WHEATBELT REGION
REGIONAL CONSERVATION PLAN

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

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Cover:
View from Mount Matilda in Wongan Hills Nature Reserve across to Lake Hinds Nature Reserve. *Photo – Brett Beecham, DBCA*
Granite spider orchid (*Caladenia graniticola*), Pingaring. *Photo – Brett Beecham, DBCA*

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1 Introduction

Each of the nine Parks and Wildlife Service regions identified and prioritised conservation actions through structured decision-support processes undertaken between 2021 and 2023. Information about how the plans were developed is outlined in the *Regional conservation planning approach,* which should be read in conjunction with this plan.

2 Regional context

The department's Wheatbelt Region extends from Wubin, Dalwallinu and Beacon in the north to Frankland River, Cranbrook, Ongerup and Lake Magenta Nature Reserve in the south, and from New Norcia, York, Wandering and Darkan in the west to Bullfinch, Southern Cross, 80km east of Hyden and Lake King in the east. This vast area inland from Perth covers more than 131,000km^2 and accounts for six per cent of Western Australia's land area.

Rapid and extensive agricultural development during the twentieth century means that little native vegetation now remains—significantly less than 10 per cent in some parts of the Wheatbelt Region. From a conservation perspective, the consequence of this clearing is that the remaining native vegetation and habitat predominantly occurs as small and isolated remnants, and ecosystem processes have been disrupted and dramatically altered.

High species diversity, high levels of endemism and high levels of threat to these values has led to the South West Botanical Province (SWBP) being recognised as one of only 36 global biodiversity hotspots (Myers et al. 2000, Conservation International 2023, CEPF 2025). The 'Central and Eastern Avon Wheatbelt' is also one of Australia's 15 national biodiversity hotspots. The Wheatbelt Region is embedded within these two hotspots. Broadscale land clearing in the Wheatbelt since colonial settlement has resulted in the loss of more than 80 per cent of pre-European vegetation and the fragmentation of remaining vegetation into many small, scattered remnants.

An essential part of the work of the department in the Wheatbelt Region is to protect and conserve the remaining biodiversity by managing threatening processes such as feral animals, weeds, Phytophthora dieback and other diseases, and landscape-scale threats including fragmentation, altered hydrology and inappropriate fire regimes at a range of different scales. However, a sizeable portion of this biodiversity is only found on lands not managed by the department, and our ability to influence the management of these lands for conservation outcomes is limited.

For example, data from the department's Threatened and Priority Flora database (TPFL December 2024) shows that the Wheatbelt Region contains 146 threatened flora species, representing more than 30 per cent of all threatened flora taxa in Western Australia. These 146 species occur as more than 3700 populations and sub-populations, with over 70 per cent occurring outside the formal conservation reserve system, including nearly 30 per cent on roadsides. Of the 146 threatened flora species in the Wheatbelt Region, at least 50 species (34 per cent) don't occur anywhere on the conservation estate. Many of the highest priority targeted actions for flora involve working with other land managers to encourage and support their efforts to conserve and protect populations on their land, which the department has no direct responsibility to manage.

The primary purpose for most lands managed under the provisions of the *Conservation and Land Management Act 1984* (CALM Act) in the Wheatbelt Region is for conservation. The reserve system reflects the nature of the Wheatbelt; it is highly diverse with high levels of species turnover between reserves, the reserves are generally small and isolated from one

another, and they are strongly affected and influenced by the altered ecological processes and pressure in the surrounding agricultural landscape. Of the nearly 700 reserves, over three-quarters are less than 500 hectares in size, and half are less than 100 hectares. Management is generally planned and undertaken at three scales; catchment or landscape, patch or reserve, and species or population level. Management actions aim to ameliorate and mitigate the effects of multiple altered ecological processes and pressures including:

- Inadequate ecological resources: Land clearing, habitat fragmentation and habitat modification have reduced species' access to a range of resources essential for sustenance and recruitment, leading to population declines and local species extinctions.
- Altered hydrological processes: The replacement of perennial native vegetation by annual crops has resulted in secondary salinisation, and altered hydrology in wetlands and streams, severely impacting species and communities in vulnerable areas.
- Altered climate processes: Scientific evidence suggests that the Wheatbelt Region's climate is changing, and will continue to change for many decades, impacting species directly and through interaction with other threatening processes.
- Inappropriate disturbance regimes: Alterations to the historic frequency, intensity and geographical scale of disturbance events, such as fire and flooding, have disadvantaged those species critically dependant on historic disturbance regimes.
- Competing land use: The Wheatbelt's remaining bushland remains the focus of a range of human activities that affect native wildlife, including grazing, recreational hunting, wildflower harvesting, timber production, mining and quarrying, and illegal activities (for example rubbish dumping and arson).
- Introduced plants, animals and diseases: These can impact native species directly by predation; grazing and competition for growing space, shelter and other key resources; and indirectly by altering ecological relationships.
- Problem native species: Land clearing and habitat changes have caused dramatic increases in some native species, leading to detrimental impacts like those associated with introduced species.

The management of biodiversity and the key threatening processes in the Wheatbelt Region has been guided by several key documents over the last 20 years, including *Managing Natural Biodiversity in the Western Australian Wheatbelt: A conceptual framework* (Wallace et al. 2003) and the *Salinity Investment Framework Interim Report – Phase I* (Department of Environment 2003). The region's approach to managing fire for biodiversity conservation was initially incorporated into the *Fire Management Plan Katanning District Eastern Reserves 2002-2012* (McClusky et al. 2002) and further refined in the adaptive management project *Conserving the Biodiversity of the Tutanning Nature Reserve* (Beecham et al. 2009) and *Wheatbelt Regional Fire Management Plan 2012–2017.*

In a region where remaining natural habitat is highly fragmented, the region has adopted several broad management approaches including:

- ensuring that the pressures on biodiversity conservation are not accelerated
- slowing the rate at which biodiversity values are being lost from agricultural areas
- taking positive steps to conserve specific elements of the biota
- taking positive steps to conserve all natural populations in an area
- re-building landscapes and their natural biota.

In the fire-prone ecosystems of the south-west of Western Australia, the reproductive cues and population persistence of many plant species are inextricably linked to fire, and this is particularly evident in the kwongan heathlands and shrublands. Many species of threatened flora are also concentrated in these vegetation communities.

Fire regimes have altered across much of the south-west of Western Australia over the last century, particularly due to the combined effects of the widespread clearing and fragmentation of native vegetation and active fire suppression in agricultural areas. The long-term exclusion of fire from many smaller reserves is contributing to senescence, structural decline and the loss of diversity in some vegetation communities.

In this context, the Wheatbelt Region implements a fire management program to achieve conservation outcomes. At the smallest scale, prescribed fire is used to regenerate individual populations of threatened flora where the numbers of mature plants have dropped below a critical threshold, or where there is concern that the viability of the soil seed bank may be declining. Fire plays a critical role in seed regeneration and population dynamics for nearly half of the Wheatbelt Region's threatened flora.

To conserve the full suite of biodiversity, the Wheatbelt Region developed the Fire Regime Optimisation Planning System (FiReOPS) to plan and program prescribed burns to restore more appropriate vegetation mosaics.

Through the South West Native Title Settlement, the department has entered into Co-operative Management Agreements (CMAs) with the six Noongar Native Title Agreement groups. The Settlement enables Noongar people to have a voice in how CALM Act lands and waters in the south-west are managed. For the Wheatbelt Region, CMAs are in place between the department and Yued, Ballardong, Gnaala Karla Booja and Wagyl Kaip Aboriginal Corporations. As of 1 December 2025, the Wheatbelt Region has no formal or informal joint management arrangements with Traditional Owners, but these arrangements are expected to be developed in the future. This will support integration of Traditional Owner participation and knowledge into reserve management.

An overview of the Wheatbelt Region is provided in Table 1 and Figure 1.

Table 1 Overview of the conservation assets of the Wheatbelt Region (December 2025).

Region	Wheatbelt		
Interim Biogeographic Regionalisation of Australia (IBRA) regions	Avon Wheatbelt sub-regions (AVW01, AVW02), Coolgardie sub-region (COO02), Esperance Plains sub-region (ESP01), Geraldton Sandplains sub-region (GES02), Jarrah Forest sub-regions (JAF01, JAF02), Mallee sub-region (MAL02), Swan Coastal Plain region (SWA01), Yalgoo sub-region (YAL02).		
Landscape description	Large inland region dominated by dryland agriculture (cropping and grazing). Native vegetation has been extensively cleared and remnants are small and fragmented. The landscape is gently undulating with subdued relief and extensive salt-lake playa systems.		
Department-managed land	**Tenure classification**	**No.**	**Area (ha)**
	Legislated lands and waters		
	National park	3	17,794
	Conservation park	7	26,784
	Nature reserve	633	1,098,131
	Section 5(1)(g) reserve	8	328
	Section 5(1)(h) reserve	24	2652
	State forest	3	9502
	Section 34A freehold	2	0.4
	Section 131 freehold	5	0.4
	Total	**685**	**1,155,192**
	Department interest in lands and waters		
	Crown freehold – department interest	36	5935
	Unallocated Crown land – department interest	2	43,143
	Total	**38**	**49,078**
	Total area of all lands and waters encompassed by the region (and portion managed by the department)		**13,599,269 (9%)**
Remnant vegetation	Approximately 29.6% of the total area of land encompassed by the region includes remnant vegetation, with approximately 27.5% of this remnant vegetation occurring on department-managed land.		
Threatened[1] and Priority[2] fauna species	Extinct (10), critically endangered (7), endangered (9), vulnerable (10), conservation dependent (3), migratory (17), other specially protected (1), Priority 1 (6), Priority 2 (2), Priority 3 (11), Priority 4 (12)		
Threatened and Priority flora species	Extinct (3), critically endangered (58), endangered (53), vulnerable (36), Priority 1 (167), Priority 2 (190), Priority 3 (267), Priority 4 (87)		
Threatened and Priority ecological communities	Collapsed (0), critically endangered (2), endangered (0), vulnerable (1), Priority 1 (14), Priority 2 (3), Priority 3 (10), Priority 4 (1)		
Wetlands	Wetlands of International Importance under the Ramsar Convention (1), Wetlands of National Importance (8)		

[1] Threatened species and ecological communities listed under the *Biodiversity Conservation Act 2016* (BC Act).
[2] Priority species and ecological community lists are maintained by the department; Priority is not a listing category under the BC Act.

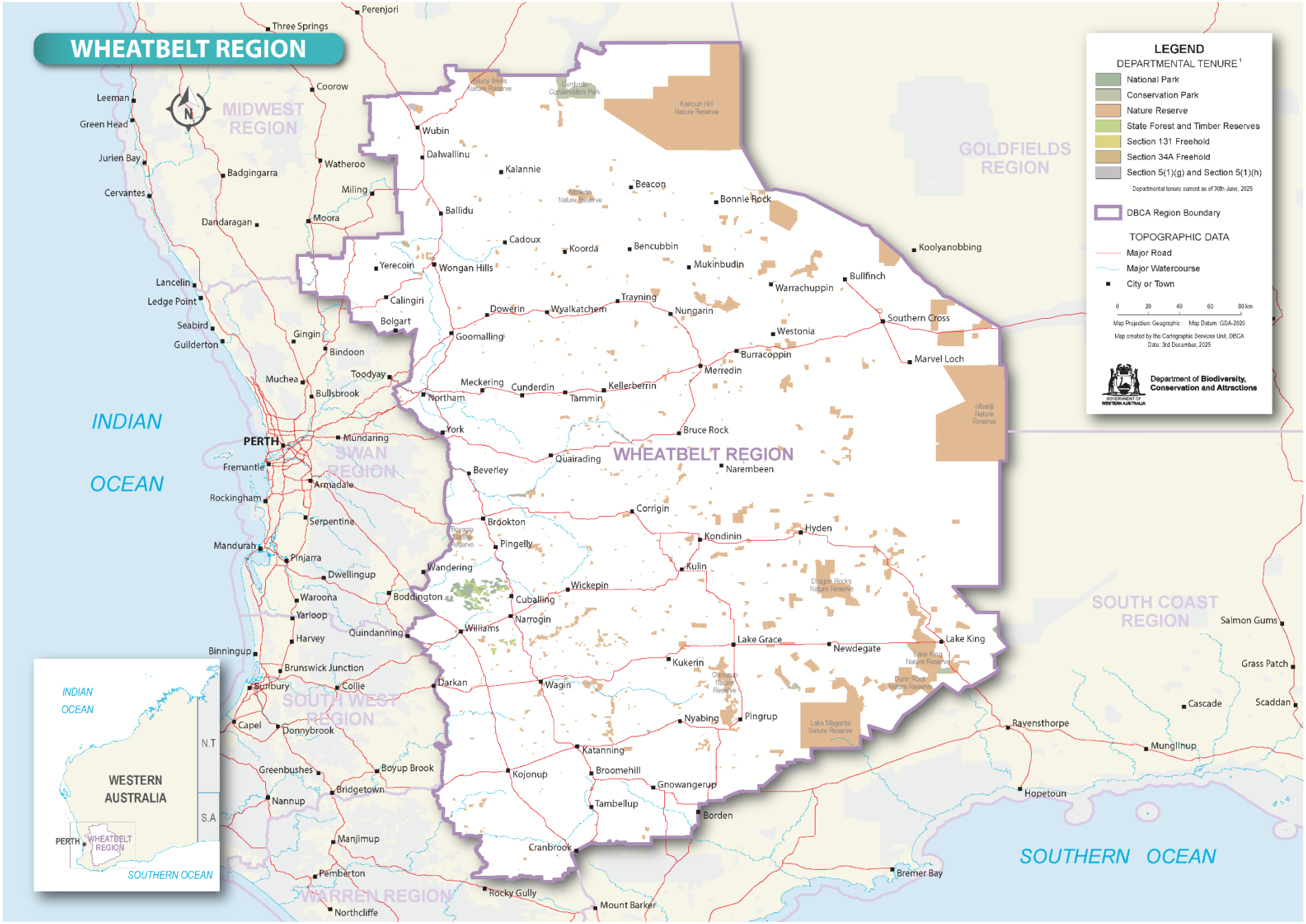

Figure 1 Wheatbelt Region department-managed land and waters (December 2025).

3 Identification of priority reserves and landscapes

To determine priorities for landscape-scale threat mitigation, the Wheatbelt Region applied the following approach to identifying priority reserves and landscapes when undertaking the Landscape action prioritisation process, in accordance with the *Regional conservation planning approach*.

3.1.1 Identification of priority landscapes

Over the preceding two decades, the Wheatbelt Region has been involved in, or developed and applied, several key biodiversity conservation planning processes that identify and prioritise reserves and landscapes. These processes are based on clearly articulated goals and objectives, the conservation assets of interest, the threats to key assets and values and the risk of not achieving the objective, and the feasibility of mitigating key threatening processes. *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002* (May and McKenzie 2002) provided the first comprehensive and systematic review and summary of the biodiversity values, threats, constraints and management opportunities across each of the Interim Biogeographic Regionalisation of Australia (IBRA) sub-regions in the State.

For the Wheatbelt Region, this reinforced the understanding that the highly cleared and fragmented landscapes of the Avon Wheatbelt IBRA are amongst the most threatened and at-risk regions in Australia, and that much of the biota is unique, of high conservation value and at significant risk. Whilst the IBRA system is useful for characterising the biota, the dominant land use provides a better means of stratifying the landscapes in the Wheatbelt Region to identify priorities. The Agricultural Zone, defined by the area cleared for agriculture, is characterised by mostly small, isolated reserves, with a few larger reserves mostly in the east and south-east. Ecosystem and population processes are severely disrupted, and pressures are pervasive and severe. The Extensive Land Use Zone (or Rangelands) occurs east of the 'clearing line' and is largely intact and contiguous vegetation with a few areas of localised clearing around infrastructure and mines. Ecosystem and population processes here are more intact, and threats often localised or diffuse.

The Wheatbelt Region has developed and applied several planning processes to identify landscapes that retain a greater proportion of remnant vegetation and therefore are likely to retain greater representative samples of the original biota. Other processes have identified the biota at risk from specific altered ecosystem processes such as salinity and fire. The identification of priority landscapes within this plan was largely based on these existing processes.

3.1.2 Categorisation of land into management units

The history of clearing for agriculture in the Wheatbelt Region leaves a contrast of islands of remnant vegetation and habitat embedded in agricultural land. While most of the conservation estate exists as small, isolated reserves, there are also larger single reserves and groups of reserves that collectively function as a larger unit. For example, the *Dongolocking Pilot Planning Project for Remnant Vegetation – Phase I Final Report* (Wallace et al. 1998) focused on 11 smaller nature reserves (3450 hectares) and 1710 hectares of other remnant vegetation, equating to 15 per cent remnant vegetation in the local landscape. The project devised revegetation strategies to increase the minimum vegetation 'patch' size to support viable populations of a suite of bird species.

The report *Managing Natural Biodiversity in the Western Australian Wheatbelt: A conceptual Framework* (Wallace et al. 2003), took this landscape-scale approach and applied it across the wheatbelt to identify other more resilient landscapes where the threshold of remnant vegetation, including conservation reserves, exceeded 20–30 per cent. The guiding principle was that landscapes of at least 10,000 hectares (100km^2) with a minimum of 20–30 per cent remnant vegetation were more likely to retain their original biota than more heavily cleared and

fragmented landscapes. These landscapes have been incorporated into a suite of subsequent projects and have also been used as the basis for many of the management units identified in this plan.

3.1.3 Identify priority management units

To prioritise these management units, the Wheatbelt Region used information from a variety of previous projects that have identified important biodiversity assets, key threatening processes, and developed and applied robust priority-setting process to allocate scarce resources. The outputs from many of these processes include spatial products that were overlaid in a geographic information system (GIS) to find management units with multiple assets. Information and spatial outputs from the following processes were used to identify priority management units:

- DBCA 'Stepping Stones' (Stepping Stones Development Team 2014)
- DBCA 'Corridors' (Beecham unpublished data)
- Natural Diversity Recovery Catchments – Existing
- Natural Diversity Recovery Catchments – Potential (Walshe et al. 2004)
- Fire Regime Optimisation Planning System (FiReOPS) (Beecham and Lacey unpublished)
- *Wheatbelt Regional Fire Management Plan 2012–-2017* (DEC 2012)
- *Regional Fuel Management Plan Wheatbelt Region 2021–2026* (DBCA 2021)
- Threatened Flora Habitat Senescence reports (Brooks and Carly 2013; Phillips et al. 2016; York 2020)
- *Western Shield Plan 2017–2026*
- *State Phytophthora Dieback Management and Investment Framework, Version 1, July 2014*
- *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002* (May and McKenzie 2002).

Management units were assigned a '1' where they were identified in each of these processes. No weighting was assigned to the relative importance, benefit or value of being identified in any of these processes.

Other datasets used to help identify priority management units included:

- Significant Wetlands
- Areas of high species diversity, richness, or endemism
- Diversity of the Physiognomic Vegetation Types of Western Australia
- Presence/absence of Threatened or Priority ecological communities
- Co-occurrence with flora, fauna or ecological communities identified through the screening and action development as requiring maintenance actions
- Presence of kwongan heathland at risk of senescence due to the prolonged absence of fire, combined with no known fire history
- Presence of Priority 1 or 2 flora.

Management units were also assigned a '1' if they included any of these biodiversity values. The exceptions were for the diversity of physiognomic vegetation types which were scored by the number of types occurring. This was assumed to be indicative of the broader biological diversity present in these management units. No other weightings were applied. The combined 'scores' were summed, and the highest-ranking management units continued to the benefit-cost analysis. Some higher-ranking management units were excluded because they were assessed to occur primarily in valley floors and either affected by secondary salinisation or at high risk, based on the SLIP Land Monitor Salinity and Valley Hazard dataset.

The Wheatbelt Region's priority management units are listed in Appendix 1.

4 Regional conservation actions

The conservation actions identified and prioritised through the regional conservation planning process are organised into the following sections:

1) Highest priority actions assessed through the prioritisation processes (as described in the *Regional conservation planning approach*) are outlined in section 5.

   These actions will be implemented by regional staff as the highest priority, focused on those actions that are on, or benefit, department-managed land[3,4] and/or involve addressing key information requirements for the management of threatened and Priority species and ecological communities both on and off department-managed land[5].

2) Actions identified through the regional conservation planning process that are not the highest priority are outlined in section 6.

   These actions will be considered in works programming as opportunities arise. They include:

   a) Actions to be led by the region that went through the benefit-cost analysis (for Landscape and Targeted actions) and the risk assessment and value of information analysis process (for Learn actions) and were assessed to not be in the highest priority category.

   b) Actions with a benefit-cost score of zero[6] or less were excluded from prioritisation category allocation, as they have been estimated to deliver no value or may be detrimental based on the information available during the regional conservation planning process. These actions are included for regions to consider should prioritisation process factors change over time (for example new information that improves feasibility or certainty).

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[3] **Department-managed land** includes lands and waters managed under the Parks and Wildlife Service's legislation (the *Conservation and Land Management Act 1984* and *Swan and Canning Rivers Management Act 2006*). It also applies to 1) those lands for which the department under a Memorandum of Understanding (MOU) with the Department of Planning, Lands and Heritage, manages pest animals, weeds and fire on unallocated Crown land (UCL) and unmanaged reserves (UMR) outside the metropolitan area, regional centres and townsites (2004), where resources are available and subject to native title considerations; and 2) Crown lands where the department has a management interest (for example UCL lands that were purchased or identified with the aim of adding them to the formal conservation estate but remain under the management of the *Land Administration Act 1997*).

[4] Actions off, but that will benefit, department-managed land were assessed through the Landscape and Targeted action prioritisation processes. These include actions that:

- are on lands adjacent to department-managed land (for example neighbouring properties, buffers)
- are undertaken in partnership with joint management partners (including potential joint management partners) off department-managed land (relationship building)
- incorporate multiple tenure types, including department-managed land.

[5] Learn actions undertaken by regions on non-department-managed land were included in the Learn action prioritisation process, even if they may not directly benefit department-managed land. This is because information about threatened and Priority species and communities is essential to inform their status, and subsequent management actions either on department-managed land or for the department to encourage actions on other lands.

[6] Zero was defined as 0.0000000001.

c) *Landscape and Targeted actions identified through the action development processes that are off, and do not directly benefit, department-managed land, and/or that rely on third parties for implementation where all costs are not incurred by the region.

   These were not assessed through the prioritisation processes. This is because the primary focus of regions is to implement actions on, or that benefit the lands for which they have a management responsibility, and/or because the benefit-cost analysis could not be accurately applied due to cost and feasibility uncertainty (as these were outside the region's control). These actions include liaison and advocacy, land acquisition and transfer, and education and awareness.

d) *Proposed/new translocation and germplasm collection and storage actions.

   These actions were considered through the Targeted action screening and action development processes but were not included in the regional conservation prioritisation processes, as these actions are dependent on approval processes and considerations at a state-wide level led by other areas of the department.

An asterisk (*) denotes the action types that have not been through the regional conservation planning prioritisation processes.

3) Learn actions that were beyond the region's capacity and/or expertise to address are outlined in section 7.

   The region will pursue collaboration opportunities to address these information requirements as they arise with other business areas of the department and/or external parties.

Conservation actions to be led by the region have been assigned to the relevant overarching biodiversity conservation strategy as outlined in the department's Biodiversity Conservation Framework. Multiple other business areas of the department contribute to achieving these overarching strategies. Therefore, the region may not deliver actions aligned to all the overarching strategies, and regional conservation plans do not reflect all the conservation activities implemented by other business areas of the department.

Many actions identified through the regional conservation planning process align with multiple overarching strategies, therefore they were assigned based on the nature of the action (what the action is focused on doing) rather than the objective (what the action is focused on achieving).

Action numbers
The action number in square brackets is a unique code for specific actions that may be grouped in a summarised format in this plan. The action number can be used to reference the detailed information documented through the prioritisation process for that action within the supporting datasets. The letters of the action number denote the prioritisation process (LA = Landscape action, LE = Learn action and TA = Targeted action). For Learn and Targeted actions, letters also denote the threatened or Priority biodiversity asset type (EC = ecological community, FA = fauna and FL = flora). The numbers are random (they do not relate to their priority).

5 Highest priority actions assessed through prioritisation processes

FAUNA

- Install roadside markers along 1km length of management track within Reserve 16148 (Wongan Hills) and 500m of management track within Mount Matilda Nature Reserve to protect habitat for shield-backed trapdoor spider (*Idiosoma nigrum*) [TA-FA-026].
- Install roadside markers on the access track, and bollards and gates at Yorkrakine Nature Reserve, to manage inadvertent damage, uncontrolled access and unauthorised camping in the habitat of Yorkrakine trapdoor spider (*Kwonkan Eboracum*) [TA-FA-027].

FAUNA

- In consultation with experts, develop a survey methodology for application by departmental staff to investigate the full distribution of the trapdoor spider *nigrum*–group (*Idiosoma* spp.). Investigate DNA techniques for non-destructive burrow sampling, for example swabbing silk or eDNA of soil [LE-FA-001].

FLORA

- Complete translocation of *Acacia subflexuosa* subsp. *capillata* at Charles Gardner Nature Reserve using seedlings to establish a minimum population size of 250 reproductively mature plants [TA-FL-081].
- Augment translocated populations 8D and 8E of *Acacia volubilis* to create sub-populations of at least 250 reproductively mature plants [TA-FL-084].
- Undertake monitoring, including population size, extent and threat assessment, for population 7 of *Acacia cochlocarpa* subsp. *cochlocarpa* [LE-FL-013] and population 2 of *Eremophila verticillata* [LE-FL-014].
- Survey for germinants of *Conospermum galeatum* post-fire in Charles Gardner Nature Reserve [LE-FL-005] and *Lysiosepalum abollatum*, *Acacia pharangites* and *Philotheca wonganensis* in the Mount O'Brien gully systems [LE-FL-080].

- Plan and implement a prescribed burn to regenerate translocated population 16 of *Daviesia euphorbioides* at Hindmarsh Nature Reserve when the number of mature individuals recorded reaches zero to determine the viability of the soil seed bank [TA-FL-028].
- Survey and assess threats to population 10 of *Eremophila glabra* subsp. *chlorella* [LE-FL-012].
- Plan and implement a prescribed burn to germinate soil seed bank of *Eremophila viscida* at selected sites within the conservation estate [LE-FL-009].
- Investigate operation of gravel pit at population 1A of *Stylidium applanatum* [LE-FL-011].
- Review flora species listed in the Threatened and Priority Flora Database (TPFL) and/or Western Australian Herbarium records without an assigned 'TPFL population number' at the time of the flora screening process, to determine survey, monitoring or other actions required.

ECOLOGICAL COMMUNITIES

- Manage Toolibin Lake in accordance with the *Toolibin Lake Catchment Recovery Plan 2015-2035* (DBCA 2017) inclusive of pest and feral control, hygiene and reserve management, preventative maintenance of hydrological infrastructure (including groundwater pumping system) to protect occurrence Tool01 of Perched wetlands of the Wheatbelt Region with extensive stands of living swamp sheoak *(Casuarina obesa)* and paperbark *(Melaleuca strobophylla)* across the lake floor ecological community [TA-EC-181].

ALTERED HYDROLOGY

- Implement a monitoring program consistent with the priorities in the *Toolibin Lake Catchment Recovery Plan 2015–2035* (DBCA 2017) to support priority targeted actions for the Threatened Ecological Community (TEC), including groundwater depth (bores), surface water inflow quality, surface water quantity and quality (lake) after fill event, vegetation health (TEC) and waterbird and aquatic invertebrate surveys after fill event [LE-EC-002].

FIRE REGIMES

- Within Dryandra Woodland, identify and map key habitat (vegetation thickets) and incorporate into the FiReOPS tool to plan and implement a prescribed burn program. Where appropriate, undertake two prescribed burns of 50–100 hectares specifically targeting the regeneration of senescent *Gastrolobium* thickets [LA-016].

- Within Durokoppin Nature Reserve, undertake an assessment of senescence levels within the kwongan and complete one prescribed burn of 50–100 hectares if appropriate. Incorporate requirements to regenerate *Grevillea dryandroides* subsp. *hirsuta* from the soil seed bank, consistent with actions 13 and 16 in the Interim Recovery Plan (2010–15), and the mygalmorph trapdoor spider community as priorities. If appropriate, protect seedlings from browsing by rabbits and macropods [LA-019].
- Restore ecosystem resilience in Lake Magenta Nature Reserve through developing a prescribed burn program using the FiReOPS tool to implement an appropriate fire regime to restore age-class distribution for all vegetation types, and specifically regenerate senescing threatened flora habitat for populations of *Acacia leptalea*, *Banksia rufa* subsp. *chlemocarpa* and *Grevillea newbeyi*. As appropriate, prepare burn prescriptions and include four approximately 500 hectare burns in the Wheatbelt Region's annual burn program. Investigate opportunities to reintroduce fauna as 'ecosystem engineers' to complement the Western Shield program [LA-032].
- Continue to implement, evaluate and monitor the *Conserving the Biodiversity of the Tutanning Nature Reserve Adaptive Management Project* (2009), including the prescribed burn program developed using the FiReOPS tool for Tutanning Nature Reserve. Target is four to six 100 hectare prescribed burns (total approximately 500 hectares) [LA-066].
- Develop prescribed burn plans using the FiReOPS tool to implement appropriate fire regimes for all vegetation types, threatened species and ecological communities in the Dragon Rocks Nature Reserve [LA-012], Dunn Rock-Lake King-Pallarup Landscape [LA-017], Tarin Rock Target Landscape [LA-043] and Wongan Hills Ecoscape [LA-058]. Specific consideration will be given to the habitat and regeneration requirements of *Stylidium coroniforme* subsp. *coroniforme*, *Conostylis wonganensis*, *Daviesia euphorbioides* and *Gastrolobium hamulosum* (Wongan Hills Ecoscape), *Calectasia pignattiana, Conostylis rogeri* and *Acacia depressa* (Tarin Rock Target Landscape), and *Grevillea involucrata* (Dragon Rocks NR). The objective will be to incorporate these into the region's prescribed burn program, including:
  - two approximately 300 hectare (Dragon Rocks Nature Reserve)
  - two 200–300 hectare (Dunn Rock-Lake King-Pallarup landscape)
  - five 100–200 hectare (Tarin Rock Target Landscape)
  - five approximately 100 hectare (Wongan Hills Ecoscape).
- Plan and implement prescribed burn of population 1 of *Acacia insolita* subsp. *recurva* at East Yornaning Nature Reserve following insecticide treatment and seed collection. Augment population using collected seed post fire to establish viable population, including fencing and monitor the population [TA-FL-072].

PEST ANIMALS

- Remove the fence at Minnivale Nature Reserve and implement a rabbit control program to reduce the impact of grazing on Minnivale trapdoor spider (*Teyl* sp., MYG693) habitat [TA-FA-028].
- Re-fence population 15 of *Chorizema humile* at Waddington-Wongan Hills Road Nature Reserve to create a larger grazing exclosure [TA-FL-014].

FLORA

- Produce or reprint and distribute *Have you seen this plant* brochures for *Caladenia luteola* [TA-FL-095] and *Hemiandra rutilans* [TA-FL-124].

6 Actions identified through the regional conservation planning process that are not the highest priority

FAUNA

**Land acquisition and transfer actions*

- Investigate the potential acquisition of 150 hectares of land to the east and south of Kokerbin Rock Nature Reserve and revegetate with native species to provide additional black-flanked rock-wallaby (*Petrogale lateralis lateralis*) foraging habitat [TA-FA-428].
- Investigate the potential acquisition of up to 1000 hectares of land surrounding key black-flanked rock-wallaby (*Petrogale lateralis lateralis*) sites (Mount Stirling Nature Reserve, Gundaring Nature Reserve or Mount Caroline Nature Reserve), manage feral predators by either building an introduced predator-proof fence [TA-FA-121] or controlling feral animals (rabbits, feral cats, foxes) [TA-FA-143], and revegetate the land to provide additional foraging habitat and/or improved connectivity between isolated sub-populations.

FLORA

**Land acquisition and transfer actions*

- Investigate the potential acquisition of areas to reserve for conservation purposes, and manage threats as necessary, for the following populations of threatened or Priority flora currently on private property:
  - Population 5A of *Acacia ataxiphylla* subsp. *magna* [TA-FL-003]
  - population 14 of *Acacia auratiflora* [TA-FL-011]
  - population 4A *Acacia brachypoda* (Fairview remnant) [TA-FL-262]
  - population 16 of *Banksia mimica* (Lot 10) [TA-FL-231]

- unassigned population of *Darwinia* sp. Wyalgima Hill (L.W. Sage, J.P. Pigott & E.B. Pigott LWS1549) on (Wyalgima Hill, 45 hectares) [TA-FL-021]
- population 2 of *Daviesia cunderdin* [TA-FL-026]
- population 1 of *Guichenotia seorsiflora* (Kennedy Reserve, 30 hectares) [TA-FL-117]
- population 15B of *Hakea aculeata* [TA-FL-121]
- populations 19A and 19B of *Hakea aculeata* (Kingscliffe, 45 hectares) [TA-FL-119]
- population 1A of *Stylidium applanatum* [TA-FL-059]
- populations 10A and 10B of *Stylidium coroniforme* subsp. *amblyphyllum* [TA-FL-056]
- subpopulations 1A, 1B, 1C, 1D of *Thomasia montana* [TA-FL-046].

- Investigate opportunities to amend vesting and/or purpose of various Crown lands to secure populations of the following species and undertake management actions as appropriate:
  - populations 2E, 2F and 4D of *Acacia auratiflora* on Agricultural Research Station R24920 [TA-FL-009]
  - population 4B of *Acacia chapmanii* subsp. *australis* on Crown Reserve R20991 [TA-FL-013]
  - populations 1C, 4, 6B and 7 of *Acacia vassalii* on unallocated Crown land (UCL) [TA-FL-083]
  - populations of *Eremophila resinosa* (translocated populations 1 to 6 and 23i) on UCL Westonia townsite and Crown reserves vested with the LGA [TA-FL-033].

ECOLOGICAL COMMUNITIES

**Land acquisition and transfer actions*

- Investigate opportunities to re-vest and/or change the purpose of Birdwood Water Reserve to conservation to protect occurrences Birdwood02 and DA21 of the Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs community ecological community [TA-EC-161].
- Investigate the potential acquisition of Middleton Swamp to protect the Middleton occurrence of the Perched wetlands of the Wheatbelt region with extensive stands of living swamp sheoak (*Casuarina obesa*) and paperbark (*Melaleuca strobophylla*) across the lake floor ecological community [TA-EC-166].
- Manage the Lake Bryde system and investigate potential land acquisitions for revegetation and hydrological infrastructure to protect occurrences West Bryde (Bryde 1), East Bryde (Bryde 2) and Lakelands Nature Reserve (Lakeland3) of the Unwooded freshwater wetlands of the southern Wheatbelt dominated by *Duma horrida* subsp. *abdita* and *Tecticornia verrucosa* across the lake floor (Lake Bryde) ecological community [TA-EC-179].

FAUNA

- Continue woylie (*Bettongia penicillata ogilbyi)* [TA-FA-415] and numbat (*Myrmecobius fasciatus*) [TA-FA-419] management and feral animal control, additional to Western Shield activities, in Dryandra Woodland. Undertake introduced predator control, burn 500 hectares to regenerate *Gastrolobium* thickets, and map and assess senescence in *Gastrolobium* thickets. Maintain the fauna monitoring camera networks on the main block and satellite blocks and utilise data to inform management actions as required.
- Undertake nesting hollow repair at known breeding sites for Carnaby's black cockatoo (*Zanda latirostris*) and supplement hollow availability by installing and maintaining artificial nest hollows across the Midwest, South Coast, Swan, Warren and Wheatbelt regions [TA-FA-351].

**Liaison actions*

- Implement and publicise enforcement programs to counter illegal taking of Baudin's black cockatoo (*Zanda baudinii*) [TA-FA-332] and Carnaby's black cockatoo (*Zanda latirostris*) [TA-FA-350] through shooting throughout their range (South Coast, South West, Swan, Warren and Wheatbelt regions).

**Proposed/new translocations*

- In line with the 'Black-flanked rock wallaby Wheatbelt population management strategy', move black-flanked rock-wallaby (*Petrogale lateralis lateralis*) between sites (intra-regionally) or translocate extra-regionally as required to maintain a healthy and stable meta-population [LA-036].

FLORA

- Complete monitoring, including population size, extent and threat assessment, for each of the following populations of threatened flora:
  - populations 2, 3, 4, 5, 6, 7, 8A, 9, 10, 11 and 13 of *Acacia denticulosa* [LE-FL-051]
  - populations of *Conospermum densiflorum* subsp*. unicephalatum* to understand population demographics and threats [LE-FL-048]
  - populations 1 and 2 of *Darwinia carnea* [LE-FL-017]
  - populations 16 and 19B of *Eleocharis keigheryi* [LE-FL-081]
  - populations 1, 2, 3, 8, 9, 14, 22 and 27 of *Eremophila viscida* [LE-FL-024]
  - population 1 of *Grevillea christineae* [LE-FL-055]
  - all populations of *Grevillea scapigera* [LE-FL-056]
  - populations 3 and 6 of *Goodenia arthrotricha* [LE-FL-049]
  - populations 1, 7 and 8 of *Melaleuca sciotostyla* [LE-FL-058]
  - populations 9A, 9B, 9C and 9D of *Spirogardnera rubescens* [LE-FL-026]

- all populations of *Stylidium coroniforme* subsp. *coroniforme* excluding population 5 [LE-FL-054]
- populations 1, 2 and 6 of *Thomasia glabripetala* [LE-FL-027]
- all populations of *Verticordia fimbrilepis* subsp. *fimbrilepis* to confirm population status and threats [LE-FL-057]
- population 1 of *Verticordia hughanii* [LE-FL-019]
- populations 2, 3, 4, 7, 8, 11 and 14 of *Verticordia staminosa* var. *cylindracea* [LE-FL-028].

- Monitor post-burn recruitment of the following species:
  - Population 4E of *Acacia auratiflora* for recruitment following fire [LE-FL-016]
  - Population 2 of *Acacia campylophylla* [LE-FL-030].
- Undertake surveys for additional populations of the following species:
  - *Anigozanthos bicolor* susp. *minor* to inform management requirements [LE-FL-033]
  - *Acacia auratiflora* in Unnamed Nature Reserve (R31111) adjacent to population 13 [LE-FL-021].
- Undertake maintenance works at population 2A of *Banksia cuneata* (Badjaling NR) including fencing, reticulation, rabbit control, weed control, infill planting and monitoring of translocated seedlings [TA-FL-049].
- Hand pollinate *Caladenia graniticola* plants in population 3 at Dragon Rocks and monitor the effectiveness of this action [TA-FL-092].
- Augment translocated populations 5 (Gravel reserve, Shire of Narrogin) and 6 (National Park) of *Darwinia carnea* with cuttings from the alternate population in the Wheatbelt [TA-FL-019].
- Infill translocated population of *Eremophila virens* on Koorda-Bullfinch Road to increase numbers above 250 reproductively mature plants [TA-FL-067].
- Investigate the requirement for fencing or markers at population 1 of *Thomasia glabripetala* [LE-FL-022].
- Monitor habitat and populations of *Tribonanthes purpurea* at the eastern edge of its range to detect any declines attributable to declining rainfall (frequency and quantity) at Dragon Rocks Nature Reserve [LA-013], Unnamed nature reserve A31111 [LA-051] and Unnamed nature reserve C29574 (Mount Vernon) [LA-057].

**Proposed/new translocations*

- Consider new flora translocation proposals for threatened flora species including:
  - *Acacia cochlocarpa* subsp*. velutinosa*
  - *Acacia insolita* subsp*. recurva*
  - *Acacia pharangites*
  - *Acacia caricina*
  - *Acacia subflexuosa* subsp*. capillata*
  - *Acacia volubilis*
  - *Allocasuarina fibrosa*
  - *Banksia cuneata*

- *Banksia ionthocarpa* subsp*. chrysophoenix*
- *Banksia oligantha*
- *Caladenia graniticola*
- *Chorizema humile*
- *Conospermum galeatum*
- *Grammosolen odgersii* subsp*. occidentalis*
- *Darwinia carnea*
- *Daviesia cunderdin*
- *Daviesia euphorbioides*
- *Eremophila pinnatifida*
- *Eremophila resinosa*
- *Eremophila virens*
- *Grevillea christineae*
- *Grevillea dryandroides* subsp*. dryandroides*
- *Grevillea pythara*
- *Grevillea scapigera*
- *Grevillea g*illingarra
- *Hakea aculeata*
- *Hemigenia ramosissima*
- *Lasiopetalum moullean*
- *Lysiosepalum abollatum*
- *Philotheca basistyla*
- *Pityrodia scabra* subsp*. scabra*
- *Stylidium coroniforme* subsp*. coroniforme*
- *Symonanthus bancroftii*
- *Tetratheca deltoidea*
- *Thomasia* sp. Green Hill
- *Verticordia fimbrilepis* subsp*. fimbrilepis*
- *Verticordia staminosa* subsp*. cylindracea* var*. erecta*.

- Augment population 1 of *Banksia oligantha* at Wangeling Gully Nature Reserve to create a viable population, including planning and implementing a prescribed burn to reduce competition.
- Translocate plants to population 3A of *Banksia oligantha* to create a viable population, including planning and implementing a prescribed burn to reduce competition, installation of rabbit-proof fencing, post-fire weed control and monitoring.

ECOLOGICAL COMMUNITIES

- Manage Lake Bryde system in accordance with the *Lake Bryde Landscape Recovery Program 2020–2040* (DBCA 2020), inclusive of maintaining seed supply, promoting revegetation of private property and monitoring ground/surface water to protect occurrences West Bryde (Bryde1), East Bryde (Bryde 2) and Lakelands Nature Reserve (Lakeland3) [TA-EC-182].

LANDSCAPES

- Monitor habitat and populations of *Tribonanthes purpurea* at the eastern edge of its range to detect any declines attributable to declining rainfall (frequency and quantity) at Dragon Rocks Nature Reserve [LA-013], Unnamed nature reserve C28574 Mount Vernon [LA-057] and Unnamed nature reserve R 31111 [LA-051].

ALTERED HYDROLOGY

- Monitor population 1 of *Conospermum galeatum* to determine impacts of altered hydrology and develop management actions if decline is significant [LE-FL-025].
- Implement a monitoring program consistent with the priorities in the *Lake Bryde Landscape Recovery Program 2020-2040* (DBCA 2020) to support priority targeted actions for the Unwooded freshwater wetlands of the southern Wheatbelt dominated by *Duma horrida* subsp. *abdita* and *Tecticornia verrucosa* across the lake floor (Lake Bryde) community. Monitoring to include groundwater depth (bores), surface water inflow quality, surface water quantity and quality (lake) after fill events, vegetation health (TEC) and updating the monitoring standard operating procedure [LE-EC-001].

FIRE REGIMES

- For the following priority reserves/landscapes from 500–2000 hectares, use the FiReOPS tool to develop and implement a fire management program to develop a mosaic of fuel ages for threatened species, their habitat and senescent vegetation communities such as kwongan, and considering the requirements of the Southern Rangelands Bushfire Risk Management Zone Mitigation Plan and Wheatbelt Regional Fuel Management Plan as appropriate:
  - Bendering Nature Reserve [LA-001]
  - Boyagin Nature Reserve
  - Charles Gardner Nature Reserve [LA-065]
  - Corneecup Nature Reserve [LA-009]
  - Flat Rock Nature Reserve [LA-021]
  - Lake Liddlow Nature Reserve [LA-028]
  - Roe Nature Reserve [LA-040]
  - South Buniche Nature Reserve [LA-041]
  - Unnamed Nature Reserve A20342 [LA-047]
  - Unnamed Nature Reserve A38450 [LA-052]
  - Unnamed Nature Reserve A46116 [LA-053]
  - Unnamed Nature Reserve C20350 [LA-054]
  - Unnamed Nature Reserve (Mount Vernon) C29574 [LA-055].

- For the following priority reserves/landscapes larger than 2000 hectares, use the FiReOPS tool to develop and implement a fire management program to develop a mosaic of fuel ages across the landscape, considering the requirements of threatened species and ecological communities, and the Southern Rangelands Bushfire Risk Management Zone Mitigation Plan and Wheatbelt Regional Fuel Management Plan as appropriate:
    - Chiddarcooping Nature Reserve [LA-005]
    - Harris Nature Reserve [LA-022]
    - Jilbadji Nature Reserve [LA-024]
    - Karroun Hill Nature Reserve [LA-025]
    - Lake Bryde Recovery Landscape [LA-026]
    - North Kalgarin Nature Reserve [LA-038]
    - Unnamed Nature Reserve A28047 [LA-048]
    - Unnamed Nature Reserve A31111 [LA-050]
    - Yellowdine Nature Reserve [LA-061].
- Plan and implement prescribed burns and monitor the results for the following species' populations and their habitat:
    - population 16 of *Acacia ataxiphylla* subsp. *magna* at Dulbelling Nature Reserve [TA-FL-005]
    - populations 1, 2, 3, 4, 13, 14, 15 and 16 of *Acacia depressa* as part of the Wongan Hills FiReOPS plan [TA-FL-071]
    - population 15 of *Acacia volubilis* in Wamenusking Nature Reserve [TA-FL-085]
    - populations 1A and 1B of *Conospermum densiflorum* subsp. *unicephalatum* within Koodjee Nature Reserve, and liaise with rail operator to implement a recruitment burn at population 2B [TA-FL-235]
    - all populations of *Conostylis rogeri* in North Tarin Rock Nature Reserve as part of the Tarin Rock Target Landscape FiReOPS plan [TA-FL-015]
    - population 1 of *Conostylis rogeri* in Hopkins Nature Reserve [TA-FL-016]
    - populations 1B and 3 of *Dasymalla axillaris* at Buntine Nature Reserve [TA-FL-023]
    - populations 1 and 2 of *Daviesia euphorbioides* in Crown Reserves 25808 and 51093 (CCWA) as part of the Wongan Hills FiReOPS Plan [TA-FL-027]
    - population 3 of *Eremophila brevifolia* at Mount Caroline Nature Reserve and protect seedlings from browsing by rabbits and macropods if required [LA-037]
    - population 23 of *Eremophila viscida* at Chiddarcooping Nature Reserve when the number of mature individuals recorded at survey reaches zero [TA-FL-065]
    - apply fire to population 23 of *Eremophila viscida* to stimulate recruitment, monitor the population's response to fire and apply learnings to inform a suitable fire management interval, and follow up with herbivore and weed control as required [TA-FL-165]
    - populations 14, 15A, 16 and 22 of *Grevillea involucrata* as part of the Dragon Rocks Nature Reserve FiReOPS plan [TA-FL-113]
    - population 4 of *Guichenotia seorsiflora* at Burges Spring Nature Reserve, and include grazing and weed management [TA-FL-118]
    - population 2A of *Jacksonia velveta* at Wingedine Nature Reserve [TA-FL-125]
    - population 1A of *Lasiopetalum trichanthera* at Bobakine Nature Reserve and include grazing and weed management [TA-FL-179]

- populations 3 (Lake Magenta Nature Reserve) and 4 (Dunn Rock Nature Reserve) of *Melaleuca sculponeata* to stimulate regeneration of seedlings [TA-FL-588]
- populations 2, 5, 6, 7, 8 and 11A of *Stylidium coroniforme* subsp. *coroniforme* as part of the Wongan Hills FiReOPS plan [TA-FL-055]
- populations 4A, 5, 6, 7, 8A, 9A, 9B, 10, 11, 12, 14, 15 *of Thomasia montana* in Boyagin Nature Reserve [TA-FL-045]
- populations 7 and 14 of *Verticordia fimbrilepis* subsp. *fimbrilepis* at Jingaring Nature Reserve and Hotham River Nature Reserve and include weed and grazing management [TA-FL-042].

PEST ANIMALS

- Maintain the integrity of the Numbat Woylie Sanctuary (NWS) in Dryandra Woodland for woylie (*Bettongia penicillata ogilbyi)* [TA-FA-416] and numbat (*Myrmecobius fasciatus*) [TA-FA-420]. Monitor and maintain the fence, the internal tracks, the external boundary tracks and the surveillance camera network to detect feral animal incursions. For native animals, monitor their health and population trends, remove animals to prevent impacts from overstocking (covered in the translocation plan) and consider introducing new animals to maintain a high level of genetic diversity within the enclosure. Implement introduced predator removal strategies in the event of an incursion and remove large macropods from within the enclosure. Implement prescribed burns around the enclosure to protect infrastructure (200 hectares) and within the enclosure to regenerate vegetation (200 hectares).
- Maintain the enclosure at Nangeen Hill Nature Reserve for black-flanked rock-wallaby (*Petrogale lateralis lateralis*). Actions include monitoring and maintaining the fence, the cameras within the enclosure and the canid pest ejectors; the removal of feral predators in the event of an incursion; and controlling rabbits and managing macropod numbers. Monitor animal health and population trends [TA-FA-427].
- In consultation with the Western Australian Museum, undertake rabbit control on 50 hectares of known shield-backed trapdoor spider (*Idiosoma nigrum*) habitat across Yorkrakine, East Yorkrakine, North Bungulla, Minnivale, Wongan Hills and Durokoppin nature reserves to reduce the impact of rabbits [TA-FA-017].
- Maintain rabbit-proof fence at Wangeling Gully Nature Reserve for population 1 of *Banksia oligantha,* conduct monitoring of habitat and species regeneration post-fire and implement grassy weed control [TA-FL-097].
- Install kangaroo-proof fencing to mitigate grazing impacts to population 5 of *Caladenia graniticola* at Dragon Rocks [TA-FL-091].
- Reduce herbivore grazing pressure at all populations of *Caladenia melanema* within Lake Chinocup Nature Reserve [LA-008].
- Maintain existing fence around population 1 of *Tetratheca deltoidea* [TA-FL-051].
- Fence (less than one hectare) around all plants of *Thomasia glabripetala* populations 1A and 6A (Meenaar Nature Reserve) to exclude grazing by kangaroos and rabbits [TA-FL-180].

- Remove nest competition by feral bees by managing apiarist license conditions and the use of contractors for forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) across their breeding range [TA-FA-352].

FLORA

**Proposed germplasm collection and storage priorities*

- Consider seed collection and storage priorities for threatened flora species including:
  - *Acacia aphylla*
  - *Acacia chapmanii* subsp. *australis*
  - *Acacia cochlocarpa* subsp. *velutinosa*
  - *Acacia depressa*
  - *Acacia insolita* subsp. *recurva*
  - *Acacia langinophylla*
  - *Acacia pharangites*
  - *Acacia prismifolia*
  - *Acacia subflexuosa* subsp. *capillata*
  - *Acacia volubilis*
  - *Allocasuarina fibrosa*
  - *Caladenia graniticola*
  - *Chorizema humile*
  - *Conospermum galeatum*
  - *Grammosolen odgersii* subsp. *occidentalis*
  - *Darwnia carnea*
  - *Daviesia cunderdin*
  - *Eremophila pinnatifida*
  - *Eremophila trifida* subsp. *rostrata*
  - *Eremophila virens*
  - *Grevillea drummondii*
  - *Grevillea dryandroides* subsp. *dryandroides*
  - *Grevillea dryandroides* subsp. *hirsuta*
  - *Grevillea pythara*
  - *Grevillea scapigera*
  - *Grevillea gillingarra*
  - *Guichenotia seorsiflora*
  - *Hakea aculeata*
  - *Hemigenia ramosissima*
  - *Hibbertia priceana*
  - *Jacksonia velveta*
  - *Lasiopetalum moullean*

- *Lechenaultia laricina*
- *Lysiosepalum abollatum*
- *Philotheca basistyla*
- *Pityrodia scabra* subsp. *scabra*
- *Spirogardnera rubescens*
- *Stylidium coroniforme* subsp. *coroniforme*
- *Stylidum applanatum*
- *Tetratheca deltoidea*
- *Thelymitra stellata*
- *Thomasia* sp. Green Hill.

FAUNA

**Education and awareness*

- Develop and run a community education program around *Living with chuditch*, including the production and distribution of educational material for landowners around Dryandra Woodland to support conservation of chuditch (*Dasyurus geoffroii*). Attend local community events and shows to promote chuditch conservation and educate the public [TA-FA-111].
- Create a *Living with phascogales* informational brochure/pamphlet to distribute to landowners to support conservation of red-tailed phascogale (*Phascogale calura*). Develop an application for recording sightings of threatened fauna species, including the phascogale, for visitors and landowners in the Wheatbelt Region and specific to Dryandra Woodland, to encourage reporting of phascogales by landowners [TA-FA-411].
- Work with Wheatbelt Natural Resource Management (WNRM) [TA-FA-453] or both WNRM and the Northern Agricultural Catchments Council (NACC) [TA-FA-178] to develop information products to encourage landholders to retain fallen timber habitat for western spiny-tailed skink (*Egernia stokesii badia*) in woodland remnants across the Midwest and Wheatbelt regions.

**Liaison actions*

- Implement a staged introduced predator control program in and around Tutanning Nature Reserve to reduce the impact of feral animals on woylie (*Bettongia penicillata ogilbyi)* [TA-FA-417] and chuditch (*Dasyurus geoffroii*) [TA-FA-418], including supporting natural resource management (NRM) groups, implement off reserve feral animal control programs with landholders, and feral cat control on the reserve.
- Provide support to the Peel-Harvey Catchment Council for introduced predator control and habitat protection programs on private properties surrounding Dryandra Woodland

for woylie (*Bettongia penicillata ogilbyi)* [TA-FA-147], chuditch (*Dasyurus geoffroii*) [TA-FA-261] and numbat (*Myrmecobius fasciatus*) [TA-FA-146].

- Liaise with the Department of Fire and Emergency Services (DFES) and local government authorities in the Wheatbelt and South Coast regions regarding fire management strategies in known or likely heath mouse (*Pseudomys shortridgei*) habitat [TA-FA-430].
- Develop and implement strategies to reduce the incidence of motor vehicle collisions with Baudin's black cockatoo (*Zanda baudinii*) across its range (South Coast, South West, Swan, Warren and Wheatbelt regions), including the identification of hotspots, signage, road and drainage design, and planting of food resources [TA-FA-331].
- Implement an education program targeting primary producers to promote awareness of the impacts of illegal shooting to Carnaby's black cockatoo (*Zanda latirostris*) across its range in the Midwest, South Coast, South West, Swan, Warren and Wheatbelt regions [TA-FA-325].

FLORA

- Produce or reprint and distribute *Have you seen this plant* brochures for *Acacia prismifolia* [LE-FL-083].

**Liaison actions*

- Liaise with the relevant landowners or managers to plan and implement the following conservation actions for populations of threatened flora:
    - A prescribed burn for population 8 and 9 of *Acacia ataxiphylla* subsp. *magna*, including weed control and fencing [TA-FL-004].
    - A prescribed burn for population 2D of Acacia brachypoda, and fence regenerating habitat [TA-FL-263].
    - A prescribed burn at population 4 on *Acacia chapmanii* subsp*. australis* [TA-FL-012].
    - A prescribed burn to regenerate population 1 of *Acacia cochlocarpa* subsp. *velutinosa* on Manmanning Townsite UCL [TA-FL-070].
    - A prescribed burn of population 2 of *Acacia insolita* subsp. *recurva* following insecticide treatment and seed collection. Augment population using collected seed post fire to establish viable population, including fencing, and monitor the population [TA-FL-073].
    - A prescribed burn of populations 1 and 2 of *Acacia leptoneura*, including pre- and post-fire weed control, grazing management and watering over the first summer to maximise seedling survival. When plants mature, collect seeds and/or cuttings to maximise potential for ex-situ conservation [TA-FL-074, TA-FL-075].
    - A prescribed burn of population 1 of *Acacia subflexuosa* subsp. *capillata*, including pre- and post fire weed control, grazing management and watering over the first summer to maximise seedling survival. When plants mature, collect seeds and/or cuttings to maximise potential for ex-situ conservation [TA-FL-078].

- Maintain the rabbit fence and control rabbits as determined by monitoring at 'Marribank' subpopulations 2A and 2B of *Adenanthos pungens* subsp. *effusus* [TA-FL-006].
- A prescribed burn of population 1B of *Adenanthos velutinus* [TA-FL-007].
- Maintain the fence and control rabbits to protect population 8A of *Banksia cuneata* [TA-FL-087].
- Remove any *Allocasuarina* sp. at populations 2, 3 and 4 of *Banksia ionthocarpa* subsp. *chrysophoenix* and burn habitat at one population to reduce plant competition [TA-FL-088].
- Maintain fence, control rabbits and revegetate around subpopulations 2A and 2B of *Banksia oligantha* [TA-FL-100, TA-FL-101].
- Construct 600m of rabbit-proof fence at subpopulation 2C of *Banksia oligantha* [TA-FL-102].
- Maintain rabbit-proof fence, control weeds, and revegetate around population 4 of *Banksia oligantha* [TA-FL-103, TA-FL-104].
- A prescribed burn at 2A and 2B of *Banksia sphaerocarpa* var*. dolichostyla* to promote regeneration [TA-FL-233].
- Implement a watering program for population 1C of *Caladenia graniticola* [TA-FL-090].
- Manage access, mitigate grazing impacts and reduce bushfire risk on subpopulations 6A and 6B of *Caladenia luteola* [TA-FL-094].
- A prescribed burn of population 3A of *Darwinia carnea* [TA-FL-020].
- Pursue opportunities for a conservation covenant and construct a stock exclusion fence (2000m) to protect the population of *Darwinia* sp. Wyalgima Hill (L.W. Sage, J.P. Pigott & E.B. Pigott LWS1549) (unassigned population) [TA-FL-022].
- A prescribed burn to regenerate population 1 of *Eremophila pinnatifida*, including weed management and fencing to exclude grazing [TA-FL-032].
- A prescribed burn to regenerate population 6 of *Eremophila resinosa* [TA-FL-034].
- A prescribed burn at translocated populations 1 and 2 to determine the response of *Eremophila resinosa* to smoke and fire [TA-FL-035].
- Fence 0.4 hectare remnant (approximately 300m) to protect population 5 of *Eremophila rostrata* subsp. *trifida* [TA-FL-036].
- Install a fence and declared rare flora (DRF) markers at populations 1 and 2 of *Eremophila* sp. Beverley (K. Kershaw KK 2438) to minimise accidental damage [TA-FL-037].
- A prescribed burn to stimulate regeneration of *Eremophila* sp. Beverley (K. Kershaw KK 2438) at population 1 [TA-FL-038].
- A prescribed burn to germinate soil seed bank at population 3 of *Eremophila verticillata* on UCL, including weed and grazing management (fencing [TA-FL-040].

- Install stock-proof fence at population 4A of *Eremophila virens* [TA-FL-068].
- Revegetation works at population 12 of *Eremophila viscida* [TA-FL-064].
- Undertake post-bushfire weed and grazing management on roadside populations 1A, 2, 4B, 6A of *Eucalyptus recta* [TA-FL-106].
- Maintain the fence at population 1C of *Grammosolen odgersii* subsp. *occidentalis* [TA-FL-017].
- A prescribed burns to germinate soil seed bank for subpopulations 3C, 4D and 5B of *Grevillea dryandroides* subsp. *dryandroides*, including weed and grazing management [TA-FL-110, TA-FL-111].
- A prescribed burn to regenerate population 8 of *Grevillea dryandroides* subsp. *hirsuta* [TA-FL-112].
- A prescribed burn to regenerate population 16 of *Hakea aculeata* [TA-FL-120].
- Fence to exclude kangaroos and rabbits, and implement weed management, for population 1 of *Haloragis platycarpa* [TA-FL-122].
- A prescribed burn of population 1 of *Hemiandra rutilans* to stimulate the soil seed bank, including weed (pre- and post-burn) and grazing (rabbit fencing) management [TA-FL-123].
- Maintain stock fence at subpopulations 9A and 9B of *Lechenaultia laricina* and undertake rabbit control [TA-FL-127].
- A prescribed burn of population 1 of *Lechenaultia laricina* to germinate potential soil seed bank [TA-FL-128].
- Maintain fence, install shadecloth to prevent ingress of weed seeds, and implement weed control at subpopulation 2B of *Philotheca basistyla* [TA-FL-129].
- Install a fence and manage weeds to protect population 1 of *Philotheca basistyla* in the event of a rainfall event triggering germination [TA-FL-130].
- A prescribed burn at population 14 of *Pityrodia scabra* subsp. *scabra*, including installation of reticulation for any emergent seedlings, and weed and rabbit control [TA-FL-131].
- Maintain the fence at population 6 of *Rhizanthella gardneri* to exclude rabbit browsing and digging [TA-FL-060].
- Fence and control weeds to protect population 1A of *Stylidium applanatum* [TA-FL-062].
- Install fencing (2km) to exclude stock from populations 10A and 10B of *Stylidium coroniforme* subsp*. amblyphyllum* [TA-FL-057].
- Install shadecloth on existing fence to prevent ingress of crop stubble onto population 2 of *Tetratheca aphylla* subsp*. megacarpa* [TA-FL-053].
- Fence population 1 of *Thomasia* sp. Green Hill (S. Paust 1322) to prevent kangaroo and rabbit incursion and implement weed control [TA-FL-044].

- Prescribed burns to regenerate all off-reserve populations (1, 2, 4, 5A, 5B, 6, 7A, 8A, 8B, 8C, 8D, 8E, 12, 13, 15) of *Verticordia fimbrilepis* subsp. *fimbrilepis*, including weed and grazing management [TA-FL-043].
- Undertake bushfire risk mitigation and install a stock fence to protect population 1 of *Verticordia staminosa* subsp. *staminosa* [TA-FL-041].

- Liaise with and support the following land managers to increase their awareness and understanding of their responsibilities under the *Biodiversity Conservation Act 2016* to mitigate the impacts of activities on populations of threatened and Priority flora:
  - adjacent landholders and land managers of all roadside populations of *Acacia auratiflora* [TA-FL-010]
  - LGAs about road maintenance on population 1 of *Acacia subflexuosa* subsp. *capillata* [TA-FL-079]
  - LGA and DFES about bushfire risk mitigation within the Wongan Hills townsite on populations 1, 4, and 6 of *Acacia vassalii* [TA-FL-082]
  - adjoining landholders of population 6 of *Acacia volubilis*, and notify them about the population [TA-FL-086]
  - LGA in relation to the installation of a fence to protect population 1 of *Androcalva* sp. York (C.F. Wilkins & A. Sole CW 2527) from accidental damage during road maintenance activities [TA-FL-048]
  - Main Roads, rail operator and LGAs about road maintenance or clearing on populations of *Dasymalla axillaris* in the Midwest and Wheatbelt regions [TA-FL-203]
  - relevant mining company about rehabilitation of mined areas in UCL including habitat of population 2 of *Eremophila verticillata* [TA-FL-039]
  - LGA about road maintenance on population 18 of *Gastrolobium appressum* [TA-FL-107]
  - rail operator, landowner and LGA about maintenance activities on population 1 of *Grammosolen odgersii* subsp. *occidentalis* [TA-FL-018]
  - LGA about firebreak construction and maintenance [TA-FL-108] and prescribed burning [TA-FL-241] on population 1 of *Grevillea christineae*
  - LGA about gravel extraction and disturbance on population 4 of *Lasiopetalum rotundifolium* [TA-FL-126]
  - golf club and LGA about fire management on subpopulations 1A and 1B of *Pultenaea pauciflora* [TA-FL-063]
  - private property owners about herbicide and fertiliser drift on population 1 of *Rhizanthella gardneri* [TA-FL-061]
  - LGA to implement education programs as necessary to ensure population 2 of *Styphelia disjuncta* is avoided during roadside maintenance [TA-FL-174]

    - LGA about road maintenance activities on Tarco Road population (new) and population 2 of *Tetratheca aphylla* subsp. *megacarpa* [TA-FL-052].
- Re-issue DRF notifications to land managers and adjacent landholders of all roadside populations of *Acacia ataxiphylla* subsp. *magna* [TA-FL-002].
- Liaise with private property landholders in relation to potential NRM group-managed volunteer projects focused on managing weeds (hand weeding annual species around individual plants) and grazing impacts (maintaining fences) for fenced subpopulations 4A and 5B of *Caladenia drakeoides* [TA-FL-089].
- Liaise with WA Native Orchid Society to develop a conservation program for all populations of *Caladenia graniticola* [TA-FL-093] and *Caladenia luteola* [TA-FL-096], including weeding, hand pollination and surveys.
- Re-issue DRF notifications to land managers for populations 1, 2, 3, 4, 5, 6, 9, 10, 11, 12,13 and 14 of *Eremophila virens* [TA-FL-066].
- Install and maintain roadside DRF markers in consultation with land managers for 17 subpopulations of *Grevillea involucrata* [TA-FL-114].
- Re-issue DRF notifications to land managers of populations A, 1, 2, 3, 4, 6, 7, 8, 9 and 10 of *Stylidium coroniforme* subsp. *amblyphyllum* [TA-FL-058].

ECOLOGICAL COMMUNITIES

**Liaison actions*

- Liaise with Water Corporation to investigate opportunities for a rehabilitation trial within wheel ruts at DA21 (Birdwood occurrence) of Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs to determine whether claypan damaged by vehicles can be effectively rehabilitated [TA-EC-163].
- Liaise with the Department of Planning, Lands and Heritage to manage access track through adjacent woodland vegetation east of Magenta Nature Reserve to minimise vehicle impacts on occurrence G226 of Herblands and bunch grasslands on gypsum lunette dunes alongside saline playa lakes [TA-EC-165].
- Install interpretive signage at occurences Birdwood02 and DA21 of Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs to describe ecological values and promote community awareness and appropriate behaviours [TA-EC-180].

LANDSCAPES

**Liaison actions*

- Seek and encourage projects (for example regional NRM groups, environmental offsets, carbon farming) that can maintain or increase the quantity of habitat in proximity to Bendering Nature Reserve, including protecting existing remnants or undertaking revegetation [LA-002, LA-003].
- Seek and encourage projects with regional NRM groups and other interested parties to reduce groundwater recharge in the Lake Chinocup catchment to mitigate the impacts of

rising groundwater on populations 1A, 1C, 2A-C and 2E of *Caladenia melanema* [LA-007].

- Seek and encourage projects with regional NRM groups and other interested parties that maintain or improve surface water quality and reduce groundwater recharge in the immediate Yenyening Lakes catchment [LA-063, LA-064].

7 Learn action collaboration opportunities

FAUNA

Mammals

- Implement a consistent statewide monitoring program to determine the distribution and population trend of chuditch (*Dasyurus geoffroii*) at a species level.
- Undertake targeted surveys and assessment of known and potential habitat (following climate change adjusted modelling) for heath mouse (*Pseudomys shortridgei*) at sites such as Lake Magenta Nature Reserve, Dragon Rocks Nature Reserve, Fitzgerald River National Park, Ravensthorpe Ranges and Peniup to advise future management, such as mosaic burning practices.

Birds

- Map forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) water sources across the landscape and liaise with the Department of Water and Environmental Regulation to support maintaining water resources/stream flows.
- Consolidate information available on feeding, roosting and nesting habitat of forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), Baudin's black cockatoo (*Zanda baudinii*) and Carnaby's black cockatoo (*Zanda latirostris*) to improve input into environmental impact assessment and land use planning processes and to develop a better understanding of distribution, habitat use, tenure distribution (including area/proportion of habitat in secure reserves) and movement patterns between regions. Work collaboratively to map critical breeding/feeding/roosting habitats to understand where conservation effort should be focused.
- Develop a cross regional monitoring protocol to track and monitor the movements of black cockatoos (*Calyptorhynchus banksii naso, Zanda baudinii* and *Zanda latirostris*) using the most appropriate technology.
- Survey potential forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), Baudin's black cockatoo (*Zanda baudinii*) and Carnaby's black cockatoo (*Zanda latirostris*) habitat occupied by feral bees and determine, through liaison with the apiary industry, where the use of fipronil to control feral bees is appropriate. Liaise with Biodiversity and Conservation Science and Australian Pesticides and Veterinary Medicines Authority to implement a fipronil trial with the view to adopting as an effective control method for feral bees utilising black cockatoo hollows.
- Investigate the effectiveness of different feral predator control regimes on the persistence and recovery of malleefowl (*Leipoa ocellata*) populations.

- Monitor the interactions and movement patterns between the coastal and inland populations of hooded plover (*Thinornis cucullatus*) to determine population extents and habitat protection priorities.
- Establish a species-wide population estimate for Carnaby's black cockatoo (*Zanda latirostris*).

Invertebrates

- Determine the appropriate time to exclude prescribed fire from shield-backed trapdoor spider (*Idiosoma nigrum*) habitat through matching up male spider records for each species with local rainfall records to determine what time in late autumn to winter they move above ground.
- Research to identify a habitat surrogate for shield-backed trapdoor spider (*Idiosoma nigrum*) in kwongan versus woodland versus shrubland habitat.

FLORA

- Conduct surveys for new occurrences or previously unsurveyed populations of the following species:
  - *Acacia alata* var. *platyptera*
  - *Acacia prismifolia*
  - *Banksia chamaephyton*
  - *Darwinia* sp. Dryandra (G.J. Keighery 9295)
  - *Drosera albonotata*
  - *Eucalyptus caesia* subsp. *caesia*
  - *Eucalyptus caesia* subsp. *magna*
  - *Gastrolobium ovalifolium*
  - *Grevillea* sp. Trayning (W. Johnston WJ 071)
  - *Hemigenia platyphylla*
  - *Hibbertia miniata*
  - *Lasiopetalum bracteatum*
  - *Lepyrodia curvescens*
  - *Stylidium squamellosum*
  - *Thysanotus brachiatus*
  - *Tricoryne* sp. Wongan Hills (B.H. Smith 794).
- Resurvey unassigned populations of:
  - *Acacia adjutrices* and survey for additional populations within suitable habitat
  - *Amanita fibrillopes* in Dryandra Woodland and survey for additional populations in suitable habitat
  - *Amanita kalamundae* and survey for additional populations in suitable habitat
  - *Austrostipa* sp. Cairn Hill at Bruce Rock and survey for additional populations in suitable habitat
  - *Banksia pteridifolia* subsp. *vernalis* north of Gillingarra and survey for additional populations in suitable habitat
  - *Chamaescilla gibsonii* and survey for additional populations in suitable habitat

- *Conospermum scaposum* in Boodagong Nature Reserve and survey for additional populations in suitable habitat
- *Dampiera triloba* and survey for additional populations in suitable habitat
- *Daviesia debilior* subsp. *sinuans* and survey for additional populations in suitable habitat
- *Eremophila verticillata* and survey for additional populations in suitable habitat.
- *Hibbertia glomerata* subsp. *wandoo* and survey for additional populations in suitable habitat
- *Isopogon autumnalis* and survey for additional populations in suitable habitat
- *Lasiopetalum glutinosum* subsp. *glutinosum* and survey for additional populations in suitable habitat
- *Placynthium nigrum* and survey for additional populations in suitable habitat
- *Stackhousia* sp. Red-blotched corolla in Ronans Nature Reserve and survey for additional populations in suitable habitat
- *Stylidium asteroideum* at Mount Caroline and survey for additional populations in suitable habitat
- *Stylidium periscelianthum* on and survey for additional populations in suitable habitat
- *Stylidium sacculatum* at Calingiri Water Reserve and survey for additional populations in suitable habitat
- *Stylidium uniflorum* subsp. *extensum* and survey for additional populations in suitable habitat
- *Tetratheca retrorsain* in Gathercole Nature Reserve and survey for additional populations in suitable habitat
- *Thomasia tenuivestita* at Dingo Rock Nature Reserve and survey for additional populations in suitable habitat.

- Survey for additional populations of:
  - *Acacia brachypoda* in the Crown reserve adjacent to population 2; if new populations are recorded, investigate the possibility of acquisition
  - *Eremophila subteretifolia*
  - *Guichenotia seorsiflora* in suitable habitat
  - *Stylidium applanatum* in nearby remnants and reserves (Interim Recovery Plan No. 375)
  - *Thomasia glabripetala.*
- Monitor populations of the following species:
  - populations 2, 3A, 3B, 6, 7, 8, 9, 10, 11 and 16 of *Acacia anarthros*
  - populations 9 and 11 of *Acacia cummingiana*
  - population 1A, 1B, 5 and 18 of *Acacia cuneifolia*
  - populations 1A, 1B, 4 and 6 of *Acacia trinalis*
  - populations 1A, 1B, 2, 3A, 3B, 4, 5A, 5B, 6A, 6B, 7, 8, 9, 10, 11A, 11B and 12 of *Anigozanthos bicolor* subsp. *exstans*
  - populations 1A, 1B, 1C, 1D, 1E, 1F, 1J, 2, 3 and 11 of *Anigozanthos humilis* subsp. *chrysanthus*
  - population 10 of *Asterolasia grandiflora*
  - populations 1, 3 and 6 of *Beaufortia eriocephala*

- population 16 of *Boronia tenuis*
- 1, 2, 3A, 3C, 3D, 3E, 3F, 3G, 7, 8, 9, 10, 12, 14, 15, 16, 19A, 19B, 19C, 19D, 19E, 20, 21, 22 of *Caladenia integra*
- population 1 of *Conostylis caricina* subsp. *Elachys*
- populations 1 and 2 of *Dicrastylis reticulata*
- populations 1, 2, 3, 4, 8, 9A, 9B, 10, 11, 12, 13, 14, 17 and 21 of *Dielsiodoxa leucantha* subsp. *leucantha*
- populations 1A, 1B, 1C, 1D, 1E, 4, 5 and 6 of *Eremaea blackwelliana*
- populations 1A, 1B, 6, 8, 9A, 9B, 10A, 10B, 10C, 11A, 11B, 12A, 12B, 13, 14, 15, 16A, 16B, 17 and 19 of *Eucalyptus exilis*
- populations 1, 2, 4B, 5, 6, 9, 10, 11, 12, 13, 14, 15 and 16 of *Eucalyptus loxophleba* x *wandoo*
- population 24 of *Goodenia verreauxii*
- populations 13A, 13B, 14A, 14B, 15A, 15B and 15C of *Grevillea drummondii*
- populations 3 and 7 of *Grevillea florida*
- population 4 of *Lasiopetalum cardiophyllum*
- populations 1, 2, 3, 4A, 4B, 5, 6, 7, 8, 9, 10, 11, 12A, 12B, 14, 17, 18, 20A, 20B, 20C, 22, 23, 24, 25A, 25B, 26, 27, 28 and 29 of *Lechenaultia pulvinaris*
- population 5 of *Lepidobolus densus*
- populations 7, 8, 10, 12, 13, 15 and 16 of *Leucopogon florulentus*
- populations 6 and 12 of *Persoonia sulcata*
- populations 1, 7A, 7B, 8, 9 and 10 of *Schoenus capillifolius*
- population 1 of *Schoenus griffinianus*
- populations 3, 4, 5, 6, 7, 9 and 10 of *Stylidium cymiferum*
- population 1 of *Stylidium exappendiculatum*
- populations 3, 10 and 11 of *Stylidium scabridum*
- population 1 of *Tetratheca similis*
- population demographics, including reproduction and recruitment of *Thomasia* sp. Green Hill
- population 3 of *Verticordia lindleyi* subsp. *lindleyi*
- populations 1A, 1B, 2 and 11 of *Verticordia paludosa*.

- Investigate the fire ecology and fire response to inform the management of:
  - *Acacia ataxiphylla* subsp*. magna*
  - *Acacia caesariata*
  - *Androcalva* sp. York,
  - *Chorizema humile*
  - *Eremophila rostrata* subsp. *trifida*
  - *Eremophila* sp. Beverley
  - *Eryngium* sp. Ferox (G.J. Keighery 16034)
  - *Grevillea christineae*
  - *Melaleuca sciotostyla*
  - *Stylidium coroniforme* subsp. *coroniforme*
  - *Thelymitra apiculate*
  - *Thomasia glabripetala*
  - *Thomasia montana*
  - *Thomasia* sp. Green Hill

- *Verticordia fimbrilepis* subsp. *fimbrilepis.*

- Investigate seed bank dynamics and regeneration cues of:
  - *Eremophila viscida*
  - *Grevillea scapigera*
  - *Guichenotia seorsiflora*
  - *Jacksonia pungens*
  - *Rumex drummondii*
  - *Verticordia fimbrilepis* subsp. *fimbrilepis.*
- Review the conservation status of the following taxon:
  - *Acacia caesariata*
  - *Acacia lirellata* subsp. *lirellata*
  - *Acacia lobulata*
  - *Acacia pygmaea*
  - *Bossiaea atrata*
  - *Conostylis rogeri*
  - *Eremophila* sp. Beverley (K. Kershaw KK 2438)
  - *Grevillea minutiflora*
  - *Scaevola tortuosa*
  - *Verticordia fimbrilepis* subsp. *fimbrilepis*.
- Undertake a taxonomic review of the following taxa:
  - *Acacia cochlocarpa* subsp*. cochlocarpa*
  - *Androcalva* sp. York (C.F. Wilkins & A. Sole CW 2527)
  - *Chamelaucium* sp. Dryandra (D. Rose 446)
  - *Darwinia carnea*
  - *Darwinia* sp. Wyalgima Hill (L.W. Sage, J.P. Pigott & E.B. Pigott LWS1549)
  - *Daviesia microcarpa*
  - *Eremophila glabra* subsp. *chlorella*
  - *Grevillea crowleyae*
  - *Grevillea* sp. Trayning (W. Johnston WJ 071)
  - *Haloragis platycarpa*
  - *Melaleuca sciotostyla*
  - *Pultenaea pauciflora*
  - *Senecio gilbertii*
  - *Styphelia allittii*
  - *Synaphea panhesya*
  - *Thomasia glabripetala*.
- Check viability of *Acacia caesariata* seed in storage.
- Investigate the reproductive biology of *Androcalva* sp. York.
- Undertake additional surveys and review conservation status of *Androcalva sp. York.*
- Investigate the presence and viability of a soil seed bank for population 16 of *Daviesia euphorbiodes.*
- Survey recently burnt area of Great Western Woodland for new populations of *Daviesia macrocarpa*.

- Targeted survey for *Eremophila pinnatifida* in burnt areas or in suitable habitat after high rainfall.
- Survey R18913 (315 hectares) for additional populations of *Eremophila rostrata* subsp. *Trifida.*
- Research alternative soil conditioners to gypsum for *Eremophila verticillata*.
- Develop and implement an inundation trial ('wet' disturbance) to regenerate the soil seed bank of *Eremophila virens* at populations 10 and 11 in conjunction with the land manager.
- Undertake additional surveys in suitable habitat around population 4 of Eremophila virens.
- Investigate reproductive biology and suitable propagation techniques for *Grevillea pythara*.
- Investigate herbarium specimen and survey Wattengutting Hill occurrence of *Haloragis platycarpa*.
- Investigate outlier *Phyllangium palustre* population 3 on the Beaufort River Flats to determine if record is valid.
- Investigate pollination dynamics and techniques to increase *Thelymitra apiculata* seed output.
- Monitor population demographics, including reproduction and recruitment of *Thomasia* sp. Green Hill (S. Paust 1322).
- Develop a suitable monitoring method (potentially similar to orchids and other geophytes that respond to seasonal rainfall) to investigate the ecology of *Tribonanthes purpurea*.
- Resurvey all populations of *Trithuria occidentalis* and survey for additional populations in suitable habitat.

ECOLOGICAL COMMUNITIES

- Learn fire regime requirements of key species and community senescence, and impact of weed invasion on *Banksia prionotes* and *Xylomelum angustifolium* low woodlands on transported yellow sands ecological community.
- Investigate possible groundwater interactions within all occurrences of Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs.
- Progress the listing of the Gypsum Dunes (Lake Chinocup) Priority Ecological Community (PEC) as a TEC. Research and establish best practice techniques to restructure dunes (post-mining) and re-establish vegetation.
- Survey and undertake a hydrological threat assessment of the Perched wetlands of the Wheatbelt region with extensive stands of living swamp sheoak (*Casuarina obesa*) and paperbark (*Melaleuca strobophylla*) across the lake floor ecological community at the Middleton Swamp and Dowerin occurrences.

- For the Unwooded freshwater wetlands of the southern Wheatbelt dominated by *Duma horrida* subsp. *abdita* and *Tecticornia verrucosa* across the lake floor (Lake Bryde) ecological community:
  - undertake a population demographics study on the life cycle of *Duma horrida* subsp. *abdita* and *Tecticornia verrucosa* to better understand the spatial and temporal pattern and dynamics
  - conduct aquatic invertebrate survey to describe and characterise the aquatic invertebrate community
  - investigate the seed ecology of *Tecticornia verrucosa* in relation to hydro-regime and persistence.
- Undertake additional surveys to describe and map the full extent and condition of the following PECs, particularly those at risk from mining and mineral exploration activities, and update their conservation status and list as appropriate:
  - *Banksia prionotes* and *Xylomelum angustifolium* low woodlands on transported yellow sands
  - Assemblages of gypsum dunes of the central and southern Wheatbelt
  - Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs
  - Highclere Hills (Mayfield) vegetation complex (banded ironstone formation)
  - Ironcap Hills vegetation assemblages (Mt Holland, Middle, North and South Ironcap Hills, Digger Rock and Hatter Hill) (greenstone ranges).
  - Plant assemblages of the Parker Range System
  - Plant assemblages of the Wongan Hills System - some woodlands are a component of the Eucalypt woodlands of the WA Wheatbelt nationally listed as a TEC under the *Environment Protection and Biodiversity Conservation Act 1999*.

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Appendix 1: Priority management units identified through the prioritisation process for landscape scale threat mitigation actions for priority reserves and landscapes

Table 2 Wheatbelt Region priority management units.

IBRA Sub-Region	Priority Management Unit (reserve name)	Reserve number(s)
MAL02, Western Mallee	2210/891 - Crown freehold (department interest)	P024592 12
MAL02, Western Mallee	2892/380 - Crown freehold (department interest)	P401311 41
AVW01, Merredin	Badjaling Nature Reserve	A23758
AVW01, Merredin	Badjaling West Nature Reserve	A28318
AVW01, Merredin	Baladjie Lake Nature Reserve	C42720
JAF02, Southern Jarrah Forest	Beaufort Bridge Nature Reserve	A1736
MAL02, Western Mallee	Bendering Nature Reserve	A25681
AVW01, Merredin	Billyacatting Hill Nature Reserve	C17746
AVW02, Katanning	Birdwhistle Nature Reserve	A19120
JAF02, Southern Jarrah Forest	Birdwood Nature Reserve	A27769
JAF01, Northern Jarrah Forest	Boodadong Nature Reserve	A6779
AVW02, Katanning	Boundain Nature Reserve	A17115
AVW02, Katanning	Boyagin Nature Reserve	A20610
AVW01, Merredin	Buntine Nature Reserve	A26837

IBRA Sub-Region	Priority Management Unit (reserve name)	Reserve number(s)
AVW01, Merredin	Burges Spring Nature Reserve	A563
MAL02, Western Mallee	Cairlocup Nature Reserve	C28324
AVW01, Merredin	Cairn Nature Reserve	A9754
AVW02, Katanning	Charles Gardner Reserve	A20041
AVW01, Merredin	Chiddarcooping Nature Reserve	A19210
MAL02, Western Mallee	Chinocup Nature Reserve	A28395
AVW02, Katanning	Coblinine Target Landscape (Coblinine Nature Reserve, Unnamed nature reserve)	Target Landscape 3 (A25135/25136, A27481)
MAL02, Western Mallee	Corneecup Nature Reserve	C24589
AVW02, Katanning	Coyrecup Nature Reserves	A28552, A26020
AVW01, Merredin	Damboring Nature Reserve	A38371
JAF01, Northern Jarrah Forest	Dead Man's Swamp Nature Reserve	A5456
AVW02, Katanning	Dongolocking Target Landscape (Dongolocking Nature Reserve, Mallee Plain Nature Reserve, Unnamed nature reserve, Hurdle Creek Nature Reserve)	Target Landscape 5 (A19082/A19083/A19087/A19089 /A19090/A19091/A19096/A20069, A19084, A19085/A19086/A26005, A20070)
MAL02, Western Mallee	Dragon Rocks Nature Reserve	A36128
JAF01, Northern Jarrah Forest	Dryandra Woodland (Dryandra Woodland National Park, Lol Gray State Forest)	(A53976, F51, F53)

IBRA Sub-Region	Priority Management Unit (reserve name)	Reserve number(s)
AVW01, Merredin	Dukin Nature Reserve	C16867
COO02, Southern Cross	Duladgin Nature Reserve	C2179, C3112
AVW02, Katanning	Dulbelling Nature Reserve	A10584
AVW02, Katanning	Dumbleyung Lake Nature Reserves	C5999, C26664
MAL02, Western Mallee	Dunn Rock Nature Reserve	C36445
MAL02, Western Mallee	Dunn Rock-Lake King-Pallarup (Pallarup Nature Reserve, Lake King Nature Reserve, Dunn Rock Nature Reserve, Unnamed conservation park, unallocated Crown land)	Target Landscape 82 (A29860, A39422, C36445, R47100, unallocated Crown land)
AVW01, Merredin	Durokoppin Nature Reserve	A22921
AVW02, Katanning	East Yornaning Nature Reserve	A18952
AVW01, Merredin	Elashgin Nature Reserve	C10992
MAL02, Western Mallee	Flat Rock Nature Reserve	C27487
AVW01, Merredin	Frog Rock Nature Reserve	A20262
MAL02, Western Mallee	Harris Nature Reserve	A32549
AVW02, Katanning	Highbury State Forest	F 52
AVW01, Merredin	Hindmarsh Nature Reserve	A14510
MAL02, Western Mallee	Hopkins Nature Reserve	C35134
AVW02, Katanning	Hotham River Nature Reserve	A8291

IBRA Sub-Region	Priority Management Unit (reserve name)	Reserve number(s)
MAL02, Western Mallee	Jackson Nature Reserve	A34523
COO02, Southern Cross	Jilbadji Nature Reserve	C24049
AVW01, Merredin	Jingaring Nature Reserve	A13797
COO02, Southern Cross	Karroun Hill Nature Reserve	A36936
AVW01, Merredin	Kodj Kodjin Nature Reserve	A23138
MAL02, Western Mallee	Kondinin Salt Marsh Nature Reserve	C26692, C26905
JAF01, Northern Jarrah Forest	Koodjee Nature Reserve	A20738
AVW01, Merredin	Kwolyin Nature Reserve	A11038, A30969
MAL02, Western Mallee	Lake Bryde Recovery Catchment (Silver Wattle Hill Nature Reserve, Breakaway Ridge Nature Reserve, Lake Bryde Nature Reserve, Lakeland Nature Reserve, Lake Janet Nature Reserve, Unnamed conservation park, Unnamed 5(1)(h) Reserve)	Lake Bryde Natural Diversity Recovery Catchment (A29018, A29019, A29020/A29021, A29023/A29024/A29025, A29026, C47384, C48436)
AVW01, Merredin	Lake Campion Nature Reserve	A11211, C24789
COO02, Southern Cross	Lake Cronin Nature Reserve	A36526
MAL02, Western Mallee	Lake Hurlstone Nature Reserve	A24417, A27837, A27927
MAL02, Western Mallee	Lake King Nature Reserve	A39422
MAL02, Western Mallee	Lake Liddelow Nature Reserve	A29810
MAL02, Western Mallee	Lake Magenta Nature Reserve	A25113

IBRA Sub-Region	Priority Management Unit (reserve name)	Reserve number(s)
MAL02, Western Mallee	Lake Varley Nature Reserve	A27928, A28014
COO02, Southern Cross	LR3137/470 unallocated Crown land (department interest) ex Ennuin	LR3137/470
MAL02, Western Mallee	McGlinn Nature Reserve	C18730
AVW02, Katanning	Meenaar Nature Reserve	A29977
JAF02, Southern Jarrah Forest	Mininup Nature Reserve	A2243
AVW01, Merredin	Mokamie Nature Reserve	A23686
AVW01, Merredin	Mollerin Nature Reserve	A14429
AVW01, Merredin	Moullean Landscape (Gundaring Nature Reserve, Mount Caroline Nature Reserve, Mount Stirling Nature Reserve, Kokerbin Nature Reserve, Nangeen Hill Nature Reserve)	(A11039, A11047, A11048, A11043, A23187)
AVW01, Merredin	Namelcatchem Nature Reserve	A687
AVW01, Merredin	Norpa Nature Reserve	C20504
MAL02, Western Mallee	North Karlgarin Nature Reserve	A20338
AVW02, Katanning	Ockley Nature Reserve	A19122
MAL02, Western Mallee	Pallarup Nature Reserve	A29860
MAL02, Western Mallee	Plain Hills Nature Reserve	C36558
AVW02, Katanning	Pootenup Nature Reserve	A38303

IBRA Sub-Region	Priority Management Unit (reserve name)	Reserve number(s)
AVW01, Merredin	Red Lake Nature Reserve	A16493
MAL02, Western Mallee	Roe Nature Reserve	C20339
AVW01, Merredin	Sandford Rocks Nature Reserve	A1432
AVW01, Merredin	Seagroatt Nature Reserve	A25062
AVW01, Merredin	Shackleton Nature Reserve	A24505
MAL02, Western Mallee	South Buniche Nature Reserve	A26763
AVW02, Katanning	Taarblin Lake Nature Reserve	A9550
MAL02, Western Mallee	Tapper Road Nature Reserve	C33713
MAL02, Western Mallee	Tarin Rock Target Landscape (Tarin Rock Nature Reserve, North Tarin Rock Nature Reserve, Unnamed nature reserve, Crown freehold)	Target Landscape 22 (A25711, A29857, R38379, P060132-111)
AVW02, Katanning	Toolibin Lake Recovery Catchment (Dulbining Nature Reserve, Walbyring Nature Reserve, Dingerlin Nature Reserve, Toolibin Nature Reserve, 5(1)(h) Reserves)	Toolibin Lake Natural Diversity Recovery Catchment (A9617/ A27286, A14398, A15266, A24556, R46407, R52018)
AVW02, Katanning	Tutanning Nature Reserve	A25555
MAL02, Western Mallee	Unnamed conservation park C47100	C47100
AVW01, Merredin	Unnamed nature reserve A12333	A12333
MAL02, Western Mallee	Unnamed nature reserve A20046	A20046
MAL02, Western Mallee	Unnamed nature reserve A20342	A20342

IBRA Sub-Region	Priority Management Unit (reserve name)	Reserve number(s)
AVW02, Katanning	Unnamed nature reserve A21424	A21424
AVW01, Merredin	Unnamed nature reserve A23991	A23991
MAL02, Western Mallee	Unnamed nature reserve A27485	A27485
MAL02, Western Mallee	Unnamed nature reserve A28047	A28047
AVW01, Merredin	Unnamed nature reserve A28319	A28319
AVW01, Merredin	Unnamed nature Reserve A28940	A28940
AVW02, Katanning	Unnamed nature reserve A30427	A30427
MAL02, Western Mallee	Unnamed nature reserve A31111	A31111
COO02, Southern Cross	Unnamed nature reserve A36918	A36918
AVW01, Merredin	Unnamed nature reserve A38395	A38395
MAL02, Western Mallee	Unnamed nature reserve A38450	A38450
AVW02, Katanning	Unnamed nature Reserve A41180	A41180
MAL02, Western Mallee	Unnamed nature reserve A43282	A43282
MAL02, Western Mallee	Unnamed nature reserve A46116	A46116
AVW02, Katanning	Unnamed nature reserve A46128	A46128
MAL02, Western Mallee	Unnamed nature reserve A46260	A46260
AVW01, Merredin	Unnamed nature reserve A47960	A47960

IBRA Sub-Region	Priority Management Unit (reserve name)	Reserve number(s)
AVW02, Katanning	Unnamed nature reserve C19412	C19412
MAL02, Western Mallee	Unnamed nature reserve C20350	C20350
MAL02, Western Mallee	Unnamed nature reserve C25248	C25248
MAL02, Western Mallee	Unnamed nature reserve C29574 (Mount Vernon)	C29574
MAL02, Western Mallee	Unnamed nature reserve C32663	C32663
MAL02, Western Mallee	Unnamed nature reserve C48742	C48742
AVW01, Merredin	Wallaby Hills Nature Reserve	A39149
COO02, Southern Cross	Walyahmoning Nature Reserve	A35752
AVW01, Merredin	Wamenusking Nature Reserve	A16346
AVW01, Merredin	Wandjagill Nature Reserve	C25884
AVW02, Katanning	Wangeling Gully Nature Reserve	A9098
AVW01, Merredin	Warramuggan Nature Reserve	A16040
AVW02, Katanning	Weam Nature Reserve	A29322
AVW02, Katanning	Wingedine Nature Reserve	A28471
AVW02, Katanning	Wongan Hills Ecoscape (Elphin Nature Reserve, Wongan Hills Nature Reserve, Fowler Gully Nature Reserve, Rogers Nature) Reserve, Unnamed nature reserve, Unnamed conservation park)	Target Landscape 13 (A25808, A33530, A42375, A39145, R51093, C52103)

IBRA Sub-Region	Priority Management Unit (reserve name)	Reserve number(s)
AVW01, Merredin	Wundowlin Nature Reserve	A22262
AVW01, Merredin	Xantippe Nature Reserve	A20482
AVW01, Merredin	Yanneymooning Nature Reserve	A24465
COO02, Southern Cross	Yellowdine Nature Reserve	C41936
AVW01, Merredin	Yenyening Lakes Nature Reserve	A28088, C31837
AVW01, Merredin	Yorkrakine Rock Nature Reserve	A23586

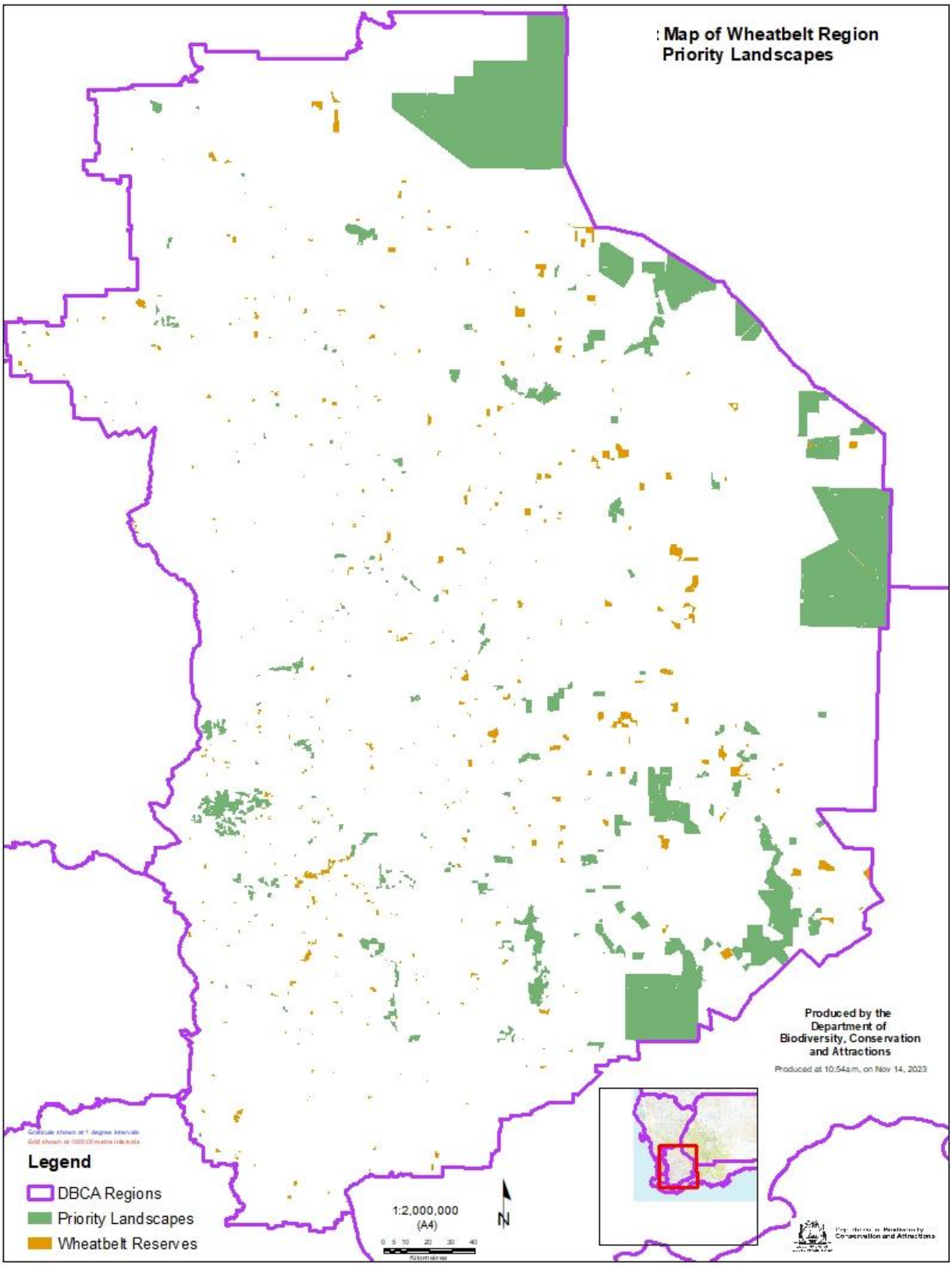

Figure 2 Wheatbelt Region priority landscapes (2023).

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

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