

- Structurally, the ecological community may be described as proteaceous kwongan shrubland and heath, or mallee heath.
- Typically for this ecological community, plants from the family Proteaceae make up a large component of the flora, including plants from the genera *Adenanthos*, *Banksia*, *Grevillea*, *Hakea*, *Isopogon* and *Lambertia*. The actual Proteaceae species present in the ecological community is variable across its range.
- Widespread and characteristic species within the ecological community include:
  - *Banksia alliiacea*
  - *B. armata* (prickly dryandra)
  - *B. cirsioides*
  - *B. media* (southern plains banksia)
  - *B. nutans* (nodding banksia)
  - *B. obovata* (wedge-leaved dryandra)
  - *B. sessilis* (parrot bush)
  - *B. speciosa* (showy banksia)
  - *B. tenuis*
  - *Hakea cucullata* (hood-leaved or scallop hakea)
  - *H. corymbosa* (cauliflower hakea)
  - *H. denticulata*
  - *H. drupacea*
  - *H. ferruginea*
  - *H. obliqua* (needles and corks)
  - *H. pandanicarpa*
  - *H. victoria* (royal hakea)
  - *Lambertia inermis*
  - *Beaufortia empetrifolia* (Myrtaceae)
  - *Xanthorrhoea platyphylla* (Xanthorrhoeaceae)
  - *Melaleuca striata* (Myrtaceae).
- Mallee eucalypt trees may be present at varying densities, but providing the vegetation is dominated by Proteaceae species, it is still classified as the ecological community.

The ecological community provides habitat for 45 plant and 15 animal species that are listed as nationally threatened, including:

- critically endangered plant species, such as: *Daviesia glossosema* (maroon-flowered daviesia), *Gastrolobium luteifolium* (yellow-leaved gastrolobium) and *Scaevola macrophylla* (large-flowered scaevola)
- threatened animals include the dibbler, heath mouse, Carnaby's black cockatoo, western bristlebird, western ground parrot, and western whipbird.

## Why is the Proteaceae Dominated Kwongan Shrubland ecological community important?

The region where the ecological community occurs has been identified as a global hotspot of biodiversity and is home to many unique plant species. The ecological community also provides habitat for a range of native birds, mammals, reptiles and other animals. Fifty-four plant and eighteen animal species that are listed as threatened, either nationally or in Western Australia, are known to occur in this ecological community.

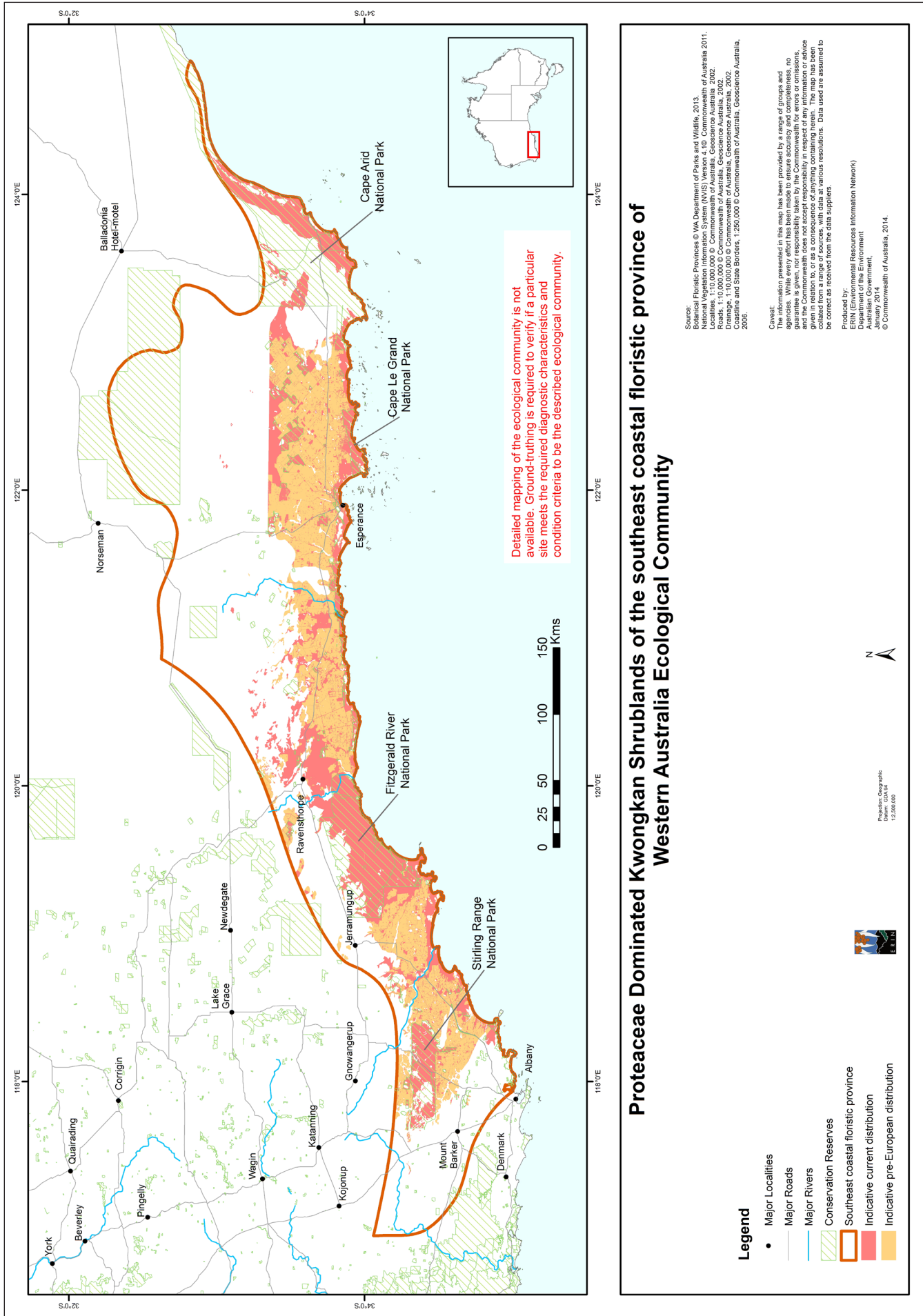
The country of the Nyungar/Noongar and Ngadju Aboriginal people, and their sub-groups or dialectal groups, cover the region where the ecological community occurs. These groups have a strong cultural connection to the ecological community and surrounding environment. The ecological community provides an important resource for Aboriginal people in the form of bush foods, medicines and materials for tools and other significant items. Many patches contain important sites such as ceremonial areas and law grounds.

A large portion of the ecological community has already been lost and remaining areas are vulnerable to the impacts of threats such as dieback due to *Phytophthora cinnamomi*, changing fire regimes, land clearing, invasive species, and climate change. Some of these threats are also affecting areas of the ecological community that occur in reserves. In many areas it now mostly exists as small and fragmented patches. Protection will contribute to a region that is better able to cope with environmental fluctuations and changes.



Fitzgerald River National Park and surrounding lands (Department of the Environment)

Figure 1: Location of the Proteaceae Dominated Kwongan Shrubland Ecological Community, showing indicative current and pre-European distribution.





Degraded roadside, showing loss of the ecological community on the left (Department of the Environment)



Loss of dominant tall structure due to dieback of *Banksia speciosa* (showy banksia), Cape Le Grand National Park (Department of the Environment)

## Why does it need national protection?

In January 2014, the Australian Government Minister for the Environment listed the Proteaceae Dominated Kwongan Shrubland ecological community after considering the advice of the Threatened Species Scientific Committee.

During a rigorous assessment, the scientific evidence supported as it met the eligibility criteria for listing as endangered under national environment law.

Across its range the ecological community has been grouped on a biological basis, bringing together vegetation across the region of similar structure that is dominated by proteaceous species. This forms a nationally unique ecological community that has common threats and management practices. Whilst the ecological community is likely to be present in several shires, it is all included within the South Coast Natural Resource Management (NRM) region, which allows for a co-ordinated NRM approach.

The ecological community is intolerant of frequent disturbance due to land modification and clearance. A reduction in the integrity of the ecological community is evident from observations of dieback due to plant pathogens, effects of altered fire regimes, weed invasion, fragmentation and the subsequent decline or changes to flora and fauna within the ecological community. A reduction in community integrity results in changes to both the species composition and ecological processes that maintain the ecological community. If these changes are ongoing, some native species may persist, but it could lead to the eventual loss of a naturally functioning ecological community overall.

The overall aim of listing is to prevent its decline and to provide support to on-ground efforts that ensure its long-term survival. The **conservation advice** outlines a range of priority research and management actions that provide guidance on how to manage, restore and protect the ecological community.

## What are the benefits of listing an ecological community as nationally threatened?

There are a number of benefits to listing ecological communities under Australia's national environment law:

- Listing an ecological community can help to protect the landscapes that provide connectivity, corridors and refuge essential to protect and improve the ecological function, health and biodiversity of the region. It can protect habitat critical for refuge and recruitment for threatened species and for other species that are under pressure in the region. In turn, this helps foster the ecosystem services associated with an ecological community.
- Listing threatened ecological communities helps protect them from future significant human impacts that may cause further decline. The aim of the national environment law is to ensure the matters of national environmental significance are given due consideration, along with broader economic, social and other issues in the planning of any large projects. Where possible, significant adverse impacts to the environment should be avoided, or the impacts mitigated, reduced or offset, when unavoidable.



- National listing encourages agencies and community/Landcare groups to access environmental funding opportunities for conservation and recovery works. The Australian Government has a variety of funding programs to encourage land managers to continue to conserve biodiversity and ecosystem services on their properties.
- A **conservation advice**, published at the time of listing, provides guidance and options for environmental decision-making, including rehabilitation and conservation initiatives in the region.
- In the case of the Proteaceae Dominated Kwongkan Shrubland ecological community, the listing will:
  - provide landscape-scale protection that complements existing national protection for threatened species that are found within the ecological community (e.g. the Fitzgerald Biosphere Recovery Plan)
  - protect the environmental values, including the ecosystem functions and services associated with the ecological community, which contributes to the long-term productivity of the landscape
  - provide a range of environmental amenity benefits that support tourism and recreation activities.



Regeneration following fire, Fitzgerald River National Park (Department of the Environment)

## What does the listing mean for landholders?

The national environment law is triggered if an action is likely to have a significant impact on the Proteaceae Dominated Kwongkan Shrubland ecological community. If a proposed action is likely to have such an impact, it would require:

- referral (determining if the action may have a significant impact on the ecological community)
- assessment (the scope of the assessment depends on the complexity of the proposed action and impacts)
- a decision on approval from the Minister (who considers the environmental, social and economic factors involved).

Social and economic matters may be taken into account for individual projects that may have a significant impact on the ecological community, through the EPBC Act approvals process. Strict timeframes apply to assessments to ensure decisions are made as quickly as possible.

The normal activities of individual landholders and residents will typically not be affected by a listing. Routine property maintenance, land management and other established practices are unlikely to have a significant impact and so do not typically require referral under national environment law, particularly if carried out in line with other national and state laws covering native vegetation.

For instance, the following actions are unlikely to trigger national environment law:

- ongoing grazing, horticultural or cropping activities
- maintaining existing fences, roads, internal access tracks and firebreaks
- maintaining existing farm gardens and orchards
- maintaining existing farm dams or water storages
- maintaining existing pumps and clearing drainage lines
- replacing and maintaining sheds, yards and other farm buildings
- controlling weeds and spraying for pests on individual properties
- small scale extraction of gypsum and lime for on farm use, as well as small scale gravel extraction for road works.

In all these cases impacts on important patches of the ecological community (e.g. high quality, important corridor for wildlife) should be avoided.

One of the major concerns with some activities is the spread of *Phytophthora* dieback, which has the potential for broader detrimental impacts to the ecological community. Activities in the region should therefore continue to be carried out with appropriate hygiene measures in place to prevent the introduction and spread of dieback (e.g. by cleaning boots, vehicles and machinery).

Whether or not an action is likely to have a significant impact depends upon the sensitivity, value and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. The major activity that is likely to have a significant impact on the ecological community is permanently clearing large or otherwise important areas of intact or high-quality native vegetation. This might include, for example, major mining, residential, commercial or other industrial development, developing wind farms, building new roads or widening existing roads, or converting large areas into new pastures or cropping fields. To help reduce the significance of actions, the EPBC Act promotes the avoidance and mitigation of impacts from the early planning stage, wherever that is possible.

## Have activities previously been referred under the EPBC Act for this area?

Within the area of the Proteaceae Dominated Kwongkan Shrubland ecological community some developments and activities have previously been referred for consideration under the EPBC Act due to possible impacts on threatened species that are already nationally protected. No activity has been rejected outright, although some were approved with conditions to take better account of significant environmental impacts.

## Where can I get further information?

- The listing process: [www.environment.gov.au/topics/threatened-species-ecological-communities](http://www.environment.gov.au/topics/threatened-species-ecological-communities)
- The EPBC referral and approval process: [www.environment.gov.au/topics/environment-protection](http://www.environment.gov.au/topics/environment-protection)
- Australian Government natural resource management initiatives: [www.nrm.gov.au/](http://www.nrm.gov.au/)
- The Department's Community Information Unit: by phone on **1800 803 772** (freecall), or email at [ciu@environment.gov.au](mailto:ciu@environment.gov.au)
- The EPBC liaison officer with the National Farmers Federation: by email at [environment@nff.org.au](mailto:environment@nff.org.au)



Kwongkan shrublands at East Mount Barren, Fitzgerald River National Park (Department of the Environment)

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The views and opinions expressed in this publication are those of the authors and do not necessarily reflect those of the Australian Government or the Minister for the Environment.

## Appendix H

### List of Threatened Ecological Communities (TECs) endorsed by the Western Australian Minister for Environment

Species & Communities Branch (Correct as at 6 October 2016)

| Community identifier           | Community name   | General Location (IBRA Regions) | Category of Threat and criteria met under WA criteria | #Category under Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) |
|--------------------------------|--|---------------------------------|---|--|
| <u>1. SCP20a</u>               | <i>Banksia attenuata</i> woodland over species rich dense shrublands (a component of the Banksia woodlands of the Swan Coastal Plain EPBC listed TEC)  | Swan Coastal Plain              | EN B) iii)  | EN   |
| <u>2. TOOLIBIN</u>             | Perched wetlands of the Wheatbelt region with extensive stands of living Swamp Sheoak ( <i>Casuarina obesa</i> ) and Paperbark ( <i>Melaleuca strobophylla</i> ) across the lake floor.              | Avon Wheatbelt                  | CR A) i); CR A) 11); CR C)                            | EN   |
| <u>3. SCP10b</u>               | Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)  | Swan Coastal Plain              | CR B) ii)   | EN   |
| <u>4. SCP19</u>                | Sedgeland in Holocene dune swales of the southern Swan Coastal Plain   | Swan Coastal Plain              | CR B) ii)   | EN   |
| <u>5. Clifton-microbialite</u> | Stromatolite like freshwater microbialite community of coastal brackish lakes  | Swan Coastal Plain              | CR B) i), CR B) ii)                                   | CR   |
| <u>6. Richmond-microbial</u>   | Stromatolite like microbialite community of coastal freshwater lakes   | Swan Coastal Plain              | CR B) i), CR B) ii)                                   | EN   |
| <u>7. Mound Springs SCP</u>    | Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain)   | Swan Coastal Plain              | CR A) i), CR A) ii), CR B) i), CR B) ii)              | EN   |
| <u>8. SCP20c</u>               | Shrublands and woodlands of the eastern side of the Swan Coastal Plain   | Swan Coastal Plain              | CR B) ii)   | EN   |
| <u>10. NTHIRON</u>             | Perth to Gingin Ironstone Association  | Swan Coastal Plain              | CR A) ii), CR B) ii), CR C)                           | EN   |
| <u>11. MUCHEA LIMESTONE</u>    | Shrublands and woodlands on Muchea Limestone   | Swan Coastal Plain              | EN B) ii)   | EN   |
| <u>12. Augusta-microbial</u>   | Rimstone Pools and Cave Structures Formed by Microbial Activity on Marine Shorelines   | Warren                          | EN B) ii)   |  |
| <u>13. SCP30a</u>              | <i>Callitris preissii</i> (or <i>Melaleuca lanceolata</i> ) forests and woodlands, Swan Coastal Plain  | Swan Coastal Plain              | VU B)   |  |
| <u>14. SCP18</u>               | Shrublands on calcareous silts of the Swan Coastal Plain   | Swan Coastal Plain              | VU B)   |  |
| <u>15. SCP02</u>               | Southern wet shrublands, Swan Coastal Plain  | Swan Coastal Plain              | EN B) ii)   |  |
| <u>16. SCP3a</u>               | <i>Corymbia calophylla</i> - <i>Kingia australis</i> woodlands on heavy soils, Swan Coastal Plain  | Swan Coastal Plain              | CR B) ii)   | EN   |
| <u>17. SCP3c</u>               | <i>Corymbia calophylla</i> - <i>Xanthorrhoea preissii</i> woodlands and shrublands, Swan Coastal Plain   | Swan Coastal Plain              | CR B) ii)   | EN   |
| <u>18. Thetis-microbialite</u> | Stromatolite community of stratified hypersaline coastal lakes (Lake Thetis)   | Geraldton Sandplain             | VU B)   |  |
| <u>19. SCOTT IRONSTONE</u>     | Scott River Ironstone Association  | Warren                          | EN B) i), EN B) ii)                                   | EN   |
| <u>20. SCP20b</u>              | <i>Banksia attenuata</i> and/or <i>Eucalyptus marginata</i> woodlands of the eastern side of the Swan Coastal Plain (a component of the Banksia woodlands of the Swan Coastal Plain EPBC listed TEC) | Swan Coastal Plain              | EN B) i), EN B) ii)                                   | EN   |
| <u>21. SCP15</u>               | Forests and woodlands of deep seasonal wetlands of the Swan Coastal Plain  | Swan Coastal Plain              | VU C)   |  |

| Community identifier             | Community name   | General Location (IBRA Regions) | Category of Threat and criteria met under WA criteria | #Category under Commonwealth Environment Protection and Biodiversity Conservation Act 1999 |
|----------------------------------|--|---------------------------------|---|--|
| <u>22. SCP1b</u>                 | <i>Corymbia calophylla</i> woodlands on heavy soils of the southern Swan Coastal Plain   | Swan Coastal Plain              | VU B)   |  |
| <u>23. SCP3b</u>                 | <i>Corymbia calophylla</i> - <i>Eucalyptus marginata</i> woodlands on sandy clay soils of the southern Swan Coastal Plain  | Swan Coastal Plain              | VU B)   |  |
| <u>24. CAVES SCP01</u>           | Aquatic Root Mat Community Number 1 of Caves of the Swan Coastal Plain   | Swan Coastal Plain              | CR B) i), CR B) ii)                                   | EN   |
| <u>25. CAVES LEEUWIN01</u>       | Aquatic Root Mat Community Number 1 of Caves of the Leeuwin Naturaliste Ridge  | Warren                          | CR B) i), CR B) ii)                                   | EN   |
| <u>26. CAVES LEEUWIN02</u>       | Aquatic Root Mat Community Number 2 of Caves of the Leeuwin Naturaliste Ridge  | Warren                          | CR B) i), CR B) ii)                                   | EN   |
| <u>27. CAVES LEEUWIN03</u>       | Aquatic Root Mat Community Number 3 of Caves of the Leeuwin Naturaliste Ridge  | Warren                          | CR B) i), CR B) ii)                                   | EN   |
| <u>28. CAVES LEEUWIN04</u>       | Aquatic Root Mat Community Number 4 of Caves of the Leeuwin Naturaliste Ridge  | Warren                          | CR B) i), CR B) ii)                                   | EN   |
| <u>29. MONTANE</u>               | Montane Thicket of the eastern Stirling Range (some areas are also a component of the Proteaceae Dominated Kwongan Shrublands of the southeast coastal floristic province of Western Australia Endangered EPBC listed TEC) | Esperance Sandplain             | CR B) ii)   | EN   |
| <u>30. MEELUP GRANITES</u>       | <i>Calothamnus graniticus</i> heaths on south west coastal granites  | Warren/Jarrah Forest            | VU B)   |  |
| <u>32. SCP07</u>                 | Herb rich saline shrublands in clay pans (a component of the Claypans of the Swan Coastal Plain EPBC listed TEC)   | Swan Coastal Plain              | VU B)   | CR   |
| <u>33. SCP08</u>                 | Herb rich shrublands in clay pans (a component of the Claypans of the Swan Coastal Plain EPBC listed TEC)  | Swan Coastal Plain              | VU B)   | CR   |
| <u>34. SCP09</u>                 | Dense shrublands on clay flats (a component of the Claypans of the Swan Coastal Plain EPBC listed TEC)   | Swan Coastal Plain              | VU B)   | CR   |
| <u>35. SCP10a</u>                | Shrublands on dry clay flats (a component of the Claypans of the Swan Coastal Plain EPBC listed TEC)   | Swan Coastal Plain              | EN B) ii)   | CR   |
| <u>38. Morilla swamp</u>         | Perched fresh-water wetlands of the northern Wheatbelt dominated by extensive stands of living <i>Eucalyptus camaldulensis</i> (River Red Gum) across the lake floor.  | Avon Wheatbelt                  | PD B)   |  |
| <u>39. Camerons</u>              | Camerons Cave Troglitic Community  | Carnarvon Basin                 | CR B) i), CR B) ii)                                   |  |
| <u>40. Bryde</u>                 | Unwooded freshwater wetlands of the southern Wheatbelt of Western Australia, dominated by <i>Duma horrida</i> subsp. <i>abdita</i> and <i>Tecticornia verrucosa</i> across the lake floor                                  | Avon Wheatbelt                  | CR B) i), CR B) ii)                                   |  |
| <u>41. Bundera</u>               | Cape Range Remipede Community  | Carnarvon Basin                 | CR B) ii)   |  |
| <u>42. Greenough River Flats</u> | <i>Acacia rostellifera</i> low forest with scattered <i>Eucalyptus camaldulensis</i> on Greenough Alluvial Flats.  | Geraldton Sandplain             | CR C)   |  |
| <u>44. Roebuck Bay mudflats</u>  | Species-rich faunal community of the intertidal mudflats of Roebuck Bay  | Kimberley                       | VU B)   |  |
| <u>46. Themeda Grasslands</u>    | Themeda grasslands on cracking clays (Hamersley Station, Pilbara). Grassland plains dominated by the perennial Themeda (kangaroo grass) and many annual herbs and grasses.   | Pilbara                         | VU A)   |  |
| <u>49. Bentonite Lakes</u>       | Herbaceous plant assemblages on Bentonite Lakes  | Avon Wheatbelt                  | EN B) iii)  |  |



| Community identifier                      | Community name  | General Location (IBRA Regions)         | Category of Threat and criteria met under WA criteria | #Category under Commonwealth Environment Protection and Biodiversity Conservation Act 1999 |
|---|---|---|---|--|
| <u>55. Coomberdale chert hills</u>        | Heath dominated by one or more of <i>Regelia megacephala</i> , <i>Kunzea praestans</i> and <i>Allocasuarina campestris</i> on ridges and slopes of the chert hills of the Coomberdale floristic region.   | Avon Wheatbelt                          | EN B) ii)   |  |
| <u>56. Billeranga System</u>              | Plant assemblages of the Billeranga System (Beard 1976): <i>Melaleuca filifolia</i> – <i>Allocasuarina campestris</i> thicket on clay sands over laterite on slopes and ridges; open mallee over mixed scrub on yellow sand over gravel on western slopes; <i>Eucalyptus loxophleba</i> woodland over sandy clay loam or rocky clay on lower slopes and creeklines; and mixed scrub or scrub dominated by <i>Dodonaea inaequifolia</i> over red/brown loamy soils on the slopes and ridges. (Some woodland areas are components of the Eucalypt woodlands of the WA Wheatbelt EPBC listed TEC).   | Avon Wheatbelt                          | VU A), VU B)  | CR (some component woodlands)  |
| <u>59. Koolanooka System</u>              | Plant assemblages of the Koolanooka System (Beard 1976): <i>Allocasuarina campestris</i> scrub over red loam on hill slopes; Shrubs and emergent mallees on shallow loam red over massive ironstone on steep rocky slopes; <i>Eucalyptus ebbanoensis</i> subsp. <i>ebbanoensis</i> mallee and <i>Acacia</i> sp. scrub with scattered <i>Allocasuarina huegeliana</i> over red loam and ironstone on the upper slopes and summits; <i>Eucalyptus loxophleba</i> woodland over scrub on the footslopes; and mixed <i>Acacia</i> sp. scrub on granite. (Some woodland areas are components of the Eucalypt woodlands of the WA Wheatbelt EPBC listed TEC). | Avon Wheatbelt                          | VU A), VU B)  | CR (some component woodlands)  |
| <u>60. Moonagin System</u>                | Plant assemblages of the Moonagin System (Beard 1976): <i>Acacia</i> scrub on red soil on hills; <i>Acacia</i> scrub with scattered <i>Eucalyptus loxophleba</i> and <i>Eucalyptus oleosa</i> on red loam flats on the foothills. (Some woodland areas are components of the Eucalypt woodlands of the WA Wheatbelt EPBC listed TEC).   | Avon Wheatbelt                          | VU A), VU B)  | CR (some component woodlands)  |
| <u>62. Limestone ridges (SCP 26a)</u>     | <i>Melaleuca huegelii</i> - <i>Melaleuca systema</i> shrublands on limestone ridges (Gibson <i>et al.</i> 1994 type 26a)  | Swan Coastal Plain                      | EN B) iii)  |  |
| <u>63. Irwin River Clay Flats</u>         | Clay flats assemblages of the Irwin River: Sedgeland and grasslands with patches of <i>Eucalyptus loxophleba</i> and scattered <i>E. camaldulensis</i> over <i>Acacia acuminata</i> and <i>A. rostellifera</i> shrubland on brown sand/loam over clay flats of the Irwin River.   | Avon Wheatbelt                          | PD A), PD B)  |  |
| <u>67. Monsoon thickets</u>               | Monsoon (vine) thickets on coastal sand dunes of Dampier Peninsula  | West Kimberley, Dampierland Bioregion   | VU C)   | EN   |
| <u>70. Mt Lindesay</u>                    | Mt Lindesay – Little Lindesay Vegetation Complex  | Frankland District, Warren Region       | EN B) ii)   |  |
| <u>71. Russell Range</u>                  | Russell Range mixed thicket complexes (a component of the Proteaceae Dominated Kwongan Shrublands of the southeast coastal floristic province of Western Australia EPBC listed TEC)   | South Coast, Esperance Plains Bioregion | VU B), VU C)  | EN   |
| <u>72. Ferricrete</u>                     | Ferricrete floristic community (Rocky Springs type)   | Geraldton Sandplain                     | VU B)   |  |
| <u>74. Herblands and Bunch Grasslands</u> | Herblands and Bunch Grasslands on gypsum lunette dunes alongside saline playa lakes.  | Esperance Sandplain                     | VU B)   |  |



| Community identifier                                 | Community name  | General Location (IBRA Regions)                                | Category of Threat and criteria met under WA criteria | #Category under Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> |
|--|---|--|---|---|
| <u>75. Inering System</u>                            | Plant assemblages of the Inering System (Beard 1976). <i>Allocasuarina campestris</i> scrub over chert and granite; <i>Allocasuarina campestris</i> thicket with scattered <i>Acacia acuminata</i> and <i>Allocasuarina huegeliana</i> over brown sandy loam over stony and lateritic summits and slopes; <i>Acacia</i> sp. mixed low woodland on red/brown sandy loam over granite on summits and slopes; <i>Melaleuca cardiophylla</i> thicket with scattered <i>Eucalyptus loxophleba</i> and <i>Eucalyptus salmonophloia</i> over granite on the lower slopes and foothills; and <i>Eucalyptus loxophleba</i> woodland over clay loam on the foothills. (Some woodland areas are components of the Eucalypt woodlands of the WA Wheatbelt EPBC listed TEC). | Avon Wheatbelt   | VU A)   | CR (some component woodlands)   |
| <u>76. Lesueur-Coomallo Floristic Community D1</u>   | Lesueur-Coomallo Floristic Community D1   | Geraldton Sandplain  | CR B) i)<br>CR B) ii)                                 |   |
| <u>77. Lesueur-Coomallo Floristic Community A1.2</u> | Lesueur-Coomallo Floristic Community A1.2   | Geraldton Sandplain  | EN B) ii)   |   |
| <u>78. Ethel Gorge</u>                               | Ethel Gorge aquifer stygobiont community  | Pilbara  | EN B) ii)   |   |
| <u>80. Theda Soak</u>                                | Assemblages of Theda Soak rainforest swamp  | North Kimberley  | VU A), VU B)  |   |
| <u>81. Walcott Inlet</u>                             | Assemblages of Walcott Inlet rainforest swamps  | North Kimberley  | VU B)   |   |
| <u>82. Roe River</u>                                 | Assemblages of Roe River rainforest swamp   | North Kimberley  | VU B)   |   |
| <u>84. Dragon Tree Soak</u>                          | Assemblages of Dragon Tree Soak organic mound spring  | Kimberley Region, Great Sandy Desert Bioregion                 | EN B) i)  |   |
| <u>85. Bunda Bunda</u>                               | Assemblages of Bunda Bunda organic mound spring   | West Kimberley, Dampierland Bioregion                          | VU A), VU B)  |   |
| <u>86. Big Springs</u>                               | Assemblages of Big Springs organic mound springs  | West Kimberley, Dampierland Bioregion                          | VU A), VU B)  |   |
| <u>89. North Kimberley mounds</u>                    | Organic mound spring sedgeland community of the North Kimberley Bioregion   | North Kimberley  | VU A), VU B)  |   |
| <u>92. Black Spring</u>                              | Black Spring organic mound spring community   | North Kimberley  | EN B) i), EN B) ii)                                   |   |
| <u>95. Mandora Mounds</u>                            | Assemblages of the organic springs and mound springs of the Mandora Marsh area  | West Kimberley, Dampierland and Greats Sandy Desert Bioregions | EN B) iii)  |   |
| <u>96. Broomehill</u>                                | Plant assemblages of the Broomehill System  | Avon Wheatbelt   | PD A)   |   |
| <u>97. Mound Springs (Three Springs area)</u>        | Assemblages of the organic mound springs of the Three Springs area  | Avon Wheatbelt   | EN B) i), EN B) ii)                                   |   |
| <u>99. Depot Springs</u>                             | Depot Springs stygofauna community  | Goldfields Region, Murchison Bioregion                         | VU B)   |   |

| Community identifier                      | Community name   | General Location (IBRA Regions) | Category of Threat and criteria met under WA criteria | #Category under Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> |
|---|--|---------------------------------|---|---|
| 102. <i>Eucalyptus acies mallee heath</i> | Thumb Peak, Mid mount Barren, Woolburnup Hill (Central Barren Ranges) <i>Eucalyptus acies</i> mallee heath (a component of the Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia EPBC listed TEC). | Esperance Sandplain             | VU B)   | EN (part)   |

Total = 69 TECs in Western Australia that are endorsed by the Minister for Environment (31 of these, or components of them, are also listed under the EPBC Act).

#The key diagnostic characteristics, condition and size thresholds in the Approved Conservation Advices should be applied to determine if particular occurrences/areas align with EPBC listed TECs.

TECs: Critically Endangered: 21; Endangered: 17; Vulnerable: 28; Presumed Destroyed: 3

## Appendix I

| <b>PRIORITY ECOLOGICAL COMMUNITIES FOR WESTERN AUSTRALIA<br/>VERSION 27</b>   |   |                      |                          |
|---|---|----------------------|--------------------------|
| <b>Species and Communities Branch, Department of Biodiversity, Conservation and Attractions</b>   |   |                      |                          |
| <b>30 June 2017</b>   |   |                      |                          |
| <p>Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the priority ecological community list under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as threatened ecological communities. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for near threatened, or that have been recently removed from the threatened list, are placed in priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in priority 5.</p> <p>Note:</p> <p>i) Nothing in this table may be construed as a nomination for listing under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)</p> <p>ii) The inclusion in this table of a community type does not necessarily imply any status as a threatened ecological community, however some communities are listed as threatened ecological communities (TECs) under the EPBC Act (see column D).</p> <p>iii) The key diagnostic characteristics, condition and size thresholds in the Approved Conservation Advices should be applied to determine if particular areas align with EPBC listed TECs.</p> <p>iii) Regions eg Pilbara are based on Department of Biodiversity, Conservation and Attractions regional boundaries.</p> <p>iv) For definitions of categories (Priority 1 etc.) refer to document entitled 'Definitions and Categories'.</p> |   |                      |                          |
|   | <b>Community name</b>   | <b>Category (WA)</b> | <b>Category EPBC Act</b> |
| <b>PILBARA</b>  |   |                      |                          |
| 1   | <p><b>West Angelas Cracking-Clays</b></p> <p>Open tussock grasslands of <i>Astrebla pectinata</i>, <i>A. elymoides</i>, <i>Aristida latifolia</i>, in combination with <i>Astrebla squarrosa</i> and low scattered shrubs of <i>Sida fibulifera</i>, on basalt derived cracking-clay loam depressions and flowlines.</p> <p>Threats: disturbance footprints increasing from mine, future infrastructure development, possible weed invasion and changes in fire regime.</p>   | Priority 1           |                          |
| 2   | <p><b>Weeli Wolli Spring community</b></p> <p>Weeli Wolli Spring's riparian woodland and forest associations are unusual as a consequence of the composition of the understorey. The sedge and herbfield communities that fringe many of the pools and associated water bodies along the main channels of Weeli Wolli Creek have not been recorded from any other wetland site in the Pilbara. The spring and creekline are also noted for their relatively high diversity of stygofauna and this is probably attributed to the large-scale calcrete and alluvial aquifer system associated with the creek. The valley of Weeli Wolli Spring also supports a very rich microbat assemblage including a threatened species.</p> <p>Threats: dewatering and re-watering altering patterns of inundation, weed invasion</p>  | Priority 1           |                          |
| 3   | <p><b>Burrup Peninsula rock pool communities</b></p> <p>Calcareous tufa deposits. Interesting aquatic snails.</p> <p>Threats: recreational impacts, and potential development; possibly NOX and SOX emissions, weed invasion including <i>Passiflora foetida</i> (stinking passion flower) .</p>  | Priority 1           |                          |
| 4   | <p><b>Burrup Peninsula rock pile communities</b></p> <p>Pockets of vegetation in rock piles, rock pockets and outcrops. Comprise a mixture of Pilbara and Kimberley species, communities are different from those of the Hamersley and Chichester Ranges. Short-range endemic land snails.</p> <p>Threats: industrial development dust emissions. Weed invasion including buffel grass, <i>Passiflora foetida</i>.</p>  | Priority 1           |                          |
| 5   | <p><b>Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays</b> (Roebourne Plains gilgai grasslands)</p> <p>The Roebourne Plains coastal grasslands with gilgai micro-relief occur on deep cracking clays that are self mulching and emerge on depositional surfaces. The Roebourne Plains gilgai grasslands occur on microrelief of deep cracking clays, surrounded by clay plains/flats and sandy coastal and alluvial plains. The gilgai depressions supports ephemeral and perennial tussock grasslands dominated by <i>Sorghum</i> sp. and <i>Eragrostis xerophila</i> (Roebourne Plains grass) along with other native species including <i>Astrebla pectinata</i> (barley mitchell grass), <i>Eriachne benthamii</i> (swamp wanderie grass), <i>Chrysopogon fallax</i> (golden beard grass) and <i>Panicum decompositum</i> (native millet). Restricted to the Karratha area, this community differs from the surrounding clay flats of the Horseflat land system which are dominated by <i>Eragrostis xerophila</i> and other perennial tussock grass species (<i>Eragrostis</i> mostly).</p> <p>Threats: grazing, clearing for mining and infrastructure and urban development, weed invasion, basic raw material extraction.</p> | Priority 1           |                          |

|                    |   |               |                                  |
|--------------------|---|---------------|----------------------------------|
| 23                 | <p><b>Plant assemblages of the Wongan Hills System</b> (some woodlands are a component of the Eucalypt woodlands of the WA Wheatbelt EPBC listed TEC)</p> <p>Mallee over <i>Petrophile shuttleworthiana/Allocasuarina campestris</i> thicket on shallow gravely soils over ironstone on summit and slopes; Shrub mallee on slopes of lateritic hills; Mallee over <i>Allocasuarina campestris</i> thicket on the slopes of the laterite plateaus; Mallee over <i>Melaleuca</i> thicket on red brown loam over gravel on slopes below the plateau; Mallee over <i>Melaleuca coroncarpa</i> heath on shallow red soil on scarp slopes; <i>A. campestris/Calothamnus asper</i> thicket over red-brown clay/ironstone/greenstone on scree slopes; and in lower areas: <i>Eucalyptus longicornis/ E. salubris</i> woodland, <i>E. salmonophloia</i> and <i>E. loxophleba</i> woodlands; <i>Acacia acuminata</i> low forest; <i>E. ebbanoensis</i> mallee over scrub; and open mallee of <i>E. drummondii</i>.</p>                    | Priority 4(i) | Critically Endangered TEC (part) |
| <b>SOUTH COAST</b> |   |               |                                  |
| 1                  | <p><b>Stromatolite-like microbialite community of a Coastal Hypersaline Lake (Pink Lake)</b></p> <p>Microbial, invertebrate and plant assemblages of natural saline seeps. Well-laminated stromatolites consisting of alternations of egg-shell-like layers of inorganic aragonite precipitate and calcified microbial layers dominated by coccoid cyanobacteria and photosynthetic bacteria. These structures probably record seasonal alternations of the growth of a benthic microbial community and aragonite precipitation.</p>  | Priority 1    |                                  |
| 2                  | <p><b>Allocasuarina globosa assemblages on greenstone rock (Esperance District)</b></p> <p>Assemblage only known from near Norseman and in the Bremer Range (see below).<br/>Threats: mining and exploration</p>  | Priority 1    |                                  |
| 3                  | <p><b>Bremer Range vegetation complexes</b></p> <p>Mt Day, Round Top Hill, Honman Ridge.</p> <p><i>Eucalyptus rhomboidea</i> ms and <i>E. eremophila</i> woodland on the side slopes of low ridges; <i>E. flocktoniae</i> woodland (with <i>E. salubris</i>, <i>E. salmonophloia</i>, <i>E. dundasii</i> and <i>E. tenuis</i>) on broad flat ridges and side slopes; <i>E. flocktoniae</i> and/or <i>E. longicornis</i> woodland on saline soils on ridges and flats adjacent to large salt lake systems; <i>E. longicornis</i> and/or <i>E. salmonophloia</i> or, <i>E. georgei</i> subsp <i>georgei</i> or, <i>E. dundasii</i> woodland, on low areas; <i>E. livida</i> woodland on lateritic tops or <i>Allocasuarina</i> thickets on greenstone ridges of lateritic breakaways; <i>Acacia duriuscula</i>, <i>Allocasuarina globosa</i>, <i>E. georgei</i> subsp. <i>georgei</i> and <i>E. oleosa</i> thickets on greenstone ridges with skeletal soils. Proposed Nature Reserve.</p> <p>Threats: exploration and mining</p> | Priority 1    |                                  |
| 4                  | <p><b>Fraser Range vegetation complex</b></p> <p>Plant assemblages of the Fraser Range Vegetation Complex: <i>Allocasuarina huegeliana</i> and <i>Pittosporum phylliraeoides</i> open woodland over <i>Beyeria lechenaultia</i> and <i>Dodonaea microzyga</i> Scrub and <i>Aristida contorta</i> bunch grasses (granite complex), on the slopes and summits of hills; <i>Acacia acuminata</i> Tall Shrubland dominated by <i>Melaleuca uncinata</i> and <i>Triodia scariosa</i> on uplands with shallow loamy sands; <i>Eucalyptus</i> aff. <i>uncinata</i> (KRN 7854) over <i>Senna artemisioides</i> subsp. <i>helmsii</i>, <i>Cryptandra miliaris</i>, <i>Dodonaea boroniifolia</i>, <i>D. stenozyga</i> and <i>Triodia scariosa</i> (<i>Eucalyptus effusa</i> Mallee) on colluvial flats with loamy clay sands, and; <i>E. oleosa</i>, <i>E. transcontinentalis</i>, <i>E. flocktoniae</i> Woodland on flats.</p>   | Priority 1    |                                  |
| 5                  | <p><b>Plant assemblages of the Southern Hills Vegetation Complex</b></p> <p>Complex of woodland (<i>Eucalyptus oleosa</i>, <i>E. transcontinentalis</i>, <i>E. flocktoniae</i>) on flats with open stony ridges carrying mainly mallee and spinifex (<i>Eucalyptus effusa</i> mallee: <i>Eucalyptus rigidula</i> over <i>Cassia helmsii</i>, <i>Cryptandra miliaris</i>, <i>Dodonaea boroniifolia</i>, <i>D. stenozyga</i> and <i>Triodia scariosa</i>). Includes patches of grassland, wattle thicket and mallee.</p>  | Priority 1    |                                  |
| 6                  | <p><b>Green Range granite hill heath and woodland community</b></p> <p>Heath and woodland dominated by <i>Acacia heteroclita</i>, <i>Anthocercis viscosa</i>, <i>Thryptomene saxicola</i>, <i>Darwinia citriodora</i>, <i>Prostanthera verticillata</i>, <i>Platysace compressa</i>, <i>Gastrolobium bilobum</i>, <i>Hakea oleifolia</i>, <i>Leucopogon verticillaris</i>, <i>Agonis flexuosa</i>, <i>Eucalyptus cornuta</i>, and <i>Acacia drummondii</i> ssp. <i>elegans</i> on red clay-loam over granite.</p>   | Priority 1    |                                  |
| 7                  | <p><b>Wet ironstone heath community (Albany District)</b> (a component of the Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p>The habitat for the community is winter-wet ironstone in valley floors. The heath community is dominated by <i>Kunzea recurva</i>, <i>K. preissiana</i>, <i>K. micrantha</i>, <i>Hakea lasiocarpa</i>, <i>H. tuberculata</i>, <i>H. oldfieldii</i>, <i>H. cucullata</i>, <i>H. sulcata</i>, <i>Petrophile squamata</i>, <i>Dryandra tenuifolia</i> ssp. <i>tenuifolia</i>, <i>Adenanthos apiculatus</i>, <i>Melaleuca suberosa</i>, <i>M. violacea</i>, <i>Gastrolobium spinosum</i>. North Porongurup.</p>  | Priority 1    | Endangered TEC                   |



|    |   |            |                       |
|----|---|------------|-----------------------|
| 8  | <p><b>Porongurup Range Karri Forest</b></p> <p>Occurs on granite, red clay-loam on the mid-upper slopes of the Porongurup Range. Dominants include <i>Eucalyptus diversicolor</i>, <i>Corymbia calophylla</i>, <i>Trymalium floribundum</i>, <i>Hydrocotyle ?hirta</i>, <i>Tetrarrhena laevis</i>, <i>Clematis pubescens</i>, <i>Lepidosperma effusum</i> and <i>Pteridium esculentum</i>. Other associated species include; <i>Apium prostratum</i> subsp. <i>phillipii</i> (DRF), <i>Ranunculus colonorum</i>, <i>Adiantum aethiopicum</i>, <i>Asplenium flabellifolium</i>, <i>A. aethiopicum</i> (P4), <i>Veronica plebeia</i>, <i>Poa porphyroclados</i> and <i>Oxalis corniculata</i>.</p>  | Priority 1 |                       |
| 9  | <p><b>Cheynes 1 Tree Mallee</b> (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p><i>Eucalyptus acies</i>, <i>E. lehmanii</i>, <i>E. goniantha</i> Tree Mallee Tall Open Shrubland and Open Sedgeland on loam on steep slopes of spongelite breakaway. Common shrub species include <i>Gastrolobium bilobum</i>, <i>Rhadinothamnus rudis</i>, <i>Melaleuca blaeriifolia</i>, <i>Hakea elliptica</i>, <i>Spyridium majoranifolium</i> and <i>Agonis theiformis</i>. Common sedges include <i>Desmocladus flexuosus</i> and <i>Tetraria capillaris</i>. Priority taxa other than <i>E. acies</i> (P4) and <i>E. goniantha</i> (P4) include <i>Dryandra serra</i> (P4, at the eastern limit of its range) and <i>Calothamnus robustus</i> (P3).</p>  | Priority 1 | Endangered TEC (part) |
| 10 | <p><b>Cheynes 2 Open Tree Mallee</b> (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p><i>Eucalyptus acies</i> (P4), <i>E. doratoxylon</i> Tree Mallee over Mixed Tall Open Shrubland, Open Shrubland and Open Sedgeland on loam on gentle to moderate slopes and crests of spongelite outcropping. Common tall shrub species include <i>Allocasuarina trichodon</i>, <i>Hakea cucullata</i> and <i>H. lasiantha</i>; however the tall shrub stratum may be absent. Common shrubs include <i>Calothamnus robustus</i> (P3), <i>Beaufortia empetrifolia</i>, <i>Dryandra mucronulata</i>, <i>Melaleuca striata</i> and <i>Taxandria spathulata</i>. Common sedges include <i>Mesomelaena stygia</i>, <i>M. tetragona</i>, <i>Cyathochaeta avenacea</i>, <i>Anarthria scabra</i> and <i>Chordifex leucoblepharus</i>.</p>   | Priority 1 | Endangered TEC (part) |
| 11 | <p><b>Melaleuca sp. Kundip (now <i>M. sophisma</i>) Heath</b></p> <p>Very open mallee over <i>Melaleuca sophisma</i> (Collection number GF Craig 6020) dense heath.</p> <p>Open mallee over dense shrub heath (1.0-1.5) dominated by <i>Melaleuca sophisma</i> on pale grey loamy sand with quartz rubble, occupies hill slopes. Associated species include <i>Melaleuca sophisma</i> (GF Craig 6020) (P1) (dominant), <i>M. haplantha</i>, <i>M. stramentosa</i> (P1), <i>M. rigidifolia</i>, <i>M. bracteosa</i>, <i>Melaleuca</i> sp. Gorse, <i>Pultenaea</i> sp. Kundip (GF Craig 6008) (P1), <i>Eucalyptus cernua</i>, <i>E. phaenophylla</i>, <i>E. pileata</i>, <i>Dodonaea trifida</i> (P3), <i>Acacia durabilis</i> (P3), <i>Leucopogon infuscatus</i> and <i>Hibbertia psilocarpa</i> ms. On its eastern boundary, the community abuts <i>Eucalyptus astringens</i> open low woodland and in this area there is an intergrade community.</p>  | Priority 1 |                       |
| 12 | <p><b>Montane mallee of the Stirling Ranges</b> (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p>Thicket, mallee-thicket and heath community on mid to upper slopes of Stirling Range mountains and hills east of Red Gum Pass.</p>  | Priority 1 | Endangered TEC (part) |
| 13 | <p><b>Coyanarup Wetland Suite</b></p> <p>Microscale paluslopes associated with seepage and creeks in the area between Coyanarup Peak and Bluff Knoll in the Stirling Ranges.</p>  | Priority 1 |                       |
| 14 | <p><b><i>Eucalyptus purpurata</i> woodlands (Bandalup Hill)</b></p> <p><i>Eucalyptus purpurata</i> woodlands on magnesite soils of the ridge-tops and upper slopes of Bandalup Hill</p>   | Priority 1 |                       |
| 15 | <p><b><i>Banksia coccinea</i> Shrubland/<i>Eucalyptus staeri</i>/Sheoak Open Woodland ('Community type 14a')</b></p> <p>Found on deep white/light grey sand on the lower slopes and valleys, usually occurring just upslope of seasonally wet drainage lines. The community is floristically very diverse and structurally quite variable. Typically <i>Allocasuarina fraseriana</i>, <i>Eucalyptus staeri</i>, <i>Banksia attenuata</i> and <i>Banksia ilicifolia</i> are present as emergents or as low open woodland above a <i>Banksia coccinea</i> tall open scrub, mixed open/closed heath, mixed low open heath, mixed sedgeland and open herbland. <i>Jacksonia spinosa</i> often forms a distinct stratum above the heathland, dominant heath species are <i>Melaleuca thymoides</i>, <i>Adenanthos cuneatus</i>, <i>Leucopogon rubricaulis</i>, <i>Phyllota barbata</i>, <i>Hypocalymma strictum</i> and <i>Leucopogon glabellus</i>. Common sedges and herbs include <i>Anarthria scabra</i>, <i>Lyginia barbata</i>, <i>Schoenus caespitius</i>, <i>Anarthria prolifera</i>, <i>Anarthria gracilis</i> and <i>Cyathochaeta equitans</i>. The community is highly susceptible to <i>Phytophthora</i> dieback with infestations resulting in greatly reduced floristic and structural diversity. Appears to be restricted to the Albany region.</p> | Priority 1 | Endangered TEC (part) |

|    |   |            |                       |
|----|---|------------|-----------------------|
| 16 | <p><b><i>Banksia laevigata</i> – <i>Banksia lemnniana</i> proteaceous thicket</b> (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p>This community occurs on laterised ridges and breakaways. Associated species generally include <i>Eucalyptus pleurocarpa</i>, <i>Adenanthos oreophilus</i>, <i>Leptospermum maxwellii</i>, <i>Beaufortia orbifolia</i>, <i>Taxandria spathulata</i> and <i>Stylidium albomontis</i>.</p>  | Priority 1 | Endangered TEC (part) |
| 17 | <p><b><i>Eucalyptus megacornuta</i> mallet woodland</b></p> <p>Associated species include the shrubs <i>Hovea acanthoclada</i>, <i>Lasiopetalum compactum</i>, <i>Melaleuca thapsina</i>. This community typically grows on rock piles and breakaways of laterised banded ironstone and pyrite formations. A vegetation study noted that <i>E. megacornuta</i> is almost confined to the Ravensthorpe Range and was considered rare (less than 1,000 plants known in conservation reserves, or few populations).</p>  | Priority 1 |                       |
| 18 | <p><b>Microbial mantles of Nullarbor caves (especially Weebubbe Cave)</b></p> <p>Significant microbial communities in underwater sections of caves.</p> <p>Threats: uncontrolled access</p>   | Priority 1 |                       |
| 19 | <p><b>Mosaic of Albany Blackbutt (<i>Eucalyptus staeri</i>) mallee-heath found on lateritic ridges and Chittick (<i>Lambertia inermis</i> subsp. <i>inermis</i>) scrub-heath on seasonally-waterlogged laterite</b> (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p>Regionally very restricted and very poorly reserved.</p> <p>Threats: dieback</p>  | Priority 1 | Endangered TEC (part) |
| 20 | <p><b><i>Banksia littoralis</i> woodland / <i>Melaleuca incana</i> Shrubland (South Coast Region)</b></p> <p>Threats: fragmentation, dieback disease, hydrological change, too frequent fire, weed invasion</p>   | Priority 1 |                       |
| 21 | <p><b><i>Banksia occidentalis</i>/<i>Kunzea clavata</i> Shrubland (South Coast Region)</b></p> <p>Threats: dieback disease, too frequent fire, weed invasion</p>  | Priority 1 |                       |
| 22 | <p><b><i>Astartea scoparia</i> Swamp Thicket (South Coast Region)</b></p> <p>Threats: fragmentation, too frequent fire, hydrological change, weed invasion, dieback disease</p>   | Priority 1 |                       |
| 23 | <p><b>Coastal <i>Melaleuca incana</i> / <i>Taxandria juniperina</i> Shrubland/ Closed Forest</b></p> <p>Threats: fragmentation, too frequent fire, hydrological change, weed invasion, dieback disease</p>  | Priority 1 |                       |
| 24 | <p><b>Tallerack (<i>Eucalyptus pleurocarpa</i>) mallee-heath on seasonally inundated soils (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</b></p> <p>May have been common prior to clearing for agriculture, and the remaining occurrences of this vegetation are of high conservation significance.</p>  | Priority 2 | Endangered TEC (part) |
| 25 | <p><b><i>Melaleuca striata</i> /<i>Banksia</i> spp. Coastal Heath</b> (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p>Community occurs on light grey deep sand on coastal slopes and valleys. <i>Melaleuca striata</i>, <i>Banksia attenuata</i> and <i>Banksia coccinea</i> dominate the closed to open heath/low heath with exposure to salt laden winds restricting the growth of the latter two species. This unit is typically dense being a closed to open heath/low heath over a dense sedgeland dominated by <i>Anarthria scabra</i>. Other common species include <i>Isopogon cuneatus</i>, <i>Adenanthos cuneatus</i>, <i>Astroloma baxteri</i>, <i>Hypocalymma strictum</i>, <i>Petrophile rigida</i>, <i>Melaleuca thymoides</i>, <i>Lyginia barbata</i> and <i>Hypolaena exsulca</i>. The community is restricted to an area in Gull Rock National Park east of Albany.</p> <p>Threats: All known occurrences are affected by <i>Phytophthora</i> dieback and/or aerial canker. Also vulnerable to inappropriate fire regimes as the community contains serotinous obligate seeders.</p> | Priority 1 | Endangered TEC (part) |
| 26 | <p><b><i>Melaleuca spathulata</i>/<i>Melaleuca viminea</i> Swamp Heath</b></p> <p>Seasonally wet heath dominated by <i>Melaleuca spathulata</i> and <i>Melaleuca viminea</i> in the upper stratum over an open sedgeland characterised by <i>Meeboldina roycei</i>; occurs on brown to orange brown loam overlying clay in winter-wet sumplands.</p> <p>Threats: As a wetland community may be considered vulnerable to inappropriate fire regimes i.e. intense fire while the dominant species <i>Melaleuca viminea</i> is a serotinous obligate seeder and vulnerable to too frequent fire.</p>   | Priority 1 |                       |

|    |  |                 |                       |
|----|--|-----------------|-----------------------|
| 27 | <p><b><i>Banksia coccinea</i> Shrubland / <i>Melaleuca striata</i> / <i>Leucopogon flavescens</i> Heath</b> (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p>Community occurs on light grey or grey deep sand on lower slopes and valleys. Structurally this unit is a diverse heathland over a diverse sedgeland dominated by <i>Anarthria scabra</i> and a very open herbland dominated by <i>Dasyogon bromeliifolius</i>. Emergent trees (<i>Allocasuarina fraseriana</i>, <i>E. marginata</i>) may be present along with the shrub <i>Taxandria angustifolia</i>. The community is restricted to an area in the Angove-Two-Peoples Bay - Bettys Beach area east of Albany.</p> <p>Threats: dieback disease caused by <i>Phytophthora</i> spp., inappropriate fire regimes.</p>  | Priority 1      | Endangered TEC (part) |
| 28 | <p><b><i>Allocasuarina campestris</i> / <i>Callitris preissii</i> Tall Shrubland on Siltstone</b></p> <p><i>Callitris preissii</i> occurs with <i>Allocasuarina campestris</i> as dominants in a tall shrubland to shrubland over low open shrubland and very open herbland. Canopy cover is variable in density, depending on the amount of surface rock. Shrub species in the open low heath to low open shrubland stratum are variable and common species include: <i>Leucopogon</i> sp. Coujinup, <i>Kunzea recurva</i>, <i>Calytrix tetragona</i>, <i>Calothamnus quadrifidus</i>, <i>Taxandria spathulata</i>, <i>Chamelaucium ciliatum</i>, <i>Leucopogon</i> spp., <i>Verticordia endlicheriana</i>, <i>Astartea glomerulosa</i>, <i>Beaufortia cyrtodonta</i>, <i>Melaleuca spathulata</i>, <i>Acrotriche parviflora</i> and <i>Hakea marginata</i>. Habitat is uplands, on skeletal loam soils associated with siltstone rock outcropping or rock close to the soil surface, with or without laterite intrusions.</p> <p>Threats: Vulnerable to altered fire regimes, grazing pressure and weeds.</p>  | Priority 1      |                       |
| 29 | <p><b><i>Regelia velutina</i> / <i>Melaleuca lutea</i> shrubland of the Fitzgerald River National Park</b></p> <p>A shrubland dominated by members of the Myrtaceae occurring on areas of exposed quartzite bedrock with shallow loamy sand soils on mountain ridges, large quartzite hillocks and a wave cut bench.</p> <p>Threats: Climate change/ drought, <i>Phytophthora</i> dieback, altered fire regimes.</p>   | Priority 2      |                       |
| 30 | <p><b>Albany Blackbutt (<i>Eucalyptus staeri</i>) mallee-heath on deep sand</b> (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p>The structure of the vegetation is mallee heath. <i>Eucalyptus staeri</i> to about 4-5 m in height is the most common mallee within a tall open shrub layer consistently dominated by <i>Agonis theiformis</i> and <i>Banksia baxteri</i>. <i>Banksia attenuata</i>, <i>Banksia coccinea</i>, <i>Hakea pandanicarpa</i> subsp. <i>crassifolia</i> and <i>Lambertia inermis</i> are also dominant in some occurrences. <i>Banksia attenuata</i> dominates this assemblage at occurrences with the deepest sand. <i>Hakea baxteri</i> and <i>Nuytsia floribunda</i> are other common species in the tall shrub layer. <i>Banksia baxteri</i> in the tall shrubs layer is a conspicuous indicator species of this unit. Requires further survey to confirm distribution.</p> <p>Threats: appears to have been very extensive and common throughout the region but has been comprehensively cleared and degraded (mainly through grazing).</p> | Priority 2      | Endangered TEC (part) |
| 31 | <p><b>Subterranean faunal ecosystems of Nullarbor caves (known from Nurina Cave, Olwolgjin Cave, Burnabbie Cave, N327, N1327)</b></p> <p>The caves contain communities of invertebrates, other fauna and sensitive habitats including tree roots. Caves included in this community contain at least four troglobitic taxa.</p> <p>Threats: uncontrolled access</p>   | Priority 3(i)   |                       |
| 32 | <p><b>*<i>Posidonia australis</i> complex seagrass meadows</b></p> <p>The community consists of the assemblage of plants, animals and micro-organisms associated with seagrass meadows dominated by species from the <i>Posidonia australis</i> complex. It occurs as continuous to patchy monospecific and multispecies seagrass meadows dominated by species from the <i>Posidonia australis</i> complex - <i>P. angustifolia</i>, <i>P. australis</i> and <i>P. sinuosa</i>. It is the climax community of a successional process that occurs over decades to centuries. The community is distributed in temperate Australian waters between Shark Bay (25°S) on the west coast, across southern Australia to Wallis Lake (32°S) on the east coast, around Bass Strait islands and along the north coast of Tasmania.</p> <p>Threats: decline in water quality, coastal infrastructure development and damage caused by vessels and moorings. Climate change is anticipated to significantly impact on seagrasses over time due to their particular sensitivity to changes in factors such as temperature, salinity, water clarity, pH and sea level.</p>                     | Priority 3(i)   |                       |
| 33 | <p><b>Swamp Yate (<i>Eucalyptus occidentalis</i>) woodlands in seasonally inundated clay basins (South Coast)</b></p> <p>Yate woodlands with intact understorey and fringing vegetation are poorly conserved in the region.</p>  | Priority 3(iii) |                       |

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| 34 | <p><b>*Subtropical and Temperate Coastal Saltmarsh</b></p> <p>Consists of the assemblage of plants, animals and micro-organisms associated with saltmarsh in coastal regions of sub-tropical and temperate Australia (south of 23° S latitude). The habitat is coastal areas under tidal influence. In southern latitudes saltmarsh are the dominant habitat in the intertidal zone and often occur in association with estuaries. It is typically restricted to the upper intertidal environment, generally between the elevation of the mean high tide, and the mean spring tide. The community consists mainly of salt-tolerant vegetation (halophytes) including: grasses, herbs, reeds, sedges and shrubs. Succulent herbs and grasses generally dominate and vegetation is generally &lt;0.5m tall with the exception of some reeds and sedges. Many species of non-vascular plants are also found in saltmarsh, including epiphytic algae, diatoms and cyanobacterial mats. Saltmarsh consists of many vascular plant species but is dominated by relatively few families. There is also typically a high degree of endemism at the species level. The two most widely represented coastal saltmarsh plant families are the Chenopodiaceae and Poaceae. Four structural saltmarsh forms are currently recognised based on dominance of a particular vegetation type:</p> <ul style="list-style-type: none"> <li>• dominance by succulent shrubs (e.g. <i>Tecticornia</i>)</li> <li>• dominance by grasses (e.g. <i>Sporobolus virginicus</i>)</li> <li>• dominance by sedges and grasses (e.g. <i>Juncus kraussii</i>, <i>Gahnia trifida</i>)</li> <li>• dominance by herbs (e.g. low-growing creeping plants such as <i>Wilsonia backhousei</i>, <i>Samolus repens</i>, <i>Schoenus nitenis</i>).</li> </ul> | Priority 3(iii) | Vulnerable TEC        |
| 35 | <p><b>*Ironcap Hills vegetation complexes</b> (Mt Holland, Middle, North and South Ironcap Hills, Digger Rock and Hatter Hill) (banded ironstone formation)</p> <p>Threats: mining</p>   | Priority 3(iii) |                       |
| 36 | <p><b>Heath on Komatiite of the Ravensthorpe area</b></p> <p>Dense heath on alkaline red clay over komatiite (ultra-mafic rock) and associated carbonates. Note: very open tree mallee over heath B in Hale Bopp orebody area. Dominant species: <i>Beyeria cockertonii</i> (DRF), <i>Acacia ophiolithica</i>, <i>Hakea verrucosa</i>, <i>Grevillea fastigiata</i>, <i>Melaleuca ulicoides</i>, <i>Allocasuarina hystricosa</i> (P3), <i>Verticordia oxylepis</i>, <i>Grevillea oligantha</i>, <i>Hybanthus floribundus</i>, <i>Pomaderris brevifolia</i> ssp. <i>brevifolia</i>, <i>Pultenaea wudjariensis</i> (P1), <i>Melaleuca pomphostoma</i>, <i>Nematolepis phebalioides</i>, <i>Philothea gardneri</i> subsp. <i>gardneri</i>, <i>Gyrostemon sessilis</i>, <i>Colethamnus quadrifidus</i>, <i>Calytrix tetragona</i>, <i>Halgania anagalloides</i>, <i>Coleanthera myrtooides</i>. <i>Beyeria cockertonii</i>, <i>Pultenaea wudjariensis</i>, <i>Grevillea fastigiata</i> and <i>Gyrostemon sessilis</i> are narrow range endemics.</p>  | Priority 3(iii) |                       |
| 37 | <p><b>Moodini Land System</b></p> <p>Level to gently undulating plains of residual sand and calcrete near the edge of the Bunda Plateau supporting eucalypt or myall woodlands.</p> <p>Threats: over grazing</p>   | Priority 3(iii) |                       |
| 38 | <p><b>*Granite outcrop pools with endemic aquatic fauna</b></p> <p>Freshwater pools formed on granite outcrops that may persist for several months and house a variety of aquatic invertebrates, some of which are endemic to south-west WA. Some examples include cladocerans, ostracods, copepods, rotifers, oligochaetes and molluscs.</p>  | Priority 3(i)   |                       |
| 39 | <p><b><i>Taxandria spathulata</i> Heath</b> (a component of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia EPBC Listed TEC)</p> <p>Community is an open heath dominated by <i>Taxandria spathulata</i>, with a sedgeland that includes <i>Schoenus</i> sp. Cape Riche Cushion and <i>Mesomelaena stygia</i> on clay loam overlying spongolite plains.</p> <p>Threats: The community is vulnerable to inappropriate fire regimes with <i>Taxandria spathulata</i> being a serotinous obligate seeder.</p>  | Priority 4(i)   | Endangered TEC (part) |
| 40 | <p><b>*Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia</b></p> <p>Consists of predominantly obligate seeding proteaceous shrubland and heath (kwongkan) and mallee heath on sandplain, duplex sand/clay and gravels overlying Eocene sediments, quartzite, schist, Yilgarn and Albany Fraser granite and greenstone ranges. Its flora is characterised by high species diversity and a high degree of endemism, particularly in the Stirling Range, Fitzgerald River National Park, Ravensthorpe Range and Russell Ranges. Due to the high levels of endemism, there are few species that exist across the entire range of the dense, obligate seeding Proteaceae dominated shrublands and kwongkan of the Esperance Sandplains, however particular species have been identified as common dominant species in each of its eco districts.</p> <p>Threats: past threats have principally been fragmentation from land clearing, current threats are plant disease <i>Phytophthora cinnamomi</i>, increased fire frequencies, invasive weeds and feral animals.</p>  | Priority 3(iii) | Endangered TEC        |
| 41 | <p><b>Woodline Hills vegetation complexes (<i>Baeckea</i> sp. <i>Barbalin</i> previously known as <i>B. recurva</i>) shrubland</b></p> <p>Ridge communities unique but unless a mine is proposed are currently not threatened.</p>   | Priority 4(i)   |                       |



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| 42   | <b>Stirling Range Upland Yate community</b><br>Low woodland of <i>Eucalyptus cornuta</i> over a sparse shrub layer of <i>Gastrolobium velutinum</i> , <i>Chamelaucium pauciflorum</i> and <i>Thomasia foliosa</i> over open herbs of <i>Tetrarrhena laevis</i> , <i>Poa porphyroclados</i> , <i>Billardiera heterophylla</i> , <i>Clematis pubescens</i> , <i>Senecio</i> sp., <i>Hydrocotyle hirta</i> , <i>Cheilanthes austrotenuifolia</i> and <i>Asplenium flabellifolium</i> . | Priority<br>4(ii) |  |
| *Community type occurs in more than one region<br><br><b>Total 391 (community types and sub-types)</b> |   |                   |  |