

DRAFT Damper Creek Reserve North Conservation Management Plan



Prepared for the City of Monash

June 2021

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1. INTRODUCTION

Practical Ecology Pty Ltd was commissioned by the City of Monash to update the monitoring data from the 2018 *Monash Bushlands Reserves Assessment and Monitoring Report* and provide an updated ecological evaluation of the conditions in the form of a *Conservation Management Plan*. This *Conservation Management Plan* will focus on areas of remnant and rehabilitated/revegetation bushland within Damper Creek Reserve North.

Damper Creek Reserve North is a 5.32 ha bushland reserve located along Damper Creek surrounded by urban residential development. The North bushland reserve is found west of Stephenson's Road running south to Monomeith Crescent. Damper Creek Reserve North is a significant remnant in the context of eastern Greater Melbourne region. The reserve consists of high biodiversity vales for remnant vegetation based on the present EVC conservation status and moderate biodiversity values for the remainder of the site considering the mature revegetation and floristic diversity.

The remnant bushland present is approximately 0.7 ha and occurs in small areas throughout the reserve. Damper Creek flows from the north of the reserve to the south providing habitat connectivity to the Damper Creek South Reserve and Electra Reserve. The reserve is a passive recreational space that includes small mowed areas in the western portion of the reserve, walking tracks along the creek and benches throughout.

Prior to this updated *Conservation Management Plan*, works within the bushland areas of the reserve have been guided by the previous management report and works plan: *Damper Creek Reserve Bushland Management Plan* (Practical Ecology; 2002) and *Damper Creek Reserve Works Program* (Danny Raditsis, Reserve Manager).

This *Conservation Management Plan* reviews the former *Damper Creek Reserve Bushland Management Plans, and Works Programs* and outlines the ecological outcomes evident within the areas of remnant bushland, revegetation and creek lines of Damper Creek Reserve North since the 2002 Management Plan. It also presents new information to provide recommendations for on-going works programs that will assist Council, and/or bushland ecological contractors with future management. The recommendations are not based on projected budget allocations.

The *Conservation Management Plans* are mostly prepared for Monash's bushland reserves/patches, where there are no Master Plans to guide the overall reserve/bushland management. The main purpose of the *Conservation Management Plans* is to review and document the ongoing bushland management works across Monash; and to present all the vegetation and bird monitoring data available for a reserve in one self-contained document.

Another purpose of the *Conservation Management Plans* is to utilise the Eastern Alliance for Greenhouse Action (EAGA) Monitoring Framework methodology across Monash's bushland reserves/patches, and to present the results in a format that is consistent across all of Monash's bushland; which is one of the objectives of the *Monash Bushlands Reserves Assessment and Monitoring Report* (Practical Ecology 2018).

1.1 Project Background and Aims

This report aims to assess the quality and extent of indigenous vegetation within Damper Creek Reserve North. The assessment has been undertaken to document the current ecological/biodiversity status of the bushland to assist in the protection and enhancement of the ecological values present.

The following tasks were undertaken to revise the *Monash Bushlands Reserves Assessment and Monitoring Report* and develop this *Conservation Management Plan*:

- A brief review of the previous Vegetation Management Report and other relevant reports/plans;
- Confirmation of the reserve's context, ecological significance (EVC, Bioregion) and existing vegetation condition;
- A brief review of past and ongoing works including regeneration/revegetation works;
- A botanical survey throughout the reserve mapping the overall quality of indigenous vegetation, both remnant and planted;
- An assessment of current vegetation condition supported by a Habitat Hectare assessment;
- Three bird surveys using the standardised 20-minute bird census as recommended by Birds Australia;
- Identification and discussion of management issues;
- A summary of recommendations to improve vegetation quality over time including general management prescriptions and works programs; and
- A proposal for a process of follow up monitoring and assessment to evaluate the progress of management works.

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2. REVIEW OF PREVIOUS REPORTS AND PLANS

There are three existing documents (including two previous *Vegetation Management Plans* for Damper Creek Reserve) which were reviewed in the creation of this document:

- *Damper Creek Reserve Management Plan* (City of Monash; 1998)
- *Damper Creek Reserve Bushland Management Plan* (Practical Ecology; 2002)
- *Monash Bushlands Reserves Assessment and Monitoring Report* (Practical Ecology; 2018)

This section provides some background on Damper Creek Reserve, and a brief outline of the previous report and management plans completed in relation to the site. Flora information from the previous reports is presented in Appendix 1. Some of the vegetation and fauna assessment data from these reports is also presented throughout this document.

2.1 Monitoring Reports

***Monash Bushlands Reserves Assessment and Monitoring Report* (Practical Ecology; 2018)**

Damper Creek Reserve North was one of 16 priority indicator reserves selected by council staff within the City of Monash. The aim of the assessment and monitoring report was to provide a format for presenting the baseline ecological data for the selected bushland reserves and provide monitoring methods outlined in the *Monash Bushland Framework and Matrix Report*.

Each reserve assessment identified the ecological values present, vegetation types, management recommendations and the recommended bushland monitoring methods utilised within each reserve. The baseline data collected in this report was the first step in establishing a series of repeatable methodologies for the purposes of comparing vegetation, habitat condition and bird composition overtime.

2.2 Management Plans

There have been two previous *Management Plans* written for Damper Creek Reserve, as briefly outlined below:

***Damper Creek Reserve Management Plan* (City of Monash; 1998)**

This *Management Plan* was developed to protect and preserve remnant vegetation and provide future management objectives for the entire reserve.

The management plan gives a detailed description of the soils, geography, climate, birdlife, forest type and weeds present in the reserve and provides recommendations for the protection and enhancement of Damper Creek Tributary and remnant areas. The main management strategies present are erosion control to stabilise and vegetate banks and management of encroaching weeds.

***Damper Creek Reserve Bushland Management Plan* (Practical Ecology; 2002)**

This *Management Plan* was developed to establish baseline information on the environmental values and risks within the Reserve and to deliver management actions for the protection and restoration of remnant indigenous

vegetation and associated wildlife habitat present in Damper Creek Reserve North. The four objectives presented in the management are of the following:

- Protection and enhancement of existing indigenous bushland;
- Restoration and further diversification of remnant indigenous bushland and fauna habitat;
- Prioritisation of the management requirements for the Reserve’s managers; and, to
- Encourage greater community appreciation of the Reserve’s ecological values.

Environmental risks were identified based on the conducted site assessments that included issues such as weed invasion, stormwater and surface run-off, dogs off-lead, unrestricted public access, barriers to fish migration, dumping of garden rubbish, introduced predators and modification of vegetation structure. Both short- and long-term management priorities and actions were defined and proposed for a number of management areas within the reserve.

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3. METHODS

This section outlines the approach to ecological assessment for this *Conservation Management Plan*, which builds upon the foundations of ecological data collected for the 2018 report.

The ecological assessment methods utilised in this 2021 *Conservation Management Plan* are based upon the methodologies utilised in the 2018 *Monash Bushlands Reserves Assessment and Monitoring Report* prepared for City of Monash 16 indicator bushland reserves.

The 2018 Monash *Bushlands Reserves Assessment and Monitoring Report* presents information on the remnant bushland and revegetation areas at the Damper Creek Reserve North based on a vegetation assessment (habitat hectare and vegetation quality); three bird/incidental fauna surveys and a fauna habitat assessment; and an overview of former and current management works and actions. Further details on the methods employed are provided below.

Additional information on floristics and past/present management actions and issues were obtained from discussions with Council staff (Danny Raditsis; Reserve Manager and Andrew Bailey; Bushland & Wetland Foreperson) and members of Friends of the Damper’s Creek Reserve. This includes information obtained during an on-site meeting with the Friends group, as well as on-ground and management staff from Council, which was conducted in the creation of this document.

3.1 Flora Species Lists

Plant taxonomy used in this report is generally in accordance with *A Census of the Vascular Plants of Victoria* (Walsh and Stajsic 2008) and/or the Victorian Biodiversity Atlas (DEPI 2013).

The results of the 2016 flora survey throughout Damper Creek Reserve North have been compiled in Appendix 2. In addition, flora data collected by Danny Raditsis (Bushland and Wetland Team Member) and his team over the years is also included. The 2021 flora survey completed as part of this preparation of this Plan was undertaken in April 2021.

Limitations

While the 2021 survey included only a relatively brief survey, the results were combined with those from 2016 as well as records collected by on-ground staff over a number of years. Overall, this list is considered to provide a comprehensive representation of the flora species found in the reserve however it is likely that some deciduous or cryptic species are present but have not been observed.

Please note that as a precaution, taxa which are often poached have been removed from the flora list however are included in the tally of total species. Further details on the flora species lists are provided in Section 4.1.

3.2 Ecological Vegetation Class Identification

Ecological Vegetation Classes (EVCs) are a systematic vegetation classification system defining plant communities into common types occurring in similar environmental conditions across Victoria. EVCs are assigned in the field according to observable attributes including dominant and characteristic species consistent with the descriptions in the mapping and literature. Each vegetation type is identified on the basis of its floristic

composition (the plant species present), vegetation structure (i.e.: woodland, grassland, saltmarsh), landform (i.e. gully, foothill, plain) and environmental characteristics (i.e.: soil type, climate).

Prior to fieldwork a review of relevant literature, EVC benchmarks and online EVC mapping/benchmark information provided by the Department of Environment, Land, Water and Planning (DELWP) was accessed to assess the EVCs likely to occur in the bushland patch. The relevant EVCs were then identified in the field according to observable attributes including dominant and characteristic species consistent with the EVC benchmark descriptions.

In addition, EVCs were defined for the Damper Creek Reserve North in the 2016 *Monash Bushlands Reserves Assessment and Monitoring Report* (Practical Ecology, 2018). Therefore the 2018 classifications were also assessed against the existing vegetation for accuracy.

For indigenous vegetation to qualify as a remnant patch, it must have an understorey cover comprised of at least 25% perennial indigenous species (or there be at least three native canopy trees with touching drip lines); it can then be classifiable as an Ecological Vegetation Class (EVC).

Further discussions of the EVC/s present within Damper Creek Reserve North are presented in Section 4.2.

3.3 Habitat Hectare Assessment

Habitat Hectare Assessments are a vegetation assessment method developed by DEPI (Version 1.3 October 2004). They were initially undertaken within the reserve for the 2016 Monash Bushlands Reserves Assessment and Monitoring Report and repeated during the 2021 site assessments.

Habitat hectare assessments examine vegetation quality in terms of a variety of habitat elements which when assessed as a whole indicate the vegetation and habitat quality of a patch of remnant vegetation. Habitat Hectare assessments provide greater detail of ecological condition compared to Vegetation Cover Mapping, as they also assess Large Old Trees, Tree Canopy Cover, Recruitment of woody species, Logs and Organic Litter. Both assessment methods compare indigenous understorey and weed cover using a percentage scale.

Habitat hectare assessments are a quality–quantity assessment of native vegetation according to established criteria that are set against a defined benchmark. Refer to Appendix 1 for an outline of the habitat hectare assessment process.

3.4 Vegetation Quality Mapping

The vegetation quality mapping is a long–term on–ground management and visual reporting tool that illustrates percentage cover of indigenous groundstorey vegetation in proportion to weed cover.

The indigenous groundstorey vegetation cover maps were produced initially in 2016 for the *Monash Bushlands Reserves Assessment and Monitoring Report* and repeated during the 2021 site assessment.

The indigenous groundstorey vegetation cover mapping is based on a five–colour, 20 percent increment rating system as outlined in Table 2 below. Each grid square was given an overall score based on this system. This differs from the system used in the 2016 Monash Bushlands Reserves Assessment and Monitoring Report where 25 percent increments based on a four–colour rating system were used to categorise the indigenous groundstorey vegetation within each grid square (including variations within each grid i.e. each grid may contain multiple categories of cover mapped at a very fine scale).

The revised system of 20 percent increments provides on-ground managers with a more accurate representation of the weed cover against the native species cover across the reserve. Defining each grid square with a single overall score allows for easier replication and reduces the need to estimate the location of the scored areas within each grid square.

Table 1. Indigenous Groundstorey Vegetation Cover Mapping Categories

Colour	Indigenous Vegetation Cover
Pink	0–20% indigenous groundstorey vegetation cover Areas where indigenous vegetation has been severely degraded as a result of weed invasion to the extent it is almost completely replaced by exotic plant species
Orange	20–40% indigenous groundstorey vegetation cover Areas where indigenous vegetation is severely degraded although some indigenous vegetation is evident
Blue	40–60% indigenous groundstorey vegetation cover Area of indigenous vegetation with moderate infestations of weeds
Yellow	60–80% indigenous groundstorey vegetation cover Areas of indigenous vegetation with light infestations of weeds
Green	80%–100% indigenous groundstorey vegetation cover Areas of indigenous vegetation virtually free of exotic plants and where the native plant communities' structure, species composition and diversity are comparatively intact

Limitations

Issues with Vegetation Quality maps include the subjectivity between different assessors and the time of year in which the mapping is undertaken, however the broad increments largely account for this discrepancy. As different flora species flower and seed at different times of the year and there are autumn/winter and spring/summer seasonal species, there is never an ideal time of year in which the one survey will capture all indigenous species within a reserve.

Further details on the Vegetation Cover Mapping are provided in Sections 4.5.

3.5 Bird Monitoring

Two two-hectare bird monitoring plots were established at the top northern section, the strip along both sides of Damper Creek and the southern wedge, either side of the creek within the reserve initially in 2016 for the *Monash Bushlands Reserves Assessment and Monitoring Report* and repeated during the 2021 site assessment. This is in line with the standard BirdLife Australia bird census area.

The bird census method is based on a defined two-hectare area and involves a 20-minute search, where all birds heard and/or observed in the pre-defined search area are recorded on the Bird Census form as per the methodology defined in the EAGA's Biodiversity Monitoring Framework Methodology.

As a component of this revision of the *Monash Bushlands Reserves Assessment and Monitoring Report*, two bird surveys have been undertaken, within three hours of dawn.

Note, one bird census was conducted during Autumn 2021 and represents a 'point in time' assessment (i.e.: they were undertaken in one day rather than over a longer time period) of the bird life within the reserve.

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4. FLORA AND VEGETATION ASSESSMENT RESULTS

The information presented in this section of the *Conservation Management Plan* is focussed on the observations made during the site assessment undertaken on 29th April 2021.

4.1 Flora Species List

All areas of Damper Creek Reserve North were rapidly inspected for flora, by foot, on 29th April 2021.

The results of the previous (2016) and current (2021) flora surveys were collated with species records from Monash City Council staff which have been combined into the one overall flora species list which is presented in Appendix 1 and summarised in Table 2 below.

Please note that in 2021, only species which had not been recorded in 2016 were listed.

Table 2. Summary of Flora Recorded in Damper Creek Reserve North

Total Number of Species	
Indigenous Species	213
Exotic/Introduced Species	177
Naturalised Species	5
Total	395
Naturalised: Species native to Victoria but occur outside their natural range, or have been planted, and are considered to be environmental weeds	

4.2 Ecological Vegetation Classes

The DELWP biodiversity interactive mapping (NatureKit) indicates the North reserve is predominantly EVC 126: Swampy Riparian Complex (Endangered) with some elements of EVC 47: Valley Grassy Forest (Vulnerable) at the reserve edges, which was confirmed on-ground.

Table 3 below outlines the benchmark descriptions for the EVC/s, as provided by the former Department of Sustainability and Environment (DSE):

Table 3. EVCs unit occurring in Damper Creek North Reserve

EVC	Bioregional Conservation Status	General Benchmark EVC Description
Swampy Riparian Complex	Endangered	Occurs on poor drainage areas located in topographically protected high rainfall country. The complex consists of emergent eucalypts over a shrub layer with a ground layer primarily ferny to sedgy in character, including mixtures of wet forest and poor-drainage species.
Valley Grassy Forest	Vulnerable	Occurs on fertile well-drained colluvial or alluvial soils on gently undulating lower slopes and valley floors. Open forest to 20 m tall may carry a variety of eucalypts, usually species, which prefer more moist or more fertile conditions over a sparse shrub cover. In season, a rich array of herbs, lilies, grasses and sedges dominate the ground layer but at the drier end of the spectrum the ground layer may be sparse and slightly less diverse, but with the moisture-loving species still remaining.

4.3 Habitat Hectare Assessments

The 2016 *Monash Bushlands Reserves Assessment and Monitoring Report* mapped one habitat zone within the Damper Creek North Reserve. The same area was re-assessed to provide some comparative results based on 5 years of weed control, bushland rehabilitation and planting management works.

Descriptions of the condition of the Habitat Zone from 2016 and 2021 is provided below.

Habitat Zone 1 (HZ1)

The zone represents a patch of EVC 126: Swampy Riparian Complex.

Habitat Zone 1 is located between Bengal and Monomeith Crescent in the southern section of the reserve, with the edges defined by the walking tracks around the creek.

Overall, this zone is of reasonable quality with good indigenous floristic diversity in revegetated areas. A good vegetation structure with regards to canopy and shrub layer. Few weed species present, mostly around the drains entering Damper Creek and few patches of perennial grasses at the western edge of the habitat zone.

4.4 Habitat Hectare Data

The results of the habitat hectare assessments are presented in Table 4, which presents both the 2016 and the 2021 data. The 2021 Habitat Zone was assessed on 29/04/2021.

The description of the Habitat Zone is provided in Section 4.3 above. Table 4 and the text below provides a brief comparison between the 2016 and 2021 assessments.

Table 4. Habitat Hectare Scores for Damper Creek Reserve North Habitat Zone (2016 & 2021)

Assessment Year		2016*	2021
Habitat Zone		HZ1	HZ1
Bioregion		Gippsland Plain	
EVC		EVC 126: Swampy Riparian Complex	
EVC Conservation Status		Endangered	
Size of Zone (hectares)		-	0.7ha
		Max Score	Zone Score
Site Condition	Large Old Trees	10	0
	Tree canopy cover	5	2
	Lack of weeds	15	0
	Understorey	25	15
	Recruitment	10	0
	Organic litter	5	3
	Logs	5	5
Subtotal		75	25
Landscape value	Patch size	10	4
	Neighbourhood	10	0
	Distance to core	5	0
Habitat points (out of 100)		100	29
Habitat Score (habitat points/100)		0.00	0.29
No. of large Old Trees		0	0

Changes between 2016 and 2021

Overall, the site conditions improved over the 5-year period. Canopy cover and recruitment were higher due to the increase in canopy health (perhaps from the higher than usual rainfall in the previous year), percentage cover, higher diversity and evidence of recruitment from multiple species. The weed cover reduced from >50% cover in 2016 to 5 – 25% cover in 2021, resulting in a moderate 'Lack of Weeds' score. The understory score remained the same from 2016 to 2021 ($\geq 50\%$ – 90% of Life forms present). Organic litter increased from 2016 and was dominated by native species, while large logs were absent from the habitat zone with a score reduced over the five-year period.

Overall, the data points towards the sampled habitat zone being in a stable state which appear to be gradually increasing in quality due to successful management efforts. This is a testament to the on-ground staff on site, as such a change is rarely observed in such a short (i.e., 5 year) time period as the habitat scoring methodology can be relatively coarse.

Note, the habitat hectare assessment is defined through categorising site conditions into percentages. Calculating the same score from 2016 to 2021 does not define the site conditions as unchanging.

4.5 Vegetation Quality Mapping

The 2016 Monash Bushlands Reserves Assessment and Monitoring Report mapped the indigenous groundstorey vegetation cover within the Damper Creek Reserve North. The same areas were re-assessed with the revised system to provide some comparative results based on the weed control, bushland rehabilitation and planting management works that have occurred between 2016 - 2021.

See 2016 and 2021 Vegetation Quality Maps below.







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Damper Creek Reserve North Vegetation Quality Mapping

Reserve No 7

Legend

-  Priority_Reserves
-  Reserve Grids (50 x 50m Grids)
- % Indigenous Cover**
 -  0-25%
 -  25-50%
 -  50-75%
 -  75-100%

Details

Date: 28 April 2017
 Created by: Greg James
 Aerial Photography from Google Earth Pro
 Base map data Copyright State of Victoria



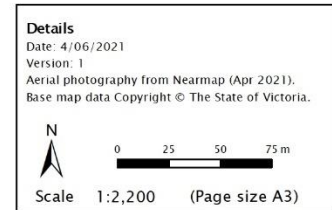
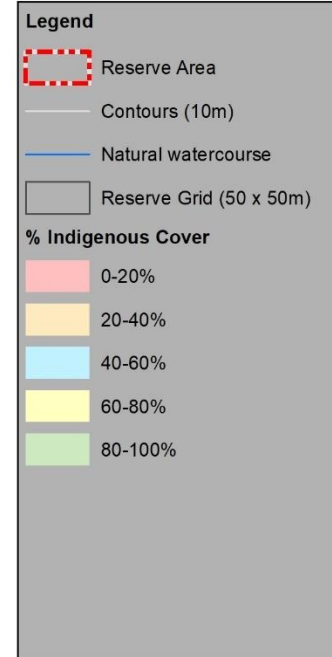
Disclaimer

Practical Ecology bears no responsibility for the accuracy and completeness of this information and any decisions or actions taken on the basis of the map. While information appears accurate at publication, nature and circumstances are constantly changing.





Map 3. Vegetation Quality
Damper Creek Reserve North, Monash



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Changes between 2016 and 2021 assessment

Whilst the mapping only captures broad-scale patterns in indigenous vegetation cover, an analysis of the maps (Figure 1 and 2 above) indicated that the overall vegetation quality has improved throughout the reserve since 2016. In particular, the northern portion of the reserve scored a low percentage of indigenous cover in 2016, and now represents areas of 60–80 percent and 80–100 percent indigenous vegetation. There are still areas of low indigenous cover though they have substantially reduced since 2016.

Overall vegetation quality mapping is a useful on-ground management tool for bushland management crews; it enables them to easily identify the ‘better’ quality vegetation in a patch, and to focus management efforts upon maintaining and then increasing these areas.

The ‘edge effects’ which are often discussed with regard to the management of fragmented bushland vegetation are only noticeable in few sections of the north reserve in 2016 and 2021. The perimeter of the patch mostly has greater weed cover and management issues than the centre of the patch which is less impacted by the constant vegetation management issues such as trampling and weed invasion. The comparison of the two maps indicates the reduction of such edge effects within the reserve to a point where few edges remain with a low percent of indigenous vegetation cover, this from the consistent management over the 5-year period.

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5. BIRD SURVEYS AND FAUNA ASSESSMENT RESULTS

As outlined in the 2017/18 *Monash Bushlands Reserves Assessment and Monitoring Report*, the remnant and revegetated areas in Damper Creek North Reserve provide a high diversity of flora species and habitat types within the constraints of an urbanised landscape.

The vegetation composition within the Reserve varies from open mowed areas, treed areas with low understory, dense remnant vegetation with small hollow bearing trees or hollow bearing capacity and riparian areas along Damper Creek. The presence of multiple habitat types at the Reserve provides important foraging and nesting resources for various fauna species. In particular, threatened species that have been observed within the reserve, species such as Grey-headed Flying Fox, Powerful Owl and Eastern Snake-necked Turtle.

However, Damper Creek Reserve North is an isolated reserve surrounded by residences; meaning there is no ground connectivity with other bushland areas, there is only 'stepping stone' aerial connectivity for aerial species (i.e. birds and bats) and connectivity for aquatic species via Damper Creek to Electra Reserve. With the surrounding residences the potential for predation of smaller fauna species from cats and foxes is high. Increasing patches of indigenous street trees and gardens at the edges of the reserve has the potential to provide connectivity to the surrounding reserves, as elaborated in section 6.3.

Nest boxes have been established throughout the reserve though many were observed as unstable, broken or appeared to be unoccupied. Nest box audits are recommended to calculate the number of nest boxes currently within the reserve, their condition and what type are deployed (etc. Sugar Glider, Microbat). Nest box surveys along with nocturnal fauna surveys would be recommended to determine the current species occupancy and species diversity within the reserve, with further nest box deployment based on the findings. This is further elaborated in Section 6.3. It is important to manage and maintain nest boxes on an annual basis as unmaintained nest boxes can cause more problems than benefits for wildlife, such as providing habitat for feral animals such as European Honey Bees and Indian Mynas.

5.1 Bird Census Results

As a component of the *Conservation Management Plan*, two bird censuses have been undertaken in autumn 2021. Animal taxonomy is consistent with the Victorian Biodiversity Atlas (DEPI 2020).

Table 5. Summary of Bird Census Results Autumn 2016 and 2021.

Common Name	Scientific Name	Area 1		Area 2	
		Autumn 2016	Autumn 2021	Autumn 2016	Autumn 2021
Australian King-Parrot	<i>Alisterus scapularis</i>				+
Australian Raven	<i>Corvus coronoides</i>		+		+
Australian Magpie	<i>Gymnorhina tibicen</i>		+		+
Common Blackbird	<i>Turdus merula</i>		+		
Crested Pigeon	<i>Ocyphaps lophotes</i>		+		
Crimson Rosella	<i>Platycercus elegans</i>			+	
Golden Whistler	<i>Pachycephala pectoralis</i>		+		
Laughing Kookaburra	<i>Dacelo novaeguineae</i>				+
Little Corella	<i>Cacatua sanguinea</i>				+
Magpie-lark	<i>Grallina cyanoleuca</i>		+		+
Noisy Miner	<i>Manorina melanocephala</i>	+	+	+	+
Pied Currawong	<i>Strepera graculina</i>			+	+
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	+	+		+
Red Wattlebird	<i>Anthochaera carunculata</i>	+		+	+
Spotted Dove	<i>Streptopelia chinensis</i>	+		+	
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>				+

Within only three 20 minute surveys, the bird diversity observed at Damper Creek Reserve North was relatively high, particularly for an area within such a dense urban landscape. The high-quality habitat and diversity in habitat types within the reserve allows for diversity in bird species. Observing species such as the Australian King-Parrot, a species that occupies rainforests and wet sclerophyll forests or the Golden Whistler, a species that prefers dense wooded habitat, highlights the well-established eucalypt canopy in the reserve. Larger common bird species frequently observed in urban landscapes dominated all areas of the reserve such as the Australian Magpie, Australian Raven, Noisy Miner and Rainbow Lorikeet. Assessing next box occupancy for such common species such as the Rainbow Lorikeet will guide further management of placement, position and numbers of next boxes with the reserve.

However, whilst Damper Creek North has areas of high-quality habitat, there was lower diversity of smaller bird species than expected, with the only observation being of a female Golden Whistler. Smaller bird species previously recorded within the reserve include the Superb Fairywren, Silveryeye, Eastern Spinebill, Spotted Pardalote, Brown Thornbill and White-browed Scrubwren (ebird 2021), none of which were recorded during the 2021 surveys. Increasing middlestorey habitat components, especially thorny shrubs such as Sweet Bursaria *Bursaria spinosa* or Hedge Wattle *Acacia paradoxa*, is likely to provide nesting sites for these small birds and perhaps increase their abundance.

5.2 Ongoing Monitoring

The two two-hectare bird monitoring plots established initially in 2016 for the *Monash Bushlands Reserves Assessment and Monitoring Report* and repeated during the 2021 site assessment follow the methodology defined in the EAGA's Biodiversity Monitoring Framework Methodology and are in line with the standard BirdLife Australia bird census area and allows for the three monitoring plots to be easily replicated.

Utilising the bird census maps provided in Appendix 3 alongside the Birdlife Birddata app for recording species can provide ongoing data on bird community composition within the reserve and in turn better influence future management plans. This type of ongoing monitoring gives the opportunity for the local community to contribute to the monitoring of the bird life and engage in the conservation of the Damper Creek Reserve North.

The combination of ongoing bird surveys and future nest box monitoring within the reserve will allow for passive identification of potential future impacts to fauna within Damper Creek Reserve.

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6. CURRENT AND FUTURE MANAGEMENT

The Damper Creek Reserve North is a linear reserve though provides a significant green wedge in an urbanised landscape with well established patches of dense wetland and ephemeral vegetation. The revegetation of terrestrial and wetland/riparian plantings, low weed cover and high recruitment present clearly shows the successful management of the reserve. Thus, we do not prescribe any specific work methods (e.g., how to conduct weed removal) but instead define priorities and goals to guide works and allow consistent monitoring and to assess and document such results.

6.1 Public use considerations

Dog walking

Damper Creek Reserve North was previously a dog-on-lead reserve with a designated dogs-off-lead area in the southern section of the reserve. However, currently there are no restrictions on dogs throughout the reserve. Dogs negatively impact natural bushland areas through the destruction of plantings, supporting weed growth from faeces and acting as weed dispersers (Holderness-Roddam; 2011). They impact native fauna through inducing stress from physical presence and scent and have the potential to attack or kill native fauna. It is recommended that Council consider implementing measures to reduce the impact of dogs within the reserve as the habitat values are likely impacted negatively by the presence of even well-behaved dogs.

Designated dog-off-lead areas could be implemented at the eastern boundary of the reserve and the grassed area adjacent to Bengal Crescent to reduce the impact to ecological values within the reserve.

Lighting installation

Artificial light alters the natural patterns of light and dark in an ecosystem and can affect fauna species in different ways. The main responses include disorientation, attraction or avoidance with various studies exemplifying these responses. Artificial lights have been found to disorientate flying species such as birds and bats (Gleeson and Gleeson; 2012). Conversely, such artificial lighting may increase orientation, providing a benefit for predator species such the Magpie and Kookaburra to forage (Patriarca 2010), common bird species observed within the Reserve. Some species may avoid well-lit areas due to an increased risk of predation (Longcore & Rich 2004). Such responses to light may affect foraging, reproduction, communication and other critical behaviours of fauna. Any future establishment of lighting within the reserve should consider the implications to native fauna mentioned above.

Cyclists

The presence and speed of cyclist has been highlighted as a potential safety issue within the reserve, and while this is outside of the scope of this report, future measures to mitigate this issue should consider biodiversity of the reserve.

Walking track upgrades

Any future track works within the reserve should take into consideration FFG Amendment Act obligations (see Section 6.2) and relevant planning permits triggering Clause 52.17; *Removal, destruction or lopping of native vegetation*.

6.2 Legal obligations

Catchment and Land Protection Act 1994 (CaLP Act)

The CaLP Act is the primary piece of legislation relevant to the *Damper Creek Reserve North Conservation Management Plan 2021* and contains a number of specific requirements for land owners and managers. The CaLP Act was enacted to manage land degradation including detrimental environmental or economic impacts of declared noxious weeds and pest animals.

Under section 20 of the CaLP Act, all land owners, including the Crown, public authorities and licensees of Crown lands, must, in relation to their land, take all reasonable steps to:

- Avoid causing or contributing to land degradation which causes or may cause damage to land of another land owner;
- Eradicate regionally prohibited weeds; and
- Prevent the growth and spread of regionally controlled weeds on their land.

These are also provisions within the CaLP Act to prevent the spread of declared noxious weeds, through regulating the purchase, sale, display, propagation or transport of these species into or within Victoria.

Weed categories

Declared noxious weeds are categorised into four groups depending on their known and potential impact, and specific circumstances for each region:

- **State Prohibited Weeds (S)** are either currently absent in Victoria or are restricted enough to be eradicated. The Victorian Government is responsible for their control. There are 25 State Prohibited Weeds. The State Government is responsible for management of these weeds and runs management programs for where these weeds are known to occur.
- **Regionally Prohibited Weeds (P)** are not widely distributed in a region but are capable of spreading further. It is reasonable to expect that they can be eradicated from a region and they must be managed with that goal. Land owners, including public authorities responsible for crown land management, must take all reasonable steps to eradicate regionally prohibited weeds on their land.
- **Regionally Controlled Weeds (C)** are usually widespread but it is important to prevent further spread. It is the responsibility of the landowner to control these weeds on their property and on adjacent roadside reserves.
- **Restricted Weeds (R)** include plants that pose unacceptable risk of spreading in the State or other Australian states and are considered to be a serious threat to primary production, Crown land, the environment and/or community health if they were traded in Victoria.

All landowners in Monash (including public authorities responsible for Crown land management) are responsible for managing *Regionally Prohibited* and *Controlled* weeds on their land. *State Prohibited* weeds should be reported to the State Government by calling 136 186. See Section 6.3 for CaLP-listed species recorded in Damper Creek Reserve North.

Flora and Fauna Guarantee Amendment Act 2019 (Amendment Act)

The FFG Act has been amended to provide a modern and strengthened framework for the protection of Victoria's biodiversity. The Amendment Act came into effect on June 1st 2020.

The Amendment Act:

- Introduces principles to guide the implementation of the FFG Act, including consideration of the rights and interests of Traditional Owners and the impacts of climate change;
- Requires consideration of biodiversity across government to ensure decisions and policies are made with proper consideration of the potential impacts on biodiversity;
- Clarifies existing powers to determine critical habitat and improves their protection by encouraging cooperative management;
- Gives effect to a consistent national approach to assessing and listing threatened species using the Common Assessment Method (CAM), which will reduce duplication of effort between jurisdictions and facilitate the monitoring and reporting of species' conservation status; and
- Modernises the FFG Act's enforcement framework including stronger penalties.

The Amended Act requires ministers and public authorities to consider the FFG Act when performing functions that might impact biodiversity when exercising their functions (set out in new section 4B). The Amended Act requires that in performing any of their functions that may reasonably be expected to impact on biodiversity, including a function under any act, ministers and public authorities must give proper consideration to the act's objectives, so far as is consistent with the proper exercising of their functions.

Additional matters are also specified to be considered to clarify the objectives, including the Biodiversity Strategy, relevant action statements, management plans or critical habitat determinations. The types of potential impacts on biodiversity that should be considered are also specified, these include:

- Long and short-term impacts;
- Detrimental and beneficial impacts;
- Cumulative impacts; and
- Potentially threatening processes.

The act establishes tools to provide guidance to public authorities in considering biodiversity, these include:

- *Ministerial Guidelines* (currently in development) to clarify the duty and support public authorities with further information; and
- *Public Authority Management Agreements* made with the Secretary to DELWP, which can provide certainty that biodiversity impacts are being sufficiently considered and being managed and can streamline approval requirements.

For further information on Public Authority Duty under the Amendment Act, see:

https://www.environment.vic.gov.au/_data/assets/pdf_file/0031/466681/Public-Authority-Duty-factsheet.pdf

Duty of Public Authorities: The Amended Act requires ministers and public authorities to consider the FFG Act when performing functions that might impact biodiversity when exercising their functions. The actions and recommendations made in this *Conservation Management Plan* seek to address this requirement.

Listed Species, Communities, and Threatening Processes: As with the EPBC Act, the FFG Act does not contain specific legal prescriptions for weed management, and thus there are no legal requirements for weed management in Monash under this act outside of what is mentioned above for Public Authorities. However, when prioritising sites, also as per the EPBC Act, the locations of, and threats to, FFG-listed species, communities, and threatening processes within Damper Creek Reserve North should be considered.

Again, as per the EPBC Act, it is outside of the scope of this management plan to document the presence of FFG-listed species, communities, and threatening processes within Damper Creek Reserve North. A detailed, ground truthed inventory of Damper Creek Reserves FFG-listed species, communities, and threatening processes should be created in order to assist with prioritisation of work

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6.3 Priorities for the Coming Years

- Eliminating new and emerging weeds

Council to monitor for new emerging weeds throughout the reserve and manage accordingly.

- Reducing the cover of priority weeds

– Ivies *Hedera spp.*: identified in several areas throughout the reserve. Rapid growing spreading and climbing vine. Birds are the main form of seed dispersal for this species allowing the species to germinate throughout the reserve.

– Asparagus fern *Asparagus scandens*: located on the western side of the reserve south of Stephenson's Road carpark. This species is shade tolerant and may occupy areas that are not easily accessible. Forms dense impenetrable mats. CaLP Schedule 2– Restricted weed

– Sweet Pittosporum *Pittosporum undulatum*: identified on the eastern boundary, north of Sunhill Road entrance. This evergreen tree is native to eastern Australia though beyond its natural range. Birds eat the fruit of this species, allowing the seeds to be distributed around the reserve

– Wandering Trad *Tradescantia fluminensis*: identified south of the bridge along the creek line and along the western edge. This trailing herb smothers and prevents regeneration of plants. Difficult to remove due to the easily breakable stems and regenerating capacities.

– Kikuyu *Cenchrus clandestinus*: large patches identified south of Swayfield Road entrance. A creeping, rapid growing, coarse, perennial lawn grass that spreads by runners.

– Panic Veldt-grass *Ehrharta erecta*: identified in patches throughout the reserve, predominately along the path edges. This species is rapid growing, excludes native ground cover and is frequently in seed.

- Establishing monitoring and recording protocol for new weeds

Ensure on-ground staff identify and record the establishment of new weeds by documenting the exact location, seasonal period, providing clear pictures, and number of individuals. If CaLP listed species are found further inspection of the reserve is required. Notifying residents of new weed species and to remove if present within gardens.

- Enhancing revegetation areas

Increasing ground layer diversity in areas where its currently low. This would include planting various grasses, herbs, forbs and shrubs throughout previously revegetated areas. Trialling direct seeding to introduce a ground layer in areas that have recently been managed for weeds.

- Enhancing small bird habitat

Increasing the diversity of middlestorey vegetation through the introduction of prickly shrubs such as Prickly Moses *Acacia verticillata* and Sweet Bursaria *Busaria spinosa*. Increasing the vegetation layers will provide more habitat, places of refuge and food sources for the smaller bird species such as Superb Fairywren, Spotted Pardalote, Eastern Spinebill and Silvereye, that are becoming less frequent within the

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reserve (Damper Creek Friends Group, pers. Comms.). Areas of initial consideration for planting could include low – moderate vegetation cover, enhancing areas with few plantings, increasing the vegetation quality that is present.

- Tree audit

Concerns for the current and future health of the trees within the reserve, Bundy *Eucalyptus goniocalyx* in particular were highlighted at the site meeting (dated 29/04/2021). Recommendations for assessing the health of trees is outside our scope of qualification. In order to manage this current and future issue an experienced arborist would need to be consulted to assess the health of the individual trees within the reserve and implement a management plan.

- Pest management

Ensure on ground staff conduct sweeps of the reserve to identify any potential evidence of pest species activity (etc. fox dens, small mammal/bird remains), recording the location and distinguishing between fox or cat (where possible). Ensure annual fox trapping continues throughout the reserve, with the activity records from staff assisting in the most ideal time and location for potential traps.

Records will also provide evidence in fluctuations of domestic cats entering the reserve from surrounding residents. Increases in sightings of cats or evidence of fauna predation should guide a reminder of the Monash Cat Curfew to local residents through a letter drop and placing signs at the reserve entrance.

- Requirements under CaLP Act

The legal obligations of the CaLP Act are listed above. Asparagus fern was the only CaLP listed weed recorded within the reserve. It is important to check if any new weed species recorded within the reserve are CaLP listed in order to fulfill legal obligations under the Act.

For a full list of CaLP listed species see:

<https://agriculture.vic.gov.au/biosecurity/protecting-victoria/legislation-policy-and-permits/consolidated-lists-of-declared-noxious-weeds-and-pest-animals>.

- Requirements under FFG Amendment Act.

Under the Amendment Act public authority are required to consider biodiversity when performing their functions. For the purposes of this management plan, it is recommended that, in order to meet obligations under this act, all future works within the reserve are assessed for the potential to influence weed spread and contamination and mitigation measures are put in place if deemed necessary.

- Nest box audits and monitoring

Establishing annual monitoring of nest boxes to record number of boxes deployed within the reserve, type of boxes deployed (etc. Microbat, Sugar Glider), how many show evidences of occupancy and replace/remove broken boxes. Developing photo points, box number and GPS locations of each box will assist with future monitoring and allow for Friends groups and members of the general public to assist with reporting nest box issues in the future.

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- Citizen Science program

Surveying the bird life within the reserve is a potential program that could be implemented for Damper Creek Reserve, encouraging local community involvement. As mentioned above the bird survey protocols have been established at the reserve, with use of the Birdlife Birddata app where a current species list for Damper Creek is exist, will allow the general public to contribute to the conservation of the reserve.

The individual priorities for the coming years are elaborated in the section below.

6.4 Goals for the Next 5 years

1. Develop a protocol for on-ground staff to report new weed species to management staff (which may be as simple as a text message with location to be recorded in a spreadsheet) within the first six months of this plan
2. Each time a new weed species is found in the reserve (or in a new *area* of the reserve), report (as per the protocol above in Goal 1) on the same day, and eradicate within one month
3. Develop a priority weed pamphlet with pictures and control methods of the species listed above within the first year of this plan which is distributed to all residents with adjoining land within the following six months
4. Consider the feasibility of creating a grant scheme for private landowners to remove large infestations of priority weed species (in conjunction with Goal 3 above) on land adjoining the reserve
5. Establish a program for monitoring CaLP-listed species on adjoining land (could involve annual sweeps by the on-ground crew)
6. Consider the feasibility of creating of a Local Law to enforce the removal of CaLP-listed species on private land such as issuing 'Weed Letters' with an infringement notice.
7. Continue the current weed control program such that when the reserve is resurveyed, each grid defined scored as 1–3 in the vegetation quality mapping increased one point higher
8. Nest box monitoring protocols developed and implemented within the first year and conducted annually
9. Contact local residents for expression of interest for regular bird surveys within the first six months and develop an annual volunteer day to replicate the bird census plots in this report. This day should start with an information seminar on how to conduct bird surveys and efficiently use the Birdlife app
10. Meet legal obligations under the CaLP and FFG Amendment Acts
11. Consult pest expert to assess the reserve for evidence of fox's and determine next trapping date within the first six months
12. Consult an experienced Arborist for the development of a tree management plan within the first year

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13. Identify areas for initial and future planting of middlestorey and ground layer species and list according to achievability within the first six months
14. Conduct first planting event for enhancing small bird habitat within the first year

6.5 Future Monitoring

Damper Creek Reserve North is a well-managed reserve with densely vegetated creek bed and banks that include well-established patches of wetland and ephemeral vegetation. This reserve is one of few within the City of Monash with intact remnant bushland. Continuous monitoring of this reserve is beneficial for documenting the ecological changes and the development of short- and long-term management strategies. Future monitoring should continue to replicate the survey methods conducted for this management plan with the inclusion of increasing the number of bird census to one each seasonal period to gain further perspective on the seasonal changes in bird communities within the reserve. Incorporating two – three quadrats for future monitoring that represent areas of varying vegetation quality within the reserve will further document the changes in vegetation over time.

The future monitoring of Damper Creek Reserve North should continue alongside the priorities and goals mentioned above within the next five-year period.

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7. REFERENCES

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APPENDIX 1. Habitat Hectare Methodology

The habitat hectare assessment process aims to establish the conservation significance of native vegetation through an objective and repeatable methodology using working documents (benchmark data and field assessment score sheets) that are uniformly applied across Victoria.

The process begins with the identification of EVC's within a site. Each EVC has a benchmark of values for any given site's condition and are the basis of the assessment criteria. The site condition values are:

- the quantity of large trees per hectare;
- tree canopy cover;
- diversity and abundance of life forms;
- weed abundance and invasiveness threat;
- potential recruitment or regeneration of tree and shrub species and the abundance of grasses and herbs;
- amount of organic litter; and
- the presence of logs.

These site assessments require establishing a value score on the above criteria using the DSE *Vegetation Quality Field Assessment Sheet* (Version 1.3 October 2004). The Habitat Hectare process also requires an assessment of the site in a landscape context. The landscape values are:

- the size of the vegetation patch being assessed;
- the site's proximity to a 'core area' of indigenous vegetation greater than 50 hectare in size; and
- the amount of other remnant vegetation within the local landscape.

The final habitat score is presented as a percentage, which is then converted into a decimal point Habitat Hectare score. Site assessments require establishing a vegetation quality score on the basis of the above criteria using DSE field assessment sheets.

The conservation status of each EVC, combined with the habitat hectare score, determines the conservation significance of the assessed patch. This is outlined in *Victoria's Native Vegetation Management, a Framework for Action* (DNRE 2002).

APPENDIX 2. Damper Creek North Reserve Flora Species List

References and data used to compile flora species list:

- Monash Bushlands Reserves Assessment and Monitoring Report (Practical Ecology, 2018)
- Practical Ecology; Survey undertaken April 2021
- Danny Raditsis, Bushland and Wetland Team Member, City of Monash

PE– Practical Ecology

DR– Danny Raditsis (Bushland and Wetland Team Member – City of Monash)

The flora species table below indicates the species observed during the flora survey period. This list is not exhaustive. If a species is not listed, this does not mean it does not occur within the reserve, or that it no longer grows within the reserve if it was recorded in previous surveys.

Key to Species List

- * Introduced plants
- # Species which is native to Victoria but is naturalised outside of natural range. Species may be an Environmental Weed.

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Origin	Scientific Name	Common Name	Source (1=PE-2016, 2=PE-2021, 3= DR)
	<i>Acacia aculeatissima</i>	Thin-leaf Wattle	1
*	<i>Acacia baileyana</i>	Cootamundra Wattle	1
	<i>Acacia dealbata</i>	Silver Wattle	1
*	<i>Acacia decurrens</i>	Early Black Wattle	1
*	<i>Acacia elata</i>	Cedar Wattle	1
*	<i>Acacia floribunda</i>	White Sallow Wattle	1
	<i>Acacia genistifolia</i>	Spreading Wattle	1
	<i>Acacia implexa</i>	Lightwood	1
#	<i>Acacia longifolia subsp. longifolia</i>	Sallow Wattle	1
	<i>Acacia mearnsii</i>	Black Wattle	1
	<i>Acacia melanoxylon</i>	Blackwood	1
	<i>Acacia myrtifolia</i>	Myrtle Wattle	1
	<i>Acacia paradoxa</i>	Hedge Wattle	1
*	<i>Acacia pravissima</i>	Ovens Wattle	1
	<i>Acacia pycnantha</i>	Golden Wattle	1
*	<i>Acacia retinodes var. retinodes</i>	Wirilda Wattle	1
*	<i>Acacia saligna</i>	Golden Wreath Wattle	1
	<i>Acacia verticillata</i>	Prickly Moses	1
	<i>Acaena novae-zealandiae</i>	Bidgee-Widgee	1
	<i>Acaena ovina</i>	Australian Sheep's Burr	1
*	<i>Acanthus mollis</i>	Bear's Breach	1
*	<i>Acer negundo</i>	Box-elder Maple	1
*	<i>Acmena smithii</i>	Lilly Pilly	1
	<i>Acrotriche serrulata</i>	Honey-pots	1
	<i>Adiantum aethiopicum</i>	Common Maidenhair	1
*	<i>Agapanthus paraecox ssp. orientalis</i>	Agapanthus	1
*	<i>Agonis flexuosa</i>	West. Aust. Willow-myrtle	1
	<i>Agrostis avenacea</i>	Common Blown-grass	1
*	<i>Agrostis capillaris</i>	Brown-top Bent	1
*	<i>Agrostis stolonifera</i>	Creeping Bent	1
*	<i>Aira elegans</i>	Hair Grass	1
*	<i>Alisma lanceolata</i>	Water Plantain	1
	<i>Alisma plantago-aquatica</i>	Water Plantain	1
*	<i>Allium neapolitanum</i>	Naples Onion	1
*	<i>Allium triquetrum</i>	Angled Onion	1
	<i>Allocasuarina littoralis</i>	Black She-oak	1
	<i>Allocasuarina verticillata</i>	Drooping Sheoak	2
	<i>Amyema pendula</i>	Drooping Misteltoe	1
*	<i>Anagallis arvensis</i>	Pimpernel	1
	<i>Anthosachne scabra s.l.</i>	Common Wheat-grass	3
*	<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	1
*	<i>Arbutus unedo</i>	Strawberry Tree	1
*	<i>Arctotheca calendula</i>	Cape Weed	1
	<i>Arthropodium milleflorum</i>	Pale Vanilla-lily	1
*	<i>Asparagus scandens</i>	Asparagus Fern	2
*	<i>Asphodelus fistulosus</i>	Onion-Weed	1
	<i>Astroloma humifusum</i>	Cranberry Heath	1
	<i>Austrodanthonia geniculata</i>	Kneed Wallaby-grass	1
	<i>Austrodanthonia laevis</i>	Smooth Wallaby-grass	1
	<i>Austrodanthonia penicillata</i>	Slender Wallaby-grass	1
	<i>Austrodanthonia racemosa var. racemosa</i>	Striped Wallaby-grass	1

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Origin	Scientific Name	Common Name	Source (1=PE-2016, 2=PE-2021, 3= DR)
	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass	1
	<i>Austrodanthonia spp.</i>	Wallaby Grass	1
	<i>Austrodanthonia tenuior</i>	Purplish Wallaby-grass	1
	<i>Austrostipa flavescens</i>	Coast Spear-grass	1
	<i>Austrostipa mollis</i>	Supple Spear-grass	1
	<i>Austrostipa pubinodis</i>	Tall Spear-grass	3
	<i>Austrostipa rudis</i>	Veined Spear-grass	1
	<i>Austrostipa spp.</i>	Spear Grass	1
*	<i>Avena fatua</i>	Wild Oat	1
*	<i>Babingtonia pluriflora</i>	Tall Baeckea	1
*	<i>Banksia spp.</i>	Banksia	1
	<i>Baumea rubiginosa</i>	Soft Twig-rush	1
*	<i>Bellis perennis</i>	Lawn Daisy	1
*	<i>Berberi darwinii</i>	Berbris	1
*	<i>Berkheya rigida</i>	African Thistle	1
	<i>Billardiera scandens var. scandens</i>	Common Apple-berry	1
	<i>Blechnum minus</i>	Soft Water-fern	1
	<i>Bolboschoenus caldwellii</i>	Salt Club-sedge	1
	<i>Bossiaea cinerea</i>	Showy Bossiaea	3
	<i>Bossiaea prostrata</i>	Creeping Bossiaea	1
	<i>Brachyscome multifida</i>	Cut-leaf Daisy	1
*	<i>Brassica tournefortii</i>	Mediterranean Turnip	1
*	<i>Briza maxima</i>	Large Quaking-grass	1
*	<i>Briza minor</i>	Lesser Quaking-grass	1
*	<i>Bromus catharticus</i>	Prairie Grass	1
*	<i>Bromus diandrus</i>	Great Brome	1
*	<i>Bromus rubens</i>	Red Brome	1
	<i>Brunonia australis</i>	Blue Pincushion	1
	<i>Bulbine bulbosa</i>	Bulbine Lily	2
	<i>Burchardia umbellata</i>	Milkmaids	1
	<i>Bursaria spinosa</i>	Sweet Bursaria	1
*	<i>Callitriche stagnalis</i>	Common Starwort	1
	<i>Calochlaena dubia</i>	Common Ground-fern	1
*	<i>Capsella bursapastoris</i>	Shepherds Purse	1
*	<i>Cardamine hirsuta</i>	Common Bitter-cress	1
	<i>Carex appressa</i>	Tall Sedge	1
	<i>Carex fascicularis</i>	Tassel Sedge	1
	<i>Carex inversa</i>	Knob Sedge	3
	<i>Cassinia arcuata</i>	Drooping Cassinia	1
	<i>Cassinia longifolia</i>	Shiny Cassinia	1
*	<i>Cassinia sifton</i>	Drooping Cassinia	2
	<i>Cassytha melantha</i>	Coarse Dodder-Laurel	1
*	<i>Centaurium erythraea</i>	Common Centaury	1
*	<i>Centaurium spicatum</i>	Spike Centaury	1
	<i>Centella cordifolia</i>	Centella	3
	<i>Centrolepis spp.</i>	Centrolepis	1
*	<i>Cerastium fontanum</i>	Mouse-ear Chickweed	1
*	<i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed	1
*	<i>Chenopodium album</i>	Fat Hen	1
*	<i>Chenopodium murale</i>	Sowbane	1

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Origin	Scientific Name	Common Name	Source (1=PE-2016, 2=PE-2021, 3= DR)
	<i>Chrysocephalum semipapposum</i>	Clustered Everlasting	1
*	<i>Cirsium vulgare</i>	Spear Thistle	1
	<i>Clematis aristata</i>	Mountain Clematis	1
	<i>Clematis microphylla</i>	Small- leaved Clematis	1
*	<i>Conyza spp.</i>	Fleabane	1
	<i>Coprosma quadrifida</i>	Prickly Currant-bush	1
*	<i>Coprosma repens</i>	New Zealand Mirror-bush	1
*	<i>Cordyline stricta</i>	Cordyline	1
*	<i>Coronopus spp.</i>	No Common Name	1
	<i>Correa reflexa</i>	Common Correa	1
*	<i>Cortaderia selloana</i>	Pampas Grass	1
#	<i>Corymbia maculata</i>	Spotted Gum	1
*	<i>Cotoneaster divaricatus</i>	Green Cotoneaster	1
*	<i>Cotoneaster glaucophyllus</i>	Large-leaf Cotoneaster	1
*	<i>Cotoneaster pannosus</i>	Cotoneaster	1
*	<i>Cotula coronopifolia</i>	Water Buttons	1
	<i>Crassula helmsii</i>	Swamp Crassula	1
*	<i>Crassula multicava ssp. multicava</i>	Shade Crassula	1
*	<i>Crataegus monogyna</i>	Hawthorn	1
*	<i>Crococsmia X crocosmiiflora</i>	Montbretia	1
*	<i>Cuscuta planiflora</i>	Dodder	1
	<i>Cyathea australis</i>	Rough Tree-fern	1
*	<i>Cynodon dactylon</i>	Couch	1
*	<i>Cyperus eragrostis</i>	Drain Flat-sedge	1
	<i>Cyperus tenellus</i>	Tiny Flat-sedge	1
*	<i>Cytisus palmensis</i>	Tagasaste	1
*	<i>Cytisus scoparius</i>	English Broom	1
*	<i>Dactylis glomerata</i>	Cocksfoot	1
	<i>Damasonium spp.</i>	Star Fruit	1
	<i>Davesia latifolia</i>	Hop Bitter-pea	1
	<i>Daviesia leptophylla</i>	Narrow-leaf Bitter-pea	1
*	<i>Delairea odorata</i>	Cape Ivy	1
	<i>Deyeuxia quadriseta</i>	Reed Bent-grass	3
	<i>Dianella admixta</i>	Black-anther Flax-lily	1
	<i>Dianella brevicaulis</i>	Short-stalk Flax-lily	1
*	<i>Dianella caerulea</i>	Flax-lily	1
	<i>Dianella longifolia var. longifolia</i>	Pale Flax-lily	1
	<i>Dianella revoluta</i>	Black-anther Flax-lily	1
	<i>Dichelachne crinita</i>	Long-hair Plume-grass	1
	<i>Dichelachne sieberiana</i>	Plume-grass	1
	<i>Dichondra repens</i>	Kidney Weed	1
	<i>Dichopogon strictum</i>	Chocolate Lily	1
*	<i>Digitaria sanguinalis</i>	Summer Grass	1
	<i>Dillwynia cinerascens</i>	Grey Parrot-pea	1
	<i>Dodonaea viscosa subsp. spatulata</i>	Sticky Hop-bush	3
	<i>Drosera peltata</i>	Tall Sundew	1
	<i>Drosera whittakeri</i>	Scented Sundew	1
*	<i>Ehrharta erecta var. erecta</i>	Panic Veldt-grass	1
*	<i>Ehrharta longiflora</i>	Annual Veldt Grass	1
	<i>Eleocharis acuta</i>	Common Spike-sedge	1
	<i>Eleocharis sphacelata</i>	Tall Spike-sedge	1

Damper Creek North Reserve Management Plan

Origin	Scientific Name	Common Name	Source (1=PE-2016, 2=PE-2021, 3= DR)
	<i>Elymus scaber</i>	Common Wheat-grass	1
	<i>Epacris impressa</i>	Common Heath	1
	<i>Epilobium billardierianum</i>	Variable Willow-herb	1
*	<i>Epilobium ciliatum</i>	Glandular Willow-herb	1
*	<i>Erigeron karvinskianus</i>	Fleabane	1
*	<i>Eriostemon myoporoides</i>	Long Leaf Wax Flower	1
	<i>Erodium spp.</i>	Heron's Bill	1
#	<i>Eucalyptus botryoides</i>	Southern Mahogany	1
	<i>Eucalyptus cephalocarpa</i>	Mealy Stringybark	1
*	<i>Eucalyptus cladocalyx</i>	Sugar Gum	1
	<i>Eucalyptus gonicalyx</i>	Bundy	1
	<i>Eucalyptus macrorhyncha</i>	Red Stringybark	1
	<i>Eucalyptus melliodora</i>	Yellow Box	1
	<i>Eucalyptus obliqua</i>	Messmate Stringybark	1
	<i>Eucalyptus ovata</i>	Swamp Gum	1
	<i>Eucalyptus radiata subsp. radiata</i>	Narrow-leaf Peppermint	1
	<i>Eucalyptus viminalis ssp. pryoriana</i>	Coast Manna-gum	1
	<i>Eucalyptus viminalis subsp. viminalis</i>	Manna Gum	1
*	<i>Euphorbia lathyris</i>	Caper Spurge	1
*	<i>Euphorbia peplus</i>	Petty Spurge	1
	<i>Exocarpos cupressiformis</i>	Cherry Ballart	1
*	<i>Ficus carica</i>		1
*	<i>Foeniculum vulgare</i>	Fennel	1
*	<i>Fraxinus angustifolia</i>	Desert Ash	1
*	<i>Fraxinus rotundifolia spp. rotund</i>	Desert Ash	1
*	<i>Freesia leichtinii</i>	Freesia	1
*	<i>Fumaria capreolata</i>	Ramping Furnitory	1
*	<i>Fumaria spp.</i>	Fumitory	1
	<i>Gahnia radula</i>	Thatch Saw-sedge	1
	<i>Gahnia sieberiana</i>	Red-fruit Saw-sedge	1
*	<i>Galium aparine</i>	Cleavers	1
*	<i>Gamochaeta purpurea sensu</i>	Spiked Cudweed	1
*	<i>Genista monspessulana</i>	Montpellier Broom	1
*	<i>Geranium dissectum</i>	Cut-leaf Cranesbill	1
*	<i>Geranium molle</i>	Dovesfoot	1
	<i>Geranium solanderi</i>	Austral Cranesbill	1
	<i>Geranium spp.</i>	Crane's Bill	1
*	<i>Gladiolus spp.</i>	Gladiolus	1
	<i>Glycine clandestina</i>	Twining Glycine	3
	<i>Gonocarpus micranthus</i>	Creeping Raspwort	1
	<i>Gonocarpus tetragynus</i>	Common Raspwort	1
	<i>Goodenia ovata</i>	Hop Goodenia	1
	<i>Goodia lotifolia</i>	Golden Tip	1
	<i>Gynatrix pulchella</i>	Hemp Bush	1
	<i>Hakea decurrens subsp. physocarpa</i>	Bushy Needlewood	1
	<i>Hakea nodosa</i>	Yellow Hakea	1
*	<i>Hakea salicifolia</i>	Willow-leaf Hakea	1
*	<i>Hakea suaveolens</i>	Sweet Hakea	1
	<i>Hakea ulicina</i>	Furze Hakea	1
	<i>Hardenbergia violacea</i>	Purple Coral-pea	1
*	<i>Hedera helix</i>	Ivy	1

Damper Creek North Reserve Management Plan

Origin	<i>Scientific Name</i>	Common Name	Source (1=PE-2016, 2=PE-2021, 3= DR)
*	<i>Hedychium gardnerianum</i>	Ginger Lily	1
*	<i>Helianthus annuus</i>	Sunflower	1
	<i>Helichrysum scorpioides</i>	Button Everlasting	1
	<i>Hibbertia riparia</i>	Erect Guinea-flower	1
	<i>Hibbertia spp.</i>	Guinea Flower	1
*	<i>Holcus lanatus</i>	Yorkshire Fog	1
	<i>Hovea heterophylla</i>	Common Hovea	3
	<i>Hypericum gramineum</i>	Small St John's Wort	1
*	<i>Hypochaeris radicata</i>	Flatweed	1
*	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	1
	<i>Hypolepis spp.</i>	Ground Fern	1
*	<i>Ilex aquifolium</i>	English Holly	1
	<i>Indigofera australis</i>	Austral Indigo	1
*	<i>Ipomoea indica</i>	Purple Morning-glory	1
	<i>Isolepis platycarpa</i>	Broad-fruit Club-sedge	1
*	<i>Jasminium polyanthum</i>	Common Jasmine	1
	<i>Juncus amabilis</i>	Hollow Rush	1
	<i>Juncus australis</i>	Austral Rush	1
	<i>Juncus bufonius</i>	Toad Rush	1
	<i>Juncus gregiflorus</i>	Green Rush	1
	<i>Juncus holoschoenus</i>	Joint-leaf Rush	1
	<i>Juncus pallidus</i>	Pale Rush	1
	<i>Juncus pauciflorus</i>	Loose-flower Rush	1
	<i>Juncus planifolius</i>	Broad-leaf Rush	1
	<i>Juncus prismatocarpus</i>	Branching Rush	1
	<i>Juncus procerus</i>	Tall Rush	1
	<i>Juncus sarophorus</i>	Broom Rush	1
	<i>Juncus subsecundus</i>	Finger Rush	1
	<i>Juncus usitatus</i>	Billabong Rush	1
	<i>Kennedia prostrata</i>	Running Postman	1
*	<i>Kennedia rubicunda</i>	Dusky Coral-pea	1
	<i>Kunzea ericoides</i>	Burgan	1
	<i>Lagenifera stipitata</i>	Common Lagenifera	1
	<i>Lemna spp.</i>	Duckweed	1
	<i>Lepidosperma laterale</i>	Variable Sword-sedge	1
	<i>Leptorhynchos tenuifolius</i>	Wiry Buttons	3
*	<i>Leptospermum continentale</i>	Prickly Tea-tree	1
	<i>Leptospermum lanigerum</i>	Woolly Tea-tree	1
	<i>Leptospermum scoparium</i>	Prickly Tea-tree	1
*	<i>Leucojum vernum</i>	Snow flake	1
*	<i>Ligustrum lucidum</i>	Large-leaf Privet	1
*	<i>Ligustrum ovalifolium</i>	Hedge Privet	1
*	<i>Lolium perenne</i>	Perennial Rye-grass	1
	<i>Lomandra filiformis subsp. filiformis</i>	Wattle Mat-rush	1
	<i>Lomandra longifolia subsp. longifolia</i>	Spiny-headed Mat-rush	1
	<i>Lomandra nana</i>	Dwarf Mat-rush	1
*	<i>Lonicera japonica</i>	Japanese Honeysuckle	1
*	<i>Lotus corniculatus</i>	Birds-foot Trefoil	1
*	<i>Lycopersicon esculentum</i>	Tomato	1
	<i>Lycopus australis</i>	Australian Gipsywort	3
	<i>Lythrum hyssopifolia</i>	Mediterranean Loosestrife	1

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Origin	Scientific Name	Common Name	Source (1=PE-2016, 2=PE-2021, 3= DR)
	<i>Marsilea drummondii</i>	Common Nardoo	1
	<i>Mazus pumilio</i>	Swamp Mazus	3
*	<i>Medicago arabica</i>	Spotted medic	1
*	<i>Medicago polymorpha</i>	Burr medic	1
#	<i>Melaleuca armillaris subsp. armillaris</i>	Giant Honey-myrtle	1
	<i>Melaleuca ericifolia</i>	Swamp Paperbark	1
	<i>Melaleuca squarrosa</i>	Scented Paperbark	1
	<i>Melicytus dentatus s.l.</i>	Tree Violet	3
	<i>Mentha australis</i>	River Mint	3
	<i>Microlaena stipoides var. stipoides</i>	Weeping Grass	1
	<i>Microseris lanceolata</i>	Yam-daisy	1
	<i>Microtis unifolia</i>	Common Onion-orchid	1
*	<i>Modiola caroliniana</i>	Carolina Mallow	1
*	<i>Myosotis sylvatica</i>	Wood Forget-me-not	1
*	<i>Myriophyllum aquaticum</i>	Parrot's Feather	1
*	<i>Nephrolepis cordifolia</i>	Fishbone Fern	1
	<i>Olearia lirata</i>	Snow Daisy-bush	1
	<i>Ottelia ovalifolia subsp. ovalifolia</i>	Swamp Lily	3
*	<i>Oxalis articulata</i>	Wood-sorrel	1
	<i>Oxalis corniculata</i>	Yellow Wood-sorrel	1
*	<i>Oxalis incarnata</i>	Pale Wood-sorrel	1
*	<i>Oxalis latifolia</i>	Large-leaf Wood-sorrel	1
	<i>Oxalis perennans</i>	Grassland Wood Sorrel	1
*	<i>Oxalis pes-caprae</i>	Soursob	1
*	<i>Oxalis purpurea</i>	Large-flower Wood-sorrel	1
	<i>Ozothamnus ferrugineus</i>	Tree Everlasting	1
*	<i>Paraserianthes lophantha</i>	Cape Wattle	1
*	<i>Paspalum dilatatum</i>	Paspalum	1
*	<i>Passiflora mollissima</i>	Banana Passionfruit	1
	<i>Patersonia occidentalis var. occidentalis</i>	Long Purple-flag	3
*	<i>Pelargonium hortorum</i>	Zonal Pelargonium	1
*	<i>Pennisetum clandestinum</i>	Kikuyu	1
	<i>Persicaria decipiens</i>	Slender Knotweed	1
*	<i>Persicaria maculosa</i>	Persicaria	1
*	<i>Phalaris aquatica</i>	Toowoomba Canary-grass	1
*	<i>Phormium tenax</i>	New Zealand Flax	1
	<i>Phragmites australis</i>	Common Reed	1
	<i>Pimelea humilis</i>	Common Rice-flower	1
*	<i>Pinus radiata</i>	Radiata Pine	1
#	<i>Pittosporum undulatum</i>	Sweet Pittosporum	1
*	<i>Plantago coronopus</i>	Buck's-horn Plantain	1
*	<i>Plantago lanceolata</i>	Ribwort	1
*	<i>Plantago major</i>	Greater plantain	1
	<i>Plantago varia</i>	Variable Plantain	1
	<i>Platylobium obtusangulum</i>	Common Flat-pea	1
*	<i>Poa annua</i>	Winter Grass	1
	<i>Poa ensiformis</i>	Sword Tussock-grass	1
	<i>Poa labillardierei</i>	Common Tussock-grass	1
	<i>Poa morrisii</i>	Soft Tussock-grass	1
	<i>Poa sieberiana</i>	Grey Tussock Grass	1

Damper Creek North Reserve Management Plan

Origin	Scientific Name	Common Name	Source (1=PE-2016, 2=PE-2021, 3= DR)
	<i>Poa tenera</i>	Slender Tussock-grass	3
*	<i>Polycarpon tetraphyllum</i>	Four-leaved Allseed	1
*	<i>Polygonum arenastrum</i>	Knotweed	1
*	<i>Polygonum aviculare</i>	Prostrate Knotweed	1
	<i>Pomaderris aspera</i>	Hazel Pomaderris	2
	<i>Pomaderris racemosa</i>	Cluster Pomaderris	1
*	<i>Populus alba</i>	White Poplar	1
	<i>Poranthera microphylla</i>	Small Poranthera	1
	<i>Prostanthera lasianthos var. lasianthos</i>	Victorian Christmas-bush	1
*	<i>Prunella vulgaris</i>	Self-heal	1
*	<i>Prunus cerasifera</i>	Cherry Plum	1
	<i>Pteridium esculentum</i>	Austral Bracken	1
*	<i>Pteris tremula</i>	Tender Brake	1
	<i>Pterostylis nutans</i>	Nodding Greenhood	3
	<i>Pultenaea gunnii subsp. gunnii</i>	Golden Bush-pea	3
	<i>Ranunculus lappaceus</i>	Australian Buttercup	1
*	<i>Ranunculus repens</i>	Creeping Buttercup	1
*	<i>Romulea longifolia</i>	Onion-grass	1
*	<i>Romulea rosea</i>	Onion Grass	1
*	<i>Rosa rubiginosa</i>	Sweet Briar	1
*	<i>Rubus fruticosus spp. agg.</i>	Blackberry	1
	<i>Rubus parvifolius</i>	Native Raspberry	1
*	<i>Rumex acetosella spp. agg.</i>	Sheep Sorrel	1
	<i>Rumex brownii</i>	Slender Dock	1
*	<i>Rumex crispus</i>	Curled Dock	1
*	<i>Rumex spp.</i>	Dock	1
	<i>Rytidosperma caespitosum</i>	Common Wallaby-grass	3
	<i>Rytidosperma geniculatum</i>	Knead Wallaby-grass	3
	<i>Rytidosperma laeve</i>	Smooth Wallaby-grass	3
	<i>Rytidosperma racemosum var. racemosum</i>	Slender Wallaby-grass	3
*	<i>Salix babylonica</i>	Weeping Willow	1
*	<i>Salix caprea</i>	Pussy Willow	1
*	<i>Salix cinerea</i>	Grey Sallow (Willow)	1
	<i>Schoenoplectus validus</i>	River Club-sedge	1
*	<i>Sedum sp.</i>	Sedum	1
	<i>Senecio quadridentatus</i>	Cotton Fireweed	1
*	<i>Senecio vulgaris</i>	Common Groundsel	1
	<i>Solanum aviculare</i>	Kangaroo Apple	1
	<i>Solanum laciniatum</i>	Large Kangaroo Apple	1
*	<i>Solanum mauritianum</i>	Wild Tobacco Tree	1
*	<i>Solanum nigrum</i>	Black Nightshade	1
*	<i>Solanum pseudocapsicum</i>	Madeira Winter-cherry	1
*	<i>Sollya heterophylla</i>	Bluebell Creeper	1
*	<i>Sonchus oleraceus</i>	Common Sow-thistle	1
	<i>Sphaerolobium vimineum</i>	Leafless Globe-pea	1
*	<i>Sporobolus africanus</i>	Rat-tail Grass	1
*	<i>Sporobolus indicus var. capensis</i>	Rat-tail Grass	1
	<i>Spyridium parvifolium</i>	Dusty Miller	2
	<i>Stackhousia monogyna</i>	Creamy Stackhousia	1
*	<i>Stellaria media</i>	Chickweed	1
	<i>Stylidium graminifolium</i>	Grass Trigger-plant	1

Damper Creek North Reserve Management Plan

Origin	<i>Scientific Name</i>	Common Name	Source (1=PE-2016, 2=PE-2021, 3= DR)
*	<i>Taraxacum Sect. Hamata</i>	Garden Dandelion	1
*	<i>Taraxacum Sect. Ruderalia</i>	Garden Dandelion	1
	<i>Tetrarrhena juncea</i>	Forest Wire-grass	3
	<i>Tetradlea ciliata</i>	Pink-bells	3
	<i>Thelionema caespitosum</i>	Tufted Lily	1
	<i>Thelymitra spp.</i>	Sun Orchid	1
	<i>Themeda triandra</i>	Kangaroo Grass	1
*	<i>Tradescantia fluminensis</i>	Wandering Trad	1
	<i>Tricoryne elatior</i>	Yellow Rush-lily	1
*	<i>Trifolium dubium</i>	Suckling Clover	1
*	<i>Trifolium fragiferum</i>	Strawberry Clover	1
*	<i>Trifolium repens var. repens</i>	White Clover	1
*	<i>Trifolium subterraneum</i>	Subterranean Clover	1
	<i>Triglochin procera</i>	Common Water-ribbons	1
*	<i>Tropaeolum majus</i>	Nasturtium	1
	<i>Typha spp.</i>	Bulrush	1
*	<i>Ulex europaeus</i>	Gorse	1
	<i>Vallisneria australis</i>	Eel Grass	3
	<i>Veronica gracilis</i>	Slender Speedwell	3
*	<i>Vicia hirsuta</i>	Tiny Vetch	1
*	<i>Vicia sativa subsp. sativa</i>	Common Vetch	1
	<i>Viminaria juncea</i>	Golden Spray	1
*	<i>Vinca major</i>	Blue Periwinkle	1
	<i>Viola hederacea</i>	Ivy Leaf Violet	1
*	<i>Viola odorata</i>	Common Violet	1
*	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	1
	<i>Wahlenbergia gracilis</i>	Sprawling Bluebell	1
	<i>Wahlenbergia gymnoclada</i>	Naked Bluebell	1
	<i>Wahlenbergia spp.</i>	Bluebell	1
*	<i>Watsonia meriana var. bulbifera</i>	Bulbil Watsonia	1
	<i>Wurmbea dioica</i>	Common Early Nancy	1
	<i>Xanthorrhoea minor</i>	Small Grass-tree	1
	<i>Xanthosia dissecta</i>	Cut-leaf Xanthosia	1
*	<i>Zantedeschia aethiopica</i>	White Arum-lily	1

APPENDIX 3. Maps

Map 1: Site Overview

Map 2: Habitat Hectare and Quadrat Assessment

Map 3: Vegetation Quality




Map 4: Bird Census

Damper Creek North Reserve Management Plan


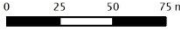


Map 1. Site Overview
 Damper Creek Reserve North, Monash

Legend

-  Reserve Area
-  Contours (10m)
-  Natural watercourse

Details
 Date: 2/06/2021
 Version: 1
 Aerial photography from Nearmap (Apr 2021).
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


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Damper Creek North Reserve Management Plan


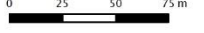


Map 2. Habitat Hectare
 Damper Creek Reserve North, Monash

Legend

-  Reserve Area
-  Contours (10m)
-  Natural watercourse
-  Damper Creek Reserve North

Details
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Damper Creek North Reserve Management Plan



Map 3. Vegetation Quality
Damper Creek Reserve North, Monash

Legend

- Reserve Area
- Contours (10m)
- Natural watercourse
- Reserve Grid (50 x 50m)

% Indigenous Cover

- 0-20%
- 20-40%
- 40-60%
- 60-80%
- 80-100%

Details

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Map 4. Bird Census
 Damper Creek Reserve North, Monash

Legend

- Reserve Area
- Contours (10m)
- Natural watercourse
- Bird Census Plot

Details
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