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DRAFT Kooryunderup - Mount Hallowell Management Plan 2025 - 2035, Shire of Denmark, WA

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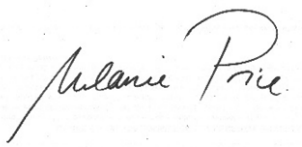
Author:	Melanie Price Principal Environmental Scientist		17 June 2025
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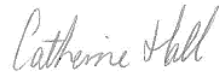
Reviewed by:	Dr Catherine Hall Senior Environmental Scientist		17 June 2025
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LIST OF ABBREVIATIONS

DBCA	Department of Biodiversity, Conservation and Attractions
DEC	Department of Environment and Conservation
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation
M AHD	metres Australian Height Datum
SWALSC	South West Aboriginal Land and Sea Council

ACKNOWLEDGEMENTS

We wish to acknowledge the traditional custodians of the land that supports Kooryunderup – Mount Hallowell and its surrounding landscape. The people of the Noongar Nation were the first to protect and manage this rich area. We respect their continuing culture and their contribution to the care of this land.

Thanks to the Shire of Denmark staff, community stakeholder organisations, groups and individuals who have provided advice, expertise, diverse perspectives and local insights in developing this management plan.

EXECUTIVE SUMMARY

Kooryunderup - Mount Hallowell is an iconic reserve located between the town of Denmark and the Southern Ocean in Western Australia. With sweeping views, natural bushland and majestic granite domes and tors, the reserve is much loved and visited by locals and tourists in increasing numbers. It can be accessed from Ocean Beach Road to the east and Lights Road to the south and is traversed by the Sheila Hill Memorial Trail, which forms a section of the Bibbulmun Track.

The purpose of this management plan is to guide sustainable use and management of the Reserve where conservation, culture and heritage are the key goals. Where recreation is compatible with these goals, low key activities such as walking, hiking and nature appreciation are supported.

Management goals include:

1. Conservation: The primary goal of managing the reserve is to protect natural biodiversity through sound management of threatening processes.
2. Recreation and infrastructure: Low-key passive recreation activities such as walking and hiking will be encouraged where they will not impact the conservation values of the Reserve.
3. Fire management: The goal is to protect the Reserve's environmental values and the lives and property of surrounding landowners through best-practice fire management and active wildfire suppression**.**
4. Culture and Heritage: Kooryunderup—Mount Hallowell is a significant cultural and heritage site for Traditional Custodians, and it will be managed to protect these values.
5. Community engagement, research and education: As an area rich in biodiversity, the goal is to raise awareness of the Reserve's intrinsic and educational value while promoting ongoing citizen science and other research initiatives.
6. Land use planning and compliance: With threats such as fire, the introduction and spread of dieback, user safety, and management of neighbouring properties, land use planning and compliance outcomes must be achieved.

Consultation and site assessment during the management plan review process indicates that:

Conservation

- Kooryunderup is highly valued by the community, with conservation and biodiversity values perceived as the most significant management consideration for the Reserve.

Recreation and Infrastructure

- The community supports low-key and passive pursuits, including walking dogs on leashes (but not on the Bibbulmun Track), hiking (Bibbulmun Track and Sheila Hill Trail), nature appreciation and birdwatching.
- The Sheila Hill Memorial Trail is poorly delineated and the alignment may include all or part of the Bibbulmun Track.
- The majority of stakeholders do not support any mountain bike use, including the informal mountain bike trails in the eastern portion of the Reserve.

- Whilst acknowledging that additional bike trails or an expanded trail network are not suitable responses for Mount Hallowell, the staff at the Shire have flagged limitations with completely prohibiting cycling within the Reserve. Officers cite that it isn't realistically enforceable (or justified from an environmental protection or safety perspective) to ban cycling on emergency access tracks along certain parts of the Reserve boundary, so accepting this practice (particularly given the high future likelihood of it continuing) will reduce uncertainty and the potential conflict between different user groups. The Shire is seeking feedback on options regarding cyclists in the Reserve through the advertising of this draft management plan.
- Some existing assets supporting these low-impact recreational activities need formalising and/or upgrading, including signage and car parks (Lights Beach Road and Sheila Hill Trail Head).
- Signage is outdated and in poor condition. New signage should reflect a standard approach across the Shire.
- All trailhead signage needs to be updated. Safety information is currently absent from trailheads. Maps of the Reserve should be included in trailhead information.
- Wayfinding signage for the Sheila Hill Memorial trail is missing or in poor condition.
- Bibbulmun track wayfinding signage is present and in good condition.
- Access control to the Reserve is effective.

Fire Management

- Firebreak and emergency access tracks within the reserve are crucial for quick access should a fire threaten the reserve or another emergency affect users.
- The northern emergency access track is in good condition with turning and passing areas.
- Emergency access to Monkey Rock and behind Heather Road is highly eroded and unsafe. Drainage and gravel re-sheeting are required to bring these tracks to a serviceable standard.

Cultural Heritage

- Kooryunderup—Mount Hallowell is a significant cultural and heritage site for Traditional Custodians. Wagyl Kaip, in partnership with the Shire of Denmark and the local community, proposes to undertake a cultural heritage survey of the area.

Community Engagement, Research And Education

- There are opportunities to incorporate themed signage with interpretation at key points such as car parks/trailheads, Monkey Rock and the summit of Mount Hallowell (e.g. Cultural heritage, biodiversity, fire and Sheila Hill).

Land Use and Compliance

- Neighbouring landowners are using the Reserve adjacent to Heather Road. Private use of the reserve is less than ideal, with potential weed introduction and other risks associated with the personal use of a public space. However, the use has been long-term, and the Shire will need to work with landowners to develop an acceptable solution.

- The Local Law regarding dogs on leashes may need to be updated for Mount Hallowell so that dogs are prohibited on the Bibbulmun Track and must be on leashes in other parts of the Reserve.

1 CONTEXT

1.1 LOCATION, NAME AND TENURE

Mount Hallowell is an iconic reserve located 5 kilometres (km) southwest of the town of Denmark, 1.5 km from the coastline and 500 metres (m) from Wilson Inlet (Figure 1). With sweeping views, natural bushland, and majestic granite features, the reserve is much loved and visited by locals and tourists in increasing numbers. It can be accessed from the bordering Ocean Beach Road to the east and Lights Road to the south and is traversed by the Sheila Hill Memorial Trail, which forms a section of the Bibbulmun Track.

Kooryunderup - Mount Hallowell is designated under the *Land Administration Act 1997* (LAA) and comprises various land parcels, with the largest being Reserve 46618 (Figure 2; Table 1). It is classified as an A Class Reserve, the highest level of protection. To enable amendments, proposals must be advertised and potentially tabled in both Houses of Parliament. The Class A classification is solely intended to safeguard areas of high conservation or significant community value.

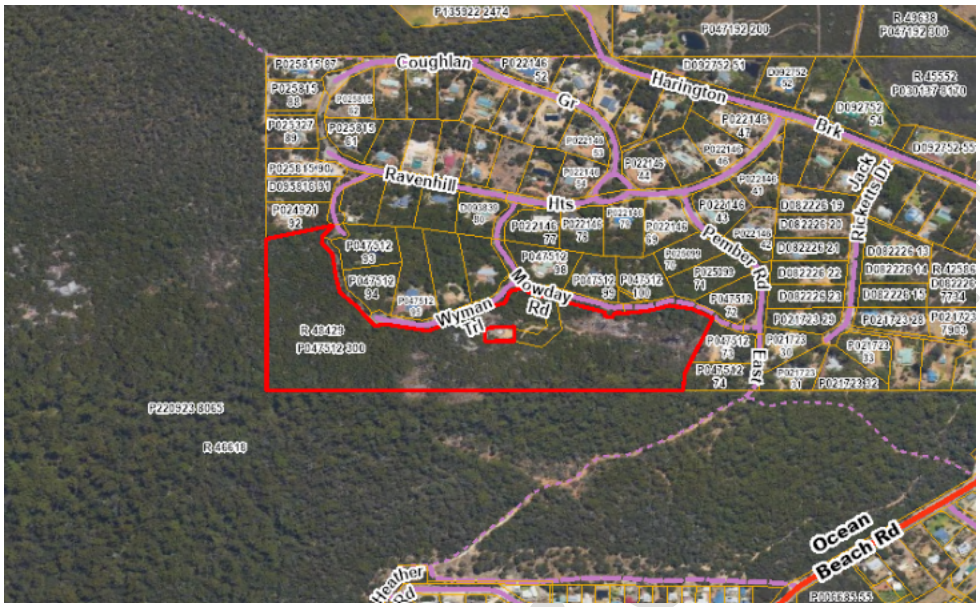
Kooryunderup – Mount Hallowell comprises 532.2409 hectares (ha) and has management orders in favour of the Shire of Denmark with the designated purpose of '*Conservation & Recreation'*. The management orders state that the reserve is to be managed in accordance with its Management Plan and used only for the designated purposes.

The summit of Mount Hallowell is contained within Reserve 14239 (Lot 7572 on Deposited Plan (DP) 187145) with an area of 4.0470 ha and a purpose of 'trigonometrical station'.

In 2024, the Shire of Denmark, with advice and support from the South West Aboriginal Land and Sea Council (SWALSC), the Wagyl Kaip Southern Noongar Aboriginal Corporation and the Wagyl Kaip Cultural Advice Committee, introduced dual naming of the Reserve as 'Kooryunderup – Mount Hallowell'. Kooryunderup means 'the place of many bush kangaroos'.

TABLE 1: KOORYUNDERUP – MOUNT HALLOWELL DETAILS

RESERVE	AREA	MANAGEMENT ORDERS	PURPOSE	DETAILS
Kooryunderup – Mount Hallowell Reserve 46618	532.2409 ha	Shire of Denmark	Conservation & Recreation	Volume 3083/3118 Folio 97/34.
				
The following land parcels are not included in this Management Plan, but management principles are expected to be implemented to complement the goals of the Kooryunderup Mount Hallowell reserve:				
Mount Hallowell Reserve 14239	4.0470 ha	Western Australian Land Information Authority	Trigonometrical Station	Lot 7572 on DP 187145
				

RESERVE	AREA	MANAGEMENT ORDERS	PURPOSE	DETAILS
Reserve 48429	9.344 ha		Public Recreation	Reserve Comprises Lot 300 on DP 47512 (J575775)
				
Reserve 32861	4.7684 ha		Public Recreation	Reserve comprises Lot 7633 on Plan 9060 & Lot 500 on DP 61028 (L051413) & Lot 300 on DP 61027 (L112968)
				

RESERVE	AREA	MANAGEMENT ORDERS	PURPOSE	DETAILS
Reserve 35464	2.2147 ha		Public Recreation	Lot 7415 on Plan 12356 and Lot 7785 on Plan 17570

1.2 BACKGROUND AND RESERVE HISTORY

A portion of the Mount Hallowell Reserve was originally gazetted as a timber reserve in 1913 and later as a Timber and National Park Reserve in 1927. Other areas were vested in the Shire of Denmark for recreational purposes and 27 ha were allocated for sand and gravel extraction.

On 14 May 2002, Reserves Numbers 12182, 14959, 18077, 30080, and 38844, along with vacant crown land south of Location 2897, were amalgamated into one A Class Reserve Number 46618, encompassing Plantagenet Locations 7560 and 8065 for conservation and recreation.

The summit of Mount Hallowell remains designated as Crown Land Reserve No. 14239 (Location 7572) for a trigonometrical station. A trigonometrical station, triangulation pillar, or trig point serves as a fixed surveying station for geodetic surveying and other surveying projects in nearby areas.

When the Reserve was amalgamated in 2002, it was named Mount Hallowell Nature Reserve. The Department of Land Information formally approved the technical conversion to Mount Hallowell Reserve for Reserve Number 46618 on 23 January 2008. According to the *Conservation and Land Management Act 1984*, the term 'Nature Reserve' is now exclusively used for reserves vested with the Department of Biodiversity, Conservation and Attractions (DBCA) for the conservation of flora and/or fauna.

1.3 PREVIOUS MANAGEMENT PLANS

In 1993, the Mount Hallowell Management Committee, composed of Shire Councillors and local residents, prepared a Draft Management Plan which:

- Aimed to manage the Reserve as a conservation priority area.
- Provided for bushwalking with scenic views while maintaining conservation priorities.
- Included a Fire Management Plan created by the Mount Hallowell Fire Management Group.

Following community consultation, the Plan was finalised and adopted by Council in 1995. The three key management goals in the 1993 draft were reiterated, and strategies were devised to meet these goals, with a revision of the Plan set to occur after five years.

In 2003, the Shire formed a community-based committee to review the Plan. Between 2003 and 2004, the Denmark Environment Centre conducted the Mount Hallowell Reserve Survey and Research Project, specifically aimed at providing information to support the goals of the 1995 Management Plan and contribute to its review.

The reviewed Plan was completed in 2006 and adopted by Council as the Mount Hallowell Reserve Management Plan in March 2006. The Plan incorporated information from the Mount Hallowell Reserve Survey and Research Project 2004 and updated other sections.

The flora, fungi, and fauna database developed from the Mount Hallowell Reserve Survey and Research Project 2004 aimed to facilitate measures for protecting and maintaining viable populations of existing flora and fauna species, particularly those with special status.

Some recommendations from these documents have been implemented, some have become redundant and outstanding matters are prioritised in this Plan of 2025.

1.4 PROJECT SCOPE AND OBJECTIVES

The objectives of the management plan review are:

- To review and audit the management actions of the 2008 plan.
- To assess the background information and conduct a literature review.
- To map all existing tracks and trails across the Reserve and identify their uses.
- To redefine the management goals in alignment with the Reserve's purpose of 'Conservation and Recreation.'
- To update management actions relevant to the management goals, opportunities, and constraints for conservation and recreation.

The scope of the management plan review includes:

- The preparation and implementation of a stakeholder engagement strategy.
- Meetings with key stakeholders to gather input on the future management of Kooryunderup – Mount Hallowell.
- The release of a survey to gather broader community input.
- Site visits to the Reserve for assessment, mapping, and planning for future management.
- The preparation of a stakeholder summary report, audit outcomes report, and a draft management plan report for consideration by the Denmark Shire Council.

- The draft management plan will be released for public comment and submissions.
- A final document will be presented to the Denmark Shire Council for adoption.
- The final document will be disseminated to the State Government for adoption in accordance with the Reserve's A Class status.

1.5 LAND USE AND INFRASTRUCTURE

Current recreational use of the Reserve includes walking, dog walking, nature appreciation and hiking. The Bibbulmun Track traverses the Reserve in an east-west direction (Figure 4) and the Sheila Hill Memorial Trail head is located in the east. There are unsanctioned informal mountain bike trails, primarily situated on the lower slopes in the south-eastern section of the Reserve (Figure 5).

Infrastructure in the Reserve includes:

- Emergency and fire access tracks;
- the Bibbulmun Track and the Sheila Hill Memorial Trail;
- Monkey Rock and Mount Hallowell Lookouts; and
- Car parks at Ocean Beach and Lights Beach Roads.

Kooryunderup – Mount Hallowell is reserved for 'Parks and Recreation' under the Shire of Denmark Local Planning Scheme No. 3 (Figure A).

Surrounding land uses and zones (Figure A) include:

- Residential land to the north, east and southeast (Zoned: Residential).
- Special Residential land to the north (Zoned: Special Residential 1).
- Rural small holdings and bush blocks to the south (Zoned: Special Rural 3 and Rural).
- Rural land to the north and west (Zoned: Rural).
- Wilson Inlet is less than 500 m to the east.

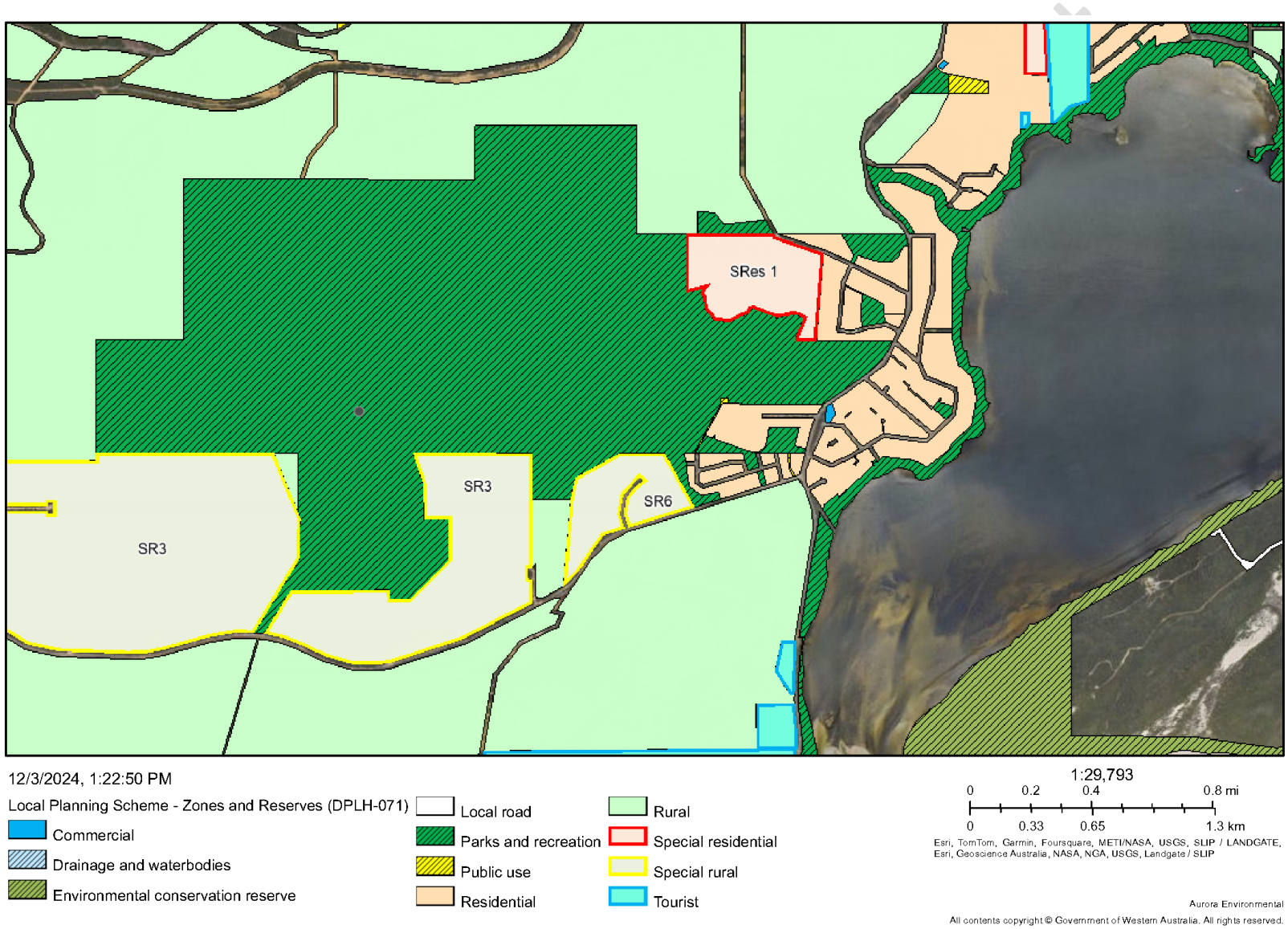
1.6 FIRE HISTORY

Apart from its high biodiversity and conservation values, the Reserve represents long-unburnt vegetation (Christensen and Abbott, 1989). The last reported significant fire over the majority of the Reserve was in 1937[1], making it one of the longest unburnt areas in the south west of Western Australia.

Over the past thirty years, residential development has occurred on the eastern and southern boundaries of the Reserve, leading to a program of fuel reduction burns on the north side of the Reserve. Since 1995, two small management burns have taken place on the north and south-east edges of the Reserve.

[1] The area was fire bombed in 1985 (DBCA pers comm.) but the area burnt was limited (local resident pers comm.).

FIGURE A: SHIRE OF DENMARK LOCAL PLANNING SCHEME NO. 3



1.7 ASSESSMENTS AND STUDIES

A range of assessments and studies have been undertaken in the Reserve, including:

- Report on Aboriginal Heritage Survey and Dieback on Ocean Beach and Mount Hallowell Mountain Bike Trail Network (2022).
- BioDiverse Solutions (2022) Vertebrate Fauna Assessment of Mount Hallowell. Prepared for the Shire of Denmark.
- Mount Hallowell Reserve 46618 Dieback Occurrence Survey (Great Southern Bio Logic, January 2021).
- Mount Hallowell Trails Concept Plan (June 2021).
- Flora and Vegetation Survey Report Part Reserve 46618 Mount Hallowell (2020).
- Vertebrate Fauna Assessment of Mount Hallowell (2020).
- Mount Hallowell Proposed Trail Development – public consultation report (2019).
- Structural Plant Community Survey, Mt Hallowell and Wilson Inlet Foreshore Reserves (McQuoid, 2012).
- A Guide to Macrofungi in the Shire of Denmark Mount Hallowell Reserves (2011).
- Wilson Inlet Foreshore & Mount Hallowell Reserves Fauna Survey (2011).
- Shire of Denmark Mount Hallowell Reserve Management Plan (2008).
- Patrick Gillespie (2011) Wilson Inlet Foreshore & Mount Hallowell Reserves Fauna Survey. Prepared for the Shire of Denmark.
- Denmark Environment Centre (2004) Mount Hallowell Survey and Research Project.

1.8 SHIRE OF DENMARK STRATEGIES AND MANAGEMENT FRAMEWORK

This Management Plan considers the Shire of Denmark Governance framework and incorporates concepts, policies, and strategies developed in consultation with the Denmark community. The framework includes:

Shire of Denmark Community Strategic Plan: Our Future 2033 (Shire of Denmark, 2023)

The review and update of the revised Mount Hallowell Reserve Management Plan is consistent with the Shire's Community Strategic Plan: Our Future (2033) which identifies environmental conservation and protection as one of three primary Shire service deliveries and lists the Mount Hallowell Reserve Management Plan as a key existing plan to turn our vision into action by operating as environmental custodians for the future.

Shire of Denmark Corporate Business Plan 2024 – 2028 (Shire of Denmark, 2024)

The Shire of Denmark Corporate Business Plan 2024 – 2028 identifies the review of the Mount Hallowell Management Plan for 2024/25.

Shire of Denmark Sustainability Strategy 2021 – 2031 (Shire of Denmark, 2021)

The Shire's Sustainability Strategy (2021-2031) supports protecting and enhancing natural systems with a Key Land and Nature objective to "Implement responsible and sustainable practices through policy development and land-use planning."

The Sustainability Strategy states:

We will protect and enhance our natural systems vital to our local community's sustainability. Strategies include:

- Implementation of responsible and sustainable practices through policy development and land-use planning.
- Prioritising protection of natural bushland habitats and ecosystems, including protection of waterways for nutrient control in agriculture, salinity control and riparian vegetation.
- Revegetation and rehabilitation of degraded environments.
- Supporting education of the broader community regarding protection of the natural environment.

2 EXISTING ENVIRONMENT

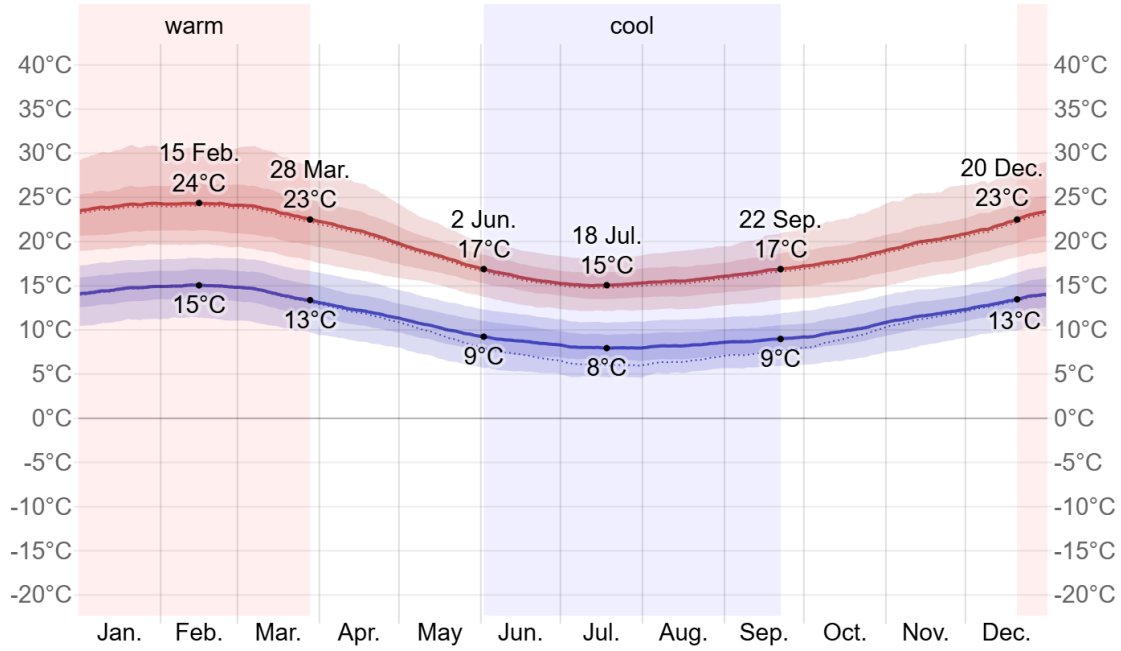
2.1 CLIMATE

The climate in the Denmark area is characterised as Mediterranean, with cool, wet winters and warm, dry summers (Figure B). The long-term average rainfall recorded at the Denmark Research Station from 1951 to 1984 is 1,000.1 mm (Figure C). However, slightly higher amounts can be expected on Mount Hallowell due to localised effects.

The southwest region of Western Australia is already experiencing the impacts of climate change, including declining annual rainfall, reduced wet season (winter and spring) rainfall, increased intensity of rainfall events, and a higher incidence of drought. These changes result in lower soil moisture, decreased runoff, and reduced groundwater recharge (DWER, 2021).

The decline in rainfall and runoff is likely to affect species that thrive in wet environments. Additionally, decreased rainfall heightens the risk of fire. Effective management of the Reserve in response to a changing climate must focus on building resilience by mitigating threats such as weeds, dieback, and other controllable stressors.

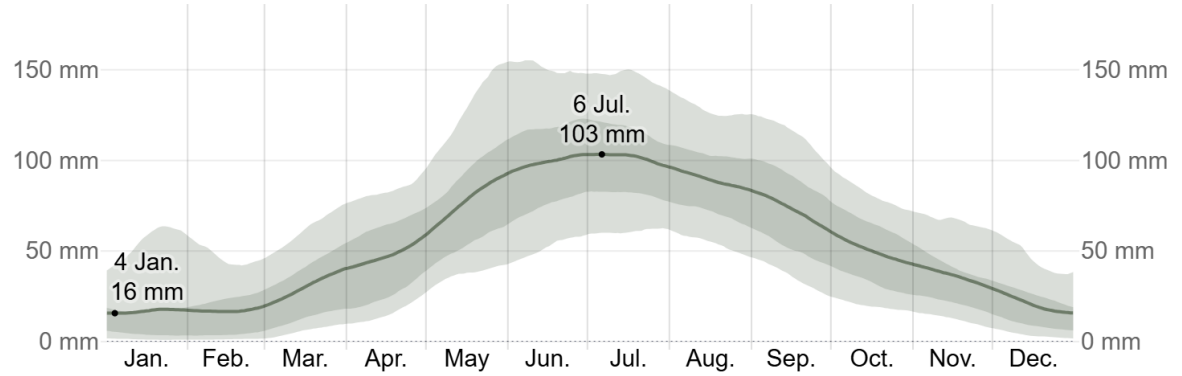
FIGURE B: AVERAGE HIGH AND LOW TEMPERATURES



Average	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
High	24°C	24°C	23°C	21°C	18°C	16°C	15°C	16°C	17°C	18°C	20°C	22°C
Temp.	19°C	19°C	18°C	16°C	14°C	12°C	11°C	12°C	12°C	14°C	15°C	17°C
Low	15°C	15°C	14°C	12°C	10°C	9°C	8°C	8°C	9°C	10°C	12°C	13°C

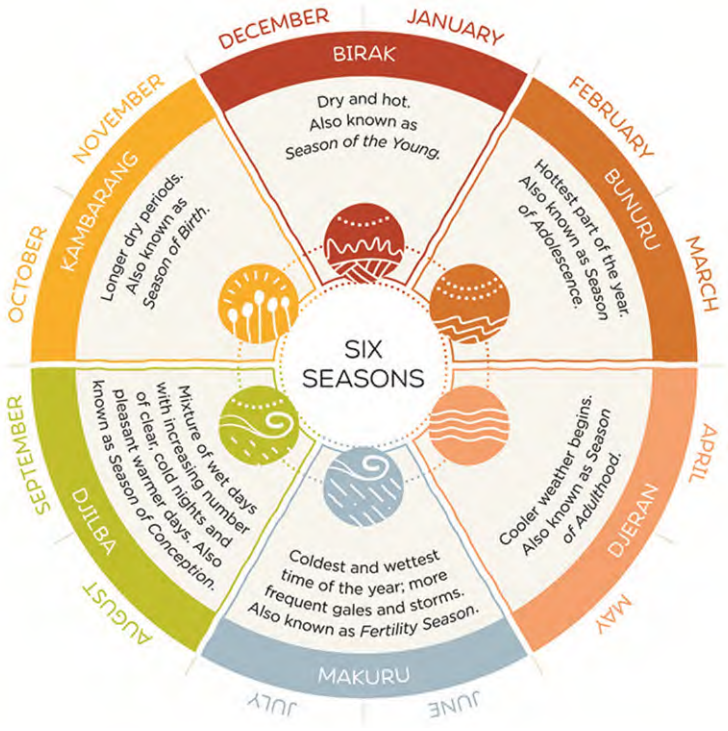
Source: Weatherspark (2024)

FIGURE C: AVERAGE MONTHLY RAINFALL IN DENMARK



Note: *The average rainfall (solid line) accumulated over the course of a sliding 31-day period centred on the day in question, with 25th to 75th and 10th to 90th percentile bands.* Source: Weatherspark (2024).

The six Noongar seasons – Birak, Bunuru, Djeran, Makuru, Djilba, and Kambarang – represent the annual seasonal changes observed across the southwest of Western Australia, indicated by weather patterns, food availability and shifts in the activity or presence of flora and fauna. These seasons reflect the weather experience in Denmark and serve as a valuable tool for planning management activities.



Source: Australia's South West: Six Seasons of the South West. https://australiassouthwest.com/six-seasons-of-the-south-west/

2.2 LANDFORM, GEOLOGY AND SOILS

Stretching from north to south, the Kooryunderup – Mount Hallowell Reserve rises from the Little River valley at 20 metres above sea level (metres Australian Height Datum - m AHD) and features sandy soils up to 75 m AHD. These sandy soils comprise moist and peaty flats along with creek valleys. Above

75 m AHD, the Reserve ascends rapidly through loamy gravel soils, which sustain tall forests (Figure 3; Table 2).

On the higher slopes, lateritic gravel soils with numerous granite outcrops are present. The most notable massive outcrops are Monkey Rock and the summit of Mount Hallowell, which ascends to nearly 300 m AHD. Smaller granite outcrops and surface granite are predominantly concealed by vegetation.

Laterite is an igneous rock that forms through the solidification of cooled magma (molten rock), weathering to a red-brown gravelly sandy soil. The granite bedrock in this area is approximately 2,700 million years old. The large granite batholiths (the significant granite outcrops, formed by extensive volumes of molten granite) intruded beneath the surface millions of years ago and have since been exposed due to the erosion of overlying soils.

The immense age of the landscape, the underlying geology, and its aspect have given rise to varied soils and microclimates in the Reserve, which in turn have resulted in diverse floral associations.

TABLE 2: SOIL LANDSCAPE DESCRIPTIONS

CODE	NAME	DESCRIPTION
254WhHA	Hazelvale subsystem	Narrow sandy plains; slight stream incision. Humus podzols on crests of spurs; Teatree scrub. Yellow duplex soils on valley flanks; Jarrah-Marri low forest. Peaty podzols on minor valley floors; sedges and reeds.
254WhKYs	Keystone podzols phase	Podzols (typical sequence of organic topsoil with leached grey-white subsoil with iron-rich horizon below); Teatree heath and Jarrah woodland.
254WhKYb	Keystone brown duplex phase	Brown gravelly duplex soils and red or yellow earths; much laterite. Marri-Karri-Red Tingle-Yellow Tingle forest.
254WhKYg	Keystone granite phase	Granite outcrop.
254NkMRp	Meerup podzols over calcareous sand phase	Podzols over calcareous sand; Banksia-Bulich-Yate woodland.
254NkMRf	Meerup podzols on interdune plains phase	Podzols on interdune plains; Banksia-Bulich-Yate woodland.
254BrOW	Owingup subsystem	Plains with swamps, lunettes and dunes. Yellow solonetzic soils, organic loams and diatomaceous earth; Wattle-Paperbark thickets, Teatree heath and reeds. Podzols on dunes; Banksia-Sheoak woodland.

Source: Landgate, 2025 (DPIRD-027 - South Coast and hinterland landforms and soils)

2.3 HYDROLOGY

The Reserve lies within the Denmark Coast Catchment area and the Warren-Denmark Hydrological Zone (HZ19_WD), which is described as *"Rises in a series of broad benches from the Southern Ocean north to the Blackwood Valley. Deeply weathered granite and gneiss overlain by Tertiary and Quaternary sediments in the south. Swampy in places"* (DPIRD, 2020a).

The Reserve is not within a Public Drinking Water Source area (Landgate, 2025).

Several first-order creeks flow northwards towards Little River from the northern slopes of Mount Hallowell (Figure 4). These creeks provide important habitat and are sensitive to disturbance. No permanent standing water bodies occur within the Reserve.

2.4 VEGETATION

Kooryunderup – Mount Hallowell lies within the Warren Bioregion and Warren (WAR01) subregion. Hearn *et al.* (2002) describes the Warren Bioregion as 'dissected undulating country of the Leeuwin Complex, Southern Perth Basin (Blackwood Plateau), South-West intrusions of the Yilgarn Craton and western parts of the Albany Orogen with loamy soils supporting Karri forest, laterites supporting Jarrah-Marri forest, leached sandy soils in depressions and plains supporting low Jarrah woodlands and paperbark/sedge swamps, and Holocene marine dunes with *Agonis flexuosa* and Banksia woodlands and heaths'.

The vegetation was mapped on a broad scale by J.S. Beard (Shepherd *et al.* 2002) in the 1970s, when a system was devised for state-wide mapping and vegetation classification based on geographic, geological, soil, climate structure, life form and vegetation characteristics (Sandiford and Barrett, 2010). Vegetation units were regarded as associations and were grouped into Vegetation Systems, representing a particular pattern of association distribution within a given area. A GIS search of J.S. Beard's vegetation classification (Beard *et al.* 2013) places the Reserve within two Systems and Vegetation Associations (Landgate, 2025).

1. **System Association Name:** Denmark.

- **Vegetation Association Number:** 1.
- **Vegetation Description:** Tall forest or Tall woodland.
- **Floristic Description:** Mainly karri *Eucalyptus diversicolor* or Tuart *E. gomphocephala.*
- **Remnant Vegetation by Beard Association Rarity in LGA:** 48.06% remaining (Government of WA, 2019).
- **Remnant Vegetation by Beard Association Rarity in IBRA Region:** 77.91% remaining (Government of WA, 2019).

2. **System Association Name:** Denmark.

- **Vegetation Association Number:** 14.
- **Vegetation Description:** Low forest, woodland or low woodland with scattered trees.
- **Floristic Description:** Jarrah, Banksia or Casuarina *Eucalyptus marginata, Banksia spp., Allocasuarina spp.*
- **Remnant Vegetation by Beard Association Rarity in LGA:** 90.32% remaining (Government of WA, 2019).
- **Remnant Vegetation by Beard Association Rarity in IBRA Region:** 63.35% remaining (Government of WA, 2019).

The Mount Hallowell Survey and Research Project (Denmark Environment Centre, 2004) indicated that the Reserve comprises a variety of vegetation types, including tall open forest of *Eucalyptus*

diversicolor (karri) and *Allocasuarina decussata* (sheoak); closed forest of *E. guilfoylei* (yellow tingle) and *E. jacksonii* (red tingle); woodland of *Eucalyptus marginata* (jarrah), *E. patens* (blackbutt), *Allocasuarina fraseriana* (sheoak), and *Banksia grandis*; *Corymbia calophylla* (marri), *E. megacarpa* (bullich), and *Agonis flexuosa* (Peppermint) on the lower slopes at the base of granite outcrops; and closed heath of Myrtaceae and Proteaceae species.

The sandy soils in the north of the Reserve with elevations below 75 m include moist and peaty flats and creek valleys. The vegetation on these lower slopes is a mosaic of tall Marri/Jarrah forest, low Jarrah/Casuarina and Banksia Woodlands, moist shrublands and sedgelands. The creeks are first-order with Yarri (*Eucalyptus patens)*, and taller Marri, Jarrah and Karri trees growing in the small moist fertile valleys. Above 75 m, the Reserve rises rapidly through loamy gravel soils, which support tall forest. Jarrah and Marri dominate the lower part of this section while Karri and Karri/Marri forest dominate the higher reaches of the northern and southern slopes. Granite outcrops are numerous on the higher slopes, some being visible from surrounding vantage points while smaller granite outcrops and surface granite are often hidden by vegetation. On the southern boundary of the Reserve, Jarrah, Marri and Casuarina dominate the vegetation in a narrow belt of transition from Karri forest. The sandy dune country south of Lights Road is dominated by Peppermint (*Agonis flexuosa*).

The granite batholiths and outcrops, with elevations of nearly 300 m, create special niches for vegetation on the rock and in the surrounding fringes. These niches around the granite outcrops on the Hallowell Reserve are created by areas of shallow soil, pockets of deep soil, water drainage, nutrient from rock catchments, and microclimates caused by aspect and shelter. These soil conditions and microclimates differ from one outcrop to another, resulting in unique floral associations. Arnica (*Taxandria marginata)* is present on many outcrops but absent on others. Blind Grass (*Stypandra glauca)* is similarly common but not omnipresent on the granite outcrops. Surrounding Yate trees are a feature of the granite summit and some other outcrops but absent from others where *Agonis flexuosa* or *Allocasuarina decussata* (Karri Oak) is a dominant fringing component of the vegetation.

The Mount Hallowell Survey and Research Project (Denmark Environment Centre, 2004) collected detailed flora information that is still relevant today. This list was combined with other flora assessments, including a citizen science Bioblitz in 2023 (Appendix 1). The vegetation types identified during the 2004 survey are listed in Table 3.

The vegetation in Kooryunderup is classified as being in ‘Excellent’ condition, with small areas of in ‘Degraded’ condition. There is evidence of human impact through walk and bike trails particularly within the *Eucalyptus diversicolor* Open Forest, in the eastern portion and the *Eucalyptus marginata/ Corymbia calophylla* Open Forest in the southeastern area. Some of these areas are part of the existing signposted walk trails. There are unauthorised mountain bike trails (jumps, banks where bikes turn at speed).

No vegetation types within the Reserve are classified as Threatened or Priority ecological communities (TEC or PEC).

TABLE 3: VEGETATION TYPES

VEGETATION DESCRIPTION	KEY SPECIES
Tall Forest (Forest > 20 m tall)	
Pure Karri Pure stands of Karri exists in large areas of the reserve. Within this forest type are small areas dominated by Sheoak (*Allocasuarina decussata*) Peppermint (*Agonis flexuosa*) and Karri Hazel (*Trymalium floribundum*).	*Indicative species: Acacia pentadenia, Dampiera linearis, Scaevola striata, Agonis flexuosa, Hardenbergia comptoniana, Sollya heterophylla, Allocasuarina decussata, Hibbertia furfuraceae, Stylidium sp., Billardiera floribunda, Lasiopetalum floribundum, Thomasia heterophylla, Boronia gracilipes, Leucopogon propinquus, Tremandra stelligera, Cassytha glabella, Leucopogon verticillatus, Trymalium floribundum, Chorilaena quercifolia, Ozothamnus ramosus, Clematis pubescens, Paraserianthes lopantha*
Karri/Marri Typically, very tall forest, with a very similar understorey to the pure Karri forest. On the ridge of Hallowell five hundred meters east of Kooryunderup, Marri is significant component of the upper canopy.	*Corymbia calophylla, Acacia pentadenia, Dampiera linearis, Scaevola striata, Agonis flexuosa, Hardenbergia comptoniana, Sollya heterophylla, Allocasuarina decussata, Hibbertia furfuraceae, Stylidium sp., Billardiera floribunda,Lasiopetalum floribundum, Thomasia heterophylla, Boronia gracilipes, Leucopogon propinquus, Tremandra stelligera, Cassytha glabella, Leucopogon verticillatus, Trymalium floribundum, Chorilaena quercifolia, Ozothamnus ramosus, Clematis pubescens, Paraserianthes lopantha*
Jarrah/Marri/Karri Some mixed tree areas again typically in belts between the Karri and Marri/Jarrah forest. Understorey plants also mixed between those typical of the forest types but tending more to the Karri understorey.	
Jarrah/Marri Located primarily on the mid-slope of the northern and eastern slope aspect. These forests have a diverse understorey.	*Acacia browniana var. obscura, Dampiera hederaceae, Persoonia longifolia, Acacia myrtifolia, Banksia serra, Petrophile diversifolia, Agonis theiformis, Eucalyptus marginata, Podocarpus drouynianus, Allocasuarina fraseriana, Hakea amplexicaulis, Taxandria parviceps, Banksia grandis, Hibbertia furfuraceae, Xanthosia rotundifolia, Bossiaea linophylla, Macrozamia riedlei, Chorizema retrorsum, Hypocalymma strictum, Corymbia calophylla, Monotoca tamariscina*

VEGETATION DESCRIPTION	KEY SPECIES
Medium Forest	
Jarrah/Marri - these medium forests occupy the gravelly soils above the sands and winter wet flats. The understory is varied. *Allocasuarina fraseriana* and *Banksia grandis* are a typical lower canopy in this plant community type.	*Acacia myrtifolia, Acacia pentadenia, Agonis parviceps, Agonis theiformis, Anarthria prolifera, Hakea amplexicaulis, Macrozamia riedlei, Mesomelaena tetragon, Thomasia integrifolia, Xanthorrhoea preissii*
Medium Forest (Forest between 10 m and 20 m tall)	
Jarrah The Jarrah woodlands exist as moderately thick stands and as sparse woodland with sedge and *Agonis* understory. Where Jarrah is less than 5% of the total canopy, the vegetation type is a shrubland with scattered tree occurrence.	*Acacia myrtifolia, Eucalyptus marginata, Banksia Ilicifolia, Lepidosperma sp., Corymbia calophylla, Taxandria parviceps*
Jarrah/Marri Often existing adjacent to the Jarrah/Marri forest types these woodlands indicated the change from gravel soils to poorer sandy soils.	*Acacia pentadenia, Astartea sp. (aff. fascicularis), Adenanthos cuneatus, Banksia grandis, Agonis theiformis, Johnsonia lupulina, Allocasuarina fraseriana, Taxandria parviceps*
Medium/Low forest (Forest between 5 & 10 m tall)	
Jarrah/Marri	*Acacia pentadenia, Astartea sp. (aff. fascicularis), Adenanthos cuneatus, Banksia grandis, Agonis theiformis, Johnsonia lupulina, Allocasuarina fraseriana, Taxandria parviceps*
Allocasuarina/Jarrah	*Acacia myrtifolia, Taxandria parviceps, Dasypogon bromeliifolius, Xanthorrhoea preissii, Persoonia longifolia*
Low Forest (< 5 m)	
Allocasuarina/Jarrah Sedge and rush spp. are dominant understorey in these areas of woodland.	*Acacia myrtifolia, Taxandria parviceps, Dasypogon bromeliifolius, Xanthorrhoea preissii, Persoonia longifolia*
Allocasuarina/Banksia	*Allocasuarina fraseriana, Banksia quercifolia, Banksia grandis, Hypocalymma strictum, Banksia ilicifolia*

VEGETATION DESCRIPTION	KEY SPECIES
These woodlands exist on the nutrient poor sandy soils. The tree species are all Dieback susceptible and are found within these moist sandy flats where Dieback incursions are the most common.	
Woodland (As for Low Forest but < 30 % tree cover)	
	• Allocasuarina • Jarrah • Jarrah/Marri/Banksia
Shrubland (< 5% tree cover)	
The shrublands have a similar composition but varied dominant species mixes with different habitat niches. Dominant species: • *Agonis/Beaufortia* • *Agonis/Astartea* • *Agonis/Callistemon* • *Agonis/Jarrah/Marri* • *Agonis/Kunzea* • *Agonis/Xanthorrhoea*	*Other species:* *Acacia myrtifolia, Adenanthos cuneatus, Agonis theiformis, Andersonia caerulea, Astartea fascicularis, Beaufortia sparsa, Boronia molloyae, Callistemon glauca, Cassytha glabella, Hypocalymma strictum, Kunzea sulphurea, Stackhousia monogyna, Taxandria parviceps, Thelymitra antennifera, Thelymitra flexuosa*
Sedgeland	
Occupying the moist flats, sedgelands are typically present as an understorey in shrublands and woodland areas. One exception was notable and in this area the sedges formed a thick low carpet	*Anarthria prolifera, Lepidosperma angustatum, Anarthria scabra, Lepidosperma effusum, Dasypogon bromeliifolius, Lepidosperma gladiatum, Evandra aristata, Mesomelaena tetragona*

VEGETATION DESCRIPTION	KEY SPECIES
Monadnocks and granite outcrops	
The granite outcrops are a dominant feature of the Mount Hallowell Reserve. The typical monadnock is a large protuberance visible from surrounding vantage points. These are impressive features when viewed proximately. The smaller granite outcrops are widespread throughout the Reserve and vary from exposed sheets to large boulders the height of medium trees. The granite outcrops create special niches for vegetation, both on the rock and in the surrounding fringes. These niches around the granite outcrops on the Mount Hallowell Reserve are created by: • areas of shallow soil • pockets of deep soil • water drainage • nutrient from rock catchments • microclimates caused by aspect and shelter These soil conditions and micro-climates differ from one outcrop to another and result in unique floral associations. *Agonis marginata* is present on many outcrops but absent on others. *Stypandra glauca* is similarly common but not omnipresent on the granite outcrops. Surrounding Yate (*Eucalyptus cornuta*) trees are a feature of the granite summit and some other outcrops but absent from others where *Agonis flexuosa* or *Allocasuarina decussata* is a dominant fringing component of the vegetation. The smaller outcrops have a less significant effect on the surrounding vegetation composition which reflects soil type and landscape position. These outcrops are predominantly in the areas designated in this report as Karri and Karri/Marri Tall Forest areas.	*Agonis flexuosa, Allocasuarina decussata, Andersonia sprengelioides, Bossiaea linophylla, Corymbia calophylla, Eucalyptus cornuta, Eucalyptus diversicolor, Eucalyptus megacarpa, Eutaxia obovate, Hibbertia furfuraceae, Lepidosperma sp., Leucopogon revolutus, Stypandra glauca, Taxandria marginata, Taxandria parviceps* Monkey Rock and surrounds: *Agonis flexuosa, Allocasuarina decussata, Bossiaea linophylla, Corymbia calophylla, Eucalyptus cornuta, Eucalyptus marginata, Eutaxia obovate, Lepidosperma sp., Leucopogon revolutus, Stypandra glauca, Taxandria linearifolia, Taxandria marginata, Taxandria parviceps* Kooryunderup – Mount Hallowell and surrounds: *Agonis flexuosa, Allocasuarina decussata, Bossiaea linophylla,a Corymbia calophylla, Eucalyptus cornuta, Eucalyptus marginata, Eutaxia obovate, Lepidosperma sp., Leucopogon revolutus, Stypandra glauca, Taxandria linearifolia, Taxandria marginata, Taxandria parviceps*

2.5 FLORA

2.5.1 Flora Databases

Information provided by the DBCA (NatureMap, 2024) indicates there are 1,007 records of flora species within 10 km of Kooryunderup – Mount Hallowell as indicated in Table 4.

TABLE 4: NUMBER OF PLANT SPECIES WITHIN 10 KM

GROUP	NUMBER OF SPECIES
Alga	3
Dicot	643
Fern	7
Gymno	2
Liverwort	22
Monocot	277
Moss	53

Source: NatureMap, 2024

2.5.2 Surveys

Biodiverse Solutions (2020) undertook a reconnaissance flora and vegetation survey for Mount Hallowell, comprising 21.27 ha in the southeastern portion of the Reserve, and identified 101 native flora species.

A Bioblitz citizen science event was held at Kooryunderup – Mount Hallowell in 2023 (Denmark Environment Centre, 2023), which recorded 467 flora species (Appendix 1), including species identified in the 2004 survey.

To date, 467 flora species have been documented within the Reserve. Of these, 347 were listed in the 2008 Mount Hallowell Reserve Management Plan, and 120 additional flora species have been documented subsequently as part of the Bioblitz and the Mount Hallowell (Kooryunderup) Reserve species observations on iNaturalist.

2.5.3 Conservation Significant Species

NatureMaps indicates that there are six threatened flora species listed under the *Biodiversity Conservation Act 2016* within 10 km of Kooryunderup – Mount Hallowell (Table 5). In addition, there are:

- Priority 1 species: 2;
- Priority 2 species: 7;
- Priority 3 species: 12; and
- Priority 4 species: 22.

The southeastern portion of the Reserve was identified with a Priority 4 species, *Banksia serra* (Biodiverse Solutions, 2020).

In 2023, the citizen science Bioblitz recorded seven Priority species within the Reserve:

- Priority 2 flora species: *Lepyrodia extensa;*
- Priority 3 flora species: *Anthocercis sylvicola* (Tailflower);
- Priority 3 flora species: *Goodenia* sp. South Coast;
- Priority 3 flora species: *Leucopogon alternifolius;*
- Priority 4 flora species: *Banksia serra* (Serrate-leaved Dryandra);
- Priority 4 flora species: *Drosera fimbriata* (Manypeaks Sundew); and
- Priority 4 flora species: *Pleurophascum occidentale* (Western Giant-leaved Moss).

No Threatened species have been recorded in the Reserve.

Definitions for Threatened and Priority species are included in Appendix 2.

TABLE 5: CONSERVATION SIGNIFICANT FLORA WITHIN 10 KM

SPECIES	CONSERVATION STATUS		WA RANK
Goodenia radicans	Priority	1	
Stylidium sp. Kordabup (A.R. Annels 1660)	Priority	1	
Caladenia applanata subsp. *erubescens*	Priority	2	
Diuris heberlei	Priority	2	
Drepanocladus aduncus	Priority	2	
Amanita walpolei	Priority	2	
Rytidosperma racemosum var. *racemosum*	Priority	2	
Andersonia sp. Virolens (G.J. Keighery 12000)	Priority	3	
Anthocercis sylvicola	Priority	3	
Borya longiscapa	Priority	3	
Lasiopetalum sp. Denmark (B.G. Hammersley 2012)	Priority	3	
Amanita drummondii	Priority	3	
Amanita fibrillopes	Priority	3	
Andersonia sp. Amabile (N. Gibson & M. Lyons 355)	Priority	3	
Netrostylis sp. Blackwood River (A.R. Annels 3043)	Priority	3	
Synaphea incurve	Priority	3	
Banksia sessilis var. *cordata*	Priority	4	
Boronia virgata	Priority	4	
Corysanthes limpida	Priority	4	

SPECIES	CONSERVATION STATUS		WA RANK
Drosera fimbriata	Priority	4	
Eucalyptus virginea	Priority	4	
Gahnia sclerioides	Priority	4	
Microtis pulchella	Priority	4	
Pleurophascum occidentale	Priority	4	
Thomasia quercifolia	Priority	4	
Banksia serra	Priority	4	
Lepidium pseudotasmanicum	Priority	4	
Thomasia solanacea	Priority	4	
Xanthosia eichleri	Priority	4	
Kennedia glabrata		Threatened	Vulnerable
Microtis globula		Threatened	Endangered
Commersonia apella		Threatened	
Grevillea fuscolutea		Threatened	
Isopogon buxifolius		Threatened	

Source: NatureMap, 2025

2.6 FAUNA

2.6.1 Fauna Databases

The Mount Hallowell Reserves represent a variety of fauna habitats influenced by topography and soil types (granitic outcrops through clay slopes to deep sand and peat swamps). The higher slopes, particularly on the eastern and southern sides, are dominated by Karri (*Eucalyptus diversicolor)* with pockets of Sheoak (*Casuarina* spp.), while the lower slopes and northern slopes are more typically Jarrah (*Eucalyptus marginata*), Marri (*Corymbia calophylla*), *Banksia grandis*, *Banksia ilicifolia* and Sheoak (Gillespie, 2011).

Information provided by the DBCA (NatureMap, 2024) indicates there are 444 records of fauna species within 10 km of Kooryunderup – Mount Hallowell, as grouped in Table 6.

TABLE 6: NUMBER OF FAUNA SPECIES WITHIN 10 KM

GROUP	NUMBER OF SPECIES
Amphibians (frogs)	8
Invertebrates (insects, spiders, molluscs, worms, crayfish)	111
Reptiles	23
Birds	218
Fish (includes Wilson Inlet, adjacent waterways and Southern Ocean)	55

GROUP	NUMBER OF SPECIES
Mammals	29

Source: NatureMap, 2024

2.6.2 Surveys

To date, 270 fauna species have been documented within the Reserve. Many were listed in the 2008 Management Plan. However, additional fauna species have been documented subsequently as part of the Mount Hallowell Bioblitz and the Mount Hallowell (Kooryunderup) Reserve species observations on iNaturalist.

A Bioblitz citizen science event was held at Kooryunderup—Mount Hallowell in 2023 (Denmark Environment Centre, 2023). The event recorded 106 insects, 34 spiders, five frogs, 12 reptiles, 82 birds, 14 native mammal species, and 12 'other vertebrate' species.

A list of species is provided in Appendix 3.

2.6.3 Conservation Significant Species

The Commonwealth's *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* and WA's *Biodiversity Conservation (BC) Act 2016* (Department of Biodiversity, Conservation and Attractions DBCA, 2023) provide a listing of threatened fauna species. Fauna species that are poorly known, rare, near threatened, or others in need of monitoring are listed under the DBCA Priority List.

NatureMap indicates that there are 42 records of Threatened or Migratory species listed under the *Biodiversity Conservation Act 2016* within 10 km of Kooryunderup – Mount Hallowell (Table 7). In addition, there are:

- Priority 1 species: 0
- Priority 2 species: 2
- Priority 3 species: 1
- Priority 4 species: 5

Definitions for Threatened and Priority species are described in Appendix 2.

TABLE 7: CONSERVATION SIGNIFICANT FAUNA WITHIN 10 KM

TAXON	COMMON NAME	CLASS	WA STATUS	EPBC STATU
Thalassarche chlororhynchos	Atlantic yellow-nosed albatross	BIRD	VU	MI
Limosa lapponica	bar-tailed godwit	BIRD	MI	MI
Zanda baudinii	Baudin's cockatoo	BIRD	EN	EN
Ixobrychus flavicollis australis (southwest subpopulation)	black bittern (southwest subpopulation)	BIRD	P2	
Thalassarche melanophris	black-browed albatross	BIRD	EN	VU & MI

TAXON	COMMON NAME	CLASS	WA STATUS	EPBC STATU
Oxyura australis	blue-billed duck	BIRD	P4	
Zanda latirostris	Carnaby's cockatoo	BIRD	EN	EN
Hydroprogne caspia	Caspian tern	BIRD	MI	MI
Dasyurus geoffroii	chuditch, western quoll	MAMMAL	VU	VU
Tringa nebularia	common greenshank	BIRD	MI	MI
Actitis hypoleucos	common sandpiper	BIRD	MI	MI
Sterna hirundo	common tern	BIRD	MI	MI
Thalasseus bergii	crested tern	BIRD	MI	MI
Calidris ferruginea	curlew sandpiper	BIRD	CR	CR & MI
Sternula nereis nereis	fairy tern	BIRD	VU	VU
Ardenna carneipes	flesh-footed shearwater	BIRD	VU	MI
Calyptorhynchus banksii naso	forest red-tailed black cockatoo	BIRD	VU	VU
Calidris tenuirostris	great knot	BIRD	CR	CR & MI
Charadrius leschenaultii	greater sand plover, large sand plover	BIRD	VU	VU & MI
Pluvialis squatarola	grey plover	BIRD	MI	MI
Tringa brevipes	grey-tailed tattler	BIRD	MI & P4	MI
Thinornis cucullatus	hooded plover, hooded dotterel	BIRD	P4	
Puffinus huttoni	Hutton's shearwater	BIRD	EN	
Calidris subminuta	long-toed stint	BIRD	MI	MI
Zephyrarchaea mainae	Main's assassin spider	INVERTEBRATE	VU	
Leipoa ocellata	malleefowl	BIRD	VU	VU
Pandion haliaetus	osprey	BIRD	MI	MI
Pluvialis fulva	Pacific golden plover	BIRD	MI	MI
Falco peregrinus	peregrine falcon	BIRD	OS	
Geotria australis	pouched lamprey	FISH	P3	
Isoodon fusciventer	quenda, southwestern brown bandicoot	MAMMAL	P4	
Setonix brachyurus	quokka	MAMMAL	VU	VU
Calidris canutus	red knot	BIRD	EN	EN & MI
Calidris ruficollis	red-necked stint	BIRD	MI	MI
Arenaria interpres	ruddy turnstone	BIRD	MI	MI

TAXON	COMMON NAME	CLASS	WA STATUS	EPBC STATU
Calidris alba	sanderling	BIRD	MI	MI
Calidris acuminata	sharp-tailed sandpiper	BIRD	MI	MI
Elapognathus minor	short-nosed snake	REPTILE	P2	
Ardenna tenuirostris	short-tailed shearwater	BIRD	MI	MI
Phascogale tapoatafa wambenger	south-western brush-tailed phascogale, wambenger	MAMMAL	CD	
Physeter macrocephalus	sperm whale	MAMMAL	VU	MI
Zephyrarchaea melindae	Toolbrunup assassin spider	INVERTEBRATE	VU	
Hydromys chrysogaster	water-rat, rakali	MAMMAL	P4	
Cynotelopus notabilis	Western Australian pill millipede	INVERTEBRATE	EN	
Dasyornis longirostris	western bristlebird	BIRD	EN	EN
Notamacropus irma	western brush wallaby	MAMMAL	P4	
Pezoporus flaviventris	western ground parrot	BIRD	CR	CR
Pseudocheirus occidentalis	western ringtail possum, ngwayir	MAMMAL	CR	CR
Zanda sp. 'white-tailed black cockatoo'	white-tailed black cockatoo	BIRD	EN	EN
Chlidonias leucopterus	white-winged black tern	BIRD	MI	MI

Source: NatureMap, 2024. Note: Marine species such as whales and seals have been removed.

Sanders (2020) prepared a Vertebrate Fauna Assessment of Mount Hallowell Reserve for the southeastern portion of the Reserve. The survey indicated that the following conservation significant species were present:

- Baudin's black cockatoo (Threatened);
- Forest Red-tailed black cockatoo (Threatened); and
- Osprey (not threatened but considered significant).

The habitat assessment confirmed the potential presence of habitat for quokka and western ringtail possum, although no signs were found owing to the dense vegetation.

Several fauna species listed under the EPBC Act, BC Act, and Priority list are known to occur in the Mount Hallowell-Kooryunderup Reserve (Department of Climate Change, Environment, Energy and Water (DCCEEW), 2025; DBCA, 2025).

There are six threatened fauna species documented within the Mount Hallowell-Kooryunderup Reserve. These include:

- Baudin's Cockatoo (*Zanda baudinii) Njoolark* (Endangered, WA and Nationally);

- Carnaby's Cockatoo (*Zanda latirostris) Njoolark* (Endangered, WA and Nationally);
- WA Pill Millipede (*Cynotelopus notabilis)* (Endangered, WA);
- Forest Red-tailed Black-cockatoo (*Calyptorhynchus banksii naso) Karrak* (Vulnerable, WA);
- Main's Assassin Spider (*Zephyrarchaea mainae)* (Vulnerable, WA); and
- South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger)* (Conservation dependent, WA).

The Southwestern Brown Bandicoot (*Isoodon fusciventer)* and Western False Pipistrelle (*Falsistrellus mackenziei)* are listed as Priority 4 species and present within the Reserve.

The Reserve is also home to numerous endemic fauna species with limited distributions and specific habitat requirements that occur only in the southwest of Western Australia.

2.7 FUNGI AND OTHER LIFE FORMS

Lifeforms such as slime mould, fungi and lichen are poorly known and understood compared to other species. However, they play a very important role in the recycling of nutrients and soil production.

Some fungi have symbiotic relationships with plants, benefiting both. Some native animals, such as the Southwestern Brown Bandicoot (*Isoodon fusciventer*) and the Bush Rat (*Rattus fuscipes*), depend on fungi as part of their diet. They are also important vectors for fungal spore dispersal.

Lichens can help produce soil by breaking down rocks into smaller particles. They get their nutrients from the air and serve as excellent indicators of air quality.

Slime moulds exhibit complex behaviours like problem-solving and learning, even without a brain or nervous system, and are crucial for nutrient recycling in ecosystems.

2.7.1 Other Life Forms Databases

Information provided by the DBCA (NatureMap, 2024) indicates there are 425 records of slime mould, fungi and lichen species that have been identified within 10 km of Kooryunderup – Mount Hallowell as summarised in Table 8.

TABLE 8: NUMBER OF OTHER SPECIES WITHIN 10 KM

GROUP	NUMBER OF SPECIES
Slime mould	8
Fungi	316
Lichen	101

Source: NatureMap, 2024

2.7.2 Surveys

A total of 251 macrofungi and lichen species were documented in the 2008 Management Plan.

A Guide to Macrofungi in the Shire of Denmark, Mount Hallowell and Wilson Inlet Foreshore was prepared in 2011 (Syme, 2011) and included identification of 100 named species, 115 recognisable unnamed taxa and 12 species of truffle-like fungi.

iNaturalist lists 87 fungi present at Kooryunderup – Mount Hallowell. Seventy-seven fungi and lichen species were identified as part of the citizen science Bioblitz in 2023 (Appendix 4).

2.8 DIEBACK

A dieback assessment of the Reserve was undertaken in 2014 (Great Southern Biologic, 2014). The disease distribution is shown in Appendix 5. Disease expression was confirmed in the creek line to the west of Iluka Avenue on the southern boundary, on a granite peak on the Bibbulmun Track and extending north from the infestations west of Harrington Break. As a result, the disease distribution map shows the infested area spreading from the creek to the west of Iluka Avenue, heading east and north to include the vegetation adjacent to the Heather Road development, west along the Bibbulmun Track, north to the northern management access track and then west to the western boundary.

The disease boundary has not been operationally mapped in areas excluding access points such as management access tracks and the Bibbulmun Track. It is possible that the infested area may contain some small areas of vegetation yet to show visible signs of infestation. Likewise, the full extent of the areas depicted as uninterpretable may also contain some infested soils that do not express due to the lack of susceptible species in the vegetation.

Recommendations from the 2014 dieback assessment include:

1. **Town Planning Scheme Policy No. 1 for Dieback Disease Management**

   All works within and around Kooryunderup – Mount Hallowell, to strictly adhere to Town Planning Scheme Policy No. 1 for Dieback Disease Management (Shire of Denmark, 1997) hygiene controls.

2. **Phosphite**

   Treatment with Phosphite is not recommended within the Reserve due to the size of the infested area and the requirement for treatment of disease boundaries, which cannot be accurately determined due to the uninterpretable nature of much of the Reserve's vegetation.

3. **Operational Hygiene:**

   a. All operational activities, including firebreak maintenance, are to be undertaken in dry soil conditions. Undertaking operational activities in dry soil will significantly reduce the risk of transporting infested soil from currently infested areas to uninfested areas in the Mount Hallowell Reserve and other Shire reserves.

   b. All vehicles, machinery, equipment, and footwear must be effectively cleaned down prior to accessing protectable areas within the Reserve. Clean-down locations for people on foot and vehicles are shown in Appendix 5.

   c. All earthworks, road verge works, and street sweeping conducted in any residential area adjoining the reserve must be undertaken in accordance with Town Planning Scheme Policy No. 1 for Dieback Disease Management (Shire of Denmark, 1997) hygiene guidelines. These areas are also considered to be infested through the mechanisms of autonomous spread.

d. The movement of soil and vegetable matter from these residential areas presents a potential risk of disease vectoring. Private residents and contractors undertaking private works should also be urged to comply with this standard.

e. If soil moving activities are proposed in areas away from existing access tracks and trails, then an operational survey must be undertaken prior to commencing the proposed works. The information in this survey provides operational disease distribution information for existing tracks and trails.

4. Track Rationalisation

a. The reserve has interconnected vehicle access tracks, originating from the Heather Road and Iluka Avenue residential areas. These tracks are contained within the infested hygiene category and do not present an immediate threat to the protectable areas of the reserve. They do present a source of infested soil that can be transported to other Shire reserves following moist soil access by four-wheel drive vehicles. Closure of all non-essential tracks will reduce this risk and should be considered. Closure of tracks crossing moisture-gaining sites (e.g. creeks) and clayey soils should be the highest priority.

5. Bimbimbi Way Management Access Hygiene

a. The management access and fire break to the north of Bimbimbi Way is classified as uninterpretable due to insufficient indicator species to enable detection of the disease. As the eastern end of this access adjoins an infested creek line, it is likely that there is dieback along this management access track, which cannot be identified and demarcated. It is a recommendation that this section of management access be managed as a stand-alone area.

b. Effective clean-down should be undertaken when entering and leaving this management access track, and all operational activities in this area should be undertaken in dry soil conditions. If required, clean-down is to be performed on Shire land at the gate where the management access track enters private property, as shown in Appendix 5.

6. Project Dieback Signage

a. Existing Project Dieback disease category demarcation signage posts should be monitored and reviewed along walk trails and management access tracks as they mark the disease hygiene categories as shown in Appendix 5.

b. General disease information signage has been installed at reserve entry points in residential areas (e.g., Heather Road). The signage highlights the issues associated with dieback and the management actions required to minimise the spread. Signage assists with communicating these messages but should not be relied on as a stand-alone communication strategy.

7. Boot cleaning stations

a. There are three boot cleaning stations (Figure 4).

b. Boot cleaning stations are located on the disease boundary lines identified in Appendix 5. The locations of the stations should be reviewed when the dieback status is reviewed.

c. If relocated, the boot cleaning station positioned at the western end of the Bibbulmun Track will be able to be bypassed by walkers using the management access track which parallels the walk trail in this area.

8. Community Awareness and Education

a. The 2014 mapping of dieback includes the surrounding residential developments on Harrington Break and Heather Road. Movement of infested soil from these areas poses a significant threat of disease vectoring to other areas within the Shire of Denmark. Consistent with the solutions to address the threat identified in 'A Study into the Risk of Phytophthora Dieback in Ten Peri-Urban Reserves within the Shire of Denmark, Section 8, Limited Education and Awareness in the Community (Green Skills, 2008)', a public communication strategy is recommended for the immediate local community.

9. Re-Survey

a. It is recommended that the 2014 assessment be updated in 2026 and then reviewed every ten years.

2.9 WEEDS

Biodiverse Solutions (2020) identified nine weed species in the southeast portion of the Reserve (Table 9). Eight of these are "Permitted – s11" and one is a "Declared Pest - s22(2) (C3 Exempt)" under the *Biosecurity and Agriculture Management Act 2007*. Under the Environmental Weeds Strategy for Western Australia (CALM 1999), three are rated as *"Low"*, three are rated as *"Moderate"*, and three were not listed. The Strategy classifies weeds according to their relative level of threat to conservation (high, medium, or low), and this rating is based on their distribution, relative level of invasiveness and environmental impact.

TABLE 9: WEED SPECIES RECORDED IN SOUTHEAST PORTION OF RESERVE

FAMILY	SPECIES	COMMON NAME	WA WEED STRATEGY RATING (CALM 1999) / BAM ACT
Asparagaceae	*Asparagus scandens*		-/ Permitted - s11
Poaceae	*Cenchrus clandestinus*	Kikuyu Grass	Moderate / Permitted - s11
Asteraceae	*Cirsium vulgare*		Moderate / Permitted - s11
Fabaceae	*Dipogon lignosus*	Dolichos pea	Low / Permitted - s11
Asteraceae	*Hypochaeris glabra*	Smooth Cats-ear	Moderate / Permitted - s11
Oxalidaceae	*Oxalis incarnata*		Low / Permitted - s11
Plantaginaceae	*Plantago lanceolata*	Ribwort Plantain	Low / Permitted - s11
Polygalaceae	*Polygala myrtifolia*	Myrtleleaf Milkwort	- / Permitted - s11
Rosaceae	*Rubus anglocandicans*		- / Declared Pest - s22(2) (C3 Exempt)

Source: Department of Conservation and Land Management (1999).

In 2024 Green Skills Inc. and South Coast Bushcare Services prepared a Bushland Reserve Weeds Strategy 2024 – 2034 for the Shire of Denmark.

The following criteria were used for determining High Conservation Value reserves such as Kooryunderup - Mount Hallowell:

- The bushland is in excellent condition;
- The use of the reserve includes public use, recreation and enjoyment. The facilities available include walk trails, views, landscape values (e.g. entrance to Denmark);
- The reserve is actively managed - the history of weed control, track maintenance and fuel management;
- Protection of waterways;
- Connectivity with other bushland areas; and
- Presence of weed/s of limited distribution that are highly invasive and have severe environmental impacts.

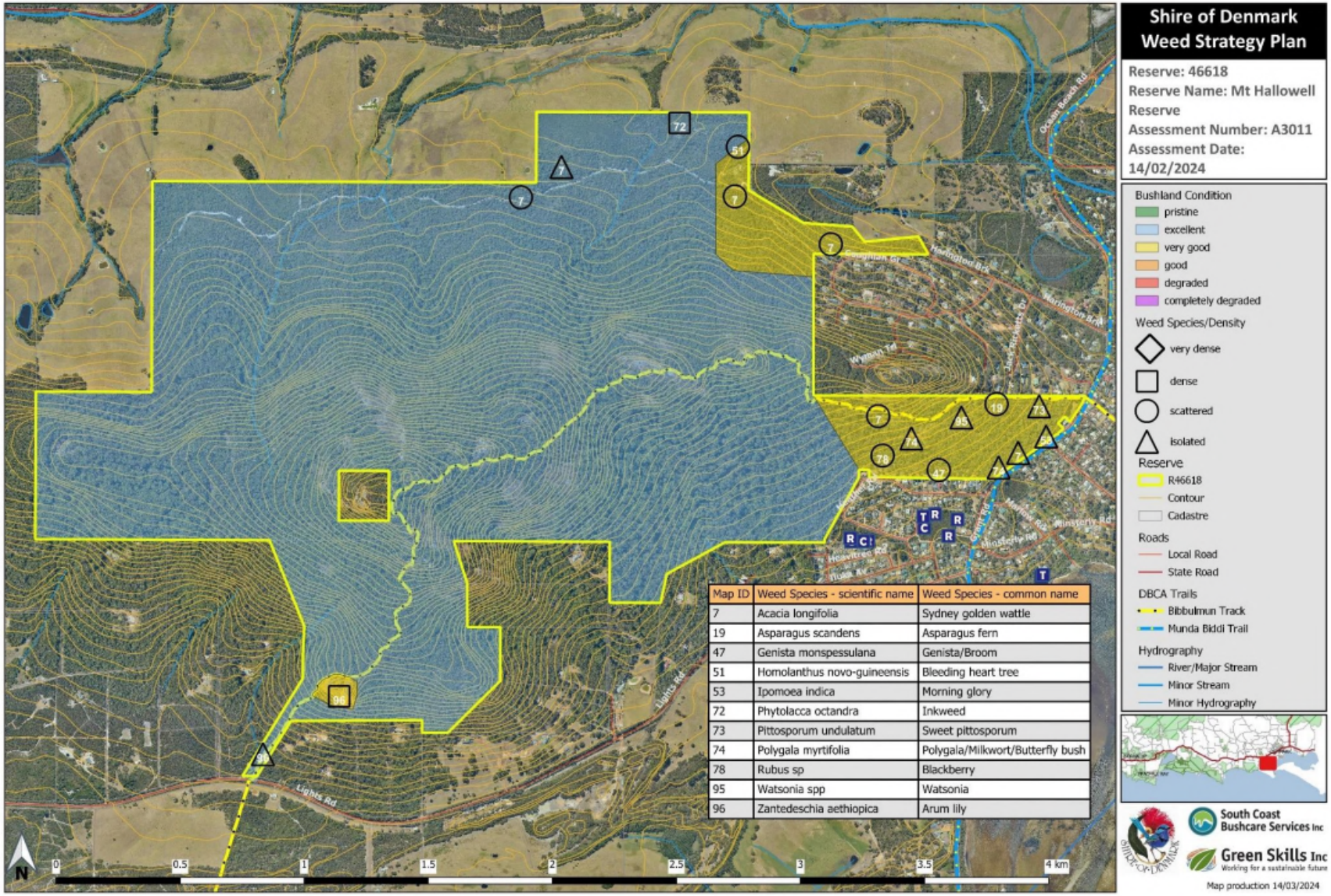
Kooryunderup - Mount Hallowell (Reserve 46618) priority weeds to target include:

- *Acacia longifolia;*
- *Dipogon lignosus;*
- *Genista monspessulana;* and
- *Ipomea indica*.

A map of weed affected areas is shown in Figure D.

It was recommended that the Friends of Kooryunderup – Mount Hallowell and Bibbulmun Track hold regular weeding sessions and not spray. The weed works were assigned a 'High' priority. It was also noted that *Dipogon lignosus* (Dolichos pea) and *Leptospermum leavegatum* (Victorian Tea Tree) had not been marked on the weeds map at the time of survey and that further survey work needed to be undertaken.

FIGURE D: WEED MAPPING FOR KOORYUNDERUP – MOUNT HALLOWELL



Source: Green Skills and South Coast Bushcare Services Inc (2024) Bushland Reserves Weeds Strategy 2024 – 2034

2.10 ACCESS

Pedestrians access the Reserve via the Bibbulmun Track and Sheila Hill Memorial Trail from Ocean Beach Road (Figures 4 and 5) and from Lights Road towards Monkey Rock (Figure 4).

Parking is available at Lights Road (Trailhead for Bibbulmun Track) and Ocean Beach Road (Sheila Hill Memorial Trailhead). The gravel parking spaces are not delineated and can accommodate 7 - 10 cars each.

There is emergency vehicle access at five points (Figures 4 and 5), including:

- At the southeast corner of the Reserve (behind Heather Road) (not gated). Heather Street residents utilise this track for access to the rear of their properties.
- Emergency access track from the Lights Road car park to Monkey Rock (gated).
- Emergency access track from Mooney Valley Place to Lights Road (gated).
- Along the northern boundary of the Reserve from Goughlan Grove (gated).
- Emergency access to the north of the Reserve is by agreement with farm owners to the Denmark Heritage Rail Trail alignment (gated).

Parts of the Reserve have been slashed to provide low fuel zones of approximately 25 - 30 m width (Figures 4 and 5). The low fuel zones are assessed annually, and slashing is done when fuel loads are high.

Signage indicates that the Sheila Hill Memorial Trail starts at the car park and trail head on Ocean Beach Road and then joins the Bibbulmun Track, extends to the Mount Hallowell summit and lookout before descending to Monkey Rock and terminating at the Lights Road car park. However, wayfinding signage for the trail is either missing or in poor condition.

3 STAKEHOLDER ENGAGEMENT

3.1 STAKEHOLDER ENGAGEMENT PROCESS

Due to the significant community interest in the Reserve, the Shire prepared a Community Engagement Plan in 2024, which was adopted by Council for implementation (October 2024). The framework of the engagement plan is shown in Table 10.

TABLE 10: KOORYUNDERUP – MOUNT HALLOWELL ENGAGEMENT FRAMEWORK

DELIVERABLE	TIMING	TARGET GROUP	METHOD	LEVEL	RESPONSIBILITY
Preparation Work					
Engagement plan endorsement	October 2024	Council	Present Community Engagement Plan for endorsement by Council at the October Ordinary Council meeting.	Empower	Shire of Denmark Council
Your Denmark page	October 2024	Community	Launch project webpage 'Mount Hallowell Reserve Management Plan Review' to host community consultation information. (https://www.yourdenmark.wa.gov.au/mount-hallowell-management-plan-review)	Inform	Shire of Denmark
Engagement plan and project awareness	October 2024	Community	Share the Community Engagement Plan with the broader community to increase awareness of the review process's key objectives. • Advert in Bulletin • Media release • Social media post • Your Denmark page	Inform	Shire of Denmark and Aurora Environmental
Delivery and Implementation					
One-on-one engagement	December 2024	Key Stakeholder Groups	Invitations were sent to each key stakeholder group for specific one-on-one meetings with a consultant, with an option for an on-site visit. • Letters • Email • Phone	Involve	Shire of Denmark and Aurora Environmental
Community Survey	Finish 17 January 2025	Community	Gather community feedback about what is important about the Reserve and any concerns, hosted via Your Denmark page. Promote: • Advert in Bulletin • Media release • Social media post • Your Denmark page • Posters • E-newsletter	Consult	Created by Shire of Denmark and Aurora Environmental

DELIVERABLE	TIMING	TARGET GROUP	METHOD	LEVEL	RESPONSIBILITY
Analysis, Writing and Completion					
Draft Plan presented to Council	April 2025	Council	Aurora Environmental will brief the council on the engagement and research process and outcomes as presented in the Draft plan.	Inform	Aurora Environmental
Draft Plan released for Public Comment	May 2025	Community	Incorporating community feedback from engagement and on-ground research conducted by Aurora Environmental, with a draft plan to be released on the Your Denmark page and an online public comment portal to be set up. Hard copies will be available at the front counter (Shire Administration Building).	Consult	Shire of Denmark
Final Plan	June 2025	Council	Final plan presented at Ordinary Council Meeting for adoption.	Empower	Shire of Denmark
		Community	Make final document available to community: • Media release • Your Denmark • Principal website • Facebook • E-news	Inform	Shire of Denmark
		Minister	Seek ministerial approval following Council adoption	Empower	Shire of Denmark

3.2 IDENTIFICATION OF KEY STAKEHOLDERS

The Shire of Denmark initially identified key stakeholder groups, and the list was expanded during the engagement process (Table 11). The list comprises organisations, groups and individuals interested in the management of the Reserve, or that have a legislative interest. Other groups and individuals were included in the engagement process if they expressed an interest.

TABLE 11: STAKEHOLDERS

KEY STAKEHOLDERS
Bibbulmun Track Foundation
Bibbulmun Track Foundation Maintenance Volunteers (Mount Hallowell section)
Denmark Dog Owners Group
Denmark Bird Group
Denmark Environment Centre
Denmark Equestrian Management Group
Denmark Mountain Bike Club

KEY STAKEHOLDERS
Denmark Running Club
Department of Biodiversity Conservation and Attractions (DBCA) Warren Region (Manjimup & Frankland District Walpole Office)
DBCA Parks and Wildlife Recreation & Trails Unit
Department of Planning Lands and Heritage (DPLH) – Indigenous Heritage South Coast Region
Department of Water and Environmental Regulation (DWER)
Friends of Bibbulmun Track (Mount Hallowell sections)
Friends of Kooryunderup Mount Hallowell Reserve
Green Skills
Kwoorabup Barefoot Walking Group
Ocean Beach Bushfire Brigade
Private Property owners with a shared boundary with the Reserve
Shire of Denmark (relevant staff)
South Coast Bushcare Services
Ocean Beach residents and ratepayers
Wagyl Kaip
Wider Shire of Denmark community
Water Corporation

3.3 SUMMARY OF STAKEHOLDER INTERVIEWS

Eight groups met with Aurora Environmental, including:

- Friends of Kooryunderup - Mount Hallowell Inc. (PowerPoint presentation provided).
- South Coast Bushcarer Services Inc.
- Wagyl Kaip.
- Denmark Environment Centre.
- Bibbulmun Track Foundation.
- Denmark Bird Group.
- Denmark Mountain Bike Club Inc. (submission provided).
- Department of Biodiversity Conservation and Attractions (Frankland and Kensington Offices).

Eighteen individuals were interviewed, including residents.

Internal (Shire of Denmark) stakeholders included:

- Executive Officers.

- Denmark Sustainability Officer.
- Denmark Fire Control Officer.
- Manager Waste and Reserves.

Other stakeholders included:

- Nathan McQuoid, Ecologist.
- Elizabeth (Lizzie) Hill, daughter of Sheila Hill.

Submissions were also received from:

- Birdlife WA.
- South Coast Bush Fire Brigade.

3.4 COMMUNITY SURVEY

The Shire of Denmark released a survey on Wednesday, 20 November 2024, and closed on Friday, 17 January 2025. The survey questions focused on feedback regarding management of Kooryunderup—Mount Hallowell and are summarised in Appendix 6. Key themes and concerns are also summarised in Appendix 6.

Key insights and analysis including quantifiable measures based on the survey responses include:

Demographics and Participation

- **Total Responses**: 202 responses. The survey received a significant number of responses from various participants, including residents, visitors, and stakeholders.
- **Age Groups**: Respondents were from diverse age groups, with a notable representation from the 50-64 and 65+ age brackets.
    - 17 years or younger: 2 (0.9%)
    - 18-29 years: 3 (1.4%)
    - 30-49 years: 52 (24.2%)
    - 50-64 years: 93 (43.3%)
    - 65+ years: 65 (30.2%)
- **Gender:**
    - Female: 137 (63.7%)
    - Male: 73 (34.0%)
    - Prefer Not to Say: 4 (1.9%)
    - Other: 1 (0.5%)

The survey responses reflected a community deeply connected to Mount Hallowell, valuing its natural beauty, biodiversity, and the peace it offers. There was support for existing passive uses such as walking and hiking. However, there was little to no support for activities such as mountain biking.

The community's concerns about fire risk, illegal activities, and the need for better infrastructure and education also highlight areas that need attention in this Management Plan.

Based on the data analyses and survey responses, suggestions for the future management of the Mount Hallowell Reserve are as follows:

1. **Enhanced Environmental Protection**

- **Strict Enforcement**: Implement stricter enforcement of existing rules to prevent illegal activities such as unauthorised trail creation and vandalism. This includes responses to notifications about unauthorised use and increased penalties for violations.
- **Dieback Management**: To prevent the spread of dieback, introduce more educational signage at trailheads. Regular monitoring and treatment of affected areas should be prioritised.
- **Habitat Preservation**: Focus on preserving critical habitats, especially for endangered species such as Black Cockatoos. This includes protecting nesting sites and ensuring minimal disturbance to their habitats.

2. **Recreational Use**

- **Designated Trails**: High support to maintain Bibbulmun Track and Sheila Hill trails.
- **Multi-Use Areas**: Very low support for mountain bike trails in the Reserve based on conservation values, safety and user conflict. Walkers only on Bibbulmun Track (no dogs). Dog walking in eastern and northern portion with dogs on leashes. Clear signage indicating appropriate activities for each trail.

3. **Fire Risk Management**

- **Controlled Burns**: Value the long unburnt areas of the Reserve. Implement controlled burns and other bushfire management strategies to reduce the buildup of dead matter and mitigate fire risks around the periphery of the Reserve. This should be done in consultation with fire management experts, traditional custodians and local communities.
- **Firebreaks**: Maintain and improve firebreaks around the Reserve to provide better access for emergency vehicles and reduce the risk of fire spreading.

4. **Infrastructure and Education**

- **Educational Signage**: Increase the number of educational / interpretive signs at car parks and trailheads to inform visitors about the importance of preserving the Reserve and how to minimise their impact.
- **Visitor Facilities**: Improve infrastructure such as car parks and picnic areas to manage visitor impact and enhance their experience. Ensure these facilities are environmentally friendly and do not detract from the natural beauty of the Reserve.

5. **Community and Social Well-being**

- **Inclusive Planning**: Engage with the community including local residents, indigenous groups, and other stakeholders, in the planning and management process. This ensures that diverse perspectives are considered and that the Reserve meets the needs of all users.

- **Social Spaces**: Maintain areas that are important for community interaction and social well-being, such as dog walking zones and spaces for elderly residents to enjoy nature safely.

6. Monitoring and Research

- **Ongoing Research**: Conduct regular citizen science studies (e.g. Bioblitz) to monitor the health of the Reserve's flora and fauna. This includes tracking the impact of recreational activities and climate change on the ecosystem.
- **Adaptive Management**: Use the findings from research and monitoring to adapt management practices as needed. This ensures that the Reserve's management remains effective and responsive to changing conditions.

7. Tourism and Economic Considerations

- **Sustainable Tourism**: Promote sustainable tourism practices that highlight the natural beauty and biodiversity of the Reserve without compromising its ecological integrity. This can include guided tours, educational programs, and eco-friendly facilities.
- **Economic Balance**: Ensure that economic activities, such as tourism, do not overshadow the primary goal of conservation. Any development should be carefully assessed for its environmental impact and long-term sustainability.

3.5 COMMUNITY EXPECTATIONS

A stakeholder engagement summary document was prepared and submitted to the Shire of Denmark (Aurora Environmental, 2025a) which summarised the one on one interviews and community survey. Outcomes of the engagement are summarised below.

The stakeholder engagement process indicated that the community is very invested in the long-term health and management of Kooryunderup – Mount Hallowell. Summarising stakeholder input by management issues, indicates the following:

Conservation

Conservation of biodiversity, including threatened species, is seen as the most important management focus for the Reserve. All other uses were seen as ancillary and only acceptable if they were compatible with preservation of natural values.

Pest, Weed and Disease Management

Consistent pest, weed, and disease management was identified as the key to preserving biodiversity within the Reserve, either through active management (e.g., activities by South Coast Bushcare Services Inc. and Friends of Kooryunderup—Mount Hallowell).

Recreation

Recreation is viewed as a way to interact with nature without disturbing the area's conservation values. Passive recreation activities such as hiking, bird watching, and dog walking (dogs on leashes) were supported. However, all but a few stakeholders strongly rejected activities such as mountain bike riding.

Fire Management

Stakeholders recognised that fire was an imminent risk in the area. However, all respondents valued the Reserve's conservation values more than the fire risk. People also recognised the significance of long unburnt areas, including old trees containing nesting hollows that could be lost in fuel reduction burns. Many nearby residents have evacuation plans and do not want to see the Reserve's conservation values diminished by widespread fuel reduction burns.

The presence of low fuel zones adjacent to Heather Road was supported.

Notably, the Ocean Beach Bushfire Brigade submission states that the volunteers are well placed to rapidly respond to fires on the lower slopes of the Reserve, if access is maintained at current levels.

Infrastructure

Upgrading of the car parks, including interpretive signage at the Sheila Hill and Bibbulmun track trail heads was supported.

Signage for Sheila Hill Trail needs to be updated.

Resurfacing and drainage works associated with emergency access ways (Heather Road and Monkey Rock) was supported.

Monitoring and upgrades of infrastructure such as Sheila Hill Trail signage, dieback boot cleaning stations, bollards and gates was requested.

Installation of drainage and re-sheeting with gravel of eroded emergency access ways behind Heather Road and track up to Monkey Rock was identified as a high priority.

Compliance

Respondents were generally supportive of compliance efforts to prevent unlawful or unauthorised activities (e.g. construction of mountain bike trails, rubbish dumping, low fuel areas and emergency access).

Access and use of the Reserve by landowners that back onto the Reserve from Heather Road was questioned. Should this use be prevented? Requires further discussion with landowners.

Community Engagement

Groups such as the Friends of Kooryunderup – Mount Hallowell, Denmark Bushcare Group and Denmark Environment Centre are already actively involved in the care and management of the Reserve. These groups will benefit from more formal interaction with the Shire of Denmark regarding management of the area.

Respondents were supportive of educational activities and programs to increase awareness of the value of Kooryunderup – Mount Hallowell (and other natural areas).

Land Use Planning

Stakeholders supported the management of Reserves 14239, 48429, 32861 and 35464 consistent with values of Kooryunderup – Mount Hallowell.

Residents recognise the importance of fire planning and conditions placed on development with respect to access and fire management.

Culture And Heritage

Stakeholder input strongly supported the recognition of cultural heritage in the area, including carrying out a Cultural Heritage Survey (i.e. partnership with Wagyl Kaip).

Some activities such as abseiling on Monkey Rocks was questioned by some as possibly inappropriate.

4 VALUES

4.1 BIODIVERSITY VALUES

Biodiversity underpins all life on Earth. Without the complex interactions between plants, animals, and their environment, there would be no air to breathe, no food to eat, and no water to drink. Many discoveries are yet to be made about the web that makes up our lives, livelihoods, medicine, culture, and natural beauty.

Humans depend on nature for various ecosystem services (clean air and water, pollination and food). Generally, the more biodiverse an ecosystem is, the greater its stability, productivity, and resilience, including in the face of threats such as climate change, pests and diseases (Barraclough *et al*., 2023). In addition, animal, plant and microbial diversity are essential sources of medicinal compounds and nutritious food.

Scientific research supports the benefits of investing in environmental protection, including improved community health and wellbeing, protection of cultural identity, economic benefits, moderating climate impacts, reducing diseases and enhanced resilience. It will also allow for future research opportunities.

Growing evidence shows that accessible and diverse green spaces offer higher restorative benefits to human health and wellbeing than those that can be realised in simplified natural environments, such as landscaped parks with limited numbers of plant species.

Kooryunderup – Mount Hallowell, with its varied geology and vegetation assemblages which provide a refuge for a diverse range of species, including Threatened species, and is an important biodiversity resource for Denmark and the southwest of Western Australia.

The Reserve is part of the Macro Corridor along the South Coast (Wilkens *et al.,* 2006). It is also part of 'Gondwana Link', an area which is the subject of reconnection between the forest areas of the southwest of Western Australia and the Western Woodlands of the Goldfields (Gondwana Link, 2025).

4.2 CULTURAL AND HERITAGE VALUES

The Kooryunderup – Mount Hallowell reserve is not currently listed as a site under the *Aboriginal Heritage Act 1972*. However, this is most likely because the area has not been adequately surveyed. Important cultural sites exist in the area, and their significance is only starting to be realised and rediscovered. Lizard traps '*karda mia'*, water trees '*boorna gnamma'*, hollowbutt trees and red ochre '*wilgi'* or '*mirda'* have been found on Kooryunderup – Mount Hallowell indicating a rich Aboriginal cultural history within the area.

The WA Heritage Council has listed Mount Hallowell (Reserves 46618 and 14239) as a 'Registered Heritage Place that does not warrant assessment' (26 July 2020, INHERIT, 2025).

Mount Hallowell is listed in the Shire of Denmark Municipal Heritage Inventory (Municipal Heritage Inventory Review Working Group (2011 as amended 2014) due to its considerable significance as outlined below. Shire of Denmark Municipal Heritage Inventory. Council Resolution 120814.

- **Description:** Very important to the heritage of the locality. High degree of integrity/ authenticity.
- **Desired Outcome:** Conservation of the place is highly desirable. Any alterations or extensions should reinforce the significance of the place.
- The area is significant for the maintenance of faunal processes as it contains undisturbed remnant forest communities of karri (*Eucalyptus diversicolor*); karri/marri (*Eucalyptus diversicolor/Eucalyptus calophylla*); karri/yate (*Eucalyptus diversicolor/Eucalyptus cornuta*); jarrah (*Eucalyptus marginata*); jarrah/blackbutt/bullich (*Eucalyptus marginata/ Eucalyptus patens/Eucalyptus megacarpa*); jarrah/marri (*Eucalyptus marginata/Corymbia calophylla*); marri (*Corymbia calophylla*); and woodlands of mixed jarrah (*Eucalyptus marginata*), blackbutt (*Eucalyptus patens*) and paperbark (*Melaleuca* sp.); shrublands and heathlands with vegetation associated with granite outcrops also being prominent. The Reserve provides habitats for >70 documented species of birds (see Mount Hallowell Reserve Management Plan, Shire of Denmark, November 1995) including the red capped parrot, (*Purpureicephalus spurius*) and the red-eared firetail finch (*Emblema oculatum*). It contains a range of landforms, soils and vegetation communities characteristic of the eastern extremity of karri forest occurrence. It consists mainly of virgin (unlogged) forest with little disturbance and all the Reserve is old growth vegetation. It has extremely high landscape values and visual amenity and has important values for tourism.
- It an important benchmark area. The Reserve is one of a small number of forested areas managed to exclude all fire i.e. no planned burn (Christensen & Abbott, 1989).
- The Mount Hallowell Reserve includes habitat for a number of endemic fauna species, including: Red Capped Parrot (*Purpureicephalus spurius*); Red Winged Fairy Wren (*Malurus elegans*); Peregrine Falcon (*Falco peregrinus*); Quokka (*Setonix brachyurus*); Honey Possum (*Tarsipes rostratus*); Western Brush Wallaby (*Macropus irma*); Woylie (*Bettongia penicillata*); Common Brushtail Possum (*Trichosurus vulpecula*); Common Ringtail Possum (*Pseudocheirus peregrinus*); Western Pygmy Possum (*Cercartetus concinnus*); Southern Brown Bandicoot (*Isoodon obesulus*); Western Quoll or Chuditch (*Dasyurus geoffroii*); Brush-tailed Phascogale (*Phascogale tapoatafa*); Yellow- footed Antechinus (*Antechinus flavipes*); Bush Rat (*Rattus fuscipes*); Water Rat (*Hydromys chrysogaster*); Echidna (*Tachyglossus aculeatus*); Square Nosed Snake (*Rhinoplocephalus bicolor*); Dugite (*Pseudonaja affinis affinis*); Black Tiger Snake (*Notechis ater occidentalis*); Marbled Gecko (*Phyllodactylus marmoratus*); Smith's Skink (*Egernia napoleonis*); Burrowing Skink (*Hemiegis peronii peronii*) and New Holland Skink (*Leiolopisma trilineatum*).
- The Reserve contains known populations of endemic flora species, including: *Eucalyptus cornuta* and *Banksia serra*. The area is also important for maintaining forest and woodland processes.
- The topographic diversity of this area contributes to high aesthetic values and scenic grandeur. The area contains uncommon geomorphic features of rock outcrops and monadnocks which are significant reasons for abundance and diversity of flora and fauna taxa and habitats. Despite its small size, the Reserve provides wilderness values for many visitors.
- Mount Hallowell was named by Dr TB Wilson after Admiral (Sir) Benjamin Hallowell of The Royal Navy. The Mount Hallowell Reserve is located 3.5 km NNW of the mouth of Wilson Inlet on the south coast of Western Australia. It consists of an extremely diverse landscape with hills and ridges generally with a 50 m to 100 m of local relief but rising to >300 m at the summit of Mount Hallowell. Granite outcrops on the upper and mid slopes occur as prominent domes and pinnacles. Soils are dominated by Keystone (K) units (Churchward *et. al.*). The area contains a significant diversity of vegetation comprising forests of karri; karri/marri; karri/yate; jarrah; jarrah/blackbutt/ bullich; jarrah/marri; marri; and woodlands of mixed jarrah, blackbutt and paperbark; shrublands and heathlands. Vegetation associated with granite outcrops is also prominent.
- Most of the area is undisturbed (>96%). A small part on the northern boundary was used for sand extraction in the 1980s. Some timber was selectively extracted from a discrete area on the northern slopes during the 1950s. The Sheila Hill Memorial Walk Trail (which doubles as part of the Perth to Albany Bibbulmun Walk Track) passes through the Reserve. It is bordered to the west and north by grazing farmland, to the south by rural subdivisions and by urban residential to the east. The Reserve has good condition and integrity with the majority carrying very old fire age (>70 years) vegetation.
- There is oral history to indicate that a WW2 Voluntary Defence Corps lookout post was situated on the top of Mount Hallowell.

4.3 RECREATIONAL VALUES

The Kooryunderup - Mount Hallowell Reserve affords spectacular views of the Southern Ocean, coastal areas and Wilson Inlet from the Bibbulmun Track/ Sheila Hill Memorial Trail. Walkers enjoy the magnificent towering stands of old karri, jarrah and marri and unparalleled vistas from the granite-strewn ridgeline towards the summit. Views to the north encompass Mount Shadforth, Mount Lindsay, and the Denmark hinterland. The South Coast Bushcare Services Inc. have developed a brochure to inform trail users about the values of Kooryunderup – Mount Hallowell (Appendix 7).

The Bibbulmun Track/ Sheila Hill Memorial Trail and other trails (and fire access tracks) allow Denmark residents and visitors to enjoy passive recreational pursuits without contributing to the decline of the conservation values of the Reserve.

In the past, school groups and outdoor education tour operators have been allowed to use an area near Monkey Rock for abseiling and rock climbing. Case-specific permission is required from the Shire CEO or endorsed by Council for these activities to take place. Consideration of the cultural sensitivities of Traditional Custodians may indicate that some of these activities are inappropriate.

Considerable debate has occurred around proposals to develop mountain bike facilities in the southeastern portion of the Reserve. In 2019, the *Great Southern Regional Trails Master Plan* (Outdoors Great Southern[2], 2019) identified Mount Hallowell as one of five potential mountain bike project areas in the Great Southern region. At the time, unsanctioned mountain bike trails in the southeast portion of the Reserve provided some basis for establishing a node for this recreational activity.

In its investigations for using Kooryunderup – Mount Hallowell as a mountain bike site, the following stages of a planning process were undertaken (Shire of Denmark, 2019):

> Stage 1 – Trail Proposal – A trail development proposal is either supported in principle by the land manager, so or not supported (due to environmental, social, cultural or other constraints).
>
> Stage 2 – Framework – A project outline is developed by a steering group including: project objectives, project management model, stakeholders, roles, target market, requirements, execution and an ongoing management model.
>
> Stage 3 – Site Assessment – Broad scale study of the area and identification of opportunities, constraints, and characteristics such as soil type, vegetation etc.
>
> Stage 4 – Concept Planning – Identification of opportunities and conceptual trail plan, including broad trail corridors and infrastructure requirements.

Between Stages 3 and 4, the project area was increased from 23 ha to 68 ha based on the advice that the smaller area was insufficient to construct effective short loop cross country mountain bike trails.

A survey indicated that the community was accepting of a low key 23 ha mountain bike trail (Shire of Denmark, Ordinary Meeting of Council, 18 October, 2022). However, the community response to the

[2] Outdoors Great Southern (OGS), previously known as Great Southern Centre for Outdoor Recreation Excellence (GSCORE)

proposal for the larger area was generally negative, based on the likely environmental and cultural impacts.

The stakeholder engagement associated with this management plan reiterated the negative sentiment regarding mountain biking. Based on the significance of Kooryunderup – Mount Hallowell's environmental and cultural values, it is recommended that formalised mountain biking not be supported in the Reserve and that the existing unsanctioned trails be closed.

However, to allow for transparency and opportunity for stakeholder feedback during advertising of this draft document the following options are presented:

- Option 1: Exclude all cycling activities in the Reserve (close unauthorised bike tracks).
- Option 2: Allow cycling activities within the Reserve on emergency access tracks only (close unauthorised bike tracks).
- Option 3: In addition to Option 2 above, allow cycling activities (including mountain biking) on existing mountain bike trails and jumps – noting these existing trails would need to be formalised, allow improved safety and be properly maintained. The Bibbulmun Track and Sheila Hill Memorial Trail will remain walking only.

The staff of the Shire have requested that the community consider the following:

Shire Officers' Statement on the Review of Mount Hallowell Management Plan

As Shire officers, we acknowledge that one of the primary reasons for the review of the Mount Hallowell Management Plan was to address concerns over mountain biking within the reserve. We recognise that there are significant community concerns regarding the existing unsanctioned trails that have been constructed over the years and the proposals to construct more trails within the reserve.

The feedback we have received indicates a strong opposition to mountain biking in the reserve, and we are mindful of the sentiments expressed by the community. In light of this feedback, we offer the following opinion on the matter.

Any management plan must have reasonably achievable outcomes that can be delivered with existing or moderately additional resourcing, given the vast competing priorities across the Shire. We acknowledge that with the current community feedback, additional trails or an expanded trail network are not suitable responses. However, we also believe that a total ban on cycling is not reasonable.

Let's take cycling on fire breaks as an example. Fire breaks are typically 3-4 meters wide, often paved, and designed for fire trucks. There is no justification that a bike causes more environmental damage than other users, such as barking dogs and walkers. This argument cannot be made convincingly. Nor can it be justified that there is a safety issue, given the optimal sightlines and passing room that accommodate both walkers and mountain bike riders.

With regards to the potential management of bike access to the reserve as a whole, there are no physical barriers that can effectively manage bike access while enabling fire truck access. While it is possible to manage narrow trail access, this is not the case where fire breaks are installed to manage the fire risk, and officers will be unable to respond to or deal with complaints relating to bike use on a fire break. All this aside, and as a stark example of the impact, it is not considered a reasonable response that a family walking their dog on a 4 m wide track cannot have their children riding their bikes alongside them.

Ultimately, it is not reasonably enforceable to stop bikes entirely. The practicality of enforcement and the resources required to monitor and regulate such a ban would be considerable, if not prohibitive. Therefore, we suggest that the review and update of the management plan takes these factors into account, adopts a realistic and balanced approach, and provides recommendations accordingly.

In summary, while we understand the community's concerns regarding mountain biking in Mount Hallowell Reserve, we believe that a balanced and practical approach is essential. By managing and regulating biking activities, we can protect the environment, ensure the safety of all users, and provide recreational opportunities that enhance the community's enjoyment of the reserve. We encourage the management plan and its actions to embrace this concept.

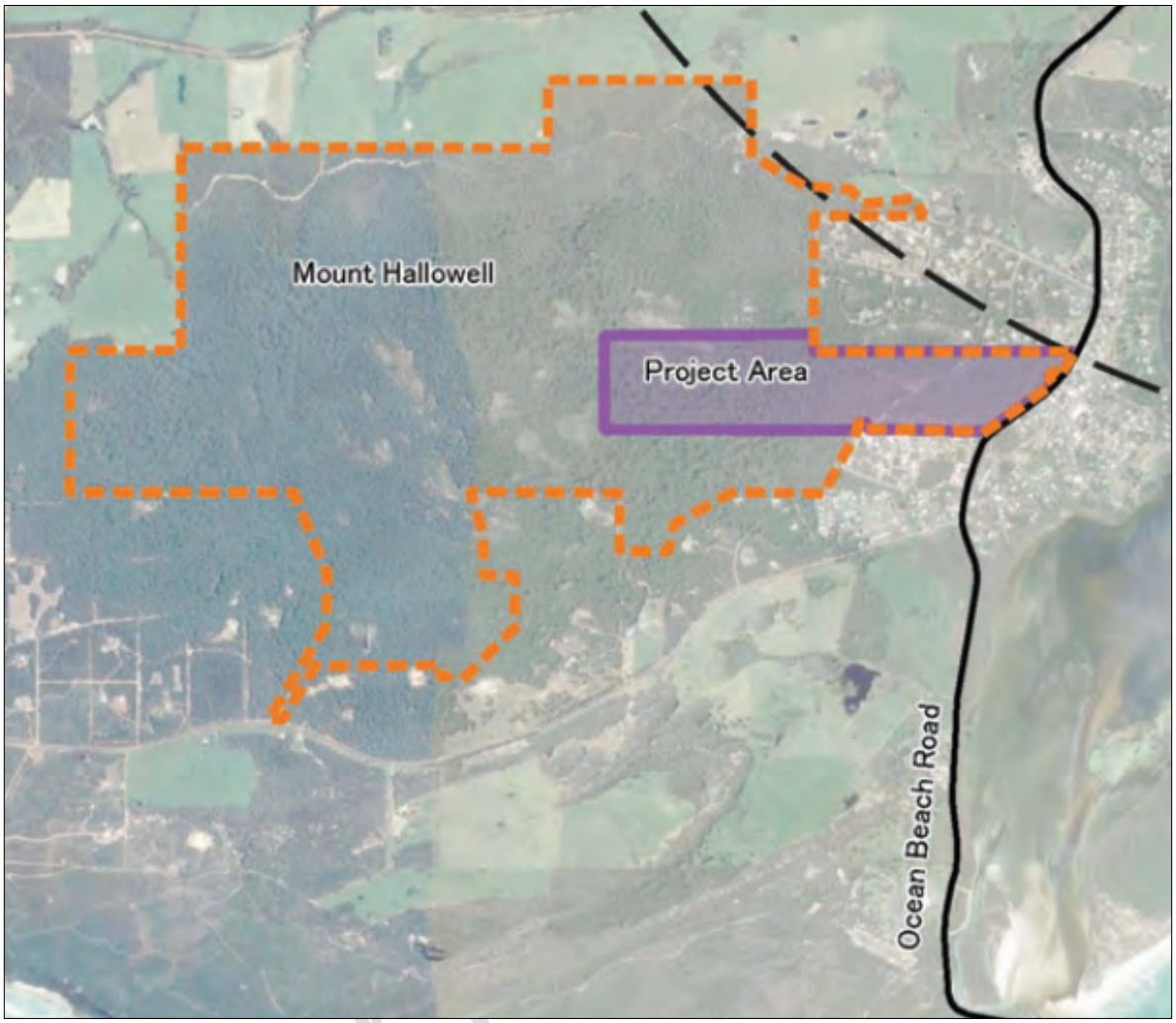
Please provide feedback on this request…

The Shire of Denmark is advancing plans for mountain bike facilities at Turner Road and McLean Park.

Should it be decided that mountain biking activities are to be excluded, the following steps are proposed:

1. Engage with Mountain Bike Club regarding investigation into alternative local facilities.
2. Public information campaign on Shire of Denmark webpage, Denmark bulletin and on Facebook for new management plan, conservation values, timing of works.
3. Signage at entry points.
    a. ‘Conservation Area - Mountain Biking Prohibited’ with alternative (Turner Road, McLean Park etc).
    b. ‘Please report unauthorised usage’ and phone number.
4. Response to community reports within 24 hours or within defined timeframe.
5. Rehabilitation staging:
    a. Bobcat/ backhoe to dig humps and hollows.
    b. Use post and rail, bollards, large branches and/or boulders to block off jumps and trails to be closed.
    c. Implement dieback hygiene for works.
6. Monitoring every quarter or in response to community reports.

FIGURE E: HISTORIC CONCEPT AREA FOR MOUNTAIN BIKES – NOT CURRENT



Source: Three Chillies Design, 2021. This Design is no longer under consideration.

5 ASSESSMENT AND AUDIT

5.1 STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

The development of this management plan has considered management strengths, weaknesses, opportunities and threats (SWOT analysis). Input from key stakeholders has also informed this analysis. Strengths, weaknesses, opportunities and threats are shown in Table 12.

TABLE 12: STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

STRENGTHS	WEAKNESSES
Iconic Reserve is valued by the community. High Biodiversity. Presence of Threatened species such as Black Cockatoos.	Resource availability from Shire (e.g. Rangers for compliance, funding for infrastructure such as car park upgrades, signage, emergency access track rehabilitation and educational investment).
OPPORTUNITIES	**THREATS**
To engage with the community for active management in the Reserve. Cultural Heritage Survey proposed by Wagyl Kaip. Research long-unburnt vegetation (fuel and community assemblages). Further citizen science initiatives such as Bioblitz events.	Fire risk is high. Current safety risk with competing recreational uses (mountain bikes and walkers).

5.2 AUDIT OF CAR PARKS, TRACKS, TRAILS AND DIEBACK INFRASTRUCTURE

An audit of existing infrastructure has been undertaken as part of this management plan review (Aurora Environmental, 2025b). Figures 4 and 5 show the locations of existing car parks, trailheads, tracks, trails, gates, and dieback infrastructure. Photographs are shown in Appendix 8.

In summary, the audit indicates the following:

1. Sheila Hill Memorial Trail car park: The gravel parking area is in fair condition. Delineating the space with bollards between the edge of the parking area and bushland would improve it. Drainage improvements are recommended.
2. Lights Road car park: Gravel parking area in fair condition. Delineation with bollards between the edge of the parking area and the bushland would improve the space. Drainage improvements using the Shire of Denmark depot resources are recommended.
3. Increasing the number of car parking bays at both car parks would require clearing of existing native bushland and is not recommended at this stage.
4. Emergency access tracks to Monkey Rock from Lights Road and behind Heather Road are in poor condition and seriously eroded in places. Drainage needs to be installed to capture and divert water (pipes and/or rollover drains) and re-sheet gravel to fill eroded areas.

5. The northern track meets emergency access requirements—no action is required other than annual or seasonal maintenance.
6. The Bibbulmun Track is in good condition and well supported by the Bibbulmun Track Foundation, DBCA, and local volunteers. However, some signage needs renewal.
7. The Sheila Hill Memorial Trail is poorly delineated and requires formalisation (wayfinding signage and information at the trail head).
8. The low fuel zones adjacent to Heather Road and Forest Road function well.
9. A low fuel zone needs to be installed behind residences on Pember Way and Ravenhill Heights in Harrington Break.
10. The Shire can provide permission for landowners to take a strategic approach to emergency access where topography and obstacles make boundary access impractical. For lots adjacent to the southwest portion of the Reserve where topography and obstacles make boundary access impractical, the Shire currently grants periodic exemptions to landowners for strategic emergency access in lieu of boundary fire breaks. The Shire and these effected landowners can investigate amending individual property titles to formalise and make such exemptions permanent, noting this only applies to specific lots and would be achieved through liaison with the Shire to approve alternatives to the existing defined Strategic Access and Subdivision Access plans (Figure 6). This will give more certainty to landowners in the area.
11. Three dieback boot cleaning stations are located as shown in Figure 4. The stations are located according to the status of dieback in the Reserve, mapped by Great Southern Bio Logic in 2014 (Appendix 5). Until the dieback status is reviewed, the boot cleaning stations are in the most appropriate locations. However, the stations must be maintained (brushes and cleaning out of sand from trays). It is suggested that the Shire work with Friends of Kooryunderup – Mount Hallowell to service the boot cleaning stations.
12. Proposed actions regarding the various tracks and trails are shown in Figures 6 and 7. Stakeholder consultation prior to the release of this management plan indicates that there is very little support for mountain biking within the Reserve and that the unauthorised trails and jumps should be closed and rehabilitated. This is also the professional recommendation from the plan's author. However, to test this proposed course of action, there is also the option to retain and formalise the mountain bike trails. They would need to be upgraded to a safe standard and maintained. The public review of this draft plan will provide important feedback regarding these two options.

5.3 AUDIT OF TRAIL HEADS, SIGNS AND WAYFINDING MARKERS

The goal of signage is to provide direction, identification, succinct information, and/or interpretation to inform visitors about the use of the area. Signs should be integrated so that there are no more signs than needed. All signs should match the style the Shire has across the municipality.

Signs should comprise positive messages, noting that regulatory information can be presented positively. When reminding visitors of their obligations, the signs can inform them of positive aspects of their environment, such as recreational or nature appreciation opportunities.

The status of signs in the Reserve is as follows:

- The trailhead signage at Lights Road and Sheila Hill Memorial Trail car parks is in poor condition (Figures F and H) and needs to be upgraded.
- Signage directing walkers from the Lights Road car park to the Sheila Hill Memorial Trail car park is needed.
- Sheila Hill Memorial Trail signage is missing or in poor condition.
- Dieback signage is appropriately located and in line with the dieback assessment carried out by Great Southern Biologic in 2014. However, some signs need to be replaced as they are in poor condition.

New trailhead signage should be developed and erected at locations shown in Figures 6 and 7. Figure I illustrates the proposed signage style and includes the Shire's logo and relevant symbols for recreational uses and safety warnings. Trailhead signage should include a map of the Reserve, including the possibility of people walking from the Lights Road carpark to the Sheila Hill Memorial Trail carpark. Interpretive signage can be mounted on a separate structure.

Symbols for 'permissible', regulatory or information should follow the National Aquatic and Recreational Signage Style Manual format (Aquatic Signage Steering Committee, 2006). Symbols which should be included:

Regulatory:

- No dogs on Bibbulmun Track (RS,41).
- Bicycles prohibited (RS2) (if bikes prohibited).
- No open fires.

Permissible:

- Dogs on leashes (R,1).
- Walking/ hiking (Use DBCA symbol).
- Observe/ Conserve (Use DBCA symbol).
- Lookout (Use DBCA symbol).

FIGURE F: EXISTING LIGHTS ROAD CAR PARK SIGNAGE

FIGURE G: EXISTING TRAILHEAD SIGNAGE SHEILA HILL MEMORIAL TRAIL

FIGURE H: TRAILHEAD SIGNAGE - PROPOSED SIGN STYLE

6 MANAGEMENT GOALS

Consultation with stakeholders indicated that the management goals for the Reserve should include:

1. **Conservation:** The primary goal of managing the Reserve is to protect natural biodiversity through sound management of threatening processes.
2. **Recreation and infrastructure:** Low-key passive recreation activities such as walking and hiking will be encouraged where they will not impact the conservation values of the Reserve.
3. **Fire management:** The goal is to protect the Reserve's life, property and environmental values through best-practice fire management and active suppression of wildfires**.**
4. **Culture and Heritage:** Kooryunderup—Mount Hallowell is a significant cultural and heritage site for Traditional Custodians, and it will be managed to protect these values.
5. **Community engagement, research and education:** As an area rich in biodiversity, a goal is to raise awareness of the Reserve's intrinsic and educational value while promoting ongoing citizen science and other research initiatives.
6. **Land use planning and compliance:** With threats such as fire, introduction and spread of dieback, safety of users and management of neighbouring properties, land use planning and compliance outcomes must be achieved.

6.1 CONSERVATION

The Reserve has significant conservation values, and the main priority is protecting and maintaining these ecological values, including vegetation communities, flora, fungi, fauna, and ecological processes that contribute to the reserve's well-being. Conservation actions will need to minimise threatening processes such as introducing and spreading dieback, weed management, and fire suppression.

Goal: Maintain and improve the integrity and conservation value of the vegetation and the habitat values for fungi and fauna, and manage threatening processes.

6.2 CULTURE AND HERITAGE

Goal: That cultural and heritage values are recognised and respected accordingly.

6.3 RECREATION

Goal: Recreational activities consistent with the conservation values of the Reserve are supported in existing trails and lookouts.

6.4 FIRE MANAGEMENT

Goal: Achieving a balance of biodiversity protection, recognition of long unburnt values and protection of life and property through fire management strategies.

6.5 COMMUNITY ENGAGEMENT

Goal: Support an engaged community which is aware of the Reserve’s values and who take an active role in managing the area.

6.6 COMPLIANCE

Goal: Ensure that fire management requirements are met and that access in the Reserve is consistent with conservation values.

6.7 INFRASTRUCTURE

Goal: That appropriate infrastructure is installed and maintained to ensure a safe and enjoyable experience for visitors and fire and emergency services personnel.

6.8 LAND USE PLANNING

Goal: That land use planning considers the conservation and recreation values of the Reserve with appropriate use and fire management.

7 MANAGEMENT ACTIONS

Actions are listed against each identified goal/value category, site, responsibility, priority, and resourcing requirements.

The actions outlined in the 2008 management plan have been reviewed. Stakeholders, including Shire staff, provided information about whether the 2008 actions had been completed, were ongoing, not commenced, or were redundant.

Categories for action priorities, status, resourcing, responsibility and management are included in Table 13.

Some actions are still current and were updated for inclusion in this Management Plan. Other actions have been developed based on stakeholder engagement and visits to the Reserve. All proposed actions are included in Table 14. Site specific actions are shown in Figures 6 and 7, dependent on community feedback and Council resources.

TABLE 13: CATEGORIES FOR ACTION PRIORITY, TIMING, STATUS, RESOURCING, RESPONSIBILITY AND MANAGEMENT

PRIORITY AND TIMING	RESOURCING	RESPONSIBILITY (SHIRE OF DENMARK)	MANAGEMENT CATEGORY
High	Existing	Rangers	Compliance
Medium	Planned	Fire	Fire
Low	New	Reserves	Conservation
		Sustainability	Community Engagement
		Planning	Land Use Planning
		Projects	Education
		Infrastructure	Infrastructure
		Governance	Heritage
		Technical Services	

TABLE 14: RECOMMENDED ACTIONS BY MANAGEMENT CATEGORY

MANAGEMENT CATEGORY	ACTION ID	2025 ACTIONS (SPECIFIC AND MEASURABLE)	RESPONSIBILITY (SHIRE OF DENMARK)	PRIORITY	RESOURCING REQUIRED	COMMENT (ACHIEVABLE AND RELEVANT) EXTERNAL PARTNERS
CONSERVATION	C1	Refer to Shire of Denmark Code of Practice for Works and Reserve management.	Sustainability	**Medium**	**Low – undertaken within 5 years**	Achievable and relevant. Review Shire of Denmark Code of Practice and include information on standards for walk trail widths and surface materials. Use DBCA guidelines as a guide: https://www.dbca.wa.gov.au/parks-and-wildlife-service/trails
	C2	Ensure Code of Practice is implemented for any operational disturbance/ works undertaken by Shire staff and contractors.	Infrastructure	**High**	**Existing**	Achievable and relevant. Inform/train Shire staff and contractors as part of Code of Practice.
	C3	Follow the requirements of the 'Shire of Denmark Policy No. 1 Dieback Management' with respect to dieback management within the Reserve.	Infrastructure	**High**	**Existing**	Achievable and relevant. Ensure staff and contractors implement requirements of dieback management policy. Policy at: https://www.denmark.wa.gov.au/documents/198/policy-no-1-dieback-disease-management
	C4	Undertake Environmental Impact Assessments (EIA) for any new operational disturbance activity proposed.	Sustainability	**High**	**New**	Achievable and relevant. Shire undertakes EIA with any new operational disturbance activity proposed (e.g. new infrastructure, trails, etc).
	C5	Consider environmental sensitivities such as granite outcrops, black cockatoo nesting etc. when reviewing and approving events (e.g. abseiling and adventure races on Mount Hallowell / Monkey Rock.)	Reserves	**High**	**Existing**	Achievable and relevant.
	C6	Implement weed control activities according to Bushland Reserves Weeds Strategy 2024 – 2034.	Sustainability	**High**	**Planned**	Achievable and relevant. Bushland Reserves Weeds Strategy 2024 - 2034
	C7	Implement track rehabilitation and maintenance program as identified in this plan, which will depend on the feedback received regarding management actions CO1 and IR1 (refer IR1 in this Table) as part of the final public review	Reserves	**High**	**New**	Appropriate management measures to be confirmed in finalised Management Plan, depending on the community feedback received as part of the final public review.
	C8	Continue to monitor areas that have been rehabilitated and/or revegetated (quarterly for three years).	Reserves	**Medium**	**New**	Achievable and relevant. Involve volunteers for these activities.
	C9	Implement recommendations from Dieback Study and Great Southern Bio Logic (2014) as described in Section 2.8: • Operate in compliance with Town Planning Scheme Policy No.1 Dieback. • Practice operational hygiene (clean down vehicles). • Rationalise tracks. • Bimbimbi Way management access hygiene. • Project dieback signage installation to be monitored. • Maintain boot cleaning stations. • Continue community awareness and education.	Sustainability	**Medium**	**New**	Achievable and relevant. Details are in Kooryunderup – Mount Hallowell Management Plan
	C10	Update dieback distribution mapping in 2026 and every 10 years.	Sustainability	**Medium**	**New**	Achievable and relevant.
	C11	Implement a regular program to control feral animals across the Reserve.	Reserves	**Medium**	**New**	Achievable and relevant but Reserve may be too close to residential areas to undertake use of 1080 baiting. Consult with DBCA.
	C12	The Shire of Denmark to consider Climate Change advice and initiate actions to increase resilience of the Reserve.	Sustainability	**High**	**Planned**	Achievable and relevant. Refer to Sustainability Strategy - Land & Nature pillar.

MANAGEMENT CATEGORY	ACTION ID	2025 ACTIONS (SPECIFIC AND MEASURABLE)	RESPONSIBILITY (SHIRE OF DENMARK)	PRIORITY	RESOURCING REQUIRED	COMMENT (ACHIEVABLE AND RELEVANT) EXTERNAL PARTNERS
	C13	Train Shire of Denmark Reserves and Sustainability staff in environmental practices and weed management.	Sustainability	**High**	**Planned**	Achievable and relevant. Protection of environmental values workshop planned for Shire staff and contractors.
COMMUNITY ENGAGEMENT AND EDUCATION	CE1	Continue educating the public and community, including nearby residents and landowners, about native flora, fauna, and fungi and the identification and control of invasive species in the Reserve.	Sustainability	**Medium**	**Existing**	Achievable and relevant. Consider a partnership with Birdlife Australia (Denmark Bird Group),
	CE2	Support the Friends of K-MH and other community partners in management of Mount Hallowell Reserve.	Sustainability	**High**	**Existing**	Achievable and relevant. Regular meetings, development of a partnership/ work program, administrative support, recognition, celebrations.
	CE3	Support building conservation (flora, fauna, fungi) knowledge of K-MH via opportunities such as citizen science initiatives.	Sustainability	**Low**	**New**	Achievable and relevant. Obtain funding to conduct Citizen Science projects such as Bioblitz.
	CE4	Seek partnership with educational and natural resource organisations to further knowledge about K-MH, particularly long unburnt vegetation.	Sustainability	**Low**	**New**	Achievable and relevant. Potential partnership with educational institutions such as Centre for Excellence - Natural Resource Management, South Coast Natural Resource Management, UWA, Birds Australia.
COMPLIANCE AND LAND USE PLANNING	CO1	There are several options for the use of trails in the Reserve (other than the Bibbulmun Track and Sheila Hill Memorial Trail – which are for walking only). Compliance and land use planning in relation to future use and management of trails will depend on the feedback received on the options below as part of the final public review : • Option 1: Exclude all cycling activities in the Reserve. • Option 2: Allow cycling activities within the Reserve on emergency access tracks only. • Option 3: In addition to Option 2 above, allow cycling activities (including mountain biking) on existing mountain bike trails and jumps – noting these existing trails would need to be formalised, allow improved safety and be properly maintained.	Rangers	**High**	**New**	Community feedback overwhelmingly requested prohibition of mountain biking within the Reserve. However, the Shire has requested that appropriate management measures to be confirmed in the finalised Management Plan, depending on the community feedback received as part of the final public review.
	CO2	Identify and install appropriate signage to indicate that dogs must be kept on leashes (Monkey Rock, eastern and northern tracks). Dogs to be prohibited on Bibbulmun Track.	Rangers	**Medium**	**Existing**	Achievable and relevant. Currently dogs are permitted off-lead as the Reserve is outside the Denmark town gazetted area. A change to the local law is likely to be required to require dogs to be on leads. Signage to be installed regarding dogs being kept on leashes in eastern area and at Monkey Rock and prohibited on Bibbulmun Track.
	CO3	Ensure compliance with domestic animal control regulations by following up on complaints.	Rangers	**Medium**	**Existing**	Achievable and relevant.
	CO4	Identify property owners who do not comply with the requirements of the Fire Break Notice and issue infringements where appropriate.	Rangers	**High**	**Existing**	Achievable and relevant. Inspections are carried out throughout the Shire of Denmark for fire management compliance. The requirements for property owners are stated in the annual Firebreak and Fuel Management Notice and infringements are issued for non-compliance.
	CO5	Shire to investigate neighbouring landowner's use of the Reserve adjacent to Heather Road.	Planning/ Rangers	**High**	**New**	Neighbouring landowners are using the Reserve adjacent to Heather Road. Private use of the reserve is less than ideal, with potential weed introduction and other risks associated with the personal use of a public space. However, the use has been long-term, and the Shire will need to work with landowners to develop an acceptable solution.
INFRASTRUCTURE AND RECREATION	IR1	The rationalisation and future management of trails for different uses (walking or cycling or both) will depend on the community feedback received as part of the final public review to the options	Reserves	**High**	**New**	Appropriate management measures to be confirmed in finalised Management Plan, depending on the community feedback received as part of the final public review.

MANAGEMENT CATEGORY	ACTION ID	2025 ACTIONS (SPECIFIC AND MEASURABLE)	RESPONSIBILITY (SHIRE OF DENMARK)	PRIORITY	RESOURCING REQUIRED	COMMENT (ACHIEVABLE AND RELEVANT) EXTERNAL PARTNERS
		presented under management action CO1 and in Section 4.3. Signage will need to reflect the final option selected (other than the Bibbulmun Track and Sheila Hill Memorial Trail – which are for walking only).				
	IR2	Trailhead signage will be developed and installed at Lights Beach car park, Sheila Hill Memorial Track car park, and the Bibbulmun Track entry point on Ocean Beach Road.	Reserves	**High**	**New**	Achievable and relevant.
	IR3	Replace wayfinding signage for Sheila Hill Memorial Trail.	Reserves	**High**	**New**	Achievable and relevant.
	IR4	Keep paths and trails well-defined, marked and maintained to ensure that walkers do not stray into the bush.	Reserves	**High**	**New**	Achievable and relevant.
	IR5	Install a map of the Reserve at carparks with safety instructions (including how to walk from Lights Road car park to Sheila Hill Memorial Trail car park).	Reserves	**High**	**New**	Achievable and relevant. Place a map of the reserve at each of the carparks (including Monkey Rock, Sheila Hill carpark and Ocean Beach/ Bibbulmun Track junction.
	IR6	Interpretive information to be developed for the Reserve (subjects could include Aboriginal heritage, fire regimes, Sheila Hill and biodiversity).	Reserves	**Low**	**New**	Achievable and relevant. Interpretive information to be developed for key locations in Reserve e.g. car parks, trail heads and Mount Hallowell summit. Subjects include biodiversity, long unburnt vegetation, Sheila Hill, Traditional Custodian heritage and culture, fauna, flora, fungi.
	IR7	Maintain Boot Cleaning Stations and review locations when dieback status is updated.	Reserves	**High**	**Planned**	Achievable and relevant. Work with partners such as Friends of Kooryunderup - Mount Hallowell to regularly maintain the Boot Cleaning Stations.
	IR8	Upgrade Sheila Hill Memorial Trail and Lights Road carparks - formalise drainage, delineate parking areas and boundaries	Technical Services	**Medium**	**New**	Achievable and relevant but will require engineering design and capital outlay. Deep roadside drain at Sheila Hill Memorial Trail carpark needs barrier fencing.
	IR9	Record numbers of cars parking in peak periods (school holidays).	Technical Services	**Medium**	**Planned**	Formalise car park layout and drainage to maximise use of existing space. Consider expansion of car park only if there is a safety risk associated with existing parking.
FIRE MANAGEMENT	F1	Ensure the Fire Management Plan incorporates: • Assessment of fire hazard levels and biomass in both the Reserve and adjoining properties. • Fire Prevention Plan with medium to long term mitigation strategies. • Fire Response Plan outlining predetermined fire suppression responses. • Revised Strategic Fire Access Route System. New or proposed developments to consider: • Building Protection Zones. • Hazard Reduction Zones. • Current Water Supplies. • Current maps. Ensure implementation of the Fire Management Plan, particularly for adjoining developments.	Fire	**High**	**Planned**	Liaise with Mitigation Activities Fund (MAF) personnel. Fire management plan to allow for dynamic changes outside of plan with MAF program and fire management for the reserve considered as broader Shire fire priorities
	F2	Rehabilitate emergency access tracks - Lights Road carpark to Monkey Rock to formalise drainage (rollover drains) and resheet with gravel to ensure safe access.	Fire/ Technical Services	**High**	**Planned**	Monkey Rock and Heather Road emergency access requires drainage works and resheeting with gravel to ensure safe access. Consideration to sourcing dieback free material. Achievable and relevant but will require engineering design and capital outlay.
	F3	Erect and maintain appropriate barriers to fire access ways.	Fire	**High**	**New**	Select standardised gates that serve entry requirements.

MANAGEMENT CATEGORY	ACTION ID	2025 ACTIONS (SPECIFIC AND MEASURABLE)	RESPONSIBILITY (SHIRE OF DENMARK)	PRIORITY	RESOURCING REQUIRED	COMMENT (ACHIEVABLE AND RELEVANT) EXTERNAL PARTNERS
	F4	Review Heather Road southern boundary access track - consider installation of gates (in consultation with neighbouring landowners). Prevent erosion by addressing drainage issue in southern portion of emergency access track.	Fire	**High**	**New**	Review Heather Road southern boundary access track - consider installation of gates (in consultation with neighbouring landowners). Erosion has made the area unsuitable for emergency access and resurfacing/ drainage works are needed. Achievable and relevant but will require engineering design and capital outlay.
	F5	Ensure maps are current and readily accessible to fire fighters and show contours, the location of all dwellings, access, strategic fire breaks and water supply, as well as buffer areas. A grid and a legend should be included for easy reference.	Fire	**High**	**Existing**	Seek advice from MAF personnel and Community Emergency Services Manager (CESM). Achievable and relevant.
	F6	Continue implementation of a Fire Management public education program aimed at residents, visitors and tourists, incorporating the following: • Notification of High Fire Risk Days via EmergencyWA webpage and local radio stations. • "No open fires" incorporated into signage at entries. • Shire of Denmark to forward fire related information to new residents adjacent to Mount Hallowell Reserve to increase their fire awareness and advise them of their obligations in terms of fire protection responsibilities. • Develop and implement a process for ensuring that tenants of rental properties and holiday homes are informed of fire protection requirements. • Before and during each fire season conduct a public fire awareness campaign that particularly targets residents in the area. This may be in the form of general publicity, seminars or a door knock. Ownership of this campaign by Denmark Community Fire Manager with assistance from Ocean Beach Bush Fire Brigade and William Bay Bush Fire Brigade. • Emphasis on the benchmark status of the Reserve as a 'no planned burn area' to adjacent landowners. • Focus on quick fire suppression.	Fire	**High**	**Existing**	Achievable and relevant but will require coordination with partners. Details of actions for tracks shown in Figures 6 and 7.
	F7	Construct low fuel zone behind residences on Pember Way and Ravenhill Heights in Harrington Break.	Fire	**High**	**Planned**	Achievable and relevant but will require communication and coordination with stakeholders. The existing access is partly on private property, due to historic conditions of subdivision. This was due to the presence of granite. Existing alignment to be maintained.
	F8	Work with adjacent landowners to south west of Reserve to allow a strategic approach to emergency access where topography and obstacles make boundary access impractical.	Fire	**High**	**Existing**	Achievable and relevant but will require liaison between landowners and Shire.
	F9	Access tracks to be inspected annually by Bushfire Compliance officers.		**High**	**Existing**	Achievable and relevant as currently undertaken by Shire.

MANAGEMENT CATEGORY	ACTION ID	2025 ACTIONS (SPECIFIC AND MEASURABLE)	RESPONSIBILITY (SHIRE OF DENMARK)	PRIORITY	RESOURCING REQUIRED	COMMENT (ACHIEVABLE AND RELEVANT) EXTERNAL PARTNERS
CULTURE AND HERITAGE	H1	Support Wagyl Kaip in undertaking a Cultural Heritage Survey and respectful consideration of culturally significant places.	Sustainability	**Medium**	**New**	Heritage Survey undertaken for project area trails proposal by Deep Woods and Menang Peoples Working Group in 2021. More complete heritage survey is achievable and relevant and will require forming a partnership with Wagyl Kaip and other stakeholders.
	H2	Consider cultural and heritage sensitivities such as granite outcrops when reviewing and approving events (E.g. abseiling and adventure races on Mount Hallowell / Monkey Rock.)	Reserves	**High**	**Existing**	Achievable and relevant depending on outcome of Cultural Heritage Survey.

8 REFERENCES

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FIGURES

N

0 0.5 1 1.5 2km

SCALE 1 : 50 000 at A3
GDA2020 MGA Zone 50

Legend

Reserve Boundary

REGIONAL INSET

Aurora environmental
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Shire of Denmark
KOORYUNDERUP - MOUNT HALLOWELL MANAGEMENT PLAN 2025 - 2035
OCEAN BEACH, DENMARK

REGIONAL LOCATION

Figure 1

Drawn: M. Price | Date: 26 May 2025 | Job: SOD-AP00721

SOD-AP00721_MPR_002_mp-f01.dgn

PINPOINT CARTOGRAPHICS (08) 9562 7136

526 000mE
528 000mE
530 000mE
6 128 000mN
6 126 000mN
SOUTH COAST HIGHWAY
Little River
Little River
ROAD
HARRINGTON BEACH
BREAK
OCEAN
GRANT ROAD
MINSTERLY ROAD
ROAD
LIGHTS ROAD
LIGHTS ROAD
HEAVY TREE
Wilson Inlet
Lot 8065
R 46618
Lot 7572
R 14239
Lot 7560
R 46618

N

0 100 200 300 400 500m

SCALE 1 : 15 000 at A3
GDA2020 MGA Zone 50

Legend

- Reserve Boundary
- Cadastral Boundary

CADASTRAL SOURCE: Landgate, January 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.

PINPOINT CARTOGRAPHICS (08) 9562 7136 SOD-AP00721_MPR_002_mp-f02.dgn

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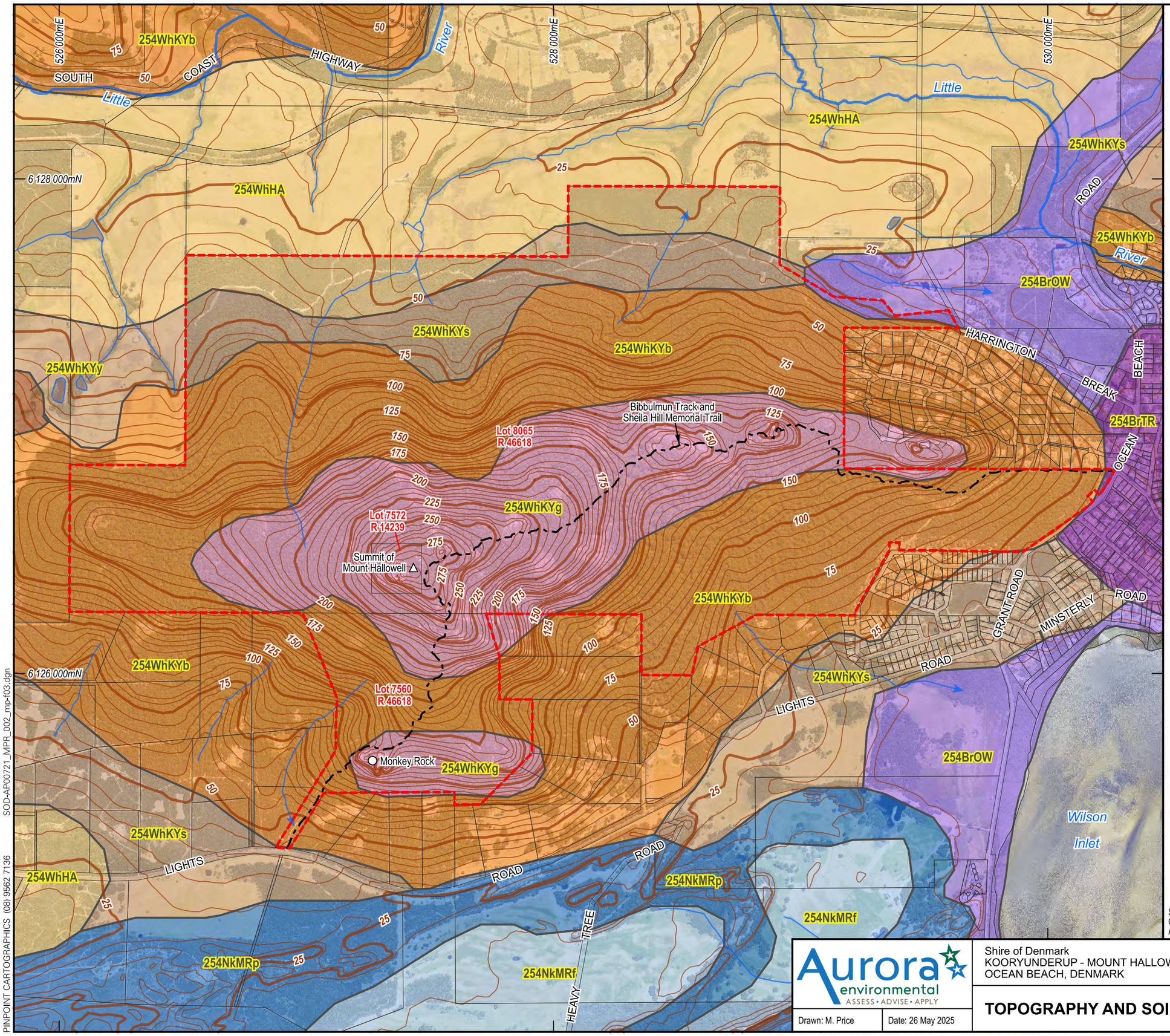
Shire of Denmark
KOORYUNDERUP - MOUNT HALLOWELL MANAGEMENT PLAN 2025 - 2035
OCEAN BEACH, DENMARK

KOORYUNDERUP - MOUNT HALLOWELL

Figure 2

Drawn: M. Price | Date: 26 May 2025 | Job: SOD-AP00721



Legend

- Reserve Boundary
- Cadastral Boundary
- Topographic Contour
- Watercourse
- Bibbulmun Track

Soil Types

254BrOW - Owingup subsystem
Plains with swamps, lunettes and dunes; Yellow solonetzic soils, organic loams and diatomaceous earth; Podzols on dunes

254BrTR - Trent subsystem
Gravelly yellow duplex soils and laterite on crests; Leached sands with iron pan on flanks

254NkMRf - Meerup podzols on interdune plains phase
Podzols on interdune plains

254NkMRp - Meerup podzols over calcareous sand phase
Podzols over calcareous sand

254WhHA - Hazelvale subsystem
Narrow sandy plains, slight stream incision; Humus podzols on crests of spurs; Yellow duplex soils on valley flanks; Peaty podzols on minor valley floors

254WhKYb - Keystone brown duplex phase
Brown gravelly duplex soils and red of yellow earths; much laterite.

254WhKYg - Keystone granite phase
Granite outcrop

254WhKYs - Keystone podzols phase
Podzols

254WhKYy - Keystone yellow duplex phase
Gravelly yellow duplex soils

SOILS SOURCE: DPIRD, January 2025.
CADASTRAL SOURCE: Landgate, January 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.

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Drawn: M. Price | Date: 26 May 2025

Shire of Denmark
KOORYUNDERUP - MOUNT HALLOWELL MANAGEMENT PLAN 2025 - 2035
OCEAN BEACH, DENMARK

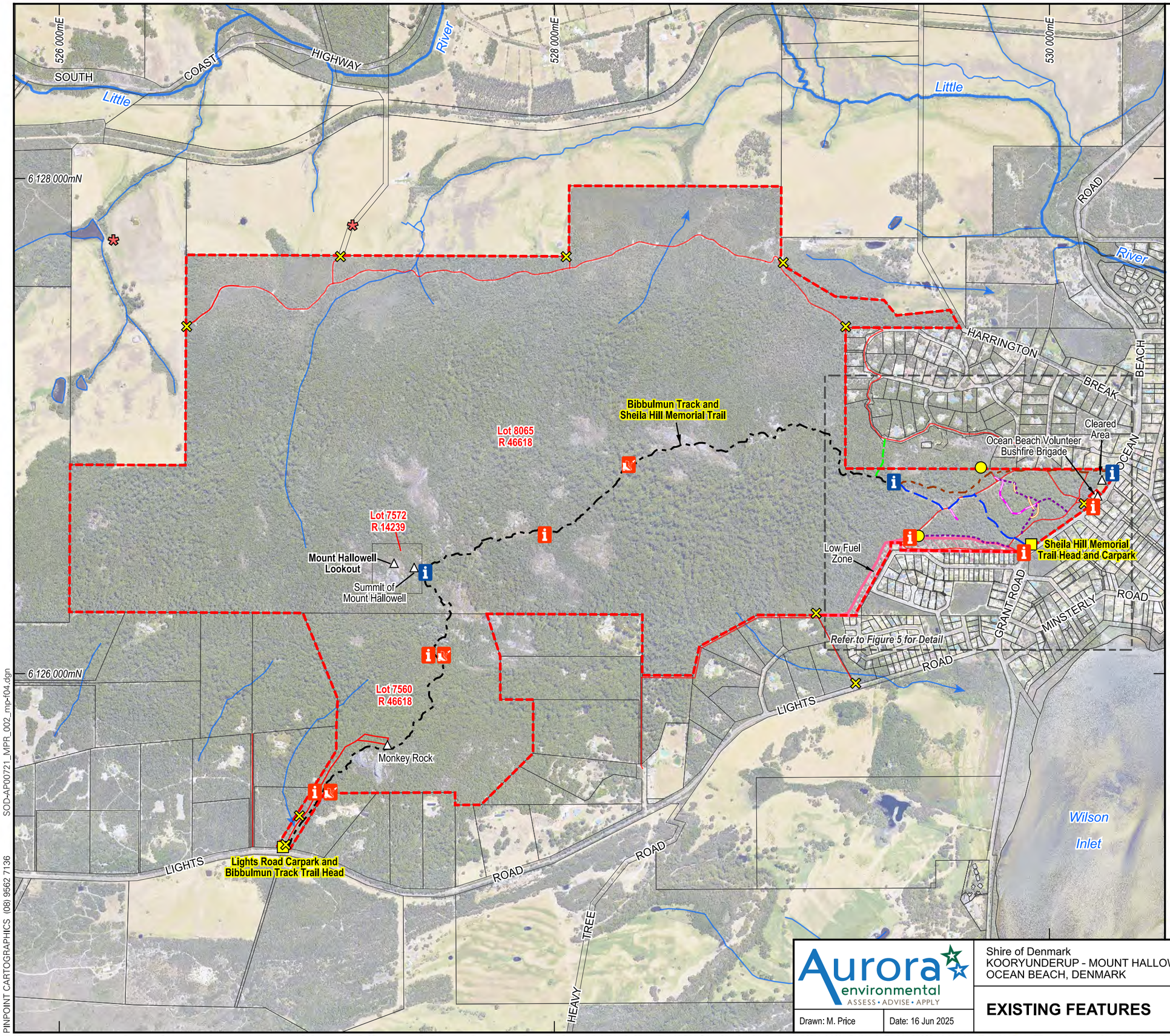
TOPOGRAPHY AND SOILS

Figure 3

Job: SOD-AP00721

SOD-AP00721_MPR_002_mp-f03.dgn

PINPOINT CARTOGRAPHICS (08) 9562 7136



N

0 100 200 300 400 500m

SCALE 1 : 15 000 at A3
GDA2020 MGA Zone 50

Legend

- Reserve Boundary
- Cadastral Boundary
- Watercourse
- Emergency Access Via Farm
- Emergency Access
- Mountain Bike Trail and Jumps
- Trail Previously Closed
- Bibbulmun Track
- Bibbulmun Track & Sheila Hill Memorial Trail
- Sheila Hill Memorial Trail
- Walk Trail
- Access Walk Trail
- Low Fuel Zone
- Access Gate
- Bollards
- Car Park
- Wayfinding, Trailhead & Interpretive Signage
- Dieback Signage
- Boot Cleaning Station

CADASTRAL SOURCE: Landgate, January 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.

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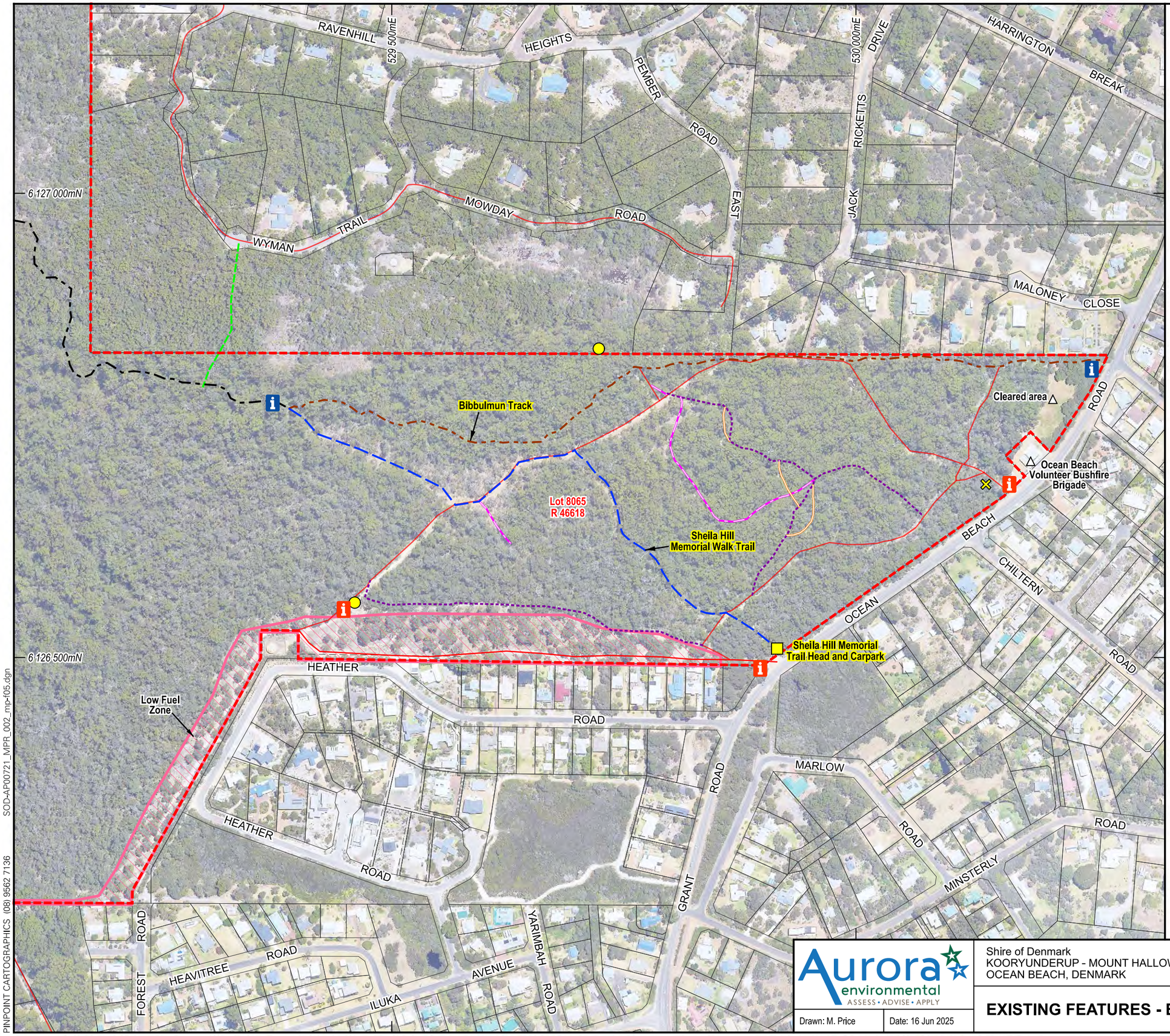
Shire of Denmark
KOORYUNDERUP - MOUNT HALLOWELL MANAGEMENT PLAN 2025 - 2035
OCEAN BEACH, DENMARK

EXISTING FEATURES

Figure 4

Drawn: M. Price | Date: 16 Jun 2025 | Job: SOD-AP00721

PINPOINT CARTOGRAPHICS (08) 9562 7136 SOD-AP00721_MPR_002_mp-f04.dgn



N

0 50 100 150 200m

SCALE 1 : 4 000 at A3
GDA2020 MGA Zone 50

Legend

- Reserve Boundary
- Cadastral Boundary
- Watercourse
- Emergency Access Via Farm
- Emergency Access
- Mountain Bike Trail and Jumps
- Trail Previously Closed
- Bibbulmun Track
- Bibbulmun Track & Sheila Hill Memorial Trail
- Sheila Hill Memorial Trail
- Walk Trail
- Access Walk Trail
- Low Fuel Zone
- Access Gate
- Bollards
- Car Park
- Wayfinding, Trailhead & Interpretive Signage
- Dieback Signage
- Boot Cleaning Station

CADASTRAL SOURCE: Landgate, January 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.

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Drawn: M. Price | Date: 16 Jun 2025

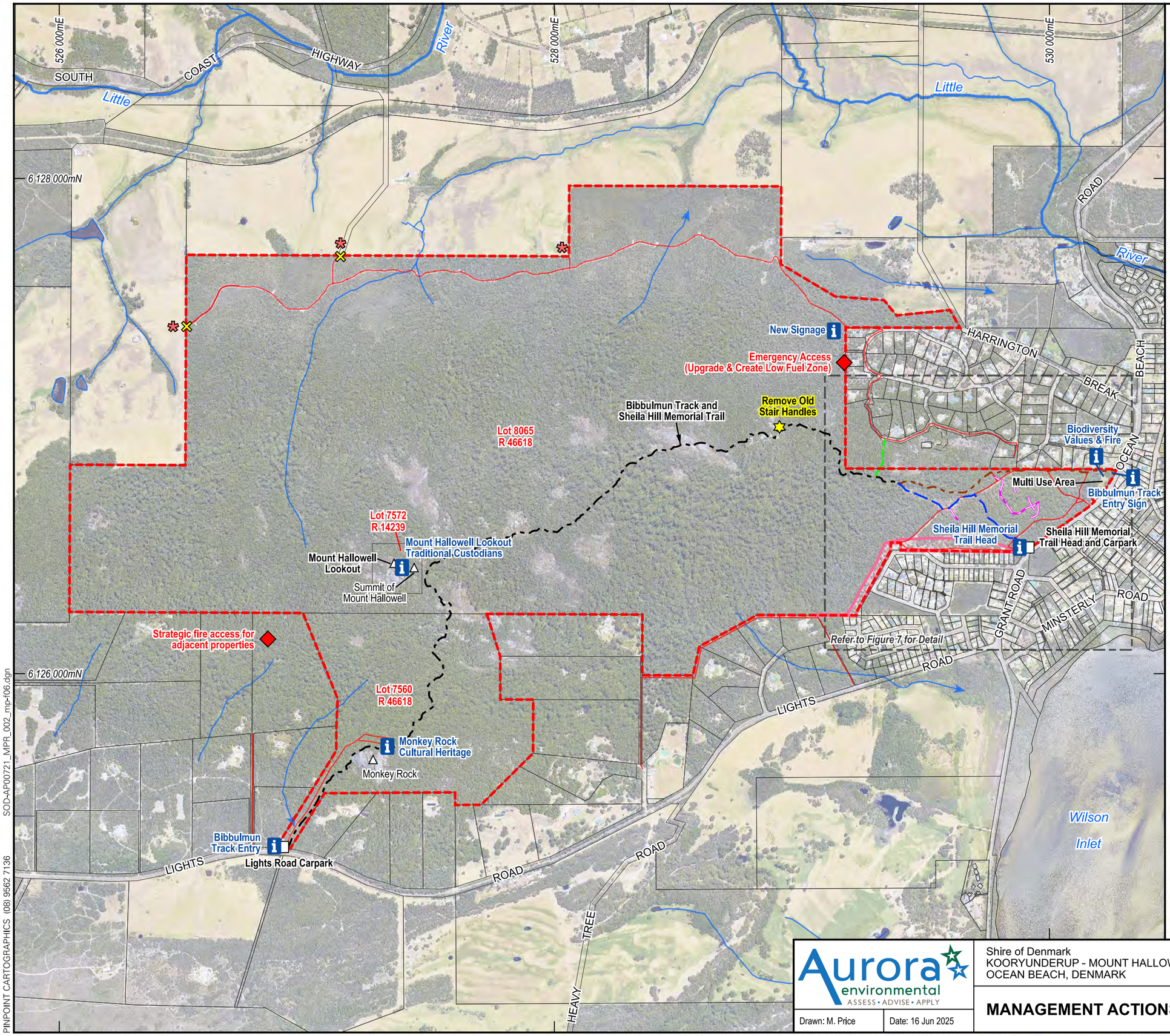
Shire of Denmark
KOORYUNDERUP - MOUNT HALLOWELL MANAGEMENT PLAN 2025 - 2035
OCEAN BEACH, DENMARK

EXISTING FEATURES - EASTERN AREA

Figure 5

Job: SOD-AP00721

PINPOINT CARTOGRAPHICS (08) 9562 7136 SOD-AP00721_MPR_002_mp-f05.dgn



N

0 100 200 300 400 500m

SCALE 1 : 15 000 at A3
GDA2020 MGA Zone 50

Legend

- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Watercourse
- Emergency Access Via Farm
- Emergency Access
- Bibbulmun Track
- Bibbulmun Track & Sheila Hill Memorial Trail
- Sheila Hill Memorial Trail
- Low Fuel Zone
- Car Park

Management Actions

- Access Gate
- Infrastructure Removal
- Wayfinding, Trailhead & Interpretive Signage
- Emergency Access Upgrade
- Mountain Bike Trail and Jumps Close or Formalise
- Trail Previously Closed
- Access Walk Trail (Retain and Monitor)

Actions:

- Delineate Lights Road carpark and improve drainage
- Retain the cleared grass area to the north of South Coast Volunteer Bush Fire Brigade station for training and other low key activities
- Upgrade signage (trail head signage at Lights Road car park for Bibbulmun Track/ Sheila Hill Memorial Trail)
- Maintain boot cleaning stations and dieback information signage with support from Friends of Kooryunderup - Mount Hallowell
- Install interpretive signage at the summit of Mount Hallowell, noting permission will be required from the Department of Planning, Land and Heritage (e.g.
- Upgrade drainage and resurface eroded areas of emergency access track from Lights Road car park to Monkey Rock
- Install directional and interpretive signage for lookout at Monkey Rock (from walk trail)
- Update dieback mapping in 2026 and then every 10 years

Signage:

- Dogs on leashes in eastern area, northern access track and at Monkey Rock. No dogs on Bibbulmun Track

CADASTRAL SOURCE: Landgate, January 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.

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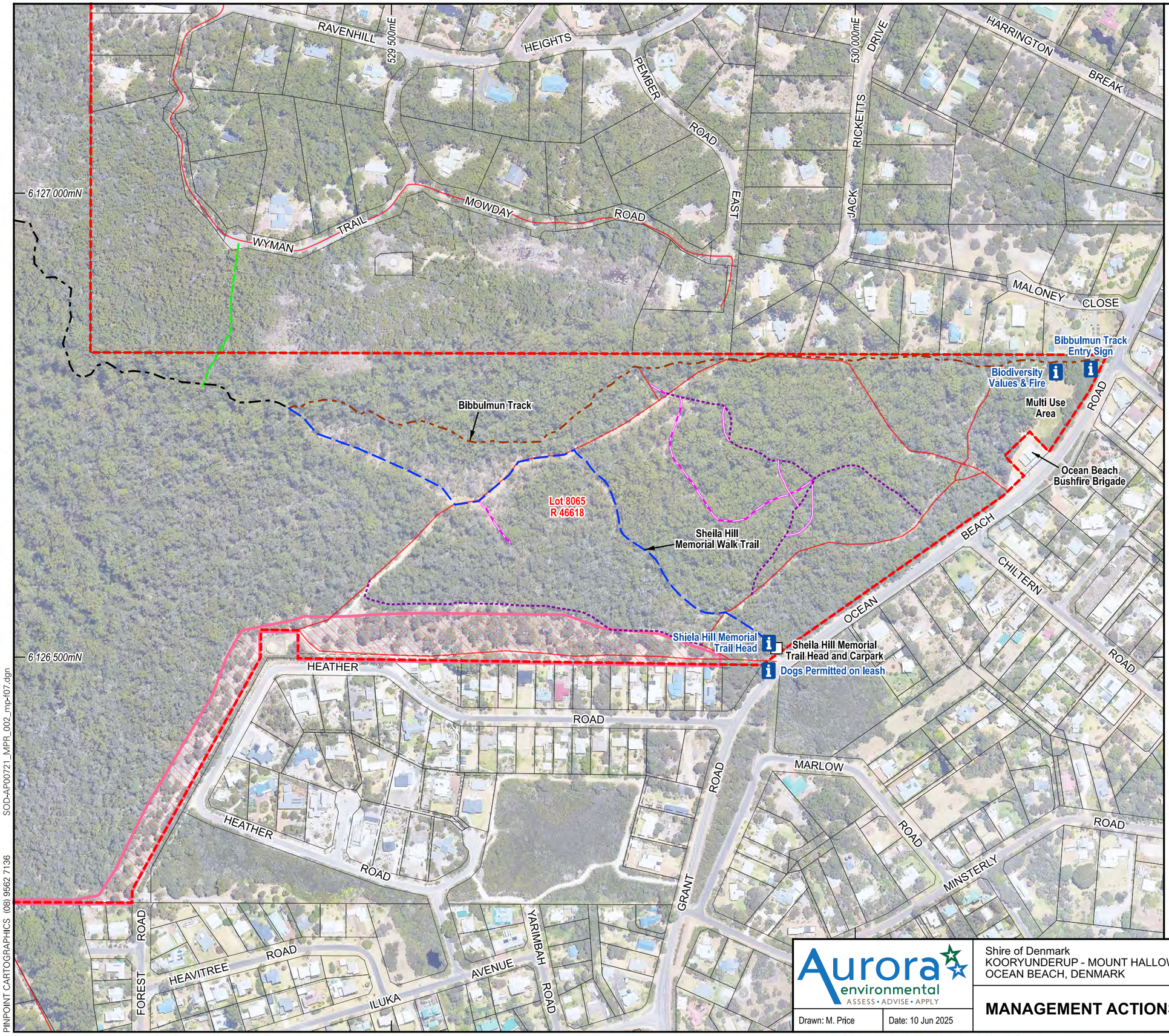
Shire of Denmark
KOORYUNDERUP - MOUNT HALLOWELL MANAGEMENT PLAN 2025 - 2035
OCEAN BEACH, DENMARK

Figure 6

MANAGEMENT ACTIONS

Drawn: M. Price | Date: 16 Jun 2025 | Job: SOD-AP00721

PINPOINT CARTOGRAPHICS (08) 9562 7136 SOD-AP00721_MPR_002_mp-f06.dgn



N

0 50 100 150 200m

SCALE 1 : 4 000 at A3
GDA2020 MGA Zone 50

Legend

- Site Boundary
- Cadastral Boundary
- Easement Boundary
- Emergency Access
- Bibbulmun Track
- Bibbulmun Track & Sheila Hill Memorial Trail
- Sheila Hill Memorial Trail
- Walk Trail
- Low Fuel Zone
- Car Park

Management Actions

- Wayfinding, Trailhead & Interpretive Signage
- Mountain Bike Trail and Jumps Close or Formalise
- Trail Previously Closed
- Access Walk Trail (Retain and Monitor)

Actions:

- Retain the cleared grass area to the north of South Coast Volunteer Bush Fire Brigade station for training and other low key activities
- Replace trailhead signage at Shiela Hill Memorial Trail head/ car park including interpretive signage about Sheila Hill
- Replace Bibbulmun Track entry signage on Ocean Beach Road
- Replace wayfinding markers for Sheila Hill Memorial Trail
- Remediate emergency access from Trail head carpark (parallel to Heather Road) to improve drainage and resheet washed out areas
- Close mountain bike trails and jumps as indicated and monitor OR formalise and monitor
- Signage to be installed as described in Plan (dogs on leashes, etc)
- Interpretive signage adjacent to Bibbulmun Track entry (Ocean Beach Road) regarding fire regimes, long unburnt status and biodiversity
- Upgrade Sheila Hill Memorial Trail car park to delineate boundary and improve drainage
- Monitor car park usage during peak times (e.g. school holidays)
- Consider private use of Reserve by landowners (e.g. adjacent to Heather Road) and potential installation of access control gate(s) (in consultation with neighbouring landowners).

Other Signage:

- Dogs on leashes
- No dogs on Bibbulmun Track

CADASTRAL SOURCE: Landgate, January 2025.
AERIAL PHOTOGRAPH SOURCE: Landgate, flown January 2022.

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Shire of Denmark
KOORYUNDERUP - MOUNT HALLOWELL MANAGEMENT PLAN 2025 - 2035
OCEAN BEACH, DENMARK

MANAGEMENT ACTIONS - EASTERN AREA

Figure 7

Drawn: M. Price | Date: 10 Jun 2025 | Job: SOD-AP00721

PINPOINT CARTOGRAPHICS (08) 9562 7136 SOD-AP00721_MPR_002_mp-f07.dgn

APPENDICES

APPENDIX 1

Flora List

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

FLORA NO.	SCIENTIFIC NAME	COMMON NAME
1	*Acacia browniana*	Brown's Wattle
2	*Acacia browniana var.obscura*	Brown's Wattle
3	*Acacia cyclops*	Western Coastal Wattle
4	*Acacia divergens*	Sail-boat Wattle
5	*Acacia drummondi*	Drummond's Wattle
6	*Acacia hastulata*	Prickly Swamp Wattle
7	*Acacia littorea*	Shark Tooth Wattle
8	*Acacia longifolia*	Longleaf Wattle
9	*Acacia myrtifolia*	Myrtle Wattle
10	*Acacia pentadenia*	Karri Wattle
11	*Acacia pulchella*	Prickly Moses
12	*Acacia pulchella var.pulchella*	Prickly Moses
13	*Acacia urophylla*	Net-veined Wattle
14	*Acacia varia*	
15	*Actinotus glomeratus*	
16	*Actinotus omnifertilis*	
17	*Adenanthos cuneatus*	Coastal Jugflower
18	*Adenanthos obovatus*	Jugflower
19	*Agonis flexuosa*	Western Australian Peppermint
20	*Agonis flexuosa var. flexuosa*	Peppermint
21	*Agonis flexuosa var. latifolia*	Peppermint
22	*Agonis theiformis*	
23	*Agrostocrinum scabrum*	Blue Grass Lily
24	*Allocasuarina decussata*	Karri Sheoak
25	*Allocasuarina fraseriana*	Western Sheoak
26	*Allocasuarina humilis*	Dwarf Sheoak
27	*Amperea simulans*	
28	*Amphipogon species*	
29	*Anarthria gracilis*	
30	*Anarthria prolifera*	
31	*Anarthria scabra*	
32	*Andersonia caerulea*	Foxtails
33	*Andersonia caerulea* subsp. Diminuta	
34	*Andersonia sprengelioides*	
35	*Andersonia virolens*	
36	*Anigozanthos flavidus*	Tall Kangaroo Paw
37	*Anigozanthos preissii*	Albany Catspaw
38	*Anthocercis sylvicola* **PRIORITY 3**	
39	*Aotus intermedia*	
40	*Aphella cyperoides*	
41	*Asplenium aethiopicum*	Ethiopian spleenwort
42	*Asplenium flabellifolium*	Necklace Fern

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

FLORA NO.	SCIENTIFIC NAME	COMMON NAME
43	*Asteridea pulverulenta*	
44	*Banksia dallanneyi*	
45	*Banksia grandis*	Giant Banksia
46	*Banksia ilicifolia*	Holly-Leaved Banksia
47	*Banksia littoralis*	Swamp Banksia
48	*Banksia quercifolia*	Oak-leaved Banksia
49	*Banksia serra* **PRIORITY 4**	Serrate-leaved Dryandra
50	*Barbula calycina*	
51	*Beaufortia decussataiMelaleuca transversa*	Gravel Bottlebrush
52	*Beaufortia sparsa*	Swamp Bottlebrush
53	*Beaufortia sparsa/ Melaleuca sparsa*	Swamp Bottlebrush
54	*Billardiera floribunda*	White-flowered Billardiera
55	*Billardiera heterophylla*	Australian Bluebell
56	*Billardiera variifolia*	
57	*Boronia alata*	Winged Boronia
58	*Boronia crenulata*	Aniseed Boronia
59	*Boronia gracilipes*	Karri Boronia
60	*Boronia molloyae*	Tall Boronia
61	*Boronia spathulata*	
62	*Boronia stricta*	
63	*Borya sphaerocephala*	Pincushions
64	*Bossiaea linophylla*	
65	*Bossiaea praetermissa*	
66	*Brachyloma baxteri*	
67	*Brachythecium albicans*	Whitish Feather-moss
68	*Braunia imberbis*	
69	*Bryum argenteum*	
70	*Bryum caespiticium*	
71	*Bryum dichotomum*	
72	*Burchardia congesta*	Milkmaids
73	*Caesia occidentalis*	Pale Grass Lily
74	*Caladenia attingens*	Forest Mantis-orchid
75	*Caladenia browni*	Karri Spider Orchid
76	*Caladenia cairnsiana*	Zebra Orchid
77	*Caladenia flava*	Cowslip Orchid
78	*Caladenia flava* subsp. *flava*	Cowslip Orchid
79	*Caladenia flava* subsp. *sylvestris*	Cowslip Orchid
80	*Caladenia latifolia*	Pink Fairies
81	*Caladenia longicauda*	Common White Spider Orchid
82	*Caladenia macrostylis*	Leaping Spider Orchid
83	*Caladenia nana*	Pink Fan Orchid
84	*Caladenia pectinata*	King Spider Orchid

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

85	*Caladenia reptans*	Little Pink Fairy Orchid
86	*Caladenia reptans* subsp. *reptans*	Little Pink Fairy Orchid
87	*Calandrinia species*	
88	*Caleana nigrita*	Flying Duck Orchid
89	*Callistachys lanceolata*	Native Willow/Wonnich
90	*Callistemon glaucus/Melaleuca glauca*	Albany Bottlebrush
91	*Campylopus australis*	
92	*Campylopus bicolor*	
93	*Campylopus clavatus*	
94	*Campylopus introflexus*	Heath Star-moss
95	*Cassytha glabella*	Slender Devil's Twine
96	*Centaurium erythraea*	Common Centaury
97	*Cephaloziella arctica* subsp.*subantarctica*	
98	*Ceramanus clatritexta*	
99	*Chaetophyllopsis whiteleggi*	
100	*Chamaescilla corymbosa*	Blue Stars
101	*Chamaescilla corymbosa* var.*paradoxa*	Blue Squill
102	*Cheilanthes austrotenuifolia*	Rock Fern
103	*Chiloscyphus semiteres*	
104	*Chiloscyphus species*	Leafy Liverworts
105	*Choretrum lateriflorum*	
106	*Chorilaena quercifolia*	Karri Oak
107	*Chorizema diversifolium*	
108	*Chorizema ilicifolium*	Holly flame pea
109	*Chorizema reticulatum*	Showy Flame Pea
110	*Chorizema retrorsum*	Holly Flame Pea
111	*Clematis pubescens*	Old Man's Beard
112	*Codonoblepharon menziesii*	
113	*Comesperma calymega*	Blue Spike Milkwort
114	*Comesperma confertum*	
115	*Comesperma flavum*	
116	*Comesperma virgatum*	Milkwort
117	*Comesperma volubile*	Climbing Milkwort
118	*Commersonia corniculata*	
119	*Commersonia corylifolia*	Hazel-leaved Rulingia
120	*Conostylis setigera*	Bristly Cottonhead
121	*Corymbia calophylla*	Marri
122	*Corymbia ficifolia*	Red-flowering gum (planted)
123	*Crassula decumbens*	Rufous Stonecrop
124	*Crowea angustifolia* var. *platyphylla*	Crowea
125	*Cryptostylis ovata*	Slipper Orchid
126	*Cyanicula sericea*	Silky Blue Orchid
127	*Cyrtostylis huegeli*	Midge Orchid
128	*Cyrtostylis robusta*	Mosquito Orchid

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

129	*Dampiera alata*	Winged-stem Dampiera
130	*Dampiera diversifolia*	
131	*Dampiera hederacea*	Karri Dampiera
132	*Dampiera leptoclada*	
133	*Dampiera linearis*	Common Dampiera
134	*Darwinia vestita*	Pom-pom Darwinia
135	*Dasypogon bromelifolius*	Drumsticks
136	*Daviesia cordata*	Bookleaf
137	*Daviesia inflata*	
138	*Desmocladus fasciculatus*	
139	*Desmocladus flexuosus*	
140	*Dicranoloma diaphanoneuron*	
141	*Didymodon subtorquatus*	
142	*Dielsiodoxa lycopodioides*	
143	*Diplasiolejeuna plicatiloba*	Tiny Leafy Liverwort
145`	*Disa bracteata**	Bract Disa
146	*Ditrichum cylindricarpum*	
147	*Ditrichum difficile*	
148	*Diuris jonesi*	Dunsborough Donkey Orchid
149	*Diuris longifolia*	Purple Pansy Orchid
150	*Drakaea glyptodon*	King-in-his-carriage
151	*Drakaea livida*	Warty Hammer Orchid
152	*Drakaea thynniphila*	Narrow-lipped Hammer Orchid
153	*Drosera collina*	
154	*Drosera erythrogyne*	
155	*Drosera erythroryiza*	Red Ink Sundew
156	*Drosera fimbriata* **PRIORITY 4**	Manypeaks Sundew
157	*Drosera glanduligera*	Pimpernel Sundew
158	*Drosera huegeli*	Bold Sundew
159	*Drosera macrantha*	Bridal Rainbow
160	*Drosera microphylla*	Golden Rainbow
161	*Drosera modesta*	
162	*Drosera pulchella*	Pretty Sundew
163	*Elythranthera brunonis*	Purple Enamel Orchid
164	*Eriochilus dilatatus*	White Bunny Orchid
165	*Eucalyptus cornuta*	Yate
166	*Eucalyptus cornuta*	River Yate
167	*Eucalyptus diversicolor*	Karri
168	*Eucalyptus marginata*	Jarrah
169	*Eucalyptus megacarpa*	Bullich
170	*Eucalyptus patens*	Common Blackbutt
171	*Euchiton collinus*	
172	*Eutaxia myrtifolia*	
173	*Eutaxia parvifolia*	

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

174	*Evandra aristata*	
175	*Fissidens curvatus*	
176	*Fissidens species*	
177	*Fissidens taylori*	
178	*Fissidens tenellus*	
179	*Fossombronia species*	
180	*Frullania falciloba*	
181	*Frullania pentapleura*	
182	*Frullania probosciphora*	
183	*Gastrodia lacista*	Potato Orchid
184	*Gastrolobium browni*	
185	*Glischrocaryon racemosum*	Shrubby Raspwort
186	*Gompholobium confertum*	
187	*Gompholobium knightianum*	Handsome Wedge Pea
188	*Gompholobium ovatum*	
189	*Gompholobium polymorphum*	Twining Gompholobium
190	*Gompholobium shuttleworthii*	
191	*Gompholobium tomentosum*	Hairy Yellow Pea
192	*Gonocarpus benthami*	
193	*Gonocarpus diffusus*	
194	*Goodenia eatoniana*	
195	*Goodenia macrophylla*	Large-leaved Velleia
196	*Goodenia pusilla*	
197	*Goodenia* sp. *South Coast* **PRIORITY 3**	
198	*Goodenia trinervis*	Common Velleia
199	*Grevillea quercifolia*	Oak-leaf Grevillea
200	*Grevillea trifida*	
201	*Gymnostomum calcareum*	Blunt-leaf Tufa-Moss
202	*Haemodorum paniculatum*	Mardja/Born
203	*Haemodorum simplex*	
204	*Haemodorum spicatum*	Bloodroot/Mean
205	*Hakea amplexicaulis*	Prickly Hakea
206	*Hakea florida*	
207	*Hakea linearis*	
208	*Hakea ruscifolia*	Candle Hakea
209	*Hakea varia*	Variable-leaved Hakea
210	*Haloragodedron racemosum/Glischrocaryon racemosum*	Shrubby Raspwort
211	*Hardenbergia comptoniana*	Native Wisteria
212	*Hedwigia ciliata*	Ciliate Hoarmoss
213	*Hemigenia humilis*	
214	*Hemigenia podalyrina*	
215	*Hibbertia amplexicaulis*	
216	*Hibbertia cuneiformis*	Cutleaf Hibbertia
217	*Hibbertia cunninghami*	

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

218	*Hibbertia furfuracea*	
219	*Hibbertia pilosa*	
220	*Hovea chorizemifolia*	Holly-Leaved Hovea
221	*Hovea elliptica*	Tree Hovea
222	*Hovea trisperma*	Common Hovea
223	*Hydrocotyle alata*	
224	*Hypnum cupressiforme*	
225	*Hypocalymma strictum*	Pink Myrtle
226	*Hypolaena fastigiata*	Tassel Rope-rush
227	*Ischyrodon lepturus*	Feather Mosses
228	*Isopogon longifolius*	Long-leaved Isopogon
229	*Isopogon sphaerocephalus*	Drumstick Isopogon
230	*Isotropis cuneifolia*	Granny Bonnets
231	*Jacksonia horrida*	
232	*Johnsonia lupulina*	Hooded Lily
233	*Kennedia coccinea*	Coral Vine
234	*Kingia australis*	bullanock
235	*Kunzea ericifolia*	Spearwood
236	*Kunzea ericifolia* subsp.*ericifolia*	Spearwood
237	*Kunzea sulphurea*	Spearwood
238	*Kurzia compacta*	
239	*Lasiopetalum floribundum*	
240	*Lavandula stoechas**	Topped Lavender
241	*Laxmannia grandiflora*	
242	*Laxmannia minor*	
243	*Lepidosperma effusum*	Riverside Sword Sedge
244	*Lepidosperma gladiatum*	Coastal Sword Sedge
245	*Lepidosperma gracile*	
246	*Lepidosperma squamatum*	
247	*Lepidozia species*	Leafy Liverworts
248	*Leporella fimbriata*	Hare Orchid
249	*Leptobryum pyriforme*	
250	*Leptocarpus elegans*	
251	*Leptocarpus scoparius*	Velvet Rush
252	*Leptocarpus tenax*	
253	*Leptoceras menziesi*	Rabbit Orchid
254	*Leptomeria scrobiculata*	
255	*Leptomeria squarrulosa*	
256	*Lepyrodia extensa* **PRIORITY 2**	
257	*Lethocolea pansa*	
258	*Lethocolea squamata*	
259	*Leucobryum subchlorophyllosum*	
260	*Leucopogon alternifolius* **PRIORITY 3**	
261	*Leucopogon australis*	Spiked Beard-heath

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

262	*Leucopogon capitellatus*	
263	*Leucopogon distans*	
264	*Leucopogon glabellus*	
265	*Leucopogon obovatus* subsp. *revolutus*	
266	*Leucopogon parviflorus*	Coastal Beard-heath
267	*Leucopogon unilateralis*	
268	*Leucopogon verticillatus*	Tassel Bush/Njorr-lee
269	*Levenhookia pusilla*	Tiny Stylewort
270	*Lindsaea linearis*	Screw Fern
271	*Lobelia anceps*	Punakuru
272	*Lobelia gibbosa*	Tall Lobelia
273	*Lobelia rhombifolia*	
274	*Logania vaginalis*	White Spray
275	*Lomandra drummondii*	
276	*Lomandra nigricans*	
277	*Lomandra pauciflora*	
278	*Lomandra purpurea*	
279	*Lomandra sericea*	Silky Mat Rush
280	*Lophocolea semiteres*	Southern Crestwort
281	*Lotus species**	Bird's-foot Trefoils and Deervetches
282	*Lyperanthus serratus*	Rattle Beaks
283	*Macrocoma tenuis*	Joint-toothed Mosses
284	*Macrozamia riedlei*	Zamia Palm
285	*Marianthus drummondianus*	
286	*Marianthus sylvaticus*	
287	*Marianthus tenuis*	
288	*Melaleuca microphylla*	
289	*Melaleuca thymoides*	
290	*Mesomelaena tetragona*	Semaphore Sedge
291	*Microtis media*	Tall Mignonette Orchid
292	*Microtis media* subsp. *media*	Common Mignonette Orchid
293	*Mirbelia dilatata*	Holly-leaved Mirbelia
294	*Mittenia plumula*	Southern Goblin's Gold
295	*Monotaxis occidentalis*	
296	*Myoporum insulare*	Blueberry Tree
297	*Olax phyllanthi*	
298	*Olearia muricata*	Rough-leaved Daisy
299	*Olearia paucidentata*	Autumn Scrub Daisy
300	*Opercularia hispidula*	Hispid Stinkweed
301	*Opercularia volubilis*	Climbing Stinkweed
302	*Orianthera serpyllifolia*	
303	*Ornduffia parnassifolia*	
304	*Ornithopus compressus*	Yellow Serradella
305	*Orobanche minor*	Common Broomrape

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

306	*Orthodontium lineare*	Cape Thread-moss
307	*Paracaleana disjuncta*	
308	*Paracaleana nigrita*	Flying Duck Orchid
309	*Paraserianthes lophantha*	Plume Albizia
310	*Paraserianthes lophantha*	Plume Albizia/False Wattle
311	*Patersonia occidentalis*	Purple Flag Iris
312	*Patersonia umbrosa* var. *umbrosa*	Purple flag
313	*Pelargonium australe*	Austral Stork's-bill/Wild Geranium
314	*Pelargonium drummondi*	Geraniums and storksbills
315	*Pelargonium littorale*	Native Geranium
316	*Pentapeltis silvatica*	Southern Pentapeltis
317	*Persoonia elliptica*	Spreading Snottygobble
318	*Persoonia longifolia*	Snottygobble
319	*Petrophile diversifolia*	Pixie Mops
320	*Petrorhagia dubia**	Hairypink
321	*Pheladenia deformis*	
322	*Pigea debilissima*	Native Violet
323	*Pimelea clavata*	
324	*Pimelea hispida*	Bristly Pimelea
325	*Pimelea longiflora*	
326	*Pimelea rosea*	Rosy Rice Flower
327	*Pimelea spectabilis*	Bunjong
328	*Pithocarpa ramosa*	
329	*Platysace filiformis*	
330	*Platysace pendula*	
331	*Platytheca juniperina*	
332	*Pleurophascum occidentale* **PRIORITY 4**	Western Giant-leaved Moss
333	*Podocarpus drouynianus*	Emu Plum/Emu Berry
334	*Polygala myrtifolia**	Butterfly Bush/Sweet Pea Shrub
335	*Poranthera huegeli*	
336	*Prasophyllum* aff. *parvifolium*	Autumn Leek Orchid
337	*Prasophyllum browni*	Christmas Leek Orchid
338	*Prasophyllum cucullatum*	Hooded Leek Orchid
339	*Prasophyllum elatum*	Tall Leek Orchid
340	*Prasophyllum fimbria*	Fringed Leek Orchid
341	*Prasophyllum regium*	King Leek Orchid
342	*Pteridium esculentum*	Bracken Fern
343	*Pterostylis* aff. *turfosa*	Bearded Bird Orchid
344	*Pterostylis barbata*	Bird Orchid
345	*Pterostylis glebosa*	Clubbed Snail Orchid
346	*Pterostylis pyramidalis*	Snail Orchid
347	*Pterostylis recurva*	Jug Orchid
348	*Pterostylis sanguinea*	Red-banded Greenhood
349	*Pterostylis turfosa*	Bearded Bird Orchid

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

350	*Pterostylis vittata*	Banded Greenhood
351	*Ptychostomum capillare*	Capillary Thread-moss
352	*Pultenaea reticulata*	
353	*Pyrorchis nigricans*	Redbeaks
354	*Racopilum cuspidigerum*	
355	*Radula buccinifera*	
356	*Rhacocarpus purpurascens*	Royal Rock Moss
357	*Rhacopilum convolutaceum*	
358	*Rhapidorrhynchium amoenum*	
359	*Rhodanthe citrina*	
360	*Rhynchostegium tenuifolium*	Loose Straw Moss
361	*Riccardia aequicellularis*	
362	*Riccardia bipinnatifida*	
363	*Riccardia cochleata*	
364	*Riccardia wattsiana*	
365	*Ricinocarpos glaucus*	Wedding Bush
366	*Rinzia schollerifolia*	Cranberry Rinzia
367	*Romulea rosea**	Guildford Grass/Rosy sandcrocus
368	*Rosulabryum albolimbatum*	
369	*Rosulabryum billardierei*	
370	*Rosulabryum campylothecium*	
371	*Rosulabryum subtomentosum*	
372	*Rosulabryum torquescens*	
373	*Rytidosperma caespitosum*	Common Wallaby-grass
374	*Sauloma tenella*	Joint-toothed Mosses
375	*Scaevola microphylla*	Small-leaved Scaevola
376	*Scaevola striata*	Royal Robe
377	*Sematophyllum homomallum*	Bronze Moss
378	*Solanum laciniatum*	Kangaroo-apple
379	*Sphaerolobium alatum*	
380	*Sphaerolobium drummondi*	
381	*Sphaerolobium grandiflorum*	
382	*Sphaerolobium medium*	
383	*Sphaerolobium vimineum*	Leafless Globe-pea
384	*Sphenotoma capitata*	
385	*Sphenotoma gracilis*	Swamp Paper-heath
386	*Stackhousia monogyna*	Creamy Candles
387	*Stylidium adnatum*	Common Beaked Triggerplant
388	*Stylidium amoenum*	Lovely Triggerplant
389	*Stylidium assimile*	Bronze-leaved Triggerplant
390	*Stylidium calcaratum*	Book Triggerplant
391	*Stylidium crassifolium*	Thick-leaved Triggerplant
392	*Stylidium fasciculatum*	Pale Beaked Triggerplant
393	*Stylidium guttatum*	Dotted Triggerplant

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

394	*Stylidium inundatum*	Hundreds and Thousands
395	*Stylidium junceum*	Little Reed Triggerplant
396	*Stylidium nymphaeum*	
397	*Stylidium piliferum*	Common Butterfly Triggerplant
398	*Stylidium planirosula*	
399	*Stylidium pritzelianum*	Royal Triggerplant
400	*Stylidium repens*	Matted Triggerplant
401	*Stylidium rhynchocarpum*	Black-beaked Triggerplant
402	*Stylidium scandens*	Climbing Triggerplant
403	*Stylidium schoenoides*	Cow Kicks
404	*Stylidium acuminatum* subsp. *meridionale*	
405	*Stylidium spathulatum*	Creamy Triggerplant
406	*Stylidium squamosotuberosum*	Rhizomatous Reed Triggerplant
407	*Stypandra glauca*	Blind Grass/Nodding Blue Lily
408	*Styphelia erubescens*	
409	*Styphelia madida*	
410	*Styphelia pallida*	Kick Bush
411	*Styphelia pendula*	
412	*Styphelia propinqua*	
413	*Styphelia racemulosa*	
414	*Symphyogyna podophylla*	
415	*Taxandria conspicua*	
416	*Taxandria juniperina*	Wattie/Warren River Cedar
417	*Taxandria linearifolia*	
418	*Taxandria marginata*	
419	*Taxandria parviceps*	Fine Teatree
420	*Tayloria octoblepharis*	
421	*Tayloria octoblepharum*	Austral Poop Moss
422	*Tetrarrhena laevis*	Forest Rice Grass
423	*Tetratheca affinis*	
424	*Tetratheca hispidissima*	
425	*Tetratheca setigera*	
426	*Thelymitra antennifera*	Vanilla Orchid/Lemon-scented Sun Orchid
427	*Thelymitra benthamiana*	Leopard Orchid/Blotched Sun-orchid
428	*Thelymitra crinita*	Blue Lady Orchid
429	*Thelymitra cucullata*	Swamp Sun Orchid
430	*Thelymitra flexuosa*	Twisted Sun Orchid
431	*Thelymitra fuscolutea*	Chestnut sun orchid
432	*Thelymitra graminea*	Shy Sun Orchid
433	*Thelymitra macrophylla*	Scented Sun Orchid
434	*Thelymitra paludosa*	Plain Sun Orchid
435	*Thelymitra sp. Denmark*	
436	*Thelymitra tigrina*	Tiger Orchid
437	*Thomasia heterophylla*	

FLORA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

438	*Thomasia paniculata*	
439	*Thomasia purpurea*	
440	*Thomasia sp. Vasse*	Thomasias
441	*Thuidiopsis sparsa (*syn. *Thuidium sparsum)*	Sparse Fern Moss
442	*Thuidium sparsum* var. *hastatum*	Sparse Fern Moss
443	*Thysanotus multiflorus*	Many-flowered Fringe Lily
444	*Thysanotus patersoni*	Twining Fringe-lily
445	*Thysanotus tenellus*	
446	*Thysanotus thyrsoideus*	
447	*Tortula antarctica*	
448	*Trachymene grandis*	
449	*Tremandra stelligera*	
450	*Tribonanthes australis*	Southern Tiurndin
451	*Tricoryne elatior*	Yellow rush-lily
452	*Tricoryne humilis*	
453	*Triquetrella papillata*	
454	*Trymalium ledifolium* var.*rosmarinifolium*	
455	*Trymalium odoatissimum*	Karri Hazel
456	*Trymalium venustum*	
457	*Utricularia menziesi*	Redcoats
458	*Utricularia multifida*	Pink Petticoats
459	*Weissia controversa*	
460	*Wurmbea dioica* subsp.*alba*	Early Nancy
461	*Xanthorrhoea gracilis*	Graceful Grass Tree/Mimidi
462	*Xanthorrhoea preissii*	Balga
463	*Xanthosia huegeli*	Heath Xanthosia
464	*Xanthosia rotundifolia*	Southern Cross Flower
465	*Xanthosia tasmanica*	
466	*Xyris lanata*	Yellow-eyed Grasses
467	*Zygodon species*	Yoke Mosses

APPENDIX 2

Definitions and Categories for Western Australian Conservation Categories

CONSERVATION CATEGORY DEFINITIONS

For Western Australian Fauna and Flora

Threatened, Extinct and Specially Protected fauna or flora[1] are species[2] which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

Categories of Threatened, Extinct and Specially Protected fauna and flora are:

T Threatened species

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is the species of fauna that are listed as critically endangered, endangered or vulnerable threatened species.

Threatened flora is the species of flora that are listed as critically endangered, endangered or vulnerable threatened species.

The assessment of the conservation status of threatened species is in accordance with the BC Act listing criteria and the requirements of Ministerial Guideline Number 1 and Ministerial Guideline Number 2 that adopts the use of the International Union for Conservation of Nature (IUCN) Red List of Threatened Species Categories and Criteria[3], and is based on the national distribution of the species.

CR Critically endangered species

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.

Examples of use:

- The western ringtail possum (*Pseudocheirus occidentalis*) is listed as a critically endangered threatened species under the *Biodiversity Conservation Act 2016.*
- Western ringtail possum is listed as critically endangered under the *Biodiversity Conservation Act 2016.*
- Listing reference in a table: column heading: BC Act, row text: CR.

EN Endangered species

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines.

Examples of use:

- *Caladenia hopperiana* is listed as an endangered threatened species under the *Biodiversity Conservation Act 2016.*
- *Caladenia hopperiana* is listed as endangered under the *Biodiversity Conservation Act 2016.*
- Listing reference in a table: column heading: BC Act, row text: EN.

VU Vulnerable species

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.

Examples of use:

- The forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) is listed as a vulnerable threatened species under the *Biodiversity Conservation Act 2016.*
- Forest red-tailed black cockatoo is listed as vulnerable under the *Biodiversity Conservation Act 2016.*
- Listing reference in a table: column heading: BC Act, row text: VU.

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

EX Extinct species

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Examples of use:

- *Acacia kingiana* is listed as an extinct species under the *Biodiversity Conservation Act 2016.*
- *Acacia kingiana* is listed as extinct under the *Biodiversity Conservation Act 2016.*
- Listing reference in a table: column heading: BC Act, row text: EX.

EW Extinct in the wild species

Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no fauna or flora species listed as extinct in the wild.

SP Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered, or vulnerable) or extinct species under the BC Act cannot also be listed as specially protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Migratory species include birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA)[4], China (CAMBA)[5] or The Republic of Korea (ROKAMBA)[6], and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention)[7], an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Examples of use:

- The wedge-tailed shearwater (*Ardenna pacifica*) is listed as a specially protected migratory species under the *Biodiversity Conservation Act 2016.*
- Wedge-tailed shearwater is listed as migratory under the *Biodiversity Conservation Act 2016.*
- Listing reference in a table: column heading: BC Act, row text: MI.

CD **Species of special conservation interest (conservation dependent)**

Species of special conservation need that are dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Currently only fauna are listed as species of special conservation interest.

Examples of use:

- The wambenger, south-western brush-tailed phascogale (*Phascogale tapoatafa wambenger*) is listed as a specially protected species of special conservation interest under the *Biodiversity Conservation Act 2016.*
- Wambenger, south-western brush-tailed phascogale, is listed as conservation dependent under the *Biodiversity Conservation Act 2016.*
- Listing reference in a table: column heading: BC Act, row text: CD.

OS **Species otherwise in need of special protection (other specially protected)**

Species otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Currently only fauna are listed as species otherwise in need of special protection.

Examples of use:

- The dugong (*Dugong dugon*) is listed as a specially protected species otherwise in need of special protection under the *Biodiversity Conservation Act 2016.*
- Dugon is listed as other specially protected fauna under the *Biodiversity Conservation Act 2016.*
- Listing reference in a table: column heading: BC Act, row text: OS.

P **Priority species**

Priority is not a listing category under the BC Act. The Priority Flora and Fauna lists are maintained by the department and are published on the department's website.

All fauna and flora are protected in WA following the provisions in Part 10 of the BC Act. The protection applies even when a species is not listed as threatened or specially protected, and regardless of land tenure (State managed land (Crown land), private land, or Commonwealth land).

Species that may possibly be threatened species that do not meet the criteria for listing under the BC Act because of insufficient survey or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of prioritisation for survey and evaluation of conservation status so that consideration can be given to potential listing as threatened.

Species that are adequately known, meet criteria for near threatened, or are rare but not threatened, or that have been recently removed from the threatened species list or conservation dependent or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of priority status is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

1 **Priority 1: Poorly-known species - known from few locations, none on conservation lands**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, for example, agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation.

Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.

Examples of use:

- *Borya stenophylla* is listed as a Priority 1 species by the Department of Biodiversity, Conservation and Attractions.
- *Borya stenophylla* is listed as Priority 1 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P1.

2 Priority 2: Poorly-known species - known from few locations, some on conservation lands

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, for example, national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation.

Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements for threatened listing and appear to be under threat from known threatening processes. These species are in urgent need of further survey.

Examples of use:

- *Caladenia nivalis* is listed as a Priority 2 species by the Department of Biodiversity, Conservation and Attractions.
- *Caladenia nivalis* is listed as Priority 2 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P2.

3 Priority 3: Poorly-known species - known from several locations

Species that are known from several locations and the species does not appear to be under imminent threat or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat.

Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. These species need further survey.

Examples of use:

- *Acacia nitidula* is listed as a Priority 3 species by the Department of Biodiversity, Conservation and Attractions.
- *Acacia nitidula* is listed as Priority 3 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P3.

4 Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as a conservation dependent specially protected species.

(c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

(d) Other species in need of monitoring.

Examples of use:

- *Banksia aculeata* is listed as a Priority 4 species by the Department of Biodiversity, Conservation and Attractions.
- *Banksia aculeata* is listed as Priority 4 on the DBCA Priority Flora List.
- Listing reference in a table: column heading: DBCA, row text: P4.

[1] The definition of flora includes algae, fungi, and lichens.

[2] Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

[3] Western Australia has assigned species to threat categories using the *IUCN Red List of Threatened Species Categories and Criteria* since 1996 (referencing all criteria).

[4] JAMBA - first included in the WA migratory species list in 1980.

[5] CAMBA - first included in the WA migratory species list in 2010.

[6] ROKAMBA - first included in the WA migratory species list in 2010.

[7] Bonn Convention (Birds) - first included in the WA migratory species list in 2015.

APPENDIX 3

Fauna Species List

FAUNA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

SPIDERS		
NO.	**SCIENTIFIC NAME**	**COMMON NAME**
1	*Aldabrinus species*	Pseudoscorpion
2	*Arachnura higginsi*	Scorpion-tailed Spider
3	*Araneus cyphoxis*	Western Bush Orbweaver
4	*Araneus senicaudatus*	Tailed Orbweaver
5	*Arkys walckenaeri*	Walckenaer's Studded Triangular Spider
6	*Austracantha minax*	Christmas Jewel Spider
7	Australomimetus (Genus)	Australasian Pirate Spiders
8	*Australomisidia pilula*	Lozenge-shaped Crab Spider
9	*Austrarchaea `sp.`*	Pelican Spiders
10	Bomis (Genus)	Crab Spiders
11	Cheiracanthium (Genus)	Longlegged Sac Spiders
12	*Chelifer cancroides*	House Pseudoscorpion
13	*Chenistonia `paludigena`*	Wishbone Spiders
14	*Chenistonia `sp. indet.`*	Wishbone Spiders
15	Clubionidae (Family)	Sac Spiders
16	Euophryini (Tribe)	Typical Jumping Spiders
17	Habronestes (Genus)	Zodariid Spiders
18	*Leucauge dromedaria*	Silver Orb Spider
19	Linyphiidae (Family)	Sheetweb and Dwarf Weavers
20	Lycosidae (Family)	Wolf Spiders
21	Maratus pavonis	Common Peacock Spider
22	*Megalopsalis minima*	Megalopsalis minima-species group
23	Neosparassus (Genus)	Badge Huntsman Spiders
24	*Nicodamus peregrinus*	Red-and-black Spider
25	Opisthoncus (Genus)	Garden Jumping Spiders
26	Salticinae (Family)	Typical Jumping Spiders
27	Sidymella (Genus)	Square-ended Crab Spiders
28	*Socca pustulosa*	Knobbled Orbweaver
29	*Storosa tetrica*	Zodariid Spiders
30	Theridiidae (Family)	Cobweb Spiders
31	Trachycosmus (Genus)	Scorpion Flat Spiders
32	Triaenonychidae (Family)	Triaenonychid Harvestmen
33	Trombidia (Infraorder)	Velvet Mites, Chiggers, and Relatives
34	*Zephyrarchaea mainae* **VULNERABLE**	Main's Assassin Spider
35	*Zygometis xanthogaster*	Milky Flower Spider

INSECTS		
NO.	**SCIENTIFIC NAME**	**COMMON NAME**
1	Acanthomimini (Tribe)	Stick Insects
2	Acanthosomatidae (Family)	Shield Bugs
3	*Acrida conica*	Giant Green Slantface

FAUNA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

INSECTS		
NO.	SCIENTIFIC NAME	COMMON NAME
5	*Adversaeschna brevistyla*	Blue-spotted Hawker
6	Amblyopone (Genus)	Vampire Ants
7	*Anax papuensis*	Australian Emperor
8	*Anophelepis telesphorus*	Short-winged Stick Insect
10	Aphidinae (Subfamily)	Aphids
11	Apioninae (Subfamily)	Pear-shaped Weevils
12	*Archaeosynthemis leachi*	Twinspot Tigertail
13	*Archaeosynthemis occidentalis*	Western Brown Tigertail
14	*Archimantis sobrina*	Mallee Grass Mantis
15	Assilinae (Subfamily)	Robber Flies
16	*Austroaeschna anacantha*	Western Darner
17	Bethylinae (Subfamily)	Flat Wasps
18	*Bibio imitator*	March Flies
19	Callibracon (Genus)	Braconid Wasps
20	Calyptratae	Calyptrate Flies
21	*Catasarcus impressipennis*	Broad-nosed Weevils
22	Cecidomyiidae (Family)	Gall and Forest Midges
23	Cerambycidae (Family)	Longhorn Beetles
24	Chironomus (Genus)	Non-biting Midges
25	*Choerocoris variegatus*	Variable Shield Bug
26	Cicadellidae (Family)	Typical Leafhoppers
27	*Circopetes obtusata*	Broken Leaf Moth
29	Coccidae (Family)	Soft scales
30	Coccoidea (Superfamily)	Scale Insects
31	Cochylimorpha (Genus)	Tortricine Leafroller Moths
32	Complex *Chrysopasta elegans*	Bristle Flies
34	Corticariinae (Subfamily)	Minute Brown Scavenger Beetles
35	*Coryphistes ruricola*	Bark-mimicking Grasshopper
36	*Cryptocheilus bicolor*	Two-colored Orange Spider Wasp
37	Cryptodus (Genus)	Rhinoceros Beetles
39	Diphucephala (Genus)	June Beetles
40	*Ecnolagria aeneoviolacea*	Long-jointed Beetles
41	*Ectropis excursaria*	Twig Looper
43	*Endoxyla lituratus*	Leopard Moths
45	Eriopterini (Tribe)	Limoniid Crane Flies
46	*Euchaetis metallota*	Concealer Moths
47	Exoneura (Genus)	Allodapine Bees
48	*Gastrimargus musicus*	Australian Yellow-winged Locust
49	*Geitoneura klugi*	Klug's Xenica
51	Geron (Genus)	Bee Flies
52	Gryllotalpa (Genus)	Mole Crickets
53	*Hemicordulia tau*	Tau Emerald

FAUNA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

INSECTS		
NO.	**SCIENTIFIC NAME**	**COMMON NAME**
54	*Hemisaga denticulata*	Common Sluggish Katydid
55	Heteromastix (Genus)	Soldier Beetles
56	*Heteronympha merope duboulayi*	Western Brown
57	Heteropsilopus (Genus)	Long-legged Flies
58	Iridomyrmex (Genus)	Rainbow, Tyrant, and Meat Ants
59	*Iridomyrmex conifer*	Rainbow Ants
60	*Lamprima aurata*	Golden Stag Beetle
61	Lasioglossum (Genus)	Sweat and Furrow Bees
63	*Laxta rieki*	Giant Cockroaches
64	*Leptotarsus costalis*	Common Brown Crane Fly
66	Membracidae (Family)	Typical Treehoppers
67	*Micromus tasmaniae*	Tasmanian Brown Lacewing
68	Monophlebulus (Genus)	Giant Scale Insects
69	*Mygalopsis pauperculus*	Coneheads
70	*Myrmecia imai*	Bull and Dinosaur Ants

OTHER INVERTEBRATES		
NO.	**SCIENTIFIC NAME**	**COMMON NAME**
1	Armadillidae (Family)	Tropical Pill Woodlice
2	Atelomastix (Genus)	Forest Millipedes
3	*Atelomastix ellenae*	Millipede
4	Cormocephalus (Genus)	Common Centipedes
6	*Cynotelopus notabilis* **ENDANGERED**	WA Pill Millipede
7	Entomobryidae (Family)	Slender Springtails
8	*Fletchamia sugdeni*	Canary Worm
9	Geophilomorpha (Order)	Soil Centipedes
10	*Hesperisiphon diversus*	Millipede
11	*Megalosiphon flavomarginatus*	Millipede
12	Siphonotidae (Family)	Camphor Millipedes

FROGS		
NO.	**SCIENTIFIC NAME**	**COMMON NAME**
1	*Ranoidea moorei*	Motorbike Frog
2	*Metacrinia nichollsi*	Nichollas Toadlet
3	*Crinia georgiana*	Quacking Frog
4	*Litoria adelaidensis*	Slender Tree Frog
5	Heleioporus (Genus)	Foam-nesting Ground Frogs

FAUNA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

REPTILES			
NO.	**COMMON NAME**	**SCIENTIFIC NAME**	**FAMILY**
1	Black Tiger Snake	*Notechis ater occidentalis*	Elapidae
2	Bobtail	*Tiliqua rugosa*	Scincidae
3	Burrowing Skink	*Hemiegis peroni peroni*	Scincidae
4	Common South-west Ctenotus	*Ctenotus labillardieri*	Scincidae
5	Crowned Snake	*Drysdalia coronata*	Elapidae
6	Dugite	*Pseudonaja affinis affinis*	Elapidae
7	Karda	*Varanus rosenbergi*	Scincidae
8	King's Skink	*Egermia kingi*	Scincidae
9	Marbled Gecko	*Phylladaclylus marmoratus*	Gekkonidae
10	New Holland Skink	*Leiolopisma trilineatum*	Scincidae
11	Smith's Skink	*Egernia napoleonis*	Scincidae
12	Square-nosed Snake	*Rhinoplocephalus bicolor*	Elapidae

BIRDS		
NO.	**COMMON NAME**	**SCIENTIFIC NAME**
1	Australian Hobby	*Falco longipennis*
2	Australian Kestrel	*Falco cenchroides*
3	Australian Magpie	*Gymnorhina tibicen*
4	Australian Magpie-lark	*Grallina cyanoleuca*
5	Australian Raven	*Corvus coronoides*
6	Australian Ringneck	*Barnardius zonarius*
7	Australian Shelduck	*Tadorna tadornoides*
8	Baudin's Cockatoo **ENDANGERED**	*Zanda baudini*
9	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*
10	Brown Falcon	*Falco berigora*
11	Brown Goshawk	*Accipiter fasciatus*
12	Brown Honeyeater	*Lichmera indistincta*
13	Brush Bronzewing	*Phaps elegans*
14	Carnaby's Cockatoo **ENDANGERED**	*Zanda latirostris*
15	Collared Sparrowhawk	*Accipiter cirrocephalus*
16	Common Bronzewing	*Phaps chalcoptera*
17	Crested Shrike-tit	*Falcunculus frontatus*
18	Dusky Woodswallow	*Artamus cyanopterus*
19	Elegant Parrot	*Neophema elegans*
20	Fan-tailed Cuckoo	*Cacomantis flabelliformis*
21	Forest Red-tailed Black-cockatoo **VULNERABLE**	*Calyptorhynchus banksii naso*
22	Galah*	*Eolophus roseicapilla*
23	Gilbert's Honeyeater	*Melithreptus chloropsis*
24	Grey Butcherbird	*Cracticus torquatus*
25	Grey Currawong	*Strepera versicolor*

FAUNA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

BIRDS		
NO.	**COMMON NAME**	**SCIENTIFIC NAME**
26	Grey Fantail	*Rhipidura albiscapa*
27	Grey Shrike-thrush	*Colluricincla harmonica*
28	Grey Teal	*Anas gibberifrons*
29	Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*
30	Inland Thornbill	*Acanthiza apicalis*
31	Laughing Kookaburra*	*Dacelo novaeguineae*
32	Little Eagle	*Hieraaetus morphnoides*
33	Little Wattlebird	*Anthochaera chrysoptera*
34	Maned Duck	*Chenonetta jubata*
35	Marsh Harrier	*Circus aeruginosus*
36	Nankeen Kestrel	*Falco cenchroides*
37	New Holland Honeyeater	*Phylidonyris novaehollandiae*
38	Osprey	*Pandion haliaetus*
39	Pacific Black Duck	*Anas superciliosa*
40	Painted Button-quail	*Turnix varia*
41	Pallid Cuckoo	*Cacomantis pallidus*
42	Port Lincoln Ringneck	*Barnardius zonarius*
43	Purple-crowned Lorikeet	*Parvipsitta porphyrocephala*
44	Rainbow Bee-eater	*Merops ornatus*
45	Red Wattlebird	*Anthochaera carunculata*
46	Red-capped Parrot	*Purpureicephalus spurius*
47	Red-eared Firetail	*Stagonopleura oculata*
48	Red-winged Fairy-wren	*Malurus elegans*
49	Restless Flycatcher	*Myiagra inquieta*
50	Rufous Treecreeper	*Climacteris rufa*
51	Sacred Kingfisher	*Todiramphus sanctus*
52	Scarlet Robin	*Petroica multicolor*
53	Shining Bronze-Cuckoo	*Chrysococcyx lucidus*
54	Silvereye	*Zosterops lateralis*
55	Southern Boobook	*Ninox boobook*
56	South-western Spotted Scrubwren	*Sericornis maculatus maculatus*
57	Splendid Fairywren	*Malurus splendens*
58	Spotted Pardalote	*Pardalotus punctatus*
59	Square-tailed Kite	*Lophoictinia isura*
60	Striated Pardalote	*Pardalotus striatus*
61	Tawny Frogmouth	*Podargus strigoides*
62	Tawny-crowned Honeyeater	*Gliciphila melanops*
63	Tree Martin	*Petrochelidon nigricans*
64	Twenty-eight Parrot	*Barnardius zonarius semitorquatus*
65	Varied Sittella	*Daphoenositta chrysoptera*
66	Wedge-tailed Eagle	*Aquila audax*

FAUNA SPECIES LIST KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

BIRDS		
NO.	**COMMON NAME**	**SCIENTIFIC NAME**
67	Welcome Swallow	*Hirunclo neoxena*
68	Western Gerygone	*Gerygone fusca*
69	Western Rosella	*Platycercus icterotis*
70	Western Shrike-tit	*Falcunculus leucogaster*
71	Western Spinebill	*Acanthorhynchus superciliosus*
72	Western Thornbill	*Acanthiza inornata*
73	Western Whistler	*Pachycephala fuliginosa*
74	Western Yellow Robin	*Eopsaltria griseogularis*
75	Whistling Kite	*Haliastur sphenurus*
76	White-bellied Sea-Eagle	*Haliaeetus leucogaster*
77	White-breasted Robin	*Eopsaltria georgiana*
78	White-browed Babbler	*Pomatostomus superciliosus*
79	White-browed Scrubwren	*Sericornis frontalis*
80	White-faced Heron	*Ardea novaehollandiae*
81	Willie Wagtail	*Rhipidura leucophrys*
82	Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*
***Introduced (non-native) species**		

MAMMALS			
NO.	**COMMON NAME**	**SCIENTIFIC NAME**	**FAMILY**
1	Australian Bush Rat	*Rattus fuscipes*	Muridae
2	Black Rat*	*Rattus rattus*	Muridae
3	Cat*	*Feline catus*	Felidae
4	Common Brushtail Possum	*Trichosurus vulpecula*	Phalangeridae
5	Dog*	*Canine familiarus*	Canidae
6	House Mouse*	*Mus musculus*	Muridae
7	Rat	*Rattus species*	Muridae
8	Red Fox*	*Vulpes vulpes*	Canidae
9	South-western Brown Bandicoot **PRIORITY 4**	*Isoodon fusciventer*	Perameledae
10	South-western Brush-tailed Phascogale **CONSERVATION DEPENDENT**	*Phascogale tapoatafa wambenger*	Dasyuridae
11	Western Grey Kangaroo	*Macropus fuliginosus*	Macropodidae
12	Yellow-footed Antechinus	*Antechinus flavipes*	Dasyuridae
13	White-striped Free-tailed Bat	*Austronomus australis*	Molossidae
14	Gould's Wattled Bat	*Chalinolobus gouldii*	Vespertilionidae
15	Chocolate Wattled Bat	*Chalinolobus morio*	Vespertilionidae
16	Western False Pipistrelle **PRIORITY 4**	*Falsistrellus mackenziei*	Vespertilionidae
17	Lesser Long-eared Bat	*Nyctophilus geoffroyi*	Vespertilionidae
18	Southern Forest Bat	*Vespadelus regulus*	Vespertilionidae
***Introduced (non-native) species**			

APPENDIX 4

Fungi Species List

FUNGI SPECIES LIST - KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

FUNGI NO.	SCIENTIFIC NAME	COMMON NAME
1	*Abortiporus biennis*	Blushing Rosette
2	*Agaricus species*	Field and Button Mushrooms
3	*Amanita ananiceps*	Australian Pineapple Lepidella
4	*Amanita xanthocephala*	Vermilion Amanita
5	*Anthracophyllum archeri*	Orange Fan
6	*Arcangeliella daucina*	Milkcaps, Brittlegills and Allies
7	*Armillaria luteobubalina*	Australian Honey Fungus
8	*Austroboletus occidentalis*	Boletes
9	*Austrocortinarius australiensis*	Common Gilled Mushrooms and
10	*Austropaxillus infundibuliformis*	Boletes and Allies
11	*Bankeraceae*	Mushrooms, Bracket Fungi, Puffballs
12	*Boletellus obscurecoccineus*	Rhubarb Bolete
13	*Boletus species*	Porcini and Allies
14	*Calocera guepinioides*	Higher Basidiomycetes
15	*Cantharellus concinnus*	Australian Chanterelle
16	*Cladia species*	Cladias
17	*Cladonia rigida*	Spindles and Structured Lichens
18	*Clavulinopsis amoena*	Antler and Spindle Fungi
19	*Clavulinopsis sulcata*	Flame Fungus
20	*Coltricia species*	Mushrooms, Bracket Fungi, Puffballs
21	*Coprinellus disseminatus*	Trooping Crumble Cap
22	*Coprinus comatus*	Shaggy Mane
23	*Cortinarius rotundisporus*	Elegant Blue Webcap
24	*Cortinarius sinapicolor*	Common Gilled Mushrooms and
25	*Crepidotus variabilis*	Variable Oysterling
26	*Cuphophyllus aurantiopallens*	Waxcaps and Allies
27	*Favolaschia claudopus**	Orange Pore Fungus
28	*Fistulinella mollis*	Marshmallow Bolete
29	*Fistulinella prunicolor*	Boletes
30	*Fuscoporia gilva*	Mustard Yellow Polypore
31	*Galerina*	Moss Bells
32	*Graphidaceae*	Script Lichens and Allies
33	*Gymnopilus allantopus*	Common Gilled Mushrooms and
34	*Gymnopilus eucalyptorum*	Common Gilled Mushrooms and
35	*Gymnopilus junonius*	Spectacular Rustgill
36	*Gymnopilus purpuratus*	Common Gilled Mushrooms and
37	*Helotiales*	Higher Ascomycetes
38	*Hemimycena species*	Half Bonnets
39	*Hydnoplicata convoluta*	Pezizas, Desert Truffles, and Allies
40	*Hydnum species*	Hedgehog Mushrooms

FUNGI SPECIES LIST - KOORYUNDERUP – MOUNT HALLOWELL

Sourced from 2023 Citizen Science Bioblitz and iNaturalist (Denmark Environment Centre, 2023)

FUNGI NO.	SCIENTIFIC NAME	COMMON NAME
41	*Hygrocybe species*	Waxcaps
42	*Hygrophoropsis aurantiaca*	False Chanterelle
43	*Hypholoma fasciculare*	Sulphur Tuft
44	*Hypomyces chrysospermus*	Bolete Mould
45	*Laccaria species*	Laccarias
46	*Lactarius eucalypti*	Milkcaps, Brittlegills and Allies
47	*Lecidella species*	Disc Lichens
48	*Lepiota species*	Common Gilled Mushrooms and Allies
49	*Leucopaxillus lilacinus*	Common Gilled Mushrooms and Allies
50	*Lichenomphalia chromacea*	Yellow Navel
51	*Lobaria species*	Lung Lichens
52	*Melanelia species*	Camouflage Lichens
53	*Mucronella pendula*	Icicle Spine
54	*Mycena species*	Bonnets
55	*Ochrolechia species*	Crabseye Lichens
56	*Omphalotus nidiformis*	Ghost Fungus
57	*Peltigera dolichorhiza*	Longroot Pelt Lichen
58	*Peltigera polydactylon*	Many-fruited Pelt Lichen
59	*Piptoporus australiensis*	Curry Punk
60	*Pisolithus arhizus*	Dyeball
61	*Pluteus species*	Deer Mushrooms
62	*Podoserpula pusio*	Pagoda Fungus
63	*Pseudocyphellaria neglecta*	Common Gilled Mushrooms and Allies
64	*Ramaria capitata*	Mushrooms, Bracket Fungi, Puffballs,
65	*Rhodofomitopsis lilacinogilva*	Gum Bracket
66	*Rickenella fibula*	Orange Moss Navel
67	*Russula adusta*	Blackening Russula
68	*Russula clelandii*	Milkcaps, Brittlegills and Allies
69	*Russula persanguinea*	Milkcaps, Brittlegills and Allies
70	*Russula purpureoflava*	Milkcaps, Brittlegills and Allies
71	*Scleroderma*	Earthballs
72	*Stereum hirsutum*	Hairy Curtain Crust
73	*Trametes coccinea*	Southern Cinnabar Polypore
74	*Trametes versicolor*	Turkey-tail
75	*Tubaria rufofulva*	Burgundy Wood Tubaria
76	*Usnea species*	Beard Lichens
77	*Xylaria hypoxylon*	Candlesnuff Fungus

APPENDIX 5

Dieback Mapping

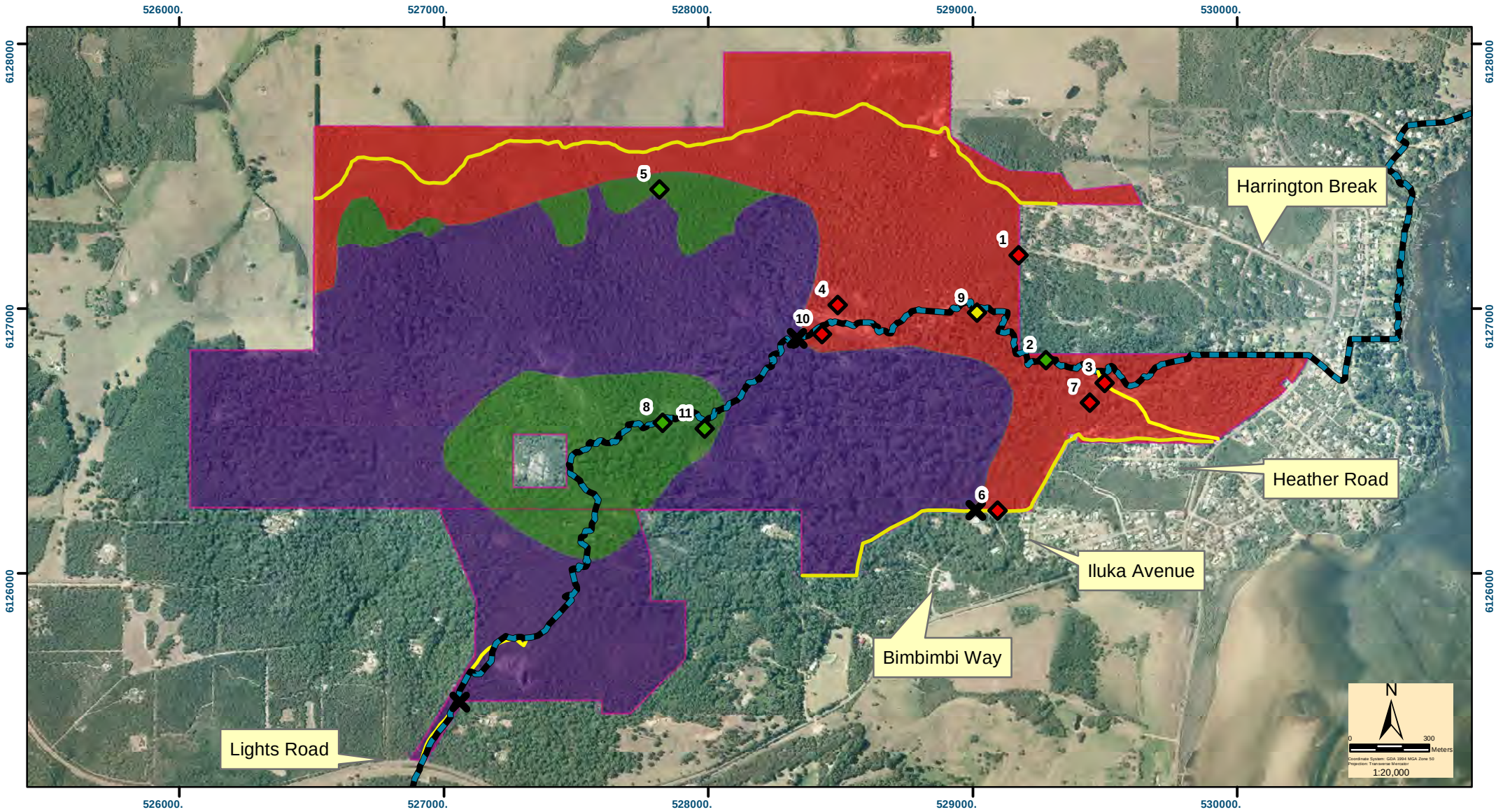


Figure 1: Phytophthora dieback disease distribution showing sample and cleandown locations

Great Southern Bio Logic

Ref: GSBL133
Date: 26/06/2014
Image supplied by Shire of Denmark

Broadscale survey of Phytophthora Dieback Distribution across the Mount Hallowell Reserve, Denmark and Reserve Hygiene Management Plan

Legend

Disease Status
- Infested
- Uninfested
- Uninterpretable
- MtHallowellReserve
- Access tracks
- Bibbulmun Track (Sheila Hill Memorial Trail)

Sample Locations
Result
- Negative
- Positive
- Unresolved at 16 June 2014
- Cleandown locations

APPENDIX 6

Community Survey

A survey was released by the Shire of Denmark on Wednesday 20 November 2024 and closed on Friday 17 January 2025.

Questions in the survey focused on feedback regarding management of Kooryunderup – Mount Hallowell and are summarised below.

SURVEY QUESTIONS

SURVEY DATA 1) Full Name 2) Age
17 years or younger
18 - 29 years
30 - 49 years
50 - 64 years
65+ years
3) Gender
Female
Male
Prefer Not To Say
Other
4) Place of Residence
Denmark
Hay
Ocean Beach
Scotsdale/Shadforth
Parryville/Kordabup
Peaceful Bay/Bow Bridge/Hazelvale/Kentdale/Nornalup
William Bay
Do not live in the Shire of Denmark
5) What is your primary connection to the Shire of Denmark?
I live in the Shire of Denmark
I have a commercial interest in the Shire of Denmark
I am a visitor to the Shire of Denmark
Other (please specify)
6) Tell us more about you. Are you a.....?(Please select all that are applicable to you.)
Denmark community member
Bibbulmun Track Foundation member
Bibbulmun Track Maintenance volunteer (Mt Hallowell section)
Denmark Bird Group member
South Coast Bushcare Services member or volunteer
Denmark Dog Owners Group member
Green Skills Denmark employee or volunteer
Friends of Mount Hallowell Kooryunderup member
Denmark Environment Centre employee, member or volunteer

Denmark Equestrian Club member
Denmark Mountain Biking Club member
Denmark Running Club member
Denmark Dog Owners Group member
Denmark Mountain Biking Club member
Denmark Bird Group member
Department of Biodiversity Conservation and Attractions representative
Kwoorabup Barefoot Walking Group member
Department of Planning, Lands and Heritage Indigenous Heritage South Coast Region representative
Bibbulmun Track Foundation member or volunteer
Bibbulmun Track Maintenance Volunteer (Mt Hallowell section)
Denmark Running Club member
Denmark Environment Centre employee or volunteer
Green Skills Denmark employee or volunteer
Denmark Equestrian Management Group representative or member
Department of Biodiversity, Conservation and Attractions representative
Department of Water and Environmental Regulation representative
Department of Water and Environmental Regulation SC Region representative
Department of Planning, Lands and Heritage Indigenous Heritage South Coast Region representative
Friend of Kooryunderup / Mount Hallowell member
Option 20
Denmark Equestrian Management Group member
Kwoorabup Barefoot Walking Group member
Private property with a shared boundary with the Mt Hallowell Reserve
Option 22
Ocean Beach Bushfire Brigade member
Ocean Beach resident or ratepayer
Private property owner with a shared boundary with the Mt Hallowell reserve
South Coast Bushcare Services member or volunteer
Water Corporation SC Region representative
None of the above
7) How often do you visit Mount Hallowell Reserve?
Daily
Weekly
Fortnightly
Monthly
Seasonally
Rarely
Never
8) How do you get to the Reserve?
Drive
Walk
Cycle
Other (please specify)

9) How do you get to the Reserve? (Select all applicable)
Drive
Walk
Cycle
Other (please specify)
10) Which are your favourite areas to visit in the Reserve?(Select all applicable))
Monkey Rock
Shiela Hill Memorial Trail
Mount Hallowell summit
Bibbulmun Track
Ocean Beach Bushfire Brigade
Other (please specify)
11) What activities do you undertake while visiting the Reserve?(Select all applicable)
Hiking
Dog walking
Mountain bike riding
Bird watching
Picnicking
Enjoying nature
Guided tours (tourism)
Educational activities
Citizen science
Organised maintenance activities (i.e. weed control, Bibbulmun Track Foundation activities etc)
Other (please specify)
12) What is special to you about Mount Hallowell Reserve? (Select all applicable)
The biodiversity values of the Reserve
The ability for me to enjoy being in nature
The hiking trails
Having a lovely place to walk my dog
Mountain biking on the trails
The cultural heritage of the Reserve (including the Indigenous heritage)
Easy access to nature
The natural beauty of the Reserve in the landscape
Scientific value
Other (please specify)
13) Please rate the following values by level of importance to you at Mt Hallowell. (1 being most important, 7 being least important) **14) Before we move on to asking about any concerns you may have, is there anything else you would like to tell us about what is special to you about Mount Hallowell? (Question type: Essay)** **15) What issues do you think the new Management Plan for the Mount Hallowell reserve should address?(Select all applicable)**
Vehicle access
Signage and trail way-finding
Multi-use of the Reserve
Dogs

Weeds, ferals and disease
Illegal clearing
Walkers
Mountain Bike use
Illegal camping
Bushfire risk
Provision of infrastructure (e.g. carparking, bins, toilets, picnic tables etc)
All abilities access
Safety
Littering
Not sure
Emergency response
Education
Other (please specify)
16) With regard to your last response, tell us what are your primary issues? (Select three)
Vehicle access
Signage and trail way-finding
Multi-use of the Reserve
Walkers
Mountain Bike use
Dogs
Weeds, ferals and disease
Illegal clearing
Illegal camping
Littering
Bushfire risk
Provision of infrastructure (e.g. carparking, bins, toilets, picnic tables etc)
All abilities access
Safety
Emergency response
Education
Not sure
Other (please specify)
17) Please rate the following concerns by level of importance to you.(1 being most important, 12 being least important) **18) Is there any more detail you would like to provide about your concerns about the future of the Mount Hallowell reserve? (Question type: Essay)**

Survey outcomes

Key insights and analysis including quantifiable measures based on the survey responses include:

Demographics and Participation

- **Total Responses**: 216 responses. The survey received a significant number of responses from various participants, including residents, visitors, and stakeholders.
- **Age Groups**: Respondents were from diverse age groups, with a notable representation from the 50-64 and 65+ age brackets.
    - 17 years or younger: 2 (0.9%)
    - 18-29 years: 3 (1.4%)
    - 30-49 years: 52 (24.2%)
    - 50-64 years: 93 (43.3%)
    - 65+ years: 65 (30.2%)
- **Gender**:
    - Female: 137 (63.7%)
    - Male: 73 (34.0%)
    - Prefer Not To Say: 4 (1.9%)
    - Other: 1 (0.5%)

Key Themes and Concerns

1. Biodiversity and Conservation

- **Positive Mentions**: 184 mentions (91.09%)

Many respondents highlighted the importance of preserving the biodiversity and natural beauty of Mount Hallowell. They emphasised the need to protect endangered species like the Black Cockatoos and maintain the area's ecological integrity.

- **Negative Mentions**: (8.91%) Concerns were raised about the potential threats to biodiversity from activities such as mountain biking, which could lead to erosion, spread of dieback, and disturbance to wildlife.

2. Recreational Use

- **Positive Mentions**: 195 mentions (96.53%). There is support for recreational activities such as walking, bird watching, and enjoying nature. Very few respondents support the inclusion of designated mountain bike trails.
- **Negative Mentions**: (10.40%) Significant opposition to mountain biking, with concerns about environmental damage, safety risks to other users, and increased vehicle traffic.

3. Natural Beauty and Peace

- **Positive Mentions**: 199 mentions (98.51%) The natural beauty, peace, and tranquility of the reserve were frequently mentioned. Respondents value the opportunity to connect with nature and enjoy the scenic views.
- **Negative Mentions**: (1.49%) Minimal negative mentions, mostly related to potential disturbances from increased human activity.

4. Environmental Protection

- **Positive Mentions**: 127 mentions (62.87%) Respondents emphasised the need for strong environmental protection measures, including better enforcement of rules and regulations to prevent illegal activities.
- **Negative Mentions**: (37.13%) Concerns about the Shire's lack of enforcement and potential for environmental degradation.

5. Fire Risk Management

- **Positive Mentions**: 112 mentions (55.45%) The need for effective fire risk management, including controlled burns and other mitigation strategies, was mentioned.
- **Negative Mentions**: (44.55%) Concerns about the buildup of dead matter and associated bushfire risk.

6. Infrastructure and Education

- **Positive Mentions**: 101 mentions (50%) Some respondents suggested improvements in infrastructure, such as educational signage, car parks, and trail heads, to manage visitor impact and promote conservation.
- **Negative Mentions**: (4.95%) Minimal negative mentions, mostly related to the need for better infrastructure and educational signage.

7. Community and Social Well-being

- **Positive Mentions**: 68 mentions (33.66%) The Reserve is seen as an important space for community interaction and social well-being. It is valued for its accessibility and the role it plays in the lives of local residents.
- **Negative Mentions**: (2.48%) Minimal negative mentions, mostly related to potential exclusion of certain user groups.

Quantified Mentions of Mountain Biking

- **Total Mentions**: 21 mentions (10.4%)
    - **Positive Mentions**: (0.99%) 2 responses were positive, supporting the inclusion of designated mountain bike trails.
    - **Negative Mentions**: (3.96%) 8 responses were negative, expressing concerns about environmental damage, safety risks, and the impact on other users.

APPENDIX 7

Walk Trail Brochure

Caring For Country

Granite Outcrops

The granite outcrops are a dominant feature of the Mount Hallowell Reserve. They create special niches for vegetation, both on the rock and in the surrounding fringes. They are sensitive areas and can be culturally significant.

Please tread carefully and refrain from moving rocks which in the past may have been placed purposefully by Noongar people for cultural purposes.

Invasive Weeds

Many invasive weeds species in the reserve are ”garden escapees” from adjacent subdivisions. Weeds have also colonised disturbed areas. South Coast Bushcare Services Inc. (formally Denmark Weed Action Group Inc.) continue to control invasive weed species within the reserve, supporting natural regeneration of the bush. We can be contacted for advice on how to identify and control weeds.

South Coast Bushcare Services Inc

Contact

Rear 33 Strickland Street, Demark WA 6333

Email: scbs@westnet.com.au

Mobile: 0448 388720

Sheila Hill Memorial Walk Trail and Bibbulmun Track

Mount Hallowell and Monkey Rock

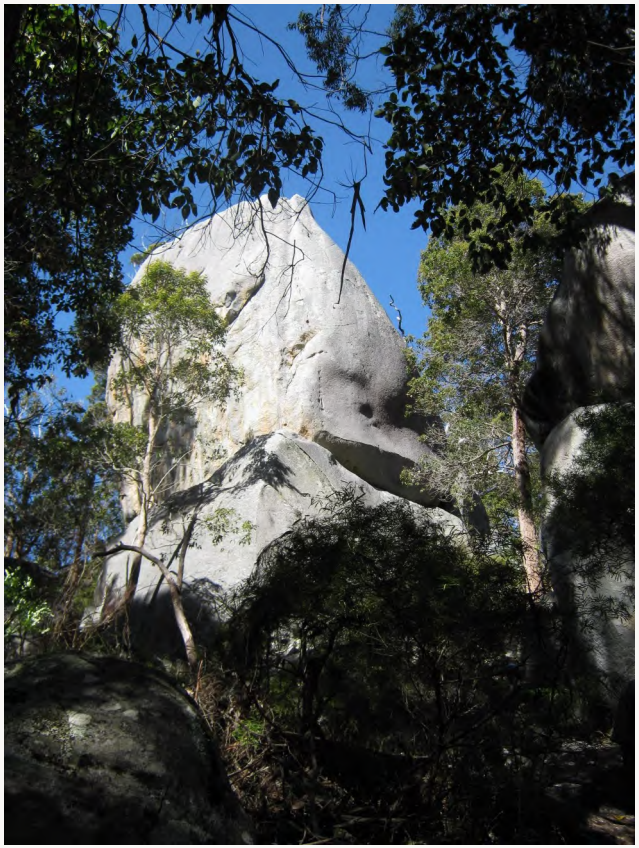
Bibbulmun Track .....

Mount Hallowell Reserve is located approximately 5km south-west of Denmark. It can be accessed by pedestrians via the Bibbulmun Track/Sheila Hill Memorial Trail. The Bibbulmun Track runs between Ocean Beach Road and Lights Road via the summit of Mount Hallowell and Monkey Rock.

The trails passes up through marri/ jarrah and karri forest and over expansive granite outcrops. There are spectacular views of the coast and inlet at the summit.

A shorter return walk to Monkey Rock can be accessed from Lights Road.

Kooryunderup Mount Hallowell Reserve



"The Jewel in the Crown"

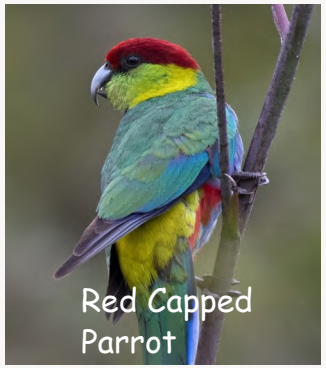
Kooryunderup means 'place of many bush Kangaroo'

Supported by the Shire of Denmark Community Environmental Education Program

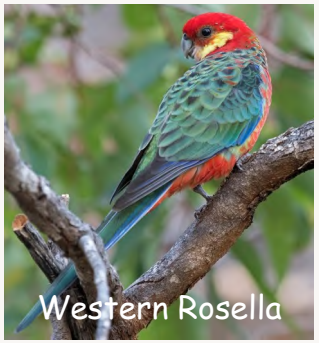
Birdlife in the Forest

White-browed babblers can be seen in the reserve foraging mostly on the ground in noisy flocks. They build communal roosting nests of twigs and sticks, usually in dead or partly living trees.


White browed Babbler


Red Capped Parrot


New Holland Honeyeater


Western Rosella


Red-eared Firetail Finch

Bird photos by John Anderson

A Place for Conservation

Mount Hallowell Reserve consists of mostly virgin (unlogged) old growth forest. It is a conservation priority area for the maintenance of the flora, fungi and fauna and is recognized as a significant scientific reference site. It is one of the few remnant long-unburnt areas in the South West , the last recorded fire was in 1937.

Dieback in the Reserve

Dieback (*Phytophthora cinnamomi*) is a deadly plant disease that effects over 40% of native WA plant species. Many of these susceptible plants are only found in the South-west, these include jarrah, banksias, grasstrees (*Xanthorrhoea*) and zamia palms.

Dieback is present in the northern area of the reserve. It can spread through the movement of soil. Look for signage and clean footwear before moving into Dieback-free areas. Stick to designated trails.

References: Mount Hallowell Management Plan 2008

Plants of Denmark Walk Trails: Traditional Noongar Uses

A Study into the Risk of Phytophthora Dieback in Ten Peri-urban Reserves within the Shire of Denmark

Common Plants

Common name: Tassel Flower

Scientific name: *Leucopogon verticillatus*

Uses: the berries are edible

Common name: Karri Oak

Scientific name: *Allocasuarina decussata*

Noongar name: Kulli, Gulli

Uses: Soft needles were used for bedding

Fungi

In late autumn fungi emerge around Mount Hallowell. In WA about 500 species of fungi have been recorded most found in the South-west. There are more yet to be discovered. Fungi are vital for the health of vegetation and food for small mammals.

For more information refer to the *Guide to Macrofungi in Mount Hallowell and Wilson Inlet Foreshore Reserves.*

Boletus fungi (see photo) have a sponge-like surface under the cap rather than gills. The flesh turns blue/ black when disturbed.

APPENDIX 8

Photographs