



SOUTH WEST REGION REGIONAL CONSERVATION PLAN



Department of **Biodiversity,
Conservation and Attractions**



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White-bellied frog (*Anstisia alba*). Photo – Kim Williams, DBCA
Petrophile latericola. Photo – Kim Williams, 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 South West Region, though relatively small in area compared to other departmental regions, is biogeographically diverse and contains two nationally defined terrestrial biodiversity hotspots (Busselton–Augusta and part of Avon Wheatbelt). Rainfall ranges from 1200–600mm across a west–east transect, and combines with variability in geology and landform to create a rich diversity in the natural landscape and vegetation patterns. The region is botanically rich, with 15 Beard vegetation mapping units and 54 regional forest agreement vegetation complexes described and approximately 3300 flora taxa recorded. High levels of diversity and endemism in flora and fauna are present on the Swan Coastal Plain, Blackwood Plateau, Leeuwin Block and Scott Plain landscapes.

The region contains highly fragmented landscapes along its western and eastern portions. These are associated with significant and expanding urbanised residential land uses in the Bunbury to Yallingup coastal strip, and historical and extensively cleared agricultural zones on the eastern side. Between these zones is a moderately intact expanse of high rainfall forest encompassing jarrah/marri and karri forests fringed with wandoo woodlands to the east and tuart woodlands in the west. These forested environments contain several medium and small sized townships and support important, large-scale mining industries including bauxite, lithium, coal operations and power generation. Major mine expansions in the bauxite and lithium sectors over the next decade will result in large-scale loss and fragmentation of the high rainfall native forest area. These industries and their supporting infrastructures fragment many of the larger tracts of forested lands and reserves in the South West Region. Numerous mineral sands and basic raw materials (gravel, building sand and fill, limestone) mining operations operate within the coastal plain and along the fringes of the forest. These landscapes contain the most poorly reserved and threatened vegetation communities in the region.

The region consists of terrestrial and marine reserves including internationally and nationally important wetlands, karst and cave features. These receive high levels of public visitation and are used for a wide range of recreational purposes. Protecting and sustaining the diverse and highly threatened conservation values present in these reserves presents many technical and managerial challenges.

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 *Conservation and Land Management Act 1984* lands and waters in the south-west are managed. For the South West Region, CMAs are in place between the department and Karri Karrak and Gnaala Karla Booja Aboriginal Corporations. As of 1 December 2025, the South West 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 South West Region is provided in [Table 1](#) and [Figure 1](#).

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

Region	South West				
Interim Biogeographic Regionalisation of Australia (IBRA) regions	Jarrah Forest sub-regions (JAF01, JAF02), Swan Coastal Plain sub-region (SWA02), Warren sub-region (WAR01).				
Integrated Marine and Coastal Regionalisation of Australia (IMCRA) regions	Leeuwin-Naturaliste (LNE)				
Landscape description	The region covers a major proportion of the Northern and Southern Jarrah Forest (JF1 and JF2) biogeographic sub-regions, and southern parts of the Perth (SWA2) sub-region and northern parts of the Warren bioregion (WAR). It contains two of the nationally defined terrestrial biodiversity hotspots (Busselton–Augusta and part of Avon Wheatbelt).				
Department-managed land	Tenure classification	No.	Area (ha)		
	Legislated lands and waters				
	National park	22	151,796		
	Conservation park	13	19,202		
	Nature reserve	82	14,719		
	Section 5(1)(g) reserve	6	30,365		
	Section 5(1)(h) reserve	28	1166		
	State forest	35	526,091		
	Timber reserve	33	26,275		
	Marine park	2	122,554		
	Section 34A freehold	168	12,080		
	Section 131 freehold	81	7362		
	Total	470	911,611		
	Department interest in lands and waters				
	Crown freehold - department interest	50	6673		
	Unallocated Crown land - department interest	4	5		
	Total	54	6679		
	Total area of all lands and waters encompassed by the region (and portion managed by the department)	1,877,629 (49%)			
Remnant vegetation	Approximately 56.7% of the total area of land encompassed by the region includes remnant vegetation, with approximately 76.4% of this remnant vegetation occurring on department-managed land.				
Threatened¹ and Priority² fauna species	Extinct (0), critically endangered (12), endangered (24), vulnerable (28), conservation dependent (4), migratory (50), other specially protected (2), Priority 1 (2), Priority 2 (4), Priority 3 (9), Priority 4 (16)				
Threatened and Priority flora species	Extinct (2), critically endangered (24), endangered (20), vulnerable (11), Priority 1 (42), Priority 2 (55), Priority 3 (86), Priority 4 (49)				
Threatened and Priority ecological communities	Collapsed (0), critically endangered (13), endangered (8), vulnerable (1), Priority 1 (17), Priority 2 (6), Priority 3 (8), Priority 4 (0)				
Wetlands	Wetlands of International Importance under the Ramsar Convention (1), Wetlands of National Importance (6)				

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.

SOUTH WEST REGION



INDIAN OCEAN

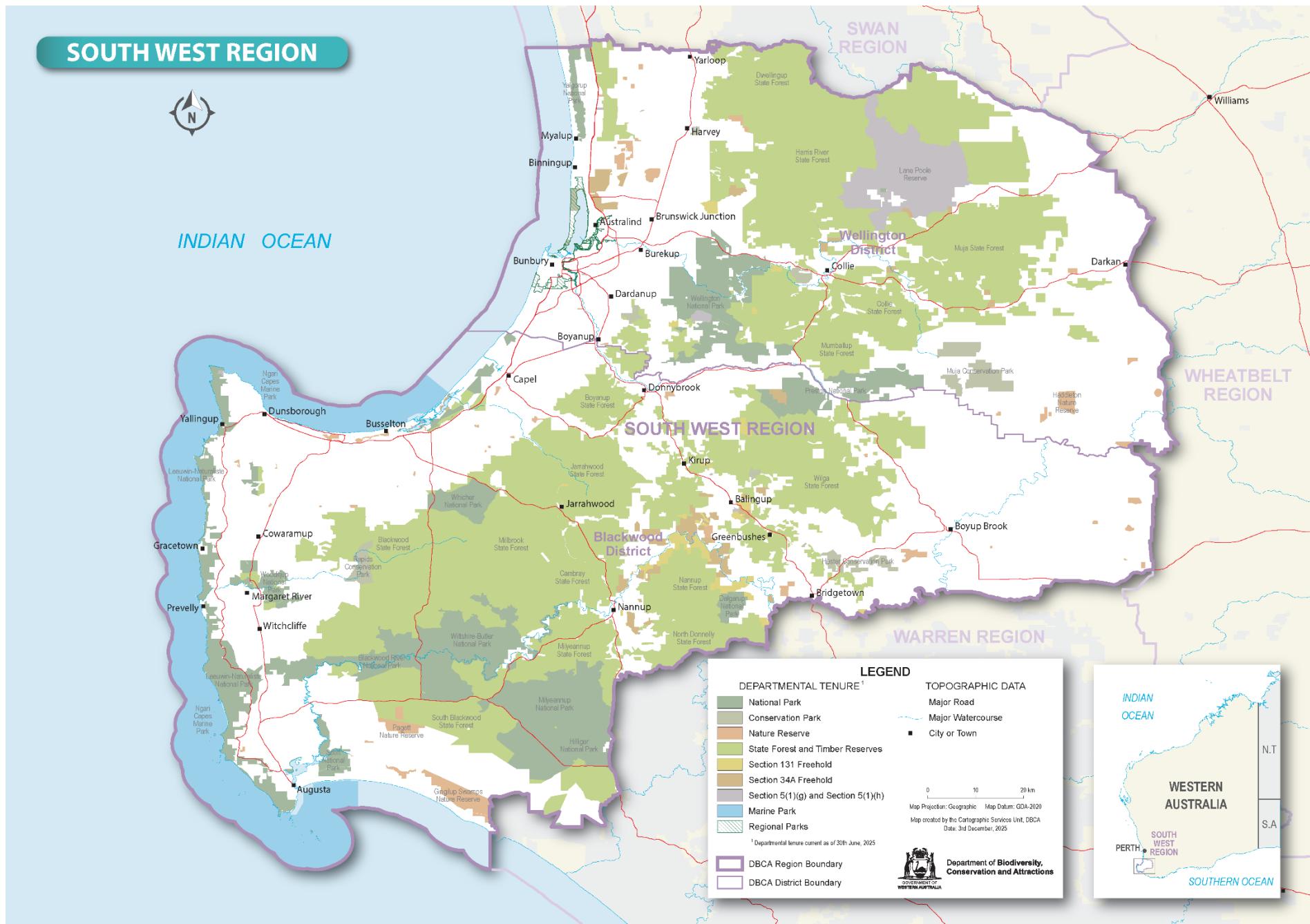


Figure 1 South West Region department-managed land and waters (December 2025).

3 Identification of priority reserves and landscapes

To determine priorities for landscape-scale threat mitigation, the South West 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

The South West Region encompasses three Interim Biogeographic Regionalisation of Australia (IBRA) bioregions; Swan, Jarrah Forest and Warren; and four sub-regions (SWA2, JF1, JF2, WA). Though useful at a national scale, the bioregions and sub-regions are too broad to provide an operational basis for on-ground management actions in the South West Region. Further division of the 1.7 million hectares comprising the South West Region was required.

Across the three bioregions, 16 priority landscapes were defined using soil-landscape mapping (Department Agriculture and Food Western Australia 2007). This mapping is based on repeating patterns of landscape and associated soils together with a consideration of climate and vegetation. Soil-landscape mapping data is captured at several scales and the scale used for each South West Region priority landscape was determined based on biological complexity and the number of management issues present in the landscape. This mirrored and refined similar processes adopted in previous conservation planning employed in the South West Region. The priority landscapes are outlined below.

1. Three priority landscapes; the *Darling Scarp and Plateau*, *Woolbelt* and *Nannup Karri* have been mapped for the portion of the Yilgarn Craton (the geological regolith) which underlies much of the South West Region. The *Darling Scarp and Plateau* is the Western Darling Range zone as detailed by Tille (1961) and is an undulating lateritic plateau where major rivers have formed deep steep-sided valleys exposing granitic rock. Annual rainfall ranges from 500 to 1200mm and the landscape is predominantly characterised by the Jarrah-Marri forest belt. Key management issues are high public visitation with unsanctioned uses, feral animals, pathogens and mining.
2. The *Woolbelt* is the Eastern Darling Range zone as detailed by Tille (1961) and is a greatly dissected undulating landscape with remnants of the lateritic plateau. Annual rainfall ranges from 500 to 750mm, the native vegetation (jarrah, marri, wandoo forest) has been extensively cleared for agriculture. Key management issues are small, fragmented reserves, native and feral animal grazing, and rising salinity.
3. The *Nannup Karri* landscape is a small South West Region extension of the Warren-Denmark Southland zone as detailed by Tille (1961). This is an intact higher rainfall lateritic landscape characterised by tall karri and jarrah-marri forest. Key management issues are feral animals, changing hydrology, inappropriate fire regimes and the ecological legacy of timber harvesting.
4. Two priority landscapes are mapped for the Leeuwin block major landform - the *Margaret River Plateau* and the *Naturaliste ridge*. The *Margaret River Plateau* is the eastern extent of the landform characterised by a lateritic plateau with incised river valleys. The vegetation is a highly cleared jarrah-marri forest and the headwaters of the Margaret River contain many short-range endemic flora species. Management issues are associated with fragmented reserves, weeds, high public visitation, historic and contemporary vegetation clearing, and management of endemic threatened flora and ecological communities.

5. The *Naturaliste Ridge* is the western extent of the Leeuwin Block characterised by limestone soils with peppermint (*Agonis* sp.) and coastal heath vegetation and areas of karri. Most of the landscape is within the Leeuwin-Naturaliste National Park. Management issues are very high public visitation, weeds, a high perimeter to area ratio reserve shape facilitating detrimental edge effects, and management of endemic threatened flora and ecological communities.
6. Two priority landscapes are mapped for the Scott Coastal Plain landform - the *Scott Alluvial* and *Scott Dune*. The *Scott Alluvial* is the Scott River Plain land system as detailed by Tille and Lantzke (1990). It is a broad, poorly drained flat dominated by wetland sedges and shrubs with low rises of bleached sand supporting banksia woodlands or stunted jarrah and marri forest. Within the South West Region, this landscape is highly cleared and management issues are those associated with small, fragmented reserves, weeds, eutrophication originating from agriculture, vegetation clearing, management of endemic threatened flora and communities, and high levels of native and feral animal grazing.
7. The *Scott Dune* is the D'Entrecasteaux Dunes land system as detailed by Tille and Lantzke (1990). These dunes are characterised by calcareous sand and limestone with peppermint (*Agonis* sp.) woodlands and coastal heath vegetation becoming a stunted jarrah-peppermint forest on older sheltered dunes. Most of this landscape is privately owned with key management issues being unsanctioned vegetation clearing, feral animals, hydrological change and inappropriate fire regimes.
8. Two priority landscapes have been mapped for the Blackwood Plateau major landform - the *Whicher Scarp* and *Blackwood Plateau*. The *Whicher Scarp* is the Whicher Scarp System as detailed by Tille (1961). It is a narrow scarp along the northern edge of the Blackwood Plateau with highly diverse jarrah-mountain marri (*Corymbia haematoxylon*) forests, banksia woodlands and wetlands. Keighery et al. (2008) documented the landform's flora to extend approximately 2km inland beyond its mapped extent; a buffer of this order has been applied to the priority landscape to reflect this vegetation extension. Key management issues of this landscape are uncontrolled public access, disease spread, vegetation clearing, mining, grazing, inappropriate fire regimes, and management of endemic threatened flora and ecological communities.
9. The remainder of the major landform has been mapped as the *Blackwood Plateau* landscape. This is generally an intact landscape, poorly drained and mostly a jarrah-marri forest with *Kingia* and tea-tree understorey. It has many wetlands including significant tributaries of the Blackwood and Margaret Rivers containing short range endemic threatened fauna species and Threatened Ecological Communities (TECs). Key management issues are uncontrolled public access, disease and pathogens, feral animals, hydrological change, inappropriate fire regimes, and management of endemic threatened fauna and ecological communities.
10. Several priority landscapes are mapped for the Swan Coastal Plain landform including the *Quindalup*, *Vasse*, *Yoongarillup*, *Spearwood*, *Bassendean*, *Pinjarra* and *Foothill*. The extent of these correlate to the landform units of the coastal plain as mapped in the vegetation complex mapping extension (Webb et al. 2016). The *Quindalup* landscapes are the youngest coastal dunes with coastal heath, peppermint and some tuart. Key management issues are uncontrolled public access, soil erosion and compaction, vegetation clearing and feral animals.

11. The *Vasse* landscape is the contemporary coastal wetland chain with estuarine and freshwater wetlands. Key management issues are incoming catchment water quality and eutrophication, drainage and wetland water level management, feral animals, weeds, vegetation clearing, urban interface management, and native and feral animal and agricultural grazing.
12. The *Spearwood* landscape is old coastal dunes with leached sands and underlying limestone characterized by tuart forest and banksia woodlands. They have a high level of clearing and weed degradation. Key management issues are uncontrolled public access, weeds, inappropriate fire regimes, vegetation clearing, feral animals, and management of threatened fauna and ecological community restoration.
13. The *Yoongarillup* landscape is an old coastal wetland chain now characterized by seasonally waterlogged sands over limestone. The vegetation is extensively cleared but was previously a melaleuca-flooded gum wetland mosaic with small stands of peppermint, blackbutt, tuart, banksia and marri. Key management issues are vegetation clearing, fragmentation, weeds, public access, inappropriate fire regimes and management of endemic threatened flora.
14. The *Bassendean* landscape is extensively weathered ancient coastal dunes dominated by banksia woodlands with damland and inundated wetlands. Key management issues are uncontrolled and inappropriate public access, vegetation clearing, changing hydrology, inappropriate fire regimes, native and feral animal grazing, and management of endemic threatened flora.
15. The *Pinjarra Plain* landscape is the alluvial soils of the coastal plain characterised by jarrah, marri and wandoo forests with an extensive wetland mosaic. The landscape is extensively cleared with key management issues being weeds, inappropriate fire regimes, feral animals, vegetation clearing, native and feral animal grazing, and management of endemic threatened flora and ecological communities.
16. The *Foothill* landscape is sand and lateritic spurs at the base of the Darling Scarp with banksia woodland and jarrah-marri or wandoo forests. They are highly cleared with key management issues of weeds, public access, inappropriate fire regimes, and native and feral animal grazing.

3.1.2 Categorisation of land into management units

To assist in planning and prioritising across department-managed tenure, the South West Region considered several approaches including the 465 land parcels identifiable by tenure and cadastral boundaries and the corporate Land Management Units 2014 dataset. Neither was considered to represent the region's conservation assets in a logical or practical manner that would enable functional management units to be derived.

The South West Region adopted the following approach to determine conservation management units. The size of the identified priority landscapes varies between 2066 to 660,200 hectares. The density and abundance of biodiversity assets (threatened flora, fauna and ecological communities) found within each landscape also varies, influenced by the size of the landscape unit and extent of threatening processes present historically and contemporarily and the quantity of endemism inherent in the landscape.

In general, priority landscapes with smaller areas and lineal shapes contain a higher proportion of regionally endemic and threatened values and have been or are being significantly impacted by threatening processes. Their size and shape limits their capacity to

buffer threats and maintain ecosystem resilience without management intervention. These smaller sized units are restricted to the South West Region and are considered management units, for example Whicher Scarp and Swan Coastal Plain (Vasse). For the Swan Coastal Plain landform, the availability of more detailed soil mapping provided the opportunity to identify seven distinct priority landscape management units.

At the other scale, larger sized priority landscape units such as the Jarrah Marri forests of the Darling Scarp and Plateau and the Blackwood Plateau contain widely distributed forest ecosystems that extend beyond the boundaries of the South West Region. To provide operational practicality these were divided into smaller management units based on distinctive vegetation communities and similarity of threats operating across the unit.

3.1.3 Identify priority management units

The South West 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 land⁵.

- 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 zero⁶ 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).

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

Conservation reserves



Expand and effectively manage a comprehensive, adequate and representative conservation reserve system to protect biodiversity, cultural and social values.

FAUNA

- Manage public access and disturbance at the Vasse Wonneup Ramsar wetland to seasonal feeding and roosting/resting sites utilised by great knot (*Calidris tenuirostris*) [TA-FA-308] and far eastern curlew (*Numenius madagascariensis*) [TA-FA-306]. Identify and develop low impact public access facilities on adjoining department-managed land that aid in the conservation of migratory shorebird habitat.
- Manage public access at sites with populations of orange-bellied frog (*Anstisia vitellina*) within the Blackwood River National Park where recreational pressures are directly (trampling, causing sediment erosion) or indirectly (increased fire risk) impacting *Anstisia* habitat. Install new and maintain existing access infrastructure and repair breaches, promptly conducting compliance investigations as needed [TA-FA-004].
- Restrict access to hairy marron (*Cherax tenuimanus*) habitat occurrences in the upstream pools of reserve R 45952 [TA-FA-259].

FLORA

- Install fencing around nature reserve 16144 and liaise with the local government authority (LGA) to fence Shire reserve 22293 to prevent inappropriate vehicle access into the reserves at populations 14, 15, 16 and 17 of *Drakaea elastica* [TA-FL-441].

ECOLOGICAL COMMUNITIES

- Implement recreation access management and explore options to realign the Cape to Cape walk trail at occurrence AUG01 of the Rimstone pools and cave structures formed by microbial activity on marine shorelines (Augusta microbialites) ecological community to reduce the impact of walkers on the microbialites [TA-EC-053].

LANDSCAPES

- Close illegally constructed and unsanctioned mountain bike, four-wheel drive and motorbike tracks in reserves on the Whicher Scarp management unit. Exclude firewood collection, remove existing unsanctioned rubbish dump sites and undertake compliance in these areas [LA-085]. Indicative reserves are:
 - Argyle State Forest Block
 - Dardanup Conservation Park
 - Treeton State Forest Block
 - Whicher National Park.

- For reserves of the Darling Scarp and Plateau management unit, minimise any conservation impacts resulting from firewood collection [LA-008]. Indicative forest blocks are those containing the Harris River headwaters.
- For reserves of the Blackwood Plateau (Blackwood Plateau) management unit, install new and maintain existing access management infrastructure to ensure it remains effective. Liaise with other agencies where works on other tenures adjacent to the reserves may be required to achieve effective access control. Educate users and undertake compliance and enforcement, track closures, site remediation and rehabilitation as required [LA-007]. Indicative sites are:
 - Abba State Forest Block
 - Headwaters of the Margaret River
 - Perennial tributaries of the Blackwood River
 - Rapids Conservation Park.
- Establish and maintain an ongoing baseline monitoring program for species composition and abundance and quantify threatening processes and their extent to track landscape ecosystem health and condition for the Blackwood Plateau (Blackwood Plateau) [LA-115], Darling Scarp and Plateau [LA-114] and Swan Coastal Plain (Pinjarra [LA-116] and Spearwood [LA-104]) management units. Use results to inform future management actions.

Species and ecological communities



Maintain viable, intact and healthy ecological communities and populations of species, especially those that are threatened, significant or iconic, while allowing the sustainable use of natural resources and facilitating nature-based tourism.

FAUNA

- For quokka (*Setonix brachyurus*), determine the northern distribution and extent of the population at Greater Bunbury Regional Scheme Regional Open Space Reserve 14 and refine management and protection measures accordingly [LE-FA-020].
- At Benger Swamp Nature Reserve, expand the area of habitat suitable for Australasian bittern (*Botaurus poiciloptilus*) by altering typha density and implementing water level manipulation to increase water supply late in the breeding season to optimise breeding habitat [TA-FA-060].
- At Benger Swamp Nature Reserve, collect bathymetry data to determine potentially suitable habitat and enable modelling for water level manipulation to optimise Australasian bittern (*Botaurus poiciloptilus*) habitat [LE-FA-004].
- At Benger Swamp Nature Reserve, review the typha management program to ensure habitat modification for Australasian bittern (*Botaurus poiciloptilus*) is providing suitable habitat and fire mitigation. Monitor habitat parameters such as typha density, macroinvertebrate biomass, water levels and water quality to inform the works program prioritisation processes [LE-FA-005].

- Implement mitigation actions for populations of white-bellied frog (*Anstisia alba*) in Forest Grove on land acquired for conservation purposes [TA-FA-002].
- For white-bellied frog (*Anstisia alba*) [LE-FA-012] and orange-bellied frog (*Anstisia vitellina*) [LE-FA-014], maintain the population monitoring program at a frequency to accurately detect changes in the abundance, extent and location of the frogs at each occupied site and release area.
- For hairy marron (*Cherax tenuimanus*) habitat occurrences in reserve R 45952, continue public education, compliance and enforcement strategies to minimise recreational impacts and prevent illegal poaching of the species [TA-FA-082].

FLORA

- For *Alyogyne* sp. Rockingham (G.J. Keighery 14463), survey for new populations to guide management priority and conservation status review [LE-FL-009].
- Implement fire response monitoring to guide management of *Andersonia longifolia* [LE-FL-014].
- For *Andersonia longifolia*, ensure a range of occurrences are inspected [LE-FL-015].
- For *Austrostipa bronwenae* populations within Flooded gum, marri and peppermint closed low forest ecological community occurrences, undertake surveys for new populations [LE-FL-016].
- For *Banksia squarrosa* subsp. *argillacea* populations, monitor all known populations to determine status [LE-FL-020].
- For *Boronia exilis*, monitor populations to determine current threatening processes and their impact [LE-FL-022].
- For *Brachysciás verecundus*, monitor populations the first season after fire [LE-FL-027].
- At populations 2 and 4 of *Caladenia busselliana*, install surveillance cameras and undertake compliance and enforcement activities during the flowering period to prevent illegal taking [TA-FL-494].
- At population 2 of *Caladenia excelsa*, establish a comprehensive fire response monitoring program to contribute to an improved understanding of long-term fire impact [LE-FL-031].
- For *Calochilus* sp. Boyup Brook population (SWR1117), survey for additional populations in the immediate McAlinden area [LE-FL-036].
- For *Chamelaucium royci*, monitor known populations to determine and review current condition and conservation status [LE-FL-041].
- For *Commersonia erythrogyna*, monitor the original source population (population 1) to determine whether it persists [LE-FL-042].
- At populations SWR529 and SWR1938 of *Darwinia whickerensis*, implement an adaptive management program to determine and trial an appropriate fire regime to promote recruitment inclusive of pre- and post-fire weed and rabbit control [TA-FL-526].
- For *Eucalyptus x phylacis*, ensure a range of occurrences are inspected [LE-FL-050].

- For *Gastrolobium argyrotrichum*, survey granite outcrops to the south-west of population 1 for new occurrences [LE-FL-052] and monitor existing populations to inform a review of current condition and conservation status [LE-FL-053].
- At populations 1 and 2 of *Gastrolobium papilio*, implement an adaptive management program to determine and trial an appropriate fire regime in nature reserve R46006 and Millbrook State Forest 33 areas inclusive of pre- and post-fire weed and rabbit control [TA-FL-534].
- For *Gastrolobium papilio*, monitor translocated populations 2 and 3 to determine current condition and conservation status [LE-FL-056].
- For *Jacksonia velveta*, undertake surveys for additional populations to determine species extent in the South West Region [LE-FL-068].
- For *Jacksonia velveta*, undertake an adaptive fire management trial to promote recruitment of populations [LE-FL-067].
- Undertake surveys for additional populations of *Orianthera wendyae* to increase understanding of its distribution and conservation status [LE-FL-092].
- For *Orianthera wendyae*, expand monitoring to improve the understanding of the species' response to fire and use this to advise on a suitable fire regime for management of the species [LE-FL-091].
- At populations 1A, 3, 4C and 5 on rail reserves and translocated populations 4A and 6 of *Petrophile latericola*, implement an adaptive management program to determine and trial an appropriate fire regime that promotes recruitment [TA-FL-554].
- For *Stylium ferricola*, survey for new populations to improve understanding of habitat requirements and extent of the species [LE-FL-112].
- For *Stylium perplexum* (population SWR2162), complete fire response monitoring in Dardanup Conservation Park [LE-FL-116].
- For *Stylium* sp. Scott River Plain, undertake surveys to update current knowledge of the species' condition and determine the extent of occurrence [LE-FL-117].
- Implement fire response monitoring to guide fire management of *Synaphea trinacriiformis* [LE-FL-127].
- For *Verticordia attenuata*, monitor populations to clarify species current condition and status [LE-FL-130].
- For *Verticordia densiflora* var. *pedunculata*, ensure a range of occurrences are inspected to inform species management requirements [LE-FL-132].
- For *Verticordia plumosa* var. *vassensis*, monitor all populations initially focusing on those with old records to confirm current species condition and status [LE-FL-133].
- For *Wurmbea calcicole*, survey for new populations using a drone where sites are inaccessible [LE-FL-134].
- 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

- At the Augusta microbial rimstone pools and cave structures (Augusta microbialites) ecological community, collect field data and utilise 3D modelling to rescore detailed growth patterns as an indicator of ecological condition. Resurvey and apply learnings to inform the need for hydrological supplementation over time [LE-EC-014].
- At Shrublands on the southern Swan Coastal Plain ironstones (Busselton area) ecological community occurrences of SCP 10b, implement weed, kangaroo and fire management within and adjoining the occurrences as required to maintain the persistence and ecological resilience of the occurrences [TA-EC-056].

LANDSCAPES

- At all populations of the critically endangered and endangered species and ecological communities endemic to the South West Region, seek to implement threat mitigation, habitat management and habitat restoration actions where required to maintain their persistence and improve their resilience within the Blackwood Plateau (Blackwood Plateau) [LA-123], Darling Scarp and Plateau [LA-121], Leeuwin Block (Naturaliste Ridge) [LA-120] and Whicher Scarp [LA-112] management units. Monitor outcomes within an adaptive management framework and adjust implementation as required.

Threatening processes



Reduce the impacts of key threatening processes, including altered hydrology, climate change and priority pest animals, weeds and diseases, on biodiversity, ecological processes and sustainable land uses.

DISEASE

- Implement hygiene procedures to minimise the spread of Phytophthora dieback and other plant pathogens. Undertake access control and other measures to maintain the integrity of disease-free areas containing high value threatened species and ecological communities. Where required, close access tracks to ensure conservation asset protection within the Blackwood Plateau (Blackwood Plateau [LA-003] and Whicher Scarp [LA-084]) management units to limit the spread of disease. Indicative areas include:
 - Abba State Forest Block
 - Argyle State Forest Block
 - Bennelacking Conservation Park
 - Blackwood River National Park tributaries
 - Forest Grove National Park
 - Margaret River headwaters: McGregor, Punch, Molloy, Rapids State Forest blocks
 - Muja Conservation Park
 - Rapids Conservation Park
 - Unnamed (Location 83) National Park

- Wellington National Park
- Whicher National Park.
- Where required, close tracks in reserves on the Darling Scarp and Plateau management unit to reduce the risk of Phytophthora dieback spread to high status threatened species and ecological communities. Manage unauthorised firewood collection through staff patrols to educate and enforce regulations. Improve understanding of the conservation values to inform management of recreation developments and events [LA-009, LA-012]. Indicative reserves and systems are:
 - Bennelacking Conservation Park
 - Muja Conservation Park
 - Wellington National Park
 - Forest blocks containing the Harris River headwaters.

ENVIRONMENTAL IMPACT ASSESSMENT AND ADVICE

- Ensure firewood collection planning considers the conservation values of the Blackwood Plateau landscape unit [LA-001]. Indicative areas include:
 - Abba State Forest Block
 - Argyle State Forest Block
 - Happy Valley State Forest Block
 - Molloy State Forest Block
 - Quilergup State Forest Block
 - Rapids State Forest Block
 - Schroeder State Forest Block.

FIRE REGIMES

- Undertake targeted and ongoing liaison and input into the Burn Options Program and prescribed fire planning processes to ensure fire is applied in a way that supports ecological objectives and maintains conservation values in the Blackwood Plateau [LA-004] and Darling Scarp and Plateau [LA-011] management units. Indicative areas include:
 - Abba State Forest Block
 - Argyle State Forest Block
 - Blackwood River National Park
 - Bennelacking Conservation Park
 - Dardanup Conservation Park
 - Forest Grove National Park
 - Lane Poole National Park
 - Leeuwin-Naturaliste National Park
 - Margaret River headwaters: headwaters McGregor, Punch, Molloy, Rapids State forest blocks
 - Milyeannup National Park
 - Muja Conservation Park
 - Quilergup State Forest Block
 - Scott National Park
 - Treeton State Forest Block

- Unnamed National Park (Location 83)
- Unnamed reserve (Location 4470)
- Wellington National Park
- Whicher National Park.
- Consider hairy marron (*Cherax tenuimanus*) habitat requirements when implementing prescribed burns around the pools of reserve R 45952 by maintaining intact riverbank fringing vegetation to provide summer shading and in water refuge areas [TA-FA-081].
- At the EASTER01 [TA-EC-011], STRONGS01 [TA-EC-016] and BUDJURMAR01 [TA-EC-017] occurrences of Aquatic Root Mat Community Number 1-4 of Caves of the Leeuwin-Naturaliste Ridge TEC, implement pre-suppression actions and operational buffers to protect the vegetation above the cave chambers forming the root mat habitat during prescribed burning operations and from other above-ground disturbances. Keep informed of and apply the latest techniques to identify the exact source tree(s) of the root mat habitat and monitor their condition.

PEST ANIMALS

- Continue to implement control programs to reduce fox and cat predation pressure on regionally significant fauna populations [LA-068] including:
 - western ringtail possum (*Pseudocheirus occidentalis*) in Tuart Forest National Park, Locke Nature Reserve and Boranup portions of Leeuwin-Naturaliste National Park
 - quokka (*Setonix brachyurus*) and western ringtail possum (*Pseudocheirus occidentalis*) populations in Greater Bunbury Region Scheme Regional Open Space Reserve 14
 - woylie (*Bettongia penicillata ogilbyi*), quokka (*Setonix brachyurus*), chuditch and western ringtail possum (*Pseudocheirus occidentalis*) in Wellington National Park
 - Australasian bittern (*Botaurus poiciloptilus*) in Benger Swamp Nature Reserve and Scott National Park
 - western swamp tortoise (*Pseudemydura umbrina*) in the Scott National Park.
- On department-managed land adjoining Vasse Wonnerup and at other key wetlands such as Benger Swamp Nature Reserve and Broadwater Nature Reserve utilised by far eastern curlew (*Numenius madagascariensis*), increase the area and/or frequency of fox control with a particular emphasis on the winter-spring swan and duck breeding period and the summer-autumn feeding period for migratory shorebirds [TA-FA-311].
- At Benger Swamp Nature Reserve, implement targeted control of foxes and feral pigs to improve Australasian bittern (*Botaurus poiciloptilus*) breeding success [TA-FA-012].
- Continue to implement responsive feral pig monitoring and control programs within the Blackwood Plateau priority landscape [LA-005]. Indicative areas include:
 - Blackwood River National Park
 - Forest Grove and unnamed (Location 83) National Parks
 - Margaret River headwaters McGregor, Punch, Molloy and Rapids State forest blocks
 - Milyeanup National Park.

- For populations of white-bellied frog (*Anstisia alba*) located in Forest Grove, Location 83, Witchcliffe and Leeuwin-Naturaliste National Park, undertake a feral pig control program at locations where feral pigs have been detected in monitoring programs, to achieve no loss of frog populations attributed to feral pig disturbance [TA-FA-001].
- Fence *Lambertia orbifolia* subsp. *pecuniosa* populations SWR2222 and SWR2409 to protect from stock and feral pig access (approximately 3km of fencing) and undertake ongoing fence maintenance [TA-FL-548].
- At enclosures, repair and upgrade fencing through the installation of rabbit-proof netting, remove rabbits and kangaroos and implement a rabbit control program to reduce grazing pressure on:
 - populations 1 and 2 of *Gastrolobium papilio* [TA-FL-533]
 - population 1 of *Lambertia echinata* subsp. *occidentalis* [TA-FL-546].
- At Shrublands on southern Swan Coastal Plain Ironstones (Busselton area) (SCP 10b) ecological community occurrences YIRON01, YIRON02, SWR90 and SWR91, implement kangaroo and rabbit control, appropriately prescribed fire management and subsequent weed control targeting annual weed species [TA-EC-057].

WEEDS

- Maintain informed management of weedy grass control at population 2 of *Austrostipa jacobsiana* in Kalgulup Regional Park to ensure the *Austrostipa* it is not mistaken for lovegrass. Consider erecting markers to aid identification of field locations of *Austrostipa jacobsiana* [TA-FL-169].
- At population 2 of *Caladenia loddgeana*, coordinate the implementation of a weed control program targeting watsonia, arum lily, wavy gladiolus, tea tree, eastern states wattle species and dolichos pea to protect the population at Flat Rock and West Bay [TA-FL-504].
- At populations 1, 2, and SWR1799 (natural and translocated) of *Grevillea maccutcheonii*, undertake control for annual weeds. Monitor weed density at population 1 and supply data to the LGA for incorporation into their roadside weed control programs [TA-FL-541].
- For *Myriophyllum echinatum* populations, investigate methods of annual weed control that limit off target impacts on native flora [LE-FL-088].
- At occurrences of the Shrublands on dry clay flats of Swan Coastal Plain 10a [LE-EC-012], Herb rich shrublands in clay pans Swan Coastal Plain 08 [LE-EC-008], and Herb rich saline shrublands in clay pans Swan Coastal Plain 07 [LE-EC-007], develop a weed control program and methodology to develop and trial the application of selective weed sprays. Establish transects to monitor soil moisture using probes in conjunction with data from bore monitoring for the communities to evaluate the impact of weed control on available soil moisture.

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

Conservation reserves



Expand and effectively manage a comprehensive, adequate and representative conservation reserve system to protect biodiversity, cultural and social values.

FAUNA

- Manage public access and disturbance at the Vasse Wonnerup Ramsar wetland to seasonal feeding and roosting/resting sites utilised by red knot (*Calidris canutus*) [TA-FA-309], curlew sandpiper (*Calidris ferruginea*) [TA-FA-310], lesser sand plover (*Charadrius mongolus*)
- [TA-FA-057] and bar-tailed godwit (*Limosa lapponica*) [TA-FA-307]. Identify and develop low impact public access facilities on adjoining department-managed land that aid in the conservation of migratory shorebird habitat.
- Manage public access at sites with populations of white-bellied frog (*Anstisia alba*) within the Forest Grove, Location 83, Witchcliffe, and Leeuwin-Naturaliste National Park, where recreational pressures are directly (trampling, causing sediment erosion) or indirectly (increased fire risk) impacting *Anstisia* habitat. Install new and maintain existing access infrastructure and repair breaches, promptly conducting compliance investigations as needed [TA-FA-005].

*Land acquisition and transfer actions

- Investigate opportunities to change the tenure of Crown land and potentially acquire other lots within the Vasse Wonnerup wetlands that contain habitat required by migratory shorebirds, including *Calidris canatus* [TA-FA-304], curlew sandpiper (*Calidris ferruginea*) [TA-FA-305], great knot (*Calidris tenuirostris*) [TA-FA-303], lesser sand plover (*Charadrius mongolus*) [TA-FA-056], bar-tailed godwit (*Limosa lapponica*) [TA-FA-302] and far eastern curlew (*Numenius madagascariensis*) [TA-FA-301] for inclusion into the conservation estate.

FLORA

- Close unauthorised mountain bike trails in the Whicher National Park that are impacting on the two populations (SWR1184 and SWR1382) of *Andersonia longifolia* [TA-FL-482].
- Manage access and close unauthorised motorbike tracks within 1km of population 1 of *Banksia mimica* in Whicher National Park to reduce the risk of introducing Phytophthora dieback [TA-FL-232].
- Install recreational infrastructure to create a physical barrier to prevent Cape to Cape Track users impacting sensitive granite habitat of *Boronia* sp. Leeuwin (J. Scott 235) at Moses Rock population SWR226 [TA-FL-492].

- Manage access to protect plants of population 10 of *Caladenia harringtoniae* adjacent to the walk trail [TA-FL-192].
- Close access tracks and install physical barriers to limit access and minimise impacts to *Caladenia leucochila* (populations 3, 4, 6, 9, 10 and 11) [TA-FL-502].
- Install recreational infrastructure to create a physical barrier to prevent Cape to Cape Track users impacting sensitive granite habitat for *Caladenia nivalis* (population 1) [TA-FL-507].
- Manage access to prevent damage to all populations of *Calothamnus graniticus* subsp. *graniticus*, including installing recreational infrastructure to create a physical barrier in Leeuwin-Naturaliste National Park (population 1) and Big Rock reserve (population SWR1653) accompanied by signage, and liaison with the LGA to close illegal trails in Meelup Regional Park (populations 2, 3, 4 and 5) [TA-FL-517].
- Manage access to prevent four-wheel drive damage to populations 3, 7, 12 and 13 of *Daviesia elongata* in the Argyle Forest Block and Treeton Forest Block [TA-FL-527].
- Manage access to prevent four-wheel drive damage at all populations of *Gastrolobium modestum* [TA-FL-532].
- Seek to protect at least 70 per cent of *Grevillea prominens* population 1 post tower infrastructure works [TA-FL-542].
- Protect population 4 of *Kennedia lateritia* in the Leeuwin-Naturaliste National Park from visitor impacts through signage and handrail installation. Enhance post-fire recovery through rabbit control and weed control for annual weeds and typha [TA-FL-544].
- Implement measures to protect plants from firebreak upgrade works and four-wheel drive damage where required to prevent plant loss at all populations (except SWR2164) of *Orianthera wendyae* [TA-FL-552].
- Manage access to *Platytheca anasima* populations 1, 3, 4 and 5 located in the Argyle Forest Block from unauthorised firewood cutting [TA-FL-556].
- Restrict access into the *Platytheca* sp. Sabina population (SWR1277) in the Whicher National Park from unauthorised mountain bike trails [TA-FL-557].
- Limit disturbance to *Schoenus benthamii* population SWR1429 from vehicles by implementing various measures including road closures [TA-FL-258].
- Manage access to improve protection for *Stylium accuminatum* subsp. *accuminatum* plants occurring close to walk tracks and roads (populations SWR1160, SWR1161, SWR1219, SWR1575 and SWR1985) [TA-FL-558].
- Prevent vehicle impacts to *Stylium hygrophilum* population SWR1185 by implementing various measures including road closures [TA-FL-559].
- Repair the firebreak track drainage issue to prevent erosion and subsequent new track creation around wash-outs to improve protection of population SWR2162 of *Stylium perplexum* plants close to boundary track [TA-FL-561].
- Restrict access to population 2 of *Synaphea macrophylla* to prevent impact from four-wheel drives [TA-FL-562].

- Restrict access to population 1 of *Synaphea nexosa* [TA-FL-564].
- Restrict four-wheel drive access to prevent plant loss at populations SWR1711 and SWR1712 of *Synaphea polypodioides* [TA-FL-565].
- Restrict access to *Synaphea trinacriformis* populations SWR1296 and SWR2369 to prevent plant loss [TA-FL-567].
- Restrict access to population 1 of *Synaphea* sp. Argyle from unauthorised firewood cutting [TA-FL-566].
- Liaise with the Friends of Manea Park to install and maintain fencing along the walk trail to prevent off-track access to *Thelymitra variegata* plants in population 1 [TA-FL-202].
- Manage unauthorised motorbike access and impacts to population 9 of *Verticordia densiflora* var. *pendunculata* [TA-FL-569].
- Formalise walking trails and implement appropriate access management through the installation of recreational infrastructure to reduce the impact of trampling on population 1 of *Wurmbea calcicola* [TA-FL-573].
- Manage motorbike, mountain bike, four-wheel drive and walker access into Korijekup Conservation Park and adjoining reserve 22770 to minimise impacts on population 1 and 2 of *Caladenia uliginosa* subsp *patulens* [TA-FL-512] and population SWR1190 of *Stylium korejikup* [TA-FL-560].

*Land acquisition and transfer actions

- Investigate the potential acquisition of the vegetated portions of Crown reserve 47025, Lot 51, 66, 67 to create an A class nature reserve to ensure the long-term protection of population 13 of *Caladenia dorrienii*. Once acquired, install roadside fencing and gate access tracks to protect from unauthorised firewood collection access [TA-FL-373a].
- At population 2 of *Caladenia lodgeana*, investigate opportunities to include UCL at the Flat Rocks area into the conservation estate [TA-FL-506].
- Investigate the potential acquisition of the vegetation remnant containing the Ruabon population SWR1818 of *Calochilus* sp. Boyup Brook and fence the reserve to prevent grazing impacts from kangaroos [TA-FL-600].
- Investigate the potential acquisition of approximately 60 hectares of the vegetation remnant containing population 4B of *Calytrix retrorsifolia* and install fencing to reduce grazing pressure from kangaroos [TA-FL-520].
- Investigate the potential acquisition of the vegetation remnant containing population 5 of *Lambertia orbifolia* subsp. Scott River Plains and secure boundaries through the installation of a kangaroo-proof fence to reduce the impacts of grazing [TA-FL-549].
- Investigate the potential acquisition of the vegetation remnant containing population 8 of *Melaleuca pritzelii* and fence to exclude grazing by kangaroos and to ensure the population does not senesce through lack of recruitment [TA-FL-587].

ECOLOGICAL COMMUNITIES

- Implement access management measures for all Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain occurrences in the Tuart Forest National Park and State forest areas, to reduce the damage caused by unauthorised off-road vehicles, horses and rubbish dumping [TA-EC-024].
- Rationalise and rehabilitate as necessary motorbike and mountain bike trails that traverse through the following, with an emphasis on valley floor and orange sand types:
 - Central Whicher Scarp Jarrah woodland TEC (Whicher Scarp C1) occurrences WICHER01, KEMP01, TREE03, SABI10, GOUL01, SMITH03, ACTN02, TREE02 and TB02 [TA-EC-032]
 - Whicher Scarp Jarrah woodland of deep coloured sands (Whicher Scarp C2) TEC occurrences ACTON01, HAPP01_tree, AB03, AB02, HVB04, HVB03, AB04, AB01a, HVB02, GIBSON02, AR05, AR07, AR06, AR04, AR03, AR02, AR01, DAVE01, HVN01, BOYA01, BP02, AB01b and WONN01 [TA-EC-035]
 - Central Whicher Scarp Mountain Marri woodland (Whicher Scarp A1) TEC occurrences SABI07, SABI12, ACTN01 and HAPP03 [TA-EC-028]
 - Sabina River Jarrah and Marri woodland (Whicher Scarp F1) TEC occurrence SABI03 [TA-EC-078].

*Land acquisition and transfer actions

- Investigate the potential acquisition of occurrences RB4 and RB6 of the *Reedia spathacea* - *Empodisma gracillimum* - *Sporadanthus rivularis* dominated floodplains and paluslopes of the Blackwood Plateau and liaise with the surrounding property owners regarding the implementation of conservation appropriate prescribed burns [TA-EC-052].
- Investigate the potential conservation vesting of locations in the Scott Plain (Scott Dune) management unit supporting significant conservation values. Contribute to the environmental impact assessment (EIA) process to ensure significant conservation values are considered in any development proposals [LA-043].
- Investigate the potential acquisition of approximately 60 hectares of occurrence NEG01 of Shrublands on southern Swan Coastal Plain ironstones (Busselton area) (SCP 10b) ecological community and implement kangaroo control. Rehabilitate the occurrence including managing firebreaks, implementing weed control and direct seeding [TA-EC-055b].
- Protect all occurrences of Subtropical and temperate coastal saltmarsh ecological community adjoining the Vasse Wonnerup Ramsar wetland (occurrences VasseWonNm, VasseNm, VasseS02, SaltmarshSW9, SaltmarshSW10, SaltmarshSW11 and SaltmarshSW12) by investigating potential acquisition of lands including operationally viable buffer widths between the TEC and agricultural land uses, and removal of cattle grazing and associated soil damage. Contribute to EIA and land use planning (LUP) processes to ensure protection measures are considered in development proposals, including offsets [TA-EC-010].

LANDSCAPES

- Undertake revegetation of valleys on department-managed land within the Darling Scarp and Plateau management unit to increase tree cover and reduce the impact of rising salinity. Encourage landcare groups to promote the revegetation of valleys on adjoining private land. Through the EIA process, seek to buffer vulnerable areas from vegetation clearing proposals. Undertake monitoring and surveys of habitat at risk of salinity impacts [LA-014].
- Install recreational infrastructure to create physical barriers at high visitation sites to prevent degradation and loss to conservation values and close unsanctioned tracks as required to protect values in the Leeuwin Block (Naturaliste Ridge) [LA-030] and Leeuwin Block (Margaret River Plateau) [LA-019] management units. Educate users and implement compliance and enforcement as required.
- For reserves of the Scott Plain (Scott Dune) management unit, install new and maintain existing access management infrastructure to ensure it remains effective. Liaise with other agencies and stakeholders (for example LGAs, Main Roads, landowners) to encourage significant conservation values to be considered where disturbance works are proposed on other tenures adjoining or near department-managed reserves to maintain their resilience [LA-046].
- For reserves of the Swan Coastal Plain (Bassendean) management unit, install new and maintain existing access management infrastructure to ensure it remains effective. Liaise with other agencies where works on other tenures adjacent to the reserves may be required to achieve effective access control. Educate users and undertake compliance and enforcement, track closures, site remediation and rehabilitation as required [LA-047]. Indicative sites are:
 - Capel Nature Reserve
 - Guthrie State Forest Block
 - Kemerton Industrial Buffer
 - Loughton Park part of Kalgulup Regional Park
 - Lyons State Forest Block
 - Manea Park part of Kalgulup Regional Park
 - Riverdale Road Nature Reserve complex.
- For reserves in the Swan Coastal Plain (Foothill) [LA-058], Swan Coastal Plain (Spearwood) [LA-070] and Woolbelt [LA-091] management units, install new and maintain existing access management infrastructure to ensure it remains effective. Liaise with other agencies where works on other tenures adjacent to the reserves may be required to achieve effective access control. Educate users and undertake compliance and enforcement, track closures, site remediation and rehabilitation as required.
- Continue managing access and prevent new unauthorised trail construction (for example motorbike, mountain bike, horse) in the relevant reserves in the Swan Coastal Plain (Yoongarillup [LA-081] Quindalup [LA-067]) management units. Educate users and undertake compliance and enforcement.
- For reserves within the Whicher Scarp management unit, define the boundary between the Whicher Scarp and Darling Scarp and Plateau and minimise any conservation

impacts resulting from firewood collection as applicable [LA-083]. Indicative reserves and forest blocks are:

- forest blocks containing the Harris River headwaters
- forest blocks containing Whicher Scarp vegetation communities.
- Establish and maintain an ongoing baseline monitoring program for species composition and abundance and quantify threatening processes and their extent to track landscape ecosystem health and condition for the Leeuwin Block (Margaret River Plateau [LA-125] and Naturaliste Ridge [LA-117]), Swan Coastal Plain (Bassendean [LA-099], Foothills [LA-108], Pinjarra [LA-106], Quindalup [LA-100], Vasse [LA-102] and Yoongarillup [LA-110]) and Whicher Scarp [LA-113] management units. Use results to inform future management actions.

*Land acquisition and transfer actions

- Investigate the potential acquisition of remnant vegetation in the Swan Coastal Plain (Pinjarra) management unit and/or encourage and support conservation fencing, revegetation and other conservation measures on private land surrounding or linking department-managed reserves [LA-062].
- Investigate the potential acquisition of Swan Coastal Plain (Vasse) management unit wetland occurrences and/or buffers. Contribute to EIA and LUP processes to ensure protection measures are considered in development proposals, including offsets [LA-078].

Species and ecological communities



Maintain viable, intact and healthy ecological communities and populations of species, especially those that are threatened, significant or iconic, while allowing the sustainable use of natural resources and facilitating nature-based tourism.

FAUNA

- Implement the regional component of field trials utilising chuditch (*Dasyurus geoffroii*) specific trapping lures to improve trap success [LE-FA-011].
- For western ringtail possum (*Pseudocheirus occidentalis*):
 - continue long-term monitoring programs and use results as a baseline to compare abundance and density trends over time and among sites [LE-FA-016]
 - identify sites and opportunities for long-term monitoring of Whicher escarpment and forest populations in the Blackwood District to determine population persistence and trends [LE-FA-018]
 - determine the northern extent of the forested distribution in the Wellington District and establish long-term monitoring sites to determine population persistence and trends in this part of the species distribution [LE-FA-019].
- Develop guidance for pruning and tree removal not affiliated with land use planning and native vegetation clearing approvals to minimise disturbance to western ringtail possum (*Pseudocheirus occidentalis*) across the South Coast, South West, Swan and Warren

regions. Disseminate to the public, contractors and local government authorities, including procedures for the requirement of *Biodiversity Conservation Act 2016* (BC Act) section 40 authorisation [TA-FA-122].

- For all three species of threatened black cockatoos (*Calyptorhynchus banksii naso*, *Zanda baudinii* and *Zanda latirostris*), maintain best practice triage and rehabilitation processes by ensuring that injured birds are sent to Perth Zoo for clinical assessment and treatment and transferred to agreed and licensed rehabilitation facilities [TA-FA-221, TA-FA-299, TA-FA-300].
- Survey for potential and undocumented Australasian bittern (*Botaurus poiciloptilus*) habitat by expanding the regional monitoring program to include other wetlands on the Swan Coastal and Scott River/Gingilup Swamps area [LE-FA-007].
- Continue to record far eastern curlew (*Numenius madagascariensis*) data in the Vasse-Wonnerup surveys [LE-FA-015].
- Evaluate the need for and implement appropriate techniques to create new breeding sites for fairy tern (*Sternula nereis nereis*) where deemed necessary to maintain viable breeding sites [TA-FA-346].
- Install signage and fencing and consider seasonal beach closures to limit disturbance to fairy tern (*Sternula nereis nereis*) breeding sites [TA-FA-223].
- Respond in a timely manner to reports of hooded plover (*Thinornis cucullatus*) nesting attempts and implement nest protection and site management actions to maximise the chance of breeding success, with an emphasis on high public visitation sites along the Leeuwin-Naturaliste coastline [TA-FA-064].
- Investigate options for overcoming behavioural change barriers exhibited by the public in relation to minimising the impact of dogs on beaches in breeding sites for hooded plover (*Thinornis cucullatus*) [TA-FA-199].
- 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 [LE-FA-021].
- Continue to monitor known Cape Leeuwin freshwater snail (*Austroassiminea lethra*) populations and collect baseline data on soil chemistry and hydrology of occupied sites [LE-FA-002] and survey for new populations [LE-FA-003].
- Continue to monitor, respond to public concerns and undertake responsive translocation at sites where Carter's freshwater mussel (*Westralunio carteri*) are exposed due to low water levels [TA-FA-260].

***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

- Consider new fauna translocation proposals for threatened fauna species including:
 - white-bellied frog (*Anstisia alba*)
 - orange-bellied frog (*Anstisia vitellina*)
 - woylie (*Bettongia penicillata ogilbyi*)
 - hairy marron (*Cherax tenuimanus*)
 - chuditch (*Dasyurus geoffroii*)
 - Margaret River burrowing crayfish (*Engaewa pseudoreducta*)
 - Dunsborough burrowing crayfish (*Engaewa reducta*)
 - western ringtail possum (*Pseudocheirus occidentalis*)
 - western swamp tortoise (*Pseudemydura umbrina*)
 - quokka (*Setonix brachyurus*).
- Identify additional potential release sites east of Scott River National Park for western swamp tortoise (*Pseudemydura umbrina*) and undertake site evaluation processes in preparation for translocations over the following decade.
- Identify, test and undertake augmentation, translocations and conservation introductions of white-bellied frog (*Anstisia alba*) at suitable translocation sites using the best available hydrological information and techniques to identify creek systems that have the greatest long-term persistence potential in a changing climate.
- Regularly liaise with Perth Zoo regarding their involvement in the “head starting” and captive breeding program for white-bellied frog (*Anstisia alba*) and orange-bellied frog (*Anstisia vitellina*).
- Undertake a captive breeding trial for white-bellied frog (*Anstisia alba*) in the Margaret River area if Perth Zoo is unsuccessful in developing reliable techniques under Perth weather conditions.
- Establish at least two viable populations of orange-bellied frog (*Anstisia vitellina*) south of the Blackwood River to mitigate the implications of fire to the naturally occurring populations north of the Blackwood River.
- Identify potential release sites for hairy marron (*Cherax tenuimanus*) on department-managed land such as State forest 12 (through liaison with current lease holders) and undertake a trial controlled release to determine the likelihood of future release success.
- Identify potential release sites, quantify habitat parameters and refine capture and translocation techniques for:
 - Margaret River burrowing crayfish (*Engaewa pseudoreducta*), to establish a minimum of two additional populations
 - Dunsborough burrowing crayfish (*Engaewa reducta*), to establish a minimum of one additional population.

FLORA

- Liaise with industry to re-survey for *Adenantheros cygnorum* subsp. *chamaephyton* populations and to ensure plant protection [LE-FL-008].

- Undertake a prescribed burning trial to senescent populations of *Banksia nivea* subsp. *uliginosa* identified through risk assessment of all populations to promote recruitment. Apply post-fire weed control targeting annual weeds using a broad-spectrum herbicide [TA-FL-484].
- Monitor *Banksia* sp. Boyup Brook populations recently excluded from prescribed burns to assess condition and current conservation status. Utilise findings to inform fire management for species [LE-FL-018].
- Monitor all known *Caladenia excelsa* populations to determine the extent of current threatening processes. Apply findings to inform a weed management program and other management requirements [LE-FL-032].
- Install surveillance cameras and undertake compliance and enforcement activities during the flowering period to prevent illegal taking of *Caladenia excelsa* at population 2 [TA-FL-501].
- Complete fire response monitoring for *Caladenia leucochila* populations including where bushfires have occurred outside of the geophyte period to evaluate persistence and survival of the species [LE-FL-034].
- Install surveillance cameras and undertake compliance and enforcement activities during the flowering period to prevent illegal taking of *Caladenia viridescens* at populations 1, 2, 3, 7, 8, SWR393, SWR1347, SWR2241 and SWR2285 [TA-FL-515].
- Investigate the impact of any off-target grass selective herbicides on *Carex tereticaulis* [LE-FL-039].
- Protect the Yoongarillup plants (population 4) of *Chamelaucium erythrochlorum* through the installation of approximately 200m of fencing to prevent access and impact to plants from utility works [TA-FL-522].
- Monitor old *Chamelaucium erythrochlorum* records to determine status [LE-FL-040].
- Undertake fire response monitoring of *Daviesia elongata* to determine why numbers of mature plants have been declining and whether it is possible to replenish numbers through seed germination. Utilise findings to inform fire management for species [LE-FL-045].
- Monitor *Gastrolobium formosum* populations to determine juvenile period and to inform fire management requirements [LE-FL-054].
- Monitor *Gastrolobium modestum* population 3 post-burn to confirm species recovery [LE-FL-055].
- Investigate causes of decline in *Lambertia orbifolia* subsp. Collie. Consider tagging all plants to allow for long-term monitoring of individuals [LE-FL-071].
- Resurvey old *Lasiopteratum membranaceum* populations to determine status, threats and plant numbers [LE-FL-074].
- Monitor *Leptinella drummondii* populations in Blackwood River National Park ensuring that surveys are conducted at the appropriate time to increase chance of sighting [LE-FL-075].

- Monitor *Leucopogon extremus* populations after bushfires and prescribed burns to determine whether the species is a slow responder or is lost through fire. Investigate further why populations are currently not responding [LE-FL-077].
- Survey locations of the original herbarium collections of *Leucopogon* sp. Busselton to identify any extant populations [LE-FL-080].
- Monitor known populations of *Pimelea ciliata* subsp. *longituba*. Investigate the species taxonomy to ensure survey accuracy [LE-FL-095].
- Investigate the response of *Senecio leucoglossus* to disturbance and apply findings to management strategies [LE-FL-108].
- Re-establish environmentally sensitive area markers at populations SWR1584 and SWR1950 of *Verticordia attenuata* to prevent the ongoing loss of plants from vegetation clearing under powerline [TA-FL-568].
- Monitor quadrats of *Verticordia carinata* population 3 following the 2019 bushfire [LE-FL-131].
- Survey for additional populations of:
 - *Actinotus repens* [LE-FL-006]
 - *Amperea micrantha* [LE-FL-010]
 - *Caladenia ambusta* [LE-FL-028]
 - *Caladenia dorrienii* in the coal basin landform [LE-FL-030]
 - *Caladenia harringtoniae* [LE-FL-033]
 - *Diuris drummondii* [LE-FL-046]
 - *Hemigenia* sp. Nillup and utilise findings to clarify whether the species warrants a higher conservation status [LE-FL-064]
 - *Juncus meianthus* [LE-FL-070]
 - *Leucopogon* sp. Gingilup and gather information required to clarify if it warrants a higher conservation status [LE-FL-081]
 - *Schizaea rupestris* in a variety of suitable habitats [LE-FL-103]
 - *Netrostylis* sp. Nannup [LE-FL-089]
 - *Pimelea ciliata* subsp. *longituba* [LE-FL-096]
 - *Platychorda rivalis* [LE-FL-098]
 - *Rumex drummondii* near population 2 [LE-FL-102]
 - *Schoenus indutus* [LE-FL-106]
 - *Stachystemon exilis* in suitable habitat at the appropriate time [LE-FL-110]
 - *Stylidium lowrieorum* to better understand habitat requirements and extent of the species [LE-FL-114]
 - *Stylidium nitidum* to better understand habitat requirements and extent of the species [LE-FL-115]
 - *Synaphea* sp. Redgate Road [LE-FL-126]
 - *Synaphea trinacriformis* in the Bowelling area to define species extent and conservation status [LE-FL-128]
 - *Xyris maxima* [LE-FL-136].

- Survey for:
 - new populations of *Andersonia ferricola* to better understand habitat requirements and extent. Update corporate datasets and review conservation status to enable better decision making in regard to environmental impact assessments [LE-FL-013]
 - populations of *Schoenus loliaceus* which has not been seen since original herbarium collections [LE-FL-107].
- Monitor all known populations of the following species to determine/clarify/inform current conservation status, species distribution and management requirements:
 - *Acacia inops* [LE-FL-002]
 - *Acacia lateriticola* var. Glabrous variant [LE-FL-003]
 - *Caladenia ambusta* [LE-FL-029]
 - *Caladenia leucochila* [LE-FL-035]
 - *Grevillea elongata* [LE-FL-059]
 - *Grevillea manglesioides* subsp. *ferricola* [LE-FL-060]
 - *Grevillea ripicola* [LE-FL-063]
 - *Juncus meianthus* [LE-FL-069]
 - *Leptomeria furtiva* [LE-FL-076]
 - *Leucopogon incisus* [LE-FL-078] (currently described as not known outside of herbarium collections)
 - *Leucopogon subsejunctus* [LE-FL-083]
 - *Olearia strigose* [LE-FL-090]
 - *Pericalymma megaphyllum* [LE-FL-093]
 - *Philydrella pygmaea* subsp. *Minima* [LE-FL-094]
 - *Sphaerolobium benetectum* [LE-FL-109]
 - *Stylium korijkup* [LE-FL-113]
 - *Synaphea macrophylla* (population 2) [LE-FL-118]
 - *Xyris maxima* [LE-FL-135].
- Monitor populations of the following species to determine current threatening processes:
 - *Actinotus whicheranus* [LE-FL-007]
 - *Boronia capitata* subsp. *gracilis* [LE-FL-021]
 - *Boronia juncea* subsp. *juncea* [LE-FL-024].
- Monitor known populations of:
 - *Platychorda rivalis* [LE-FL-097]
 - *Schoenus indutus* [LE-FL-105]
 - *Synaphea* sp. Redgate Road [LE-FL-125].
- Ensure a subset of occurrences of the following species are inspected to inform and guide management requirements:
 - *Acacia semitrullata* [LE-FL-004]
 - *Acacia tayloriana* [LE-FL-005]
 - *Andersonia barbata* [LE-FL-011]
 - *Boronia humifusa* [LE-FL-023]
 - *Boronia* sp. Leeuwin (J. Scott 235) [LE-FL-025]
 - *Boronia tetragona* [LE-FL-026]
 - *Calothamnus graniticus* subsp. *graniticus* [LE-FL-037]

- *Calothamnus lateralis* var. *crassus* [LE-FL-038]
- *Dampiera heteroptera* [LE-FL-043]
- *Darwinia terricola* [LE-FL-044]
- *Eucalyptus calcicola* subsp. *calcicole* [LE-FL-048]
- *Eucalyptus marginata* x *megacarpa* [LE-FL-049]
- *Franklandia triaristata* [LE-FL-051]
- *Grevillea bronwenae* [LE-FL-058]
- *Grevillea rara* [LE-FL-062]
- *Isopogon formosus* subsp. *dasylepis* [LE-FL-066]
- *Lambertia rariflora* subsp. *rariflora* [LE-FL-072]
- *Lasiopetalum laxiflorum* [LE-FL-073]
- *Leucopogon wheelerae* [LE-FL-084]
- *Lomandra whicherensis* [LE-FL-085]
- *Loxocarya magna* [LE-FL-086]
- population 1 of *Melaleuca incana* subsp. *Gingilup* [LE-FL-087]
- *Platytheca anasima* [LE-FL-099]
- *Platytheca* sp. *Sabina* [LE-FL-100]
- *Puccinellia vassica* [LE-FL-101]
- *Synaphea otiostigma* [LE-FL-120]
- *Synaphea petiolaris* subsp. *simplex* occurrences [LE-FL-122]
- *Synaphea polypodioides* [LE-FL-123]
- *Synaphea* sp. *Argyle* [LE-FL-124]
- *Tetrapetala parvifolia* [LE-FL-129].

- Undertake fire response monitoring to better inform species management for:
 - *Andersonia ferricola* [LE-FL-012]
 - *Austrostipa jacobsiana* [LE-FL-017]
 - *Eryngium* sp. *Ferox* (G.J. Keighery 16034) [LE-FL-047]
 - *Gastrolobium whicherense* [LE-FL-057]
 - *Grevillea prominens* [LE-FL-061]
 - *Grevillea rara* [LE-FL-062]
 - *Hybanthus volubilis* [LE-FL-065]
 - *Leucopogon kirupensis* at population 1 [LE-FL-079]
 - *Leucopogon subsejunctus* [LE-FL-082]
 - *Schoenus benthamii* [LE-FL-104]
 - *Stylium accuminatum* subsp. *accuminatum* populations SWR1161 and 1219 [LE-FL-111]
 - *Synaphea nexosa* [LE-FL-119].

*Proposed/new translocations

- Prepare and implement a translocation proposal for *Banksia nivea* subsp. *uliginosa* that incorporates the full range of genetic material from the Busselton form in the reserve previously known as Lot 2.
- Prepare and implement a translocation proposal for *Banksia squarrosa* subsp. *argillacea* that incorporates the full range of genetic material in the reserve previously known as Lot 2.

- Investigate potential translocation sites and commence habitat suitability monitoring and site preparation processes for *Caladenia bryceana* subsp. *bryceana*.
- Establish additional translocated populations of *Caladenia busselliana* in secluded and secure conservation reserves.
- Investigate options available for translocation and implement a long-term augmentation of the existing population of *Caladenia viridescens* at Crown Reserve 36717 and Crown Reserve 21629. Undertake propagule collection.
- Establish a translocated population of *Commersonia erythrogyna* in an alternative *ex situ* site (gravel pit in higher rainfall zone).
- Evaluate the requirement for a translocation and if required commence the site selection, habitat suitability monitoring and site preparation processes for *Conospermum quadripetalum*.
- Establish additional translocated populations of *Darwinia whicherensis*.
- Establish additional translocated populations of *Gastrolobium papilio* to achieve a minimum of five sustainable populations each with a minimum of 50 mature plants.
- Evaluate the requirement for a translocation of *Grevillea acropogon* and if required commence the site selection, habitat suitability monitoring and site preparation processes.
- Establish additional populations of *Grevillea maccutcheonii* within the fenced portions of the nature reserve R46070.
- Establish a minimum of three new translocation sites for *Lambertia echinata* subsp. *occidentalis*, ideally not on ironstone geology.
- Investigate supplementation planting of *Petrophile latericola* in natural populations to maintain viable populations of the species. Augment plant numbers in existing translocated populations, ideally outside of ironstone geology.

ECOLOGICAL COMMUNITIES

- At the AMBR01 occurrence of *Corymbia calophylla* woodlands on heavy soils of the southern Swan Coastal Plain SCP1b, map the extent to define the relative contribution of this occurrence to the overall community [LE-EC-003].
- At occurrence WATER06_Webb of *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands SCP 03c, rescore quadrats to inform a re-assessment of the conservation status [LE-EC-001].
- At occurrence YARL03 of *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands SCP 03c, implement quadrat monitoring to inform current conservation status and to identify areas where management intervention is a priority [LE-EC-002].
- At the YARL09 occurrence of Dense shrublands on clay flats SCP 09 ecological community, monitor soil moisture to determine the rate of drying and recovery after rainfall events. Utilise findings to inform future management requirements [LE-EC-006].

- At Herb rich saline shrublands in clay pans (SCP 07) ecological community occurrence RUAB04, implement kangaroo and rabbit control, appropriate prescribed fire management and subsequent weed control targeting bulbous and annual species. Undertake regular checks of the fenced areas to identify areas where fence vandalism occurs and maintenance is required, and promptly report to the LGA to facilitate timely repairs [TA-EC-049].
- At all occurrences of *Reedia spathacea* - *Empodium gracillimum* - *Sporadanthus rivularis* dominated floodplains and paluslopes of the Blackwood Plateau within the South West Region, monitor and map habitat characteristics such as soil moisture and utilise findings to identify areas requiring priority intervention [LE-EC-010].
- Across the Scott River ironstone ecological community, map community occurrence boundaries and establish new monitoring quadrats to improve the definition of what constitutes the TEC [LE-EC-011].
- Undertake a floristic and substrate assessment of the Scott River ironstone association ecological community to assess its current conservation status and diversity [LE-EC-016].
- Undertake prescribed burning to stimulate recruitment supported by post-burn weed control, and assess results for occurrences IRON01, JACKA01, NEG01, PAYNE02, SMITH01, SMITH04, WIL01, WIL03, WONN05, WONN06, WONNEW1, YIRON01, YIRON02 and ABBA01 of the Shrublands on southern Swan Coastal Plain ironstones (Busselton area) (SCP10b) ecological community [TA-EC-159].
- Investigate the condition status of occurrence JP03 of the Southern wet shrublands of the Swan Coastal Plain SCP02 ecological community and assess its rate of decline [LE-EC-013].
- Ensure relevant restoration, revegetation and regeneration actions endorsed by the department consider how they will contribute to the persistence and ecological function of the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain PEC occurrences in the Tuart Forest National Park and in State forest areas [TA-EC-022].

LANDSCAPES

- At all populations of the critically endangered and endangered species and ecological communities endemic to the South West Region, seek to implement threat mitigation, habitat management and habitat restoration actions where required to maintain their persistence and improve their resilience within the Leeuwin Block (Naturaliste Ridge [LA-122] and Margaret River Plateau [LA-124]), Scott Plain (Scott Alluvial) [LA-119] and Swan Coastal Plain (Bassendean [LA-098], Pinjarra [LA-107], Quindalup [LA-118], Spearwood [LA-105] and Yoongarillup [LA-111]) management units. Monitor outcomes within an adaptive management framework and adjust implementation as required.

Threatening processes



Reduce the impacts of key threatening processes, including altered hydrology, climate change and priority pest animals, weeds and diseases, on biodiversity, ecological processes and sustainable land uses.

ALTERED HYDROLOGY

- Undertake hydrological studies to determine the ecological water requirements of conservation values in the Leeuwin Block (Margaret River Plateau) [LA-024], Scott Plain (Scott Dune [LA-045] and Scott Alluvial [LA-036]) and Swan Coastal Plain (Bassendean) [LA-052] management units.
- Investigate the re-direction of surface drains to increase hydrological input into reserves for Leeuwin Block (Naturaliste Ridge) [LA-029] and Swan Coastal Plain (Pinjarra) [LA-063] management units. Investigate the option of targeted prescribed burns to increase seepage flow. Monitor conservation values and condition in regard to the water regimes implemented. Contribute to EIA processes to ensure a sustainable level of groundwater abstraction and maintenance of ecological water flows is considered in development proposals within these management units.
- During operational use of fire water points and when expanding or maintaining water points, reduce the amount of water extracted and/or remove black-stripe minnow (*Galaxiella nigrostriata*) [TA-FA-093] and salamanderfish (*Lepidogalaxias salamandroides*) [TA-FA-098] and return after disruption, where possible.
- Install signage at fire water points and ephemeral pools containing western mud minnow (*Galaxiella munda*) [TA-FA-110], black-stripe minnow (*Galaxiella nigrostriata*) [TA-FA-154], salamanderfish (*Lepidogalaxias salamandroides*) [TA-FA-170] and Balston's pygmy perch (*Nannatherina balstoni*) [TA-FA-187] to provide guidance to users on how to minimise impacts on these species.
- Maintain stream connectivity by maintaining functioning culverts that cross tributaries and creek systems within Balston's pygmy perch (*Nannatherina balstoni*) distribution [TA-FA-242].
- Evaluate the feasibility and where appropriate implement artificial supplementation of the Leeuwin Swamp water supply to maintain suitable habitat to maintain a viable Cape Leeuwin freshwater snail (*Austroassiminea lethra*) population [TA-FA-107].

***Liaison actions**

- Minimise increased sediment input into catchments that control western mud minnow (*Galaxiella munda*) spawning habitat between August and September through liaison with key stakeholders undertaking disturbance activities (South West and Warren regions) [TA-FA-094].

DISEASE

- Map the extent of Phytophthora dieback in departmental-managed lands in the Swan Coastal Plain (Bassendean [LA-049] and Spearwood [LA-071]) management units,

identify areas in need of protection, rationalise access tracks, and implement and enforce hygiene measures to protect the values. Contribute to EIA processes to ensure Phytophthora dieback is considered in development proposals within these management units. Monitor for new plant pathogen outbreaks and implement management measures as required.

- Implement aerial phosphite spraying targeting ironstone community populations of:
 - *Banksia nivea* subsp. *uliginosa* (populations 3A, 3B, 4A, 4B, 4C, 5, 6A, 6B, 7B, 8A, 8B, 8C, 9A, 9B, 9C, 9D, 11, 12, 20, 21 and 22) [TA-FL-483]
 - *Petrophile latericola* (populations 1A, 1B, 2A, 2B, 2C, 3, 4B and 4C) [TA-FL-553].
- Increase the coverage of the Shrublands on southern Swan Coastal Plain ironstones (Busselton area) (SCP 10b) ecological community aerial spray phosphite program in the Treeton Forest Block, and create a treatment buffer around occurrences WIL01, NEG01, IRON01, JACKA01, SMITH01, SMITH04, ABBA01, YIRON01, YIRON02 and Tutunup Road [TA-EC-061a].

ENVIRONMENTAL IMPACT ASSESSMENT AND ADVICE

- Survey and document the diversity and distribution of conservation values within the Blackwood Plateau management unit to improve baseline knowledge for input to EIA processes [LA-006].
- Undertake mapping to accurately document the extent and distribution of Whicher Scarp management unit conservation values. Contribute to EIA processes to ensure these values and potential impacts to department-managed land are considered in development proposals [LA-087].
- Mark and protect known numbat (*Myrmecobius fasciatus*) logs and burrows from disturbance during operations where this isn't currently a standard condition in the South West and Swan regions [TA-FA-140].
- Contribute to EIA processes associated with development applications proposing water impoundments (dams) and water extraction to ensure consideration of the potential to negatively impact white-bellied frog (*Anstisia alba*) populations in the Forest Grove, Location 83, Witchcliffe and Leeuwin-Naturaliste National Park [TA-FA-003].

****Liaison actions***

- Contribute to EIA processes to ensure that resource exploration and/or extraction activities proposed within department-managed land in the Blackwood Plateau [LA-126] and Darling Scarp and Plateau [LA-013] management units are in areas that seek to avoid and minimise adverse impacts to conservation values. Indicative areas include:
 - Blackwood River National Park
 - Driver, Hoffman, Clarke and Waterous State forest blocks
 - Falls Brook Nature Reserve
 - Margaret River headwaters McGregor, Punch, Molloy and Rapids State forest blocks
 - Milyeannup National Park
 - Quilergup State Forest Block.

- Contribute to EIA and LUP processes to seek for proposed service corridor clearings on department-managed land that avoid and/or minimise impact on high conservation value areas of the Darling Scarp and Plateau [LA-015] and Woolbelt [LA-092] management units.
- Contribute to EIA and LUP processes to reduce the impact of vegetation clearing on the conservation values of the Darling Scarp and Plateau [LA-017], Scott Plain (Scott Alluvial) [LA-040] and Woolbelt [LA-094] management units. Monitor and report unauthorised clearing incidents to regulatory authorities. Encourage landcare groups to promote fencing of remnant fencing and vegetation protection measures. Investigate the potential acquisition of high conservation value remnants for conservation vesting.
- Encourage landcare groups and dairy property owners to implement nutrient management programs within the Scott Plain (Scott Alluvial) management unit. Contribute to EIA processes to ensure consideration of nutrient loads and drainage proposals to not negatively impact department-managed reserves and conservation values within this management unit [LA-041].
- Contribute to EIA and LUP processes to seek appropriate buffers from urban and industrial developments that will ensure values of the Swan Coastal Plain (Foothill) management unit on department-managed land are protected. Investigate opportunities to change the vesting of bushland remnants zoned as townsite and potential acquisition of private bushland remnants of good or better condition for inclusion into the conservation estate [LA-054].
- Contribute to EIA and LUP processes to ensure that potential impacts to conservation values and reserves in the Swan Coastal Plain (Spearwood [LA-073] and Yoongarillup [LA-079]) management units are considered in development proposals, including adequate buffers.
- Through departmental representation on interagency management and advisory committees, maintain liaison with drainage management agencies to ensure that conservation values in the Swan Coastal Plain (Vasse) management unit are considered in decision making relating to coastal wetland water levels. Undertake monitoring of wetland conservation values in response to water management regimes [LA-076].
- Contribute to EIA and LUP processes to seek to have urban/semi-rural developments appropriately set back from department-managed reserves in the Leeuwin Block (Margaret River Plateau [LA-021] and Naturaliste Ridge [LA-026]) management units to remove and reduce edge effects and potential fire risks. Investigate the potential acquisition of private bushland remnants where strategically located for protection of the conservation values within the management unit.
- Contribute to LUP processes to ensure consideration of semi-rural developments being appropriately set back from department reserves in the Whicher Scarp management unit to reduce edge effects and potential fire risks [LA-088].

FIRE REGIMES

- Undertake targeted and ongoing liaison and input into the Burn Options Program and prescribed fire planning processes, recommending prescribed fire in Leeuwin Block (Naturaliste Ridge [LA-028] and Margaret River Plateau [LA-018]) and Nannup Karri [LA-032] management units is on a rotation suitable for sustaining the high value biodiversity values. Develop and implement strategies that seek to minimise impacts from fire on relictual and endemic habitats and promote the strategic use of micro scale prescribed burns to prevent bushfire runs entering high value conservation habitats.
- Ensure strategic application of firebreak clearing and implement strategic small scale prescribed fire to minimise bushfire impacts within the Scott Plain (Scott Alluvial) management unit [LA-039].
- Undertake targeted and ongoing liaison and input into the Burn Options Program and prescribed fire planning processes, recommending longer fire rotations in the Swan Coastal Plain (Bassendean) management unit. Contribute to EIA and LUP processes to inform appropriate development setbacks from Swan Coastal Plain (Bassendean) remnant vegetation in development sites to provide fire protection. Consider alternative options to tracking around bushfires where operationally feasible and safe to do so [LA-050].
- Undertake monitoring and research to inform appropriate fire regimes for conservation values on department-managed reserves in the Swan Coastal Plain (Pinjarra) management unit. Include consideration of small scale regeneration prescribed burns detailing measures to reduce post-fire grazing and weed impacts [LA-060].
- Ensure pre- and post-fire weed control and kangaroo management in the Swan Coastal Plain (Pinjarra) [LA-059] and Woolbelt [LA-093] management units. Liaise with local Bush Fire Brigades to encourage appropriate fire mitigation strategies that avoid applying frequent fire in the same vegetation remnants. Establish monitoring to determine effectiveness of control programs on weed extent, density and species composition and the persistence and condition of native flora in these management units to inform the development of an appropriate fire regime.
- Undertake targeted and ongoing liaison and input into the Burn Options Program and prescribed fire planning processes, recommending consideration of conditional burn areas where appropriate following identification and mapping of high value areas within the Swan Coastal Plain (Spearwood) management unit, and seek to minimise impacts from fire in the tuart woodland ecosystem. Ensure pre- and post-fire weed control is undertaken [LA-069].
- Undertake targeted and ongoing liaison and input into the Burn Options Program and prescribed fire planning processes, recommending implementation of monitoring to determine fire and biodiversity requirements across the Whicher Scarp management unit. Undertake surveillance, compliance and enforcement activities in arson hotspots, and implement strategic track closures as required [LA-086].
- Undertake pre- and post-prescribed burn and post-bushfire monitoring of western ringtail possum (*Pseudocheirus occidentalis*) to inform fire management strategies [LE-FA-017].

- Establish monitoring programs to determine the persistence of potential and occupied forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) [LE-FA-008], Baudin's black cockatoo (*Zanda baudinii*) [LE-FA-009] and Carnaby's black cockatoo (*Zanda latirostris*) [LE-FA-010] nesting trees under a range of prescribed burning regimes with emphasis on those areas under a 'soft edge mosaic' burning regime in Milyannup and Bednall forest blocks.
- Identify known nesting trees for forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) [TA-FA-208], Baudin's black cockatoo (*Zanda baudinii*) [TA-FA-206] and Carnaby's black cockatoo (*Zanda latirostris*) [TA-FA-207] during prescribed burn planning processes and initiate on-ground protection measures prior to and during the prescribed burn where operationally practical.
- Implement fire management strategies that seek to minimise fire impacts to the peat swamp containing *Cyathochaeta teretifolia* population 26 [TA-FL-253].
- Implement a suitable fire regime for all *Gastrolobium formosum* populations in the South West and Warren regions [TA-FL-223].
- Implement fire management strategies that seek to minimise fire impacts to peat swamps encompassing all *Reedia spathacea* populations on department-managed land including populations in the South West and Warren regions [TA-FL-255].
- At the CALG01 occurrence of the Aquatic root mat communities number 1 of caves of the Leeuwin-Naturaliste Ridge ecological community, implement pre-suppression actions and operational buffers that protect the vegetation above the cave chambers forming the root mat habitat during prescribed burning operations and from other above ground disturbances. Keep informed of and apply the latest techniques to identify the exact source tree(s) of the root mat habitat and monitor their condition [TA-EC-018].
- Implement fence and firebreak maintenance to reduce the likelihood of arson incidents at occurrences ROSE01, ROSE04 and ROSE05 of the *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain (SCP 3c) TEC. Following firebreak works, implement weed control targeting watsonia, love and veld grass and other bulbous and grassy weed species along the boundary [TA-EC-038].

PEST ANIMALS

- Maintain introduced predator control programs in the Swan Coastal Plain (Bassandean) management unit, such as for bitterns at Benger Nature Reserve, and introduce or trial new control techniques when available [LA-048].
- Increase frequency and extent of introduced predator control in Leeuwin Block (Naturalise Ridge) management unit, with an emphasis on western ringtail possum (*Pseudochirus occidentalis*) habitat. Where possible, investigate opportunities to consolidate private bushland remnants surrounded by Leeuwin-Naturaliste National Park into conservation estate to extend the control program [LA-025].
- Maintain introduced predator control in the Leeuwin Block (Margaret River Plateau) management unit, such as in Boranup for western ringtail possum (*Pseudochirus occidentalis*) and implement new control techniques where required [LA-020].

- Maintain introduced predator control at Greater Bunbury Region Reserve 14 for the protection of quokka (*Setonix brachyurus*) populations, and regularly monitor the population and fox/feral cat predation pressure to adjust the program as required [TA-FA-138].
- Ensure all available areas of the Nannup Karri management unit are subject to introduced predator control, with a focus on maintenance of quokka (*Setonix brachyurus*) populations [LA-034].
- Seek to have all available areas of the Scott Plain (Scott Alluvial) management unit subject to introduced predator control, with a focus on sites such as western swamp tortoise (*Pseudemydura umbrina*) release areas [LA-037].
- In the Scott Plain (Scott Dune) management unit, implement feral animal control to allow for the recolonisation and/or introduction of native fauna. Investigate opportunities to acquire private land, or engage with landholders, to increase area available for feral animal management [LA-042].
- In select larger reserves within Swan Coastal Plain (Pinjarra) management unit, maintain and where possible increase introduced predator control [LA-061].
- Maintain and/or enhance existing feral animal control in the Swan Coastal Plain (Quindalup [LA-066] and Vasse [LA-074]) management units, such as in Locke Nature Reserve for western ringtail possum (*Pseudocheirus occidentalis*), and implement new control techniques when available.
- At Vasse Wonnerup and other key wetlands such as Benger Swamp Nature Reserve and Broadwater Nature Reserve utilised by great knot (*Calidris tenuirostris*) [TA-FA-313], curlew sandpiper (*Calidris ferruginea*) [TA-FA-315], red knot (*Calidris canutus*) [TA-FA-314], lesser sand plover (*Charadrius mongolus*) [TA-FA-058] and bar-tailed godwit (*Limosa lapponica*) [TA-FA-312], increase the area and/or frequency of fox control with a particular emphasis on the winter-spring swan and duck breeding period and the summer-autumn feeding period for international migratory shorebirds.
- Implement introduced predator control programs when required for rats, foxes and feral cats at key fairy tern (*Sternula nereis nereis*) breeding sites [TA-FA-071].
- Maintain feral pig control at high value sites and increase frequency and extent of control where feasible to portions of the Darling Scarp and Plateau [LA-016], Nannup Karri [LA-033], Swan Coastal Plain (Pinjarra) [LA-064] and Woolbelt [LA-095] management units in response to pig activity. Investigate and trial the use of new control measures as they become available and manage access to prevent illegal hunting.
- For populations of orange-bellied frog (*Anstisia vitellina*) located in Blackwood River National Park, undertake a feral pig control program at locations where pigs have been detected in monitoring programs, to achieve no loss of frog populations attributed to feral pig disturbance [TA-FA-225].
- Implement a feral pig control program at the BYRD01 occurrence of the Dense shrublands on clay flats (SCP 09) ecological community that trials new methods of control and follow up with watsonia weed control [TA-EC-046].

- Implement a feral pig baiting program over 35 hectares of *Reedia* occurrences on the Blackwood Plateau where monitoring has detected pig activity encompassing *Reedia spathacea* populations 9, 10, 11, 12, 20, 27 and 37 [TA-FL-254].
- At all occurrences of *Reedia spathacea* - *Empodium gracillimum* - *Sporadanthus rivularis* dominated floodplains and paluslopes of the Blackwood Plateau ecological community within the South West Region, monitor the impacts of feral pigs and utilise findings to identify areas and implement priority pig control intervention [LE-EC-009].
- For reserves of the Leeuwin Block (Margaret River Plateau) [LA-023], Swan Coastal Plain (Bassendean [LA-053], Foothill [LA-057], Pinjarra [LA-065], Scott Plain (Scott Alluvial) [LA-035], Spearwood [LA-072] and Vasse [LA-075]), and Woolbelt [LA-089] management units, undertake monitoring to determine impact of herbivore grazing, identify values being impacted, encourage strategic kangaroo management on adjoining private lands and/or install kangaroo fencing to protect values. Implement a kangaroo management program on department-managed land within existing exclusion fenced areas when breached.
- Maintain the existing fence around population SWR1403 of *Alyogyne* sp. Rockingham including extending as needed in response to population growth to reduce grazing pressure on the species [TA-FL-481].
- Protect *Anzybas abditus* populations (SWRID 1229 Haag Nature Reserve and 2354 Upper Capel) from damage by kangaroos [TA-FL-584].
- Reinstate fencing (two hectares) of ironstone TEC habitat at Kohlhagen Road State forest population 7A of *Banksia squarrosa* subsp. *argillacea* to limit kangaroo access and exclude unauthorised vehicles [TA-FL-488].
- Implement a kangaroo management program within the exclusion fenced area at the Scott River ironstone TEC to reduce grazing pressure on population 4 of *Boronia exilis* [TA-FL-489].
- Where required, install cages or fences to exclude grazing by kangaroos and rabbits at population 2 of *Caladenia uliginosa* subsp. *patulens* [TA-FL-513].
- Maintain cages to prevent grazing impacts from kangaroos to the Ruabon population (SWR1818) of *Calochilus* sp. Boyup Brook [TA-FL-516].
- For population 4A of *Calytrix retrorsifolia* in Nature Reserve 46006, remove kangaroos from inside the fenced area and implement subsequent weed control in response to reduced grazing pressure [TA-FL-521].
- Fence population 2 of *Darwinia ferricola* and implement a kangaroo management program within the exclusion fenced areas at population 1 and SWR1937 to reduce grazing pressure [TA-FL-524].
- Remove rabbits and kangaroos where they have breached the exclusion fenced area containing all *Lambertia echinata* subsp. *occidentalis* populations and implement a rabbit control program [TA-FL-547].
- Upgrade the existing fencing around the reserve and manage kangaroos to reduce the impacts of grazing on population 1 of *Lambertia orbifolia* subsp. Scott River Plains.

Implement a subsequent weed control program targeting the periphery of the reserve to prevent spread [TA-FL-550].

- Install rabbit-proof netting to reduce grazing pressure of approximately 40 hectares of habitat for population SWR1158 of *Loxocarya striata* subsp. *implexa*. Remove rabbits and kangaroos where they have breached the exclusion fenced area and implement a rabbit control program [TA-FL-551].
- Fence *Morelotia australiensis* populations 2, 3 and 9 to prevent kangaroo grazing [TA-FL-259].
- Remove kangaroos from within existing exclusion fences at populations 2, 6 and SWR1800 of *Petrophile latericola* and enhance fences through an addition of approximately 3.2km of rabbit netting to the existing fence at population 2. Follow up with weed control for annual weeds [TA-FL-555].
- Remove kangaroos within the fenced area across approximately 17 hectares of occurrence NEG01 of the Shrublands on southern Swan Coastal Plain ironstones (Busselton area) (SCP 10b) ecological community on conservation estate. Following removal, rehabilitate the occurrence including managing firebreaks, implementing weed control and direct seeding [TA-EC-055a].
- Undertake regular checks of the two fenced occurrences WIL01 and WIL03 on Williamson Road of the Shrublands on southern Swan Coastal Plain ironstones (Busselton area) (SCP 10b) ecological community to identify areas where fence maintenance is required and take action to ensure timely repairs. Remove kangaroos and rabbits within the fenced area to reduce the impacts of grazing on the community [TA-EC-058].
- 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*) [TA-FA-352] and Baudin's black cockatoo (*Zanda baudinii*) [TA-FA-034].
- Protect important breeding areas for forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) [TA-FA-033], Baudin's black cockatoo (*Zanda baudinii*) [TA-FA-339] and Carnaby's black cockatoo (*Zanda latirostris*) [TA-FA-090] by undertaking feral beehive control across the South West, Swan and Warren regions. Evaluate known clusters of active breeding sites for feral bees and develop a control program as required.

WEEDS

- In the Leeuwin Block (Naturaliste Ridge) management unit, eradicate or contain declared weeds and perennial grasses in high value threatened fauna and flora sites (for example Cape Leeuwin freshwater snail (*Austroassiminea lethra*), tufa ecological community sites) [LA-027].
- In the Leeuwin Block (Margaret River Plateau) [LA-022], Swan Coastal Plain (Bassendean [LA-051] and Foothill [LA-056]) and Woolbelt [LA-090] management units, maintain the program to control all perimeter and edge weeds on reserves and map and actively control all internal perennial weed infestations.

- Undertake a program to remove weeds and promote the recovery of heavily weed impacted areas of the Swan Coastal Plain (Vasse) [LA-077] and prevent edge invasions and remove waterway infestations within the Scott Plain (Scott Alluvial) [LA-038] management units. Undertake pre-emptive annual weed control measures to prevent the invasion and subsequent loss of un-infested areas.
- Investigate weed control options and possible impacts of chemical use at weed infested habitat sites (for example kikuyu and arum lilies) on Cape Leeuwin freshwater snail (*Astroassiminea lethra*). Proceed with trials if investigation outcomes are favourable [LE-FA-001].
- Implement weed control targeting annual grasses, arum lily and wattles to protect *Caladenia excelsa* in the Leeuwin-Naturaliste National Park populations 2A, 6, 7A, 8B, 10B, 10D and 11A. Expand weed control program to other populations in the national park (populations 4A, 5B, 16B, 23A, 24, 27, 31B, 32 and 33) and State forest (population 31B) based on survey and monitoring data of weed impacts [TA-FL-497].
- Undertake control of annual grasses, arum lily and introduced wattles at populations 2, 3, 5 and 6 in State forest, Korijeckup Conservation Park and adjoining reserve 21587 for *Caladenia uliginosa* subsp *patulens* [TA-FL-511].
- Control annual grasses, *Lotus angustissimus* and other non-native herbs species weeds in all claypan TECs and implement an adaptive management trial to implement various forms of weed control for populations 3, 6, 7, 15, 19, 22, 24, 25, SWR915, SWR1362 and SWR1840 of *Ornduffia submersa* in the claypans communities [TA-FL-156].
- At occurrences of the Claypans with mid dense shrublands of *Melaleuca lateritia* over herbs [LE-EC-017] and Dense shrublands on clay flats SCP 09 [LE-EC-004] ecological communities, develop annual weed control programs and methodologies for trialling the use of selective weed sprays. Establish transects to monitor soil moisture using probes in conjunction with data from bore.
- Contract out bulbous weed removal at occurrence WATER06_Webb and WATER03 of the *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain (SCP 3c) ecological community as required and additionally for post-fire events [TA-EC-039].
- Implement weed control at occurrence YYARL01 of the *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain (SCP 3c) ecological community and through the associated wetland [TA-EC-040].
- Implement a weed control program targeting *Watsonia meriana* var. *bulbillifera*, *Gomphocarpus fruticosus* and *Cyperus rotundus* at occurrence WELR01 of the Dense shrublands on clay flats (SCP 09) ecological community [TA-EC-045].
- At the BYRD01 occurrence of Dense shrublands on clay flats SCP 09 ecological community, expand monitoring and mapping of bulbous and grassy weed species to identify control target areas and rate of encroachment and thus the urgency for weed control [LE-EC-005].
- Implement a weed control program targeting lovegrass and other bulbous and grassy weeds at occurrence FISH01 of the Herb rich saline shrublands in clay pans (SCP 07)

ecological community. Manage access to the site to reduce unauthorised four-wheel drive, motorbike, rubbish dumping and other inappropriate activities on the occurrence [TA-EC-048].

- Implement a weed management program targeting bulbous weed species at occurrence WATER05_Webb and PM28 of Herb rich shrublands in clay pans (SCP 08) ecological community [TA-EC-051].
- Implement a weed control program targeting *Eragrostis curvula* and pasture grasses along the road, rail and drain reserves at occurrence TUT01 of the Shrublands on dry clay flats (SCP 10a) ecological community [TA-EC-054].
- Implement a weed control program at occurrences CHAMBERS01, JACKA01, NEG01, OATES01_Webb, SMITH01, SMITH04, WIL01, WIL03, WONN05, WONN06, WONNEW, YIRON0 and YIRON02 of the Shrublands on southern Swan Coastal Plain ironstones (Busselton area) (SCP10b) ecological community. Trial the use of weed-proof fencing where occurrences adjoin private properties, to reduce wind-blown weed encroachment, in addition to other techniques to control grassy weeds [TA-EC-158].
- At Shrublands on southern Swan Coastal Plain ironstones (Busselton area) (SCP 10b) occurrence SMITH01, implement control of grassy weed species and contribute to LUP processes by providing conservation information to inform appropriate uses of adjoining properties to minimise potential impacts on the occurrence [TA-EC-061b].
- Restore occurrences Davies04, Ruab05, FISH05 and JP03 of the Southern wet shrublands, Swan Coastal Plain (SCP 02) ecological community through fencing and implementing a cycle of *Pennisetum clandestinum* and other weed control followed by prescribed burns to further control weeds [TA-EC-062].

Scientific research



Undertake scientific investigations that are effectively targeted to improve knowledge and integrate science knowledge into biodiversity conservation and management.

FLORA

*Proposed germplasm collection and storage priorities

- Consider seed collection and storage priorities for threatened flora species including:
 - *Acacia flagelliformis*
 - *Acacia semitrullata*
 - *Actinotus whicheranus*
 - *Adenanthes detmoldii*
 - *Adenanthes x pamela*
 - *Austrostipa bronwenae*
 - *Banksia meisneri* subsp. *ascendens*
 - *Banksia nivea* subsp. *uliginosa* collection from all populations
 - *Banksia squarrosa* subsp. *argillacea* collection from all populations
 - *Boronia anceps*

- *Boronia exilis*
- *Boronia* sp. Leeuwin (J. Scott 235)
- *Boronia tetragona*
- *Caladenia bryceana* subsp. *bryceana*
- *Caladenia busselliana*
- *Caladenia excelsa*
- *Caladenia leucohila*
- *Caladenia lodeana*
- *Caladenia procera*
- *Calochilus* sp. Boyup Brook (E. Chapman s.n. 12/10/2002)
- *Calothamnus quadrifidus* subsp. *teretifolius*
- *Chamelaucium erythrocyclorum*
- *Chamelaucium royceri*
- *Conospermum quadripetalum*
- *Daviesia elongata*
- *Gastrolobium argyrotrichum*
- *Gastrolobium modestum*
- *Gastrolobium* sp. Yoongarillup (S. Dilkes s.n. 1/9/1969)
- *Gastrolobium whicherense*
- *Grevillea acropogon*
- *Grevillea brachystylis* subsp. *brachystylis*
- *Grevillea brachystylis* subsp. *grandis*
- *Grevillea brachystylis* subsp. *Yelverton* (A. Webb AW09122)
- *Grevillea bronwenae*
- *Grevillea ripicola*
- *Hakea oldfieldii*
- *Hemigenia* sp. Nillup (R.D. Royce 98)
- *Jacksonia velveta*
- *Lambertia echinata* subsp. *occidentalis*
- *Lambertia orbifolia* subsp. *Collie*
- *Lambertia orbifolia* subsp. Scott River Plains (L.W. Sage 684)
- *Leucopogon kirupensis*
- *Loxocarya magna*
- *Loxocarya striata* subsp. *implexa*
- *Petrophile latericola* collection from all populations
- *Stylium korijekup*
- *Synaphea hians*
- *Synaphea macrophylla*
- *Synaphea nexosa*
- *Synaphea petiolaris* subsp. *simplex*
- *Thelymitra variegata*
- *Verticordia densiflora* var. *pedunculata*
- *Verticordia plumosa* var. *ananeotes*
- *Verticordia plumosa* var. *vassensis*
- *Wurmbea calcicole*.

Community engagement



Promote public and stakeholder awareness and understanding of biodiversity, the threats facing it and its conservation, including through involvement in conservation programs, to encourage stewardship and support for conservation initiatives.

FAUNA

- Contribute to the continuation and maintenance of the Australasian bittern (*Botaurus poiciloptilus*) recovery actions such as addressing knowledge gaps, animal tracking and DNA collection to increase understanding about distribution, breeding and utilisation of non-breeding habitat [LE-FA-006].
- Maintain and update where required signage informing the public of hooded plover (*Thinornis cucullatus*) breeding habitat and desirable public behaviour at priority beaches utilised by the species along the Leeuwin-Naturaliste coastline [TA-FA-220].
- Investigate opportunities to test the viability of recreating habitat (through revegetation and or rehydration) for white-bellied frog (*Anstisia alba*) on cleared private property that historically contained populations and for which hydrological conditions are likely to remain suitable [LE-FA-013].

*Education and awareness

- Establish a community education and awareness program in collaboration with the GeoCatch citizen science survey program (Ringtail Tally) for western ringtail possum (*Pseudocheirus occidentalis*), focusing on urban areas in the South Coast, South West and Swan regions. Main activities include workshops and newsletters, co-ordinated by Wirambi Landcare [TA-FA-118].
- Educate the public and promote the use of non-lethal means of mitigating fruit damage by Baudin's black cockatoo (*Zanda baudinii*) in orchards in the South West, Swan and Warren regions [TA-FA-210].
- 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

- Coordinate a volunteer group to resurvey existing populations of *Acacia flagelliformis* to develop a better understanding of their extent [LE-FL-001].
- Re-establish contact with the managers of *Banksia* sp. Boyup Brook population 2 and determine the condition of the population [LE-FL-019].

- Maintain the Phytophthora dieback free status of *Banksia* sp. Boyup Brook (L.W. Sage LWS 2366) populations by liaising with the private property owners (population 2 and SWR1694) to raise awareness of the risk the disease poses and appropriate land management approaches to minimise its spread. Erect signage and manage access to the Hunt Forest block to limit the risk of disease to population 1 [TA-FL-487].

***Liaison actions**

- Liaise with LGAs to implement a weed control program predominantly targeting kikuyu to protect roadside populations of *Adenanthes detmoldii* (1A, 2A, 3, 5A, 5B, 6, 8A, 8B, 9, 10 and 12) and to minimise disturbance to populations from road maintenance [TA-FL-306].
- Liaise with LGAs to implement a weed control program targeting kikuyu for all roadside populations of *Adenanthes x pamela* in the Scott River area (except SWR1863) and protect them from disturbance through declared rare flora (DRF) marker installation and liaison [TA-FL-325].
- Liaise with the LGA and Main Roads to ensure *Austrostipa bronweniae* populations 4 and 5 information is available to inform future development proposals and to undertake weed control (*Zantedeschia aethiopica*, *Acacia longifolia*, annual grasses and watsonia) [TA-FL-586].
- Liaise with the LGA to fence around *Banksia nivea* subsp. *uliginosa* population 6 to exclude kangaroos and rabbits and implement rabbit control [TA-FL-485].
- Liaise with the LGA to fence population 5 of *Banksia nivea* subsp. *uliginosa* to exclude cattle [TA-FL-486].
- Liaise with the LGA to fence *Boronia exilis* (population 6) on reserve 23973 to exclude kangaroos, and remove kangaroos from within the fenced area [TA-FL-491].
- In collaboration with the LGA, apply undertake annual grass control and formalise walk trails to minimise impacts to *Caladenia busselliana* populations 2 and 4 [TA-FL-493].
- Liaise with the LGA to manage access to protect all populations of *Caladenia caesarea* subsp. *maritima* [TA-FL-495].
- Liaise with the LGA to ensure *Caladenia dorrienii* population 5 is protected during bushfire mitigation activities and appropriate weed control is undertaken for annual grasses and woody weeds (tagasaste) [TA-FL-183].
- Liaise with LGAs to implement weed control targeting annual grasses, arum lily and wattles to protect *Caladenia excelsa* Busselton populations 13A and 20, and Augusta-Margaret River populations 3A, 17A and 30A. Expand weed control and liaison program to other populations on LGA-managed land based on survey and monitoring data of weed impacts (populations 18, 23C and 23D) [TA-FL-498].
- Liaise with private property owners to implement weed control program targeting annual grasses, arum lily and wattles to protect *Caladenia excelsa* populations 1A, 3B, 12, 13B, 14, 17B, 19F, 23B and 26. Expand weed control program to other populations on private property based on survey and monitoring data of weed impacts (populations 1C, 4C,

10E, 13C, 13D, 15A, 15B, 16A, 17C, 19A, 19B, 19C, 19D, 19E, 21, 22, 25, 29, 30B, and 34) [TA-FL-496].

- Liaise with Main Roads to implement weed control targeting annual grasses, arum lily and wattles to protect *Caladenia excelsa* populations 1B, 2B, 4B, 8A, 10A and 11B. Expand weed control and liaison program to other populations on road verges based on survey and monitoring data of weed impacts (populations 5A, 7B, 28) [TA-FL-500].
- Liaise with the LGA to ensure that appropriate measures are implemented to protect *Caladenia leucochila* (populations 4A and 11A) during road maintenance operations [TA-FL-503].
- At population 2 of *Caladenia loddigesiana*, liaise with the Department of Planning, Lands and Heritage and any future land managers to implement a visitor management and monitoring program at the Flat Rocks area to inform management actions [TA-FL-505].
- Implement an adaptive management trial for all populations of *Caladenia pholcoidea* subsp. *augustensis* to exclude kangaroo grazing and fire and control the spread of *Dipogon lignosus* at SWR1113 and SWR1335. This will require liaison with the LGA and Department of Fire and Emergency Services (DFES) [TA-FL-508].
- In collaboration with the LGA, maintain existing fencing structures and implement weed control (annual grasses) at populations 2, 3, 4, 8 and SWR2284 of *Caladenia procera*. Manage access and implement education, compliance and enforcement [TA-FL-509].
- In collaboration with the LGA and Main Roads, implement weed control (annual weeds) and formalise walk trails to prevent off track access in Carbungup Reserve for population 1 of *Caladenia procera* [TA-FL-510].
- In collaboration with the LGA, implement weed control for annual grasses and formalise walk trails to prevent off track access and impact to plants at the Meelup populations of *Caladenia viridescens* (1, 2, 3, 7, 8, SWR1347, SWR2241 and SWR2285 [TA-FL-514].
- Liaise with the LGA to incorporate weed and rabbit control into their roadside restoration program to improve condition and promote recruitment of roadside populations of *Calothamnus quadrifidus* subsp. *teretifolius* (populations 2A, 4, 5, 6, 7, 8, 10, 12, 14, 15, 16, 17, 19, 22 and 24) [TA-FL-518].
- Liaise with the LGA and adjacent landholders to ensure *Caustis* sp. Boyanup population 6 is protected from disturbance. Implement a weed management program targeting grassy weeds and re-establish native vegetation [TA-FL-252].
- Liaise with the LGA to implement weed control (kikuyu, annual grasses, watsonia) targeting populations of *Chamaelaucium roycei* along the rail line (populations 1D, 2B, 2G, 4A, 4C and 5A) [TA-FL-523].
- Liaise with utility provider and the LGA to undertake weed control for perennial grasses, woody weeds and annual weeds in population SWR2194 of *Conospermum quadripetalum* [TA-FL-236].
- Fence approximately 7.5km of roadside vegetation along Governor Broome Road (Populations 1 and 3) to prevent stock movement damage to *Darwinia ferricola* [TA-FL-525].

- Liaise with the LGA and utility provider to close unmade road reserves and exclude four-wheel drive access at populations (1, 3, 4, 7, 8) of *Eryngium* sp. *Ferox* in claypan habitats [TA-FL-196].
- Liaise with the LGA to ensure an appropriate fire regime is in place for the Meelup *Eucalyptus virginea* population SWR627 [TA-FL-585].
- Liaise with the LGA to formalise walk trail to prevent off track access and reduce the impacts of trampling on *Gastrolobium argyrotrichum* [TA-FL-530].
- Liaise with DFES to trial an adaptive management program testing the introduction of prescribed fire to *Gastrolobium argyrotrichum* populations (1 and 2) to determine an appropriate fire regime [TA-FL-529].
- Liaise with utility provider and the LGA to implement weed control targeting woody weeds including eastern states wattle species to protect population 1A of *Gastrolobium argyrotrichum* [TA-FL-528].
- Liaise with the landowner of population 2 of *Grevillea acropogon* to install fencing to exclude kangaroo and rabbit grazing [TA-FL-239].
- At population 2 of *Grevillea brachystylis* subsp. *australis*, communicate with adjoining landholders about the purpose of DRF markers and the importance of the habitat to encourage measures to protect flora populations [TA-FL-537].
- Liaise with the LGA to implement a weed control program targeting kikuyu for roadside population 2 of *Grevillea brachystylis* subsp. *australis* [TA-FL-536].
- Liaise with the LGA to implement a weed control program targeting kikuyu, annual grasses, watsonia and lovegrass within roadside populations of *Grevillea brachystylis* subsp. *brachystylis* including populations 3B, 4, 6, 7, 8, 9, 10, 11, 12, 13 and 14 [TA-FL-538].
- Liaise with the LGA to implement a weed control program targeting kikuyu, *Acacia longifolia*, annual grasses, watsonia and lovegrass in roadside populations of *Grevillea brachystylis* subsp. *grandis* including populations 3A, 4, 5, 6A, 6C, 7 and 8 [TA-FL-539].
- Liaise with the LGA to undertake a weed control program targeting lovegrass, watsonia and annual grasses in *Grevillea elongata* roadside populations (populations 1A, 2A, 3A, 4 and 6A) [TA-FL-540].
- At populations 1 and 3 of *Kennedia lateritia*, liaise with the LGA to implement weed control (kikuyu) and general site management actions inclusive of fencing and rehabilitation to prevent weed spread into the adjoining national park [TA-FL-543].
- Liaise with the DFES to ensure fire management strategies minimise impacts to plants at population SWR1662 of *Stylium ireneae* within Augusta UCL [TA-FL-177].
- Liaise with the LGA to undertake weed control for kikuyu at populations 1, 2 and 5 of *Synaphea nexosa* [TA-FL-563].
- Notify and maintain ongoing liaison with road, gas pipeline and rail stakeholders of their obligations under the BC Act in relation to clearing and maintenance works that may impact populations 2, 4, 5, 6, 7A, and 8 of *Synaphea odocoileops* occurring within or

adjacent to road or rail reserves in the Swan and South West regions. Undertake weed control at populations 6 and 8 for watsonia, lovegrass and annual weeds [TA-FL-144].

- Liaise with local Bush Fire Brigade to undertake African lovegrass control after prescribed burning at population 2 of *Synaphea odocoileops* (approximately five hectares) [TA-FL-248].
- Liaise with rail infrastructure operator to manage African lovegrass, watsonia and veldt grass in rail reserves for population SWR1015 of *Synaphea* sp. Fairbridge Farm [TA-FL-146].
- Liaise with the LGA to implement a weed control program targeting lovegrass and watsonia, and install barriers to roadside populations of *Verticordia plumosa* var. *ananeotes* (Populations 2, 3A, 4 and SWR2360) [TA-FL-570].
- Liaise with the LGA to prevent clearing of roadside population 10 of *Verticordia plumosa* var. *vassensis* through the installation of approximately 6km of fencing [TA-FL-571].
- Liaise with the LGA to implement a weed control program for watsonia, lovegrass and annual grasses at *Verticordia plumosa* var. *vassensis* populations 2,3, 4, 5, 6, 7A, 7C, 7E, 7G, 7K, 8B, 9, 11 and 12 [TA-FL-572].

ECOLOGICAL COMMUNITIES

****Liaison actions***

- Work cooperatively with the LGA to implement an annual weed control program at occurrences YARL03, MYYARL01 and MYYARL04 of the *Corymbia calophylla* - *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain (SCP 3b) ecological community and consider management of other threats including fire and kangaroo grazing [TA-EC-036].
- Liaise with the LGA to implement a fire regime of longer fire return intervals for occurrence AMBR01, AMBR04, AMBR06, myAMBR03, myAMBR07 and myAMBR09 of the *Corymbia calophylla* woodlands on heavy soils of the southern Swan Coastal Plain (SCP 1b) ecological community to maintain occurrence persistence, resilience and promote regenerative processes, while minimising weed invasion [TA-EC-042].
- Provide conservation advice to the LGA about effective management actions to ensure the persistence and resilience of the AITKEN02 occurrence of the *Corymbia calophylla* - *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain (SCP 3b) ecological community, especially regarding fire management, weed control and ecological restoration requirements [TA-EC-034].
- Liaise with the LGA regarding fire management strategies to minimise impacts on ARM01 occurrence of the *Corymbia calophylla*, *Melaleuca raphiophylla*, *Banksia littoralis*, *Eucalyptus rudis*, *Agonis flexuosa* low open forest with seasonal subsoil moisture (Dunsborough area) ecological community [TA-EC-044].
- Liaise with the LGA to fence around occurrences EASTW01 and EASTW02 of the Herb rich saline shrublands in clay pans (SCP 08) ecological community to exclude

recreational vehicles. Liaise with adjacent property owners regarding kangaroo control to reduce grazing pressure on the occurrence [TA-EC-050].

- Liaise with LGA to implement effective weed control (watsonia, lotus, annual bulbs and grasses) to reduce the weed burden on YOON03 occurrence of SCP 07 claypans [TA-EC-047].

LANDSCAPES

***Liaison actions**

- Liaise with LGAs, other agencies and private landholders in the Scott Plain (Scott Dune) [LA-044] and Swan Coastal Plain (Foothill [LA-055] and Yoongarillup [LA-080]) management units in relation to fire management strategies to minimise impacts on the conservation values.
- Encourage landcare groups to promote the revegetation of valleys in the Woolbelt management unit. Contribute to EIA and LUP processes to seek to buffer vulnerable areas from vegetation clearing informed by monitoring to document habitat values [LA-096].
- Encourage landcare groups to promote fencing and protection of private remnants in the Woolbelt management unit and encourage the revegetation of linkages between bushland remnants. Investigate the potential acquisition of high value remnants for conservation vesting [LA-097].

7 Learn action collaboration opportunities

FAUNA

Mammals

- Trial different baiting techniques and frequencies and implement a monitoring plan which considers seasonal introduced predator movement patterns to determine the optimal baiting frequency to sustain persistent population of woylie (*Bettongia penicillata ogilbyi*) across its distribution.
- Implement a consistent monitoring program across the whole of the state to determine distribution and population trends of chuditch (*Dasyurus geoffroii*) at a species level.
- Assess the effectiveness of fox baits and baiting programs on maintaining the persistence of chuditch (*Dasyurus geoffroii*), tammar wallaby (*Notamacropus eugenii derbianus*) and western brush wallaby (*Notamacropus irma*).
- Monitor representative tammar wallaby (*Notamacropus eugenii derbianus*) populations across the landscape in response to fire events to inform the requirements and application of prescribed burning of thicket habitat. Establish at least one monitoring site in South West Region.
- Identify potential sites for release of western ringtail possum (*Pseudocheirus occidentalis*) held in care for extended periods by wildlife rehabilitators for which the original habitat is no longer available for release. Evaluate sites that have a baiting

history under the Western Shield program and share with wildlife rehabilitators the reasoning behind the selection of sites, release techniques and post-release monitoring of animals to ensure western ringtail possum (*Pseudocheirus occidentalis*) releases will have a conservation benefit.

- Identify sites and opportunities for long-term monitoring of the fragmented landscapes utilised by coastal plain populations of western ringtail possum (*Pseudocheirus occidentalis*) in the Wellington and Blackwood districts to determine population persistence and trends.
- Establish a monitoring program with an effective methodology to survey western ringtail possum (*Pseudocheirus occidentalis*) across its range to determine the trajectory of the species and the extent of its habitat to inform management.
- Survey areas historically known to support western ringtail possum (*Pseudocheirus occidentalis*) to determine potential occupancy, such as in northern jarrah forest and Nuyts Wilderness to determine the extent of known populations.
- Monitor and survey key populations of western ringtail possum (*Pseudocheirus occidentalis*) with an aim to understand what is driving population distribution and abundance.
- Assess the effectiveness of fox baits and baiting programs on the persistence of quokka (*Setonix brachyurus*) with a focus on the northern jarrah forest environments.
- Identify up to four key quokka (*Setonix brachyurus*) northern jarrah forest populations and establish permanent monitoring regimes to inform population abundance, population dynamics, persistence and habitat utilisation in relation to prescribed burning in the Wellington District.
- Implement a cross regional monitoring plan to assess quokka (*Setonix brachyurus*) populations post fire to inform fire exclusion areas and to understand interactions with invasive species post-burn to inform introduced predator baiting options.
- Improve the protocol for the rapid assessment of potential quokka (*Setonix brachyurus*) to provide a greater level of certainty regarding the currency of occupancy and the likely population size for each site inspected.

Birds

- Develop monitoring techniques for Australasian bittern (*Botaurus poiciloptilus*) for use in areas that are difficult to physically access.
- Collaborate with BirdLife Australia to improve data flow regarding surveying and monitoring work on red knot (*Calidris canutus*) and hooded plover (*Thinornis cucullatus*).
- Map forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) and Baudin's black cockatoo (*Zanda baudinii*) water sources across the landscape and liaise with the Department of Water and Environmental Regulation (DWER) to maintain 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 more effective and efficient survey techniques for forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) and Baudin's black cockatoo (*Zanda baudinii*) to locate individual breeding hollows and regular roosting sites in high rainfall forest environments, including trialling the use of remote sensing techniques to identify suitable hollow bearing trees.
- Use techniques such as remote sensing to identify occupied and potential nesting trees for forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) and Baudin's black cockatoo (*Zanda baudinii*).
- 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.
- Enhance departmental collaboration with BirdLife Australia and the WA Museum to improve data sharing regarding monitoring and survey results for forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*).
- Develop tools to detect illegal shooting to quantify its impact on forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) and Baudin's black cockatoo (*Zanda baudinii*) to guide future liaison actions.
- 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 apiculture 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.
- Engage with BirdLife Australia to identify nesting sites of southern giant petrel (*Macronectes giganteus*) and the associated threats in these locations to advise management.
- Improve data sharing with BirdLife Australia and species-specific focus groups regarding nests and occurrence mapping for barking owl (*Ninox connivens connivens*). Repeat the south-west forest owl survey from the mid 1990's using compatible techniques to gain trend data.
- Map current nesting sites of eastern osprey (*Pandion cristatus*) and ensure data is added to the corporate dataset.
- Review the requirements for breeding birds and support the regular banding of fairy tern (*Sternula nereis nereis*) at each breeding site to monitor movement and dispersal of individuals between populations and sites.

- Establish efficient and effective information sharing pathways across the regions for fairy tern (*Sternula nereis nereis*).
- When monitoring fairy tern (*Sternula nereis nereis*) populations, expand capacity to include research surrounding the interactions between the terns and trophic cascades and how to respond adaptively to their impacts.
- Establish a species-wide population estimate for Carnaby's black cockatoo (*Zanda latirostris*).

Amphibians

- Engage a hydrologist to investigate localised groundwater and surface water parameters to determine the relative contribution of each water source to sustaining each of the occupied sites of white-bellied frog (*Anstisia alba*) and orange-bellied frog (*Anstisia vitellina*). Develop a model and other tools to aid in the identification of future release sites that are likely to persist in a drying climate.
- Investigate the feasibility of supplementing (rehydrating) drying waterways to maintain habitat and viable populations of white-bellied frog (*Anstisia alba*) and orange-bellied frog (*Anstisia vitellina*).
- Develop automated software for the detection of white-bellied frog (*Anstisia alba*) and orange-bellied frog (*Anstisia vitellina*) from song meter recordings to assist with survey detection, monitoring abundance and understanding breeding ecology.
- Investigate opportunities to trial and evaluate the viability of creating habitat (through revegetation) for white-bellied frog (*Anstisia alba*) and orange-bellied frog (*Anstisia vitellina*) on sites for which hydrological conditions are likely to remain suitable under climate change predictions.

Fish

- Develop a freshwater fish research and monitoring program to coordinate stakeholders and encourage information sharing to determine genetic differences between populations, breeding grounds, movement patterns, and the impacts of water quality, sedimentation issues and increasing nutrients for South Coast, South West, Swan and Warren region threatened fish species including western mud minnow (*Galaxiella munda*), black-stripe minnow (*Galaxiella nigrostriata*), salamanderfish (*Lepidogalaxias salamandroides*) and Balston's pygmy perch (*Nannatherina balstoni*).
- Work with researchers to develop genetic techniques (such as eDNA) to survey habitat across the range of freshwater fish including western mud minnow (*Galaxiella munda*), black-stripe minnow (*Galaxiella nigrostriata*) and Balston's pygmy perch (*Nannatherina balstoni*).
- Undertake targeted surveys for feral fish species including *Gambusia* species in water points and isolated pools across the distribution of western mud minnow (*Galaxiella munda*), black-stripe minnow (*Galaxiella nigrostriata*), salamanderfish (*Lepidogalaxias salamandroides*) and Balston's pygmy perch (*Nannatherina balstoni*) to assess the need for intervention. Investigate the impact of feral fish on the persistence of these species

and implement feral fish control if species is adversely affected. Apply electrofishing and other survey techniques where required.

- Investigate the impact of *Gambusia* species on black-stripe minnow (*Galaxiella nigrostriata*), salamanderfish (*Lepidogalaxias salamandroides*) and Balston's pygmy perch (*Nannatherina balstoni*) and implement feral fish control if species are adversely affected.
- Investigate the genetics of disjunct populations of black-stripe minnow (*Galaxiella nigrostriata*) and determine their conservation status.
- Undertake modelling of available black-stripe minnow (*Galaxiella nigrostriata*) habitat in response to climate change.
- Undertake studies to determine current threatening processes to black-stripe minnow (*Galaxiella nigrostriata*).

Invertebrates

- Undertake post-fire monitoring of Cape Leeuwin freshwater snail (*Austroassiminea lethra*) at Leeuwin Swamp. Undertake measures of vegetation structure, composition, density and diversity (through quadrant sampling). Investigate if peat swamp is a necessary component of the habitat requirements. Install temperature loggers in burnt and unburnt areas to compare temperature fluctuations in the soil profile during successional post-fire recovery to assess the impact fire has on recolonisation.
- Conduct a conservation genetics study to explore Cape Leeuwin freshwater snail (*Austroassiminea lethra*) population diversity and compare findings with previous consultant report. Survey in areas of historical record and in areas of likely habitat.
- Undertake surveys for bark dwelling populations of tingle pygmy trapdoor spider (*Bertimainius tingle*) to determine their distribution and status in the South West Region.
- Collect samples from tingle pygmy trapdoor spider (*Bertimainius tingle*) specimens that burrow in the ground and assess the genetic differences between this population and those that burrow under the bark of tingle trees.
- Continue the development of hairy marron (*Cherax tenuimanus*) captive breeding and husbandry practices to achieve regular and successful captive breeding outcomes.
- Design a genetics management plan to inform the planning for and ongoing captive breeding stock movements and breeding plans for hairy marron (*Cherax tenuimanus*).
- Develop and implement non-invasive monitoring techniques for Margaret River burrowing crayfish (*Engaewa pseudoreducta*) and Dunsborough burrowing crayfish (*Engaewa reducta*), including application of eDNA techniques in the field.
- Undertake a trial reintroduction of Carter's freshwater mussel (*Westralunio carteri*) to assess the survival and recruitment of a population removed from a site designated for development and subsequently reintroduced or translocated. Research the genetic impacts of translocations to new systems with different clades.

- Undertake studies and apply learnings regarding Carter's freshwater mussel (*Westralunio carteri*) biology, life history, and interactions with other species to inform management actions.
- Develop a routine monitoring program for Carter's freshwater mussel (*Westralunio carteri*) across the South Coast, South West, Swan and Warren regions in conjunction with external groups.
- Undertake genetic and phylogeographic research to determine taxonomy of Carter's freshwater mussel (*Westralunio carteri*) and importance of clades. Apply findings to future proposals for salvage or translocation.

Marine⁷

- Develop and implement a triage system to direct where and when management actions need to occur based on a centralised database for reporting adverse incidents for marine turtles and mammals (for example marine debris, vessel strikes, deaths, strandings).
- Utilise the stranding database to capture information on subantarctic fur seal (*Arctocephalus tropicalis*).
- Establish monitoring systems to investigate habitat use and the impacts from vessel strike, seismic activity and marine debris on blue whale (*Balaenoptera musculus*).
- Undertake population trend analysis for all whale species including blue whale (*Balaenoptera musculus*), southern right whale (*Eubalaena australis*) and humpback whale (*Megaptera novaeangliae*) to determine a trajectory of recovery.
- Develop a standardised monitoring program to identify breeding habitat and range extensions of southern right whale (*Eubalaena australis*).
- Monitor humpback whale (*Megaptera novaeangliae*) abundance, distribution and patterns of habitat use to quantify the impact of nature-based tourism.
- Expand the monitoring program for Australian sea lion (*Neophoca cinerea*) to determine abundance, breeding sites and breeding cycle timing, and investigate the impact of increased tourism and marine interaction activities on breeding and haul out locations/populations.
- Liaise with and work alongside the Rottnest Island Authority and tour operators to manage grey nurse shark (*Carcharias taurus*) and create a photo database for conservation to gain a broader understanding of the species. Survey for the impact of human disturbance on the sharks and establish an industry wide code of conduct for interactions with shark species.
- Liaise with Department of Primary Industries and Regional Development to address knowledge gaps within the DBCA databases and to be involved in the management of great white shark (*Carcharodon carcharias*).

⁷ The 'marine' grouping includes marine mammals, marine reptiles and marine fish, including sharks and rays.

FLORA

- Investigate the genetics of *Acacia horridula* population 13 on the Swan Coastal Plain to determine whether it is the same species as the rest of the populations in jarrah forest.
- Resolve taxonomy and monitor where required *Acacia* sp. Binningup (G. Cockerton et al. WB 37784) populations to determine current threatening processes.
- Review the taxonomy of the disjunct *Andersonia auriculata* population in Blackwood District.
- Investigate the taxonomy of *Andersonia longifolia*.
- Implement an adaptive management program trialling the introduction of fire into long unburnt *Austrostipa bronwenae* populations such as 4 and 5.
- Research critical habitat requirements including soil and hydrology to inform the selection of an *Austrostipa jacobsiana* translocation site.
- Investigate the genetics of the Busselton and Scott River forms of *Banksia meisneri* subsp. *ascendens* to determine if there is any divergence.
- Investigate the genetic differences between the Swan, South West and Wheatbelt *Banksia mimica* populations and determine whether populations are clonal.
- Investigate the genetics of the Busselton and Scott River forms of *Banksia nivea* subsp. *uliginosa* to determine if there is any divergence.
- Investigate genetics of *Banksia* sp. Boyup Brook to determine whether each population is a single clone or multiple plants.
- Determine the pollinators for *Boronia* sp. Leeuwin and assess its status.
- Liaise with DWER regarding the ecological water requirements of *Boronia* sp. Leeuwin (J. Scott 235) and how to monitor.
- Research propagation techniques for *Caladenia bryceana* subsp. *bryceana*.
- Investigate the taxonomic relationship between *Caladenia bryceana* subsp. *bryceana* population 2 in the South West Region and other populations in the South Coast Region.
- Trial technology to detect species pollinator for *Caladenia busseliana*.
- Survey for additional populations of *Caladenia excelsa*.
- Identify pollinator species for *Caladenia leucochila*.
- Survey for additional populations of *Caladenia leucochila*.
- Undertake surveys for additional *Caladenia loddigesiana* populations in the Augusta townsite UCL reserves, expanding on recently found plants (SWR2114).
- Ensure a select range of *Caladenia nivalis* occurrences are inspected.
- Survey for additional populations of *Caladenia pholcoidea* subsp. *Augustensis*, to determine distribution of the species and to clarify conservation status.

- Determine if outlying *Caladenia procera* populations (ie: Kemerton, Donnybrook) are the same taxa as that around Busselton.
- Investigate taxonomy of *Caladenia uliginosa* subsp. *patulens*. Survey for additional populations of *Caladenia validinervia*.
- Trial technology to detect *Caladenia viridescens* pollinators.
- Investigate taxonomy of *Calochilus* sp. Boyup Brook (E. Chapman s.n. 12/10/2002).
- Investigate field seed longevity of *Darwinia whicherensis*.
- Investigate taxonomy of outlier population 6 of *Darwinia whicherensis*.
- Investigate differences in pollinator species for northern and southern *Drakaea elastica* populations.
- Survey for additional populations of *Drakaea elastica*.
- Determine pollinator species for *Drakaea micrantha*.
- Investigate the genetic differences between the *Eucalyptus virginea* populations in the South West and Warren Regions.
- Proceed with ongoing attempts to propagate plants from stored seed, and if successful test the genetics of any seedlings of *Eucalyptus x phylacis*.
- Undertake an adaptive management program in regard to fire response of *Gastrolobium modestum* inclusive of monitoring for upcoming prescribed burns and conducting seed soil viability tests.
- Conduct taxonomic research into *Gastrolobium whicherense* by collecting plants from full range of the species within the Whicher Scarp. Review taxonomy of the group to see if there is more than one taxon in this currently named species.
- Conduct taxonomic research into *Gastrolobium* sp. Yoongarillup (S. Dilkes s.n. 1/9/1969) by collecting plants from a full range of the closely related *Gastrolobium whicherensis* within the Whicher Scarp and newly located plants in Yoongarillup reserve.
- Investigate the taxonomy of the Blackwood Plateau form of *Grevillea brachystylis* subsp. *brachystylis*. If it is distinct, nominate species to be listed as threatened.
- Investigate the taxonomy of the Blackwood Plateau form of *Grevillea brachystylis* subsp. *grandis*.
- Investigate the genetics of *Grevillea prominens*, in particular the Mount Williams form.
- Undertake a taxonomic review of genus *Hemiandra*.
- Locate and monitor *Hemigenia obovata* to clarify species distribution, conservation status and improve understanding of local taxonomy and identification.
- Resolve the taxonomic issues with *Lambertia orbifolia* and formally recognise the three subspecies.
- Investigate genetics of *Lambertia orbifolia* subsp. Collie to formally recognise the highly restrictive nature of this subspecies.

- Develop an information sheet detailing how to identify *Leucopogon* sp. Busselton (D. Cooper 243) from other *Leucopogon* species.
- Investigate methods of annual weed control that limits off target impacts on native flora including *Meionectes tenuifolia* populations.
- Establish taxonomy of *Melaleuca incana* subsp. Gingilup and how it relates to other forms of *Melaleuca incana*.
- Monitor known populations of *Netrostylis* sp. Nannup to inform status and management needs. Utilise findings to inform how the taxonomy differs from *Netrostylis* sp. Blackwood.
- Investigate methods of annual weed control that limits off target impacts on native flora including *Ornduffia submersa* populations.
- Monitor all known *Pterostylis frenchii* populations in liaison with Adopt an Orchid.
- Survey for additional populations of *Pterostylis frenchii* populations in liaison with Adopt an Orchid.
- Conduct hydrological studies of surface and ground water at *Reedia spathacea* habitat. Liaise with DWER or hydrologist to interpret existing and ongoing Yarragadee bore monitoring.
- Establish water level measures at *Schoenus natans* populations to determine habitat requirements and to inform when weed control would be required.
- Monitor *Synaphea diabolica* populations to determine current threatening processes.
- Investigate taxonomy of *Synaphea macrophylla*.
- Investigate the taxonomy of *Synaphea nexosa* to distinguish from large plants of *Synaphea petiolaris* on the Scott Plain.
- Investigate the taxonomy of the disjunct *Synaphea otostigma* populations.
- Taxonomic review for genus *Synaphea* with specific focus on clarifying *Synaphea odocoileops* and *Synaphea gracillima*.
- Publish the taxonomy of *Synaphea* sp. Argyle.
- Complete a genetic and taxonomic review of west and south coast populations of *Thelymitra variegata*.
- Investigate the genetics of *Verticordia plumosa* var. *ananeotes* and how it differs to other subspecies.
- Investigate the genetics of *Verticordia plumosa* var. *vassensis* to determine whether the Busselton and Scott River forms can still be considered the same taxa.

ECOLOGICAL COMMUNITIES

- Capture the genetic diversity of Hairpin Road and other isolated occurrences of the Shrublands on southern Swan Coastal Plain ironstones (Busselton area) (SCP10b) ecological community in surveys.

- Investigate the cause of weed spread across the FISH09 occurrence of the Shrublands on dry clay flats (floristic community type 10a as originally described in Gibson et al. (1994)) ecological community.

8 References

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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 South West Region priority management units.

Priority landscape unit	Priority management unit	Comments	Indicative reserves*
Darling Range	Darling Scarp and Plateau	Western portions	Bennelacking CP, Muja CP, Wellington NP, Ross, Surface, Yourdamung and Nalyerin forest blocks containing the headwaters of the Harris River
	Woolbelt	Eastern portions	Haddleton NR, Kulicup NR, Wildhorse Swamp NR, Nollajup NR
Warren-Denmark Southland	Nannup Karri		Dalgarup NP, Gregory, Beaton and Ellis Creek State forest blocks
Leeuwin Block	Margaret River Plateau	Eastern portions	Yelverton NP, Forest Grove NP, Wooditjup NP, Stockdill NR, portions of Leeuwin-Naturaliste NP
	Naturaliste Ridge	Western portions	Coastal portions of Leeuwin-Naturaliste NP
Scott Plain	Scott Alluvial		Crown Reserve 42377 Dennis Road, various reserves along Governor-Broome Road including Crown Reserve 12951
	Scott Dune		Parts of Gingilup NR
Blackwood Plateau	Blackwood Plateau		McGregor, Punch, Molloy, Rapids State forest blocks containing the headwaters of the Margaret River, Blackwood River NP, Milyeannup NP
	Whicher Scarp		Treton and Argyle State forest blocks, Whicher NP, Dardanup CP
Swan Coastal Plain	Bassendean		Riverdale Road NR complex, Capel NR, Manea Park and Loughton Park parts of Kalgulup RP, Guthrie State forest block
	Foothill		Korijekup CP, Yarloop reserves
	Pinjarra		Byrd NR, Waterloo NR, Fish NR, Benger NR, Taylor NR
	Quindalup		Leschenault Peninsula CP, Maidens Reserve of Kalgulup RP, parts of Locke NR
	Spearwood		Tuart Forest NP, Kemerton reserves, proposed Lyon NP
	Vasse		Sabina NR, Broadwater NR, New River NR, wet parts of Locke NR, Vasse Wonnerup Ramsar wetland
	Yoongarillup		Hay Park parts of Kalgulup RP



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