CITY OF CLARENCE

Waverley Flora Park

Reserve Management Plan 2026-2036

Executive Summary

Document Set ID: 5663926
Version: 6, Version Date: 25/03/2026

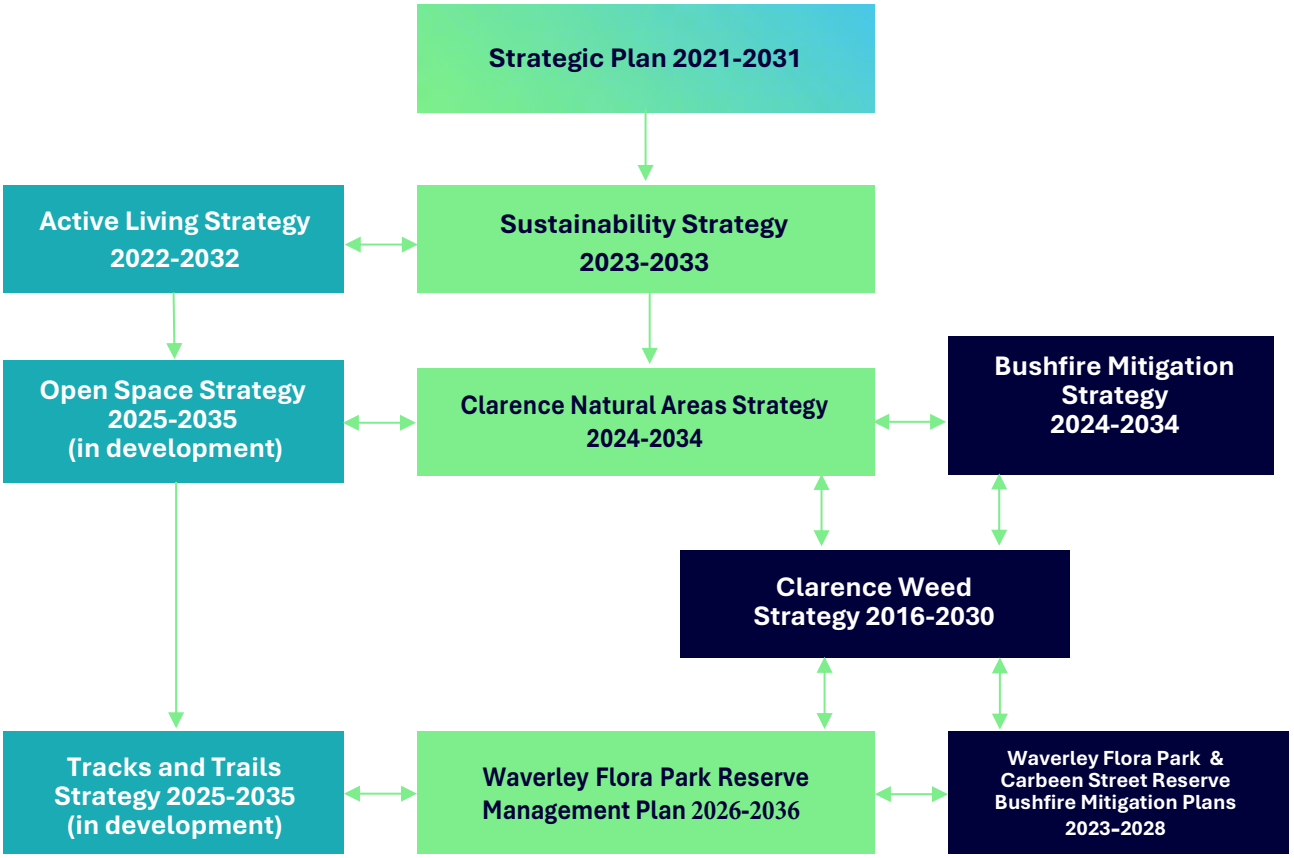
Executive Summary

Overview

The Waverley Flora Park Reserve Management Plan 2026-2036 provides a strategic and integrated approach to managing the natural and social values of both Waverley Flora Park and Carbeen Street Reserve. Together, these reserves form a critical part of the Rokeby Hills ecological corridor and provide natural bushland that is increasingly important within a rapidly urbanising setting.

This plan updates and builds upon the Waverley Flora Park Reserve Activity Plan 2014–2018 (TasFlora 2013) and the draft Carbeen Street Reserve Activity Plan (NBES 2021), addressing evolving community needs, ecological priorities, and environmental challenges through a coordinated and adaptive framework.

Where the Waverley Flora Park RMP fits into Council's strategic framework



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Purpose and Approach

The plan's overarching aim is to ensure long-term protection and enhancement of the reserves' values through practical, sustainable management. It aligns with broader Council strategies including the Clarence Natural Areas Strategy 2024–2034, the Clarence Weed Strategy 2016–2030, the Bushfire Mitigation Strategy 2024–2034, and the Sustainability Strategy 2023–2033.

Key features of the plan's development include:

- A comprehensive review of previous management outcomes and site conditions.
- Targeted ecological and social assessments.
- Extensive community and stakeholder engagement, including but not limited to the Clarence Dog Owners Group (CDOGs), local primary schools, Waverley Flora Park Landcare Group, and BirdLife Tasmania.
- Integration of new data, such as updated weed and flora surveys, and monitoring of native fauna using camera traps.

Natural and Social Values

The Waverley Flora Park (WFP) and Carbeen Street Reserve (CSR) support important vegetation communities, including the threatened *Eucalyptus amygdalina* forest and woodland on sandstone (DAS) and *E. ovata* forest and woodland (DOV), both listed under the *Nature Conservation Act 2002*. The park and reserve also provide habitat for native flora species such as tailed spider-orchids, and native fauna such as bandicoots, potoroos, wallabies, birds and bats.

The WFP and CSR are valued community spaces, offering accessible walking and cycling tracks, nature-based recreation, and opportunities for local engagement. They have the potential to support more outdoor learning for schools and citizen science programs, with the Landcare Group playing a central role in community stewardship and education.

By prioritising sustainable management and community collaboration, the plan ensures that the reserves remain cherished assets for current and future generations, contributing to a healthier environment and a stronger, more connected community

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Key Management Priorities

The plan outlines specific prioritised actions across a ten-year period to address key management challenges. The following is a summary of the key management areas and associated recommended actions, with a comprehensive list of actions available in the implementation plan.

Fire and Habitat Management

Create a mosaic of ecological patch-burns to maintain vegetation diversity and reduce fuel loads, as guided by the *Waverley Flora Park and Carbeen Bushfire Mitigation Plans 2023–2028*.

Recreation and Infrastructure

Maintain and upgrade formal tracks, close informal tracks in sensitive areas, and enhance entrances with signage, seating, and interpretation in line with the *Visitor Amenity Plan*.

Domestic Animal Management

Declare WFP “on-lead” dog zone and promote responsible pet ownership under the *Clarence Dog Management Policy and Cat Management Act 2012*.

Community Participation and Education

Partner with schools and the Landcare Group to deliver nature-based learning, citizen science, and local stewardship initiatives.

Monitoring and Review

Undertake regular vegetation and fauna monitoring to inform adaptive management and guide mid-term and long-term plan reviews.

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Implementation and Review

The implementation plan assigns each action a priority level and responsible party, providing a realistic roadmap that accounts for available resources. A formal mid-term review of the plan's progress will be undertaken in 2030, with a full review and plan update in 2036. Regular evaluation of monitoring data, community feedback, and environmental conditions will support adaptive management throughout the life of the plan.

Long-term Vision

The Waverley Flora Park Management Plan 2026-2035 facilitates the continued protection and enhancement of the reserve's natural, social, and cultural values, while enabling inclusive access and fostering community connection. Through collaborative stewardship, sustainable practices, and evidence-based decision-making, the reserve will remain a valuable natural asset — resilient, biodiverse, and deeply valued by current and future generations

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2026 - 2036

WAVERLEY FLORA PARK

RESERVE MANAGEMENT PLAN

City of Clarence

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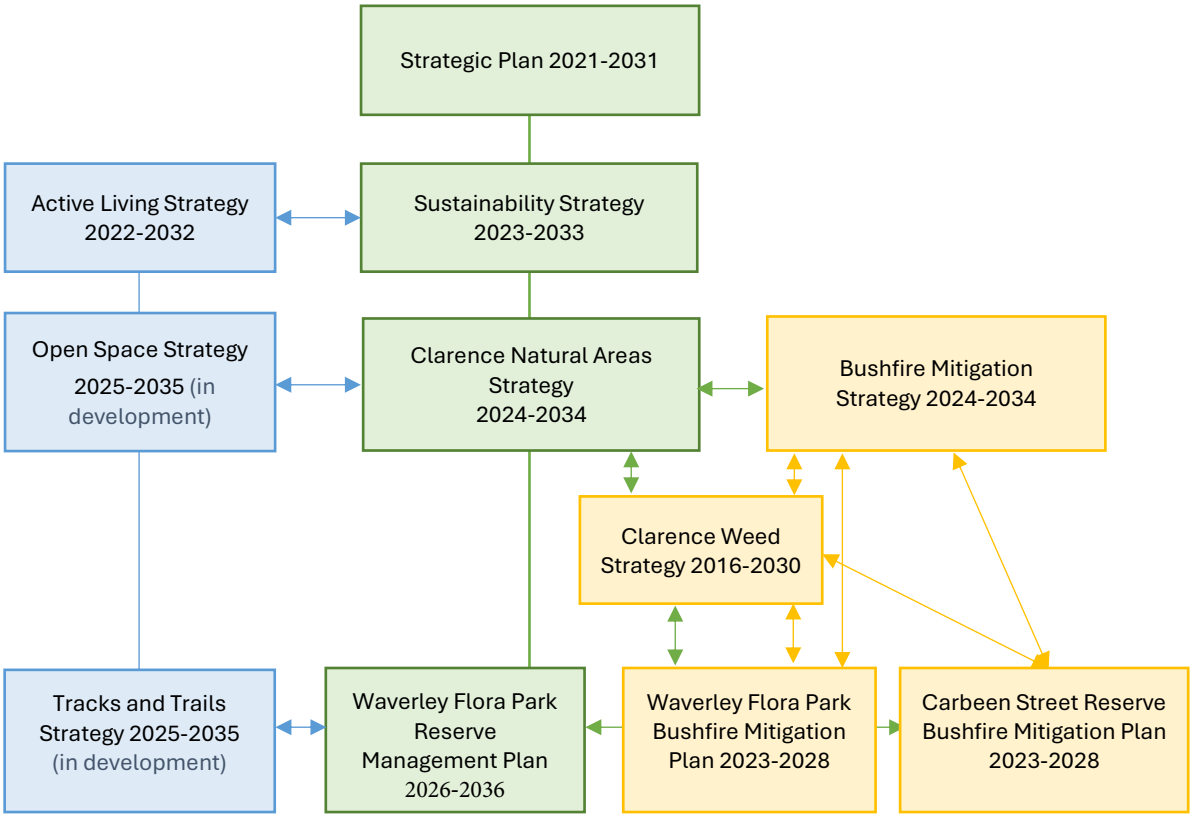

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By prioritising sustainable management and community collaboration, the plan ensures that the reserves remain cherished assets for current and future generations, contributing to a healthier environment and a stronger, more connected community.

Key management priorities

The plan outlines specific prioritised actions across a ten-year period to address key management challenges. The following is a summary of the key management areas and associated recommended actions, with a comprehensive list of actions available in the implementation plan.

Fire and habitat management

Create a mosaic of ecological patch burns to maintain vegetation diversity and reduce fuel loads, as guided by the *Waverley Flora Park Bushfire Mitigation Plan 2023–2028* and the *Carbeen Street Reserve Bushfire Mitigation Plan 2023-2028*.

Collaborative weed management

Control existing weeds and prevent weed incursions in collaboration with the Landcare groups and local community.

Recreation and infrastructure

Maintain and upgrade formal tracks, close unauthorised tracks in sensitive areas, and enhance entrances with signage, seating, and interpretation in line with the *Visitor Amenity Plan*.

Domestic animal management

Declare WFP and CSR as "on-lead on tracks" dog zones while promoting responsible pet ownership under the Clarence Dog Management Policy and *Cat Management Act 2012*.

Community participation and education

Partner with schools and Landcare Groups to deliver nature-based learning, citizen science and local stewardship initiatives.

Monitoring and review

Undertake regular vegetation and fauna monitoring to inform adaptive management and guide mid-term and long-term plan reviews.

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The implementation plan assigns each action a priority level and responsible party, providing a realistic roadmap that accounts for available resources. A formal mid-term review of the plan's progress will be undertaken in 2030, with a full review and plan update in 2035. Regular evaluation

of monitoring data, community feedback, and environmental conditions will support adaptive management throughout the life of the plan.

Long-term vision

The Waverley Flora Park Reserve Management Plan 2026-2036 (WFP RMP) facilitates the continued protection and enhancement of the reserve's natural and social values, while enabling inclusive access and fostering community connection. Through collaborative stewardship, sustainable practices and evidence-based decision-making, the reserve will remain valuable natural assets — resilient, biodiverse and deeply valued by current and future generations.

1 Introduction

The Clarence City Council is developing and implementing reserve management plans (RMPs) for bushland and coastal reserves within the municipality. This management plan addresses two reserves:

1. Waverley Flora Park (WFP), described by botanists as "a grassy gem on Hobart's eastern shore"[1]. The WFP covers 82 ha west of the South Arm Highway, about 7 km from Hobart, in the suburbs of Bellerive and Mornington on the eastern shore of the River Derwent. The park consists of several connected parcels managed by Clarence City Council with two small water reservoir reserves on Mornington Hill managed by TasWater.
2. Carbeen Street Reserve (CSR), located at 28 Carbeen Street, Mornington. A 1.32 ha remnant of native bushland within a developed urban landscape and located approx. 300 m north of WFP.

Refer to Figure 1 for the locations of the two reserves.

This Waverley Flora Park Reserve Management Plan (WFP RMP) is intended to provide guidance for management of the two reserves for the period 2026-2036. It is acknowledged that funding constraints may restrict management actions.

1.1 Background

The two reserves are valued reserves on the eastern shore under Council management. The following sections introduce the WFP RMP process as applied to the reserves, describe the history and geography of the reserves, and outline the planning overlays that apply to the reserves under the Tasmanian Planning Scheme – Clarence Local Provision Schedule (TPS).

1.1.1 Brief history of reserves

The WFP holds a remarkable historical legacy. It has long been a site of interest for botanists, ecologists, and naturalists. In 1836, Charles Darwin himself visited the area during his time in Hobart aboard the HMS Beagle. The park also played an important role in the 1940s and 1950s when Dr. Winifred Curtis, one of Tasmania's most renowned botanists, frequented the area with her botany students. Over time, the park has seen dedicated efforts from groups like the WFP

[1] Fensham & Gilfedder 1989

Landcare Group, Tasmanian Threatened Plants, and Birdlife Tasmania. These organisations, along with local volunteers, have contributed significantly to its upkeep, tackling invasive species and monitoring flora and fauna.

Geographically, the park spans 82 hectares and is surrounded by residential areas on three sides, with native vegetation to the east beyond the South Arm Highway which forms the park's eastern boundary. Its diverse topography includes the summit and slopes of Mornington Hill, offering visible prominence from Hobart and Clarence. The rich geological variety, comprising Permian siltstone, Triassic sandstone, and Jurassic dolerite, creates a foundation for diverse vegetation types and native flora. With its remnant native grasslands and woodlands, the park is crisscrossed by tracks and trails which are used for fire management, walking and mountain bike riding. Walking tracks include the Charles Darwin trail that passes through the reserve from south to north.

Carbeen is a bushland reserve comprising white gums, rare flora and views of the Meehan Range. Although it is surrounded by residential development and a playground across the street, it is a key component of the biodiversity corridor from WFP to Kangaroo Bay Riparian reserve and beyond. It has arisen out of subdivision planning and is appreciated as a retreat and dog walking area by the local community.

1.1.2 Overview of previous management and Reserve Management Plan process

The conservation significance of the WFP was first recognised when Landscape Architect Jerry De Gryse began developing a landscape management plan for the park in 1989. At that time the area was being considered for development by Housing Tasmania. In response to the natural values highlighted in the management plan, the park was listed on the National Estate.

In September 1989, Clarence City Council adopted the Landscape Management Plan. In November of that year WFP, previously Waverley Park, was officially opened and the entry at Lanena Street dedicated to noted Tasmanian botanist Winifred Curtis (De Gryse 1990).

In adopting the plan, the importance of actively managing the park to retain the natural values for future generations was recognised by Clarence City Council.

The first WFP Landscape Management Plan developed in 1990 by Jerry de Gryse, was reviewed and updated by De Gryse in 1999. This WFP RMP provides a review of recommendations and actions taken based on the Tasflora Waverley Flora Park Reserve Activity Plan (RAP) 2013-2018. Refer to Section 2.1 for more details.

It is noted that the RAP process has evolved into the RMP process in the past few years.

1.1.3 Planning zones and overlays

The land tenure of the WFP and CSR is local government. WFP extends across seven Titles, zoned Open Space, with two small Titles zoned Utilities for the TasWater reservoirs. CSR is on one Title and is also zoned Open Space. The Tasmanian Planning Scheme – Clarence Local Provisions Schedule (TPS) zoning and overlays are illustrated in Figure 2.

The following TPS overlays apply to the WFP:

- Bushfire-prone area across all titles
- Low and medium landslip hazard bands across portions of the titles
- Potentially contaminated land in the historic sandstone pit and historic fuel storage on Title 37392/1
- Airport obstacle limitation area across all titles
- Priority vegetation area across 73 ha of the park titles.

The following TPS overlays apply to CSR:

- Priority vegetation area across 0.62 ha of the western portion of the title
- Low landslip hazard band across portions of the title
- Airport obstacle limitation area across the title.

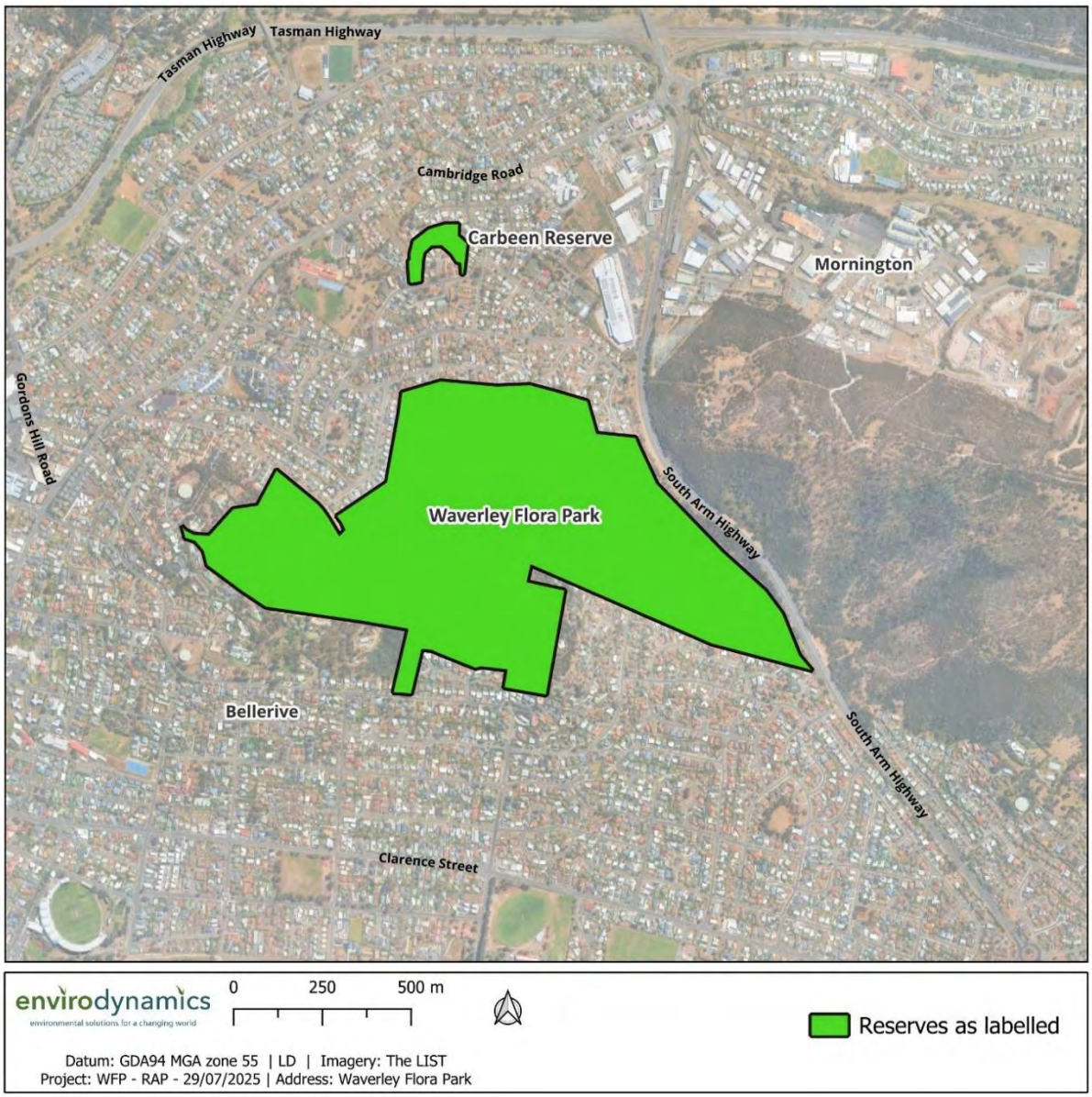


Figure 1 – Location Plan – Waverley Flora Park and Carbeen Street Reserve

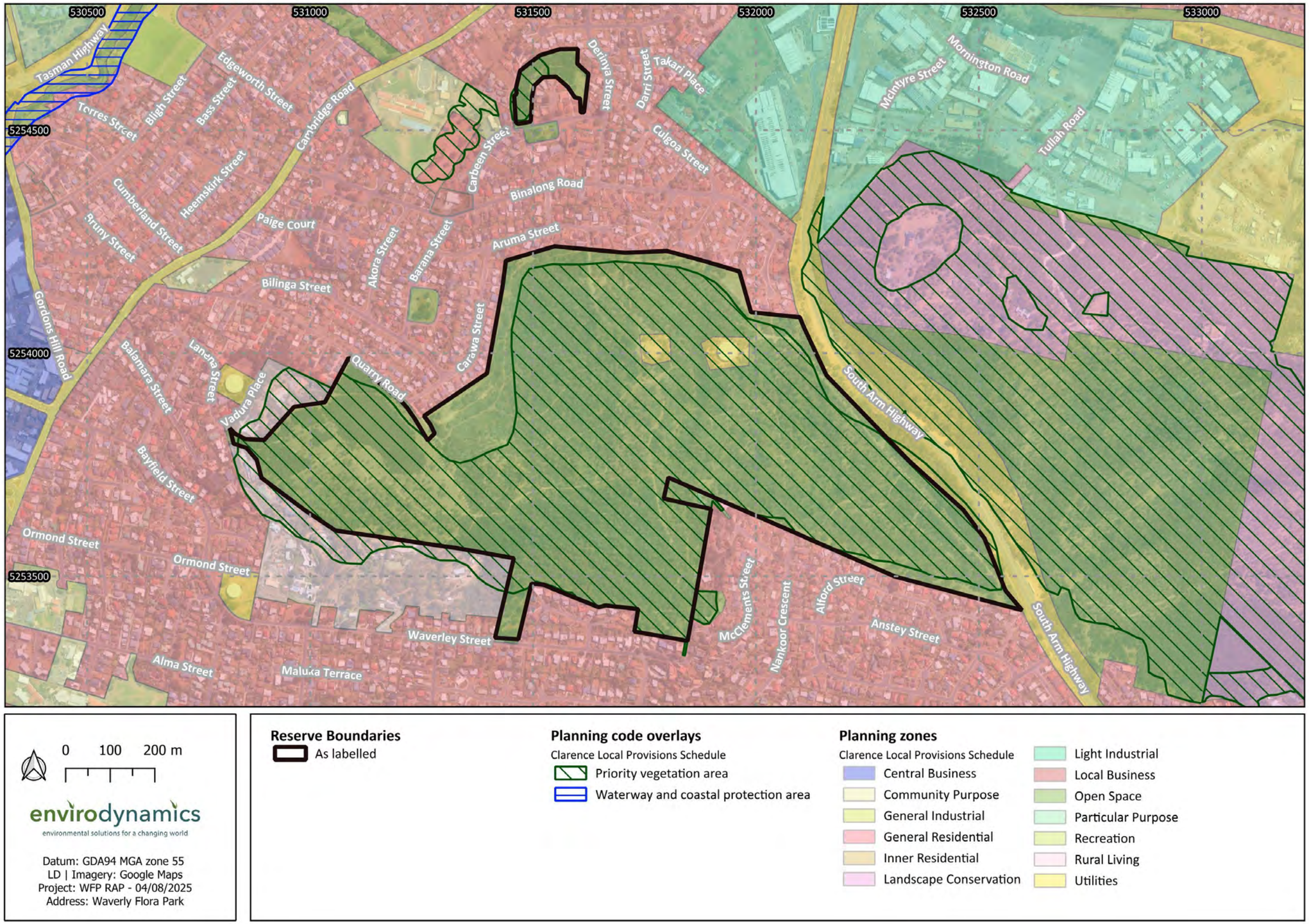


Figure 2 – Tasmanian Planning Scheme zones and overlays on Waverley Flora Park and Carbeen Street Reserve

1.2 Aims of the Reserve Management Plan

Council intends for the WFP RMP 2026-2036 to fulfil three main objectives:

- ensure the reserves are sustainably managed to protect and enhance their natural and social values,
- identify priority on-ground management activities to be undertaken within the reserves by Council, community groups and/or volunteers, and
- encourage community involvement through raising awareness of the reserve's values and encourage participation in activities to minimise threats to these values.

To facilitate these objectives, a process of extensive consultation has been undertaken within the local community. The WFP and CSR Reserve Activity Plans were subject to community consultation primarily through Council's 'Your Say' engagement process. The process also included reviews of existing natural values reports, and previous surveys in the reserves.

To meet the aims and address the desires of the community, the WFP RMP contains:

- an updated catalogue of the reserve's natural and social values
- discussion of the degrading processes impacting ecological systems in the reserve
- a community and stakeholder component demonstrating the key themes of feedback that were incorporated into future management recommendations, and
- recommendations for the future reserve management, including monitoring.

The aims of the WFP RMP will be achieved through:

- undertaking an initial assessment of the natural and social values and the existing or potential management issues
- undertaking a two-stage community consultation process to capture local knowledge and interests, and providing opportunities to raise and prioritise issues (this process builds knowledge of the reserve and management concerns while actively involving the community in management planning)
- reviewing recommendations of the RAP for Waverley Flora Park 2013-2018 (Tasflora 2013)
- reviewing existing documents and specialised reports relating to WFP and CSR.
- providing priority recommendations in the 2026 WFP RMP based on the community consultation, review of existing plans and the current understanding of the natural and social values, and any threats to those values.

1.3 Waverley Flora Park Reserve Management Plan Strategic Framework

The following flowchart illustrates the WFP and CSR Management Plan Strategic Framework.

2 Review of reserve plans and community and stakeholder consultation

This section provides the review findings for the Waverley Flora Park (WFP) and Carbeen Street Reserve (CSR) plans, followed by the input from the community and stakeholder consultation.

2.1 Waverley Flora Park Reserve Activity Plan 2013-2018

As noted in section 1.1.2, Tasflora prepared a Reserve Activity Plan (RAP) for WFP in 2013. Tasflora reviewed Council's 2002 RAP and provided an implementation plan identifying immediate and ongoing management priorities for a 5-year period. The content and structure of the 2013 RAP has been referenced for the current plan. Assessment of values and development of management actions for the CSR is an addition to this 2026-2036 Reserve Management Plan.

2.1.1 Actions undertaken successfully from WFP RAP 2013-2018 (TasFlora)

Of the recommended actions in the 2013 implementation plan, Council has successfully completed the majority. The 2013 RAP implementation plan successes include:

- Implementation of weed control measures with a focus on priority weeds and early detection and control of new incursions such as tree heath (*Erica arborea*), mediterranean daisy (*Urospermum dalechampii*) and serrated tussock (*Nassella trichotoma*). There was also a focus on lower priority environmental weeds impacting native vegetation communities. Ongoing weed maintenance is needed due to the suburban nature of the reserve, where environmental weeds are common in adjoining properties, and other forms of disturbance such as bushfire mitigation and track works provide opportunities for weeds to establish.
- Implementation of bushfire mitigation works as per the Bushfire Mitigation Plans for the reserve including fire trail maintenance, prescribed burning and the rationalisation of the fire trail network.
- Development of the Avenue of Honour to recognise the historic Bellerive Soldiers' Avenue planted in 1918 by the Bellerive Rifle Club in honour of the 23 members of the club who served during World War 1.
- Installation of safety fencing and warning signage above the quarry at the viewpoint.
- Reconstruction of the dry-stone wall at the gathering place below the quarry.

- Reserve entrance landscaping including native plantings and low sandstone walls and rock borders at most of the entrances recommended including Quarry Road, Alford Street, Waverley Street, Nankoor Crescent and the Winifred Curtis entrances.
- Substantial track improvements including on the Quarry Loop and Charles Darwin Trail in addition to the annual track maintenance program as informed by the track audit.

2.1.2 Actions yet to be completed from Tasflora WFP RAP 2013-2018

Actions that have yet to be completed and are still relevant to the management of the reserve are included in this RMP.

Some actions that were not completed have been assessed as being beyond the scope of the RMP, for example the Waverley Street Entrance Landscape Plan including the enhancement of play equipment have not been included in this RMP as they are more appropriately addressed in the Open Space Strategy.

2.2 Carbeen Street Reserve management

With its relatively small area, the CSR has previously been managed under the Carbeen Street Reserve Bushfire Mitigation Plan. Work began on a draft RAP for the Bushland Reserve including ecological assessments by North Barker Ecosystem Services (NBES) in 2021. By combining the two reserves into one RMP due to proximity, shared values and connectivity, the natural and social values of these bushland areas can be addressed cost effectively as such the information gathered by NBES is included in this WFP RMP.

2.3 Community engagement – issues and opportunities

Community consultation plays an integral role in the development of RMPs. It provides an opportunity to seek input into the values and management issues that are important to the community. This input helps to establish shared management priorities and encourages community ownership, ultimately supporting practical actions and measurable outcomes. The following community consultation activities were undertaken as part of the review of the 2013 RAP:

- A ‘walk and talk’ event was held at WFP in 2022, with 23 participants.
- A ‘walk and talk’ event was held in CSR in 2021, with 6 participants.
- Feedback forms were distributed and an online survey (via the ‘Have your Say’ website) made available to residents with further responses provided via email to Council.

The following stakeholders and user groups provided feedback:

- Clarence Dog Owners Group (CDOGs)
- Howrah, Warrane and Bellerive primary schools
- Waverley Flora Park Landcare Group
- BirdLife Tasmania
- Botanists and Ecologist
- Department of Natural Resources and Environment Tasmania (DNRE) Conservation Assessments and Wildlife Services staff
- Council staff
- Tasmanian Fire Service
- Community members

More than 30 individual and group discussions were recorded from the WFP walk and talk. The WFP online survey attracted 386 visits and 239 responses. Additional input was submitted via email to Council and the consultant.

The CSR online survey received 138 visits with six public submissions received and one individual provided feedback via direct email to Council.

Table A in **Appendix 1** summarises the main opportunities and issues raised by different stakeholders for WFP and includes the number of responses received during the community consultation process for each opportunity or issue which helps to demonstrate the community's priorities for WFP. Many of the respondents provided feedback on multiple issues and hence the total number of responses received on all issues exceeds the number of respondents. In addition, respondents may have provided feedback through more than one method of communication.

Table B in **Appendix 1** summarises the opportunities and issues raised by the CSR stakeholders.

Walking, dog walking and nature appreciation are the main reasons people visit WFP. Most survey respondents were from Howrah and Bellerive followed by Lindisfarne and Mornington with 92% of respondents living in the Clarence municipality.

While all relevant community feedback has been considered in the review and updated in the 2026-2036 WFP RMP, some issues identified during the consultation process are beyond the scope of this plan or pertain to management issues outside the areas covered by the plan. These issues have been noted and will be addressed through other processes where feasible.

3 Natural values assessment

This section outlines the natural values data, including landscape context, vegetation, and flora and fauna of the two reserves. Studies began in 1989 with the establishment of Waverley Flora Park, where 188 native vascular plant species have been recorded over the years.

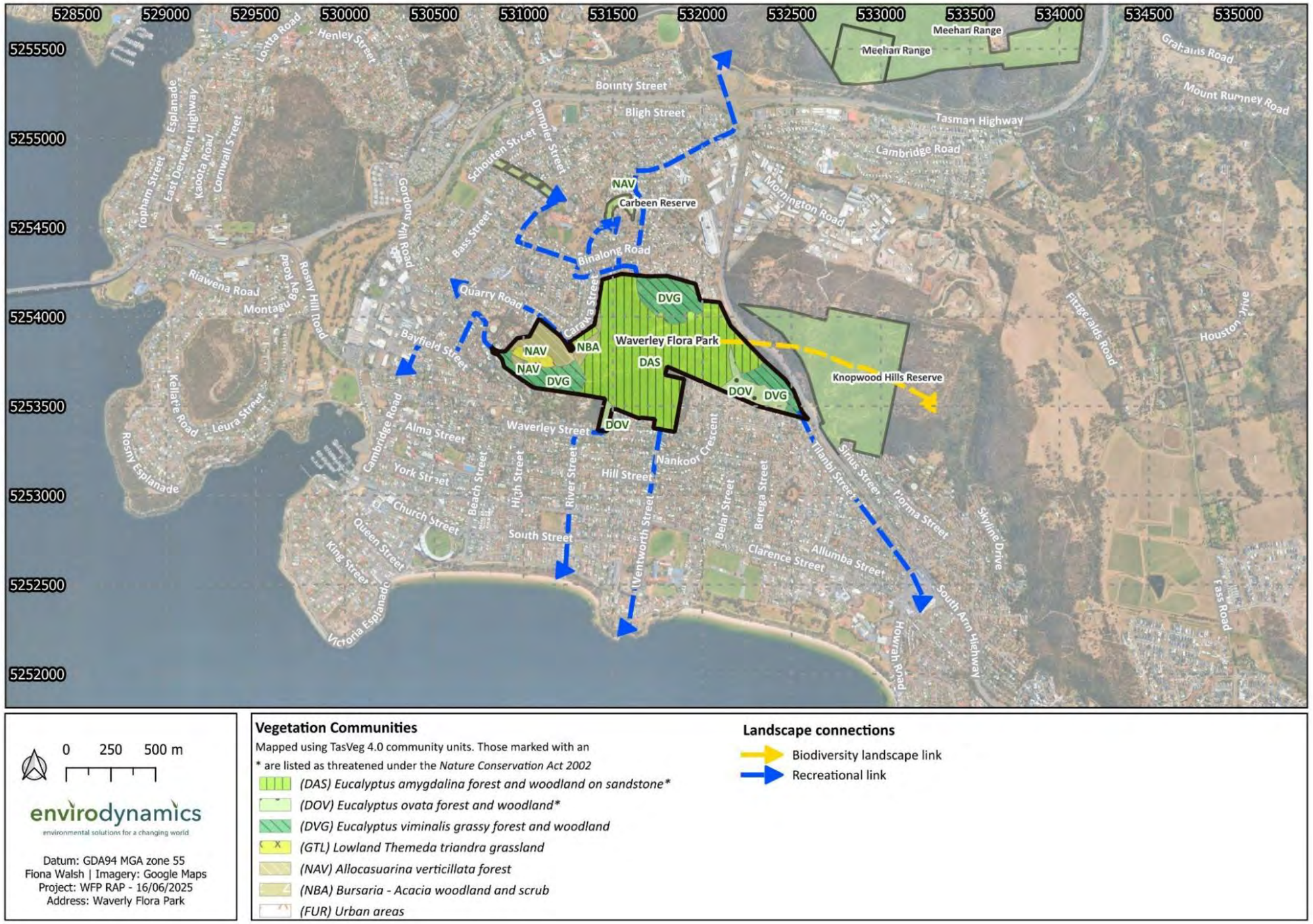
3.1 Landscape setting and connectivity

Surrounded by suburbs, Waverley Flora Park (WFP) and Carbeen Street Reserve (CSR) form vital green corridors between Bellerive and Mornington. The 1.32-ha CSR links WFP to Warrane Primary School and, together with nearby Knopwood Hill, contributes to bushland connectivity.

Since the South Arm Highway's construction in the 1980s, biodiversity connections have been fragmented. Wildlife movement is restricted, particularly for small ground-dwelling mammals like bettongs, potoroos, pademelons, and bandicoots. The highway also isolates bushland, limiting species migration and increasing vulnerability to fire, climate stress, and urban threats.

Edge effects and reduced connectivity impact natural values. Both reserves experience disturbance from all directions, including along tracks. The edge effect, urban proximity combined with threats like bushfire, climate change, feral cats, and roaming dogs result in degraded ecological integrity and may explain the absence of some expected flora and fauna.

Despite their small size, urban bushland remnants like CSR play a crucial role in biodiversity conservation. CSR serves as a key stepping stone, especially for birds, linking larger forested areas such as Mornington Hill, Knopwood Hill, Gordons Hill, and the Meehan Range (Figure 3).



Vegetation Communities

Mapped using TasVeg 4.0 community units. Those marked with an * are listed as threatened under the *Nature Conservation Act 2002*

- *(DAS) Eucalyptus amygdalina forest and woodland on sandstone**
- *(DOV) Eucalyptus ovata forest and woodland**
- *(DVG) Eucalyptus viminalis grassy forest and woodland*
- *(GTL) Lowland Themeda triandra grassland*
- *(NAV) Allocasuarina verticillata forest*
- *(NBA) Bursaria - Acacia woodland and scrub*
- *(FUR) Urban areas*

Landscape connections

- Biodiversity landscape link
- Recreational link

Figure 3 – Landscape connectivity of reserve to surrounding greenspaces in Bellerive – Knopwood Hill – Warrane and Clarence Mountain Bike Park in the Meehan Range

3.2 Vegetation communities

The vegetation communities occurring in WFP and CSR are listed below and their distribution is illustrated in Figures 5, 6 and 7. Classification of vegetation communities is in accordance with Kitchener and Harris (2013) and TasVeg 4.0. The six native vegetation communities occur within the WFP and two within CSR:

1. *Eucalyptus amygdalina* forest and woodland on sandstone (DAS)
2. *Eucalyptus ovata* forest (DOV)
3. *Eucalyptus viminalis* grassy forest and woodland (DVG) in both WFP and CSR
4. Lowland *Themeda triandra* grassland (GTL)
5. *Allocasurina verticillata* forest (NAV) in both WFP and CSR, and
6. *Bursaria – Acacia* woodland and scrub (NBA).

Modified land including disturbed sites, tracks and fuel management buffers are mapped as Extra-urban miscellaneous (FUM). Descriptions of the communities are provided in **Appendix 2** and a list of plants recorded in the different communities is included in **Appendix 3**.

The communities' conditions were assessed using Vegetation Condition Assessment (**VCA**) methodology. Photos of four of the six different vegetation communities are provided at Photo 1 and Photo 2. Refer to Figure 6 for VCA locations and **Appendix 4** for WFP VCA results. The WFP vegetation condition was rated moderate, mainly due to limited connectivity with other bushland and a lack of large trees and logs, which are vital for fauna habitats. *Eucalyptus ovata* forest scored lowest on the VCA, while *Themeda triandra* grassland scored highest. Weeds were minimal, with the most notable occurrences (boneseed and blackberry) in the *E. ovata* community. Themeda grassland had more shrubs than the benchmark but fewer herbs. The *Bursaria - Acacia* Woodland was not assessed as it exists predominantly on disturbed areas that were once *E. viminalis* and *E. amygdalina* woodland and forest.

It is noted that CSR supports *Eucalyptus viminalis* grassy forest and woodland (DVG), but the area has yet to be mapped.

3.2.1 Conservation significance of vegetation communities

Eucalyptus ovata forest (DOV) and *E. amygdalina* forest and woodland on sandstone (DAS) are listed under the *Nature Conservation Act* (NCA) *1999*. These vegetation communities have been

subject to clearing and land conversion since European settlement. *E. ovata* forest (DOV) is also listed as a threatened ecological community under the *Environmental Protection and Biodiversity Conservation* (EPBC) *Ac*t 1999.

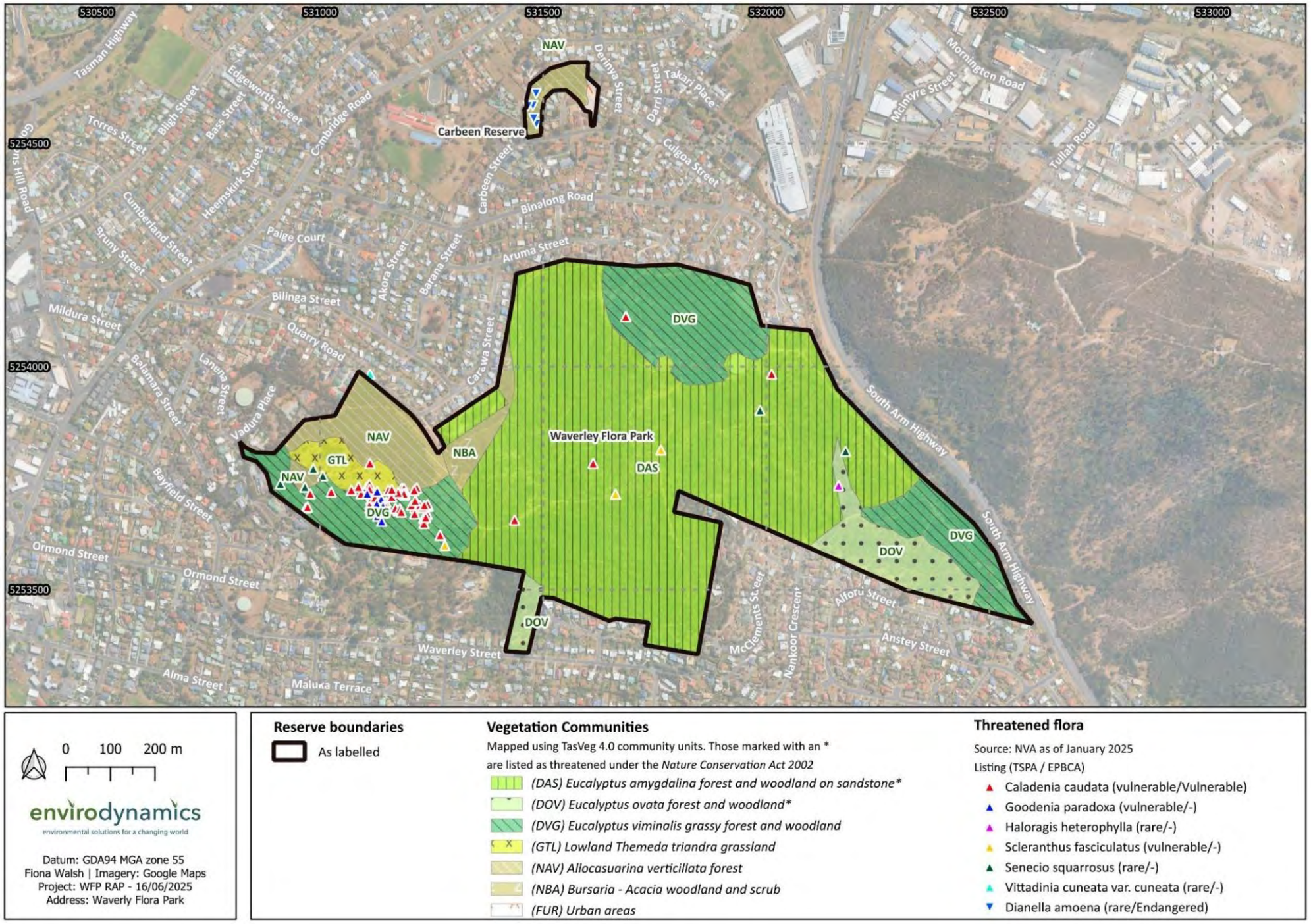


Figure 4 – Vegetation communities and threatened flora records – Waverley Flora Park

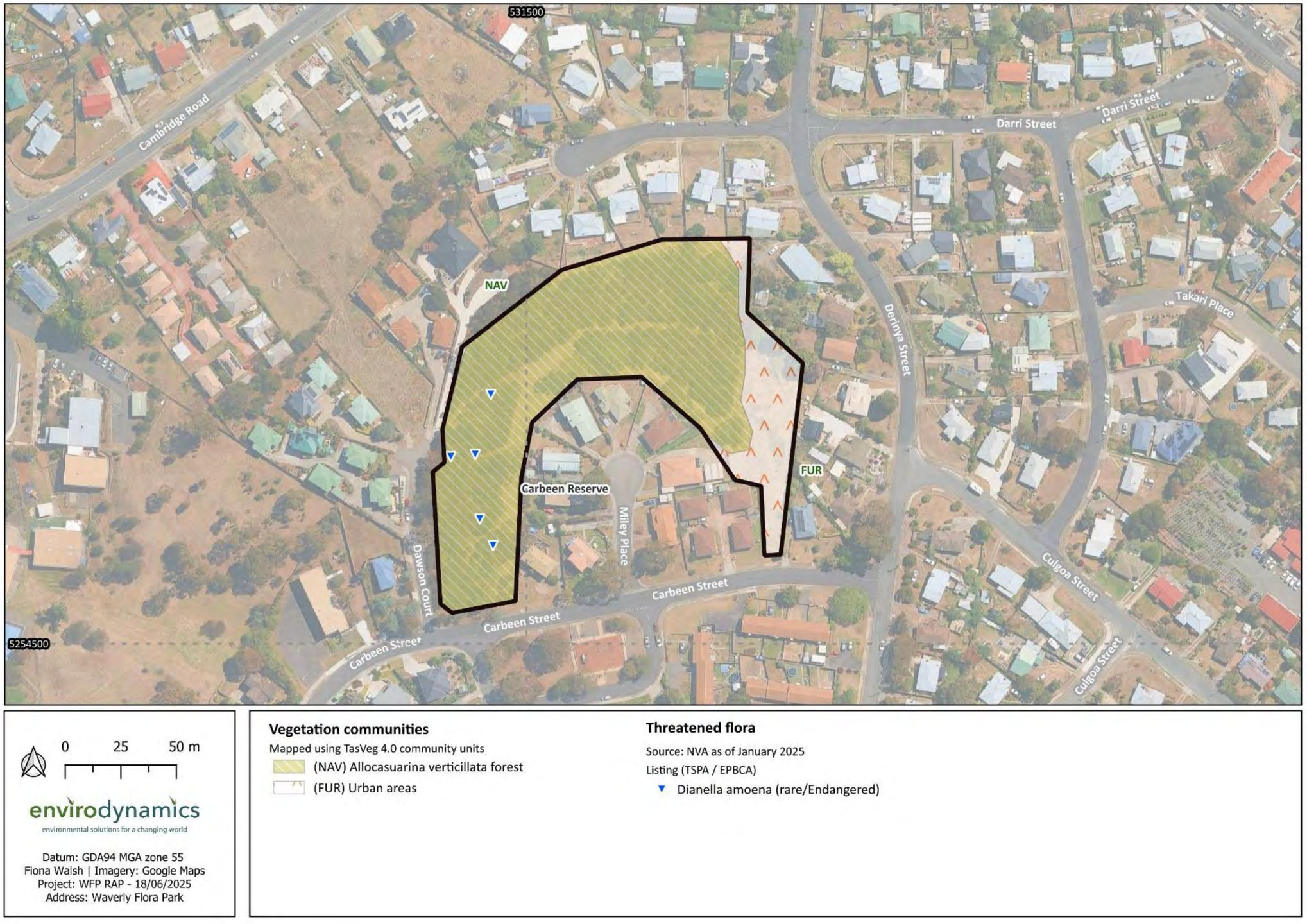


Figure 5 – Vegetation communities and threatened flora records – Carbeen Street Reserve

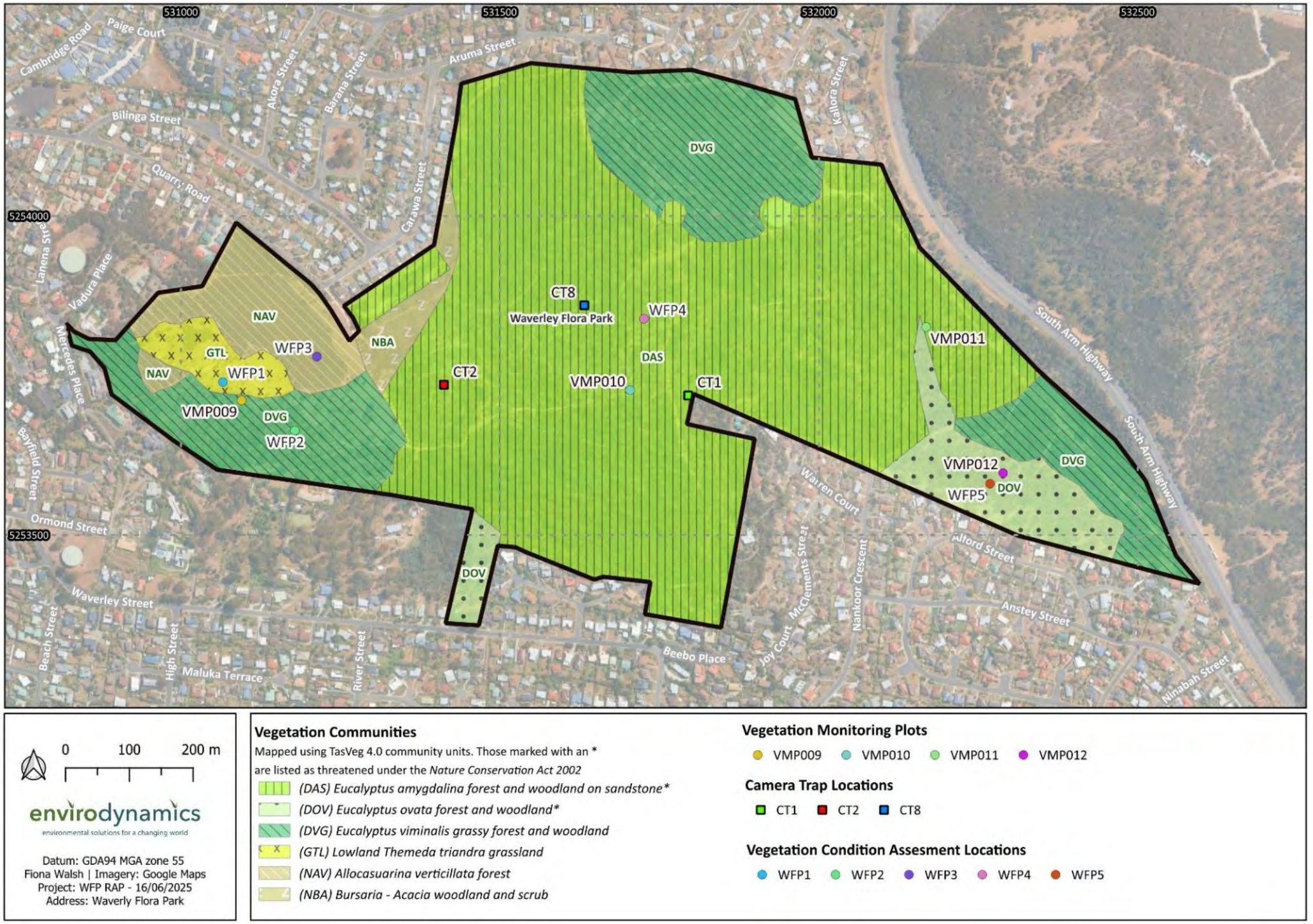


Figure 6 – Vegetation condition assessment, monitoring plots and camera trap locations in relation to vegetation communities.


Photo 1 – Vegetation Communities left to right *Eucalyptus amygdalina* forest on sandstone (DAS) and *Eucalyptus viminalis* dry forest (DVG)


Photo 2 – Vegetation communities left to right *Eucalyptus ovata* forest (DOV) and Lowland *Themeda triandra* grassland (GTL)

3.3 Flora values

3.3.1 Threatened species

Five threatened flora species occur within the WFP. An additional species listed as rare has been recorded within 20 m of the park. Detailed surveys for threatened flora were not carried out as part of this WFP RMP.

Two threatened flora species occur in the CSR. *Vittadinia muelleri* and *Dianella amoena* both listed as rare under the *Tasmanian Threatened Species Protection Act 1995* (TSP Act) (NBES 2021).

Tailed spider-orchid (*Caladenia caudata*)

Listed as vulnerable under the *Threatened Species Act* (TSP) *Act* 1995 and the *Environment Protection and Biodiversity Conservation* (EPBC) *Act* 1999. This terrestrial orchid is generally found in heathy and grassy woodland areas (TSMS 2014). It can be hard to detect as it tends to flower infrequently, making it hard to identify and posing challenges for monitoring known populations. The sub-population at Waverley is considered an important one. A survey in 2021 found that some areas where *C. caudata* was previously recorded in good numbers had no plants (Carter 2021, *pers comm*). Orchids like this are susceptible to damage especially after flowering when impacts such as trampling can prevent the flowers from setting seed. Trampling by orchid photographers, off trail bikes, walkers and off lead dogs can have significant impacts on highly restricted species such as the tailed spider-orchid. Animal browsing, fire regimes and climate change are also influencing factors.

Variable raspwort (*Haloragis heterophylla*)

Listed as rare under the TSP Act 1995. This perennial herb generally occurs on poorly drained sites, sometimes only marginally so, and is often associated with grasslands and grassy woodlands with a high component of *Themeda triandra (*kangaroo grass*) (TSS 2016).* Only one record from 2003 could be found in the WFP on the LIST. However, a comprehensive survey across the reserve was not undertaken as part of this review. This species is included in the plant species list in the 1998 Management Plan, where it is described as being frequent in the *Eucalyptus ovata – Hypoxis hygrometrica* grassy woodland community.

Photo 3 Tailed spider-orchid

Photo 4 Variable raspwort

(*Caladenia caudata*)
Photo: Fiona Walsh

(*Haloragis heterophylla*)
Photo: Nick Fitzgerald

Spur velleia (*Goodenia paradoxa* previously *Velleia paradoxa*)

Listed as vulnerable under the TSP Act 1995, Spur velleia is a short-lived perennial herb found in grasslands and grassy woodland areas. WFP is one of only three council reserves in Tasmania where this plant exists. The plant regenerates from seed, requiring bare ground which fire or disturbance by native animals may provide (TSS 2011). Only a few records were found on LISTmap however it has recently been observed by the WFP Landcare Group and recorded on iNaturalist. The 1998 Management Plan describes the *G. paradoxa* as "straddling sandstone and dolerite substrates" and populations in the park as "representing more than twice the number of individuals of this species in the rest of Tasmania."

Photo 5 – Spur velleia (*Goodenia paradoxa*) Photos: Amanda Blakney

Leafy groundsel (*Senecio squarrosus*)

Listed as rare under the TSP Act 1995. This annual or short-lived perennial herb is usually associated with dry sclerophyll forest, requiring disturbance, such as fire, for recruitment (TSS 2016). In WFP this species has been recorded in grassy *Allocasuarina* woodland areas.

Photo 6 – Leafy groundsel (*Senecio squarrosus*) Photos: Nick Fitzgerald

Spreading knawel (*Scleranthus fasciculatus*)

Listed as vulnerable under the TSP Act 1995, spreading knawel is a straggling ground dwelling herb usually associated with silver tussock grassland/grassy woodland. It appears to need gaps between tussocks and a combination of fire and grazing for its survival. (TSS 2003). In WFP this species has been recorded in the *E. amydalina* and *E. viminalis* grassy woodland areas.

Photo 7 – Spreading knawel (*Scleranthus fasciculatus*)

Narrowleaf new-holland-daisy (*Vittadinia muelleri*)

Listed as rare under the TSP Act 1995. In Tasmania, this perennial herb with woody stems, has leaves arranged alternately along the stem are greyish green and covered with rigid, short hairs

(TSS 2003). It occurs in areas of low precipitation on both fertile and infertile soils and typically is found in native grassland and grassy woodland. This species was found at numerous locations within the WFP in areas of NAV and FUM including along existing tracks. It was also found in the CSR. Approximately 29 plants were observed during the survey (NBES 2021).

Photo 8 – Narrowleaf new-holland-daisy (*Vittadinia muelleri*) Photo: Nick Fitzgerald

Matted flax lily (*Dianella amoena*)

Listed as rare under the TSP Act 1995. This mat forming perennial up to 45cm tall and 5m wide due the branched underground rhizomes has narrow tapering grey-green leaves that are softer, thinner and lighter green than other Dianella species. The pale to dark blue flowers are sweetly scented and the fruits are round, off-white to dark-blue berries, about 5 mm in diameter (TSS 2016). It occurs mainly in the Midlands where it grows in native grasslands and grassy woodlands. This species was recorded in the CSR, not WFP.

Photo 9 – **Matted flax lily** (*Dianella amoena*) Photo: H & A. Wapstra (TSS 2016).

Three (3) other threatened flora species were identified in the 2013 WFP RAP: chocolate lily (*Arthorpodium strictum*), shade peppercress (*Lepidium pseudotasmanicum*) and gentle rush (*Juncus amabilis*). These species have been since been delisted from *the* TSP Act 1995.

3.3.2 Introduced species

The reserve network contains varied and diverse infestations of introduced species due to the historical land use and the invasive nature of many of the weeds recorded. The weeds range from highly invasive declared and environmental weeds to more benign introduced pasture grasses, herbs and some garden species. Around the edges of the park there tend to be larger patches of a range of weeds resulting from higher disturbance, creeping backyards and illegal dumping of garden waste. Weeds pose a threat to the area's natural values as they can out compete and displace native species, change soil conditions, alter fauna habitat and increase fire risk.

This review did not include comprehensive mapping of the occurrence of declared and environmental weeds across the reserve. However, some weeds were recorded as part of the Vegetation Condition Assessments, during camera trapping and assessment of trails in the reserve. The WFP Landcare Group have also contributed many volunteer hours reviewing the available weed records and providing additional information about weeds and their occurrences to ensure a comprehensive and up to date weed list.

Appendix 5 provides an alphabetical list indicating weed status and management priority recorded in the vicinity of WFP and CSR including those recorded by Fensham and Gilfedder in 1989. Weeds are also included from iNaturalist, local Waverley Park Landcare group records and/or reported during the community consultation process. The approximate location of weeds with restricted distribution in WFP is indicated by using the vegetation management units (VMU) to reflect the WFP Bushfire Mitigation Plan.

Figures 9, 10 and 11 illustrate the location of weed records and management zones in WFP and CSR. The Natural Values Atlas records fourteen declared weed species (*Biosecurity Act 2019*) within the WFP, and three within the CSR. Although previous weed management activities have controlled most infestations, annual monitoring will be required to follow up in known areas and respond to any new incursions.

1. Blackberry (*Rubus fruticosus*)* present in WFP and CSR
2. Boneseed (*Chrysanthemoides monilifera* ssp. *monilifera*)* present in WFP and CSR
3. English broom (*Cytisus scoparius*)*
4. Mediterranean daisy (*Urospermum dalechampii*)^
5. Fennel (*Foeniculum vulgare*)* present in WFP and CSR
6. Gorse (*Ulex europaeus*)*
7. Montpellier broom (*Genista monspessulana*)*
8. Pampas grass (C*ortaderia* sp.) ^

9. Prickly pear (*Opuntia stricta*)* ^
10. Serrated tussock (*Nassella trichotoma*)* ^
11. Slender thistle (C*arduus pycnocephalus* and *Carduus tenuiflorus)*
12. Spanish heath (*Erica lusitanica*)
13. Tree heath (*Erica arborea*) ^

Except for tree heath, Spanish heath, mediterranean daisy and fennel, all of these weeds are listed as Weeds of National Significance (WoNs) (*) because of their economic, environmental and/or social impacts. (^) above indicates weeds require ongoing monitoring.

Three additional environmental weeds on the Clarence Local List (CLL) including cotoneaster, sweet briar and mirror bush are scattered individual plants within forested portions of the CSR. These are likely an artefact of bird dispersal or incursions from neighbouring residential gardens in the case of mirror bush which occurs on the reserve boundaries.

3.4 Fauna values

Camera traps to monitor for native and introduced fauna in WFP, were set up at three off track locations from 28th January – 11th February 2022. The location of the camera traps is shown in Figure 6. Camera traps were not set up in the open grassy area due to the risk of theft, and only some woodland areas were monitored. As such the data collected provides a snapshot and further effort would be required to determine all species present in the reserve.

3.4.1 Mammals

Table 1 shows the species recorded at each site. Pademelons, potoroos and brush tailed possums were recorded at all camera locations, brown bandicoots at two sites and blue-tongue lizard, and Bennetts wallaby at single sites. Introduced species were also recorded at all sites. The presence of feral cats and domestic dogs at the same locations as ground dwelling native wildlife is of concern.

Table 1 – Fauna species recorded at each camera trap site

Species		Site 1	Site 2	Site 3
Southern brown bandicoot *(Isoodon obesulus)*			x	x
Tasmanian pademelon (*Thylogale billardierii*)		x	x	x
Long-nosed potoroo (*Potorous tridactylus*)		x	x	x
Brush-tailed possum (*Trichosurus vulpecula*)		x	x	x
Red-necked wallaby (Bennett's) (*Macropus rufogriseus*)				x
Blotched blue-tongued Lizard (*Tiliqua nigrolutea*)				x
Domestic dog (*Canis lupus familiaris*)	i	x		x
Feral Cat (*Felis catus*)	i	x	x	x

"i" indicates an introduced species.

De Gryse 1990 indicated that the likelihood of bettongs and echidnas residing in the reserve is low but noted that more extensive surveys are required for a more comprehensive understanding of the species present. There are recent records of eastern quolls and Tasmanian devils within 1.5km of the reserve. The reserve provides foraging habitat and potential denning habitat for these species, however the urban setting of the reserve and lack of connectivity to other large areas of intact vegetation (due to the South Arm Highway), reduces the chances of these species occurring in the reserve.

Whilst the Nationally listed eastern barred bandicoot (*Perameles gunnii*) has not been recorded in WFP, the park provides suitable habitat for the species. Diggings consistent with bandicoots were recorded during recent surveys and a deceased juvenile brown bandicoot was recorded in February 2023. Digging mammals such as bandicoots and bettongs play an important role in turning over the soil to stimulate plant regeneration and recruitment. Bandicoots and bettongs require dense ground cover to provide shelter adjacent to more open foraging areas and maintaining the understorey to provide habitat is vital. These species are susceptible to dog attack.

The reserve also provides habitat for several of Tasmania's small bat species. Forest and wattled bats are likely to forage over the site and shelter under the bark of mature trees in the reserve.

The CSR may provide fauna habitat, but no specific mammal surveys or camera trapping has been conducted.

3.4.2 Birds

Complete bird lists resulting from targeted surveys in line with BirdLife Australia bird survey protocols can be found in **Appendix 6** for both WFP and CSR. The appendix contains bird survey data primarily provided by Mike Newman and Sue Wragg on behalf of Birdlife Tasmania and as part of their submission to the WFP RMP.

The data was extracted from Birdata (the national bird record database managed by BirdLife Australia), and a 2002 master's thesis by Paul Le Fort, and includes data from 58 bird surveys in WFP, with 59 species recorded and another species listed as anecdotal. An additional four species were subsequently recorded in the park, and a number of birds were seen flying over.

WFP provides habitat that supports resident, migratory and nomadic species resulting in a diverse bird population of predominantly woodland species. Ten of the 12 species endemic to Tasmania have been recorded in WFP.

WFP hosts species of conservation concern, including strong-billed honeyeaters, dusky robins, and blue-winged parrots. While not currently listed as threatened at State or National levels, the Action Plan for Australian Birds 2020 recommends these three for formal protection, meeting IUCN Vulnerable criteria.[2] As of 2023, the blue-winged parrot (*Neophema chrysostoma*) is listed as Vulnerable under the EPBC Act 1999, following a population decline of 30–50% over three generations.

Birdlife Tasmania also noted that there is only one sighting of a noisy miner in WFP, a native species that often displaces other birds. The absence of noisy miners was attributed to the quality of WFP as bird habitat.[3]

The endangered swift parrot (*Lathamus discolor*) was recorded in WFP by De Gryse in 1990 but does not appear in subsequent surveys. The white gums in the park are potential foraging habitat for swift parrots, however they are not considered a significant forging resource.

The Natural Values Atlas reports observations of threatened fauna within 5km including the Tasmanian wedge-tailed eagle, white bellied sea eagle, swift parrot, and Tasmanian masked owl which are all likely to use the reserves to some extent.

[2] Birdlife Tasmania
[3] Newman 2018

3.4.3 Reptiles and amphibians

No records were found on the Natural Values Atlas however the local Landcare group provided the following information. A mountain dragon was recorded in January 2023, and anecdotal evidence suggests that they were once common in WFP. Metallic skinks, other skinks, and blue tongue lizards have also been observed as well as the tiger snake and white-lipped whip snake. Brown tree frog tadpoles have been observed in the frog pond in the centre of the reserve.

Photo 10 – Mountain Dragon (*Rankinia diemensis*) Photo Amanda Blakney

3.4.4 Invertebrates

Although no specific invertebrate surveys were conducted in WFP nor CSR and no records were found on the NVA, the diversity of birdlife in the park suggests a diversity of invertebrates. According to the local Landcare group many moths and insects are seen in the park including the golden stag beetle, red jewel bug, the metallic shield bug and common brown butterflies.

Native invertebrates such as butterflies, moths, wasps and bees play an important role in the pollination of local native species. Male thynnine wasps are known to be important pollinators of threatened orchids such as *Caladenia caudata* (DPIPWE, 2014) which occurs in the reserve.

It is noted that *E. amygdalina* forest on sandstone supports thatch sawsedge (*Gahnia radula*) which is important habitat for the Tasmanian chaostola skipper (*Antipodia chaostola* subsp. *leucophaea*) during the larval phase of its life cycle. The Tasmanian chaostola skipper is a medium-sized (32–35 mm), brown-coloured butterfly. The adults fly for only a few weeks between October and December, but larval subpopulations can be detected at any time of the year, by the distinctive head downwards larval shelters. The species is threatened by activities which remove or degrade its Gahnia habitat, such as inappropriate burning regimes.

3.4.5 Fauna habitat values

The native vegetation communities within the WFP provide an even greater range of foraging and breeding habitat options for native mammals, woodland birds, reptiles and invertebrates. Pyrke [4] looked at the link between the diggings of small native animals such as bandicoots and the germination and establishment of native plant species. Pyrke noted the important role the animals play in helping maintain biodiversity.

Fauna habitat within the CSR includes both forest and non-forest values which support a diversity of vertebrate and invertebrate species. Currently one of the most significant fauna habitat values within the CSR is associated with the large remnant white gum trees which promote a diversity of habitat for vertebrate, invertebrate species and native birds. Refer to **Appendix 6** for complete bird lists. Some of the larger trees are approaching an age where their tree hollows will become important fauna habitat.

There is also the potential to increase this diversity through the promotion of native grassland and woodland mosaics. Elements of fauna habitat such as fallen logs and old trees are important for many species and ought to be retained wherever possible. Some vegetative refuges for native mammals are present, for example native grasses.

[4] Pyrke, A 1994

4 Social Values Assessment

This section summarises the social values of Waverley Flora Park (WFP) and Carbeen Street Reserve (CSR), including heritage, recreation, connectivity within nearby green spaces and educational values provided by the reserves.

4.1 Aboriginal heritage

Archaeological evidence of Aboriginal occupation in south-eastern Tasmanian occurs throughout the landscape[5]. There is one known Aboriginal heritage site at Waverley Flora Park[6] (WFP), however the park and the CSR have not been comprehensively assessed for Aboriginal heritage and additional undetected Aboriginal heritage are likely to be present.

The Mumirimina people of the Oyster Bay tribe were traditional custodians of the WFP area[7]. The territory of the Oyster Bay people covered 8,000 square kilometres, extending from the South Arm along Derwent Estuary north to St Patricks Head, and including the Tasman Peninsula and the kutalayna (Jordan River) area. The Oyster Bay tribe was the largest tribe in lutruwita (Tasmania) with an estimated population of 800 who travelled through their territory on well-defined routes. They went to the coasts for shellfish and marine vegetables, to the marshes and lagoons for riverine birds and their eggs, and inland to the open forest and plains for kangaroo, wallaby and possum.[8]

It is likely that the people from the Mumirimina band of the Oyster Bay tribe walked the lands of WFP and CSR to hunt, taking advantage of the northly aspects of rocky outcrops for shelter, and using traditional burning practices to shape the landscape. The prominent and open nature of the WFP hilltop may also have been important for cultural practices and gatherings.

4.2 European heritage

During the pre-colonial period, the name Waverley arises from an area of land adjoining the quarry site, which was granted to William Murray and known as “Waverley Park.” It is said that the

[5] Brown 1986 in DeGryse 1990
[6] Aboriginal Heritage Tasmania (AHDR5806)
[7] De Gryse 1990
[8] Tasmanian Aboriginal Centre 2012

inspiration for the name came from the novel “Waverley” published by Sir Walter Scott in 1814, which was very popular at the time.[9]

The Charles Darwin trail traverses WFP following in the footsteps of Charles Darwin. The trail is based on the notes and observations that Darwin made during his day excursion to Hobart’s eastern shore in 1836.[10]

4.2.1 Colonial history 1856-1901

In the 19th century colonial period sandstone was quarried from WFP. The sandstone known as “Kangaroo Point Sandstone” was used to build the Murray Street façade of the Savings Bank of Tasmania, constructed in 1859[11], as well as other buildings in Melbourne and New Zealand. The quarry opened in the 1840’s and closed in 1894, then reopened before being scaled down in 1921[12].

4.2.2 Post-colonial world war history

During the post-colonial period, a new rifle range was surveyed for the Bellerive Rifle Club in 1916 and opened in November 1917. It extended from the northern end of Quarry Road towards Knopwood Hill, covering some 242 acres in total. The rifle club conducted working bees to clear the land, dig target pits and set up the shooting area[13].

In September 1918 the rifle club planted 23 macrocarpa cypress trees on the northern end of Quarry Rd to recognise the service and sacrifice by its members in the Great War. The trees no longer remain. In 2019, Council reinstated the Avenue of Honour at the Quarry Road entrance to WFP[14] with blue gums planted along the edge of the walking track.

4.2.3 Post war and recent history

WFP has a history as an outdoor classroom. Tasmanian botanist Dr Winifred Curtis, a senior lecturer in biology at the University of Tasmania, took botany student excursions to WFP in the

[9] Dean 1997
[10] Clarence City Council website
[11] Sharples et al in De Gryse 1990
[12] Inspiring Place 2017
[13] Inspiring Place 2017
[14] Inspiring Place 2017

1940s and 1950s. Dr Curtis wrote the Endemic Flora of Tasmania (1967- 68). The Winifred Curtis entrance off Lanena St recognises her contribution to botany.[15]

The social and natural history of the reserve were described in a book entitled 'Waverley Flora Park' edited by Elizabeth Dean[16]. This book inspired Diana Duncan to develop a supplementary teachers aid[17] which aimed to encourage teachers at nearby schools to use the reserve as an outdoor classroom. An herbarium of local plants species was also developed by Diana Duncan and displayed at the Rosny Library for several years.

4.3 Recreation and connectivity

This section describes the existing recreational uses and associated connectivity to other green spaces in the community.

4.3.1 Recreation

As noted in Section 3.1, the reserves are green islands which contribute to improved air quality, regulate temperature, and promote ecological balance by providing important habitat. They also absorb rainwater which reduces runoff and flood risk. In terms of social benefits, these green islands can lower stress levels, improve mental health and increase physical activity in addition to encouraging social engagement, recreation, relaxation and community events.

Waverley Flora Park (WFP) is criss-crossed by a network of tracks and fire trails (Figure 7) and provides opportunities for community to access the bushland areas, as well as providing connections between surrounding urban areas. This is also well illustrated in the WFP Visitor Amenity Plan and Audit by Inspiring Place (**Appendix 7**). The park is used for walking, running, bike riding, orienteering, bird watching, rock climbing/abseiling, botanical excursions and dog walking. The Charles Darwin trail runs through the park forming part of a walking circuit that links to Bellerive and Howrah. The natural values of the WFP and the recreational opportunities it offers are highly valued by the local community.

The Carbeen Street Reserve (CSR) is a popular short walk destination for locals including elderly residents and locals with children and pets as well as occasional visitors. The CSR provides an

[15] Dean 1997
[16] Dean 1997
[17] Duncan 1998

opportunity for locals to appreciate a native bushland setting in a largely developed landscape. It is recognised by locals as a significant community asset.

Nature observation and appreciation of scenic landscapes are also features of the WFP and CSR, with scenic lookout points providing unique elevated views overlooking the Meehan Range and the wider Clarence/Hobart area.

4.3.2 Connectivity

Maintaining and enhancing the connectivity of native vegetation is important for preserving biodiversity in the landscape. Connectivity between natural areas plays an important role in gene flow between populations and allows native species to move through the landscape to breed, forage and nest. Linkages enable species to migrate from one area to another, providing the greatest opportunity for species to adapt to climate change.

Neighbouring properties to the WFP and CSR with remnant native vegetation provide some buffer to the park and reserve, and residents should be encouraged to maintain this habitat.

WFP provides important recreational and transit links between the suburbs of Bellerive, Howrah and Mornington. In addition, the adjacent Knopwood Hill provides important bushland/biodiversity connectivity for WFP (Figure 3). However, the construction of the South Arm Highway in the 1980s impaired connectivity interrupting recreational and biodiversity connections. The road presents a barrier to the movement of some plants and animals, increasing the risk particularly to small ground dwelling mammals, such as bettongs, potoroos, pademelons and bandicoots, which may try to cross the highway.

The WFP contains significant areas of native vegetation which provide habitat for a range of native flora and fauna species. The reduced ‘safe’ connectivity to other bushland areas to allow for species migration and/or to provide animals with escape routes and refuges when disturbed, or threatened, makes some species within WFP more vulnerable to impacts such as bushfire and climate change and to threats posed by feral cats and roaming dogs. Reduced connectivity combined with the close proximity to urban areas, most likely contributes to the absence of some fauna normally expected to occur in the vegetation present in the park.

The importance of the CSR for biodiversity and recreational connectivity in the Mornington area is likely to be underestimated by the public. The site warrants promotion and increased general awareness to the wider community for its connections with WFP and the Warrane greenbelt to Kangaroo Bay Rivulet linear reserve, Figure 3.

4.3.2.1 Entrances

The WFP Visitor Amenity Plan and Audit outlines the proposed modifications to WFP entrances. Noting that the entrances have received landscaping treatments since the previous RAP, it is proposed that the quarry road entrance gate will be refurbished, and a trailhead sign will be installed and embedded within native planting and sandstone seating. Furthermore, it is proposed that two additional formal accesses will be upgraded, and nine local entrances will be upgraded. Refer to **Appendix 7** for details.

It is possible to enter the CSR from two locations from 28 Carbeen Street (east & west). The westernmost entrance from Carbeen Street, commencing in the native bushland, is the logical site to establish the primary entrance to the Reserve, as confirmed through community consultation. This entrance is also directly opposite the existing Carbeen Play Park which makes a logical direct (across the street) connection between the playground and the reserve. Landscaping treatments to the eastern entrance are warranted, particularly if tracks are constructed to provide through access to the Reserve.

4.3.2.2 Tracks

WFP has a comprehensive network of tracks including dedicated walking/riding tracks as well as management vehicle trails. CSR has no formal network, but the fire trail and informal walking pads are used for local recreation. Tracks provide walking, dog walking and bike riding opportunities for local residents and visitors. Several unauthorised tracks have also been created by mountain bikers.

The track network offers good connectivity from the various reserve access points in the surrounding suburbs of Bellerive, Howrah and Mornington. The reserve also provides transit options between suburbs for walkers and bike riders. Track head signage is located at all main entry point to the reserves, with waypoint signage on the Charles Darwin Trail. None of the unauthorised tracks assessed have been constructed to current construction standards or methods.

Mtn. Trails was engaged by Council as part of the WFP RMP to undertake an assessment of the suitability of the current track network to meet the needs of the various users of WFP. A Track Network Plan was developed to identify and audit unauthorised tracks within WFP and opportunities for any other connections to meet user needs. It provided recommendations to address defects, close unauthorised tracks and for future planning. The Track Network Plan assessed the condition and connectivity of tracks only and did not assess impacts on natural values.

The formation of new tracks and the widening of existing tracks can pose a risk to the park's natural values by increasing the edge effects of erosion and trampling and providing a vector for the spread of weeds. There is evidence of some known orchid sites being impacted. Closing unauthorised tracks can reduce these impacts.

In assessing the broad track requirements for all users of the reserve, the proximity of, and connection to, other recreation areas is also considered. For instance, the suitability of the reserve for additional mountain bike specific trails is assessed in the context of the proximity of the tracks in the Clarence Mountain Bike Park in the Meehan Range.

As shown faintly in Figure 6, the aerial image of the CSR reveals the presence of two tracks that may have been informally established and highlights key shortcomings: the tracks lack ongoing maintenance, are fragmented, and do not offer a continuous route through the reserve. Management of the tracks is discussed further in Section 5.9.

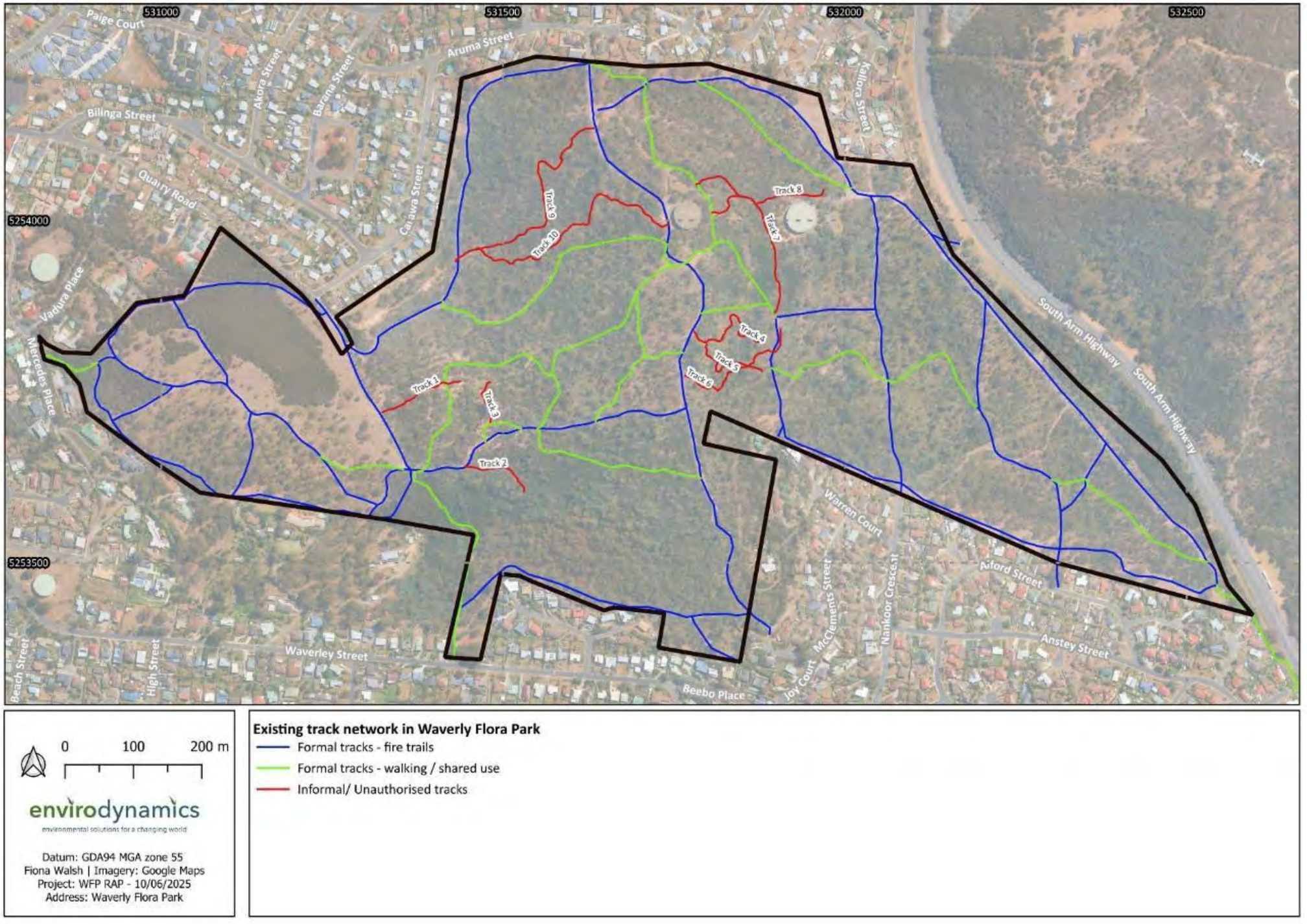


Figure 7 – Existing track network in Waverley Flora Park derived from existing data and Track Network Plan (Mtn Trails 2022)

4.4 Educational Values

The community values the park for its long-standing role in educating the public about natural heritage, particularly its significant flora. However, there is an opportunity to further raise awareness of the park's rich plant diversity and its historical role as a botanical classroom.

When the flora park was first established, botanists and volunteers actively promoted its importance, creating school programs to encourage outdoor classrooms (Duncan 1998) and showcasing a botanical collection at the Rosny Library (pers. Comm. Duncan 2022). Enhancing public understanding of fragile ecosystems, the transient nature of certain plant species, and responsible recreational practices would be valuable. Thoughtfully designed signage, incorporating art and design to complement the landscape, could help communicate these messages without detracting from the park's natural beauty.

5 Management issues and recommendations

A range of management issues were identified during the natural values surveys and community consultation phase of the WFP RMP. Issues are divided into eleven groupings:

1. Vegetation management
2. Bushfire mitigation and vegetation management
3. Weed management
4. Domestic animal management
5. Fauna habitat management
6. General land management including stormwater and litter
7. Aboriginal heritage management
8. Historic heritage management
9. Track management and development
10. Entrance, signs and infrastructure including art
11. Community participation, education and awareness

Each section includes management actions, with priority actions developed for those that had strong community support and/or were identified as important issues by Council officers or stakeholders. The management issues outlined in the previous WFP RAP remain current, and they are all considered and updated in this section based on input from the community, Council and stakeholders. A summary of the recommended actions and priority is provided in the implementation table in section 8.

5.1 Vegetation management

The WFP features significant remnant woodland and grassland that foster native biodiversity and hold strong community value. The WFP RMP seeks to safeguard and strengthen these ecosystems over time by gradually restoring pre-European vegetation, emphasizing a grassy and sedge-dominated understorey with a simplified mid-storey shrub layer.

WFP vegetation condition, key threats and protection

A Vegetation Condition Assessment (**Appendix 4**) identified areas of moderate condition, while *Eucalyptus ovata* forests scored lower due to due to a lack of mature trees, reduced understorey diversity, urban fragmentation, and invasive species. To improve the VCA condition scores, management should focus on retaining large trees, promoting natural regeneration, and targeted removal of high-threat weeds like boneseed and blackberry.

Historical land uses, including quarrying, timber harvesting, and unauthorised track development, have further exacerbated vegetation community decline. While urban constraints remain, strategic planned management, like controlled burning, slashing, and targeted weed removal offer hope for improved VCA scores.

In areas where silver wattle seedlings have been sprayed a complete absence of *Goodenia paradoxa* has been observed where plants had previously been recorded (pers. comm. A. Blakney 2023). Similarly, feedback received during the consultation indicated that orchids may also be affected by chemical use even in their dormant stage. A precautionary approach to removal of *Allocasuarina* species and wattles is advised.

Effective biodiversity preservation requires a dual focus: wholistic understanding of the vegetation communities and addressing threatened species at a finer scale.

- The Themeda grassland's herb diversity points to a need for refined management strategies.
- Concerns exist around unintended impacts of wattle and *Allocasuarina* sp. removal (RAP 2013) particularly on herbaceous layers. Observations suggest chemical spraying of wattle and *Allocasuarina* sp. has affected species like *Goodenia paradoxa* and dormant orchids. As such, support should only be given to a precautionary approach.

To support native species and prevent weed spread, minimise human activity and waste dumping, mitigate herbicide drift, restore disturbed areas e.g. Quarry Road through strategic weed removal, revegetation, fire management, and maintain hygiene protocols to prevent pest and disease introduction. In addition, explore soil carbon and biodiversity monitoring as indicators of what makes native species thrive.

Monitoring

A robust monitoring program is necessary to evaluate management effectiveness, especially given historical data gaps which hinder comparisons. Botanical surveys by Fensham and Gilfedder (1989) along with phenological observations by Pyrke (1994) noting *Vittadinia cuneata var cuneata* as opposed to *V. muelleri*, provide basis for comparing floristic changes across different areas of the park and evaluating the effectiveness of management regimes over the past 30 years. While Fensham and Gilfedder's original data was unavailable, Pyrke's records remain useful. While a comprehensive review is beyond the project's scope, further research, potentially postgraduate-led, could improve conservation planning.

Until monitoring improves, the Precautionary Principle (Rio Declaration, 1993) should guide decisions to ensure uncertainty does not delay proactive ecological protection.

The VCA provides WFP baseline condition assessments with condition scores of 64/100 for DAS, 64/100 for DVG, 64/100 for NAV and 75/100 for GTL. With a score of 57/100 for *E. ovata* forest (DOV) the objective will be to improve the condition of this vegetation community.

CSR status

Though CSR's vegetation is in poor to moderate condition, it continues to support habitat for threatened flora and fauna. As a result, ongoing maintenance of CSR is vital to ensure current ecological values are preserved or improved.

The VCA provides CSR baseline condition assessments with condition scores of 36/100 for DVG, 45/100 for NAV (NBES 2021). Areas of focus to improve the VCA results are recruitment of understorey species and trees while maintaining large trees as habitat.

5.1.1 Threatened species

Since European settlement, many ecological communities, particularly grasslands and dry forests, have significantly declined (NCB 2000). The WFP contains two such threatened vegetation communities, with five recorded threatened plant species and another nearby.

Legal protections

In Tasmania, threatened species are protected under the Tasmanian *Threatened Species Protection Act 1995,* and permits are required for actions that may harm listed species. Threatened vegetation communities are protected under the *Nature Conservation Act 2002*. Additionally, species and communities may be listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Conservation is a shared responsibility, and visitors must avoid actions that could impact vulnerable species.

Orchid vulnerability

Native orchids, including the tailed spider-orchid (*Caladenia caudata*) are particularly vulnerable to trampling, invasive weeds, and poorly timed fire or slashing regimes. While orchid-spotting is popular it can unintentionally damage plants. Protective cages have proven effective at other Tasmanian sites, and the Royal Tasmanian Botanical Gardens offers a sae alternative for photographing rare orchids.

Human activity, including off-lead dogs, bikes, and vehicle traffic, pose a threat to sensitive species. Foot traffic compacts soil, reducing fungal activity crucial for orchids, while uncollected dog waste alters soil nutrients and fosters weed invasion. Track modifications (widening, trimming, resurfacing) and unauthorised bike paths increase disturbance and weed spread.

To mitigate these impacts, management activities must be guided by current threatened species records and coordinated across on-ground crews, CCC NRM staff, and conservation groups such as Threatened Plants Tasmania and Landcare. Annual surveys during peak flowering periods may be necessary to guide decisions. Vehicles should be restricted to formed tracks, especially in grassland areas, and weed contractors must avoid spraying in sensitive areas.

Community engagement

The ephemeral nature of plants such as orchids complicates monitoring. However, there are members of organisations such as Threatened Plants Tasmania and the local Landcare group who have an intimate knowledge of local plants and populations. Incorporating these volunteers into a formal monitoring program for the threatened species in the reserve would benefit conservation efforts in the reserve.

5.1.2 Regeneration activities

Regeneration activities such as low intensity ecological burning will promote the health of the native bushland by encouraging the recruitment of eucalypts in areas of DVG and promoting species-rich open grassland mosaic within areas of NAV. Additionally, the targeted removal of invading native shrubs will be beneficial to achieving this goal.

The presence of *Vittadinia muelleri* in CSR suggests current management is favourable for this species in its current numbers. As such no specific recommendations are required for this species. As noted in Section 3.3.1, *Dianella amoena* has been recorded in the CSR thus, there may be an opportunity to enhance habitat conditions and discover additional previously unrecorded species within the CSR. Recommended ecological burning practices are likely to benefit these species and if carried out appropriately, have the potential to increase the numbers of individuals present.

Burning practices in WFP also have the potential to significantly increase the abundance of conservation significant flora such as native grasses and herbs species as well as ephemeral flowering plants such as lilies and orchids (including threatened species such as *Caladenia caudata*). The fire regimes used in the reserves should be determined through the production of a bush fire management strategy that includes ecological burning.

5.1.3 Landscaping and targeted planting

Landscaping and targeted plantings should aim to re-establish pre-European vegetation structure. This approach would be beneficial to enhance both visual amenity and biodiversity values within the CSR and WFP. Planting of local and indigenous flora is recommended, meaning species which exist in either the reserve or park. Landscaping benefits could be achieved in the following key areas but are not limited to:

- Plantings at defined reserve entrances in the WFP
- Amenity plantings throughout the WFP and CSR in association with potential infrastructure features such as tracks, seats, art installations
- Plantings for biodiversity to provide habitat for native birds, mammals, invertebrates
- Rehabilitation plantings which restore areas of non-native vegetation from the modified eastern portion of the CSR, particularly focusing on degraded dumping site and steep bank
- Plantings in association with drainage features should include application of water sensitive urban design (WSUD) principles in modified sites in the eastern portion of reserve.

Recommendations – apply to reserve(s) as noted by initials in brackets

1. Promote postgraduate research project to: use the original data from Pyrke phenology study and GPS survey locations to replicate flora surveys and allow a comparison with 1994 biodiversity and condition including exotic species. Data and methodology could form the basis of a long-term 10 yearly monitoring program (WFP).
2. Establish a new baseline vegetation monitoring process which measures soil carbon and soil biodiversity levels (WFP and CSR).
3. Install signage at entrances to highlight that areas of the WFP have sensitive vegetation close to the tracks as well as in bushland areas and highlight the importance of staying on formal tracks (WFP).
4. Establish a collaborative on-going monitoring program for threatened species within the park in partnership with the DNRE, Threatened Plants Tasmania, University of Tasmania and the local Landcare group (WFP and CSR).
5. Trial the use of cages during flowering and seed setting periods to protect threatened species in discrete locations. Follow up by assessing whether the cages attract more attention, captured via camera monitoring, compared to non-caged tailed spider-orchids.

6. Avoid all unnecessary slashing that is not in accordance with the Fire Trail Guidelines, Tasmanian Fire Service Fuel Break Guidelines and Asset Protection Zone standards as set out in the WFP Bushfire Mitigation Plan 2023-2028. Where required, undertake works during months which avoid impacts to threatened species such as cryptic orchids (WFP and CSR).
7. Thin out sheoak regrowth and understorey vegetation using appropriate methods and planned burning. Any areas of bare ground should be monitored for invasive species particularly serrated tussock grass (WFP and CSR).
8. Protect and encourage the health and recruitment of eucalypt trees within the reserves consistent with the vegetation community benchmark (WFP).
9. Enhance refugial opportunities for native mammals through the design and implementation of shelters or through planting specific habitat shelter plants such as saggs and tussock grasses (CSR) (NBES 2021).

5.2 Bushfire mitigation and vegetation management units

Bushfires in WFP or CSR present risks to nearby properties, infrastructure, and ecological values. Comprehensive management strategies are detailed in the Bushfire Mitigation Plans (2023–2028) for both WFP and CSR, thus, only a brief summary is provided here.

WFP's burning program divides dry forest and woodland into Vegetation Management Units (VMUs), each managed according to optimal fire regimes or excluded from burning if unnecessary. These burns aim to reduce bushfire risk while supporting biodiversity, particularly in grassy ecosystems.

Fire's role in ecological health depends on season, frequency, and intensity. Controlled mosaic burns enhance species diversity, but excessive burning can damage heathland. Research suggests spring burns may promote weeds, autumn burns increase invasion risk, while winter burns favour native species (Gilfedder 1991).

Appropriately timed slashing or traditional, small-scale burns are recommended for sensitive zones, offering ecological benefits and opportunities for collaboration with Aboriginal communities and Landcare groups.

Recommendations

10. Implement the management actions in the BMPs in consultation with this plan to enhance grassland flora diversity, maintain fauna habitat.

11. Aim to progressively incorporate cultural burning techniques into fire mitigation planning where appropriate by engaging with traditional burning consultants while adapting management actions to be responsive to seasonal conditions and ecological processes on the ground.

5.3 Weed management

Weed management priorities and actions for WFP and CSR should be guided by the Clarence Weed Strategy 2016-2030. The Clarence Weed Strategy (CWS) 2016–2030 was updated in 2023 (NBES 2023) to align with the *Tasmanian Biosecurity Act 2019* and Biosecurity Regulations 2022, replacing the *Weed Management Act 1999*. The review revised weed priority ratings to simplify categories and better reflect management goals.

5.3.1 Weed control

Prioritise removing aggressive declared weeds, especially boneseed and blackberry from Eucalyptus ovata forest and boneseed from E. amygdalina forest with attention to sensitive areas where threatened species are known to occur. Refer to Figure 8 for distribution of declared weeds, weed management units and threatened species in WFP. Control environmental weeds (e.g., sweet briar, watsonia, sweet pittosporum) alongside declared weeds where feasible. Refer to Figure 9 for distribution of environmental weeds and weed management units in WFP.

Weed management zones for WFP and CSR are recommended as outlined in Table 2 and Table 3, respectively and illustrated Figure 8, Figure 9 and Figure 10. The tables outlines which vegetation management units (VMUs) from the bushfire mitigation plan are in each weed management zone to allow for the integrated management of areas of the park and allow contractors to identify and document areas of monitoring and control. In addition, by highlighting the location of threatened flora species on Figure 8 and Figure 10, contractors can identify sensitive sites where precautions when treating weed infestations must be applied.

Environmental weed control in WFP and CSR are supported by the community and remain a key management priority. Weeds threaten vegetation remnants, flora species, and the reserves' amenity. Significant works on primary weed control have commenced since the original surveys by NBES in 2021. Contractors have undertaken these works and ongoing follow-up to maintain these efforts is required.

Hygiene practices are crucial for contractors and crews, including clean equipment, staying on formed tracks, and working from least to most infested areas. In sensitive zones, weeds should be

cut and pasted rather than sprayed to prevent unintended impacts. Removing "parent" plants by contractors in hard-to-access areas is advised to minimise reinfestation, allowing volunteers to focus on seedlings. Contractors should collect weed data to assess effectiveness of the program.

Early detection and control of new or spreading weeds is most cost-effective. Surveys during flowering are recommended, with prompt action to prevent seed production. A simple system for opportunistic mapping by Council teams could improve monitoring, supported by additional weed identification training if needed.

Post-works and after fire, monitoring for weed spread is essential. Programs should adapt to address new incursions. Natural regeneration is preferred for vegetation recovery after weed control, but replanting with native plants or direct seeding may be considered in sensitive areas.

Table 2 – The weed management zones and corresponding vegetation management units for bushfire mitigation in Waverley Flora Park.

Management Zone	VMUs	Description	Management actions
A	7, 10, 11 and 12	Grassland area around *Caladenia caudata*	Install cages during flowering No slashing near track Cut and paint weeds only. No spray zone.
B1	28, 29 and 31	DOV - Eucalyptus ovata forest	Weed removal in *E. ovata* from eastern end of park Allow natural regeneration
B2	21	DOV – E. ovata forest	Weed removal in *E. ovata* forest Revegetate where weeds are removed using native plants of local provenance
C	Eastern edge of 2	DAS – *E. amygdalina* forest and woodland on sandstone DVG – *E. viminalis* grassy forest and woodland	Remove and monitor for serrated tussock Avoid slashing and machinery use Apply strict hygiene protocols Monitor and control other weeds along the roadway to prevent spreading into neighbouring areas.
D	10 and adjoining 1	DAS – *E. amygdalina* forest and woodland on sandstone DVG – *E. viminalis* grassy forest and woodland	Remove tree heath and monitor No slashing Apply strict hygiene protocols
E	4 and 27	DAS – *E. amygdalina* forest and woodland on sandstone	Monitor and control declared weeds Focus on hard to access parent plants and environmental weeds such as Kunzea, freesia, blue bell creeper, tree lucerne and sweet pittosporum

Management Zone	VMUs	Description	Management actions
		DVG – *E. viminalis* grassy forest and woodland	
F	1, 8, 14 and 30	Reserve edges bordering on private lots	Survey the park edges annually for new weed incursions Control small incursions Identify and prioritise larger incursions for contractor control Undertake annual weed control in VMU 14 and 30

Table 3 – The weed management zones and corresponding vegetation management units for bushfire mitigation in Carbeen Street Reserve.

Management Zone	VMUs	Description	Management actions
A	1	Hazard management area	No planting zone Maintain as minimum 7m wide hazard management area round perimeter.
B	2	NAV tolerable fire interval of 15-80 years.	Maintain structure and floristics of vegetation community. Allow recruitment of canopy species. Reduce the extent and density of weeds. Thin vegetation around Eucalypt species which are being suppressed by *Allocasuarina verticillata* to reduce density reduction and promote growth. Cool patch burn using a mosaic of fire in 10m x 10m patches. Burn patches using a multi-stage burning approach (i.e. not all on the same day but over extended periods).
C	3	Grassland over former landfill	Reduce the extent and density of weeds. Slash grass during fire season.

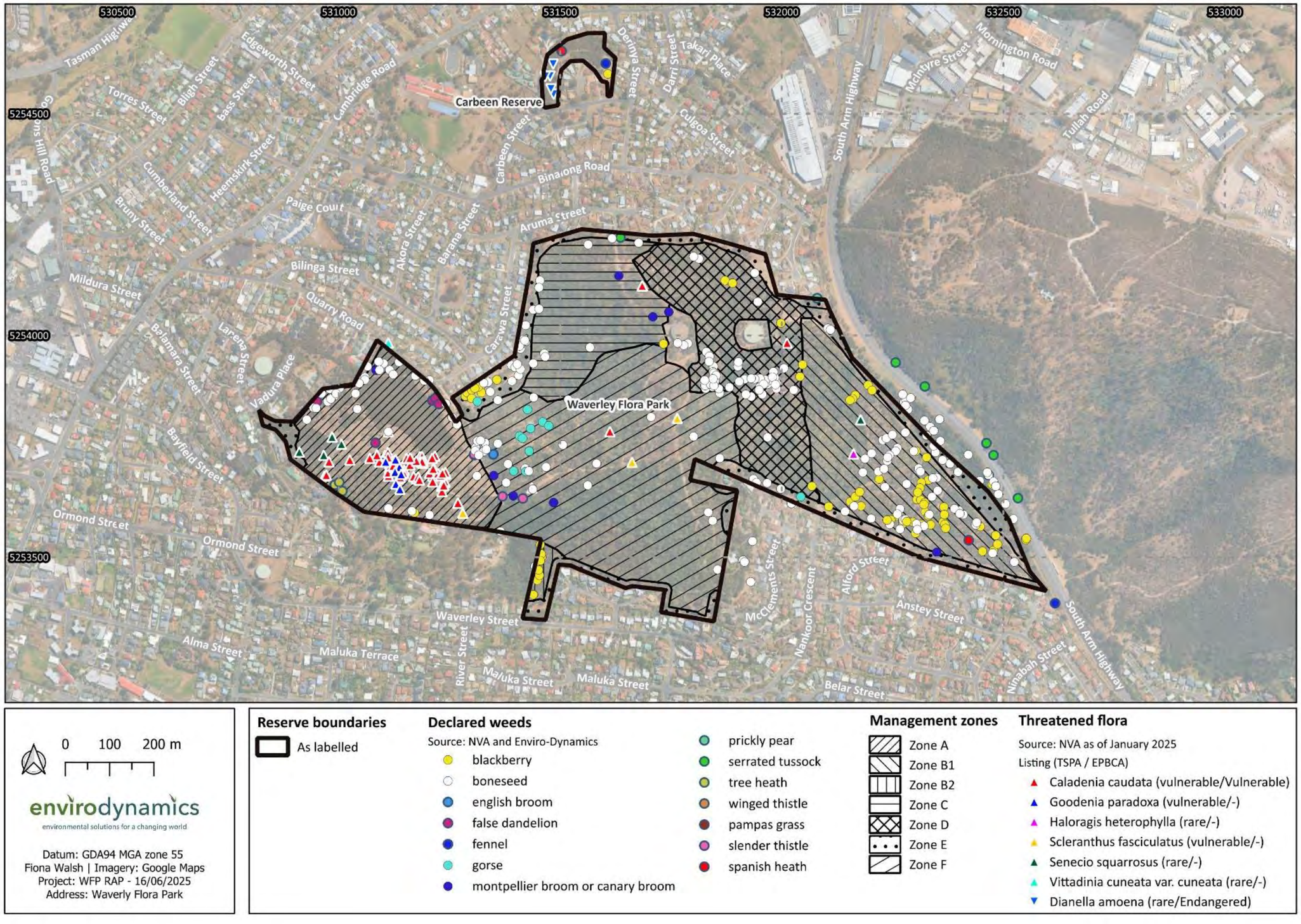


Figure 8 – Declared weeds and weed management zones defined in Table 2 and areas sensitive to weed management i.e. threatened flora in WFP.

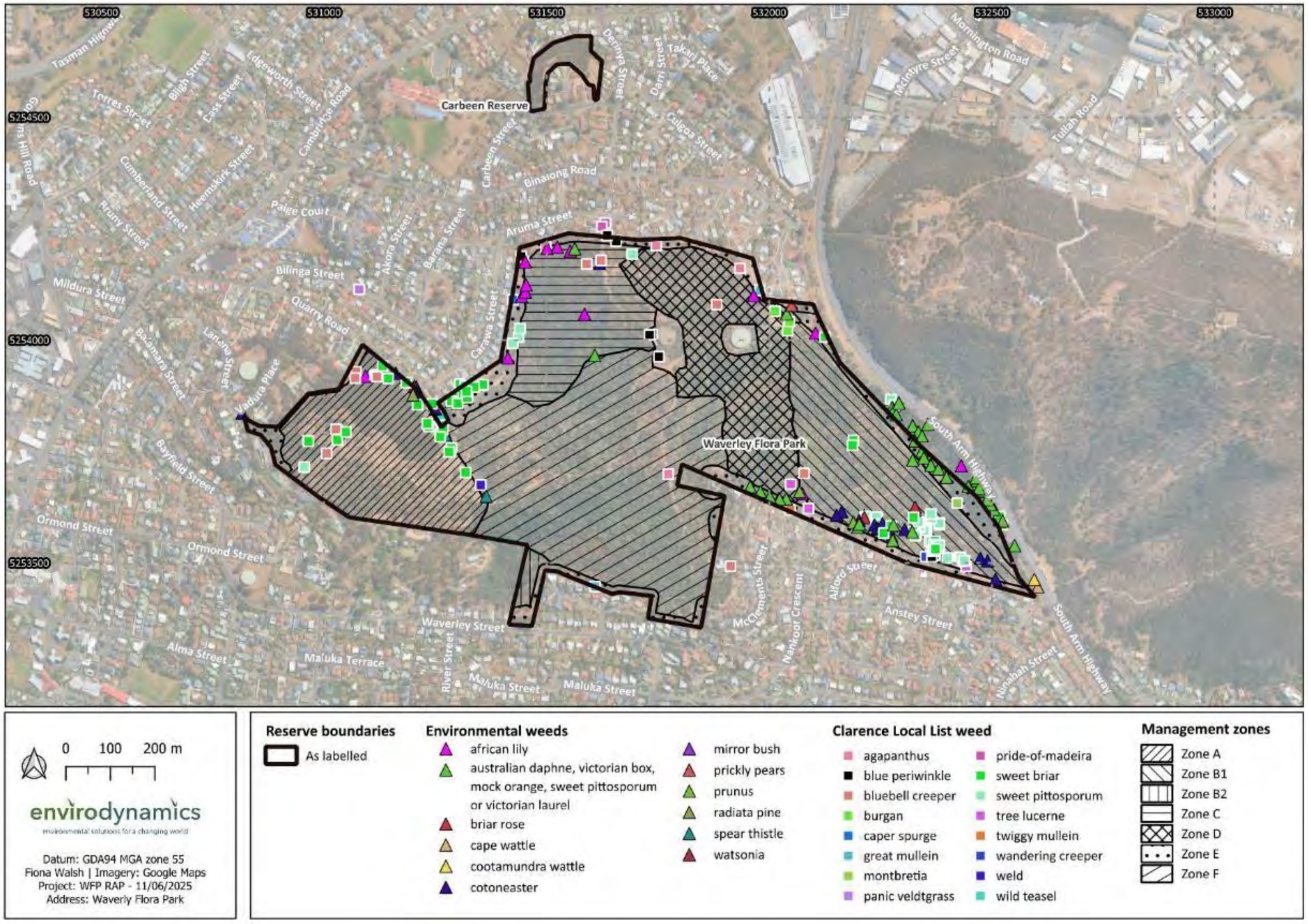


Figure 9 – Environmental weeds and weed management zones in WFP

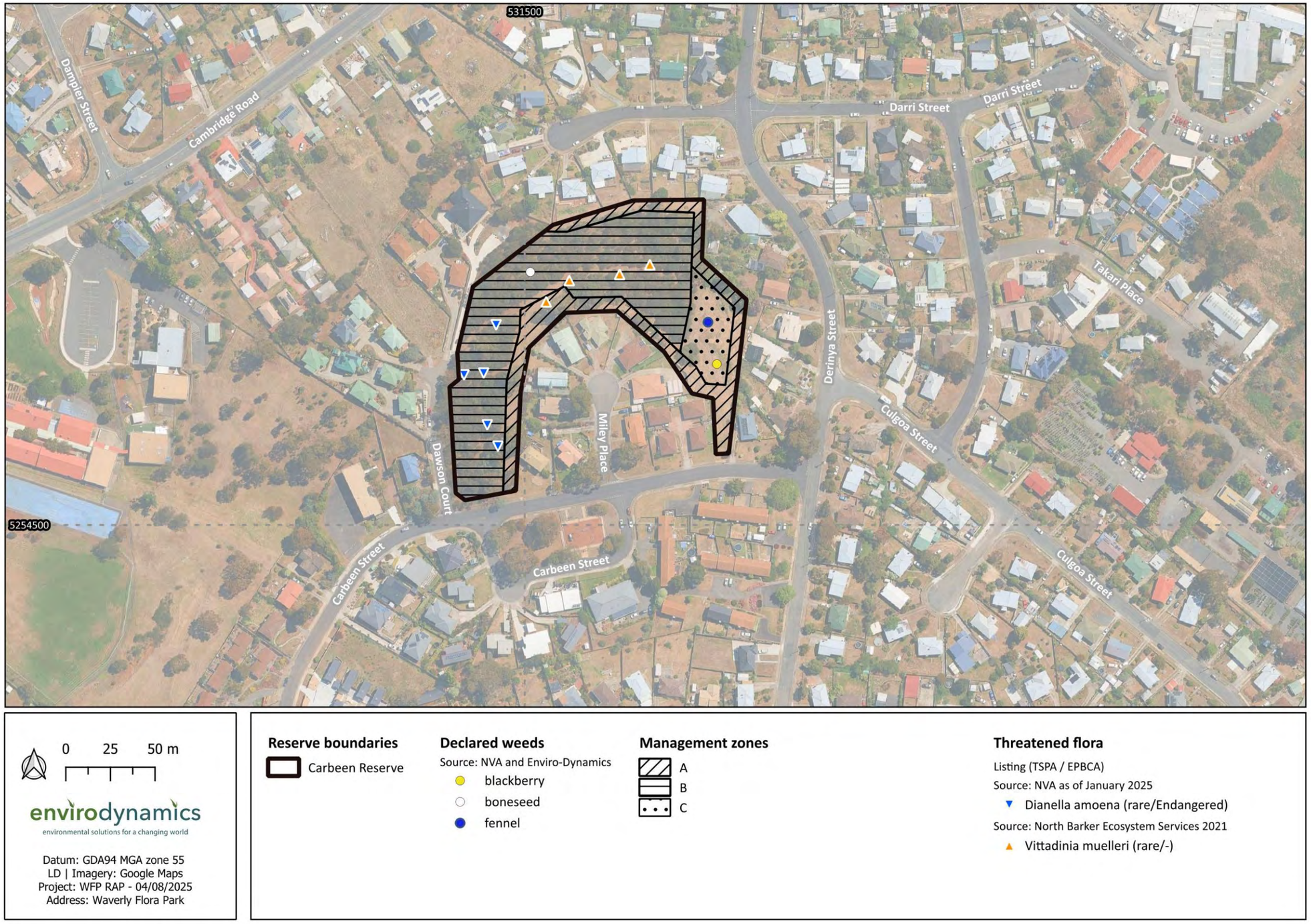


Figure 10 – Declared weeds and weed management zones defined in Table 3 and areas sensitive to weed management i.e. areas of threatened flora in CSR.

As declared weeds possess the greatest threat to the reserves' values and are required to be controlled under the *Biosecurity Act*, the top priority in the WFP is to control mediterranean daisy and prevent other grassland weeds establishing e.g. serrated tussock and Chilean needlegrass and slender thistle. In addition, control environmental weeds like sweet briar, watsonia, sweet pittosporum, and others alongside declared weeds when feasible.

In the CSR, the priority declared weeds are blackberry, fennel and boneseed. The scattered individual plants of cotoneaster and sweet briar, which are environmental weeds, within forested portions of the CSR could be managed through primary control under the same management strategy applied to the listed declared species. Additional incursions of introduced plants from neighbouring residential gardens along the CSR boundaries should be addressed through primary weed control strategies.

Serrated tussock is recorded within the WFP just inside the Aruma Street entrance. It is widespread in parts of Clarence, along with invasive grasses like Chilean needle grass, African love grass and Texan needle grass, which have more localised distribution and all threaten native grasslands. Preventing their establishment in WFP is a priority, with recommended monitoring in **Management Zone C (VMU 3 and eastern boundary of VMU 2)** and around reserve margins, footpaths, and **Management Zone F (VMU 1, 8, 14 & 30)**. Raising awareness through Council collaboration with **DNRE** and weed contractors is crucial.

Tree heath upslope of the Mornington Hill Circuit Track in the western portion of the WFP and Mediterranean daisy in the open grasslands upslope of the Avenue of Honour have been treated but require monitoring for regrowth and spread due to the fine seed dispersal by foot, vehicle, and bicycle traffic. It poses a major risk to WFP's natural values, necessitating hygiene practices and avoiding machinery use in the area.

Weeds spread rapidly after disturbances, making pre-burn control and post-burn monitoring crucial.

Park edges near backyards and tracks are vulnerable to weed invasion due to disturbance and illegal dumping of garden waste. Invasive weeds can hinder native species from re-establishing. Raising awareness about "creeping backyards," improper garden material disposal, and planting unsuitable species is essential.

Recommendation

12. Plan and undertake weed control in accordance with priorities and actions in the Clarence Weed Strategy for weed management actions in the WFP and CSR.

13. Coordinate weed management with the reserves Bushfire Mitigation Plans including monitoring and undertaking weed control prior to and following burns.
14. Ensure contractors collect weed data when undertaking weed control and maintain comprehensive weed mapping for the reserve and park to inform weed management activities and the 5-year review of weed management priorities.
15. Council contractors, TasWater, Council Operational Crews and volunteers are required to follow Weed Disease Planning and Hygiene Guidelines to prevent new introductions to the reserve.
16. Control declared weeds and significant environmental weeds as outlined in Table 2 and Table 3 for WFP and CSR respectively, with priority given to parent plants in difficult to access areas.
17. Control other environmental weeds in WFP and CSR particularly those in priority management zones outlined in Table 2 and Table 3 and when treating declared weeds wherever practicable.
18. Monitor and control for emerging weed species listed in **Appendix 5** in both WFP and CSR. Collaborate with contractors to enhance their ability to identify weeds such as serrated tussock, Chilean needle grass and Mediterranean daisy with a focus to prevent their establishment in the WFP & CSR.
19. Monitor progress annually and review weed management priorities after 5 years in both the WFP and CSR.
20. Promote the use of local native plants in gardens and general weed education.

5.4 Domestic animal management

Council supports the responsible ownership of domestic animals with particular reference to the ownership of dogs and cats. As the human population grows, so do the number of domestic animals. Council recognises the need to have a strategic approach across the municipality to ensure that people living in a suburban environment have adequate areas for personal and pet exercise while retaining that natural, aesthetic and recreational values of the place.

The tools for use by Council to determine appropriate management are the Dog Management Policy 2021 and the *Cat Management Act 2012*. Under the Policy, the impacts of dogs within a Council reserve are assessed using a standard criterion when RMPs are developed or reviewed. The criteria assess the values of each reserve and the potential impacts of dogs on these values and consider Council's responsibilities under the *Environmental Protection and Biodiversity Conservation Act 1999, Threatened Species Protection Act 1995, Nature Conservation Act*

2002, and the *Dog Control Act 2000*. The Policy states "dog owners are encouraged to have their dogs on-lead when entering into and using all shared use areas, including tracks, trails, pathways, regional parks and bushland reserves unless separately declared otherwise." The policy also states that dog owners should make sure their dog is on-lead at all times and only taken off-lead in designated off-lead areas. When in an off-lead area dog owners must keep their dog under effective control at all times. Effective control is defined as within sight, in close proximity and the dog is immediately responsive to the owner's commands.

For the management of cats, Council supports the *Cat Management Act 2012*, which requires de-sexing, microchipping, and keeping cats under control and inside at night to prevent unconstrained roaming within bushland areas day or night.

Observation indicated that many walkers in WFP do not walk their dogs on a lead, and some owners do not have their dogs under effective control. To better understand the issues associated with cat and dog use in the WFP, an assessment was conducted using remote wildlife cameras. Three cameras were located more than 20 m from any tracks.

The results of the remote camera assessment are that feral cats were recorded on all three cameras while off lead domestic dogs were recorded at two of the three sites. These results indicate that some dogs are roaming into intact bush. To minimise the potential impact on WFP and CSR, Council's Dog Management Policy, and the requirements for dogs in natural areas assessment criteria (**Appendix 8**) determined that dogs must be 'on-lead' in the WFP and CSR. The reasons include the important floristic values which have high management priority, the presence of susceptible wildlife, combined with community concern. This approach aims to minimise dogs' potential impact.

In 1990, De Gryse also noted the presence of rabbits. Introduced birds recorded in WFP include the kookaburra, starling, spotted dove, common blackbird, European goldfinch, and greenfinch. Kookaburras are likely to impact reptiles and small birds whilst black birds are known to contribute to the spread of weed species.

The management of dog access to the reserve was identified as a critical issue through the community consultation process with most people supporting dog walking in the reserve. There were also strong opinions about on-lead and off lead walking in the WFP to ensure uncontrolled dogs do not negatively impact on reserve users. The submission from the Clarence Dog Owners Group (CDOG) voiced these concerns, particularly highlighting the need for off-lead areas within walking distance of residences.

Management must aim to ensure exercise space for domestic animals and their owners while recognising that dogs and cats have the potential to pose a significant threat to flora and fauna species. Predation and harassment, disturbance while foraging, leaving scent and droppings, trampling sensitive flowering or seed setting plants and spreading diseases such as toxoplasmosis in the case of cats , are all examples of the potential significant threats posed to native flora and fauna.

Recommendations

21. Declare WFP an 'on-lead only' area and update the Schedule of Declared areas to reflect this status. Once declared, install signage and monitor for compliance.
22. Declare CSR an 'on-lead only' area and update the Schedule of Declared areas to reflect this status. Once declared, install signage and monitor for compliance.
23. Assess the impacts of domestic animals and feral animals on the local wildlife within that reserve by undertaking further remote camera monitoring.
24. Continue to promote de-sexing, microchipping and keeping cats under control and inside at night.

5.5 Fauna habitat management

Fauna habitat within the CSR and WFP includes both forest and non-forest values which supports a diversity of vertebrate and invertebrate species. There is the potential to increase vertebrate and invertebrate habitat diversity through the retention of fallen logs and old trees. As such large trees and logs should be protected during planned burns, HMA maintenance and fire trail works under the BMPs as well as more generally through the Council Tree Policy. Strategic planting of important fauna habitat plants and retention of dead or dying trees and the promotion of native grassland and woodland mosaics would enhance the existing vegetative refuges for native mammals and invertebrates. In addition, nesting boxes will promote hollow nesting fauna (NBES 2021).

Waverley Flora Park 'reappearing frog pond'

A small constructed, frog pond is located in the centre of the reserve at the base of quarried cliffs (**Appendix 7**). This ephemeral pond provides potential breeding habitat for frog species and a water supply for native mammals and birds. Brown tree frog tadpoles were recorded in the pond during natural values survey. The pond area also provides a gathering or reflecting space for the public. Revitalisation of the area is required to make the area more inviting.

Recommendations

25. Protect large trees, logs and hollow-bearing trees during planned burns, hazard management area maintenance, fire trail works and other maintenance activities.
26. Trial the installation of nest boxes in CSR targeted towards specific fauna and birds and monitor (CSR).
27. Consider species suitability and strategic planting to support fauna habitat at planning stage.
28. Clean out debris from the WFP frog pond and vegetate the perimeter with low native semiaquatic vegetation.

5.6 Rubbish management

Community concerns have highlighted ongoing rubbish dumping in both WFP and CSR. In WFP, key areas include the quarry base, rock outcrops and shelters on the northern side, and park boundaries. Rubbish dumping in CSR likely originates from both adjacent properties and broader sources, with waste including garden debris, furniture, tyres, and construction materials.

Targeted waste removal will support vegetation health, regeneration, and weed control. However, dumping remains an ongoing threat, requiring deterrents such as surveillance, signage about penalties, and public education on its impacts.

Past garden waste dumping has spread weeds around the fringes of both reserves. In areas affected by garden waste dumping, engagement with neighbouring properties is proposed, with procedures under development. Rubbish dumping poses visual, health, and biosecurity risks, and may involve hazardous materials unsuitable for community clean-ups. Unchecked dumping can invite further neglect and antisocial behaviour—timely intervention is essential.

Recommendations

29. Respond to reports of rubbish dumping by removing the rubbish in a timely manner.
30. Work with community and user groups to undertake regular clean ups within WFP and CSR linking with established community events e.g. Clean Up Australia Day.
31. Communicate negative impacts of dumping and potential fines through signage.
32. Engage with property owners, in compliance with Council's Encroachment Policy and procedure, regarding encroaching activities in the CSR and WFP.

5.7 Aboriginal heritage management

There is always the potential for Aboriginal heritage artefacts to occur given the rich history of Aboriginal occupation of the area. It is an offence to "destroy, damage, disfigure, conceal, uncover, expose, excavate or otherwise interfere with a relic" unless a permit has been granted under the *Aboriginal Heritage Act 1975*.

All Aboriginal heritage is significant to the Tasmanian Aboriginal community. It is therefore important to ensure that no Aboriginal artefacts or other cultural material are exposed or disturbed during Reserve management activities without a permit being in place. In the event of an unexpected discovery of Aboriginal heritage, all earth works disturbance should cease immediately. The Unanticipated Discovery Plan (UDP) outlines the appropriate process to follow. The UDP is available at https://www.aboriginalheritage.tas.gov.au/Documents/UDP.pdf. Further resources are available at Resources | Aboriginal Heritage Tasmania

There is an opportunity to collaborate with the Tasmanian Aboriginal community and use traditional land management practices to manage the natural values and cultural landscape of WFP.

Recommendations

33. Any proposed significant earthworks should be referred to AHT for advice and an unanticipated discovery plan (UDP) must be on site during all earthworks.
34. Promote Aboriginal history through cultural activities, storytelling, and interpretive signage as appropriate.
35. Engage with the Tasmanian Aboriginal Community, including cultural burning practitioners, regarding the incorporation of cultural management techniques and practices into the reserves' management.

5.8 Historic heritage management

Based on the brief history provided in section 4.2 there are opportunities for additional interpretation to inform the community.

Recommendations

36. Consider additional historic interpretation for WFP to discuss the source of the name 'Waverley' and its connection with Sir Walter Scott, to include the interesting

elements during the colonial period from 1856-1901, post war history and more recent history.

37. Given the significant historic and cultural heritage associated with the reserve, engage a consultant to review the Elizabeth Dean's publication "Waverley Flora Park" prior to its launch on the Council website.

5.9 Track management and development

The WFP offers many managed tracks that provide access on foot or on bike to different elements of the reserve including the quarry, the hilltop, and areas where protected species are seasonally found. The CSR currently provides informal tracks further described below.

5.9.1 Waverley Flora Park

The track network plan (Figure 7) for WFP shows the existing network of fire trails, walking & shared use tracks and unauthorised tracks. Unauthorised bike tracks have proliferated, particularly during the COVID-19 isolation period when the nearby Clarence Mountain Bike Park in the Meehan Range was closed, causing habitat fragmentation and soil disturbance increasing opportunities for weed invasion. Management advice from Mtn Trails supports the staged closure and rehabilitation of unauthorised mountain bike tracks with recommendations based on the local terrain, user behaviour and local soil characteristics.

Since the park was established to protect the florist and natural values, there should be no new track development within the park and consideration should be given to consolidate the extensive and prolific number of tracks throughout the reserve. This is supported by feedback from the community, combined with research (Gilfedder 1991) on the impacts of tracks through the WFP. Generally, the community is supportive of maintained walking tracks with limited bike use and wayfinding signage. Decommissioning surplus tracks and the closure of unauthorised tracks will minimise the spread of exotic species and fragmentation of the native vegetation and should address tunnel erosion. Management advice from Mtn Trails also supports these findings with recommendations based on the local terrain, user behaviour and local soil characteristics.

Track closures should be accompanied by public education efforts to ensure people understand that more tracks will increase edge effects and further fragment the park.

This RMP makes the following recommendations to minimise track expansion, and focus on connectivity, safety, and maintenance. The existing track network in WFP is provided in Figure 7.

This figure references the track numbers used below and is derived from existing track data and the Track Network Plan developed by Mtn Trails (2022).

5.9.2 Carbeen Street Reserve

The two existing tracks around the horseshoe-shaped reserve are informal, lacking proper design, maintenance, and continuity, as faintly shown in Figure 6. To improve access and user experience, a purpose-built loop or connecting trail, ideally linking both Carbeen Street access points, should be considered.

Walking linkages to and from the CSR also warrant consideration including signage between the Carbeen play park, the CSR and Warrane Primary School. There are adequate suburban footpaths which lead to and from the CSR but there are no dedicated footpaths connecting the Reserve and Warrane Primary School.

Walking, including dog exercise, appears to be the key primary use of this CSR. Bicycle access to the reserve will not be promoted as it was not identified as a key use during public consultation.

Recommendations

38. Undertake a review of the track network including Track 7 (Down Wavo Mountain Bike Track) to determine their recreation value, fire management value and their impact on environmental values, with low value tracks decommissioned and rehabilitated.
39. Retain Track 2 as a footpad until further risk assessment of the viewpoint.
40. Undertake a staged and informed process to close and rehabilitate all unauthorised tracks as follows:
    a. Track 3 – steep unauthorised walking track with erosion and safety issues.
    b. Tracks 4, 5, 6, 9 & 10 – unauthorised hand constructed mountain bike tracks with sustainability, safety and connectivity issues. Tracks 4 & 5 do not end at the trail head.
    c. All track closures should include a public information program which outlines the reason for the track closure and directs riders to the nearby Clarence Mountain Bike Park in the Meehan Range.
41. Formalise a trail hub at the track 6 junction above the Avenue of Honour.
42. Erect trail hub map board signage and track direction signage. Include additional information such as hazards and safety considerations.

43. The footprint of existing tracks to be maintained and not increased.
44. In CSR, formalise a perimeter track aligned with the existing perimeter hazard management area and construct a new track between two entrances to enable circuit walk. Any new tracks and upgrades to tracks to be designed and built to a minimum Class 3 walking track standard as per AS2156.

5.10 Entrances, signs and infrastructure including art

5.10.1 Infrastructure

The Amenity Plan and matrix by Inspiring Place provide recommendations for infrastructure such as natural and formal seating, as well as clifftop fencing. These suggestions respond to community interest, particularly seating at key viewpoints, while preserving the natural bushland character of the reserve. **Appendix 7** illustrates the indicative layout of proposed infrastructure locations.

5.10.2 Signage

As with the infrastructure, the aim is to retain the bushland amenity of the reserve, so signage may be used sparingly. The proposed signage for WFP is well described in the WFP Visitor Amenity Plan (**Appendix 7**).

CSR currently has no signage in the Reserve. Wayfinding signage that links the entrances and tracks to the adjoining Carbeen Play Park as well as other recreational areas such as the WFP and Warrane Primary School would benefit users of the reserve. CSR users would also benefit from interpretation signage about the landscape including identification of natural flora and fauna values, vegetation succession and the fire and disturbance history.

5.10.3 Art in the Park

Art in the WFP and CSR could be thoughtfully integrated to support the interpretation of the area's natural and cultural values, in line with the Public Art Policy. While the focus remains on flora and natural features, art may enhance visitor engagement through subtle, site-responsive installations. Existing artworks in the Avenue of Honour reflect this approach as part of the heritage interpretation project. Future opportunities could include temporary or transient art pieces in the CSR to explore and express cultural heritage themes.

Recommendation

45. Design and install seating at 2-3 scenic viewpoints in WFP including a new rock seat and interpretive signage at the WFP frog pond to improve accessibility to a confined viewing area and minimise access to other areas (**Appendix 7**).
46. Develop and install interpretation and information signage in accordance with Clarence City Council style guide including two landscaped and signed entrances from Carbeen Street (east and west).

5.11 Community participation, education and awareness

As noted in section 4.4, CSR and WFP provide excellent opportunities as outdoor classrooms for the local community. The value of the reserves for educational and recreational purposes is locally significant. As such active encouragement of increased reserve use is appropriate.

Since the establishment of Waverley Flora Park Landcare group, in 1989, the group has advocated for the park and provided a substantial contribution toward its care including revegetation and weed control works, and promotion. Over the decades the membership and leadership of the group has waxed and waned. Currently the small group has no formal working bees. A council driven promotion to attract new members and interest would benefit the group.

Members of Threatened Plants Tasmania take an active interest in the threatened species within WFP and the overall condition of its natural values. These groups can provide Council with important insights that can assist the weed control, slashing and fire and vegetation management programs within reserves. In return Council driven promotion would help to attract new members and general community interest in the Landcare group.

For over 30 years, Council has delivered and promoted annual or biannual interpretive walks focusing on wildflowers, history, and cultural heritage. These have been run under banners such as *Waverley in Full Colour* and *Waverley Flora Park Ecohistory Walks*, consistently attracting enthusiastic participants and often reaching full capacity. Given their popularity and value in fostering community connection with the park, it is important to formalise and continue this program, ideally at least once a year during peak wildflower season.

Recommendations

47. Consult the community to name key reserve entrances and trails, using names that are linked with and help promote the natural values, or Indigenous names to acknowledge the cultural significance of the area.

48. Develop and implement a community engagement and awareness strategy to significantly grow membership of the WFP Landcare Group and extend their activities into the CSR. Provide ongoing support for the group and community volunteers in controlling environmental weeds through regular working bees and facilitated programs.
49. Promote community awareness and education around weed management and the threats posed by creeping backyards and illegal dumping.
50. Work with the local Landcare groups and community to revitalise educational and interpretive material, including signage to promote the values of WFP and CSR.
51. Promote the WFP and CSR to local schools as an ideal location for an outdoor classroom.
52. Encourage WFP and CSR users and the local Landcare group to participate in citizen science using iNaturalist to record new or unusual plants/weeds and/or implement a citizen science monitoring program.
53. Continue promoting an annual Waverley Flora Park interpretive walks program for the community.

6 Monitoring program

Monitoring the condition of the reserves is important to ensure that the various management strategies are having the intended outcome on the natural values. The following sections describe the ecological monitoring that should be undertaken at prescribed intervals.

6.1 Vegetation condition assessments

The most effective and efficient way of monitoring the condition of vegetation is through structured and routine Vegetation Condition Assessments (VCAs). As a part of this plan, and noted previously, a baseline VCA was completed for each native vegetation community within the WFP and CSR. Planned assessments in the reserves are important for future ongoing monitoring. The established photo points can enable visual monitoring of change in natural values with the VCAs.

6.2 Wildlife camera and acoustic monitoring

Significant fauna observations have been recorded in WFP (see Section 3.4) while survey data for CSR remains limited. However, the availability of cost-effective remote wildlife cameras and acoustic monitoring presents a valuable opportunity to expand the fauna database. These tools enable continuous, 24/7 monitoring of bats, mammals, and reptiles. This approach will support long-term data collection to inform management and foster public engagement with biodiversity and our reserves.

6.3 Standardised bird survey in line with Birdlife Australia

A bird survey, applying BirdLife Australia survey protocols, was conducted in the WFP by Birdlife Tasmania in 2022 and CSR by NBES in 2021. The full bird species lists are included in **Appendix 6**. Ongoing monitoring is recommended to identify additional species utilising the area in different seasons.

Recommendations

54. Conduct vegetation condition assessments every five years at established photo points in WFP and CSR.
55. Conduct remote wildlife camera and acoustic monitoring for fauna at WFP and CSR including a targeted survey for bats.
56. Conduct bird surveys every five years in both WFP and CSR, using standardised BirdLife Australia survey protocols to ensure consistency and data quality.

7 Review and reporting

The Waverley Flora Park Reserve Management Plan (WFP RMP) will be reviewed at the end of the 10-year period (2036). To maintain the currency of the recommendations and implementation plan, a review and update involving the key stakeholders will be carried out after five years (2030).

Ongoing VCA monitoring is recommended to assess the impacts of management actions on the vegetation condition. Threatened species should also be monitored on an ongoing basis through the development of a long-term monitoring program.
CCC and other responsible organisations should undertake ongoing monitoring and maintenance of works such as weed control and fire management outlined in the implementation plan. Weed management priorities may need to be updated to incorporate new information, such as new weed incursions. Photo point sites may be established to monitor weed management and vegetation condition.

8 Implementation plan

The following implementation plan table summarises all the recommendations made in the revised Reserve Management Plan for WFP including CSR. All recommendations made in previous management plans have been reviewed and adapted or copied to the current WFP RMP as appropriate. Each recommendation has an associated performance measure and responsible group for implementation. Recommendations are also assigned a priority ranking based on the system used in the initial RMP with timelines extended to reflect the 10-year plan period:

- Priority 1 – short term activities (1-2 years)
- Priority 2 – medium term activities (3-5 years)
- Priority 3 – long term activities (6-10 years)

The implementation plan should be used as a guide as to what order tasks should be carried out based on priority. Recommendations are aspirational and a best-case scenario given unlimited funding. Given that this is not the case, decisions will need to be made as to what is achievable with the current resources. Alternative funding may need to be sought in the form of government grants to achieve some of the recommendations.

Table 4 – Implementation Plan

Recom #	Action	Performance measure	Priority	Responsibility
1	Promote postgraduate research project to: use the original data from Pyrke phenology study and GPS survey locations to replicate flora surveys and allow a comparison with 1994 biodiversity and condition including exotic species. Data and methodology could form the basis of a long-term 10 yearly monitoring program.	Complete postgraduate research project	3	Council and Ecological consultant
2	Establish a new baseline vegetation monitoring process which measures soil carbon and soil biodiversity levels (WFP and CSR).	Soil carbon and biodiversity results integrated into WFP RMP	3	Council and Soils consultant
3	Install signage at entrances to highlight that areas of the WFP have sensitive vegetation close to the tracks as well as in bushland areas and highlight the importance of staying on formal tracks (WFP).	Vegetation near the tracks is in good condition	1	Council
4	Establish a collaborative on-going monitoring program for threatened species within the park in partnership with the DNRE, Threatened Plants Tasmania, University of Tasmania and the local Landcare group (WFP and CSR).	Improved monitoring results	1	Council

Recom #	Action	Performance measure	Priority	Responsibility
5	Trial the use of cages during flowering and seed setting periods to protect threatened species in discrete locations. Follow up by assessing whether the cages attract more attention, captured via camera monitoring, compared to non-caged tailed spider orchids.	Improved monitoring results	3	Council and Landcare group
6	Avoid all unnecessary slashing that is not in accordance with the Fire Trail Guidelines, Tasmanian Fire Service Fuel Break Guidelines and Asset Protection Zone standards as set out in the WFP Bushfire Mitigation Plan 2023-2028. Where required, undertake works during months which avoid impacts to threatened species such as cryptic orchids (WFP and CSR).	Improved monitoring results	2	Ecological consultant
7	Thin out sheoak regrowth and understorey vegetation using appropriate methods and planned burning. Any areas of bare ground should be monitored for invasive species particularly serrated tussock grass (WFP and CSR).	Thriving threatened species	1	Council
8	Protect and encourage the health and recruitment of eucalypt trees within the reserves consistent with the vegetation community benchmark (WFP).	Thriving mature trees	1	Council

Recom #	Action	Performance measure	Priority	Responsibility
9	Enhance refugial opportunities for native mammals through the design and implementation of shelters or through planting specific habitat shelter plants such as saggs and tussock grasses (CSR) (NBES 2021).		1	Council
10	Implement the management actions in the BMPs in consultation with this plan to enhance grassland flora diversity, maintain fauna habitat.	Well balanced vegetation management for weeds, fire and amenity	1	Council
11	Aim to progressively incorporate cultural burning techniques into fire mitigation planning where appropriate by engaging with traditional burning consultants while adapting management actions to be responsive to seasonal conditions and ecological processes on the ground.	Improved fauna habitat	2	Council and Landcare group
12	Plan and undertake weed control in accordance with priorities and actions in the Clarence Weed Strategy for weed management actions in the WFP and CSR.	Well balanced vegetation	1	Council
13	Coordinate weed management with the reserves Bushfire Mitigation Plans including monitoring and undertaking weed control prior to and following burns.	Well balanced vegetation management	1	Council

Recom #	Action	Performance measure	Priority	Responsibility
14	Ensure contractors collect weed data when undertaking weed control and maintain comprehensive weed mapping for the reserve and park to inform weed management activities and the 5-year review of weed management priorities.	Good data collection contributes to improved management	1	Council and contractors
15	Council contractors, TasWater, Council Operational Crews and volunteers are required to follow Weed Disease Planning and Hygiene Guidelines to prevent new introductions to the reserve.	Minimal weed impacts in reserves	1	Council, contractors, TasWater etc.
16	Control declared weeds and significant environmental weeds as outlined in Table 2 and Table 3 for WFP and CSR respectively, with priority given to parent plants in difficult to access areas.	Minimal weed impacts in WFP	1	Council and contractors
17	Control other environmental weeds in WFP and CSR particularly those in priority management zones outlined in Table 2 and Table 3 and when treating declared weeds wherever practicable.	Minimal weed impacts in WFP	2	Council and contractors
18	Monitor and control for emerging weed species listed in **Appendix 5** in both WFP and CSR. Collaborate with contractors to enhance their ability to identify weeds such as serrated tussock, Chilean needle grass and Mediterranean daisy with a focus to prevent their establishment in the WFP & CSR.	Minimal weed impacts in reserves and good data collection contributes to improved management	1	Council and contractors

Recom #	Action	Performance measure	Priority	Responsibility
19	Monitor progress annually and review weed management priorities after 5 years in both the WFP and CSR.	Good data collection contributes to improved management	2	Council and contractors
20	Promote the use of local native plants in gardens and general weed education.	Minimal weed impacts in reserves	1	Council
21	Declare WFP an 'on-lead only' area and update the Schedule of Declared areas to reflect this status. Once declared, install signage and monitor for compliance.	Minimal impacts by domestic animals	1	Council
22	Declare CSR an 'on-lead only' area and update the Schedule of Declared areas to reflect this status. Once declared, install signage and monitor for compliance.	Minimal impacts by domestic animals	1	Council
23	Assess the impacts of domestic animals and feral animals on the local wildlife within that reserve by undertaking further remote camera monitoring.	Improved understanding and management of domestic and feral animals	2	Council
24	Continue to promote de-sexing, microchipping and keeping cats under control and inside at night.	Minimal impacts by domestic animals	1	Council
25	Protect large trees, logs and hollow-bearing trees during planned burns, hazard management area maintenance, fire trail works and other maintenance activities.	Improved habitat	2	Council and Landcare group

Recom #	Action	Performance measure	Priority	Responsibility
26	Trial the installation of nest boxes in CSR targeted towards specific fauna and birds and monitor (CSR).	Improved habitat	2	Council and Landcare group
27	Consider species suitability and strategic planting to support fauna habitat at planning stage.	Improved habitat	2	Council
28	Clean out debris from the WFP frog pond and vegetate the perimeter with low native semiaquatic vegetation.	Improved habitat	2	Council and Landcare group
29	Respond to reports of rubbish dumping by removing the rubbish in a timely manner.	Improved habitat and amenity	1	Council
30	Work with community and user groups to undertake regular clean ups within WFP and CSR linking with established community events e.g. Clean Up Australia Day.	Improved habitat and amenity	1	Council and Landcare group etc.
31	Communicate negative impacts of dumping and potential fines through signage.	Improved habitat and amenity	1	Council
32	Engage with property owners, in compliance with Council's Encroachment Policy and procedure, regarding encroaching activities in the CSR and WFP.	Improved habitat and amenity	1	Council

Recom #	Action	Performance measure	Priority	Responsibility
33	Any proposed significant earthworks should be referred to AHT for advice and an unanticipated discovery plan (UDP) must be on site during all earthworks.	Aboriginal heritage preserved	1	Council
34	Promote Aboriginal history through cultural activities, storytelling, and interpretive signage as appropriate.	Community understanding of Aboriginal heritage	2	Council
35	Engage with the Tasmanian Aboriginal Community, including cultural burning practitioners, regarding the incorporation of cultural management techniques and practices into the reserves' management.	Community understanding of Aboriginal heritage	2	Council
36	Consider additional historic interpretation for WFP to discuss the source of the name 'Waverley' and its connection with Sir Walter Scott, to include the interesting elements during the colonial period from 1856-1901, post war history and more recent history.	Community understanding of local history	2	Council
37	Given the significant historic and cultural heritage associated with the reserve, engage a consultant to review the Elizabeth Dean's publication "Waverley Flora Park" prior to its launch on the Council website.	Community understanding of local history	2	Council

Recom #	Action	Performance measure	Priority	Responsibility
38	Undertake a review of the track network including Track 7 (Down Wavo Mountain Bike Track) to determine their recreation value, fire management value and their impact on environmental values, with low value tracks decommissioned and rehabilitated.	Improved connectivity	1	Council
39	Retain Track 2 as a footpad until further risk assessment of the viewpoint.	Improved connectivity	1	Council
40	Undertake a staged and informed process to close and rehabilitate all unauthorised tracks as follows: a. Track 3 – steep unauthorised walking track with erosion and safety issues. b. Tracks 4, 5, 6, 9 & 10 – unauthorised hand constructed mountain bike tracks with sustainability, safety and connectivity issues. Tracks 4 & 5 do not end at the trail head. c. All track closures should include a public information program which outlines the reason for the track closure and directs riders to the nearby Clarence Mountain Bike Park in the Meehan Range	Improved connectivity	2	Council

Recom #	Action	Performance measure	Priority	Responsibility
41	Formalise a trail hub at the track 6 junction above the Avenue of Honour	Improved connectivity	1	Council
42	Erect trail hub map board signage and track direction signage. Include additional information such as hazards and safety considerations.	Improved connectivity	2	Council
43	The footprint of existing tracks to be maintained and not increased.	Improved connectivity	2	Council
44	In CSR, formalise a perimeter track aligned with the existing perimeter hazard management area and construct a new track between two entrances to enable circuit walk. Any new tracks and upgrades to tracks to be designed and built to a minimum Class 3 walking track standard as per AS2156.	Improved connectivity	1	Council
45	Design and install seating at 2-3 scenic viewpoints in WFP including a new rock seat and interpretive signage at the WFP frog pond to improve accessibility to a confined viewing area and minimise access to other areas (**Appendix 7**)	Improved amenity	2	Council
46	Develop and install interpretation and information signage in accordance with Clarence City Council style guide including two	Improved amenity	2	Council

Recom #	Action	Performance measure	Priority	Responsibility
	landscaped and signed entrances from Carbeen Street (east and west).			
47	Consult the community to name key reserve entrances and trails, using names that are linked with and help promote the natural values, or Indigenous names to acknowledge the cultural significance of the area.	Improved amenity	3	Council
48	Develop and implement a community engagement and awareness strategy to significantly grow membership of the WFP Landcare Group and extend their activities into the CSR. Provide ongoing support for the group and community volunteers in controlling environmental weeds through regular working bees and facilitated programs.	Community engagement	1	Council
49	Promote community awareness and education around weed management and the threats posed by creeping backyards and illegal dumping.	Improved engagement and amenity	1	Council
50	Work with the local Landcare groups and community to revitalise educational and interpretive material, including signage to promote the values of WFP and CSR.	Improved engagement and amenity	2	Council

Recom #	Action	Performance measure	Priority	Responsibility
51	Promote the WFP to local schools as an ideal location for an outdoor classroom.	Improved engagement	2	Council
52	Encourage WFP and CSR users and the local Landcare group to participate in citizen science using iNaturalist to record new or unusual plants/weeds and/or implement a citizen science monitoring program.	New data collection contributes to reserve management	2	Council
53	Continue promoting an annual Waverley Flora Park interpretive walks program for the community.	Community engagement	2	Council
54	Conduct vegetation condition assessments every five years at established photo points in WFP and CSR.	New data to contribute to reserve management	2	Council
55	Conduct remote wildlife camera and acoustic monitoring for fauna at WFP and CSR including a targeted survey for bats	New data to contribute to reserve management	2	Council
56	Conduct bird surveys every five years in both WFP and CSR, using standardised BirdLife Australia survey protocols to ensure consistency and data quality	New data to contribute to reserve management	2	Council

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10 List of Appendices

Appendix 1 – Community priorities for opportunities and issues in WFP and CSR

Appendix 2 – Description of vegetation communities occurring in the reserves

Appendix 3 – Plant list for reserves

Appendix 4 – Vegetation condition assessments

Appendix 5 – Weed lists

Appendix 6 – Bird lists

Appendix 7 – Waverley Flora Park Visitor Amenity Plan and Audit

Appendix 8 – Natural areas Assessment criteria to determine level of dog access in bushland and coastal reserves reference

Appendix 9 – Assessment criteria to determine level of dog access in bush and coastal reserves

Appendix 1 – Community priorities for opportunities & issues in WFP and CSR

Table A – Summary of key issues and community's priorities for opportunities and issues in WFP

Stakeholder	Opportunity / Issue	Number of responses
Community	Environmental and declared weeds	93
	Feral cats and roaming domestic cats	56
	Invasive species	29
Community	Native flora and wildflowers	52
	Native fauna	50
	Natural values in general	36
	Maintain habitat for fauna and natural park	32
	Native bird life	30
Community	Park entrances to remain as they are	42
	Do not support further landscaping	32
Community	Support dog walking	78
	Prefer off lead dog walking	40
	Prefer on lead dog walking	20
	No dogs in the park	2
Community	Support tracks in general	38
	Support walking tracks	34
	Support mountain bike tracks	26
	Bike control in reserves due to conflicts	15
	Dogs not an issue for wildlife	32
Community	Art not required in reserve	63
	Support of art in the bushland	57
Community	Support improvements in general wayfinding	76
	Support maps at trailheads and key junctions	57
	Support general interpretation signage	29
	Support signage interpreting the natural values	26
	Support interpretation of Aboriginal heritage	15
Community	Support for seating	97
	Support for formalising viewing points	52

Stakeholder	Opportunity / Issue	Number of responses
	No additional infrastructure was required	30
	Infrastructure should be kept as natural as possible	17
CDOGs	Supports walking dogs under effective control in all reserves	
	Need for off-lead areas	
	Evidence based, risk assessed and proportionate to the range of threats to wildlife	
	Support zoning	
	Support enforcement	
	Consider other areas for dog walking outside of bushland reserves	
BirdLife Tasmania	59 species recorded in the WFP	
	Values for birds are habitat diversity, nesting hollows, and edge effect	
	Management priorities are monitoring and considering the landscape context	
	Community engagement and participation in conservation	
DNRE Tasmania – Conservation Assessments and Wildlife Services	Changes in listing of threatened flora species and mapping since previous RAP	
	Ongoing monitoring of threatened flora is needed	
	Use of indigenous native plants	
	Trampling of orchids by orchid-spotters and photographers	
	Concerns about native tree removal for native grassy woodland and grasslands	
	Concerns about track management and widening	
	Impacts from off-lead dogs are trampling and increased nutrient levels	
	Authorised vehicles must stay on formal tracks	
	Monitor weed management effectiveness	
Waverley Flora Park Landcare Group	Impacts of mountain bikes, motorised bikes and motorbikes	
	Litter and dumping	
	Fire regimes and slashing	
	Weed management	
	Dogs in park must be on-lead	
	Impacts of orchid photographers	
	Natural values include birds, mammals, insects, frogs and lizards	
	Concerns about heath management	

Table B – Summary of key issues and community's priorities for opportunities and issues in CSR

Stakeholder	Opportunity / Issue
Community	Access to the site for health and wellbeing
Community	Importance of the site for birdlife
Community	Importance of maintaining an open 'greenspace' environment
Community	Opportunities for improving the site with seating, open spaces, ornamental plantings and access tracks
Community	Opportunities to improve pedestrian access along the north side of Dawson Court, and between the reserve and Warrane Primary School
Community	Potential rehabilitation using WSUD principles and native plantings in eastern portion
Community	Opportunity to establish a local 'friends of' group' for the reserve
Community	Problems with rubbish dumping
Community	Weed management is required
Community	Potential to use fire management and fuel reduction to open understorey

Appendix 2 – Description of vegetation communities occurring in Waverley Flora Park and Carbeen Street Reserve

Waverley Flora Park Vegetation Communities

Eucalyptus amygdalina forest and woodland on sandstone (DAS)

DAS is the most extensive vegetation type in the area occurring on Mornington Hill and surrounding slopes. Black peppermint (*E. amygdalina*) is the dominant tree species, with white gum (*E. viminalis*) sub-dominant. The understorey includes scattered tall shrubs native-cherry (*Exocarpos cupressiformis*), black sheoak (*Allocasuarina littoralis*), broadleaf hopbush (*Dodonaea viscosa*) and silver wattle (*Acacia dealbata*).

The groundcover layer contains a range of sedges, grasses, herbs and prostrate shrubs including sagg (*Lomandra longifolia*), spreading flaxlily (*Dianella revoluta*), thatch sawsedge (*Gahnia radula*), sand swordsedge (*Lepidosperma concavum*) kangaroo grass (*Themeda triandra*), velvet tussockgrass (*Poa rodwayi*), speargrass (*Austrostipa* sp.), dwarf riceflower (*Pimelea humilis*) and native cranberry (*Styphelia humifusa*).

This community is mostly weed free except for scattered boneseed (*Chrysanthemoides monilifera) plants and isolated occurrences beside paths of herbaceous weeds such as cleavers (Galium aparine), fumitory (Fumaria sp.) and slender thistle (Carduus sp.)*. This forest contains a diverse understorey and strong species recruitment. There are no large trees, >DBH 60 cm as defined by the TASVEG benchmark, present.

Eucalyptus ovata forest (DOV)

DOV is distinguished by the prominence of black gum (*E. ovata*) in the canopy. This vegetation community occurs in flat areas of lower elevation in the east and south of the park. The understorey is open with occasional large shrubs including black sheoak, silver wattle and prickly box (*Bursaria spinosa*) and small shrubs including prickly beauty (*Pultenaea juniperina*) and twiggy daisybush (*Olearia ramulosa*). The groundcover layer is dominated by sagg with scattered herbs, prostrate shrubs and native and exotic grasses including peachberry heath (*Lissanthe strigosa*), creeping bossia (*Bossiaea prostrata*), southern storksbill (*Pelargonium australe*), tussock grasses (*Poa* sp.) and cocksfoot (*Dactylis glomerata*).

There is a lack of large trees, > DBH 80 cm as defined by the TASVEG benchmark. The community lacks some understorey lifeforms notably scramblers and climbers, ground ferns and mosses and

lichens. Weeds, although not widespread, include the high threat weeds boneseed and blackberry (*Rubus fruticosus*).

***Eucalyptus viminalis* grassy forest and woodland (DVG)**

This vegetation community is dominated by white gum. Scattered large shrubs including drooping sheoak (*Allocasuarina verticillata*), native-cherry, broadleaf hopbush and silver wattle occur in the understorey. The groundcover layer includes a variety of prostrate shrubs, herbs including orchids, grasses and sedges such as forest candles (*Stackhousia monogyna*), beardheath (*Leucopogon virgatus*), tiger orchid (*Diuris sulphurea*), sagg, thatch sawsedge, spreading flaxlily, speargrass and velvet tussockgrass.

This vegetation community has moderate species diversity and is mostly weed-free. Recruitment of woody species is high. There is a lack of both large trees, > DBH 60 cm as defined by the TASVEG benchmark, and large logs.

***Allocasuarina verticillata* forest (NAV)**

NAV is characterised by a dense canopy of drooping sheoak with occasional white gums, pricklybox and broadleaf hopbush. The understorey is sparse with scattered herbs and grasses including kidneyweed (*Dichondra repens*), speargrass and velvet tussockgrass.

This community has moderate species diversity and life forms present as well as species recruitment comparative to the TASVEG benchmark. There are no weeds present or large trees, >DBH 25 cm as defined by the TASVEG benchmark.

Lowland *Themeda triandra* grassland (GTL)

GTL is restricted to a small area in the western portion of the park on flat terrain. This community is dominated by kangaroo grass (*Themeda triandra*). Other native grasses including speargrass and tussock grasses as well as exotic grasses, silvery hairgrass and lesser quaking-grass (*Briza minor*) are also common. Herbs, prostrate and small shrubs are scattered throughout this community including common everlasting (*Chrysocephalum apiculatum*), erect guineaflower (*Hibbertia riparia*), native cranberry, creeping bossia, trailing native-primrose (*Goodenia lanata*), dwarf riceflower, sagg, golden bulbine-lily (*Bulbine bulbosa*), spreading flaxlily and tiger orchid.

This community has a higher diversity of shrubs than the benchmark but a much lower diversity of herbs. Overall, this community scores well for dominant life form cover, lack of weeds and persistence potential. Observations of saplings of tree and shrub species suggests that this

community may eventually transition into a grassy woodland if not burned or subject to other disturbance which would prevent tree and shrub establishment.

Carbeen Street Reserve Vegetation Communities

Eucalyptus viminalis grassy forest and woodland (DVG)

This community occupies sections of the Carbeen Street Reserve (CSR) consisting of an overstorey canopy dominated by *Eucalyptus viminalis* (white gum) over a secondary canopy of *Allocasuarina verticillata* (she-oak) and *Acacia dealbata* (silver wattle). Tall woody shrubs such as *Bursaria spinosa* (prickly box) and *Dodonaea viscosa* (broadleaf hopbush) are also present as well as low shrubs such as *Epacris impressa* (common heath) and *Dillwynia glaberrima* (smooth parrot pea). *Lomandra longifolia* (sagg) dominates the ground layer with other native grasses such as *Austrostipa species* (spear grasses) and *Themeda triandra* (kangaroo grass).

Allocasuarina verticillata forest (NAV)

This community occupies large sections of the reserve and is characterised by a dense canopy of *Allocasuarina verticillata* (she-oak) over tall shrubs such as *Bursaria spinosa* (prickly box) and *Dodonaea viscosa* (broadleaf hopbush). Native grasses are prevalent such as *Austrodanthonia* sp. (wallaby grass), *Austrostipa* sp (spear grasses) and *Themeda triandra* (kangaroo grass). Native daisies (*Leptorhynchos squamatus*, *Vittadinia muelleri* and *Euchiton collinus*) and herbs (*Sanguisorba minor, Cynoglossum suaveolens* and *Ptilotus spathulatus*) are prevalent. Historically this vegetation patch would have supported less tree/native shrub cover and is likely to have been a native grassland at some point in the past. Google Earth aerial imagery from as recent as 2003 demonstrates that the site supported considerably fewer woody species cover at that time. In the absence of disturbance, the site has become dominated by woody trees and shrubs (predominantly she oaks).

Extra-urban miscellaneous (FUM)

Some sections of the CSR have been subject to modification including hazard management areas and clearing/fill dumping. These areas support largely introduced flora species and for the purposes of this Plan have been identified as Extra-urban miscellaneous (FUM). Introduced grasses such as *Dactylis glomerata, Piptatherum miliaceum, Bromus catharticus, Arrhenatherum elatius* var. *bulbosum* and *Cynodon dactylon* are common throughout these areas.

Appendix 3 – Plant list for Reserves

Carbeen Street Reserve

Site: 1 DVG - *Eucalyptus viminalis* grassy forest and woodland

Trees: *Eucalyptus viminalis* subsp. *viminalis*

Tall Shrubs: *Acacia dealbata* subsp. dealbata, *Acacia mearnsii*, *Allocasuarina littoralis*, *Bursaria spinosa* subsp. *spinosa*, *Dodonaea viscosa* subsp. *spatulata*

Shrubs: *Bossiaea prostrata, Dillwynia glaberrima, Epacris impressa*

Low Shrubs: *Acrotriche serrulata, Hibbertia hirsuta*

Herbs: *Arthropodium milleflorum, Cynoglossum suaveolens, Dianella revoluta, Einadia nutans subsp. nutans, Linum marginale, Oxalis perennans, Plantago varia*

Graminoids: *Lomandra longifolia*

Grasses: *Austrostipa pubinodis, Microlaena stipoides, Poa labillardierei, Poa rodwayi, Themeda triandra*

Weeds: *Chrysanthemoides monilifera* subsp. *monilifera, Cotoneaster franchetii, Dactylis glomerata, Eucalyptus leucoxylon* subsp. *Megalocarpa, Genista monspessulana, Hirschfeldia incana, Hypochaeris radicata, Lepidium africanum, Plantago lanceolata, Sanguisorba minor, Spergularia* sp.

Site: 2 NAV - *Allocasuarina verticillata* forest

Tall Shrubs: *Acacia mearnsii, Allocasuarina verticillata, Bursaria spinosa subsp. spinosa, Dodonaea viscosa* subsp. *spatulata*

Low Shrubs: *Astroloma humifusum*

Herbs: *Cynoglossum suaveolens, Dianella revoluta, Einadia nutans* subsp. *nutans, Euchiton japonicus, Leptorhynchos squamatus, Oxalis perennans, Ptilotus spathulatus, Wahlenbergia* sp.

Graminoids: *Lepidosperma filiforme*

Grasses: *Austrostipa nodosa, Austrostipa pubinodis, Austrostipa stuposa, Rytidosperma caespitosum, Themeda triandra*

Weeds: *Aira* sp., *Briza maxima, Chrysanthemoides monilifera* subsp. *monilifera, Cotoneaster franchetii, Dactylis glomerata, Linum trigynum, Plantago lanceolata, Sanguisorba minor, Sonchus asper*

Site: 3 FUM – Extra-urban miscellaneous

Herbs: *Medicago* sp., *Oxalis* sp., *Vittadinia muelleri*

Weeds: *Coprosma repens, Aira* sp., *Arrhenatherum elatius* var. *bulbosum, Avena strigosa, Bromus catharticus, Convolvulus arvensis, Cynodon dactylon* var. *dactylon, Dactylis glomerata, Echium candicans, Foeniculum vulgare, Gazania rigens, Hirschfeldia incana, Lysimachia arvensis, Malva* sp., *Piptatherum miliaceum, Plantago coronopus, Polygonum aviculare, Reseda luteola, Rosa rubiginosa, Rubus fruticosus, Sanguisorba minor, Solanum nigrum, Sonchus* sp., *Spergularia* sp.

Waverley Flora Park

For the full flora species list, please refer to Vegetation Condition Assessments (Appendix 4).

Appendix 4 – Vegetation condition assessments for WFP

The TASVEG VCA method employs a set of vegetation characteristics for which change or variation between sites is taken to indicate differences in vegetation condition. The characteristics are stratified into site level characteristics and landscape context. Site characteristics are considered to be more relevant to land managers and include large tree density, log density, canopy health, life form diversity, regeneration activity and the presence of weeds. The landscape component is determined by historical land use and location.

The following assessments for DAS, DOV, DVG, NAV and GTL were conducted in accordance with the Vegetation Condition Manual (the Manual - freely available at www.dpipwe.tas.gov.au) 10 . Rules and guidelines outlined in the Manual were used to determine the number of VCAs (zones) required. The rules were also used to assess site-level and landscape scores for each zone. At each zone, field-based observations were used to populate site characteristic matrices that reflect the range of classes specific to each characteristic. The range classes were used to determine a point score for each site characteristic against a benchmark.

***Eucalyptus amygdalina* forest on sandstone (DAS)**							
Location	Waverley Flora Park (WFP4). Central portion of park.						
Grid Reference	531726,5253784	Date	11-November-2021				
Area	46 ha	Recorder	Nick Fitzgerald, Aimee Bliss				
SITE CONDITION ATTRIBUTES							
Large Trees		Understorey Life Forms					
Number of Large Trees #/ha	0	Life Forms	No. species	Cover %	Present	Modified	
Proportion Healthy Canopy	-	Immature eucalypt tree	2	1	Yes	N/A	
Tree Canopy Cover		Tree (sub canopy) or large shrub	2	25	Yes	No	
Tree Canopy Cover (%)	25	Medium shrub/small shrub	5	30	Yes	No	
Proportion Healthy Canopy	>70	Prostrate and mat-forming shrubs	3	2	Yes	No	
Lack of Weeds		Herbs	14	5	Yes	No	
Weed Cover (%)	1	Grasses	6	40	Yes	No	
High Threat Weeds	1 %	Large sedge/rush/sagg	4	50	Yes	No	
Recruitment		Medium-small sedge/rush/sagg	-	-	No	-	
Adequate Eucalypt Recruitment	Yes	Ground ferns	-	-	No	-	
Proportion of native woody plants with adequate recruitment	>70 %						
Recruitment Diversity	High	Scrambler/Climber and Epiphytes	1	0.5	Yes	No	
Organic litter (%)		Mosses and Lichen	-	5	Yes	N/A	
Litter Cover (%)	40						
Litter – native or non native	Native	% Benchmark life forms present	82 %				
Logs							
Length of Logs (m/ 0.1 ha)	23						
Large logs – present or absent	Yes						
LANDSCAPE CONTEXT ATTRIBUTES							
Patch Size		Neighbourhood		Distance to Core Area			
Area of native vegetation continuous with assessment zone	75 ha	% Native Vegetation within 100 m	100	Distance to Core Area >50 ha	<1 km		
Significantly disturbed	Yes	% Native Vegetation within 1 km	20	Core area significantly disturbed	Yes		
		% Native Vegetation within 5 km	20				
FINAL VEGETATION CONDITION SCORE							
Site Condition Score		Landscape Context Score		TOTAL			
Large Trees	**0**/10	Patch Size	**8**/10	**64**/100			
Tree Canopy Cover	**5**/5	Neighbourhood	**2**/10				
Lack of Weeds	**13**/15	Distance to Core Area	**3**/5				
Understorey Summary	**15**/25	Landscape Context Score	**13**/25				
Recruitment	**10**/10						
Organic Litter	**3**/5						
Logs	**5**/5						
Site Condition Total	**51**/75						
DAS VCA SCORE: 64/100							

Eucalyptus ovata forest (DOV)							
Location	Waverley Flora Park (WFP5). Eastern corner of Park						
Grid Reference	532268,5253580	Date	11-November-2021				
Area	4.2 ha	Recorder	Nick Fitzgerald, Aimee Bliss				
SITE CONDITION ATTRIBUTES							
Large Trees		Understorey Life Forms					
Number of Large Trees #/ha	0	Life Forms		No. species	Cover %	Present	Modified
Proportion Healthy Canopy	-	Immature eucalypt tree		2	5	Yes	N/A
Tree Canopy Cover		Tree (sub canopy) or large shrub		3	70	Yes	No
Tree Canopy Cover (%)	70 %	Medium shrub/small shrub		7	15	Yes	No
Proportion Healthy Canopy	> 70 %	Prostrate and mat-forming shrubs		2	3	Yes	No
Lack of Weeds		Herbs		6	15	Yes	No
Weed Cover (%)	5	Grasses		4	30	Yes	No
High Threat Weeds	5 %	Large sedge/rush/sagg		3	40	Yes	No
Recruitment		Ground ferns		-	-	Absent	-
Adequate Eucalypt Recruitment	Yes	Scrambler/Climber and Epiphytes		-	-	Absent	-
Proportion of native woody plants with adequate recruitment	>70 %	Mosses and Lichen		-	-	Absent	-
Recruitment Diversity	High	% Benchmark life forms present		66 %			
Organic litter (%)							
Litter Cover (%)	40						
Litter – native or non native	Native						
Logs							
Length of Logs (m/0.1 ha)	11						
Large logs – present or absent	Yes						
LANDSCAPE CONTEXT ATTRIBUTES							
Patch Size		Neighbourhood			Distance to Core Area		
Area of native vegetation continuous with assessment zone	75 ha	% Native Vegetation within 100 m	60		Distance to Core Area >50 ha	<1 km	
Significantly disturbed	Yes	% Native Vegetation within 1 km	20		Core area significantly disturbed	Yes	
		% Native Vegetation within 5 km	20				
FINAL VEGETATION CONDITION SCORE							
Site Condition Score		Landscape Context Score			TOTAL		
Large Trees	**0**/10	Patch Size	**8**/10		**57**/100		
Tree Canopy Cover	**3**/5	Neighbourhood	**1**/10				
Lack of Weeds	**9**/15	Distance to Core Area	3/5				
Understorey Summary	**15**/25	Landscape Context Score	**12**/25				
Recruitment	**10**/10						
Organic Litter	**5**/5						
Logs	**3**/5						
Site Condition Total	**45**/75						
DOV VCA SCORE 57/100							

Eucalyptus viminalis dry forest (DVG)							
Location	Waverley Flora Park (WFP2). Along southern boundary of park.						
Grid Reference	531178,5253663		Date	11-November-2021			
Area	5.7 ha		Recorder	Nick Fitzgerald, Aimee Bliss			
SITE CONDITION ATTRIBUTES							
Large Trees			Understorey Life Forms				
Number of Large Trees #/ha	0		Life Forms	No. species	Cover %	Present	Modified
Proportion Healthy Canopy	-		Immature eucalypt tree	2	20	Yes	N/A
Tree Canopy Cover			Tree (sub canopy) or large shrub	2	20	Yes	No
Tree Canopy Cover (%)	20		Medium shrub/small shrub	7	10	Yes	No
Proportion Healthy Canopy	30-70 %		Prostrate and mat- forming shrubs	1	1	Yes	Yes
Lack of Weeds			Herbs	9	10	Yes	No
Weed Cover (%)	2		Grasses	3	35	Yes	No
High Threat Weeds	0 %		Large sedge/rush/sagg	4	50	Yes	No
Recruitment			Medium-small sedge/rush/sagg	2	1	Yes	No
Adequate Eucalypt Recruitment	Yes		Ground ferns	-	-	Absent	-
Proportion of native woody plants with adequate recruitment	>70 %						
Recruitment Diversity	High		Scrambler/Climber and Epiphytes	-	-	Absent	-
Organic litter (%)			Mosses and Lichen	-	20	Yes	N/A
Litter Cover (%)	30						
Litter – native or non native	Native		% Benchmark life forms present	81 %			
Logs							
Length of Logs (m/ 0.1 ha)	19						
Large logs – present or absent	Absent						
LANDSCAPE CONTEXT ATTRIBUTES							
Patch Size			Neighbourhood		Distance to Core Area		
Area of native vegetation continuous with assessment zone	75 ha		% Native Vegetation within 100 m	95	Distance to Core Area >50 ha		<1 km
Significantly disturbed	Yes		% Native Vegetation within 1 km	20	Core area significantly disturbed		Yes
			% Native Vegetation within 5 km	20			
FINAL VEGETATION CONDITION SCORE							
Site Condition Score			Landscape Context Score		TOTAL		
Large Trees	**0**/10		Patch Size	**8**/10	**64**/100		
Tree Canopy Cover	**4**/5		Neighbourhood	**2**/10			
Lack of Weeds	**15**/15		Distance to Core Area	**3**/5			
Understorey Summary	**15**/25		Landscape Context Score	**13**/25			
Recruitment	**10**/10						
Organic Litter	**5**/5						
Logs	**2**/5						
Site Condition Total	**51**/75						
DVG VCA SCORE 64/100							

Allocasuarina verticillata forest (NAV)							
Location	Waverley Flora Park (WFP3). Western corner of the park.						
Grid Reference	531213,5253779		Date	11-November-2021			
Area	4.1 ha		Recorder	Nick Fitzgerald, Aimee Bliss			
SITE CONDITION ATTRIBUTES							
Large Trees			Understorey Life Forms				
Number of Large Trees #/ha	0		Life Forms	No. species	Cover %	Present	Modified
Proportion Healthy Canopy	>70 %						
Tree Canopy Cover			Tree (sub canopy) or large shrub	2	2	Yes	No
Tree Canopy Cover (%)	80		Medium shrub/small shrub	3	10	Yes	No
Proportion Healthy Canopy	>70 %		Prostrate and mat-forming shrubs	-	-	No	-
Lack of Weeds			Herbs	4	0.5	Yes	No
Weed Cover (%)	0		Grasses	3	1	Yes	No
High Threat Weeds	0 %		Scrambler/Climber and Epiphytes	-	-	No	-
Recruitment							
Adequate Canopy sp. Recruitment	Yes		% Benchmark life forms present	66 %			
Proportion of native woody plants with adequate recruitment	60 %						
Recruitment Diversity	High						
Organic litter (%)							
Litter Cover (%)	90						
Litter – native or non native	Native						
Logs							
Length of Logs (m/0.1 ha)	13						
Large logs – present or absent	Yes						
LANDSCAPE CONTEXT ATTRIBUTES							
Patch Size			Neighbourhood		Distance to Core Area		
Area of native vegetation continuous with assessment zone	75 ha		% Native Vegetation within 100 m	95	Distance to Core Area >50 ha		<1 km
Significantly disturbed	Yes		% Native Vegetation within 1 km	20	Core area significantly disturbed		Yes
			% Native Vegetation within 5 km	20			
FINAL VEGETATION CONDITION SCORE							
Site Condition Score			Landscape Context Score		TOTAL		
Large Trees	**0**/10		Patch Size	**8**/10	**64**/100		
Tree Canopy Cover	**5**/5		Neighbourhood	**2**/10			
Lack of Weeds	**15**/15		Distance to Core Area	**3**/5			
Understorey Summary	**15**/25		Landscape Context Score	**13**/25			
Recruitment	**6**/10						
Organic Litter	**5**/5						
Logs	**5**/5						
Site Condition Total	**51**/75						
NAV VCA SCORE 64/100							

Lowland Themeda triandra grassland (GTL)			
Location	Waverley Flora Park (WFP1). Western portion of park.		
Grid Reference	531066,5253739	Date	11-November-2021
Area	1.6 ha	Recorder	Nick Fitzgerald, Aimee Bliss

SITE CONDITION ATTRIBUTES

Dominant Life Form		Understorey Life Forms				
Dominant Life Form Cover (%)	80	Life Forms	No. species	Cover %	Present	Modified
Lack of Weeds		Medium shrub/small shrub	7	5	Yes	No
Weed Cover (%)	5	Prostrate and mat- forming shrubs	2	1	Yes	No
High Threat Weeds	0 %	Herbs	9	1	No	-
Persistence Potential		Medium to small tussock grass	3	80	Yes	No
Regeneration Potential	High	Non-tussock grass	-	-	Absent	-
Species Diversity	High	Tiny grass/sedge/lilly	4	2	Yes	No
Organic litter (%)		Large sedge/rush/sagg/lily	3	2	Yes	No
Litter Cover (%)	3	Medium to small sedge/rush/sagg/lily	1	0.5	Yes	No
Litter – native or non native	Native	Ground fern	-	-	Absent	-
		Mosses and Lichen	-	-	Absent	-
		% Benchmark life forms present	60 %			

LANDSCAPE CONTEXT ATTRIBUTES

Patch Size		Neighbourhood		Distance to Core Area	
Area of native vegetation continuous with assessment zone	75 ha	% Native Vegetation within 100 m	100	Distance to Core Area >50 ha	<1 km
Significantly disturbed	Yes	% Native Vegetation within 1 km	20	Core area significantly disturbed	Yes
		% Native Vegetation within 5 km	20		

FINAL VEGETATION CONDITION SCORE

Site Condition Score		Landscape Context Score		TOTAL
Dominant Life Form Cover	**15**/15	Patch Size	**8**/10	**75**/100
		Neighbourhood	**2**/10	
Lack of Weeds	**15**/15	Distance to Core Area	**3**/5	
Understorey Summary	**15**/25	Landscape Context Score	**13**/25	
Persistence Potential	**10**/10			
Organic Litter	**3**/5			
Site Condition Total subtotal	**58**/70			
Sub-total x 1.07	**62**/75			

GTL VCA SCORE 75/100

Appendix 5 – Weeds list for WFP and CSR

The list provides an alphabetical list indicating weed status and management priority recorded in the vicinity of WFP and CSR including those recorded by Fensham and Gilfedder in 1989. Weeds are also included from iNaturalist (2022), local Waverley Park Landcare group records and/or reported during the community consultation process.

The weed status indicates whether the weed species is a declared weed species (D) under the *Biosecurity Act 1999* or a weed of national significance (WONS). In addition, the CWS priority value is included in the weed status column where relevant.

Priority Rating – The CWS assigns a priority rating of 1-4 is assigned to each species.

Priority 1: Declared weeds or newly introduced "alert list" weeds with a restricted distribution in Clarence. These species are of highest priority and require a rapid response. Immediately implement the eradiation plan when reported.

Priority 2: Limited distribution. Eradicate or quarantine within the term of the action plan (10 years). High priority.

Priority 3: Widespread distribution. Declared weeds and certain CLL species require strategic control. Eradicate isolated infestations and contain wider infestations to ensure no further spread within the term of the action plan (10 years).

Priority 4: Widespread distribution. CLL weeds and declared weeds of lowest priority.

Scientific Name	Common Name	WFA	CSR	Weed Status	Source
Acacia floribunda	white Sally wattle				inat
Acacia paradoxa	kangaroo thorn	3			NVA/inat
Agapanthus praecox subsp. *orientalis*	African lily	2		4	NVA/inat
Agrostis capillaris	brown top bent	1			NVA/inat
Aira caryophyllea subsp. *caryophyllea*	silvery hairy grass	3			NVA
Aloe maculata	soap aloe	1			NVA/inat
Aloe sp.	aloe				inat
Arctotheca calendula	capeweed				NVA
Billardiera heterophylla	bluebell creeper	2		4	NVA
Brassica x napus	rape				NVA
Briza maxima	greater quaking-grass	2			NVA/inat

Scientific Name	Common Name	WFA	CSR	Weed Status	Source
Briza minor	lesser quaking grass	2			NVA
Bromus diandrus	great brome				inat
Calendula officinalis	garden marigold				NVA
Capsella bursa-pastoris	shepherds purse				NVA
Cardamine hirsuta	hairy bittercress				inat
Centaurium erythraea	common centaury	3			NVA/inat
Cardus pycnocephalus and C. tenuiflorus	slender and winged thistle			D, 3	NVA
Chamaecytisus palmensis	tree lucerne	1		4	NVA
Chrysanthemoides monilifera subsp. *monilifera*	boneseed	24	1	D, WONS, 3	NVA/inat
Cirsium vulgare	spear thistle	1			NVA/inat
Cordyline australis	New Zealand cabbage tree				inat
Cortaderia sp.	pampas grass			D, 2	NVA
Cotoneaster glaucophyllus var. *serotinus*	large-leaf cotoneaster	1	1	4	NVA/inat
Cytisus scoparius	English broom	1		D, WONS, 3	NVA/inat
Echium candicans	pride of Madeira	2		4	NVA/inat
Ehrharta erecta var. *erecta*	panic veldgrass	1		4	NVA
Erica arborea	tree heath			D, 2	NVA
Erica lusitanica	Spanish heath	3		D, 3	NVA/inat
Euphorbia peplus	pretty spurge	1			NVA/inat
Foeniculum vulgare	fennel	0	1	D, 4	
Freesia leichtlinii alba	white kammetjie				inat
Freesia sp (hybrids)	freesias	1			NVA/inat
Fumaria muralis	common ramping-fumitory				inat
Fumaria muralis subsp. *muralis*	wall fumitory	1			NVA
Fumaria officinalis subsp. *officinalis*	common fumitory	1			NVA/inat
Genista monspessulana	montpellier broom	5		D, 3	NVA/inat

Scientific Name	Common Name	WFA	CSR	Weed Status	Source
Genista stenopetala	madeira broom	1			NVA
Grevillea rosmarinifolia	rosemary grevillea	3			NVA
Hedera helix	ivy				NVA
Holcus lanatus	Yorkshire fog	1			NVA
Hypochaeris radicata	rough catsear	1			NVA
Kunzea ericoides	burgan	1		4	NVA/inat
Lavandula stoechas subsp. stoechas	topped lavender				NVA
Leontodon saxatilis	hairy hawkbit				inat
Lepidium didymum	lesser swinecress				inat
Lysimachia arvensis	scarlet pimpernel				NVA/inat
Medicago lupulina	black medick				NVA
Moenchia erecta	erect chickweed				inat
Narcissus sp	daffodils				inat
Nassella trichotoma	serrated tussock			D, 3	NVA
Opuntia stricta	prickly pear			D, WONS, 2	NVA
Oxalis articulata	bent wood sorrel				inat
Petrorhagia dubia	hairypink				inat
Pinus sp.	pine sp	1			NVA
Pittosporum undulatum	sweet pittosporum			4	inat
Plantago coronopus	buckshorn plantain				NVA
Plantago lanceolata	ribwort plantain	1			NVA/inat
Rosa rubiginosa	sweet briar /briar rose	1	1	4	NVA
Rosmarinus officinalis	rosemary				NVA
Rubus fruticosus	European blackberry complex	2	1	D, 4	NVA/inat
Sanguisorba minor	salad burnet	1			NVA/inat
Silene gallica var. *gallica*	French catchfly	2			NVA/inat
Silene gallica var. *quinquevulnera*	spotted catchfly	2			NVA/inat
Sisymbrium orientale	eastern rocket				inat
Stellaria media	garden chickweed				inat
Trifolium dubium	suckling clover				inat
Trifolium repens	white clover				NVA
Trifolium subterraneum	subterranean clover				NVA/inat

Scientific Name	Common Name	WFA	CSR	Weed Status	Source
Ulex europaeus	gorse	2		D, WONS, 3	NVA/inat
Urospermum dalechampii	false dandelion			2	inat
Urtica urens	stinging nettle				NVA
Verbascum thapsus	great mullein	1		4	NVA
Vicia sp	vetch				inat
Vinca major	blue periwinkle	4		4	NVA/inat
Vulpia myuros	foxtail fescue	1			NVA
Watsonia meriana	bulbil watsonia				inat

Appendix 6 – Bird lists

Birds recorded at **Carbeen Street Reserve** on 16 April 2021 (NBES 2021):

Common name	Scientific name	Observation
Musk lorikeet	*Glossopsitta concinna*	saw/heard on site
Australian magpie	*Cracticus tibicen*	heard in distance
Common starling	*Sturnus vulgaris*	saw/heard on site
Silver eye	*Zosterops lateralis*	saw/heard on site
Striated pardalote	*Pardalotus striatus*	heard on site
Little wattlebird	*Anthochaera chrysoptera*	heard on site
Common blackbird	*Turdus merula*	heard on site
Black headed honeyeater	*Melithreptus affinis*	heard on site
Silver gull	*Chroicocephalus novaehollandiae*	saw flying over site
Brown falcon	*Falco berigora*	saw flying south of site
Brown thornbill	*Acanthiza pusilla*	saw/heard on site
Forest raven	*Corvus tasmanicus*	saw/heard on site
Sulphur-crested cockatoo	*Cactua galerita*	saw/heard on site
Galah	*Eolophus roseicapilla*	saw/heard on site

The following table is a record of the birds in **Waverley Flora Park** based on 58 surveys, extracted from birdata (https://birdata.birdlife.org.au/home).“Count” is the number of surveys in which a species was observed, and the Reporting Rate (RR) is the number of surveys in which the species was recorded divided by 58, expressed as a percentage.

Prepared by Mike Newman and Sue Wragge on behalf of BirdLife Tasmania, 12 June 2022.

(* indicates introduced)

Common name	Scientific name	Count	RR (%)
Forest Raven	*Corvus tasmanicus*	45	77.6
Yellow-throated Honeyeater	*Nesoptilotis flavicollis*	44	75.9
Brown Thornbill	*Acanthiza pusilla*	42	72.4
Little Wattlebird	*Anthochaera chrysoptera*	40	69.0
Common Blackbird*	*Turdus merula*	36	62.1
Spotted Pardalote	*Pardalotus punctatus*	34	58.6
Silvereye	*Zosterops lateralis*	34	58.6
Scarlet Robin	*Petroica multicolor*	34	58.6
Grey Fantail	*Rhipidura fuliginosa*	34	58.6
Grey Currawong	*Strepera versicolor*	34	58.6
NewHolland Honeyeater	*Phylidonyris novaehollandiae*	31	53.5

Common name	Scientific name	Count	RR (%)
Striated Pardalote	*Pardalotus striatus*	26	44.8
Common Starling*	*Sturnus vulgaris*	26	44.8
Black-headed Honeyeater	*Melithreptus affinis*	25	43.1
House Sparrow*	*Passer domesticus*	22	37.9
European Goldfinch*	*Carduelis carduelis*	22	37.9
Superb Fairy-wren	*Malurus cyaneus*	21	36.2
Dusky Woodswallow	*Artamus cyanopterus*	19	32.8
Crescent Honeyeater	*Phylidonyris pyrrhopterus*	19	32.8
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	19	32.8
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	17	29.3
Spotted Dove*	*Streptopelia chinensis*	17	29.3
Grey Shrike-thrush	*Colluricincla harmonica*	17	29.3
Eastern Spinebill	*Acanthorhynchus tenuirostris*	17	29.3
Green Rosella	*Platycercus caledonicus*	12	20.7
Golden Whistler	*Pachycephala pectoralis*	12	20.7
Laughing Kookaburra *	*Dacelo novaeguineae*	10	17.2
Grey Butcherbird	*Cracticus torquatus*	10	17.2
Yellow Wattlebird	*Anthochaera paradoxa*	9	15.5
Musk Lorikeet	*Glossopsitta concinna*	8	13.8
Pallid Cuckoo	*Heteroscenes pallidus*	7	12.1
Dusky Robin	*Melanodryas vittata*	7	12.1
Common Greenfinch*	*Chloris chloris*	7	12.1
Masked Lapwing	*Vanellus miles*	6	10.3
Brown Quail	*Synoicus ypsilophora*	6	10.3
Welcome Swallow	*Hirundo neoxena*	3	5.2
Tree Martin	*Petrochelidon nigricans*	3	5.2
Shining Bronze-Cuckoo	*Chalcites lucidus*	3	5.2
Horsfield's Bronze-Cuckoo	*Chalcites basalis*	3	5.2
Galah	*Eolophus roseicapilla*	3	5.2
Brown Goshawk	*Accipiter fasciatus*	3	5.2
Blue-winged Parrot	*Neophema chrysostoma*	3	5.2
Peregrine Falcon	*Falco peregrinus*	2	3.5
Olive Whistler	*Pachycephala olivacea*	2	3.5
Fan-tailed Cuckoo	*Cacomantis flabelliformis*	2	3.5
Brush Bronzewing	*Phaps elegans*	2	3.5
Yellow-tailed Black-Cockatoo	*Zanda funereus*	1	1.7
Tasmanian Thornbill	*Acanthiza ewingii*	1	1.7
Tasmanian Scrubwren	*Sericornis humilis*	1	1.7

Common name	Scientific name	Count	RR (%)
Tasmanian Native-hen	*Tribonyx mortierii*	1	1.7
Sulphur-crested Cockatoo	*Cacatua galerita*	1	1.7
Noisy Miner	*Manorina melanocephala*	1	1.7
Eastern Rosella	*Platycercus eximius*	1	1.7
Common Bronzewing	*Phaps chalcoptera*	1	1.7
Brown Falcon	*Falco berigora*	1	1.7
Black Currawong	*Strepera fuliginosa*	1	1.7
Australian Owlet-nightjar	*Aegotheles cristatus*	1	1.7
Australian Hobby	*Falco longipennis*	1	1.7
Strong-billed honeyeater	*Melithreptus validirostris*	Anecdotal sightings	

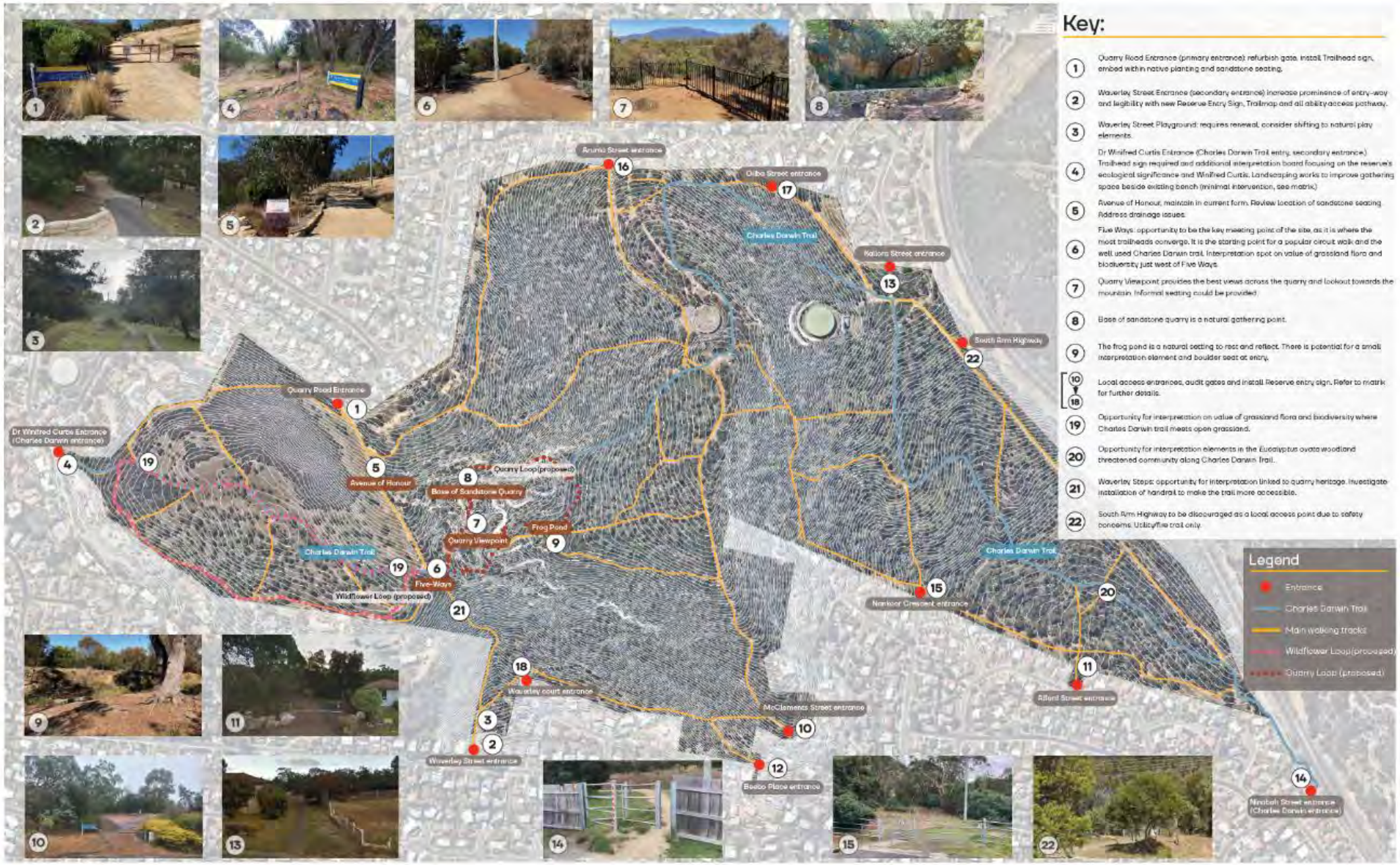
Additional species recorded by the local Landcare group and/or found on public record include:

- Tawny frogmouth (*Podargus strigoides)*
- Painted buttonquail (*Turnix varius*)
- Australian magpie (*Gymnorhina tibicen*)
- Grey goshawk (*Accipiter novaehollandiae*)

The following birds have been viewed from within the park, flying overhead:

- White bellied sea-eagle (*Haliaeetus leucogaster*) seen soaring overhead – Listed as vulnerable under the *Threatened Species Protection Act 1999*
- Silver gull (*Chroicocephalus novaehollandiae*)
- Kelp gull (*Larus dominicanus*)
- Australasian gannet (*Morus serrator*)
- Great cormorant (*Phalacrocorax carbo*).

Appendix 7 – WFP Visitor Amenity Plan and Audit



VISITOR AMENITY AUDIT: WAVERLEY FLORA PARK ENTRANCES

Entrances	Primary	Secondary	Local access	Utility access
Facility Guidelines	Quarry Road entrance	A: Waverley Street Entrance and play area B: Dr Winifred Curtis Entrance (Mercedes Place)	Kallora Street, Ninabah Street, McClements Street, Alford Street, Nankoor Crescent, Waverley Court entrance, Aruma Street, Beebo Place, Gilba Street	Fire Road Aruma Street South Arm Highway
Car Park	As this is the primary entrance to a significant reserve, parking should be considered.	Street parking sufficient	No parking required	Street parking sufficient
Arrival area	Arrival area in good condition. Previously proposed future staged works of Quarry Road entrance and Avenue of Honour Masterplan (2017) reviewed as inappropriate due to site zoning, utilities, topography and the broader need.	A: Waverley Street entrance explore the option to establish a gentler incline access. B: Dr Winifred Curtis Entrance, create a safe gathering space up from the entrance.	Not required	Not required
Furniture	New gate/refurbished with natural toned finish. Remove right-hand side fence panel to increase natural setting. Bring dog bin in-front of gate.	A: Use rock boulders as edging between path trail and fire road to delineate key access path. B: Keep timber seating, replace when required and consider additional boulder seating.	Vehicle barrier gate / trail bike barrier/ narrow entrances / other rock furniture to define entrance point to be determined on a site-by-site basis where appropriate	Maintain vehicle barrier gate
Track interface	Ongoing maintenance of drainage and track required.	A: Need for coherent pedestrian access: resurface with non slip compacted gravel. Consider new path alignment to work with existing site gradient. B: Additional pockets of track widening to allow safe meeting place/node.	Ensure safe entry way/no trip hazards	N/A
Soft landscaping	Planting well established. Prune silver wattles to allow reserve entry sign to be read. Continue weed management. Opportunity to highlight some of the rare and interesting grassland flora in plantings. Replace any non-native plantings	A: Revegetate disturbed areas around chicane and gate, along western boundary. B: Manage vegetation to support open grassland community. Prune large *Dodonaea viscosa* for visual connection to gathering space.	N/A	N/A
Vehicle/trail bike barriers	Barriers already in place	A: Retain street gate and barrier. Remove unused gate and chicane further up slope. (Photo 3 - Visitor Amenity Plan) B: None existing. Continue using natural elements to deter unwanted access.	Audit barriers: required	Barriers in place
*Reserve entry/**Trailhead sign	*Reserve entry sign, ** Trailhead sign	A & B: Required. Existing reserve entry sign limited to name and conditions of use. ** Trailhead sign required.	* Reserve entry sign required	Fire Road sign: authorised access only
***Interpretation Note: Opportunity to develop identifying names for Reserve entrances, trails + nodes	Interpretation for introduction to Waverley Flora Park, site history and ecology. Information about walking, cycling, dog walking etc. Role of the park in the broader reserve system, preservation of the botanical significance of the site, appropriate use of the site, fire management, raising awareness of the site as a means of protecting it.	A: Desirable: interpretation for introducing Waverley Flora Park's cultural and ecological significance to be located within the reserve bushland extent. B: Interpretation element desirable linking the trail name Dr Winifred Curtis with the ecological significance of Waverley Flora Park. Opportunity to re-communicate Charles Darwin Trail entry.	No interpretation required	No interpretation required
Directional Signs	Site map. Directional signs leading to the main walking tracks and points of interest.	Directional signs linking trail networks	Minor directional sign desirable	Fire road sign only

NOTE: *Reserve Entry Sign to include: Entry name, Reserve name 'Waverley Flora Park', conditions of use infographics

** Trailhead Sign: Trail map, with updated trail network including Charles Darwin track, Wildflower loop, Quarry loop, recreation amenities. Opportunity for Landcare Group contact information.

***Subject to a future interpretation plan. Opportunity for interpretation to be presented in alternative forms such as sculpture, QR code audio/visual narratives, seasonal programs etc.

VISITOR AMENITY AUDIT: WAVERLEY FLORA PARK FOCAL POINTS

Focal points	Primary Activity and Recreation Nodes	Secondary Activity and Recreation Nodes	Landscape / Cultural Feature	Natural Areas
Facility Guidelines	**Five-Ways (top of Avenue of Honour) - (6)**	**A: Quarry Viewpoint (7) B: Base of Sandstone Quarry (8)**	**Avenue of Honour (5)**	**Frog Pond (9)**
Furniture	Explore opportunities to provide seating near the arrival area or off the walkway to allow rest/reflect/meeting.	A: Explore opportunities for seating B: Retain existing as natural gathering point	Review existing seating against initial plan/regularity	Opportunity for natural seating adjacent to track node.
Track interface	Consolidate track interface at crossroads 'Five Ways'.	A + B: Keep existing	Consider threshold of proposed central track junction to ensure sightlines and safety for walkers/bike users.	Widen the existing gravel track in a small section to overlook the frog pond setting - minimal intervention.
Safety barriers	N/A	A: Retain B: N/A	N/A	N/A
Soft landscaping	Planting to be considered around edges to establish boundary to gathering space/soften edges.	A + B: Allow natural revegetation	N/A	Allow natural revegetation
Arrival area	Defined arrival/meeting area near walkway 'Five-Ways'. Opportunity to be a key recreation node.	A: Low visitor use area, keep natural. B: Natural amphitheater setting supports natural gathering place	N/A	Low visitor use area, keep natural.
Wayfinding Signage incl. Trailhead Sign	Trailhead Sign to inform visitors of the site, facilities, features of interest and restrictions applying to access and use of the site. Five-Ways is the starting point for Quarry Loop and Wildflower Loop, part of the Charles Darwin Trail.	A + B: Small sign to indicate track access/ track network (Trailhead Sign)	N/A	Small sign to indicate track access/track network (Trailhead Sign)
Interpretation*	Desirable: **site ecology, botanical and cultural significance**	A: Desirable: **convey narrative of the Mumirimina people, their connection to country, the river and Kunanyi.** Charles Darwin sign to be upgraded. B: Desirable: **historical significance**	Existing **Anzac** interpretation complete. Desirable: **Bellerive Rifle Range**	Desirable: **site ecology**
Directional Signs	Directional signs leading to the location. Important recreation node to direct users to other tracks, (Quarry Loop and Wildflower Loop).	A + B: Directional signs leading to the location B: Discrete safety signage required beyond stone wall - unstable rock face - no entry beyond this point.	N/A	None

NOTE:

*Subject to a future interpretation plan. Opportunity for interpretation to be presented in alternative forms such as sculpture, QR code audio/visual narratives, seasonal programs etc.

Appendix 8 – Natural Areas Assessment criteria to determine level of dog access in bushland and coastal reserves reference

Natural Areas Assessment criteria to determine the level of dog access in bushland and coastal reserves			
(* Note this table is for assessing environmental values only and does not include recreational values or risk management requirements, which need to be assessed separately, and does not apply to the Tangara Trail except where it passes through a reserve.			
Environmental conditions assessed in accord with: • *Environmental Protection and Biodiversity Conservation Act 1999,* • *Threatened Species Protection Act 1995,* • Wildlife Regulations under the *Nature Conservation Act 2002*	**Application** *(*Note – some reserves may have more than one level of control in different parts of a reserve)*	**Recommended dog walking Classification**	**Example**
Highly sensitive areas such as beaches, saltmarshes or wetlands where there are migratory waders, breeding shorebirds or permanent burrows of shorebirds.	Applicable to beaches, saltmarshes and wetlands	Control 1 - Dogs Prohibited	Lauderdale saltmarsh, Dorans Road Saltmarsh, Pipeclay Lagoon Coastal Reserve
Discrete breeding/nesting areas for shorebirds during breeding season or flowering periods for threatened species	Applicable to shorebird breeding/nesting areas and threatened flora species locations	Control 2 - Dogs on lead outside time-specific restricted areas	Mortimer Bay Coastal reserve
Bushland reserves where there are known populations of threatened or sensitive / susceptible flora and fauna species	Applicable to reserves with a formal track network	Control 3 - Dogs on lead on tracks	Glebe Hill Bushland area
Bushland reserves where there are known populations of threatened or sensitive / susceptible flora and fauna species	Applicable to reserves that do not have a formal track network	Control 4 - Dogs on lead	Single Hill

Natural Areas Assessment criteria to determine the level of dog access in bushland and coastal reserves			
(* Notc this table is for assessing environmental values only and does not include recreational values or risk management requirements, which need to be assessed separately, and does not apply to the Tangara Trail except where it passes through a reserve.			
Environmental conditions assessed in accord with: • *Environmental Protection and Biodiversity Conservation Act 1999*, • *Threatened Species Protection Act 1995,* • Wildlife Regulations under the *Nature Conservation Act 2002*	**Application** *(*Note – some reserves may have more than one level of control in different parts of a reserve)*	**Recommended dog walking Classification**	**Example**
Reserves with no recorded susceptible flora and fauna species and no potential habitat	Applicable to reserves with formal track network.	Control 5 - Dogs off lead & under effective control on tracks	Glebe Hill Parkland area Risdon Vale and Grass Tree Rivulets Riparian reserves
Bushland or parkland reserves with no recorded susceptible flora and fauna species and no potential habitat Open reserves with minimal native habitat and no record sensitive or threatened flora and fauna species.	Applicable to reserves with no formal track network.	Control 6 - Dogs off lead & under effective control	Richmond Recreational Reserve

Definitions

Sensitive fauna is defined as fauna that are sensitive to the impacts of dogs (e.g. disturbance, predation etc.) and may be negatively affected by dogs in terms of a significant displacement from suitable habitat, a loss of resources or reduction of population as a consequence of interactions with dogs or impacts from disease carried by dogs. Smaller mammals such as bandicoots, bettongs, potoroos, antechinus, possums, pademelons, native rodents, quolls or juvenile Bennett's wallabies are more likely to be injured or killed by dogs.

Susceptible flora species are defined as small delicate species such as orchids and lilies which may not reproduce consistently, have short flowering times and are restricted in their distribution and where a relatively small impact could prevent reproduction of a significant proportion of a population. Species that are listed as threatened under the *Environmental Protection and Biodiversity Conservation Act 1999* or the *Threatened Species Protection Act 1995* will receive the highest priority.

Appendix 9 – Assessment criteria to determine level of dog access in bush and coastal reserves

The following tables outline the assessment criteria for each reserve. Refer to Appendix 8 for details about Controls 1 to 6 which help to demonstrate how Control 3 is appropriate for both Carbeen Street Reserve and Waverley Flora Park.

Table A – Natural values and recommended dog control regulation – assessment criteria for Carbeen Street Reserve - adapted from *Natural Areas: Assessment criteria to determine level of dog access in bushland and coastal reserves by Enviro-dynamics (2024)*

Threatened Species	**Group**	**Threatened Species Status**	**Records**	**Recommended Dog Control Regulation**	**Reference section(s) of this report**	**Area to be applied to**
Fuzzy new holland daisy *(Vittadinia muelleri)* and Matted flax lily *(Dianella amoena)*	Flora	TSPA 1995	Draft Carbeen Street RAP (NBES 2021)	Control 3	3.3.1 and 5.1.1	Whole reserve
			Final Recommended Dog Control Regulation	Control 3 – Dogs on lead on formal tracks		Bushland reserve

Table B – Natural values and recommended dog control regulation – assessment criteria for Waverly Flora Park reserve - adapted from *Natural Areas: Assessment criteria to determine level of dog access in bushland and coastal reserves by Enviro-dynamics (2024)*

Threatened Species or Group	Threatened Species Status	Records	*Sensitive Species	Recommended Dog Control Regulation	Reference section(s) of this report	Area to be applied to
E. amygdalina forest and woodland on sandstone (DAS)	Threatened NCA 2002 TSPA 1995	NVA and survey	Sensitive drought	Control 3	3.2.1	Bushland reserve
E. ovata forest and woodland (DOV)	EPBC Act 1999 threatened					
Caledenia caudata	TSPA 1995 Vulnerable EPBC Act 1999 Vulnerable	NVA and surveys	Susceptible to trampling, browsing, fire and climate change	Control 3	3.3.1 and 5.1.1	Bushland reserve
Haloragis hetrophylla	TSPA 1995 Rare		Susceptible to trampling			
Goodenia paradoxa	TSPA 1995 Vulnerable					
Senecio squarrosus	TSPA 1995 Rare					
Scleranthus fasciculatus	TSPA 1995 Vulnerable					
Vittadinia muelleri	TSPA 1995 Rare					

Habitat - terrestrial	Description of suitable habitat	What #sensitive fauna is present?	Records	Recommended Dog Control Regulation	Reference section(s) of this report	Area to be applied to
Suitable shelter or foraging habitat for native mammal species	Grassy and shrubby woodland which provides foraging and sheltering habitat for small mammal species	Potentially - southern brown bandicoots, potoroos, wallabies, ring tailed possum, brush tailed possum.	Observations in woodland area	Control 3	3.4	Bushland reserve
			Final Recommended Dog Control Regulation	Control 3 - Dogs on lead on formal tracks		Bushland reserve

Definitions

* Susceptible flora species – flora – small delicate species such as orchids and lilies which may not reproduce consistently, have short flowering times and are restricted in their distribution and where a relatively small impact could prevent reproduction of a significant proportion of a population. Species may be sensitive to climate stress, trampling, browsing and fire.

Sensitive fauna species – smaller mammals that are more likely to be killed by dogs including bandicoots, bettongs, potoroos, antechinus, pademelons, possums, native rodents, juvenile Bennett's wallabies and quolls.