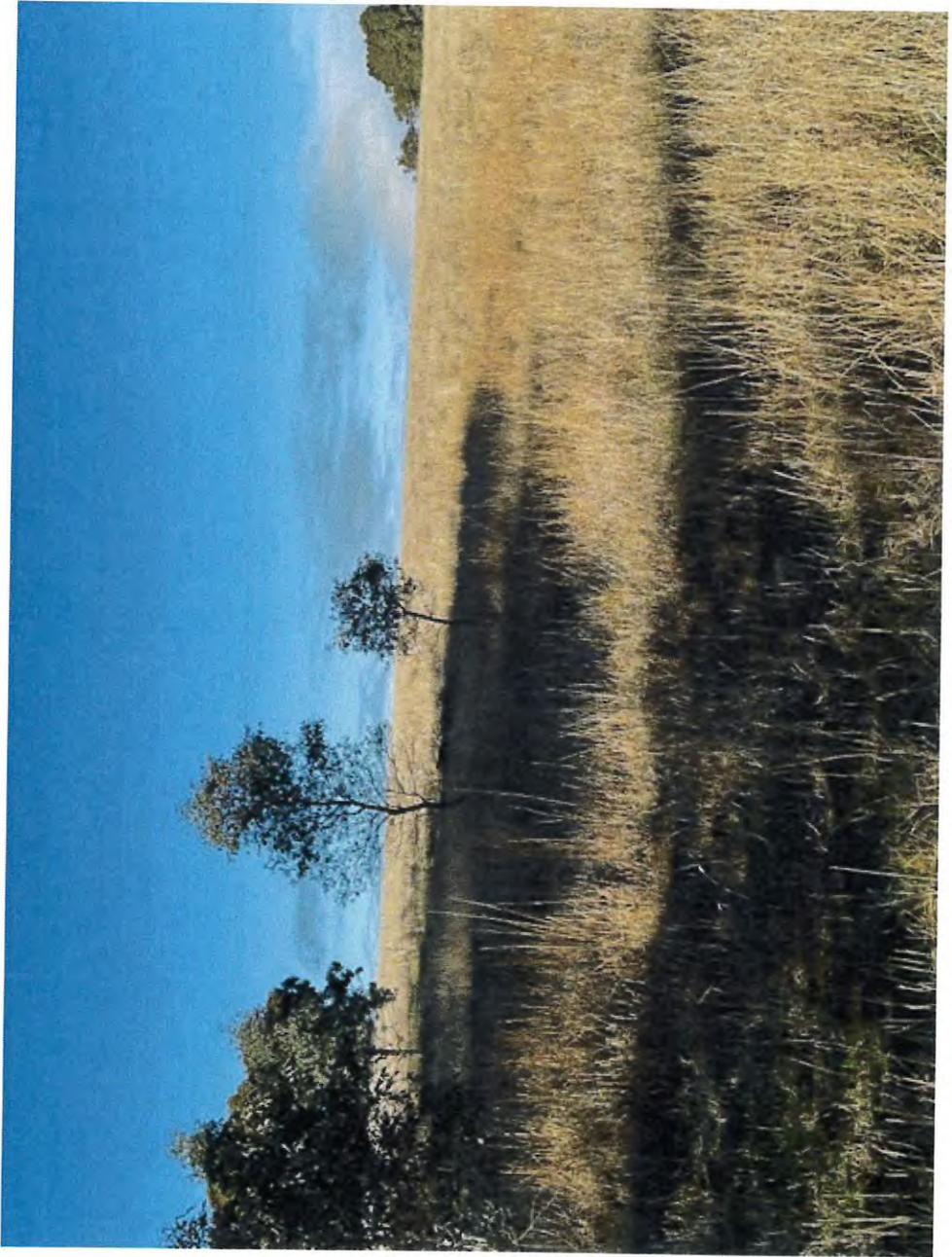


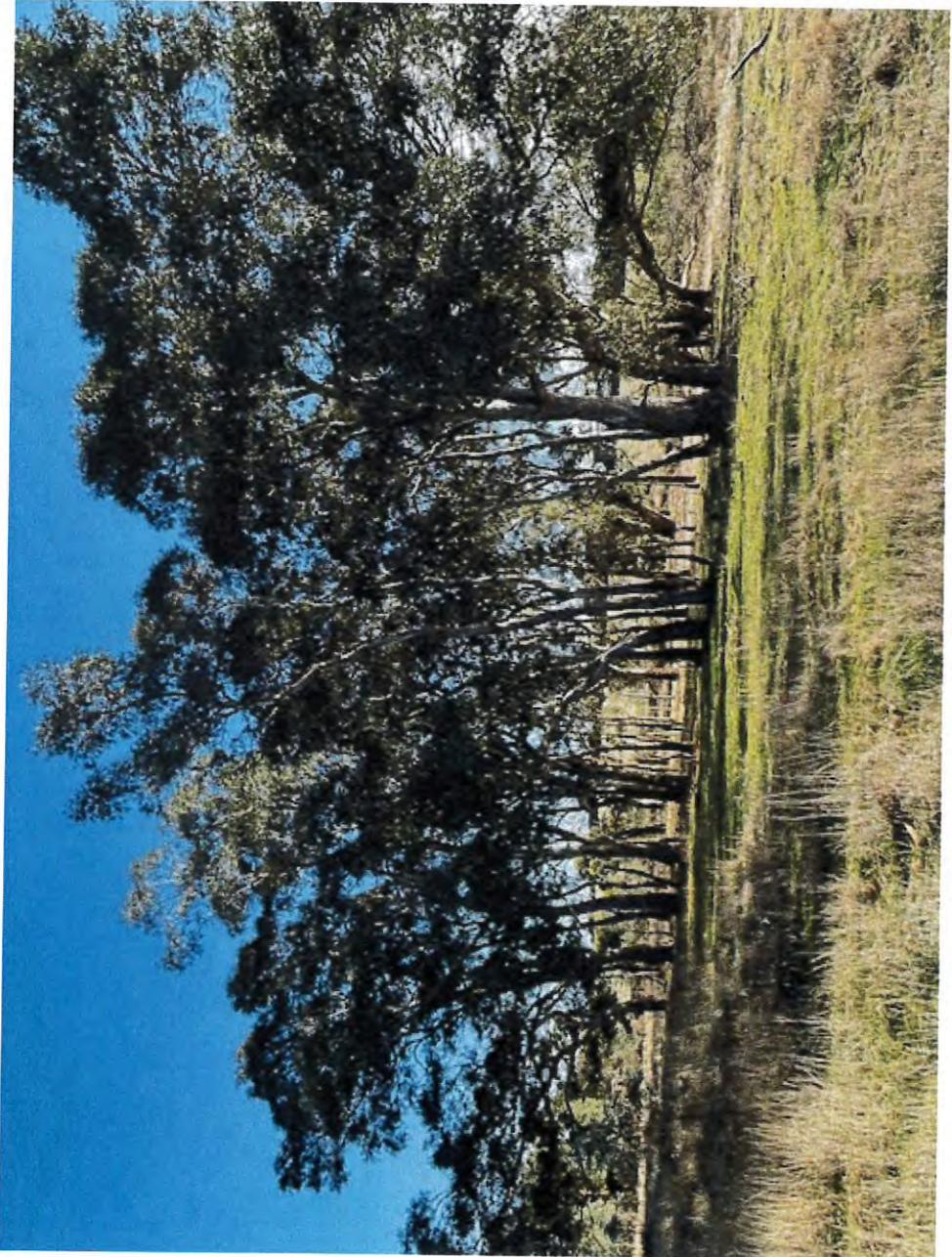
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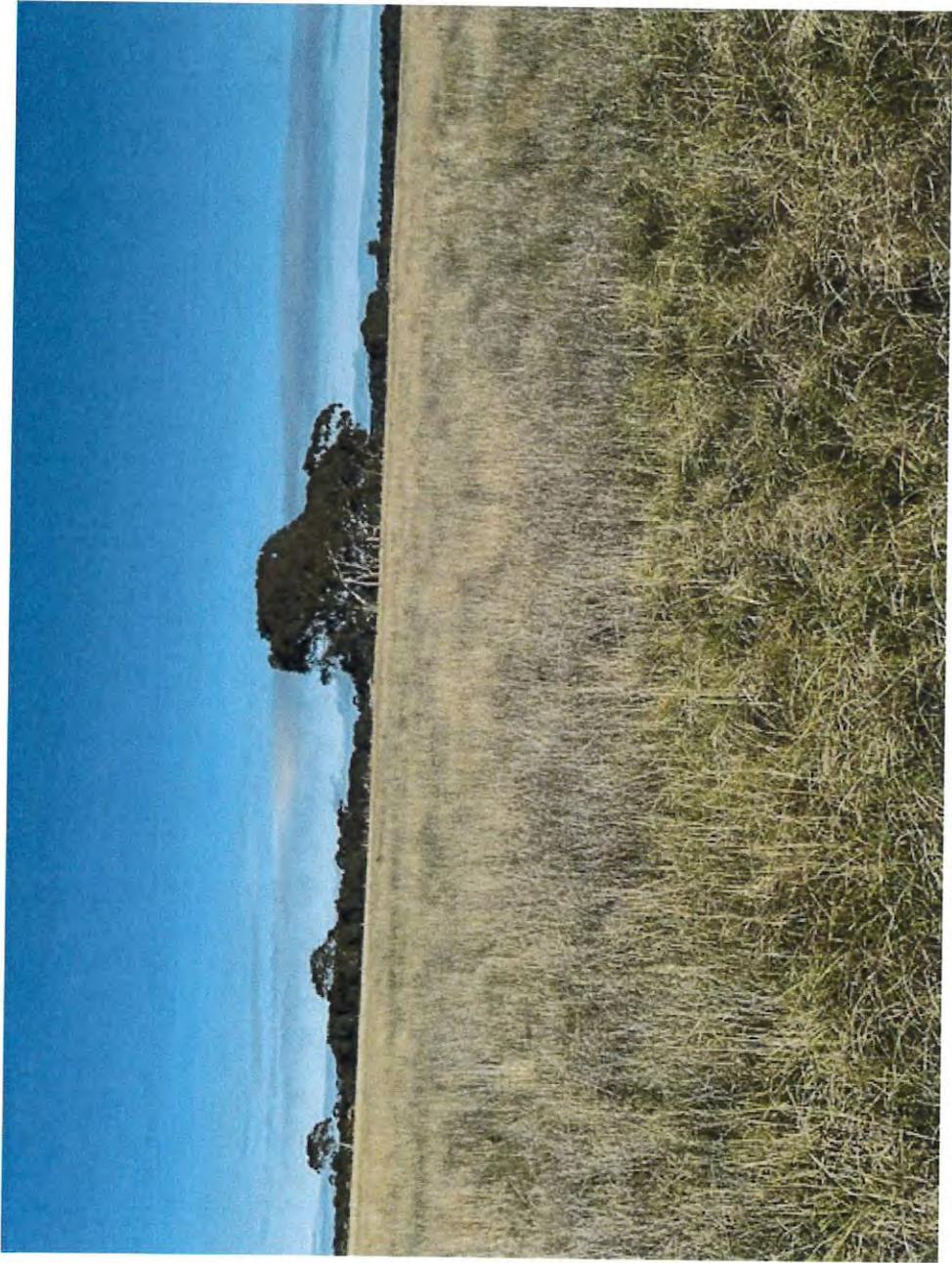


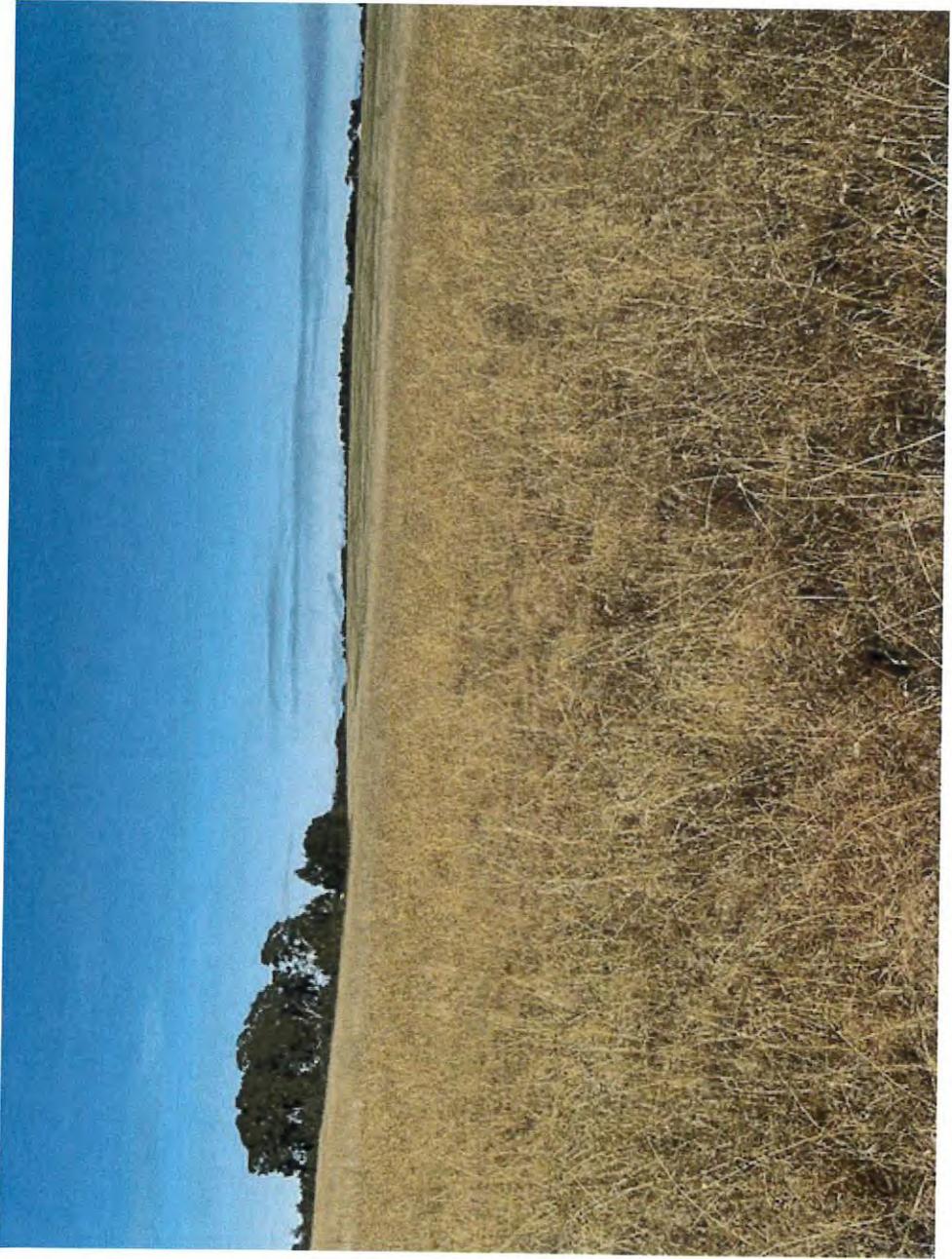


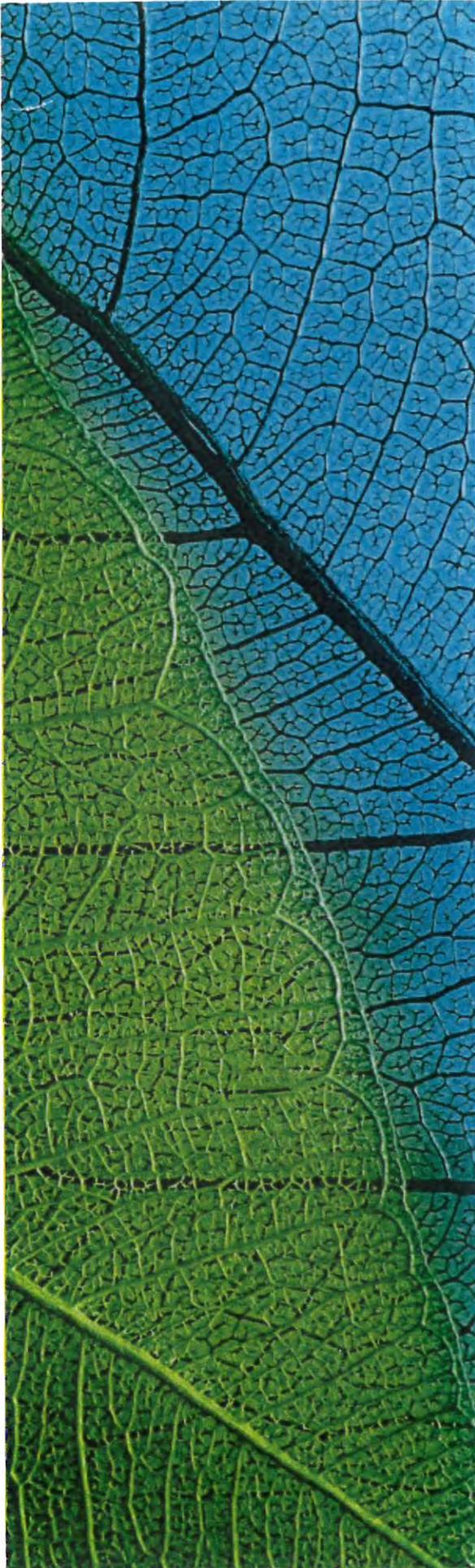












Modeina Estate Precinct 2, Project Area A1 & B

Karabeal Offset Compliance Report – Year 8

**Prepared for DFC (Project
Management) Pty Ltd**

June 2025
Report No. 7045.71 (3.0)



**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

1. Introduction

DFC (Project Management) Pty Ltd engaged Nature Advisory Pty Ltd to conduct a monitoring assessment of a 55.336 ha offset site in Karabeal. The specific area investigated, referred to herein as the 'study area' (Figure 1), comprised a portion of the property at R W McIntyres Road, Karabeal (SP: 71\PP3371 & 72\PP3371).

This report addresses the compliance of management actions prescribed in the approved offset management plan (BL&A 2017a; BL&A 2017b) to account for the loss of Matters of National Environmental Significance (MNES) associated with Project Areas A1 & B of the Modaina Precinct 2 development following an assessment under the EPBC Act (EPBC 2011/6063).

Specifically, the scope of the investigation included the following:

- Review of compliance requirements and background information including the following:

- Fencing
- Weed Control
- Pest animal control
- Biomass management

This report was prepared by a team from Nature Advisory comprising Cody Hajnal (Botanist), Neassa Fritchley (Botanist) Merinda Day-Smith (Senior Botanist and Project Manager) and Suzie Moss (Botanist and Project Manager).

2.5. Actions required

Based on the results of the Year 8 monitoring assessment, it is recommended that management actions continue as outlined in the Offset Management Plan. Current management actions to meet the obligations under the OMP include the following:

Compliance requirement	OMP obligation	Management actions to be undertaken	Report Section
Property boundary	Maintain fencing around boundary of property in good condition. Where repairs are required, these are to be undertaken according to the standards detailed in information sheet 12 - Standards for Management – Fencing.	<ul style="list-style-type: none"> General maintenance of fencing around the entire perimeter of the property to maintain suitable stock exclusion. Replace and upgrade the fencing where necessary in accordance with the standards detailed in information sheet 12. ✓ 	Section 2.6
Site boundary	Erect fencing on credit site northwest boundary according to the standards detailed in information sheet 12 - Standards for Management – Fencing and maintain in good condition.	<ul style="list-style-type: none"> Completed. However, the fence needs to be realigned to include the entirety of Habitat Zone 1L, as the current fence encroaches upon areas of the credit site. General maintenance of this fencing is to continue to maintain suitable stock exclusion. 	Section 2.6
Weed Control	All woody weeds in the credit site must be eliminated.	<ul style="list-style-type: none"> Continue control of woody weeds using appropriate methods (see Table 2) to meet elimination targets. 	Section 2.7.1
Weed Control	Monitoring for new and emerging woody weeds should be conducted throughout the year for the term of the agreement, and any new and emerging woody weeds eliminated.	<ul style="list-style-type: none"> Continue to monitor for new and emerging woody weeds across the offset site throughout the year Continue control of woody weeds using appropriate methods (see Table 2) to meet elimination targets. 	Section 2.7.2
Weed Control	Ensure that herbaceous weed cover does not increase beyond current levels.	<ul style="list-style-type: none"> Increase control of herbaceous weeds using appropriate methods (see Table 3) to ensure total cover of herbaceous weeds decreases below baseline assessment levels (Table 4). Implement additional control measures (e.g. additional burns and/or ecological grazing) after consultation with the relevant authorities. 	Section 2.7.2

Compliance requirement	OMP obligation	Management actions to be undertaken	Report Section
Annual Reporting	Prepare and submit an annual report to the Responsible Authority that is a signatory to the on-title agreement	<ul style="list-style-type: none"> ▪ Annual report is signed, dated and submitted by the landowner no more than 2 months following the anniversary date of the agreement. ▪ Report provides enough detail in the form of written comments and supporting evidence that an assessor can easily determine the completion of / progress against the commitments for each zone. 	N/A

2.7. Weeds

2.7.1. Woody weeds

No African Box-thorn was observed within the study area suggesting that monitoring and control measures have worked to effectively eliminate this woody weed at present.

A number of planted woody species that are not indigenous to the local area were recorded during the current assessment (primarily within Habitat Zone 1M and 2E) and are to be considered weeds for the purposes of the OMP. These species along with the method of control are listed in Table 2.

Table 2: Woody weeds to be eliminated – method and timing

Common name	Scientific name	Habitat zone(s)	Method	Timing	Current cover (May 2025)	Required cover	Notes
African Box-thorn	<i>Lycium ferocissimum</i>	N/A	<ul style="list-style-type: none"> ▪ <u>Cut and paint</u> adult plants with an appropriate herbicide. ▪ <u>Spot-spray</u> seedlings with appropriate herbicide. 	Autumn and spring	0%	0%	No individuals observed.
Blue Gum	<i>Southern Blue-gum</i>	1M					
Giant Honey-myrtle	<i>Melaleuca armillaris subsp. armillaris</i>	1M		Recruiting.			
Honey-myrtle	<i>Melaleuca spp.</i>	1M					
Large-fruit Yellow-gum	<i>Eucalyptus leucoxylon subsp. megalocarpa</i>	1M					
Spotted Gum	<i>Corymbia maculata</i>	2E					
Other woody weeds		All	<ul style="list-style-type: none"> ▪ Monitor and eliminate all new and emerging woody weeds. 	Ongoing			

2.7.2. Herbaceous weeds

Herbaceous weed cover was high across many of the habitat zones, with almost all (excluding HZ 1G & 1M) increasing since the baseline assessment. This suggests that significant control of herbaceous weeds is needed across the offset site to meet the obligations of the OMP.

Toowoomba Canary-grass was the dominant weed across the offset site. As the total cover of all herbaceous weeds within the offset site was primarily Toowoomba Canary-grass, management actions should largely focus on this species. Continual management of Toowoomba Canary-grass is required through spot-spraying as per the OMP but it is also recommended that burning be used in conjunction with spot spraying to limit the growth and spread of this species.

Habitat zone(s)	2016 - Total cover of all herbaceous weeds (%) (including Gain Scoring Target Weeds)	2025 - Total cover of all herbaceous weeds (%) (including Gain Scoring Target Weeds)
1D	10	30
1E	10	20
1F	5	5
1G	40	10
1H	40	80
1I	40	55
1J	40	45
1K	40	70
1L	45	80
1M	25	20
1N	20	65
1O	10	45
1P	40	80
1Q	20	40
2A	40	50
2B	40	80
2C	40	85
2D	20	60
2E	40	80
2F	20	30
2G	30	50
2H	25	90
2I	40	80
2J	40	70
2K	40	70
2L	10	90
2M	10	80



appropriate time for burning is generally considered to be autumn (March through May) as the weather is cooler and will result in a low intensity burn and soil cracks still exist that may provide refuge to Striped Legless Lizard from the burn.

2.9.2. Strategic grazing

Whilst strategic grazing is not detailed as a management strategy in the OMP and exclusion of livestock is an obligation under the Landowner agreement, it is recommended that as an adaptive management measure the proponent discuss with the relevant authorities the potential to use ecological grazing (or 'pulse grazing') as a tool for biomass management within the offset site.

Ecological grazing can be a useful tool for biomass management and annual weed control in grassy vegetation. A relatively high stocking rate for a short period of time at a strategic time of year (when sensitive species are dormant) results in the more palatable annual weeds being grazed, and protects sensitive species from stock.

2.10. Litter

Few instances of litter were observed across the offset site, primarily in the north-east comprising old fencing material, scattered rubbish, tyres and a trailer. These items must be removed from the offset site as soon as possible.



Photo 6: Scattered litter in Habitat Zone 1M



Photo 7: Old fencing material in Habitat Zone 1M



Photo 8: Tyres previously used as tree guards in Habitat Zone 1M



Photo 9: Old fencing material in Habitat Zone 1B

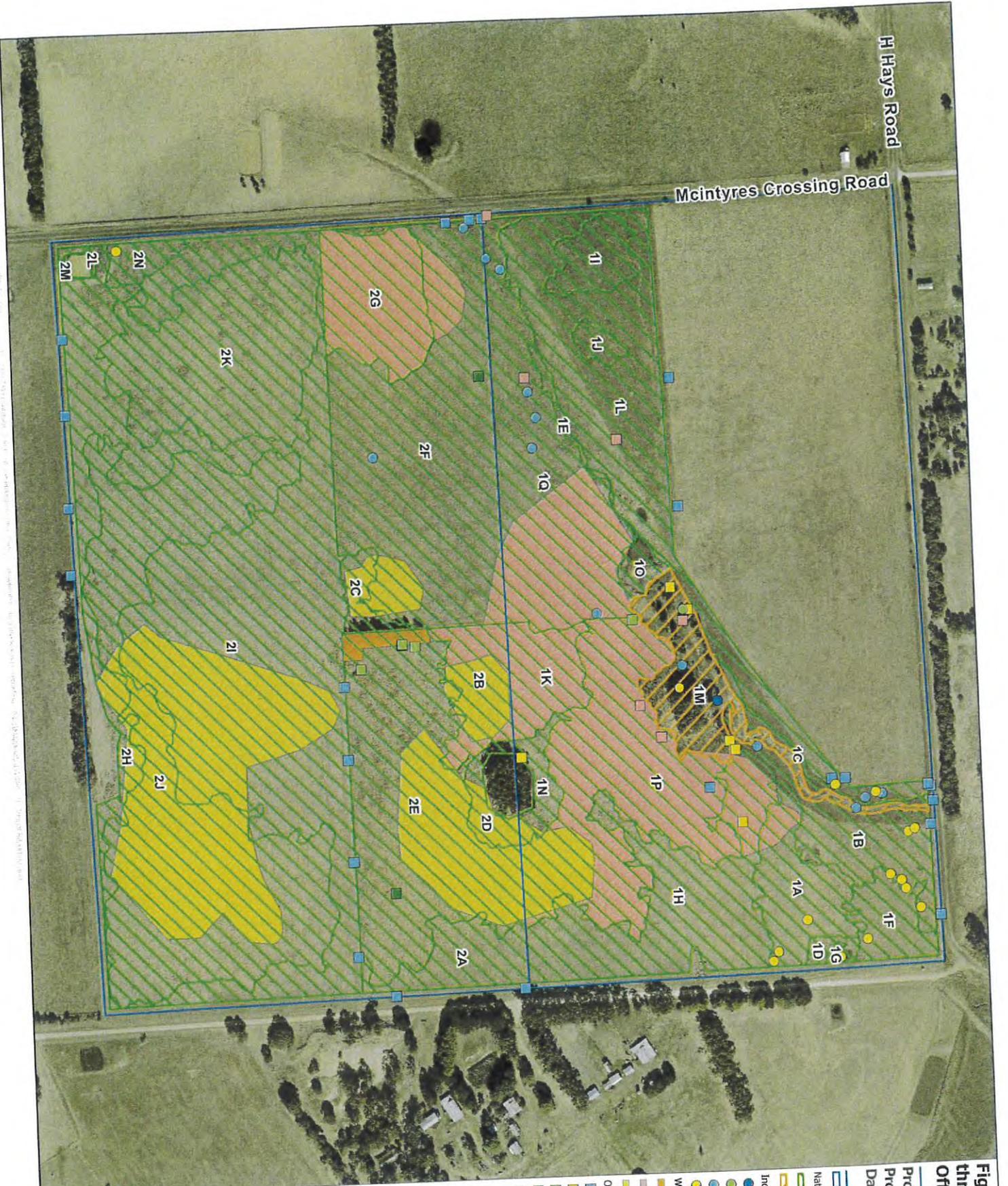
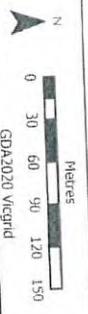


Figure 1: Weeds and key threats within the Karabeal Offset site

Project No: 7045.71
 Project: Modena Estate
 Date: 28/05/2025

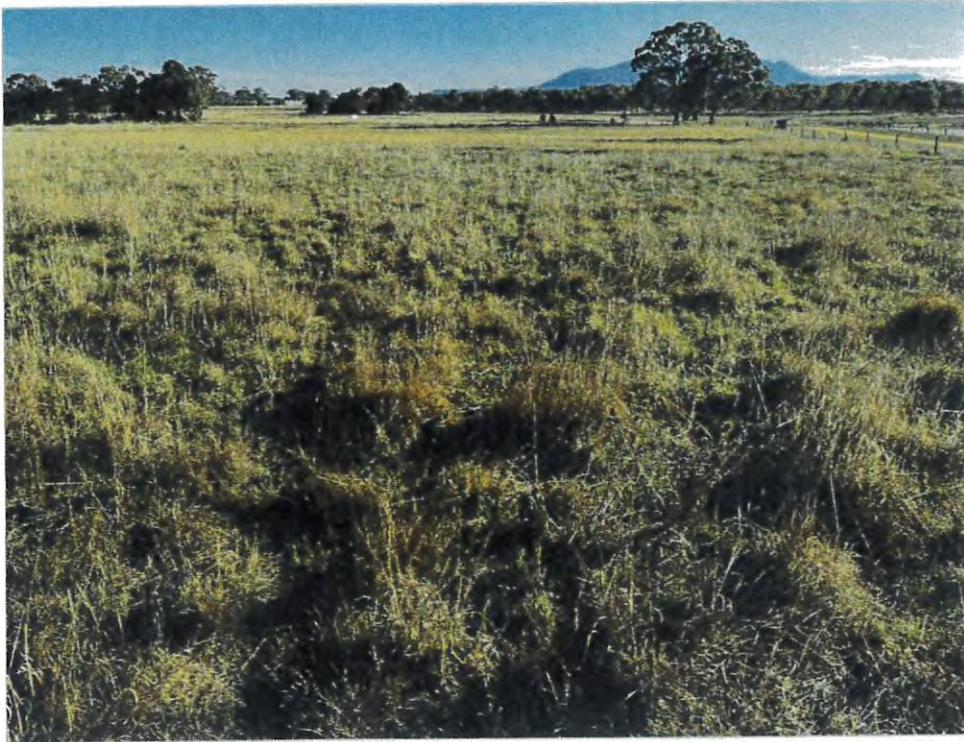
- Study area
- Native vegetation
- Heavier Soils Plains Grassland (EVC 132_61)
- Plains Grassy Woodland (EVC 55_61)
- Individual weed record
- Blue Gum
- Giant Honey-myrtle
- South African Orchid
- Spear Thistle
- Weed patch
- Spotted Gum and River Red-gum
- Spear Thistle and Towoonba Canary-grass
- Spear thistle
- Other threats
- Fencing issue
- Litter
- Log pile
- Hare activity
- Rabbit activity



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

Appendix 1: Photographs of the offset site

All photographs were taken on 21 May 2025.



Habitat Zone 1A

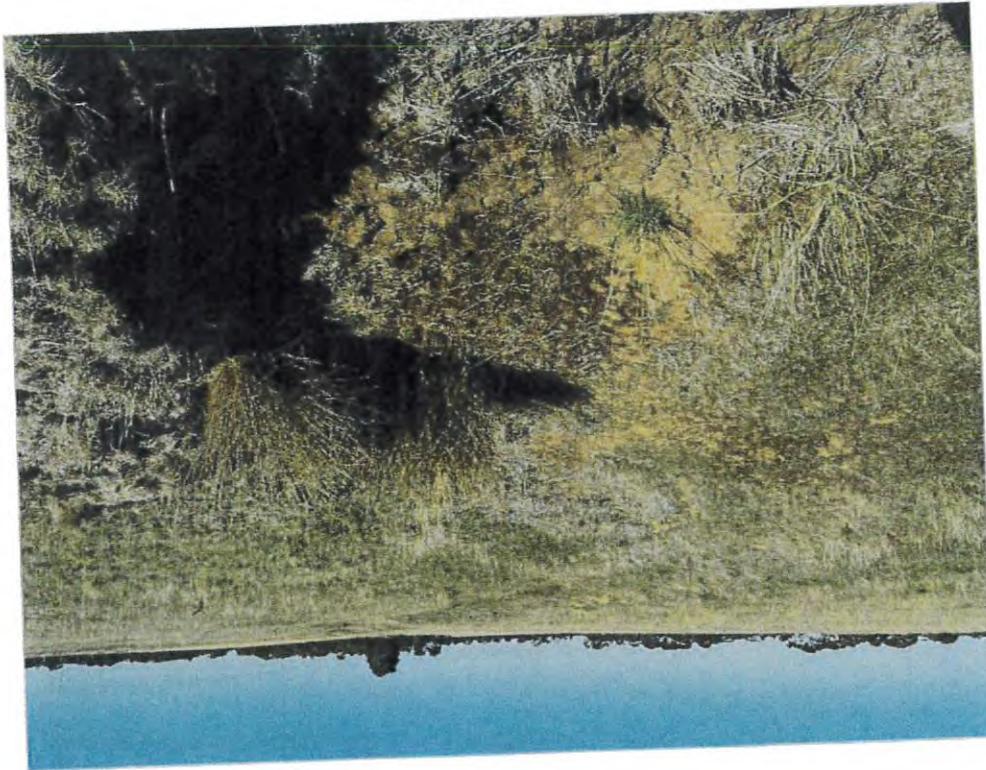


Habitat Zone 1B

Habitat Zone 1F



Habitat Zone 1E





Habitat Zone 1I



Habitat Zone 1J

Habitat Zone 1N



Habitat Zone 1M





Habitat Zone 1Q



Habitat Zone 2A

Habitat Zone 2E



Habitat Zone 2D





Habitat Zone 2H



Habitat Zone 2I

Habitat Zone 2M



Habitat Zone 2L



[Appendix 9: Campbelltown offset site, Year 8 \(2025\) annual report](#)

Department of Environment Land, Water & Planning Annual Report Form

Enter management year here: Year 8
 Management Agreement: BB- 3004 LAO 1
 Enter Landowner name(s) here:
 M.G. Pastoral Co.P/L
 Site Code: Campbelltown Sites : 01, 02, 03 & 04.

Site-Zone	Standard to be achieved	Management action description	Timing	Action Completed (Yes/No)	Description of Actions and observed outcomes (Include or attach evidence of actions completed / comments / observed outcomes)
All Sites	Maintain boundary fences to stockproof condition, and erect fencing to all sites to DELWP fencing standards	Repair and maintain the boundary perimeter fence of the property to stock proof standard and erect new fencing around each site to DELWP (stock/vermin proof) standards	Boundary ; within 3 months of agreement commencement Sites : within 12 months	Yes	Boundary fences were repaired and maintained as required within the first 12 months, noting there were no grazing animals (very minimal strays) on the property during this period. Each respective offset site polygon was GPS'd and mapped. The polygons were subsequently pegged (with buffer margins) and fences progressively erected in Dec. '17 and Jan'18. All site fences have been constructed to DELWP stockproof standards or DELWP vermin proof standards.
All Sites	Elimination of all woody weeds in the credit sites	Elimination of Hawthorn Sweet briar and all other woody weeds by the end of year 2. Eliminate all other woody weeds. Cootamundra Wattle, Acacia baileyana has been detected this year.	Autumn & Spring Ongoing	Yes	Hawthorn bush, <i>Crataegus monogyna</i> , were mostly eliminated in the Spring of Yr. 1 and remnants in Yr.2. Sweet Briar Rose, <i>Rosa rubiginosa</i> , were mostly eliminated in both Spring & Autumn of Yr. 1 and remnants in Yr. 2. Cootamundra Wattle, <i>Acacia baileyana</i> has been detected and treated where found in Yr. 8. Cut and pint with suitable herbicide (neat Glyphosate) within 20 seconds, was the method undertaken.
All Sites	Monitor, treat and eliminate emerging woody weeds	Visual detection of all emerging woody weeds throughout the respective management years. Treat emerging plants as detected and continue to monitor.	Ongoing	Yes, but ongoing	Continue to monitor and treat emerging woody weeds - Hawthorn, Sweet Briar and as of Yr. 8, Cootamundra Wattle, <i>Acacia baileyana</i> , and others. This action is routinely undertaken. Minimal emergence of woody weeds now; this action is under control.
All Sites	Control of herbaceous Weeds	Ensure weed cover does not increase beyond the levels at the commencement of the agreement, and treat weeds as directed within the OMP.	Spring	Yes, but ongoing	Spot spraying and 'wanding' using selective herbicide at recommended rates, was undertaken on <i>Phalaris spp</i> , various <i>Thistles</i> , <i>Chirsisium spp.</i> , <i>St. John's Wort</i> , <i>Hypericum perforatum</i> , & Dock Weed, <i>Rumex spp</i> . Good control kill rates were achieved. This action continues to be WIP.

Site/Zone	Standard to be achieved	Management action description	Timing	Action Completed (Yes/No)	Description of Actions and observed outcomes (include or attach evidence of actions completed / comments / observed outcomes)
All Sites	Monitoring and control of new and emerging herbaceous weed	New and emerging herbaceous weeds are to be monitored and controlled throughout the respective year of the OMP.	Ongoing	Yes, but ongoing.	Continue to monitor and control as required herbaceous weeds, utilising actions and herbicides (incl. recommended rates) suitable to each spp. throughout the year.
All Sites	Pest animal control.	Monitor and control pest animals incl. foxes and rabbits within the respective sites.	Ongoing	Yes, but ongoing	Perimeter fence around each site was visually inspected by both Contractor(s) and LO on each visit to the property. Some minor repairs including plain wire replacement to the roadside boundary fencing of Site 1. Noticeable rabbit warrens were gassed in accordance with guidelines. Some minor re-straining of plain wires were undertaken on site 3; stackness is as a result of ground movement (moisture). There has been no evidence of fox infestation on any of the sites..
Site 2	Overabundant Macroprods in Site 2	In response to DELWP's observation in July '22, monitor and observe the over abundance of Macroprods, by installing grazing prevention enclosures, and if deemed problematic seek permission to undertake a controlled cull.	Ongoing	Yes, but ongoing.	Pasture enclosures were installed on 29/7/22, consisting of 1200x1200x600 galvanised steel mesh. Direction for DELWP was to inspect after 12 months and make assessment of relative pasture growth both inside and outside of the enclosure. This will determine if the macroprods are putting too much grazing pressure on the NV offset sites and whether a cull program needs to be approved and acted upon. Recent inspection of DEECA has verified a noticeable difference in pasture height both outside the fenced sites and further, within the pasture cages of Site 2. DEECA suggests an ecological burn of Site 2. In Autumn '26.
Sites 2A, 3A 4A & 4B	Ecological Biomass Burning	Ecological mosaic burning of biomass on a regular but rotating program, with less than 50% of each site burnt per day and less than 80% of each site burnt each year.	Ongoing	Yes, but ongoing	Site 3 was 'cold' burnt in May '22, with a relatively good burn achieved. Site 4 was 'cold' burnt in late June, '24. A good burn was achieved. As mentioned in the previous section, Site 2 will be ecologically burnt in Autumn of '26.

Site-Zone	Management Action	Management action description	Timing	Completed (Yes/No)	Include or attach supporting evidence of actions completed / comments / observations
All	<p>Annual reporting</p> <p>Annual report is signed, dated and submitted by the landowner at least 1 month before the anniversary date of the agreement</p> <p>The annual report is a useful opportunity to make comprehensive comments and observations, giving a picture of the current condition of the site(s), issues identified, works undertaken and actions still required. You are encouraged to create a separate report to include in your annual reporting each year that captures this detailed information. The benefits of monitoring your vegetation condition and identifying issues and management undertaken, is that it aids you to gauge the success of management on the condition of native vegetation over time.</p> <p>The Department is also able to use this information to assist with the assessment of your compliance with the agreement and provides us with useful information and data for future management advice.</p> <p>Obligations of the landowner (compliance with section 6 of the Landowner Agreement) have been met, and I have read, signed, dated and submitted the obligations form with the annual report.</p>	<p>Prepare and submit an annual report providing evidence of works carried out.</p> <p>Where the actions were not carried out provided evidence as to the reason why.</p> <p>Include supporting evidence by:</p> <ul style="list-style-type: none"> ➤ detailed written observations & additional report ➤ photo point monitoring ➤ map of zones & photo points ➤ photographs of works undertaken ➤ receipts/invoices for materials & works carried out, including by contractors ➤ log books of works carried out ➤ obligations of the landowner form ➤ payment method is correct ➤ Receipts of seeds / seedlings ordered or purchased including a table/list of the species, numbers of each species (can estimate if using seeds), provenance ➤ Site log - table/list of numbers of species planted/recruiting or germinated, including: numbers of each species by life form that are present/survived and/or were replaced for that year 	<p>Submit at least 1 month prior to agreement anniversary any date</p>		<p>obligations of the landowner form where applicable: payment method is correct</p> <p>detailed written observations & additional report</p> <p>photo point monitoring</p> <p>map of zones & photo points</p> <p>photographs of works undertaken</p> <p>receipts/invoices for works carried out, including by contractors</p> <p>log books of works carried out</p> <p>Receipts seeds/seedlings, provenance, table of species list & numbers</p> <p>Site log / table of plantings/germination & survival numbers by life form</p>

I hereby declare that the supplied information is accurate and complies with reporting requirements under General Conditions under the Second Schedule of the DELWP Management Agreement.



Signed: Date: 15/1/12..... 1025.....



~One of the best investments you can make in your property~

***Compliance Offset Report 'Modeina Estate' Precinct 2-Project Area B
Campbelltown Offset Compliance Report Year 8.***

Project:

Intensive program of fencing and weed & vermin control at '*Modeina Estate*' Campbelltown site as per Campbelltown Offset Compliance Report Year 8, services supplied by our extensive Small Farm Contracting team.

Works:

Emu-bob Spot spraying with back packs and Ranger Spray Utes with 2x hose reels.

Site 1:

Spot spaying Phalaris Grass and St. John's Wort; cutting and pasting of all Cherry trees, Sweet Briar Rose plants and Cootamundra Wattle; repair of all broken fencing along roadside boundary; gasses visible rabbit burrows.

Site 2:

Checking and straining fencing, repair broken wires tangled by stock and kangaroos; spot spraying of St. John's Wort, Spear Thistles, Blackberries and Phalaris Grass.

Site 3:

Straining of all fencing; spot spraying of St John's Wort, Phalaris and Sweet Briar Rose.

Site 4:

Checking and straining of fences; spot spraying on St. John's Wort, Spear Thistle, Phalaris Grass and Sweet Briar Rose.

Chemical Applied:

560 litres of chemical was applied Glyphosate & Devour 1020 and redeye.

Final Check:

In the first week of December a final check for any newly -emerged or missed weeds will be undertaken and weed control will be mobilised.

Always committed to best practice and optimal outcomes, Small Farm Contracting is committed to Offset Compliance of the Campbelltown sites.

Graham Hewitt
Manager

grahamrhewitt@gmail.com
www.smallfarmcontracting.com.au
mobile: 0417044464

G. R. Hewitt trading as

Small Farm Contracting Pty Ltd

A.B.N.: 30 608 262 942

POSTAL ADDRESS:
P.O. BOX 61, LEOPOLD 3224

TRADING ADDRESS:
30 Como Road, LEOPOLD 3224

Tax Invoice

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Mob: 0417 044 464
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Online:
www.smallfarmcontracting.com.au
Email: grahamrhewitt@gmail.com

Bill To:

MG Pastoral Co.Pty Ltd DFC#041
Level 4,
863 High Street
Armadale Vic 3143

Invoice #: 00002931
Date: 28/04/2024

Page: 1

COMMERCIAL OPERATORS REGISTERED LICENCE NO. 126

DATE	DESCRIPTION	AMOUNT	CODE
23/04/2024	<p>Campbelltown Bush Broker Site 4 Controlled Burning, services supplied by the Small Farm Contracting team.</p> <p>Work involved:</p> <ul style="list-style-type: none"> i. Prior viewing and investigating the site and assessing the area for burn, ii. developing plan for numerous fire breaks prior to burning due to many irregular boundaries of the property (11 boundaries) for optimal burn depending on wind directions and overall weather and contingencies for change in wind direction during burning operation. iii. Registration of burning operation with Vic Fire with grid references, times of burning operations on 23/4/2024. iv. Fire break burns and overall burn of the entire site using 2 x Utes and 2 x Polaris all equipment with water spray units. <p>Wind direction changed during the 5 hour-burn beginning from the North-East, turning from North to the North- West.</p> <p>Cost= \$6640 +GST</p> <p>Always committed to best practice and positive outcomes, the Small Farm Contracting team valued the opportunities to contribute to your property management with their controlled burn.</p>	\$7,304.00	GST
Payment by Cheque to Postal Address or Electronic Funds Transfer (EFT) ***PLEASE NOTE: NEW BANK DETAILS BELOW***		GST:	\$664.00
EFT DETAILS:		Total Inc GST:	\$7,304.00
Account Name: Small Farm Contracting		Amount Applied:	\$0.00
Bank: Bendigo Bank		Balance Due:	\$7,304.00
BSB: 633-108			
ACCOUNT NUMBER 1559 - 95590			

G. R. Hewitt trading as

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Email: grahamrhewitt@gmail.com

Bill To:

MG Pastoral Co.Pty Ltd DFC#041
Level 4,
863 High Street
Armadale Vic 3143

Invoice #: 00002948
Date: 20/08/2024

Page: 1

COMMERCIAL OPERATORS REGISTERED LICENCE NO. 126

DATE	DESCRIPTION	AMOUNT	CODE
14/08/2024	<p>MG Pastoral Co Pty Ltd DFC #041 Intensive wead-control program at Campbelltown, services supplied by the Small Farm Contracting team. Work involved 1. Bush Broker Site 3- manual cutting out of all St John's Wort weeds, bagging them in 5 x 20kg bags. Photographs forwarded at the time. 2. Other 3 Bush Broker sites- Checking of all areas and spot spraying all emerged St John's Wort plants.</p> <p>Always committed to best practice and optimal outcomes, Small Farm Contracting was committed to the important and significant project of crucial weed elimination at Campbelltown..</p> <p>Kind regards, Graham Hewitt Manager</p>	\$2,621.30	GST
Payment by Cheque to Postal Address or Electronic Funds Transfer (EFT) ***PLEASE NOTE: NEW BANK DETAILS BELOW***		GST:	\$238.30
EFT DETAILS:		Total Inc GST:	\$2,621.30
Account Name: Small Farm Contracting		Amount Applied:	\$0.00
Bank: Bendigo Bank		Balance Due:	\$2,621.30
BSB: 633-108			
ACCOUNT NUMBER 1559 - 95590			

G. R. Hewitt trading as

Small Farm Contracting Pty Ltd

A.B.N.: 30 608 262 942

POSTAL ADDRESS:
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TRADING ADDRESS:
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Email: grahamrhewitt@gmail.com

Bill To:

MG Pastoral Co.Pty Ltd DFC#041
Level 4,
863 High Street
Armadale Vic 3143

Invoice #: 00002960
Date: 13/10/2024

Page: 1

COMMERCIAL OPERATORS REGISTERED LICENCE NO. 126

DATE	DESCRIPTION	AMOUNT	CODE
11/10/2024	<p>MG Pastoral Co.Pty Ltd DFC#041 Completion date of weed spraying program at 'Campbelltown', services supplied by an extensive Small Farm Contracting team. Spot spraying with back packs. 65 litre's of chemical applied. Weeds targeted: St John's Wort, Sweet Briar, Hawthorn plants. Work involved spraying of these weeds on the Bush Broker Sites: 1,2,3 &4.</p> <p>Cost: \$6228 +GST</p> <p>Always committed to best practice and optimal outcomes, Small Farm Contracting was committed to the significant project of weed elimination. Small Farm Contracting values the opportunity to weed elimination on the Campbelltown property.</p> <p>Kind regards, Graham Hewitt Small Farm Contracting Manager</p>	\$6,850.80	GST
Payment by Cheque to Postal Address or Electronic Funds Transfer (EFT) ***PLEASE NOTE: NEW BANK DETAILS BELOW***		GST:	\$622.80
EFT DETAILS:		Total Inc GST:	\$6,850.80
Account Name: Small Farm Contracting		Amount Applied:	\$0.00
Bank: Bendigo Bank		Balance Due:	\$6,850.80
BSB: 633-108			
ACCOUNT NUMBER 1559 - 95590			

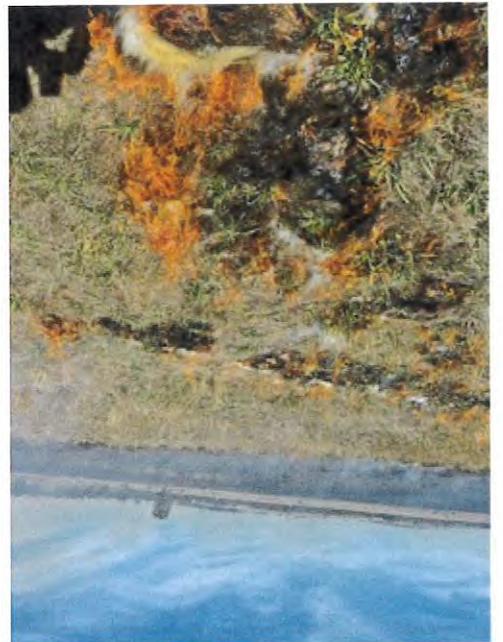
Marshall G. Dennis

From: Marshall G. Dennis
Sent: Tuesday, 16 December 2025 10:53 AM
To: Marshall G. Dennis
Subject: FW: Campbelltown Burn 23/4/24

From: Graham Hewitt <grahamrhewitt@gmail.com>
Sent: Sunday, 30 June 2024 10:44 AM
To: Marshall G. Dennis <Marshall.dennis@ranfurleiam.com.au>
Subject: Campbelltown Burn 23/4/24



Sent from my iPhone



Marshall G. Dennis

From: Marshall G. Dennis
Sent: Tuesday, 16 December 2025 11:07 AM
To: Marshall G. Dennis





Sent from my iPhone

[Appendix 10: 2025 Water quality testing report \(Aquatica Environmental\)](#)

15 October 2025

Dennis Family Corporation (Project Management) Pty Ltd
Attention: Shweta Thadani
Level 1, 863 High St
Armadale VIC 3143

Via email: shweta.thadani@denniscorp.com.au

Dear Shweta

RE: Water Quality Monitoring of Kororoit Creek for Modeina Estate Growling Grass Frog Management Plan

Aquatika Environmental was engaged by Dennis Family Corporation (Project Management) Pty Ltd (DFC) to conduct an additional round of water quality sampling as a requirement under the Growling Grass Frog Management Plan (*Litoria raniformis*, GGFMP; Nature Advisory 2017, approved by the Minister under EPBC 2011/6063) for Modeina Estate development, at Burnside, Victoria.

Condition 3 of the EPBC approval requires that the GGFMP detail measures to assess water-quality effects on GGF habitat. The following statement outlines that requirement:

“Testing of water quality upstream and downstream of outfalls (beyond mixing zone) to determine the influence of stormwater inputs and whether water quality meets the objectives for water quality in the catchments of Port Phillip Bay as per the SEPP (Waters of Victoria) guidelines.” (Nature Advisory 2017).

Note: Since 2017 the State Environmental Protection Policy (i.e. SEPP), as referenced in the GGFMP, has been replaced by the Environmental Reference Standard (ERS, EPA 2021). The ERS (2021) objectives for the ‘Urban Segment’ of the Port Phillip Bay catchment were applied for comparison.

This report represents the results and findings of sampling undertaken on 25 September 2025.

1. BACKGROUND

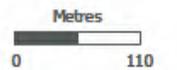
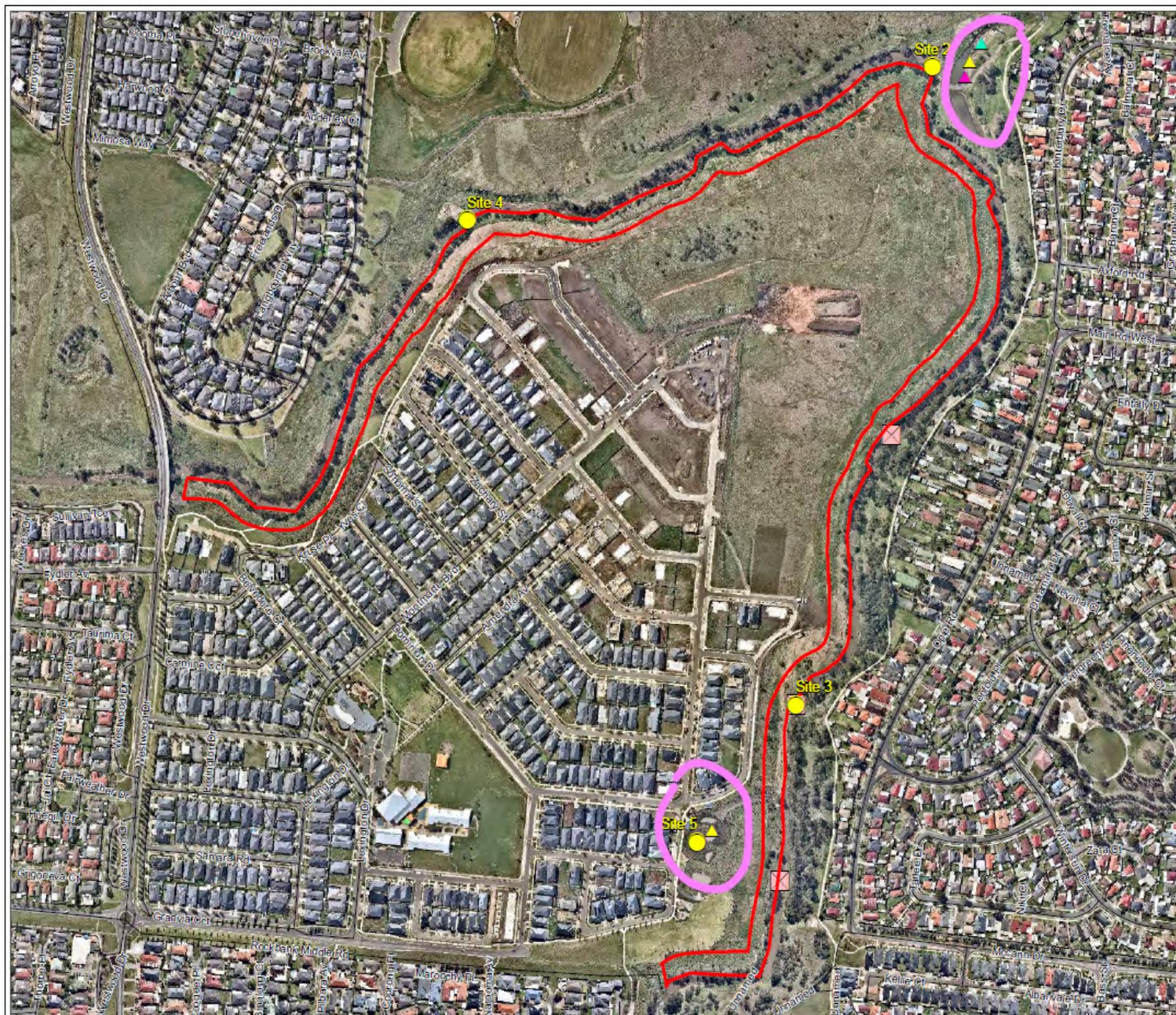
DFC originally engaged Aquatica Environmental in 2023 to scope and implement water quality sampling in broad accordance with parameters detailed in the Victorian Department of Energy, Environment and Climate Action’s (DEECA) Growling Grass Frog Habitat Design Standards (DELWP 2017). Parameters assessed included in situ water quality measurements (pH, salinity, turbidity, dissolved oxygen, temperature) and laboratory analysis of water samples (E. coli, ammonia, total nitrogen, total phosphorus, etc.).

The results from the 2023 monitoring indicated that water quality in the three Kororoit Creek sites and one constructed wetland site ([Figure 1](#)) was generally within the range typically observed in urban waterways. Minor exceedances of the ERS objectives for dissolved oxygen and turbidity were recorded at Site 5, and ammonia concentrations exceeded the GGF habitat standards at all four sites. However, none of these results were considered to represent an ecologically significant threat to the species. Nonetheless, the GGFMP (Section 6.6.2) identifies water-quality decline as a potential trigger for management review, reinforcing the need for periodic testing.

Figure 1: Survey site locations

Project: GGF Monitoring Program
Client: DFC (Project Management) Pty Ltd
Date: 22/12/2022

-  GGF Management buffer
-  Rock platforms
-  Monitoring sites
-  2018 Growing Grass-frog observation
-  2019 Growing Grass-frog observation
-  2020 Growing Grass-frog observation



2. METHODOLOGY

2.1 In-situ Water Quality Monitoring

Where surface water was present, water quality data was collected using a calibrated YSI ProDSS multiparameter water quality meter. Sampling locations aligned with the same four sites previously used during the 2023 sampling event, originally stipulated by Nature Advisory ([Figure 1](#)). Sites 2–5 correspond to those identified in the Growling Grass Frog Management Plan (Brett Lane & Associates 2017, Figures 1–4) and confirmed in the Nature Advisory (2023) EPBC Act Compliance Report. Water quality sampling was undertaken in accordance with the Environmental Protection Authority’s (EPA) “A Guide to The Sampling and Analysis of Waters, Wastewaters, Soils and Wastes”, Publication 441. (EPA 2000).

Along with GPS coordinates and upstream/downstream photographs at each site, the following parameters were collected:

- Turbidity;
- pH;
- Temperature;
- Electrical conductivity; and
- Dissolved oxygen.

2.2 Nutrient and E. coli Monitoring

Nutrient and E. coli monitoring included the collection of water samples for laboratory analysis by a National Association of Testing Authorities (NATA) accredited laboratory. Samples were placed in ice filled eskies after collection and submitted, on the day of collection, to the laboratory under a completed Chain of Custody (CoC) process.

The water samples were analysed by NATA-accredited laboratory, ALS, for the following parameters:

- E. coli;
- Nitrite (NO₂);
- Nitrate (NO₃);
- Total Kjeldahl Nitrogen (TKN);
- Total Nitrogen (as N); and
- Total Phosphorus (as P).

2.3 Assumptions and Limitations

The report and the results provided herein were based on the following assumptions and limitations:

- The comparison of results against the ERS objectives is based on a single round of sampling, rather than the minimum 12 monthly samples required to calculate 25th and 75th percentiles (EPA 2021). Accordingly, the data provide a contextual indication only of compliance with ERS objectives, not a statistically valid assessment
- Conclusions are derived from a single monitoring event and therefore represent a snapshot of water quality and stream conditions at the time of sampling.
- Monitoring was confined to the four sites specified in the original GGFMP (Nature Advisory 2017) and did not include additional locations upstream or downstream of those sites.

- While exceedances and spatial trends in nutrient or microbial concentrations may suggest potential localised inputs, the monitoring design and scope do not enable identification or confirmation of specific point sources contributing to those results.

3 RESULTS

3.1 Survey Conditions

The survey was undertaken on 25 September 2025 by Aquatica Environmental’s project ecologist Connor Donnelly. Conditions on the day were overcast and mild, with temperatures ranging between a night-time low of 9.9°C and daytime high of 16.5°C during the survey (BOM 2025). No rainfall had occurred in the preceding 72 hours (BOM 2025), reducing the likelihood of stormwater-related turbidity.

3.2 Sampling Sites

All sampling sites corresponded with those detailed in the GGFMP (Nature Advisory 2017) and previously sampled by Aquatica Environmental (2023), comprising three sites along Kororoit Creek (Sites 2 – 4) and one site within the constructed wetland in Modeina Estate (Site 5). Upstream and downstream site photographs are provided below. Side by side 2023 / 2025 site photographs are provided in Attachment A to illustrate site condition and habitat changes over time.



Photo 1 Constructed wetland (Site 5)



Photo 2 Kororoit Creek (Site 3)



Photo 3 Kororoit Creek (Site 4)



Photo 4 Kororoit Creek (Site 2)

3.3 In-situ Water Quality

The results of the in-situ water quality sampling are presented in [Table 1](#). Results of the 2023 sampling are provided in Attachment B for comparison.

Water temperature was relatively consistent across all sites (13.5–14.3 °C), reflecting cool seasonal conditions typical of early spring.

pH values were slightly above neutral at all sites (7.87–8.18) and remained within the ERS objective range (6.5–8.2). These values are indicative of slightly alkaline conditions that are typical of lowland freshwater systems.

Dissolved oxygen (DO) concentrations met the ERS objectives at all sites, with values ranging from 60.8 % to 77.1 %.

Electrical conductivity (EC) varied between sites, ranging from low salinity in the constructed wetland (71.9 $\mu\text{S}/\text{cm}$) to moderately elevated readings in Kororoit Creek (up to 1965 $\mu\text{S}/\text{cm}$). All sites remained well below the ERS objective threshold of 3000 $\mu\text{S}/\text{cm}$, suggesting that salinity levels were consistent with freshwater ecosystems in urban environments.

Turbidity levels were low at all sites (9.3–22.1 NTU) and below the ERS objective of ≤ 30 NTU. These results indicate mostly clear water conditions and minimal suspended sediment load at the time of sampling, likely reflecting limited surface runoff and stable flow conditions at the time of the sampling.

Overall, the 2025 data indicate that in-situ parameters were within ERS objectives, consistent with the GGFMP goal to maintain water quality supportive of GGF habitat (Section 5.3.2).. Compared to the 2023 sampling event, the results were largely similar, with the only exceedances in 2023 observed for dissolved oxygen (%) and turbidity at Site 5.

Table 1 September 2025 in-situ water quality results

Parameter	Units	ERS Objectives	DELWP 2017 Standards	Site			
				5	3	4	2
Temperature	°C	NA	NA	14.33	13.80	13.50	13.63
pH	pH units	≥6.5*, ≤8.2**	6.0 - 8.5	7.87	7.93	8.01	8.18
Dissolved Oxygen	%DO	≥60, 130max	NA	75.67	60.80	77.10	72.00
	mg/L	NA	NA	7.74	6.28	7.97	7.42
Electrical Conductivity	µS/CM	≤3,000	>5,000	71.93	856.00	1,936.67	1,964.67
Turbidity	NTU	≤30	>40	22.11	14.25	9.34	11.47

* 25th percentile; ** 75th percentile.

3.4 Nutrient and E. coli Monitoring

The results of the laboratory analysed are provided in [Table 2](#). Results of the 2023 sampling are provided in Attachment B for comparison.

Total Nitrogen (TN) concentrations were highest at the constructed wetland (Site 5; 1.8 mg N/L) and the most downstream site (Site 3; 1.3 mg N/L), exceeding the ERS objective and the DELWP 2017 standard. Sites 4 (most upstream; 0.43 mg N/L) and 2 (0.65 mg N/L) remained within both standards.

Total Phosphorus (TP) was elevated at Site 5 (0.19 mg P/L), exceeding both the ERS and DELWP 2017 objectives. Site 3 was at the ERS threshold and slightly above the DELWP guideline.

E. coli concentrations were markedly elevated at Site 5 (1,200 MPN/100 mL) and even higher at Site 3 (>2,400 MPN/100 mL), exceeding both primary (<150 MPN/100 mL) and secondary (<1,000 MPN/100 mL) contact standards. Sites 4 and 2 were within guideline ranges. The elevated result of >2,400 MPN/100 mL at Site 3, is likely due to a combination of factors such as downstream accumulation, and potential local point sources.

Overall, the highest nutrient and microbial concentrations occurred at the constructed wetland and downstream site, while the upstream (Site 4) and Site 2 reaches generally met both ERS objectives and DELWP 2017 standards. Results from the original sampling in May 2023 showed no exceedances of ERS or DELWP 2017 objectives, indicating that the water quality at the time of this sampling event has declined in multiple nutrient and microbial parameters in comparison.

Table 2 September 2025 nutrient and E. coli results

Analyte	Units	ERS Objectives	DELWP 2017 Standards	Site			
				Site 5	Site 3	Site 4	Site 2
Total Nitrogen, as N (TN/TP LL)	mg N / L	<1.2**	<1	1.8	1.3	0.43	0.65
Phosphorus, total as P (TN/TP LL)	mg P / L	<0.11**	<0.1	0.19	0.11	0.034	0.03
TKN (via Calculation)	mg/L	-	-	1.5	0.69	0.35	0.63
E. coli (Colilert 2000)	MPN/100mL	-	<150 [#] <1,000 ^{##}	1200	>2400	110	63
Nitrate + Nitrite, as N (NOX as N LL)	mg N / L	-	-	0.28	0.6	0.082	0.02

Yellow highlighting indicates parameter failed to meet the ERS objective.

Orange highlighting indicates parameter failed to meet the DELWP 2017 objective.

Red highlighting indicates parameter failed to meet both the ERS and DELWP 2017 objectives

** 75th percentile; [#]Primary contact; ^{##}Secondary contact. orange highlight = exceeds objective and/or standard

4 CONCLUSION

The 2025 water quality monitoring of Kororoit Creek and the constructed wetland at Modeina Estate demonstrated compliance with ERS and GGFMP objectives for in-situ parameters across all four sampling locations. Water temperature, pH, dissolved oxygen, electrical conductivity, and turbidity remained within acceptable ranges for urban waterway segments, indicating generally adequate conditions at the time of sampling. These results fulfil the monitoring commitment outlined in the GGFMP (Section 6.6.2) and respond to the trigger identified in the Year 5 EPBC Act Compliance Report (Section 3.2) to undertake water-quality testing following two years of GGF non-detection.

However, laboratory analysis revealed elevated nutrient and microbial concentrations at Site 5 (constructed wetland) and Site 3 (downstream Kororoit Creek). Total nitrogen and total phosphorus exceeded both ERS objectives and DELWP (2017) standards at the constructed wetland, whilst the downstream site exhibited marginal exceedances for total phosphorus and pronounced *E. coli* contamination (> 2,400 MPN/100 mL). This represents exceedance of both primary and secondary contact criteria under the ERS, indicating potential public-health and ecological concerns requiring follow-up sampling. These results suggest localised point-source inputs or downstream accumulation of nutrients and faecal indicator bacteria. Potential sources may include stormwater drain outfalls or organic runoff from adjacent residential areas, which should be assessed against GGFMP post-construction stormwater management requirements (Section 5.3.2). In contrast, Sites 2 and 4 generally met water-quality objectives, indicating spatial variability in water quality along the creek system.

The observed exceedances, whilst concerning from a water quality perspective, do not appear to represent an immediate ecological threat to growing grass frog populations, given the species' tolerance to moderately degraded urban waterway conditions. Nevertheless, sustained nutrient enrichment and microbial contamination will likely have adverse effects on the species, and the downstream receiving environments.

Recommendations:

- **Investigate elevated *E. coli* results:** Further investigation is recommended to determine the cause of the high *E. coli* concentrations observed at Site 3 and within the constructed wetland (Site 5). This should establish whether the elevated levels represent a persistent trend or an isolated event. The investigation should be undertaken in consultation with Nature Advisory to align with ongoing GGF monitoring cycles and to determine whether corrective actions under the GGFMP (Table 5; post-construction phase) are required.
- **Undertake seasonal sampling:** Implement additional sampling at different times of the year, particularly during the GGF breeding season (December – February), to capture potential seasonal variation in nutrient and microbial levels. This monitoring should, where practicable, coincide with annual GGF surveys to provide concurrent ecological and water-quality data.
- **Maintain methodological consistency:** Ensure that all future monitoring follows the methodology described in this report, including calibration procedures, analytical parameters, and laboratory QA/QC protocols, to enable valid temporal comparison between sampling rounds.
- **Retain fixed sampling locations:** Use the same four established monitoring sites (Sites 2 – 5; GGFMP 2017) for all future events to maintain spatial consistency and comparability of results

If you have any questions or would like to discuss this report or any other matter further, please do not hesitate to call me on 0408 558 534. We look forward to the opportunity of continuing to work with DFC and Nature Advisory on this project.

Kind Regards,



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5 REFERENCES

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Nature Advisory (2017). Modeina Estate – Precinct 2 Growling Grass Frog Management Plan. Report No. 7045 (29.7) prepared for Denis Family Corporation. Dated September 2017.

ATTACHMENT A Site Comparison Photos

Site 5 2025



Site 5 2023



Site 3 2025



Site 3 2023



Site 4 2025



Site 4 2023



Site 2 2025



Site 2 2023



ATTACHMENT B 2023 Water Quality Results

2023 In-situ water quality results

Parameter	Units	ERS Objectives (EPA 2021)	GGF Water Quality Standards (DELWP 2017)	Site 2	Site 3	Site 4	Site 5
pH	pH units	≥6.5*, ≤8.2**	6.0 – 8.5	7.77	7.86	7.91	7.76
Dissolved Oxygen (DO)	%	≥60*, <130#	-	66.4	65.5	71.2	26.4
	ppm	-	-	7.25	7.16	7.78	2.85
Salinity / Electrical Conductivity (EC)	µS/cm	≤3,000	<5,000	1,160	1,155	1,143	232
	ppm	-	-	580	577	572	116
	PSU	-	-	0.58	0.58	0.57	0.11
Turbidity	NTU	≤30	<40	17.0	14.4	16.0	31.2
Temperature	Deg. Celsius	-	-	11.69	11.61	11.67	12.22

2023 Laboratory results

Parameter	Units	ERS Objectives (EPA 2021)	GGF Water Quality Standards (DELWP 2017)	Site 2	Site 3	Site 4	Site 5
<i>E.coli</i>	Orgs/100mL	-	<150##, <1,000^	280	160	250	41
Ammonia (NH ₃)	mg/L	-	<0.010	0.049	0.031	0.026	0.15
Nitrite (NO ₂)	mg/L	-	-	0.002	0.004	0.003	0.014
Nitrate (NO ₃)	mg/L	-	-	0.051	0.068	0.045	0.13
Total Kjeldahl Nitrogen	mg/L	-	-	0.69	0.51	0.62	0.73
Total nitrogen	mg/L	<1.2**	<1	0.75	0.58	0.67	0.87
Total phosphorus	mg/L	<0.11**	<0.1	0.071	0.052	0.06	0.10

Yellow highlighting indicates parameter failed to meet the ERS objective.

Orange highlighting indicates parameter failed to meet the DELWP 2017 objective.

* 25th percentile; ** 75th percentile; # Maximum