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Final Draft Report

Environmental and Heritage Management Advice: Walkers Lake Management Plan, Walkers Lake, Avon Plains, Victoria

Prepared for

Northern Grampians Shire Council

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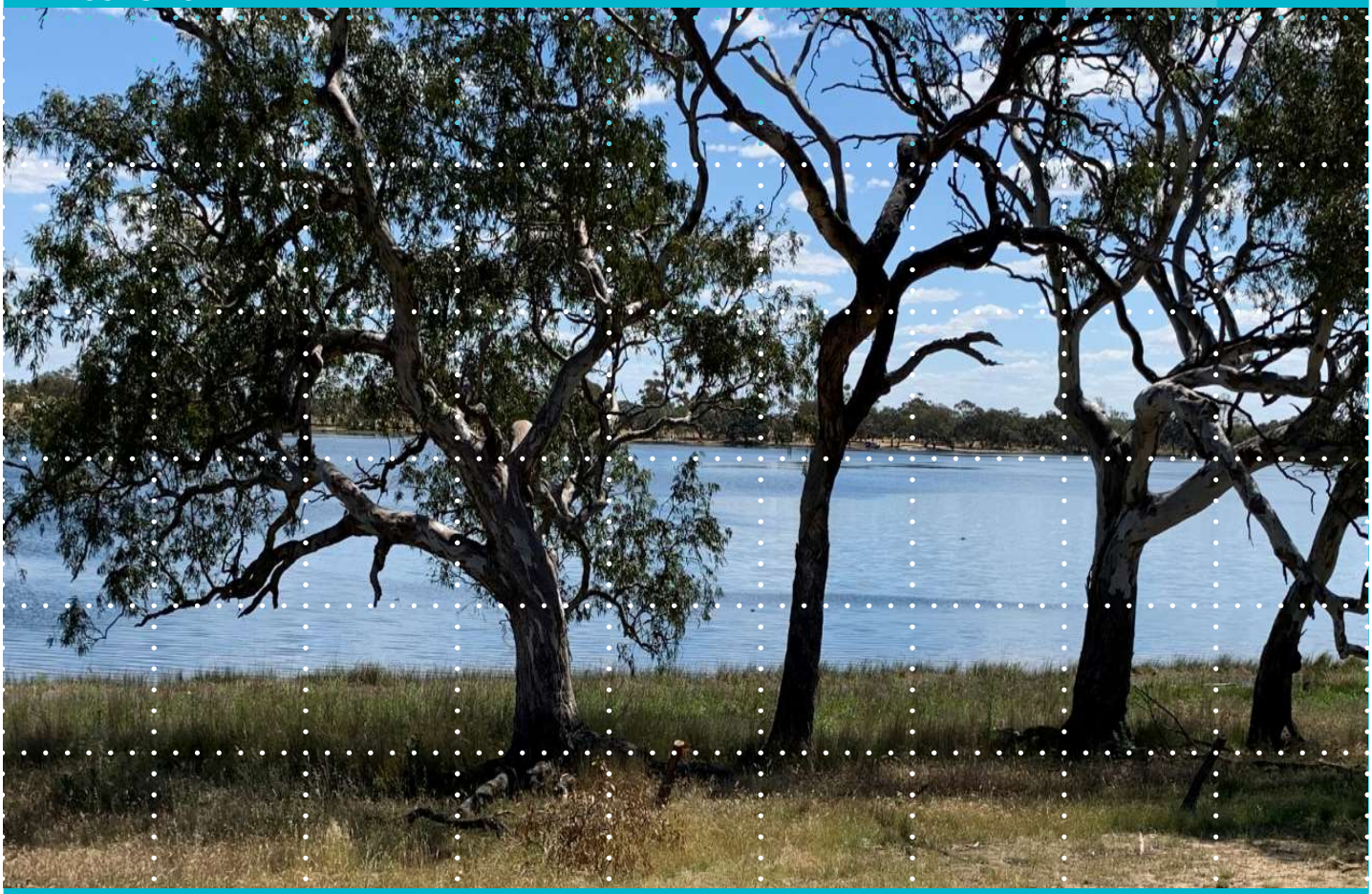

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Introduction

Background

The Northern Grampians Shire Council and the Walkers Lake Advisory Group recognise the Dja Dja Wurrung People as the Traditional Owners of the lands and waters where Walkers Lake is situated, and respects the deep and continuing connection that Dja Dja Wurrung have to their Country. The ongoing role and cultural obligation to care for Country is recognised sets an important foundation for managing Country together.

Ecology and Heritage Partners Pty Ltd was commissioned by Northern Grampians Shire Council (NGSC) to provide ecological and cultural heritage management advice and action management plan recommendations for Walkers Lake, Avon Plains, Victoria, which will inform the Walkers Lake Management Plan to be prepared.

The purpose of the assessment was to review the existing NGSC Walkers Lake Management Plan and other relevant ecological and culutralheritage reports (Blue Devil 2020). It aims to confirm the accuracy of background information and provide information on the successful implementation of the Walkers Lake Management Plan to protect and enhance biodiversity and cultural heritage values whilst providing an area for visitors and recreational activities. Advice will be provided regarding the likely or potential regulatory and legislative considerations (e.g. permits, additional assessments and approvals) associated with the continued management, including any works that are outlined in the Management Plan.

Study Area

The study area is located at Walkers Lake, Avon Plains, Victoria, and is approximately 275 kilometres north-west of Melbourne's CBD (Figure 1). Walkers Lake is situated on the western edge of the lands of the Dja Dja Wurrung People (Djaara) and is a site of cultural significance. The study area covers approximately 78 hectares and is largely surrounded by undeveloped agricultural land. It is bound by Donald-Avon Plains Road to the west, Cossens Road to the south, and Walker Road to the north. Walkers Lake is managed by the Northern Grampians Shire Council for public recreation and aims to preserve and enhance natural and cultural heritage values in balance with keeping the site open to visitors.

Walkers Lake comprises approximately 32 hectares of the study area, with the remaining area consisting of open native woodland. A campground and public toilets are located on the western edge of the lake, with vehicle access tracks running from Donald-Avon Plains Road towards and around the lake. In 2014, Walkers Lake was incorporated into a network of 12 recreational lakes supplied by the Grampians Wimmera Mallee Water Pipeline and has since been permanently filled with water (after previously existing as an ephemeral waterbody that naturally filled and dried out following flood events). The lake contains a maximum water volume of approximately 900 megalitres and has a depth of 2.5-3 metres, whilst having a large natural catchment area that can store a substantial volume of water during rainfall events (GWM Water 2021). Lake Batyo Catyo is located approximately two kilometres to the north and Hollands Lake approximately 750 metres to the south.

According to the Department of Environment, Land, Water and Planning (DELWP) NatureKit Map (DELWP 2022a), the study area is located within the Wimmera bioregion, North Central Catchment Management Authority (CMA) and the Northern Grampians Shire Council municipality.

Methods

Desktop Review

An up to date review of relevant literature, online-resources, heritage databases and flora and fauna databases was undertaken, including:

- Any recent reports relevant to the study area, including;
    - Review of the NGSC Walkers Lake Management Plan with consideration that the reserve is managed for public recreation and managing visitors to balance environmental impacts;
    - Review of the Blue Devil Consulting report November 2020.
    -
- Victorian Department of Environment, Land, Water and Planning's (DELWPs) NVIM Tool for modelled extent of current and pre-1750 Ecological Vegetation Classes (EVCs) throughout the study area (DELWP 2022b);
- DELWPs Victorian Biodiversity Atlas (VBA) for previous records of significant flora and fauna documented within a 10-kilometre radius of the study area (DELWP 2021a);
- The Commonwealth Department of the Environment (DoEE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DAWE 2022);
- DELWPs bioregional descriptions for EVCs with potential to occur in the study area;
- DELWPs Planning Maps Online (DELWP 2022d) and Planning Schemes Online to ascertain current zoning and environmental overlays in the study area;
- Relevant environmental legislation and policies; and
- Aerial photography of the study area.

Site Visit

A site visit was undertaken on 29 November 2021 to confirm the results of the Blue Devil Consulting flora and vegetation assessment and assess the on-ground implications of the existing Management Plan (Blue Devil 2020). An on-site consultation was also conducted the same day with a local advisory group, including representatives from the local community and community organisations, Northern Grampians Shire Council, and Ecology and Heritage Partners, to discuss any management issues and the future use of Walkers Lake (Section 3).

Consultation

An on-site consultation with residents and user groups was conducted on 29 November 2021. Representatives from the local field naturalists, Landcare, recreational user groups, Northern Grampians Shire councillors and officers attended the on-site consultation, as well as a botanist, zoologist and cultural heritage specialist from Ecology and Heritage Partners. The Dja Dja Wurrung Clans Aboriginal Corporation

were also invited to attend and indicated they would but were an apology on the day. The meeting canvassed the views of attendees regarding any current issues pertaining to Walkers Lake and recorded any suggestions to improve the management of the lake. This section provides a summary of the issues and suggestions recorded during the on-site consultation.

Issues relating to Walkers Lake raised by attendees, which were individual views and were not necessarily discussed in the group setting, included the following:

- There are often tensions between regular users of Walkers Lake, particularly in relation to recreational vs. conservation-based users;
- The number of users at the lake can be very high (up to 66 caravans / 300+ people counted on busy days) as the site is considered a regional centre for water-based recreational activities. Use of existing amenities often 'spills over', potentially impacting ecological values;
- Periodic fish kills / algal blooms are an issue, with native fish (e.g. Golden Perch) affected;
- There's a shortage of fire pits. The existing ones frequently get used and more are needed to meet demand. However, the use of fire on site is not regulated effectively, as there are often illegal fires on total fire ban days during the peak visitor season;
- While most people bring their own firewood, damage associated with firewood collection has been observed. It is difficult to discourage firewood collection and police the behaviour of visitors. There is great concern that Aboriginal scarred trees could be damaged;
- 4WDing off track is common, especially on lunettes, creating numerous informal tracks in higher traffic areas. Erosion, and vegetation and habitat loss are often the result of this behaviour;
- Rabbit warrens are an issue on the banks of the lake, also causing erosion, and vegetation and habitat loss for native species and impacts to heritage places;
- Visitors have expressed that they feel unsafe visiting the lake outside of peak season due to the aggressive behaviour of other users. Avon Plains Landcare 'Winter Walks' have been cancelled as a result;
- The current water regime at Walkers Lake has potentially contributed to a change in hydrology, possible dryland salinity, and loss of biodiversity at neighbouring lakes such as Lake Batyo; and,
- Approval had previously been granted to undertake revegetation and install bollard/wire rope fencing on the east side of Walkers Lake to prevent off-track 4WDing and other potentially environmentally destructive behaviour, however, this was not undertaken due to objections regarding safety and blocking access to fishing locations. There is concern that Aboriginal heritage places could be damaged by the off-track activity.

Suggestions to improve the management of Walkers Lake included:

- The installation of additional fire pits to meet demand and prevent fire damage in tree root zones;
- Improved wayfinding and educational signage to reduce environmentally destructive behaviour and protect culturally sensitive sites (e.g. off-track 4WDing, harvest/collection of wood on site, illegal

fires, etc.), including clearly marked tracks and potentially creating 'no-go areas' flagged with bollards or similar;

- Review the management interventions at Wooroonook Lake and other similar lakes in the region. Improved amenities and signage at some of these Lakes has helped reduce the impact of users on ecological values and encourage positive shared use of the lake; and,
- The use of capacity limits at the site may reduce the impact to ecological and heritage values.

Report Review

Ecological

The Flora and Vegetation Assessment and Management Advice (Blue Devil 2020) is a brief report detailing the type and extent of native vegetation present within the Walkers Lake reserve, also providing preliminary conservation management advice for the Walkers Lake environs.

While a Habitat Hectares (VQA) assessment was not undertaken, the cover/abundance method used is considered appropriate for the purpose of the assessment, being to document the native vegetation and flora values within the study area.

Five national and State-significant species were identified during the site assessment, the EPBC Act-listed Turnip Copperburr *Sclerolaena napiformis* (Plate 1) and Chariot Wheels *Maireana cheelii* and the State-significant Spiny Lignum *Muehlenbeckia horrida* subsp. *horrida* (Plate 2), Fine–hairy Spear–grass *Austrostipa puberula* and Scaly Mantle *Eriochlamys squamata* (adjacent to the study area, considered likely to be present within the study area). The three State-significant species were previously on *the Advisory list of rare or threatened plants in Victoria* (DEPI 2014) but were not listed under the FFG Act at the time of the Blue Devil Consulting (2020) site assessment and report finalisation. Following amendments to the FFG Act in 2021, the Advisory lists have been revoked. As a result, Spiny Lignum, Fine–hairy Spear–grass and Scaly Mantle are now listed under the FFG Act as critically endangered, endangered and endangered, respectively.

Recognising preliminary field assessment was undertaken over one-day only, the native vegetation mapping is generally accurate in extent; however, the cover/abundance method undertaken in localised quadrats is not suitable to determine the quality and condition of native vegetation within the study area, particularly Red Gum Woodland (Plate 3) and Black Box Woodland (Plate 4) where vegetation quality varies significantly adjacent to the lake in high-traffic areas due to camping and recreation activities.

The conservation management advice is appropriate for the ecological values identified.

Cultural Heritage

Relevant heritage reports

A series of heritage reports have been undertaken that are relevant to the Walker Lake environs.

The Walkers, Hancocks and Hollands Lakes Aboriginal Cultural Heritage Survey

The most recent and relevant is a 2018 report prepared for the Avon Plains Banyena Landcare Group. The is the Walkers, Hancocks and Hollands Lakes Aboriginal Cultural Heritage Survey (Smith et al 2018). The report summarised the work carried out to date and incorporated a field assessment. The report was undertaken by the local Traditional Owners represented by the RAP, being the Dja Dja Wurrung Clans Aboriginal Corporation and a heritage consultancy, Tech Duinn Pty Ltd.

The investigation recorded new stone artefact scatters and scarred trees at Walkers Lake. These were in addition to the ones already recorded. The extensive number of Aboriginal Places contribute to Walkers Lake and environs being part of an Aboriginal cultural landscape comprising:

Scarred Trees

Braided Trees

Ring Trees; and Earth Features.

In addition, the Dja Dja Wurrung Traditional Owners provided Oral history and language words in regard to their cultural heritage.

Extensive Aboriginal heritage places have been found at Walkers Lake around the margins and the dune systems. The exact locations will not be shown in this report, however the map shown in Appendix 3 gives an indication of the extent of places that are currently recorded. They are shown as green circles and are overlain by a mapped area of cultural sensitivity (also in green) that is an area 200 metres surrounding the lake.

The management recommendations were prepared to guide future planning for proposed activities. They noted that the area has Aboriginal heritage in high densities and include a range of specialised features, surrounding and extending out of the lake beds. Quartz artefact scatters dominate the places observed in all areas. It is considered likely that further Aboriginal heritage will be present at Walkers Lake, whether in undisturbed or disturbed contexts, surface or subsurface, and submerged contexts.

Consultation must take place with the Dja Dja Wurrung Traditional Owners (the RAP) for all future management of any impacts to the area and in regard to managing the landscape.

Dhelkunua Dja, Dja Dja Wurrung's Country Plan provides the background to traditional cultural understanding of the land and how places on Dja Dja Wurrung Country are known and valued. It assists in explaining the importance of Country to the Traditional Owners and the desire to Care for country. This is not just restricted to caring for heritage places that may have a physical presence and tangible link to the past. It also includes looking after the intangible values and the ecology and health of the place. Management of and any Interpretation of the environs including the ecology and heritage should be carried out in a consultative manner with the Dja Dja Wurrung.

Plate 1. Turnip Copperbur within the Donald-Avon Plains Road road reserve. Ecology and Heritage Partners Pty Ltd 29/11/2021.

Plate 2. Spiny Lignum within the study area. Ecology and Heritage Partners Pty Ltd 29/11/2021.

Plate 3. Red-gum Woodland within the study area. Ecology and Heritage Partners Pty Ltd 29/11/2021.

Plate 4. Black Box Woodland within the study area. Ecology and Heritage Partners Pty Ltd 29/11/2021.

Dja Dja Wurrung – Traditional Owners

Dja Dja Wurrung Clans Aboriginal Corporation. 2014 - Updated 2017. Dja Dja Wurrung Country Plan 2014-2034

Djaara (Dja Dja Wurrung People) are represented by the Dja Dja Wurrung Clans Aboriginal Corporation, trading as DJAARA. In 2013, the Dja Dja Wurrung Clans Aboriginal Corporation entered a historic Recognition and Settlement Agreement with the State of Victoria on behalf of all past, current and future Dja Dja Wurrung People. Of relevance to Walkers Lake, a range of rights secured under the agreements include:

• Recognition as the Traditional Owners of our Country and the Acknowledgement of the part government has played in dispossessing and dispersing our people;

• The right to practice and enjoy culture;

• The right to maintain spiritual, material and economic relationship with the land and its resources;

• Protocols for acknowledgments and welcomes to Country;

• Agreement by the State to develop a protocol for assisting the Corporation to engage with local government in efforts to improve the economic, cultural and social standing of Dja Dja Wurrung People;

• Advisory, negotiation and veto rights; and community benefits for certain land use activities that occur on public and within Dja Dja Wurrung Country boundaries;

• Guaranteed contracts to a specified amount for works on public lands;

The document explains the rights and responsibilities that the Traditional Owners have for Country and this is based on a 2013 native title settlement that the Dja Dja Wurrung Clans Aboriginal Corporation entered into with the State of Victoria. Under the agreements that make up that settlement the rights include the following:

Dhelkyuna Dja Country Plan 2014-34

In 2014, the Dja Dja Wurrung Clans Aboriginal Corporation released Dhelkuyna Dja, the Dja Dja Wurrung Country Plan. The Country Plan re-affirming Djaara's aspirations and describes the future Dja Dja Wurrung people as the Traditional Owners of Dja Dja Wurrung Country. It recognises the importance of cultural heritage and significant landscapes, stories and language, customs and practices and Djaara's responsibilities for looking after Country. It describes the pathway the Dja Dja Wurrung community has determined it needs to take to rebuild and prosper.

The Country Plan should be utilised as a strategic guiding document for management of land and waters on Dja Dja Wurrung Country. It is attached as Appendix 4.

Walkers Lake Management Plan Review

Water Security and Sustainable Water Levels

In 2014, Walkers Lake and its surrounding land was repurposed for 'Public Recreation' use after previously existing as an ephemeral wetland reserved for wildlife management and habitat preservation (NGSC 2019). Walkers Lake has since been permanently inundated and managed by GWM Water through a recreational water allocation supplied via the Wimmera Mallee Pipeline (NGSC 2019). The recreational water allocation is divided between a network of 12 recreational lakes in the area.

NGSC monitor the water levels at Walkers Lake, measuring the lake depth several times per year. An annual top-up regime of the Lake has been established, with adjustments made to the water levels by GWM Water throughout the year as necessary. Currently, Walkers Lake has a volume of approximately 900 megalitres and has an average depth of 2.27 metres (as of September 2021; NGSC 2019; GMW Water 2021).

The change in the hydrological regime of Walkers Lake from an ephemeral wetland to becoming permanently inundated has occurred within a relatively recent timeframe (i.e. within the last eight years). The extent of the ecological impacts caused by this change are still unknown, as the Walkers Lake environment remains in similar condition to its previous natural state (Blue Devil 2020). However, by continually topping-up the lake to maintain permanently full water levels, without allowing natural drying periods, the diversity of lake-bed flora is likely to decline. Plants adapted to different flooding frequencies and durations, and water depths, may not persist and is likely to lead to a decrease in species richness (Blue Devil 2020).

In addition, there is currently no natural in-flow (other than in high rain events when flooding occurs through Souths Creek) or out-flow (other than through flooding events which sends overflows to Lake Batyo) of water from Walkers Lake. Historically, the three ephemeral lakes (Walkers, Hancocks and Hollands Lakes) formed a wetland system that would naturally drain into Lake Batyo Catyo after flooding (NGSC 2019). However, after the construction of Hollands Bank in 1912 to restrict water into Avon Plains Lakes System (SKM Avon Plains Lakes Water Management Plan 2005), and the recent recreational water piping regime at Walkers Lake, Lake Bayto Cayto has dried up (NGSC 2019; on-site consultation pers. comm. 2021). This altered hydrological regime, combined with the increase in recreational visitation (e.g. damaging lake-side camping/activities), is expected to degrade the ecological condition of Walkers Lake if not actively managed (Blue Devil 2020).

It is recommended that NGSC maintain their membership with GWM Water and continue to meet every 6-12 months to discuss water supply to Walkers Lake. The impacts of the recently altered hydrological regime should also be monitored closely, where investigations into creating a formal in-flow or out-flow of water may be considered to manage the ecological values of Walkers Lake.

GWM Water Recreational Lakes and Weir Pools

The GWM Water pipelines supply 12 recreational lakes and weir pools with 10 of these supplied from the Grampians reservoir system through the Wimmera Mallee Pipeline. This is permitted through a recreation water entitlement held by GWM Water. The 12 recreational lakes and weir pools provide a recreational resource for locals and visitors as well as biodiversity sinks for native flora and fauna (GWM Water 2021).

Walkers Lake is the second most southern lake in the 12 listed pipeline supplied recreational lakes. Other pipeline supplied lakes in the immediate region are Marma Gully at Murtoa (50km from Walkers Lake), Donald Park Lake (23 km from Walkers Lake) and Lake Wooroonook (50km from Walkers Lake) (GWM Water 2021). Walkers Lake is also 88km from Lake Fyans, the region's most visited lake. Walkers Lake has a general catchment of visitors from local communities including St Arnaud, Marnoo, Minyip and Donald and visitors

outside this region as all recreational lakes are becoming popular destinations particularly as an outcome of the Covid 19 pandemic with people traveling locally (within the state and regions).

Walkers Lake has the largest (volume) of all the 12 pipeline supplied recreational lakes and weir pools with an estimated volume of 900 ML with Wooroonook being the second largest. Annual top up of 300 ML for Walkers Lake is conducted in winter 200ML and a further 100 ML before Easter (all subject to allocations).

Fish Stocking and Sustainable Aquatic Life

VRFish and/or Victorian Fisheries Authority manage annual fish stocking in the Lake. In the past few years, Walkers Lake has been stocked with native Golden Perch and Silver Perch *Bidyanus bidyanus*, while past stocking by the Donald Angling Club and Fisheries Victoria has included populations of Murray Cod. Approximately 15,000 Silver Perch and Golden Perch were released into Walkers Lake between 2017 and 2020 (WDA 2020). A population of English Perch (Redfin) is also found in the lake (NGSC 2019). It is recommended that NGSC continue their relationship with VRFish and/or Victorian Fisheries Authority through annual meetings in managing stocking levels in Walkers Lake.

Blue Green Algae outbreaks occur nearly annually in Walkers Lake, occasionally leading to mass fish kills affecting native species (e.g. a mass Golden Perch fish kill was reported during the November 29th; on-site consultation pers. comms.). The outbreaks are generally caused by low water flow, extended durations of warm weather and the entry of nutrients into the water (e.g. from run-off of urban or agricultural land-use), and are typically resolved by lower water temperatures and increased stream flow (Clune *et al.* 2017). Walkers Lake currently has minimal natural inflow or outflow of water due to the recent hydrological regime change and permanent water levels. Blue Green Algae outbreaks may therefore become more frequent at Walkers Lake in the future with continued agricultural run-off, increasing temperatures from climate change, increased visitation to the lake, and no natural water flow or drainage.

GWM Water are the regional coordinators in monitoring and managing Blue Green Algae outbreaks in the Grampians Wimmera region (GWM 2018). A Regional Blue Green Algae Response Plan is in place and reviewed annually to ensure it reflects the most up-to-date management strategies and the latest DELWP Blue Green Algae Circular (GWM 2018).

It is recommended that NGSC continue their relationship with GWM Water as Regional Coordinators of Blue Green Algae outbreaks in the Grampians-Wimmera region. If Blue Green Algae outbreaks increase significantly in frequency or duration in the future, investigations into restoring a natural water flow system through Walkers Lake or implementation of alternative measures to assist in managing outbreaks may be required. This should be investigated with the support of North Central CMA, Victoria Fisheries Authority, GWM Water and other key authorities as required.

Improving Visitor Experience

A large management focus for Walkers Lake involves improving visitor experience and educating visitors about the park's values, both cultural and ecological. Since being deemed a public recreation area in 2014, Walkers Lake has become an increasingly popular destination for visitors for a wide range of recreational activities (e.g. camping, water skiing, boating, fishing, etc.). Up to 300+ visitors and 66 caravans have been reported to visit the lake during some of the busiest days in peak season (on-site consultation pers. comm.). As a result, the pressure and demand on existing amenities at Walkers Lake is increasing, which may lead to a poorer visitor experience due to overcrowding, congestion and deterioration of the park's environment.

To support higher rates of visitation, further infrastructure would be required (e.g. toilet facilities, campgrounds, campfire pits, picnic tables, fishing infrastructure, boat access). However, the additional infrastructure must not compromise the ecological or cultural values of the reserve (e.g. excessive

construction of facilities, or placement of infrastructure near vulnerable lakeside habitat or where harm may occur to cultural heritage places) and needs to be maintained to an appropriate or minimal level (Blue Devil 2020). Wooroonook Lakes in Buloke Shire were cited by on-site consultation attendees as an example of public investment and improvements to visitor experience, much similar to other pipeline supplied lakes in the region.

Much like Walkers Lake, Wooroonook Lake is a natural lake popular among field naturalists, as well as for recreational activities such as fishing, boating, and for Traditional Owners to visit for cultural reasons etc. The lake is situated approximately 37 kilometres north-east of Walkers Lake and 13 kilometres west of Charlton, with visitor facilities currently comprising 10 powered sites, an amenities block, BBQ, boat launching area, playground, a pontoon, and recently installed walking trails and signage delivered with assistance from the Commonwealth's Building Better Regions Fund (WDA 2020). These facilities support a total 2,628 estimated annual visitors in 2018/19, compared with 2,796 estimated annual visitors at Walkers Lake during the same period – suggesting that Walkers Lake is currently under serviced for visitor facilities (WDA 2020). The waterway manager (under the Marine Safety Act, 2010) for Lake Wooroonook is Buloke Shire Council, and foreshore management is the responsibility of the Wooroonook Committee of Management (WDA 2020).

To effectively manage increased visitation, the number of visitors to the reserve may also need to be regulated, capped, or overflow parking area provided during busy periods to ensure the park does not become overcrowded. This may be achieved by creating designated campgrounds (e.g., denoted with a number or rope fence, campfire pit or picnic table) and introducing limits to the number of campgrounds available (Blue Devil 2020). Additionally, an online booking system may be introduced to allow visitors to reserve a space during peak periods and encourage visitors to be mindful of capacity limits, if it can be effectively monitored on site. This would also present the opportunity to request a small camping fee from visitors to assist with the upkeep and maintenance of the park grounds and associated infrastructure, however it is recommended that NGSC seek further technical advice in securing financial support for the reserve (Blue Devil 2020).

Many visitors are also reportedly unaware of the ecological and cultural values of the reserve, such as the significant flora and fauna or Ecological Vegetation Classes along with the extensive number of Aboriginal heritage places and the values the Traditional Owners hold for the area within the reserve. Educating visitors about these values may engage their interest and lead visitors to become more appreciative and respectful of the environment they use, whilst creating a more enjoyable visitor experience. Educational signs should be placed around the lake at key points (e.g., near campgrounds, or locations where a visitor may hear a Growling Grass Frog) that could inform visitors of any interesting flora and fauna inhabiting the area. Consultation must take place with the RAP to ensure the information regarding cultural places is appropriate showing the exact location of places may not be appropriate due to threats of vandalism. Further consideration should be given to installing fencing or barriers around key areas of biodiversity or heritage if appropriate at Walker's Lake, so visitors are aware of their value. Areas for protection may include existing (and created) Growling Grass Frog habitat, vegetation along steep banks, some large old trees.

A program of 'Winter Walks' had been previously trialled by Avon Plains Banyena Landcare, in which a volunteer/ranger led a guided walk to highlight the ecological values of the reserve to visitors. This program was trialled however was later stalled due to Covid. A form of ranger patrol can be an option to establish an active presence at the reserve and monitor or report any visitors acting in an anti-social manner (e.g., to the police) to ensure they do not endanger or negatively impact other visitors' experiences. Additionally, guided activities around the lake could be re-trialled, in which a park ranger or representative of the RAP may organise a walk around the reserve to identify values of interest (Blue Devil 2020). This may be more

successful or popular during peak visitation season but could also encourage visitors to Walkers Lake during the off-peak season.

Recreational fishing is popular at Walkers Lake, with the lake stocked with Golden Perch, Redfin and Murray Cod. Infrastructure for fishing (e.g., piers/jetties, fish cleaning stations, bins, signage) could be made available to meet demand and to promote a positive visitor experience. The placement of fishing infrastructure should be located away from vulnerable lakeside vegetation or habitat (e.g., outside of Growling Grass Frog habitat) to discourage fishers from entering those areas.

Regulating Campfires and Firewood Collection

Campfires are a common aspect of camping and used to provide warmth and cooking food. With the absence of powered site, the need for campfires is greater. Campfires at Walkers Lake are largely managed appropriately however there have been reportedly fireplaces built by some visitors to Walkers Lake in inappropriate locations (e.g. near trees or on tree roots) or under unsafe conditions (e.g. total fire ban days or leaving fires unattended). This is generally due to a lack of knowledge, awareness or understanding of the impacts and this increases the risk of grassfires or wildfires, which is especially problematic on total fire-ban days and could significantly impact native vegetation. The few campfire pits at Walkers Lake are used frequently, particularly during peak visitor times when demand is high. The increase in hazardous campfires is likely a direct result of a shortage of designated campfire pits and a lack of education of visitors to safe campfire practices.

It is recommended that more designated campfire pits are built at Walkers Lake to meet the increased visitor demand, which will encourage visitors to build fires in more appropriate and safe locations away from trees or flammable material and reduce the risk of uncontrolled escaped fires. Designated firepits will also minimise the extent of parkland habitat and heritage being impacted around Walkers Lake, with fires contained to a smaller controlled area of the reserve. In addition, it is suggested that NGSC consult with local CFA to discuss safe campfire practices, in order to provide educational signs or brochures to visitors about campfire safety and regulations. The signage should also include the phone number for DELWP 136 186 for visitors to report unsafe campfires (e.g. on total fire ban days) and to encourage self-policing at the reserve. Additionally, it may be necessary to consider the fencing of various areas such as parts of the eastern lunette side of the lake with the addition of signage to further educate the community on the importance of sustaining biodiversity in a shared recreational space.

Visitors to Walkers Lake are also required to provide their own firewood, however a small minority of visitors reportedly harvest or collect wood from the nearby environment. Additionally, the use of large fallen logs for firewood is generally tolerated with minimal regulation by other campers. The collection of firewood poses an issue to habitat removal or destruction, particularly if large fallen logs are removed or large dead trees and branches are cut down. Impacts to Aboriginal heritage trees could also take place. Consistent removal causes a net loss of available woody vegetation for habitat for both flora and fauna, with woody habitat decreasing at a faster rate than it can be formed (e.g. hollow-bearing trees or logs) (DAWE 2005). Dead wood provides important resources for habitat, nest-building, and foraging opportunities for many mammals, reptiles, invertebrates and birds (including EPBC and FFG-listed species), as well as being important in regulating ecological nutrient cycles in leaf litter and soils (DAWE 2005).

The system of visitors providing their own firewood is generally self-managed, however it is difficult to enforce and relies on the visitors being aware of the rules ahead of their visit and self-policing. Installing signage around the reserve to highlight the restrictions on firewood collection is recommended to discourage visitors from removing branches, sticks or logs from the reserve environment. The signage may also include a brief description of the importance of the wood remaining in the environment as habitat for

native flora and fauna, and clearly state that large fallen logs should not be burnt as firewood. The phone number for DELWP 136 186 can also be included for visitors to report illegal firewood collection to encourage self-policing at the reserve.

Managing Long-term Camping and Vehicle Use

Off-road 4WD or vehicle use is an issue at Walkers Lake, creating numerous informal tracks in higher traffic areas. Damage from off-track 4WD use is especially evident on the lunettes to the west of the lake, causing increased erosion and loss of vegetation and habitat and has a detrimental effect on Aboriginal stone scatters.

Off-road vehicle use in parks can lead to a range of ecological implications, including direct damage to vegetation, soil erosion and compaction, disturbance to wildlife (including soil-dwelling animals/invertebrates), introduction and spread of weeds and pathogens, increased air and water pollution, increased fire frequency, and slope-wash or similar impacts from off-road vehicle use (Cater e*t al.* 2008). An invasive weed species, Espartillo *Amelichloa caudata*, was recently detected within Walkers Lake reserve outside its known invaded range, suggesting it was transported into the reserve on vehicle tyres via caravan tourism (Blue Devil 2020). Aside from the risk of importing weed species, off-road vehicle use in areas with high visitation has also been found to aid in the spread of the plant dieback fungus *Phytopthora cinnamomi* (Cater *et al.* 2008).

Actions to reduce the ecological impact and destruction of culturally sensitive sites due to off-road vehicle use include the formation of designated vehicle access tracks around the lake. This will discourage off-track driving, particularly in areas with Aboriginal heritage places, vulnerable habitat or soils, reducing the instances of erosion, vegetation loss and likelihood of spreading weeds or pathogens. Further measures may be taken in areas of high traffic or in vulnerable environments, including the placement of bollards or wire fencing to establish strict 'no-go' zones.

Walkers Lake does not have designated camping areas, with visitors selecting to camp anywhere within the reserve boundaries, often in close proximity to the Lake edge. Without regulation or containment of camping to select areas, degradation to heritage places, habitat and vegetation loss can occur across the whole reserve. Additionally, no limits to the camping timeframes within Walkers Lake exist, permitting long-term camping by some visitors.

It is recommended that designated spaces with adequate room for camping are created (e.g. by marking camping spaces with numbers or rope fences, installing firepits or picnic tables, etc.), particularly in the more highly vulnerable areas of the reserve. This would encourage visitors to remain within the designated camping areas, containing the pressures of tents, caravans, vehicles, and pedestrians, to avoid damaging impacts to vulnerable lakeside vegetation and soils (Blue Devil 2020). Introducing designated camping spaces would also allow a capacity limit at Walkers Lake, where the increasing park visitor numbers could be regulated and capped via an online campsite booking system.

In addition, establishing timeframes or maximum-stay limits (to be approved by the Council) to camping is recommended to discourage long-term camping (e.g., a maximum stay of four weeks; NGSC 2019). Signage to inform visitors of the camping restrictions may be required to provide clarity on stay limits. Council appointed park rangers or increased visits by Council officers should be considered to routinely monitor the campground, particularly during peak visitation periods, and manage any long-term campers or visitors camping outside of designated campgrounds.

Pest Animal and Weed Management

Weed management should be implemented on the banks of Walkers Lake for herbaceous/grassy weeds along with the staged removal of woody weeds such as African Boxthorn within the reserve. In relation to fauna pest species, European Rabbits *Oryctolagus cuniculus* were observed to have caused widespread and intensive soil disturbance along the bank, with several individuals sighted during the site visit. A pest survey of the Site and of the adjacent conservation reserves (up to 100 meters from the Site) may be carried out by Ecologists, to:

- Identify and map pest flora and fauna species and habitat; and
- Outline priority areas, methods and schedules for pest plant and animal control.

The aforementioned will then be used to guide the Environmental Manager and pest plant and animal control contractors, in order to manage pest species within the Site.

Licensed pest control contractors with demonstrated experience working in ecologically and culturally sensitive environments will be engaged to undertake pest control. The contractors should also have demonstrated knowledge of the risks, and methods to avoid impacts, of chemical use in and around aquatic systems, including alternatives to chemical use in these systems, and methods to avoid, non-target poisoning and secondary poisoning (particularly relating to native mammals), as well as the relevant requirements and limitations associated with working near human habitation.

A 2 and 5-year pest flora and fauna survey may be undertaken by Ecologists, to report upon the species and abundance of pest species present, the effectiveness of the pest management and make any additional recommendations.

Actions to limit the spread of diseases and pest plant species should follow best-practice protocols developed elsewhere, specifically the Department of Environment and Climate Change (NSW) (2008) 'Hygiene protocol for the control of disease in frogs', and the Tasmanian 'Keeping it Clean' manual (NRM South 2010) and Chytrid Management Plan (Philips *et al*. 2011). Between them, these protocols address the potential spread of weeds and a range of plant and animal diseases including chytridiomycosis *Batrachochytrium dendrobatidis* and phytophthora *Phytophthora cinnamomi*.

Weeds

Weeds are present throughout much of the study area, as well as adjacent remnant vegetation. Weeds present include noxious weeds, Weeds of National Significance (WONS), environmental weeds and a variety of common introduced species.

The highest priority for weed control should be WONS and noxious weeds (Section 6.1.2). Landowners are responsible for the control of any infestation of noxious weeds to minimise their spread and impact on ecological values under the *Catchment and Land Protection Act 1994* (CaLP Act), which contains provisions relating to catchment planning, land management, noxious weeds and pest animals.

Where possible, infestations of WONS and noxious weeds should be treated to prevent further incursion to native vegetation. The following provisional advice for controlling WONS and noxious weeds should be refined following a detailed pest survey of the site, with pest species mapped and a management schedule proposed. Weeds should be removed by a licenced contractor with the appropriate experience and equipment.

Spear Thistle *Cirsium vulgare* should be manually removed where possible. Large infestations should be treated with a broadleaf selective herbicide at the appropriate rates. African Boxthorn *Lycium ferocissimum*

should be manually removed where possible. Mechanical removal of boxthorn may be required and consultation with the appropriate parties occur prior to any control works undertaken. Chemical control should be applied when a tree has a healthy cover of foliage. Do not spray during hot summer periods or when the plant is under stress. Apply these methods routinely to ensure the species is unable to recolonise.

Further spread of Horehound *Marrubium vulgare* can be prevented through the control of rabbits, as the species is more likely to colonise disturbed areas such as those containing rabbit warrens, while the fruit or burr commonly attach to rabbit fur aiding dispersal. Eradication strategies for Stemless Thistle *Onopordum acaulon* include manually removing isolated plants, spraying larger infestations once or twice per year, and establishing competitive plants.

Pest Animals

Erosion within the study site is predominantly centred around the banks of the lake and largely caused by European Rabbit soil disturbance. Erosion may already be causing greater sedimentation in the lake, with the potential to negatively impact aquatic flora and fauna. Pest management and revegetation are recommended to improve soil composition, nutrient retention, and stability, thereby controlling erosion. Engineering structures or physical barriers installed may be initially be required to provide a base for revegetation to establish.

Management of European Rabbit at Walkers Lake should be informed by detailed pest surveys of the area. In 2020 Avon Plains Banyena Landcare Group initiated “Rabbit Buster” program in collaboration with the Department of Agriculture. A pest inspection was previously undertaken and rabbit warrens mapped by the Department of Jobs, Precincts and Regions on 28 February 2022 (Plates 5 and 6). As a general principal the control of rabbits should occur in late summer and early autumn (outside the breeding season) and include an integrated approach of ripping (destroying warrens) with care to avoid harm to native fauna that may be present, and fumigation. Fumigation should be used in instances where significant values (ecology, heritage or otherwise) are present and where ripping is not possible. Baiting with 1080 Sodium fluoroacetate is considered unsuitable due to the regular presence of domestic pets on site (Agriculture Victoria 2022) however Kahleesi virus may be considered as an alternative.

Plate 5. European rabbit warrens mapped on the north-eastern extent of Walkers Lake. Department of Jobs, Precincts and Regions, 2022.

Plate 6. Overview of mapped European rabbit warrens in Walkers Lake Reserve. Department of Jobs, Precincts and Regions, 2022 .

Managing Native Flora and Fauna

Walker's Lake Reserve contains several nationally and state listed flora and fauna species (Section 6), and supports a range of common species, habitat types and ecological communities (Section 4). Much of the flora and fauna depend on the large Red Gum and Black Box trees present on site, as well as the lake's water cycle. During the site visit, evidence of phytopthora dieback in several large old trees was observed, in line with observations from previous ecological surveys (Blue Devil 2020). This is likely to be attributed to several human-induced factors, including illegal harvesting of firewood and changes to the lake's hydrological regime (Section 5.2). These key ecological components underlying the lake's biodiversity should be prioritised for protection and restoration.

The removal and harvesting of trees and woody debris for campfires and other recreational activities has a direct effect on native fauna present on site. A range of fauna observed at Walker's Lake during the site visit depend on the availability of hollow-bearing trees for nesting and reproduction, including Laughing Kookaburra *Dacelo novaeguineae*, Red-rumped Parrot *Psephotus haematonotus*, Little Corella *Cacatua sanguinea*, and Galah *Eolophus roseicapilla*. Other bird species rely on the presence of fallen branches and leaves to construct nests, while reptiles – such as common skinks observed during the site visit – occupy fallen logs for protective habitat and shelter. Amphibians, including the EPBC Act-listed Growling Grass Frog *Litoria raniformis* observed during the site visit, use this organic material to bask during periods of sun.

Visitor foot and vehicle traffic is likely to be the primary cause of erosion and compaction of soil and ground-cover species observed on the lake's banks during the site visit, also described in previous ecological surveys (Blue Devil 2020). Potential management actions to prevent further human-induced impacts to flora and fauna and restore existing biodiversity include:

- Prohibiting firewood removal: the installation of relevant signage and investigation into potential on-site provision of firewood for visitors during peak visitor periods;
- Monitoring individual tree health via photo points and restricting access to significant and/or unhealthy large trees;

- Encouraging camping and camping recreational activities to occur in designated areas, away from significant flora and fauna, through signage and the provision of additional fire pits;
- Staged projects and repair (GUR) locations to have ongoing regeneration works that include educational signage and in some cases barriers installed;
- Regeneration of flora consistent with mapped EVCs, including the restoration of Growling Grass Frog habitat. This could be achieved through a combination of planting, aboriginal cultural burns and biomass reduction burn restoration methods to utilise native seed bank; and,
- Investigate the impacts to biodiversity of the recent change in hydrological regime at Walker's Lake to permanent rather than ephemeral.

Growling Grass Frogs

Conservation Status and Distribution

Although formerly widely distributed across south eastern Australia, including Tasmania (Littlejohn 1963, 1982; Hero *et al*. 1991), the species has declined markedly across most of its former range. The decline has been most evident over the past two decades and in many areas, particularly in south and central Victoria, populations have experienced apparent declines and local extinctions (Mahoney 1999; DELWP 2021a).

Description

Plate 7. Growling Grass Frog (Source: Ecology and Heritage Partners Pty Ltd)

Growling Grass Frog is one of the largest frog species in Australia. It reaches up to 104 mm in length, with females usually larger (60-104 mm) than males (55-65mm) (Barker *et al*. 1995). The species varies in colour and pattern but in general are olive to bright emerald green, with irregular gold, brown, black or bronze spotting. Their backs are warty and usually have a pale green mid-dorsal stripe. The eardrum is pronounced (DAWE 2020).

Growling Grass Frog generally breed between November and March, following local flooding and a marked rise in water levels (from rain or other sources) which triggers calling in breeding males. The species feeds mainly on terrestrial invertebrates such as beetles, termites, cockroaches, moths, butterflies and various insect larvae. They sometimes prey on other frogs, including younger frogs of their own species and may also feed on vertebrates such as lizards, snakes and small fish (DAWE 2020).

Habitat Requirements

Growling Grass Frog is largely associated with permanent or semi-permanent still or slow flowing waterbodies (i.e. streams, lagoons, farm dams and old quarry sites) (Hero *et al*. 1991; Barker *et al*. 1995;

Cogger 1996; Ashworth 1998). Frogs also use temporarily inundated waterbodies for breeding purposes, provided they contain water over the breeding season.

There is a strong correlation between the presence of the species and key habitat attributes at a given waterbody. For example, the species is typically associated with waterbodies supporting extensive cover of emergent, submerged and floating vegetation (Robertson *et al.* 2002). Emergent vegetation provides basking sites for frogs and protection from predators, whilst floating vegetation provides suitable calling stages for adult males, and breeding and oviposition (egg deposition) sites. Terrestrial vegetation (grasses, sedges), rocks and other ground debris around wetland perimeters also provide foraging, dispersal and over-wintering sites for frogs.

Waterbodies supporting the above-mentioned habitat characteristics and those that are located within at least 500 metres of each other, are more likely to support a population of Growling Grass Frog compared with isolated sites lacking important habitat features. Indeed, studies have revealed that the spatial orientation of waterbodies across the landscape is one of the most important habitat determinants influencing the presence of the species at a given site (Robertson *et al*. 2002; Heard *et al*. 2004a, 2004b).

For example, studies have shown there is a positive correlation between the presence of the species and the distance of freestanding waterbodies to another occupied site. This is comparable to the spatial dynamics of many amphibian populations, including the closely related Green and Golden Bell Frog *Litoria aurea* (Hamer *et al*. 2002).

Site Assessment

Growling Grass Frog habitat was identified within the study area during the site assessment on 29 November 2021 (Plates 8-10). A resident population was observed during the site visit with up to five individuals heard calling from the western bank of the lake. One other frog species (Eastern Banjo Frog *Limnodynastes dumerilii*) was recorded during the site visit.

Some minimal fringing vegetation (predominantly exotic grasses) currently provide low-quality habitat for Growling Grass Frog recorded on site. Management of Growling Grass Frog habitat may be required to support the resident population.

Plate 8. Growling Grass Frog habitat with minimal fringing or emergent vegetation. Ecology and Heritage Partners Pty Ltd 29/11/2021.

Plate 9. Growling Grass Frog habitat. Ecology and Heritage Partners Pty Ltd 29/11/2021.

Plate 10. Growling Grass Frog habitat. Ecology and Heritage Partners Pty Ltd 29/11/2021.

Plate 11. Recreational activity potentially impacting Growling Grass Frog habitat. NGSC 2022.

Management of Growling Grass Frog

Management response actions will depend on the type of process that is causing any reduction in overall habitat quality for Growling Grass Frog. Potential processes leading to habitat degradation and possible responses are detailed in the following sections.

The degradation of Growling Grass Frog habitats can occur through a wide range of active and passive processes. Typical processes contributing to habitat degradation include:

- Lack of adequate maintenance;
- Ongoing erosion and sedimentation; and,
- Vegetation trampling, removal and/or dieback
- Water quality impacts from high nutrients, turbidity and disease.

Ongoing erosion and sedimentation

Erosion is occurring along sections of Walkers Lake's bank. Impacts of erosion and sedimentation on Growling Grass Frog habitat may be minimised by considering:

- Installation and routine maintenance of sediment and erosion controls in key areas;
- Installation of rock banks, boulders and logs or soils/clay to stabilise soils in affected areas; and,
- Increase maintenance and monitoring operations in affected areas until problem areas are improved.

Vegetation dieback

Historical dieback may have been a contributing factor to the minimal fringing and emergent aquatic vegetation currently in Walkers Lake, including in known Growling Grass Frog habitat. Impacts to aquatic vegetation may be mitigated by:

- Increasing maintenance and monitoring operations in affected areas; and,
- Replacing dead aquatic and semi-aquatic vegetation as required.

Existing Growling Grass Frog habitat on site does not have a high-level of rocky debris, and fringing and emergent vegetation. Overall, Growling Grass Frog habitat at Walker's Lake can be improved through planting vegetation and distributing rocky debris. Growling Grass Frog tadpoles and metamorphs are provided greater protection from predators by floating vegetation, while adults often utilise this vegetation during nocturnal activities.

Rocky debris and fringing / emergent vegetation (such as reeds and rushes) provide several functions for Growling Grass Frog, including habitat connectivity to enable frog dispersal, basking opportunities, and protection from predators. The Growling Grass Frog Habitat Design Standards should be consulted during habitat improvement planning and implementation (DELWP 2017b).

Managing Cultural Heritage

Walkers Lake has a significant number of Aboriginal heritage places present, much of it and recorded but there is likely to be more unrecorded heritage present. The entire place is of high significance to the RAP, who represent the Dja Dja Wurrung Traditional Owners.

The key values that need to be managed are protection of the Aboriginal cultural significance of the area, including the known and unknown places and the entire area being a significant cultural landscape. This incudes ensuring that protection of the environment and ecology is also managed and that the RAP are consulted as part of a partnership to assist in these activities where appropriate.

The physical impacts may be managed by through the mechanism of a Cultural Heritage Management Plan (CHMP) or an Indigenous Land Use Agreement (ILUA). These could include all planned activities such as working together to reducing impacts such as having portable toilets on site during busy periods and focusing fire pits to ensure multiple areas are not used that could disturb stone artefact scatter sites as well as restricting 4 WD and other vehicles from driving through sensitive areas that could cause erosion and harm to heritage places. The Dja Dja Wurrung will be involved in visitor interpretation and consulted on management in relation to erosion control and habitat management.

All aspects of the management of Walkers Lake align with the cultural values of the place, and the Dja Dja Wurrung Traditional Owners should be invited to be involved in decision making, ensuring the acknowledgment of the Dja Dja Wurrung in documents, and signage, and that the cultural values of the place area protected.

Biodiversity and Heritage Legislation and Policy Context

Commonwealth

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes a Commonwealth process for the assessment of proposed actions likely to have a significant impact on any matters of National Environment Significance (NES).

The EPBC Act established the National Heritage List (NHL), the Commonwealth Heritage List (CHL) and the World Heritage List (WHL) for statutory protection of heritage Places of national or international significance. Where Matters of National Environmental Significance (NES), including National Heritage Places, will or may be impacted by a development, then a referral to the Minister will be required to determine whether an approval under the EPBC Act is required.

The DAWE also administers the Register of the National Estate (RNE). The RNE is no longer a statutory register and listed sites are no longer protected (unless registered on another statutory register).

Three matters of NES are present at Walkers Lake, including listed flora Turnip Copperburr *Sclerolaena napiformis* (Endangered) and Chariot Wheels *Maireana cheelii* (Vulnerable), as well as Growling Grass Frog *Litoria raniformis* (Vulnerable).

Any future works within Walkers Lake must be assessed against the *Significant Impact Guidelines 1.1* under the EPBC Act to ascertain whether a significant impact on Matters of Environmental Significance would occur. This must include the cumulated impact of several works or actions within the precincts. For example, the removal of minimal fringing vegetation on the lake may not result in a significant change to Growling Grass Frog habitat, however, further impacts such as damage to vegetation from frequent road and vehicle use may lead to cumulative impacts to the species' habitat.

Flora

The VBA contains records of two nationally significant flora species previously recorded within 10 kilometres of the study area (DELWP 2021a) (Figure 3). The PMST nominated an additional seven nationally significant species which have not been previously recorded but have the potential to occur in the locality (DAWE 2022) (Figure 3; Appendix 1.1).

Of these species, there is suitable habitat within the study area for Turnip Copperburr *Sclerolaena napiformis* and Chariot Wheels *Maireana cheelii*, with both species recorded during the site visit (Section 4). No other nationally significant flora species are considered likely to occupy the study area.

Fauna

The VBA contains records of six nationally significant fauna species previously recorded within 10 kilometres of the study area (DELWP 2021a) (Figure 4). The PMST nominated an additional 12 nationally significant species which have not been previously recorded but have the potential to occur in the locality (DAWE 2022) (Figure 4; Appendix 2.1).

Of these species, there is suitable habitat within the study area for Growling Grass Frog, with several individuals recorded during the site visit (Section 5.8). There is potential habitat for Striped Legless Lizard *Delma impar* and Golden Sun Moth *Synemon plana* in the study area, with several isolated patches of native grassland recorded on site.

Ecological Communities

Six nationally listed ecological communities are predicted to occur within 10 kilometres of the study area (DAWE 2021):

- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions;
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia;
- Mallee Bird Community of the Murray Darling Depression Bioregion;
- Natural Grasslands of the Murray Valley Plains;
- Plains Mallee Box Woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions; and
- White Box-Yellow Box-Blakeley's Red Gum Grassy Woodland and Derived Native Grassland.

The cover/abundance method undertaken in localised quadrats during the site visit is not suitable to determine quality and condition of native vegetation within the study area, and therefore the presence or otherwise of Ecological Communities.

State

Aboriginal Heritage Act 2006

The *Aboriginal Heritage Act 2006* (the Act) protects Aboriginal heritage in Victoria. The Act specifies that a Cultural Heritage Management Plan (CHMP) is required for certain development activities, and construction cannot proceed until the activity area has been assessed by a qualified Heritage Advisor and members of the local Aboriginal community via a RAP. A CHMP is used to assess the Aboriginal heritage and manage any impacts to the heritage. In some circumstances, a CHMP may not be required but consultation should always take place with the Traditional Owners via the RAP. Harm to all cultural heritage places must be avoided. A permit is required to harm or impact any cultural heritage place if a CHMP is not required. There are significant penalties if harm to Aboriginal heritage takes place without permission.

The Act also protects Intangible Heritage. Intangible heritage can only be determined by the Traditional Owners.

1.1.1 Aboriginal Cultural Heritage Places in the Area

Aboriginal cultural heritage Places (sites) take many forms. The most commonly found archaeological sites include stone artefact scatters, culturally scarred trees and shell middens. In certain circumstances Aboriginal burials may also be present. Any works must take into account the highly sensitive cultural sites that surround the lake. Consultation must take place with the local RAP.

Flora and Fauna Guarantee Act 1988 (FFG Act)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (i.e. Walkers Lake).

The VBA contains records of nine state significant flora species and 13 State significant fauna species previously recorded within 10 kilometres of the study area (DELWP 2021a) (Figure 4). Of these flora species, Spiny Lignum *Muehlenbeckia horrida* subsp. *horrida* was recorded in the study area during the site visit.

Fine–hairy Spear–grass *Austrostipa puberula* has not previously been recorded within 10 kilometres of the study area according to the VBA and was recorded during the site visit. Scaly Mantle *Eriochlamys squamata* – also not previously recorded within 10 kilometres of the study area according to the VBA – was recorded adjacent to the study area and is considered likely to be present within the study area. No other state significant flora species are considered likely to occupy the study area. Of the state significant fauna species previously recorded within 10 kilometres of the study area, Hardhead *Aythya australis* is considered to have a moderate likelihood of occupying the study area, with the species likely to visit the study area regularly given the study area contains some characteristics of the species' preferred habitat.

An FFG Act permit will be required for removal of listed species recorded at Walkers Lake, including Spiny Lignum *Muehlenbeckia horrida* subsp. *horrida,* Fine–hairy Spear–grass *Austrostipa puberula* and Scaly Mantle *Eriochlamys squamata*.

Catchment and Land Management Act 1994 (CaLP Act)

The *Catchment and Land Protection Act 1994* (CaLP Act) contains provisions relating to catchment planning, land management, noxious weeds and pest animals. Landowners are responsible for the control of any infestation of noxious weeds and pest fauna species to minimise their spread and impact on ecological features.

Flora recorded at Walkers Lake that are noxious weeds listed under the CaLP Act include Stemless Thistle *Onopordum acaulon*, Horehound *Marrubium vulgare*, Spear Thistle *Cirsium vulgare*, while one Weed of National Significance (WONS) was recorded*:* African Box-thorn *Lycium ferocissimum* (Blue Devil 2020).

Similarly, there is evidence that Walkers Lake is currently occupied by pest fauna species listed under the CaLP Act such as European rabbit *Oryctolagus cuniculus*. Landholders are required to take reasonable measures under the CaLP Act to remove and manage pest species as far as possible. The State and Local authorities are also responsible for removing State prohibited weeds for land in Victoria.

Guidelines for the Removal, Destruction or Lopping of Native Vegetation

Under the *Planning and Environment Act 1987,* Clause 52.17 of the Planning Schemes requires a planning permit from the relevant local Council to remove, destroy or lop native vegetation. The assessment process for the clearing of vegetation follows the 'Guidelines for the removal, destruction or lopping of native vegetation' (the Guidelines) (DELWP 2017a).

The Guidelines manage the impacts on biodiversity from native vegetation removal using a risk-based approach. Two factors – extent risk and location risk – are used to determine the risk associated with an application for a permit to remove native vegetation. The location risk (1, 2 or 3) has been determined for all areas in Victoria and is available on DELWP's Native Vegetation Information Management (NVIM) Tool (DELWP 2021a). Determination of risk-based pathway is summarised in Table .

Table 1. Risk-based pathways for applications to remove native vegetation (DELWP 2021a)

Extent		Location		
		1	2	3
Native Vegetation	< 0.5 hectares	Low	Low	High
	≥ 0.5 hectares and more than one large old tree	Low	Moderate	High
	≥ 1 hectare	Moderate	High	High

Notes: For the purpose of determining the risk-based pathway of an application to remove native vegetation the extent includes any other native vegetation that was permitted to be removed on the same contiguous parcel of land with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before an application to remove native vegetation is lodged.

Any application to remove, destroy or lop native vegetation within Walkers Lake reserve is assessed under this decision pathway by the Responsible Authority. Applications under higher assessment pathways are required to show increased effort to minimise impacts.

Heritage Act 2017

The *Heritage Act 2017* ('the Act') and Heritage Regulations 2017 ('the Regulations'), enacted on 1 November 2017, provide for the protection and management of all historical archaeological sites in Victoria. The Act and the Regulations specify the requirements for reporting archaeological surveys and the discovery of sites

The Act defines an archaeological site as: a place (other than a shipwreck) which —

a. contains an artefact, deposit or feature which is 75 or more years old; and
b. provides information of past activity in the State; and requires archaeological methods to reveal
c. information about the settlement, development or use of the place; and
d. is not associated only with Aboriginal occupation of the place

Victoria Heritage Register

This Act protects all heritage Places deemed to be of State significance by registration on the VHR. Proposed impacts to any site registered on the VHR will require Permit from Heritage Victoria. If an archaeological site is of State significance it is listed on the VHR and a Permit from HV is required to damage it.

Victoria Heritage Inventory

The Heritage Inventory is a listing of all known sites that have more than a low level of archaeological significance. If an archaeological site is not of State significance and has archaeological value it is usually listed on the VHI and a Consent from HV would be required to damage it.

There are no known recorded historical places recorded in the area. In accordance with the *Heritage Act 2017* s.127 if a historical archaeological Place is discovered during an investigation of the land for a relevant survey purpose, the person undertaking the investigation or survey must provide a site card to Heritage Victoria within 30 days after the discovery. A relevant survey purpose is defined in s. 3 (a) finding an archaeological site and (b) of the *Heritage Act 2017* as preparing a cultural heritage management plan (CHMP).

It is recommended a Heritage Consultant is engaged if a Heritage Place on the VHI or VHR is located within the Site.

Wildlife Act 1975

The *Wildlife Act 1975* (and associated Wildlife Regulations 2013) is the primary legislation in Victoria providing for protection and management of wildlife. Authorisation for habitat removal may be obtained under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958*, or under any other Act such as the *Planning and Environment Act 1987*. Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*, issued by DELWP.

Water Act 1989

The purposes of the *Water Act 1989* are manifold but (in part) relate to the orderly, equitable, efficient and sustainable use of water resources within Victoria. This includes the provision of a formal means of protecting and enhancing environmental qualities of waterways and their in-stream uses as well as catchment conditions that may affect water quality and the ecological environments within them.

A 'works on waterways' permit from the North Central CMA is likely to be required where any action impacts on Walkers Lake. Additionally, where structures are installed within or across waterways that potentially interfere with the passage of fish or the quality of aquatic habitat, these activities should be referred to DELWP with the North Central CMA included for comment.

Planning and Environment Act 1987

The *Planning and Environment Act 1987* outlines the legislative framework for planning in Victoria and for the development and administration of planning schemes. All planning schemes contain Heritage Overlays to protect heritage places deemed to be of local significance as well as native vegetation provisions at Clause 52.17 that deal with the protection of remnant vegetation.

Planning Zones and Overlays

One planning zone is present within the Walkers Lake reserve – Farm Zone (FZ), while no planning overlays are present.

Several Overlays are provided by the Victoria Planning Provisions for the protection and consideration of environmental planning matters, including Environmental Significance Overlay (ESO), Significant Landscape Overlay (SLO), and Vegetation Protection Overlay (VPO), in addition to land management overlays, including Erosion Management Overlay (EMO). Several of which may be suitable for potential use at Walkers Lake.

Overlays are incorporated into municipal Planning Schemes by each local government and in combination with land zoning establish land usage and development controls. The use of overlays to facilitate an additional level of guidance and policy regarding local environmental matters is becoming increasingly important and widespread across municipalities.

Walkers Lake Action Plan

Issue	Ecological and Cultural Heritage Context/Implications	Actions	Timeline	Responsibility
1. Ensuring high water security for supply to the lake	See 5.1 Water Security and Sustainable Water Levels' sub-heading for more detail.	1. Maintain membership with GWM Water with meetings every 6-12 months.	Ongoing	Council
2. Long term sustainability of water supply and infrastructure	See 5.1 Water Security and Sustainable Water Levels' sub-heading for more detail.	1. Maintain membership with GWM Water with meetings every 6-12 months. 2. Continue to seek assistance from government and non-government in sourcing funding and grants for managing Walkers Lake.	Ongoing	Council
3. Maintaining levels for recreation and biodiversity management	Due to significant changes in the hydrological regime (i.e. converting it from an ephemeral lake to permanently full), the ecological condition of the lake and surrounding vegetation is likely to severely degrade in the future if management actions are not taken. See 5.1 Water Security and Sustainable Water Levels' sub-heading for more detail.	1. Maintain membership with GWM Water with meetings every 6-12 months. 2. Monitor ecological impacts of the recently altered hydrological regime and investigate options for creating a formal in-flow or out-flow of water if necessary, to conserve the ecological values of Walkers Lake. 3. Review and renew partnership opportunities with the North Central CMA where appropriate. 4. Involve Dja Dja Wurrung in management considerations.	Ongoing	Council with the assistance of GWM Water, North Central CMA
4. Continued fish stocking and suitable sustainable environment for aquatic life/fish	VRFish manage annual fish stocking in the lake. Blue Green Algae outbreaks occur nearly annually, leading to low water quality and mass fish kills. GWMWater manage the outbreaks in the region. See 5.2 Fish Stocking and Sustainable Aquatic Life' sub-heading for more detail.	1. Maintain relationship with VRFish to manage fish stocking annually between January and March. 2. Maintain membership with Regional Blue Green Algae Coordinator (GWM Water) to ensure outbreaks are managed and regulations are up to date. 3. Potential investigations into a more natural water flow system at Walkers Lake if Blue Green Algae outbreaks increase in frequency or duration in the future. 4. Engagement with Dja Dja Wurrung on cultural significant species to be considered for stocking.	Ongoing	Council and Advisory Group and the RAP with the assistance of VRFish and/or Victorian Fisheries Authority, GWM Water

Issue	Ecological and Cultural Heritage Context/Implications	Actions	Timeline	Responsibility
5. Poor recreational visitor experience	See 5.3 Improving Visitor Experience and Education' sub-heading for more detail.	1. Offer educational biodiversity /guided nature walks and Aboriginal cultural heritage walks during off peak periods initially to ensure conflict is mitigated. 2. The RAP must run the cultural heritage walks if they choose to undertake them and/or consult with Dumawul (a Dja Dja Wurrung enterprise) for cultural tourism opportunities. 3. Install educational signage highlighting biodiversity and cultural heritage values, wildlife in the area, etc. to engage visitors with their environment with consultation with Dja Dja Wurrung. 4. Provide signage depicting the history of the lake and its environs including recreational, cultural and ecological history. 5. Provide signage relating to recreational opportunities and overview of the rules and regulations at Walkers Lake, as well as advice on how to minimise your impact on the natural environment at the reserve. 6. Provide signage that assists in managing recreation such as safe boating, fishing, skiing, camping and general recreational activities	2022 / 2023	Council and Advisory Group with the assistance of Landcare and the RAP
6. Fire management - unattended, near trees, on tree roots, rubbish	Campfires are currently built outside of designated campfire pits under unsafe conditions (e.g. near trees or on tree roots, on total fire ban days, or left unattended). This increases the risk of grassfires spreading and damaging native vegetation, while the unrestricted building of fires increases the extent of habitat impacted by fire. See 5.4 Regulating Campfires and Firewood Collection' sub-heading for more detail.	1. Create more designated fire pits to meet demand – visitors would be less likely to start fires in inappropriate locations if campfire pits are available. 2. Review the inclusion of permitting portable fire pits for use by campers. Portable is defined as steel construction, foldaway and is not to be left on site for use by other campers. 3. Add/increase signage to remind visitors of campfire safety and restrictions – e.g. no fires on total fire ban days, not to leave fires unattended, to only build fires in designated fire pits, etc.	2022 / 2023	Council and Advisory Group and the RAP
7. Improving visitors experience, camping options and maintaining relative	See 5.3 Improving Visitor Experience and Education' sub-heading for more detail.	1. Provide more educational resources, fire pits, designated campgrounds, walking tracks, etc. – but keeping in mind to limit visitor capacity to not create an unsustainable use of the reserve.	2022 / 2023	Council and Advisory Group and the RAP

Issue	Ecological and Cultural Heritage Context/Implications	Actions	Timeline	Responsibility
infrastructure for users		2. Investigate infrastructure that would add to the experience and management of the reserve including waste (dump point), shelter, signage, furniture and facilities. 3. Dja Dja Wurrung to be consulted during all stages of concepts and development of infrastructure.		
8. Effectively managing increased visitors	Increased visitors will increase impacts to the environment. More amenities (e.g. toilets, campsites, other facilities) may be required to cope with the demand, however, should be restricted to maintain a sustainable use of the reserve. See 5.3 Improving Visitor Experience and Education' sub-heading for more detail.	1. Restrictions on numbers of available campsites, etc. Could implement an online booking system with a small cost to maintain a limited number of available campsites. 2. Engage with Dja Dja Wurrung on revenue opportunities to support ongoing maintenance.	Ongoing	Council and Advisory Group
9. Damage caused by camping and vehicle access	Damage to the environment from camping (e.g. impacts to habitat and vegetation loss) is currently spread throughout the park, due to having no designated campsites or restrictions. Unregulated 4WD or off-road vehicle use can create informal tracks (particularly in high traffic areas), increase erosion and damage vegetation/habitat. See 5.5 Managing Long-term Camping and Vehicle Use' sub-heading for more detail.	1. Create designated spaces for camping (e.g. marking camping spaces with numbers/rope fences, firepits, picnic tables, etc.). 2. Establish formal vehicle access tracks to discourage off-road driving. 3. Introduce further measures to discourage off-road vehicle use and camping where needed. Placement of bollards/wire fencing in areas with high instances of off-track 4wd or vehicle use or to protect vulnerable habitat and heritage places.	2022 / 2023	Council and Advisory Group with the assistance of Landcare and the RAP
10. Managing long term camping	See 5.5 Managing Long-term Camping and Vehicle Use' sub-heading for more detail.	1. Develop and create enforceable rules around timeframes for maximum lengths of stay for camping. 2. Investigate an appropriate management structure for Council to routinely monitor the site for long-term campers.	Ongoing	Council and Advisory Group
11. Illegal and unauthorised removal and use of wood for fires and other uses	Collecting branches, sticks and large fallen logs for firewood removes valuable habitat for a wide range of flora and fauna. See 5.4 Regulating Campfires and Firewood Collection' sub-heading for more detail.	1. Install signs to inform visitors of illegal collection of firewood and impacts to wildlife/habitat loss. 2. Add DELWP phone number to sign for reporting illegal collection. 3. Encourage visitors to bring their own firewood. 4. Monitor for illegal or unauthorised firewood collection.	Ongoing	Council and Advisory Group with the assistance of DELWP

Issue	Ecological and Cultural Heritage Context/Implications	Actions	Timeline	Responsibility
		5. Consider how we best plan for protection of scar trees and other important cultural heritage sites.		
12. Providing environment for the maximum health and wellbeing of the visitors	See 5.3 Improving Visitor Experience and Education' sub-heading for more detail.	1. Investigate the introduction of an online and phone booking system for reservation of camp sites. 2. Provide signage highlighting important biodiversity (e.g., Growling Grass Frog) and wayfinding (e.g. campsite numbers, no-go zones). 3. Trial 'Biodiversity Walks' and other guided activities at the lake and ensure sufficient policing of anti-social behaviour (e.g., ranger supervision) 4. Create designated spaces for camping (e.g., marking camping spaces with numbers/rope fences, firepits, picnic tables, regeneration works etc.). 5. Establish formal vehicle access tracks to discourage off-road driving. 6. Consult with Dja Dja Wurrung on opportunities in coordinating, partnering activities and advice.	Ongoing	Council and Advisory Group with the assistance of Landcare
13. Providing adequate infrastructure for recreational fishing	Would encourage fishing within a specific area rather than being spread around the whole lake, potentially impacting GGF habitat, etc. See 5.3 Improving Visitor Experience and Education' sub-heading for more detail.	1. Possible construction of a pier/s for fishing. Include signage to remind recreational fishers of VR Fishing guidelines. 2. Investigate the protection of local ecology and cultural heritage sites, to encourage recreation fishers to bring their own legal bait rather than foraging in the reserve.	2022 / 2023	Council and Advisory Group with the assistance of VRFish and/or Victorian Fisheries Authority
14. Managing vermin, pest and weeds	See 5.6 Pest Animal and Weed Management' sub-heading for more detail.	1. Conduct detailed pest and weed survey of the study area. 2. Manage and treat WONS and noxious weeds on-site where possible.	2022	Council, Advisory Group and Landcare with the assistance of licenced weed removers

Issue	Ecological and Cultural Heritage Context/Implications	Actions	Timeline	Responsibility
15. Managing native flora and fauna	See 5.7, 5.8 Managing Native Flora and Fauna' sub-heading for more detail.	1. Prohibiting firewood cutting: the installation of relevant signage and investigation into potential on-site provision of firewood for visitors during peak visitor periods. 2. Monitoring individual tree health and restricting access to significant and/or unhealthy large trees. 3. Encouraging camping and camping recreational activities to occur in designated areas, away from significant flora and fauna and heritage places, through signage and the provision of additional fire pits. 4. Regeneration of flora consistent with mapped EVCs, including the restoration of Growling Grass Frog habitat. This could be achieved through a combination of planting and bio-mass reduction burn restoration methods to utilise native seed bank. 5. Investigate the impacts to biodiversity of the recent change in hydrological regime at Walker's Lake to permanent rather than ephemeral 6. The RAP to advise on the presence of cultural places including trees to ensure harm does not take place. 7. Investigate the protection of local ecology and cultural heritage sites, to encourage recreation fishers to bring their own legal bait rather than foraging in the reserve.	2022 / 2023	Council, Advisory Group and Landcare with the assistance of a qualified arborist and ecologist and the RAP
16. Managing Aboriginal cultural heritage places and values	There are numerous recorded Aboriginal heritage places and the area around the lake is considered to be a cultural landscape with high significance for the Traditional Owners who are represented by the RAP. Ensure water levels do not cause harm to cultural heritage.	1. Ensuring the RAP are consulted about any potential works such as (but not limited to) fuel reduction activities, native vegetation clearance, fire pit locations, ramps, tracks in and out of the area, toilet blocks and signage. 2. Ensuring that consultation with the RAP takes place consistently throughout the management of the area to ensure protection of the heritage places and values. 3. Ensuring the RAP are consulted about culturally appropriate content being included in visitor signage. 4. Ongoing monitoring with Dja Dja Wurrung.	2022/2023	Council, Advisory Group and Landcare and the RAP

Issue	Ecological and Cultural Heritage Context/Implications	Actions	Timeline	Responsibility
		5. Working with Dja Dja Wurrung to establish a suitable Aboriginal Land Management Agreement (LUAA)		
17. Undergrowth destroyed and foreshore erosion	See 5.7 Managing Native Flora and Fauna' sub-heading for more detail.	1. Establish formal vehicle access tracks to discourage off-road driving. 2. Introduce further measures to discourage off-road vehicle use and camping where needed. Placement of bollards/wire fencing in areas with high instances of off-track 4wd or vehicle use or to protect vulnerable habitat.	2022 / 2023	Council, Advisory Group and Landcare and the RAP
18. Inability for council to sustain financial support and resourcing for management of the reserve	See 5.7 Managing Native Flora and Fauna' sub-heading for more detail.	1. Continue to seek assistance from government and non-government in sourcing funding and grants for managing Walkers Lake. 2. Continue to support the existing volunteer group – Friends of the Avon Plains Lakes. Avon Plains Banyena Landcare. 3. Promote further community involvement in the volunteer group – e.g. social media, flyers at the reserve, etc. 4. Possibly introduce small fee for camping or accept donations for maintenance of reserve. 5. Explore joint management arrangements with traditional owners.	Ongoing	Council
19. Visitors not aware of the ecological values of the reserve	Need to educate and improve visitor understanding of the reserve's ecological values – e.g. local flora and fauna/GGF. May allow visitors to use the space more respectfully and in a more environmentally conscious manner. See 5.3 Improving Visitor Experience and Education' sub-heading below for more detail.	1. Install information signs to highlight ecological values of reserve. 2. Have a park ranger visit the reserve on occasion to establish a presence to visitors, provide further educational information to visitors.	2022 / 2023	Council and Advisory Group and the RAP
20. Visitors not aware of the cultural values of the reserve	Need to educate and improve visitor understanding of the reserve's cultural values. May allow visitors to use the space more respectfully and in a more environmentally conscious manner.	1. Install information signs to highlight cultural values of reserve. 2. Have the RAP and a Park Ranger visit the reserve on occasion to establish a presence to visitors, provide further educational information to visitors.	2022 / 2023	Council and Advisory Group and the RAP

Issue	Ecological and Cultural Heritage Context/Implications	Actions	Timeline	Responsibility
21. Management of Growling Grass Frog habitat and resident population	GGF habitat needs to be protected for resident population – risk of vegetation loss/damage along lake banks due to recreational activities, erosion, etc. Blue-green algae outbreaks pose a risk to water quality and need to be managed to protect GGF. See 5.8 Growling Grass Frogs' sub-heading below for more detail.	1. Control/monitor recreational usage of lake edges near important areas of fringing vegetation/GGF habitat. 2. Install educational signs to inform the public about GGF and their habitat. 3. Support the annual water inflows to maintain a healthy resident population.	2022 / 2023	Council and Advisory Group and the RAP

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Figures

Figure 1: Modelled EVC – Precinct 1

Figure 2: Sig flora – Precinct 1

Figure 3 Sig Fauna – Precinct 1

Appendix 1 - Flora

Appendix 1.1 - Significant Flora Species

Significant flora within 10 kilometres of the study area is provided in the Table A1.1.3 at the end of this section, with Tables A1.1.1 and A1.1.2 below providing the background context for the values in Table 1.1.3.

Table A1.4.1 Conservation status of each species for each Act. The values in this table correspond to Columns 5 and 6 in Table A1.1.3.

EPBC (*Environment Protection and Biodiversity Conservation Act 1999*):		FFG (*Flora and Fauna Guarantee Act 1988*):	
EX	Extinct	EX	Extinct
CR	Critically endangered	CR	Critically endangered
EN	Endangered	EN	Endangered
VU	Vulnerable	VU	Vulnerable
#	Listed on the Protected Matters Search Tool		

Table A1.4.2 Likelihood of occurrence rankings: Habitat characteristics assessment of significant flora species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area to determine their likelihood of occurrence. The values in this table correspond to Column 7 in Table A1.1.3.

1	Known Occurrence	• Recorded within the study area recently (i.e. within ten years).
2	High Likelihood	• Previous records of the species in the local vicinity; and/or, • The study area contains areas of high-quality habitat.
3	Moderate Likelihood	• Limited previous records of the species in the local vicinity; and/or • The study area contains poor or limited habitat.
4	Low Likelihood	• Poor or limited habitat for the species, however other evidence (such as lack of records or environmental factors) indicates there is a very low likelihood of presence.
5	Unlikely	• No suitable habitat and/or outside the species range.

Table A1.1.3. Significant flora recorded within 10 kilometres of the study area.

Scientific name	Common name	Last documented record	Total # of documented records	EPBC	FFG	Likely occurrence in study area
NATIONAL SIGNIFICANCE						
Amphibromus fluitans #	River Swamp Wallaby-grass	-	-	VU	-	4
Caladenia tensa #	Greencomb Spider-orchid	-	-	EN	-	5
Lepidium monoplocoides #	Winged Peppercress	-	-	EN	en	4
Lepidium pseudopapillosum #	Erect Peppercress	-	-	VU	cr	5
Pimelea spinescens subsp. pubiflora #	Wimmera Rice-flower	-	-	CR	cr	5
Pimelea spinescens subsp. spinescens #	Spiny Rice-flower	-	-	CR	cr	4
Senecio macrocarpus #	Large-headed Fireweed	-	-	VU	cr	5
Maireana cheelii	**Chariot Wheels**	**1991**	**1**	**VU**	**en**	**1**
Sclerolaena napiformis	**Turnip Copperburr**	**2018**	**20**	**EN**	**cr**	**1**
STATE SIGNIFICANCE						
Allocasuarina luehmannii	Buloke	2014	12	-	vu	3
Amyema linophylla subsp. orientalis	Buloke Mistletoe	2002	5	-	cr	4
Calotis anthemoides	Cut-leaf Burr-daisy	1990	1	-	cr	3
Cycnogeton dubium	Slender Water-ribbons	1996	1	-	en	3
Duma horrida subsp. horrida	**Spiny Lignum**	**2012**	**4**	**-**	**cr**	**1**
Nymphoides spinulosperma	Marbled Marshwort	1996	10	-	en	3
Ptilotus erubescens	Hairy Tails	2000	3	-	cr	3
Ranunculus undosus	Swamp Buttercup	1990	2	-	en	4
Swainsona swainsonioides	Downy Swainson-pea	1875	1	-	en	5

Data source: Victorian Biodiversity Atlas (DELWP 2022); Protected Matters Search Tool (DAWE 2022).

Appendix 2 - Fauna

Appendix 2.1 - Significant Fauna Species

Significant fauna within 10 kilometres of the study area is provided in the Table A2.1.3 at the end of this section, with Tables A2.1.1 and A2.1.2 below providing the background context for the values in Table 2.1.3.

Table A2.1.1 Conservation status of each species for each Act/Plan. The values in this table correspond to Columns 5 to 7 in Table A2.1.3.

EPBC (*Environment Protection and Biodiversity Conservation Act 1999*):		FFG (*Flora and Fauna Guarantee Act 1988*):	
EX	Extinct	EX	Extinct
CR	Critically endangered	CR	Critically endangered
EN	Endangered	EN	Endangered
VU	Vulnerable	VU	Vulnerable
CD	Conservation dependent	CD	Conservation dependent
#	Listed on the Protected Matters Search Tool		

Table A2.1.2 Likelihood of occurrence rankings: Habitat characteristics assessment of significant fauna species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area to determine their likelihood of occurrence. The values in this table correspond to Column 7 in Table A2.1.3.

1	High Likelihood	• Known resident in the study area based on site observations, database records, or expert advice; and/or, • Recent records (i.e. within five years) of the species in the local area (DELWP 2018); and/or, • The study area contains the species' preferred habitat.
2	Moderate Likelihood	• The species is likely to visit the study area regularly (i.e. at least seasonally); and/or, • Previous records of the species in the local area (DELWP 2021); and/or, • The study area contains some characteristics of the species' preferred habitat.
3	Low Likelihood	• The species is likely to visit the study area occasionally or opportunistically whilst en route to more suitable sites; and/or, • There are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or, • The study area contains few or no characteristics of the species' preferred habitat.
4	Unlikely	• No previous records of the species in the local area; and/or, • The species may fly over the study area when moving between areas of more suitable habitat; and/or, • Out of the species' range; and/or, • No suitable habitat present.

Table A2.1.3 Significant fauna recorded within 10 kilometres of the study area.

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	Likely occurrence in study area
NATIONAL SIGNIFICANCE						
Calidris ferruginea #	Curlew Sandpiper	-	-	CR	cr	4
Delma impar #	Striped Legless Lizard	-	-	VU	en	3
Falco hypoleucos #	Grey Falcon	-	-	VU	vu	4
Grantiella picta #	Painted Honeyeater	-	-	VU	vu	4
Hirundapus caudacutus #	White-throated Needletail	-	-	VU	vu	4
Leipoa ocellate #	Malleefowl	-	-	VU	vu	4
Nyctophilus corbeni #	South-eastern Long-eared Bat	-	-	VU	en	4
Pedionomous torquatus #	Plains-wanderer	-	-	CR	cr	4
Polytelis anthopeplus monarchoides #	Regent Parrot	-	-	VU	vu	4
Pteropus poliocephalus #	Grey-headed Flying-fox	-	-	VU	vu	4
Rostratula australis #	Australian Painted-snipe	-	-	EN	cr	4
Synemon plana #	Golden Sun Moth	-	-	CR	vu	3
Botaurus poiciloptilus	Australasian Bittern	1992	1	EN	cr	4
Lathamus discolor	Swift Parrot	1994	1	CR	cr	3
Limosa lapponica	Bar-tailed Godwit	1986	1	VU	vu	4
Litoria raniformis	**Growling Grass Frog**	**2008**	**8**	**VU**	**vu**	**1**
Maccullochella peelii	Murray Cod	1998	1	VU	en	4
Numenius madagascariensis	Eastern Curlew	1960	1	CR	cr	4
STATE SIGNIFICANCE						
Actitis hypoleucos	Common Sandpiper	2017	1	-	vu	3

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	Likely occurrence in study area
Antigone rubicunda	Brolga	2004	47	-	en	3
Ardea intermedia plumifera	Plumed Egret	1999	1	-	cr	3
Aythya australis	Hardhead	1999	19	-	vu	2
Biziura lobata	Musk Duck	1999	44	-	vu	3
Egretta garzetta	Little Egret	1993	1	-	en	3
Falco subniger	Black Falcon	1978	1	-	cr	4
Haliaeetus leucogaster	White-bellied Sea-Eagle	1999	1	-	en	4
Ninox connivens	Barking Owl	1994	1	-	cr	4
Oxyura australis	Blue-billed Duck	1998	13	-	vu	4
Spatula rhynchotis	Australasian Shoveler	2017	23	-	vu	3
Stictonetta naevosa	Freckled Duck	1991	1	-	en	4
Tringa stagnatilis	Marsh Sandpiper	1986	1	-	en	4

Data source: Victorian Biodiversity Atlas (DELWP 2021a); Protected Matters Search Tool (DAWE 2021).

Appendix 2.2. - Fauna Results

Legend:

* = Non-native species;
S = Seen;
H = Heard;

Table A1.1. Fauna observed within the study area.

Common name	Scientific name	Observation type
BIRDS		
Australasian Grebe	*Tachybaptus novaehollandiae*	S
Australian Magpie	*Gymnorhina tibicen*	S
Australasian Shelduck	*Tadorna tadornoides*	S
Australian Raven	*Corvus coronoides*	S
Black-fronted Dotterel	*Elseyornis melanops*	S
Black-winged Stilt	*Himantopus himantopus*	S
Common Starling*	*Sturnus vulgaris*	S
Galah	*Eolophus roseicapilla*	S
Grey Shrike Thrush	*Colluricincla harmonica*	S
Grey Teal	*Anas gracilis*	S
Laughing Kookaburra	*Dacelo novaeguineae*	S
Little Corella	*Cacatua sanguinea*	S
Masked Lapwing	*Vanellus miles*	S
Nankeen Kestrel	*Falco cenchroides*	S
Noisy Miner	*Manorina melanocephala*	S
Pacific Black Duck	*Anas superciliosa*	S
Sacred Kingfisher	*Todiramphus sanctus*	S
Red-rumped Parrot	*Psephotus haematonotus*	S
Superb Fairywren	*Malurus cyaneus*	S
White-faced Heron	*Egretta novaehollandiae*	S
Whiskered Tern	*Chlidonias hybrida*	S
AMPHIBIANS		
Growling Grass Frog	*Litoria raniformis*	H
Eastern Banjo Frog	*Limnodynastes dumerilii*	H

Appendix 3 – Cultural Heritage SensITIVITY Map

Appendix 4 – DHelkunya Dja Country Plan 2014-2034