# The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment (Swan Coastal Plain)

**A report for the Department of Environment and Conservation as a contribution to the Peel Harvey Eastern Estuary Area Catchment Environmental Assessment Project and Swan Bioplan Project.**

**2006**

Swan Coastal Plain from Marrarup Nature Reserve on the Darling Scarp NE of Waroona BJ Keighery

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# 1 BACKGROUND

## 1.1 Peel Harvey Eastern Estuary Area Catchment Environmental Assessment Project and Swan Bioplan

The Peel Harvey Eastern Estuary Area Catchment Environmental Assessment (EEEA) study area (Map 1) lies entirely within the Swan Coastal Plain Bioregion (Map 2). The study area and the majority of this Bioregion is subject to either the Bush Forever Project (Government of WA 2000 a & b) or the current complementary Swan Bioplan Project (Bioplan). Bush Forever and Bioplan continue the work begun in 1994 by the Department of Environmental Protection (then the Department of Environment (DoE) and now the Department of Environment and Conservation (DEC)) for the Environmental Protection Authority (EPA) on the System 6 (DCE 1983) and part System 1 (DCE 1976) Update (the Update, DEP 1996).

The Bioplan study area is the area of the Swan Coastal Plain between the Moore River and Dunsborough (excluding the Bush Forever area), and the Darling and Whicher Scarps (Map 3).

This report has been prepared for the EEEA Project by the DEC Swan Bioplan Project Team from Terrestrial Ecosystems Branch, and DEC staff from the Peel Region and from Wildlife Research. It represents part of the technical work for Bioplan and is based on the collation of existing and new information (see Tables 1 and 2), and mapping of the 2005 extent of remnant native vegetation in the Bioplan area. Much of the 'existing' information was collected from 1994 to 1995 as part of the System 6/Part System 1 Update. In 1994 and early 1995 submissions were received from the public for areas suitable for addition to the recommendations in System 6 and 1 (DCE 1983 and1976). Several of these submission areas are referred to in this report. These information sets are consistent with those used in *Bush Forever* and EPA Guidance Statement No. 10 (EPA 2003).

## 1.2 Natural Area Value Assessment

The comparative assessment of values of natural areas used in this report is based on the approach used in *Bush Forever*, as updated by EPA Guidance Statement No. 10 (EPA 2003), which is expected to be used in Bioplan. EPA Guidance No. 10 lists the six criteria to be used to determine regional significance of a natural area. Appendix 1a (after Appendix 3 in Guidance 10) outlines how to assess the regional significance of a natural area. Appendix 1b summarises the natural attributes addressed in determining when an individual criterion is met. These criteria and the natural attributes associated with them can be used for both the determination of regional significance and for ranking regionally significant natural areas.

**It should be noted that, particularly south of the Perth Metropolitan Region (PMR), the EEEA study area and the Bioplan study area have been extensively cleared of native vegetation and, as there is so little native vegetation remaining, it can be considered to be all regionally significant because the target for representativeness can rarely be met.**

## 1.3 Natural Area Value Assessment in this Report

This report documents the currently known natural values of the EEEA area. The assessment of natural areas in this report is based on natural values of the areas and does not take into account other values and/or constraints. As a consequence, this report is for information and should not be seen as DEC or EPA advice.

# 2 METHODS AND LIMITATIONS

## 2.1 General Methods, Terminology and Definitions

The basic methodology for selecting, researching, collating and describing natural values used in this report follows that established in the Update (DEP 1996) and applied in *Bush Forever* (Government of WA 2000a & b).

**Volume 2 of *Bush Forever* (Government of WA 2000b) and EPA Guidance Statement No. 10 (EPA 2003) should be consulted for methodology, explanations of each dataset, terminology and definitions.**

## 2.2 Current Extent of Native Vegetation

Guidance No. 10 (EPA 2003) uses the National Land and Water Resource Audit (Beeston *et al.* 2001) remnant native vegetation data to determine the extent of native vegetation in the Guidance No. 10 area. This mapping relies on satellite and aerial photography interpretation between 1994 and 1997.

As part of the Bioplan project, the extent of remnant native vegetation is being mapped in the Bioplan study area. This work involves the interpretation of 2005 digital orthophotographs, information searches and ground truthing. Information is being recorded on specific attributes of each remnant from regional and specific dataset interpretation, orthophotographs and roadside field assessment. The mapping database and the attribute database will be intersected to describe each remnant. This characterisation of each remnant will be allocated 'degrees of confidence'. The 'degrees of confidence' are determined by the information available and the visibility and/or the accessibility of each remnant.

The mapping and characterisation of remnants is almost complete for the EEEA study area. This information will be available in a future report. However, the information gained in the mapping has provided much data on native vegetation, flora and fauna of specific areas within the EEEA study area.

As a consequence, this report uses the National Land and Water Resource Audit (Commonwealth of Australia 2001b, based on Beeston *et al.* 2001) remnant native vegetation mapping for the EEEA area and comparisons with the remainder of the Bush Forever and Bioplan area of the Swan Coastal Plain.

## 2.3 National and Regional Natural Area Values Information

Table 1 lists the national and regional datasets used in this study to determine the natural values of various natural areas.

## 2.4 Specific Area Vegetation and Flora Information

Information from a series of sources was referenced for this study. These sources are outlined below.

- Gibson *et al.* (1994) - Plot and herbarium records from the CALM, Conservation Council and Wildflower Society survey between 1991 and 1993.
- DEP (1996) - Plot and herbarium records for the System 6 and part System 1 Update.
- GJ Keighery (1996 and 1999) and subsequent follow ups - Survey and herbarium records made by Greg Keighery for a study of the conservation status of species on the Swan Coastal Plain south of the Gingin Brook.
- Herbarium collections from Peg Foreman and Jack Kelly's survey work in the region as CALM volunteers.
- Unpublished reports: A series of unpublished reports have been reviewed and referenced. These provided varying levels of information. In general the information was most useful in describing the vegetation units and condition.
- BJ Keighery *et al.* (2006b) - Species listings for the Swan Coastal Plain and discussion and conservation status of significant flora.
- Unpublished area and specific area/remnant information being compiled in the EEEA study area for Swan Bioplan 2005 native vegetation mapping (still under completion).

The flora lists in Appendices 2a (total flora), 2b (weed flora), 3a (Spearwood Dune flora), 3b (Bassendean Dune flora) and 3c (Pinjarra Plain flora) were collated from those sources listed above as well as:

- Updated lists from GJ Keighery (1999). This includes listings for:
  - Nine Mile Lake Nature Reserve and Austin Bay Nature Reserve, collated from 1991 to 2005 (GJ Keighery 2005a and b);
  - System 6 C53 Coolup Reserves report (GJ Keighery 2005c and GJ Keighery *et al.* 1994, see Appendix 5); and
  - Species lists for the Peel Estuary Islands (Greg Keighery and Bill Muir, pers. comm., 2006) and Kooljerrenup Nature Reserve (Greg Keighery, pers. comm., 2006) that were checked for additional taxa not located in the other areas.
- Unpublished reports: Only one species has been added to the flora list from these reports (Siemon 2005). Some taxa appeared to be additions but on investigation were found to have been misapplied names and/or misidentified specimens.

It is expected that the flora lists in Appendices 2a and b, and 3a, b and c will represent the following percentages of the expected flora.

- Appendix 2a: Total EEEA study area native and weed flora >80%
- Appendix 2b: Total EEEA study area weed flora >80%
- Appendix 3a: Spearwood Dune flora >70%
- Appendix 3b: Bassendean Dune flora >70%
- Appendix 3c: Pinjarra Plain flora >90%

The greater percentage for total flora and the Pinjarra Plain flora is related to more comprehensive coverage of the Pinjarra Plain (several reserves and many plots).

## 2.5 Specific Area Fauna Information

Information from a series of sources was referenced for this study. These sources are outlined below.

- FaunaBase (Western Australian Museum 2003-)
- Published and unpublished reports: A series of reports have been reviewed. These are listed in the references. These provided varying levels of information.
- Unpublished area and specific area/remnant information being compiled in the EEEA study area for Swan Bioplan 2005 native vegetation mapping (still under completion).

# 3 LANDFORMS AND VEGETATION

The Swan Coastal Plain in the study area (Maps 1 and 5, Table 3, Figure 1, Photograph 1) encompasses four major landform elements which can be divided into two groups.

- Aeolian (wind) deposits
    - Spearwood Dunes
    - Bassendean Dunes
- Alluvial (water) and colluvial (gravity) deposits
    - Pinjarra Plain (and Foothills)
    - Rivers and Estuaries

The most extensive landform in the study area is the Pinjarra Plain, which also underlies much of the Bassendean Dunes, and less commonly the Spearwood Dunes. The presence of an extensive area of Pinjarra Plain and the interleaving of this with aeolian sands is related to the presence of three rivers and their alluvial plains in the area, the Serpentine, Murray and Harvey Rivers.

The landforms and vegetation in the study area are described under each of the major landform elements. A series of tables are used to summarise some of the vegetation information. These are listed below.

- Table 4: Vegetation complexes in the EEEA study area[1]. Thirteen vegetation complexes are listed for the study area. Table 4 consists of:
    - Table 4a: Remnant vegetation remaining within the System 6/part System 1 area for each of the vegetation complexes found in the EEEA study area.
    - Table 4b: Remnant vegetation remaining within the EEEA study area for each of the vegetation complexes found in this study area.
- Tables 5 and 6: Floristic Community Types and Threatened Ecological Communities identified in the EEEA study area). Twenty-five floristic community types (FCTs) are listed for the study area. Nine of these are threatened ecological communities (TEC). Five of the FCTs have been inferred for the area, including one TEC.

Reference should be made to these tables when vegetation complexes and FCTs are discussed. The tables reference the studies from which this information has been collated.

Maps 1, 4 and 5 show the distribution of the four major landform elements (and their sub-divisions as described below), the vegetation complexes, conservation areas and the general location of floristic study plots, Declared Rare Flora (DRF), Priority Flora and TECs.

## 3.1 Spearwood Dunes

The Spearwood Dunes contribute to less than 10% of the study area, and 42% of their area on the Plain was naturally vegetated in circa 1997 (Tables 4a and b). However, the vegetation complexes that together form the Spearwood Dune system were between 29 and 41% vegetated in circa 1997 (Table 4a).

The Spearwood Dunes in the study area can be divided into three areas separated by the estuary and the rivers (see Table 4 and Maps 1, 4 and 5).

[1] Tables 4a and b list an additional major landform unit, the Foothills. However, as so little of the native vegetation of the Foothills remains (<10 ha of the Forrestfield Complex), and this in tiny remnants, this unit is not described in the report.

### 3.1.1 *Spearwood Area 1*

North-west corner of the study area, west of the Serpentine River (Map 1)

To the west of the Serpentine River, between Mandurah and the Bush Forever Site 395 (Paganoni Bushland), there are a series of low relief dunes of Spearwood Sands of varying depths. Towards the Serpentine River these dunes form low relief sheets.

A bushland area adjacent to Spearwood Area 1 has been investigated in some detail, this being Bush Forever Site 395 (plot code PAGA). Table 6 and Appendix 3a detail some of the information collected.

Spearwood Area 1 is principally mapped as Yoongarillup Complex (Map 5). However, as Peppermints (*Agonis flexuosa*) are a feature of the Yoongarillup Complex and the vegetation in this area is *Banksia attenuata* and *Banksia menziesii* Woodlands to Forest dominated by Tuart, Marri and Jarrah and no Peppermints, the vegetation is considered to better represent the Karrakatta Complex - Central and South. This complex has <30% remaining on the Swan Coastal Plain (Table 4a). Most of the vegetation in this area is in Very Good to Good condition but it is generally fragmented into small holdings, reducing the long term viability of these remnants.

#### 3.1.1.1 Uplands

On the western side of this area, where Tamala Limestone is close to the surface, the *Banksia attenuata* and *Banksia menziesii* Woodlands to Forest are dominated by Tuart (*Eucalyptus gomphocephala*), matching FCT 25 sampled in the Bush Forever Site 395 to the immediate north. On the deeper sands, *Banksia attenuata* and *Banksia menziesii* Woodlands to Forest with scattered Jarrah (*Eucalyptus marginata*) and pockets of Marri (*Eucalyptus calophylla*[2]) occur, matching FCT 21a sampled in Bush Forever Site 395 to the immediate north.

#### 3.1.1.2 Wetlands

Towards the Serpentine River wetlands are found in areas of low relief, typically dominated by scattered *Melaleuca preissiana* over shrubs, herbs and sedges.

Adjacent to the Serpentine River, where the soils are of alluvial rather than aeolian origin, there is a higher clay content and inundation and waterlogging occur. The nature of the vegetation of these wetlands is affected by saline waters moving up the Serpentine from the estuaries to the south-west. This Serpentine River vegetation is briefly described in the rivers section.

### 3.1.2 *Spearwood Area 2*

North-eastern side of the Harvey Estuary (Maps 1 and 5, Table 3, Figure 1, Photographs 2-5, 7 and 8)

The Spearwood Dunes along the eastern side of the Harvey Estuary are characterised by a Tamala Limestone ridge and associated sands. This ridge is effectively isolated from other Spearwood Dune areas and is one of the highest points in the study area.

A series of bushland areas in Spearwood Area 2 have been investigated in some detail, being: C52 McLarty Nature Reserve (plot code McLART) and Mealup Point Nature Reserve (plot code MEAL). Table 6 and Appendix 3a detail some of the information collected.

Spearwood Area 2 is principally mapped as the Cottesloe Complex - Central and South (Map 5) and the vegetation matches that described for this complex. The presence of Tuart and other species associated with shallow soils over limestone in the area contribute to this determination. Tuart is also found to the east of Spearwood Area 2, in the area of the Carrabungup Nature Reserve. This area is mapped in the Vasse Complex and included in Pinjarra Area 1 as the Vasse Complex contains some Spearwood features, such as 'Tuart open forest'. Approximately 40% of Cottesloe Complex - Central and South and <30% of the Vasse

[2] Marri is also known as *Corymbia calophylla*.

Complex remain on the Plain. However, the location and combination of vegetation units in this area of Cottesloe Complex - Central and South distinguish this area from all other areas of Cottesloe Complex - Central and South. Generally this vegetation is in Very Good condition with some patches in Excellent condition. However, as much of this area has been grazed in the past, substantive areas are only in Good condition.

3.1.2.1 Uplands

Along the ridge, limestone surfaces at a series of cliffs and points, these being located at: south of Point Grey, Stony Point, Mealup Point and east of Lake McLarty (Photographs 2 and 3). The formation of these Tamala Limestone areas indicates the potential presence of Karst features (Photograph 3). Associated with these areas of outcropping limestone and sand over limestone are areas of Tuart Woodland and *Banksia attenuata* and *Banksia menziesii* Woodlands dominated by Tuart (FCT 25, Photographs 7 and 8) and Tuart Woodlands and shrublands (FCT 26b, Photograph 2). There is a further area of Tuart Woodland just to the east of the Carrabungup Nature Reserve (part of Austin Bay Nature Reserve). There are patches of vegetation dominated by Peppermint, and scattered Peppermint in some of the woodlands, but Peppermint is not widespread in the woodlands of this area. The large Tuarts in these communities and in the paddocks are significant habitat trees (Photograph 5).

As outlined above, on the shallower soil there are shrublands or woodlands of FCT 26b. However, there is one substantial area of *Melaleuca huegelii – Melaleuca systena* (previously *M. acerosa*) Shrubland on a limestone ridge south of Point Grey. While not sampled for FCTs, this vegetation has many characteristics of FCT 26a (see Table 5). FCT 26a is a Threatened Ecological Community (see Table 5).

3.1.2.2 Wetlands

A series of wetlands are found on both the western and eastern sides of this Spearwood Ridge (Photographs 4 and 9). These are typically associated with the estuary or areas of the underlying exposed Pinjarra Plain and are described in those sections.

### 3.1.3 *Spearwood Area 3*

West of the Harvey River (Maps 1 and 5, Table 3, Figure 1, Photograph 6)

In the south-west of the study area, parallel to the Old Coast Road, there is a Tamala Limestone ridge. To the north, this ridge forms the western boundary of the Harvey Estuary and, to the south, the eastern boundary of Lake Clifton.

A series of bushland areas in Spearwood Area 3 have been investigated in some detail, being: Lake Clifton Townsite (plot code CLIFT), C56 SF Treasure Forest Block (plot code CORON) and SF Lyons Forest Block (plot code LYONS). Table 6 and Appendix 3a detail some of the information collected.

Three vegetation complexes are mapped in this Spearwood Dunes area: Cottesloe Complex - Central and South, Karrakatta Complex - Central and South and the Yoongarillup Complex. The vegetation matches these complexes, except for the sand ridges in the area mapped as Yoongarillup. These sands do not generally support two key species of the Yoongarillup Complex - Peppermint (except adjacent to the area along the Harvey River in the Vasse Complex) or Tuart. It appears that these ridges support vegetation typical of the Southern River Complex and the Bassendean Complex - Central and South which are mapped in adjacent areas. This area is described in the Bassendean Area 3 section.

In this area the vegetation is generally in Very Good condition with some patches in Excellent condition but there are some substantial areas in Good condition as much of this area has been grazed in the past.

3.1.3.1 Uplands

The *Melaleuca huegelii – Melaleuca systena* Shrublands on this ridge have been identified as the TEC FCT 26a. On the surrounding sands over limestone *Banksia attenuata* and *Banksia menziesii* Woodlands dominated by Tuart and Tuart Woodlands (FCT 25) are found. Peppermint is a co-dominant tree in most of

the woodlands with Tuart (Photograph 6). While Peppermint is common on this north-south sand ridge it is not known naturally from this ridge north of the Dawesville Cut[3]. As soils get deeper, Jarrah replaces Tuart (FCT 21a) and Peppermint declines.

On the eastern side of this Spearwood Ridge, on the western side of the Harvey River, is a low relief plain where shallow sand drifts and dunes overly alluvial soils of the Pinjarra Plain. These sands support vegetation typical of the Bassendean Dunes rather than the Spearwood Dunes (see above and Bassendean Dune Area 3).

#### 3.1.3.2 Wetlands

Wetlands are found on the west of this ridge (outside the study area) and in the lower relief areas to the east. Generally these wetlands are expressions of the underlying alluvial soils associated with the Harvey River.

## 3.2 Bassendean Dunes

The Bassendean Dunes contribute to about a third of the study area and can be divided into three areas separated by the rivers (Maps 1 and 5, Table 3, Figure 1).

The Bassendean Complex - Central and South is mapped in Areas 1 and 3. Area 1 also contains substantial areas of the Southern River Complex[4] and Area 2 is principally mapped as the Southern River Complex. With 20% of the Southern River Complex remaining vegetated, and 27% of Bassendean Complex - Central and South vegetated on the Plain in circa 1997 (Table 4a), both have less than 30% remaining. In addition, in the Bush Forever portion of the Plain (Perth Metropolitan Region, PMR), the 10% target for protection will most likely not be met for these complexes. As a consequence, the target for protection of these complexes outside the PMR needs to be increased beyond the at least 30% level.

The condition of the Bassendean Dune vegetation is variable. A substantial number of remnants of Bassendean Sands remain as these are very poor agricultural soils. As a consequence, many remnants are in paddocks, and while they appear from aerial photography to be in Good condition, they have very little understorey when observed in the field. Grazing has removed the understorey from these remnants and it is unlikely that the trees (and understorey) will regenerate with continued grazing. However, there are significant areas in Good to Excellent condition, the condition improving with a reduction in the intensity and/or frequency of grazing.

### 3.2.1 *Bassendean Area 1*

East of the Serpentine River, south of Elliot Road, west of Hopelands Road and north of the Murray River (Maps 1 and 5, Table 3, Figure 1, Photograph 11)

In this area there are a series of low relief dunes of Bassendean Sands of varying depths, with interleaving low relief sand sheets, exposed Pinjarra Plain and tortured drainage channels.

A bushland area adjacent to Bassendean Area 1 that has been investigated in some detail is Bush Forever Site 77 (plot code YANG) and values of this site have been used to interpret the expected values of Area 1.

[3] In the EEEA Area Peppermint is found south of the Dawesville Cut on the Spearwood Dunes and along rivers. It has not been located in the Bassendean Dunes within the study area.

[4] Table 4a places the Southern River Complex in the 'Combinations of Bassendean Dunes and Pinjarra Plain' but it is here grouped with the Bassendean Dunes for descriptive purposes. The Southern River Complex has attributes of both the Bassendean Dunes and Pinjarra Plain and often contains wetlands typical of the Pinjarra Plain. These wetlands are generally TECs.

3.2.1.1 Uplands

The low relief dunes support *Banksia attenuata* and *Banksia menziesii* Woodlands to Forest with scattered Jarrah and Marri. Sampling of vegetation just north of the study area (Bush Forever Site 77, Government of WA 2000b and Trudgen *et al.* 2001) and on the southern boundary of this area (Update Submission 280 Ravenswood) has identified FCT 21a and 23a in this vegetation unit. While FCT 21a is a widely spread FCT[5], FCT 23a is confined to the PMR and has not been sampled south of Bush Forever Site 77. The native vegetation that has been observed in this area indicates that much of it is similar to that in Bush Forever Site 77, and FCT 23a may well reach its southern extent in Bassendean Area 1. This is of particular conservation significance as this is the most species-rich FCT found in the Bassendean Sands.

Some areas of the low dunes that are mapped as supporting Bassendean Sands contain species that are typically associated with sand rises on the Pinjarra Plain and Foothills; these include *Mesomelaena tetragona* and *Cyathochaeta equitans* (Photograph 11). The sands in the Pinjarra Plain and Foothills are of alluvial and colluvial origin. These plants indicate that these sands are of the same origin, being associated with alluvial features.

The low relief sand sheets support *Banksia attenuata, B. menziesii* and *B. ilicifolia* Woodlands to Forest with scattered to dominant Marri and Sheoak (*Allocasuarina fraseriana*) from FCTs 22 and 21a (Table 6 - Bush Forever Site 77 and Update Submission 280 Ravenswood area). FCT 22 is at its southern limit in this location.

3.2.1.2 Wetlands

A complex series of wetlands are associated with the low sandy flats, depressions and water channels in this area. Many of these wetlands support native vegetation in Excellent to Good condition. These wetlands support *Melaleuca preissiana* Low Open Forest; *Melaleuca rhaphiophylla* Low Forest, Woodland to Tall Shrubland; Shrublands dominated by *Melaleuca lateritia, M. osullivanii, M. viminea, M. lateritia, Regelia ciliata* and combinations of these; mixed Herblands; Sedgelands dominated by *Lepidosperma longitudinale, Baumea, Meeboldina* and *Lepyrodia* species and combinations of these. The FCTs identified in the area include FCTs 4, 5, 15, S1 and S17 (Bush Forever Site 77 and Update Submission 280 Ravenswood area, Tables 5 and 6). FCT 15 is a TEC (Tables 5 and 6).

This northern part of the EEEA study area is very poorly known as it is predominantly private land, it is wet in winter/spring and there are few roads in the area. The Update study (DEP 1996) identified two additional wetland FCTs in the area, S1 and S17 in Update Submission 280 Ravenswood area (Table 6) and a series of plant communities were mapped by Siemon (2005). The complexity of wetlands in the area is such that additional floristic work could well establish additional wetland units being described (most likely FCTs 7 and 9) and undescribed regional floristic groups in the area.

### 3.2.2 *Bassendean Area 2*

Dunes overlying the Pinjarra Plain between the Murray and Harvey River (Maps 1 and 5, Table 3, Figure 1, Photographs 10, 12-15)

Apart from the broad band of vegetation on the eastern bank and hinterland of the estuaries, there are few intact naturally vegetated areas between the Murray and Harvey Rivers. The largest and best condition bushland areas are associated with the low to medium relief dunes of Bassendean Sands. In general, the Bassendean Sands overlay the Pinjarra Plain which, at times, is exposed in low lying areas between the dunes. As a consequence, the area is principally mapped as Southern River Complex. The bushland areas within and west/north-west of Pinjarra, currently mapped Bassendean Complex - Central and South, should also be mapped as Southern River Complex (Maps 1 and 5).

[5] FCT 21a is expected to be subdivided into further regional groups as part of the Swan Bioplan study.

A series of bushland areas in and adjacent to Bassendean Area 2 have been investigated in some detail, being: Update Submission 98 Hampton Road bushland (plot code hamp); Nine Mile Lake Nature Reserve (plot code NINE) and C59 Buller Road Nature Reserve (plot code BULLER). Table 6 and Appendix 3b detail some of the information collected. Reserve 34033, adjacent to Pinjarra Nature Reserve (plot code pind), is located in Bassendean Area 2 (the part just south of the Murray River and north-west of Pinjarra); however, this area contains vegetation typical of the Pinjarra Plain and is described under Pinjarra Plain Area 2.

#### 3.2.2.1 Uplands

On the deepest sands *Banksia attenuata* Low Woodlands to Forest with scattered to dominant Jarrah and Sheoak are found (FCT 21a), while *Banksia attenuata* and *B. ilicifolia* Low Woodlands to Forest with scattered to dominant Marri predominates on the lower dunes and sand sheets (FCT 21c, Photograph 14). A distinctive change in these woodlands is the decline in abundance of *Banksia menziesii*, which reaches its most southern known location just north of the Buller Road Nature Reserve (Photographs 12 and 13).

#### 3.2.2.2 Wetlands

A series of vegetation units are associated with wetlands in depressions in these dunes. On the damp to wet humus rich sands Marri Woodland, scattered *Melaleuca preissiana* to *M. preissiana* Woodland over *Pericalymma* dominated Shrublands and Mixed Shrublands are found, being examples of FCTs 4 and 5 (Photograph 15). On the clay sheets and clay/sandy-clay based sumplands, mixed *Melaleuca* Shrublands and *Melaleuca rhaphiophylla* Shrublands to Forests occur. These are often associated with sedgelands and an annually renewed herb and sedge layer which develops as the wetlands dry. This vegetation is more characteristic of Pinjarra Plain wetlands than Bassendean Dune wetlands (Photographs 10 and 21). These sandy-clay based wetlands are described further in the Pinjarra Plain and Estuaries sections.

### 3.2.3 *Bassendean Area 3*

A north-south band west of the Harvey River (Maps 1 and 5, Table 3, Figure 1, Photographs 16 and 17)

In this area there are only a few remaining vegetated areas on the low relief Bassendean Sand Dunes. Much of the area has been mapped as Yoongarillup Plain but, as described earlier, the vegetation better matches that of the Bassendean Sands.

#### 3.2.3.1 Uplands

This area supports *Banksia attenuata* and *B. ilicifolia* Low Woodlands to Forest with scattered to dominant Jarrah and Sheoak (Table 6, FCT 21a), while *Banksia attenuata* and *B. ilicifolia* Low Woodlands to Forest with scattered to dominant Marri replaces Jarrah on the lower dunes and sand sheets (FCT 21c or 22). No *Banksia menziesii* has been observed in this area.

#### 3.2.3.2 Wetlands

Most of the wetlands in this area are sandy-clay based, reflecting the Pinjarra Plain or estuarine deposits, supporting Mixed Shrublands and *Melaleuca* dominated Shrublands associated with herblands and sedgelands (Photographs 16 and 17). These are further described in the Pinjarra Plain and Estuaries sections.

## 3.3 Pinjarra Plain

The alluvial soils of the flat Pinjarra Plain form just over half of the study area and underlay much of the rest of the soils (Maps 1 and 5). Much of the area is almost completely cleared and/or the remnants are degraded (Photograph 18). Pinjarra Plain soils are relatively fertile and were cleared preferentially for agriculture. This trend increased when drainage was established in the 1920s. However, there are very significant areas of Pinjarra Plain vegetation in the study area. Fortunately, when Pinjarra Plain is left undisturbed by sand dumping, drainage, heavy nutrient enrichment, flooding etc. it has the ability to remain in Very Good or better condition. This is the case for both large and small remnants (Photographs 19-21). The many patches of Very Good vegetation along the narrow corridor of the Perth to Bunbury railway[6] illustrate this.

The Pinjarra Plain in the EEEA study area can be separated into two distinct subunits, Pinjarra Plain Area 1 associated with estuarine and alluvial soils, and Pinjarra Plain Area 2 associated with alluvial soils.

Pinjarra Plain Area 1 incorporates the areas mapped as the Vasse Vegetation Complex immediately east of the Peel Inlet and south of the Harvey Estuary, plus the south-eastern shoreline of the Harvey Estuary mapped as Cannington Complex (Map 1). The Vasse Complex is very varied and, in the EEEA study area, is more closely allied to the Pinjarra Plain vegetation complexes than the typical Vasse Complex of the Busselton area. These complexes have 29% and 10% of their original area remaining as natural vegetation (Maps 1 and 5, Table 4a).

Pinjarra Plain Area 2 incorporates the majority of the eastern side of the EEEA study area. A number of vegetation complexes are mapped within Pinjarra Plain Area 2 (Maps 1 and 5), being: some areas of Vasse and Cannington Complex; large areas of Guildford Complex; an area of Serpentine River complex in the central south of the study area; small areas of Swan complex along the eastern boundary parallel with the Murray River; small areas of Forrestfield complex along the north-eastern boundary (parallel with the Darling Scarp); and a small area of Bassendean Complex - Central and South along the north-eastern boundary (Maps 1 and 5). While only some of these are Pinjarra Plain vegetation complexes (see Table 4), they have all been included in Pinjarra Plain Area 2 as the vegetation remaining on these areas is more typical of the Pinjarra Plain Guildford complex.

There are three principal Pinjarra Plain vegetation complexes mapped in Pinjarra Plain Areas 1 and 2 - Swan, Complex, Serpentine River Complex and the Guildford Complex which respectively have 16%, 11%, and 5% of their original area remaining as natural vegetation (Maps 1 and 5, Table 4a). However, as the Vasse Complex is heterogeneous in the study area and is more closely allied to the Pinjarra Plain complexes than the typical Vasse Complex of the Busselton area (see below), there is effectively a larger area of Pinjarra Plain vegetation in the study area than the figures indicate (Table 4b). This area with Pinjarra Plain characteristics further increases when the areas of the Pinjarra Plain portions of the Cannington and Southern River Complexes are included. With less than 9% of the Pinjarra Plain remaining vegetated on the Plain in circa 1997 (Table 4a), the extensive and contiguous natural areas of the Peel Regional Park both within, and adjacent to, C50 Austin Bay Nature Reserve and C51 Kooljerrenup Nature Reserve (Maps 1 and 5) are of outstanding conservation value.

There are few dry upland areas on the Pinjarra Plain in the EEEA study area and the vegetation is described below as being wetland or transitional upland/wetland vegetation.

[6] The railway line reserve needs to be surveyed in summer as in winter/spring much of it is flooded. All survey on the rail reserve requires the permission and attendance of the rail reserve managers.

### 3.3.1 *Pinjarra Plain Area 1*

Serpentine River to Roberts Bay and Mills Road to the Harvey River (Maps 1 and 5, Table 3, Figure 1, Photographs 10, 19-21,33-35)

The immediate hinterland of both the Peel and Harvey Estuaries[7] and the deltas and lower floodplains of the Serpentine, Murray and Harvey Rivers are alluvium. Some of these areas are mapped as estuarine units (Vasse Complex) but the soils mapping and the vegetation indicate that the Vasse soils are the soils of islands, the estuarine fringe and the low lying estuarine and river flats that are occasionally or regularly inundated with salty water at high tide.

A series of bushland areas in to Pinjarra Area 1 have been investigated in some detail, being: C50 Austin Bay Nature Reserve (plot code AUSTB); C50 Carrabungup Nature Reserve (plot code CARAB) and C51 Kooljerrenup Nature Reserve (plot code KOOLJ). Table 6 and Appendix 3c detail some of the information collected.

This area of Pinjarra Plain is unusual in that it is predominantly naturally vegetated. It is likely that this is related to:

- the area being generally inundated and waterlogged in winter and spring;
- the suspected salinity of this water (the vegetation generally reflects fresh water conditions, indicating that saline water is associated with the estuarine margin and conditions in patches of wetland in late spring and early summer); and
- the bands and thin sheets of overlying infertile reworked Bassendean Sands.

#### 3.3.1.1 Wetlands

The inundation and waterlogging have resulted in the area being dominated by wetland species. This species-rich wetland vegetation forms a large variety of vegetation units that are notoriously difficult to map, such wetland areas often being mapped as wetland mosaic. Vegetation units include: *Casuarina obesa* Woodlands, *Melaleuca rhaphiophylla* Woodland to Forest; *Melaleuca cuticularis* Woodland, Open Heaths to Shrublands dominated by *Melaleuca viminea, M. osullivanii, M. lateriflora, M. lateritia, M. teretifolia, M. rhaphiophylla, Astartea scoparia, A. affinis, Regelia ciliata, Kunzea recurva, Pericalymma ellipticum* and *Verticordia* species and combinations of these; *Actinostrobus pyramidalis* Closed Tall Scrub to Shrubland; *Viminaria juncea* Tall Shrubland; *Melaleuca viminea* Tall Shrubland; Samphire Shrublands; Herblands dominated by *Borya* species, *Tribonanthes* species, *Stylidium* species and others in combination; Sedgelands dominated by *Lepidosperma longitudinale, Meeboldinia cana, M. coangustatus, Chaetanthus aristatus, Cyathochaeta avenacea, Chorizandra enodis* and combinations of these; and annual Sedgelands dominated by *Centrolepis* and *Schoenus* species. Three wetland FCTs are predominant in these wetlands, being:

- FCT 5 on the very sandy clays or sand over sandy clays (Photograph 19), dominated by combinations of the following shrubs: *Melaleuca rhaphiophylla, M. teretifolia, Astartea scoparia, Regelia ciliata, Pericalymma ellipticum, Verticordia* species and *Actinostrobus pyramidalis;* and
- FCTs 7 and 10a on the loamy clays and clayey sands (Photographs 20, 21, 34 and 35), dominated by *Casuarina obesa, Melaleuca cuticularis, M. viminea, M. lateritia, M. osullivanii, M. lateriflora, M. teretifolia, M. rhaphiophylla, Astartea scoparia* and *Viminaria juncea.* Extensive areas of herbs and sedges are also characteristic of these FCTs.

FCTs 7 and 10a are both TECs (Tables 5 and 6).

A large number of significant flora are associated with FCTs 7 and 10a, including:

- aquatic flora growing and flowering when the ponds are water-filled (Photograph 33);
- shrubs dependent on seasonal inundation (Photographs 34 and 35); and
- annually renewed herbs and sedges (Photographs 10, 20 and 21).

[7] Excluding Spearwood Area 2.

3.3.1.2 Uplands/Wetland transitional vegetation and Uplands

On the drier sandy rises, patches of damp *Banksia attenuata*, *B. ilicifolia* and *Kunzea glabrescens* Low Woodland are found. Scattered Jarrah and *Melaleuca preissiana*, and an understorey dominated by wetland species, are characteristic of these woodlands, indicating they are wetland or wetland transitional vegetation. Marri Open Forest to Woodland is also found throughout the area and this can be both a wet or dry unit as defined by the other species in the communities. While these woodlands are found along the Peel Inlet (C50 Austin Bay Nature Reserve), they become more common along the Harvey Estuary (C52 Kooljerrenup Nature Reserve). The *Banksia* unit and the dry Marri unit are FCT 21a and the wet Marri unit is FCT 3b. FCT 3b is a TEC.

### 3.3.2 *Pinjarra Plain Area 2*

Eastern side EEEA study area (Maps 1 and 5, Table 3, Figure 1, Photographs 11, 20 and 21)

The majority of the eastern side of the EEEA study area is Pinjarra Plain. Pinjarra Plain Area 2 is crossed by a series of Bassendean Dunes, which form sheets and dunes of varying depth that overlay the Pinjarra Plain.

A series of bushland areas in and adjacent to Pinjarra Area 2 have been investigated in some detail, being: Bush Forever Site 78 (plot code PAGE); Reserve 34033, adjacent to Pinjarra Nature Reserve (plot code pind); C58 Reserve 23172 (plot code C58) and C53 Coolup Reserves (plot code waro). Table 6 and Appendix 3c detail some of the information collected.

3.3.2.1 Wetlands and wetland/upland transitional vegetation

Very few vegetated areas remain in this area, but those that do support similar vegetation to the areas described for Pinjarra Plain Area 1. The majority of the larger areas are on reserves of various vesting. Together these areas have similar vegetation to the Brixton Street Wetlands (BJ Keighery and GJ Keighery 1995), containing species-rich claypans and Marri Woodlands. The variety of vegetation units encountered in these areas include: Marri Woodland; *Viminaria juncea* Tall Shrubland; *Melaleuca* Tall Shrubland to Closed Tall Scrub dominated by *Melaleuca viminea*, *M. rhaphiophylla*, *M. osullivanii*, *M. cuticularis* and combinations of these (Photographs 20 and 21); *Actinostrobus pyramidalis* Closed Tall Scrub to Shrubland; Closed Heaths to Shrublands dominated by *Regelia ciliata*, *Kunzea recurva*, *Melaleuca lateritia*, *Pericalymma ellipticum* and *Astartea affinis* and *Verticordia* species Low Open Heath; mixed Open Low Heaths to Shrublands; Herblands dominated by *Borya* species, *Tribonanthes* species, *Stylidium* species and others in combination; Sedgelands dominated by *Meeboldinia cana*, *M. coangustata*, *Chaetanthus aristatus*, *Cyathochaeta avenacea*, and combinations of these and *Amphibromus neesii* Grassland. Overall eight FCTs typical of the Pinjarra Plain are in these reserves, being:

- FCTs 3a and 9 in Reserve 34033 (adjacent to the Pinjarra Nature Reserve A41184 and other reserves on Pinjarra Road);
- FCTs 3b and 8 in C53 Coolup Reserves (Photographs 20 and 21); and
- FCTs 4, 8, 10a and 13 in C58 Reserve 23172 on the Harvey River.

The reserves on the corner of the Old Bunbury Road and Brownes Road are expected to contain a combination of the FCTs found on the Pinjarra Plain, most likely a form of FCT 3 and FCTs 7 and 8.

Six of these FCTs are TECs and FCT 3a is listed for protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Tables 5 and 6).

3.3.2.2 Uplands

One isolated upland sandy remnant in the north of the study area was observed to contain species typical of FCT 20 (eg. *Banksia* species, *Cyathochaeta equitans* and *Mesomelaena tetragona*, Photograph 11). All the FCT 20 subgroups are TECs. The intactness of this small remnant demonstrates the resilience of Pinjarra Plain vegetation.

## 3.4 Rivers

Being preferentially cleared for agriculture, riverine flat and fringing vegetation is some of the most heavily cleared vegetation on the Swan Coastal Plain. Beyond the areas of strong saline influence, the Serpentine, Murray and Harvey Rivers' vegetation follow this pattern and are predominantly cleared. As a consequence, any native vegetation constitutes valuable habitat. Relatively intact areas have outstanding value as they are uncommon and provide reference sites for restoration activities.

Beyond the river deltas, three vegetation complexes are mapped for the rivers in the EEEA study area, being:

- Serpentine River - Herdsman Complex;
- Murray River - Swan Complex; and
- Harvey River - Swan and Serpentine Complexes.

Both the Swan and Serpentine Complexes are heavily cleared on the Plain; in circa 1997 16% (0% in secure reserves) and 11% (3% in secure reserves) remained respectively (Table 4a). As most of this remaining native vegetation is in Degraded or Completely Degraded condition, these complexes are very poorly represented.

The lower reaches of the Serpentine River, where the Herdsman Complex is mapped, are the most extensively vegetated of any parts of the three rivers. However, this vegetation is not typical of the Herdsman Complex as shown by the presence of salt tolerant vegetation, unusual combinations of species and ironstone areas. As a consequence, the 674 ha of this vegetation remaining in the study area (Table 4b) is of higher conservation value than the total remaining percentages for the Plain indicate (the Herdsman Complex has 35% remaining in circa 1997 with 11% in secure reserves, Table 4a).

### 3.4.1 *Serpentine River*

(Maps 1 and 5, Table 3, Photographs 22-24)

The Serpentine River runs north-south for a 25 km stretch before it enters the Peel Inlet. As with many rivers on the Swan Coastal Plain, the Serpentine was diverted by the encroaching Spearwood Dunes when it left the flat Pinjarra Plain, forming the boundary between the Spearwood Dunes and Bassendean Dunes/Pinjarra Plain[8]. Most of this north-south area is marked by a series of shallow lakes supporting an extensive area of estuarine-like wetlands. In this area the river channel and the associated saline wet-flats are vegetated with Forests of *Casuarina obesa* and *Melaleuca rhaphiophylla*, Samphire Shrublands and *Bolboschoenus* and *Baumea* sedgelands (Photographs 22 and 23). Beyond the area of saline dominance there are Woodlands or Forests dominated by *Eucalyptus rudis*, *Melaleuca rhaphiophylla*, *M. preissiana*, Marri, Swamp Banksia (*Banksia littoralis*) or combinations of these, over *Baumea juncea* and/or *Lepidosperma longitudinale* Sedgelands (Photograph 24). In a few patches *Melaleuca* Shrublands, similar to those on the Pinjarra Plain, are found. On drier sandy rises, *Regelia ciliata* and *Kunzea glabrescens* thickets are formed. Just north of the study area, in Bush Forever Site 395, plots have been located in these freshwater wetlands and FCTs 5 and 13 have been identified.

The distribution of Tuart Woodland along the rivers of the Swan Coastal Plain is of particular interest. While Tuart dominated communities are generally confined to the Quindalup and Spearwood Dunes of the Plain, disjunct populations occur within the Bassendean Dunes and Pinjarra Plain along the banks of the rivers (BJ Keighery *et al.* 2002). Three such disjunct pockets of Tuart occur along the Serpentine River at the following locations:

- in the eastern part of Bush Forever Site 372 (Lowlands east);
- just north of the study area, where the river bends south from its east-west flow, in the western portion of Bush Forever Site 372 (Lowlands west); and

[8] As outlined previously, there is no clear separation of the Bassendean Dunes and Pinjarra Plain in the study area as the Bassendean Dunes overlay or are surrounded by Pinjarra Plain in the study area.

- at Stakehill Bridge (this woodland may not be entirely disjunct as the Tuart Woodlands of the Spearwood Dunes may be contiguous with this population to the west of the Serpentine; urbanisation has obscured the natural distribution of Tuart west of the Serpentine).

A further feature of the Serpentine is a series of ironstone bars. In Bush Forever Site 395, there is a distinctive wetland area on ironstone soils associated with an outcrop of this ironstone. The plot in this community identified it as FCT 5. However, as this soil type has only been sampled once, this may prove to be a distinctive FCT if further areas can be located and sampled. It is possible that this soil type could occur in Bassendean Area 1 east of the Serpentine lakes system along Nambeelup Brook and other creeks. This feature distinguishes the Serpentine from typical areas of Herdsman Complex vegetation.

### 3.4.2 *Murray River*

(Maps 1 and 5, Table 3, Photograph 25)

Unlike most rivers on the Plain, the Murray River does not reach the Spearwood Dune system. The Murray runs east-west through the Pinjarra Plain and Bassendean Dunes until it enters the Peel Estuary. Beyond the deltaic island area where the Murray runs through the Bassendean Dunes, most of the river flats are cleared, the river being lined by a narrow fringe of *Casuarina obesa*, *Eucalyptus rudis* and *Melaleuca rhaphiophylla*. Beyond the Bassendean Dunes in the Pinjarra Plain, *Eucalyptus rudis* and, to a lesser extent *Melaleuca rhaphiophylla*, dominate (Photograph 25). Of particular interest is the generally good health of the *Eucalyptus rudis* along the Murray and, to a lesser extent, on all the rivers in the study area. As described earlier, *Eucalyptus rudis* is a dominant tree on much of the Pinjarra Plain, particularly in predominantly cleared areas, however many of these trees are in poor health.

At least one disjunct pocket of Tuart occurs along the Murray River on the sandy river flat at Ravenswood. A group of Tuarts just east of the study area on the eastern side of Pinjarra was thought to be a disjunct natural population but, on further investigation, was found to be planted.

East of Ravenswood and south-west of the Ravenswood Speedway (Update Submission 280 Ravenswood), a naturally vegetated sandy bluff dominates the river, supporting an occurrence of FCT 21c. To the east of this bluff a creek runs into the river; this creek is fringed by FCT 17, which is dominated by Blackbutt (*Eucalyptus patens*). This is the most northern known occurrence of this species, or community dominated by this species, on the Swan Coastal Plain.

### 3.4.3 *Harvey River*

(Maps 1 and 5, Table 3, Photographs 26 and 31)

Both the Serpentine and Harvey Rivers have been heavily modified by man to become levee-lined channels. While this modification of the Serpentine is principally beyond the study area, much of the Harvey River within the study area has been altered in this way (Photograph 26). Unfortunately when this drainage work was done, and/or when it has been renewed, several species of **Watsonia* have been spread such that dense **Watsonia* fringes most of the Harvey, even into the deltaic area. This dense **Watsonia* layer, and the few areas with a sedge layer, have an overstorey of *Casuarina obesa*, *Eucalyptus rudis* and/or *Melaleuca rhaphiophylla*. The frequency of *Casuarina obesa* declines with distance from the Harvey Estuary.

The Harvey River also supports a significant disjunct area of Tuart Woodland in a small reserve at the Old Bunbury Road crossing (Photograph 31).

### 3.4.4 *Other rivers and creeks*

There are a series of other significant rivers and creeks in the study area (see Map 1), in particular the Nambeelup Brook and the Dandalup River. The vegetation of these is less well known as they are heavily cleared and pass through private land. Of particular interest on the Nambeelup Brook is an area of *Eucalyptus rudis* and *Melaleuca rhaphiophylla* Forest over *Hemarthria uncinata* Grassland, a vegetation type not observed elsewhere on the Plain.

## 3.5 Estuarine

As discussed earlier in the Pinjarra Plain section, the margins of the estuaries are distinctive from the Pinjarra Plain. Soils can be clays through to sand drifts of Holocene sands. The Holocene sands form some of the deltaic islands. All of these areas are heavily influenced by the saline waters of the estuaries. The various units are described below.

The vegetation of the estuarine fringes is mapped as Vasse Complex (Map 5, Tables 4a and b; see earlier discussion on Pinjarra Plain elements in the Vasse Complex). This vegetation has been poorly sampled in the floristic community type sampling. Only three areas of similar communities have had floristic sampling, at Bennett Brook (Bush Forever Site 305), Alfred Cove (Bush Forever Site 331) and Possum Nature Reserve in Busselton. In these areas, FCTs 16, 17 and S7 were identified and are most likely some of the FCTs to be found here.

### 3.5.1 *Deltaic islands of the Serpentine, Murray and Harvey Rivers and the Peel Inlet*

The Peel Inlet Delta islands (eg. Channel and Creery Islands, which are adjacent to the study area) are built up of marine sands forming a series of low islands. However, in the mouth of the Serpentine, Harvey and Murray Rivers, islands have formed from sands and clays deposited by these rivers as they enter the estuary.

The deltaic islands of the Murray (and the single island in the mouth of the Serpentine) have fringing *Casuarina obesa* Woodlands, clay flats with mixtures of succulent Shrublands, Sedgelands, low *Melaleuca cuticularis* or *M. rhaphiophylla* Woodlands and *Melaleuca* Shrublands. The central sand ridges on these islands have an open covering of Stinkwood (*Jacksonia furcellata*) and *Kunzea glabrescens* (perhaps indicators of past grazing).

At the mouth of the Harvey River, the deltaic islands are low sandbars rather than sandy islands. These are wet on high tides and are covered by *Bolboschoenus* Sedgeland or *Halosarcia/Sarcocornia* succulent Shrublands (Samphire Shrublands) rather than woodlands.

### 3.5.2 *Holocene sand ridges and beaches*

Quindalup-like Holocene dunes fringe areas of the Peel and Harvey Estuaries, especially on the eastern margin. These dunes support heath and grassland communities typically associated with the western oceanic beaches, dominated by *Spinifex*, *Tetragonia*, *Poa* and *Austrostipa* species, *Olearia*, and **Cakile*. In the southern part of the Peel and Harvey Estuaries, algal growth washed onshore by winds and tides contributes significant nutrients to this area, often resulting in a dense band of the weeds Wild Radish (**Raphanus raphanistrum*) and Turnip (**Brassica* species) just above high tide.

The sandy beaches are generally devoid of vegetation, the next band of vegetation being the fringing forest described below (Photograph 27).

### 3.5.3 *Estuarine Fringing Forest*

(Photograph 27)

The southern areas of the estuary have fringing Forest to Woodland, dominated by *Eucalyptus rudis*, *Melaleuca cuticularis* and/or *M. rhaphiophylla*. These communities have experienced major deaths since the opening of the Dawesville Cut, probably due to the tidal flooding. In the more saline areas, the fringing woodlands are *Casuarina obesa* Woodlands over Samphire Shrublands.

### 3.5.4 *Sandy wetlands*

(Photographs 4 and 28)

In many places, *Melaleuca cuticularis* Woodlands, typically over *Baumea juncea* and/or *Lepidosperma longitudinale*, lie beyond the dunes. It appears that there are a series of fresh water seeps along the margins of the estuary. The vegetation associated with this fresh water comprises *Banksia littoralis*, *Melaleuca rhaphiophylla*, *Eucalyptus rudis* and a variety of wetland shrubs such as *Pericalymma ellipticum* and *Regelia ciliata*. Many of the very unusual disjunct plant records for this area (*Centrolepis eremica*, *Senecio*

*glossanthus, and Menkea australis* (see 4.2 Significant Flora and Appendix 2a) are found on the Holocene sands and sandy wetlands.

### 3.5.5 *Saline to fresh wet clay flats*

In some places, such as the old water reserve south of Carrabungup Road (now part of the Austin Bay Nature Reserve), there are large, very flat claypan areas. When inundated, these can have a rich annual fresh water aquatic flora in Winter/Spring or, where saline water from the estuary intrudes, a saline aquatic flora (*Ruppia* and *Lepilaena* species). The pans are fringed by mixed *Melaleuca* Shrublands and/or *Casuarina obesa* Woodland. The communities on the wet flat areas vary in relation to salinity, which is related to the degree of inundation/exposure to the estuarine water. In the saline areas, there are areas of scattered *Casuarina obesa*, Samphire Shrublands, sedgelands and low *Melaleuca cuticularis* Woodlands. These communities merge with those described for the Pinjarra Plain, being principally *Melaleuca* Shrublands.

### 3.5.6 *Damp sandy flats*

Beyond the saline wet flats are low sandy flats and rises which are covered by dense low shrublands dominated by *Regelia ciliata, Kunzea glabrescens* and/or *Pericalymma ellipticum*, with scattered *Banksia littoralis, Melaleuca rhaphiophylla, M. preissiana, Eucalyptus rudis* and, more rarely, Tuart (adjacent to Spearwood Area 2). On the slightly drier areas, taller *Kunzea glabrescens* Shrublands are found, often with scattered to dominant *Banksia attenuata* and the same scattered trees as in the wetter areas.

# 4 FLORA

## 4.1 Total Flora

The amalgamation of the information from the plots and bushland areas, listed in the Methods section, resulted in a list of 987 taxa, 726 native taxa and 161 weeds for the study area (for combined native and weed flora lists see Appendices 2a and 3a, b and c). Appendix 2b lists the weeds alone and Appendix 6 discusses generally the invasive species within the EEEA study area.

The extensive listing of 726 native taxa contains many members of the groups outlined below.

- Monocotyledons - the most well represented families are: Orchidaceae 71 taxa, Cyperaceae 64, Poaceae 33, Anthericaceae 28, Haemodoraceae 21, Restionaceae 19 and Juncaginaceae 11, reflecting the large number of annually renewed plants in the flora of the study area.
- Dicotyledons - the most well represented families are: Asteraceae 50, Papilionaceae 50, Myrtaceae 49, Proteaceae 45, Stylidiaceae 31, Apiaceae 25, Mimosaceae and Droseraceae 23 and Epacridaceae 16.

The significant numbers of Papilionaceae, Myrtaceae and Proteaceae reflect the general dominance of trees and shrubs from these families in the South-West. Interestingly in the South-West a fourth family, the Epacridaceae, is comparably diverse. However, in the study area the numbers of Epacridaceae species is less than expected, reflecting the reduced number of Epacridaceae on the southern Swan Coastal Plain.

Information on a variety of species attributes is listed alongside the species in Appendix 2a. These attributes include:

- significant flora;
- frequency of occurrence of the taxon in the major landform elements;
- endemic status;
- growth form;
- life form; and
- common wetland species.

These attributes are described in the key to Appendix 2a and in the Perth Region Plant Biodiversity Project (PRPBP) section of the Western Australian Local Government Association's (WALGA) Perth Biodiversity Project website (DoE *et al.* 2006).

The listing of taxa against the major landform elements should be used as a guide to understanding the distribution of species on the Swan Coastal Plain in the study area. This information is supported by the listings of taxa under the major landform elements (Appendices 3a, b and c). In these lists, the taxa are listed against the individual plots outlined in the previous text and in Table 6. The plot lists in Appendix 3 can be used to gain a better understanding of the species that occur together in a particular plant community, and the floristic community types.

In general, the Pinjarra Plain vegetation is typified by the:

- greatest diversity of species (788 species, 634 native species, Appendix 3c);
- largest number of species confined to this unit; and
- greatest diversity of significant taxa.

The Spearwood Dunes (223 species, 192 native species, Appendix 3a) and Bassendean Dunes (340 species, 302 native species, Appendix 3b) support a lesser diversity of species and a lesser number of significant flora. The Bassendean Dunes are more species-rich than the Spearwood Dunes.

It is important to keep in mind when comparing species richness, rarity and significance that these contribute to the conservation values of vegetation, but it is the relatively common[9] and widespread species that make

[9] When the high levels of WA endemics in our flora are considered, most species are not common in a world or even Australian sense.

up the majority of the vegetation (Photographs 2, 4, 6, 7, 8, 9, 12, 13, 14, 15, 22, 23, 24, 25 and 28) and habitat (Photographs 5 and 29).

## 4.2 Significant Flora

When taxa are considered according to conservation status (see Appendix 2a Key for categories and *Bush Forever* for an explanation of these terms), around 150 are considered significant flora in the Study area (Appendix 2a and BJ Keighery *et al.* 2006b). Of these, 11 are listed as DRF and 33 are listed as priority taxa: 3 Priority 1, 7 Priority 2, 14 Priority 3 and 9 Priority 4 (Photographs 30, 32-37). In addition, 106 taxa are considered significant for a range of reasons determined by BJ Keighery *et al.* 2006b (Photographs 4, 13, 17, 18, 21, 38 and 39).

A selection of the significant flora from the study area has been described below. The taxa are listed under a variety of headings and are selected to illustrate the large variety of species groups according to family, life/growth form and habitat preferences in the study area.

A full treatment of all significant taxa for the Southern Swan Coastal Plain is being prepared.

### 4.2.1 *Uplands*

4.2.1.1 Spearwood Dunes - sand over limestone

*Cardamine paucijuga* Priority 2 (Brassicaceae)
This small native *Cardamine* is found in wetlands of the Tuart Forest (GJ Keighery and BJ Keighery 2002), Bush Forever Sites 395 and 368 and Spearwood Area 2. All four areas are in the Spearwood Dunes or have characteristics of the Spearwood Dunes. Several other locations are recorded in the Warren. This species may be more common in WA but is a small inconspicuous plant that is most likely to have been overlooked or mistaken for a weed.

*Hibbertia spicata* subsp. *leptotheca* Priority 3 (Dilleniaceae)
This is one of the taxa characteristic of, and endemic to, Tamala limestone ridges, growing from Yalgorup to Wedge Island. This taxon has several forms; the typical form grows in Neerabup National Park. Another form occurs at Burns Beach (GJ Keighery and BJ Keighery 1992).

*Kennedia coccinea* (Papilionaceae)
While this brilliant flowered taxon is common on the Darling Plateau, it is becoming increasingly uncommon on the western margins of the Plain. It has been recorded recently in several coastal bushland areas (the Maidens near Bunbury, Tuart Forest National Park, Leschenault Peninsula, Yalgorup National Park, Spearwood Area 2 and north of Naval Base) but it is uncommon in these areas. The coastal populations of *Kennedia coccinea* have a network of conspicuous veins in the leaves and larger, paler flowers than the flowers of the Plateau populations. Further study of this taxon may well result in it being recognised as taxonomically distinct, as are many of the species that have disjunct distributions on the Plateau and the calcareous coastal areas (GJ Keighery 1990).

*Grevillea preissii* (Proteaceae)
This attractive red flowered low shrub grows on limestone ridges from Yalgorup to Leeman. It is a limestone endemic and has recently been separated from the closely related wetland species *G. thelemanniana.*

4.2.1.2 Sandy Woodlands (all major landform elements)

*Tetraria australiensis* R (Cyperaceae) confined to Pinjarra Plain/Foothills
*Tetraria australiensis* is a perennial sedge and is difficult to locate in bushland until the first summer after a fire when it flowers *en masse*. It is present at other times but is relatively inconspicuous. *Tetraria australiensis* was rediscovered near Mundijong in 1993. While this taxon has not been specifically located in the study area, there is a population on the eastern side of the South West Hwy, just north of Pinjarra.

*Kingia australis* (Dasypogonaceae) confined to Pinjarra Plain/Foothills, Photograph 16
This distinctive species is characteristic of the Pinjarra Plain and Foothills vegetation. It grows in both woodlands and wetlands. In the past it was so common in the study area that tall specimens (there were hundreds of thousands of these up to 5 m tall) were used to build 'log' cabins.

*Caladenia huegelii* R (Orchidaceae) Spearwood, Bassendean and Pinjarra Plain sands, Photograph 32
This large spider orchid occurs in a variety of habitats, generally woodlands, and is mostly confined to the area from Ruabon to the Gnangara area, with an outlier in the Yallingup area. It is relatively widespread, though uncommon, on the Swan Coastal Plain. Several populations are found in the study area (including one located in the work for this study). A large population is in the Kooljerrenup NR, large numbers being observed in 1995 by GJ Keighery and more recently by CALM volunteers in 2005. Populations appear erratic in size as flowering occurs more commonly the year after a fire.

*Actinotus leucocephalus* (Apiaceae) Bassendean and Pinjarra Plain sands
This spectacular annual is not common on the Swan Coastal Plain, generally being found after fire in areas on the eastern side of the Plain and occasionally in reworked Bassendean Dunes. This species is relatively common in Pinjarra Plain Area 1.

*Acacia benthamii* Priority 2 (Mimosaceae)
This is a rarely collected species, generally located in the Spearwood Dunes; however, two populations are known from sands towards the east of the Plain at Gosnells and, in the study area, on a roadside. The Gosnells population is associated with an area of Muchea limestone.

*Acacia lasiocarpa* sp. Pinjarra (Mimosaceae)
A distinctive tall form of *Acacia lasiocarpa* (up to one metre) has been consistently located in damp *Banksia* woodlands from Gosnells to Pinjarra.

*Acacia semitrullata* Priority 3 (Mimosaceae) Photograph 30
A small prickly shrub found between the study area and the Blackwood Plateau. Found in Spearwood and Bassendean sands.

*Banksia menziesii* (Proteaceae) Spearwood, Bassendean and Pinjarra Plain sands; Photographs 12 and 13
The Firewood Banksia (*Banksia menziesii*) is an expected feature of *Banksia* woodlands, however south of Buller Road it is only known from several unconfirmed visual records. The Bushland north of Buller Rd is the southern-most area in which *Banksia menziesii* is a dominant species and the Nine Mile Lake Nature Reserve is the southern-most reserve in which it is recorded.

### 4.2.2 *Wetlands*

4.2.2.1 Seasonally inundated claypans

Nardoo (*Marsilea*) species Pinjarra Plain
It appears that there may be three species of Nardoo in the study area:

- *Marsilea drummondii* in Austin Bay Nature Reserve;
- *Marsilea* sp. Austin Bay (BJ Keighery & N Gibson 084) in Austin Bay Nature Reserve; and
- *Marsilea ?hirsuta* in Southern Estuary Rd wetland, the only collection south of Learmonth (Photographs 16 and 17)

These are rarely observed and collected aquatic species of deep perched wetlands on deep clay soils of the Pinjarra Plain. Water needs to persist into late spring and early summer.

*Aponogeton hexatepalus* Priority 4 (Aponogetonaceae) Pinjarra Plain; Photograph 33
This species is a true aquatic of claypans of the Pinjarra Plain south of the Swan River and on the Blackwood Plateau. It can be locally quite common such as at Brixton Street, Carousel Swamp, C53 (in the study area) and claypans in the Tuart Forest. However, populations collapse with declining water quality (nutrient enrichment and associated algae growth). With its habitat generally in decline on the Swan Coastal Plain, its

status should be periodically reviewed. Most small populations have completely collapsed or are known from single plants.

*Centrolepis caespitosa* R (Centrolepidaceae) Pinjarra Plain
Initially listed as presumed extinct, but ranges from Perth to the South Stirlings, found in Austin Bay Nature Reserve and bushland in Reserve 34033, adjacent to Pinjarra Nature Reserve.

*Eleocharis keigheryi* R (Cyperaceae) Pinjarra Plain
This declared rare species, first identified as distinct in the Brixton Street wetlands, is generally located in the study area in FCTs 7 and 8 in fresh water pools on clay.

*Schoenus natans* Priority 4 (Cyperaceae) Pinjarra Plain; Photograph 33
Prior to the Gibson *et al.*1994 study this species was considered to be extinct (GJ Keighery and BJ Keighery 1996), but it is now recorded from clay based wetlands extending from Bolgart to Lake Muir. Two populations are located in the study area, in FCTs 7 and 8 in fresh water pools on clay.

*Schoenus* sp. Waroona (GJ Keighery 12235) Priority 3 (Cyperaceae) Pinjarra Plain
This is a recently recognised annual *Schoenus* species found on the seasonally waterlogged and inundated heavy soils of the Pinjarra Plain.

*Hydatella dioica* R (Hydatellaceae) Pinjarra Plain
This is a poorly collected inconspicuous species of inundated clay flats. It is known from several sites in the study area from FCTs 7 and 8. This community type needs to be searched at the appropriate time to locate further populations.

4.2.2.2 Seasonally inundated and/or waterlogged areas
*Acanthocarpus canaliculatus* (Dasypogonaceae) Pinjarra Plain
On the Swan Coastal Plain this is an uncommon species associated with clay based wetlands on the Pinjarra Plain, reaching its most southern location in the Kemerton area (north-east of Bunbury).

*Diuris purdiei* R (Orchidaceae) Bassendean Dune/Pinjarra Plain
This pretty Donkey orchid of Bassendean Dune/Pinjarra Plain wetlands is found from the Pinjarra area to Cannington.

*Drakaea elastica* R (Orchidaceae)
This taxon is relatively widespread, though uncommon, on the Swan Coastal Plain.

*Drakaea micrantha* R (Orchidaceae)
The northern-most record of this species is in the Forrestdale area. This species favours *Kunzea ericifolia* Closed Tall Scrub associated with the low lying *Banksia* Woodlands. This taxon is relatively widespread, though uncommon, on the Swan Coastal Plain.

*Eryngium ferox* Priority 3 (Apiaceae) Pinjarra Plain
*Eryngium ferox* occurs in clay based perched fresh water. The leaves are produced in late spring. As these pools dry, only soft tubular leaves are produced which typically senesce as the cobalt blue flowers and inflorescence bracts open. When flowering finishes the leaves have died. Flowering occurs between November and January, with mature fruits being found by March.

*Eryngium pinnatifidum* subsp. *palustre* Priority 3 (Apiaceae) Pinjarra Plain
This taxon grows in winter wet claypans, usually associated with *Melaleuca* Shrublands (*Melaleuca lateritia*, *M. viminea* and *M. osullivanii*). As the claypans fill with water the tubers produce soft tubular juvenile leaves which are held above the water. These leaves are retained over the entire growing season, not being replaced by adult leaves. The soft tubular juvenile leaves are only produced in this and the nominate subspecies.

White or very pale blue flowers are produced when the claypans and flats are still flooded, between September and November. Mature fruits are found in December to January.

*Menkea australis* (Brassicaceae)
On the Swan Coastal Plain, collections of this species are only known from Kooljerrenup and Austin Bay Nature Reserves on the low dunes on the eastern side of the estuary. Beyond the Swan Coastal Plain it is found in the northern Wheatbelt, east of the Wheatbelt and in eastern Australia.

*Anthotium junciforme* Priority 4 (Goodeniaceae) Pinjarra Plain; Photographs 36 and 37
This is a late flowering species of the dried clays on Pinjarra Plain wetlands.

*Haloragis tenuifolia* Priority 1 (Haloragaceae)
A rarely collected semi-aquatic species growing in seasonally inundated areas. This species flowers once the ponded water has dried but the soils are still waterlogged.

*Acacia lasiocarpa* var. *bracteolata* (long peduncle variant) Priority 1 (Mimosaceae) Pinjarra Plain
Throughout the work on the Swan Coastal Plain, the wet claypan/clay flat *Acacia lasiocarpa* has been known as this variant. This no longer seems to be the case but this name will be retained until its correct name is determined.

*Eremophila glabra* (Myoporaceae)
A series of subspecies have recently been distinguished in *Eremophila glabra*. While this species is listed for C53 (Appendix 3c), the subspecies was not determined. The green flowered subspecies *E. glabra* subsp. *chlorella* is the subspecies encountered on the eastern side of the Swan Coastal Plain and is most likely the *E. glabra* in C53. This needs to be confirmed as this is now considered to be a very restricted and threatened taxon only known from a few populations. The closest recently observed population is in Perth.

*Baeckea tenuifolia* (Myrtaceae) Pinjarra Plain
A low, summer flowering shrub of sandy clay wetlands of the Pinjarra Plain. The majority of the populations that were grouped in this species have been determined as *Cyathostemon tenuifolius* which is confined to the south coast. Two additional taxa are likely to be distinguished on the Swan Coastal Plain, being: this taxon from Perth south to Pinjarra; and another in the Moora area (Barbara Rye, pers. comm., 2006). Work for this study located the first population in the study area.

*Dillwynia dillwynioides* Priority 3 (Papilionaceae) Bassendean Dunes/Pinjarra Plain Photographs 34 and 35
This is an uncommon species found on seasonally inundated flats, generally alongside rivers or deeper swamps, between Harvey and north of Yanchep on the Swan Coastal Plain.

*Gastrolobium* sp. Harvey (GJ Keighery 16821) River/Pinjarra Plain
Several populations of this apparently new taxon were located during work for this study. This taxon is currently only known from a few populations in the study area.

*Tripterococcus paniculatus* ms Priority 1 (Stackhousiaceae) Pinjarra Plain
This is the most southern record of this rare species which is associated with seasonally waterlogged flats on sandy clays.

### 4.2.3 *Rivers*

*Arnocrinum preissii* (Anthericaceae)
This species, generally found in Bassendean and Spearwood sandy soils in the study area, is at its most southern locations in the sandy cliffs along the Murray River. Further north it is found in *Banksia* woodlands and on sandy rises along the Serpentine River.

*Burchardia bairdiae* (Anthericaceae)
Until recently the most southern population of *Burchardia bairdiae* was considered to be at Forrestdale Lake. However, it has now been found in two wetland areas in riverine/estuarine locations at Alfred Cove Nature Reserve and on the Serpentine River (its most southern location). The riverine/estuarine habitat (a low *Melaleuca* Woodland) is very unusual for this species, which is normally found under low heath on winter wet flats. Perhaps this current distribution pattern is an artefact of extensive clearing along the rivers.

*Mesomelaena tetragona* (Cyperaceae)
This large Semaphore Sedge generally has the same distribution on the Swan Coastal Plain as *Kingia australis* and is a key species in identifying communities of the Pinjarra Plain and Foothills. While it has this distribution generally in the study area, it also occurs along the Serpentine River, a similar distribution pattern to *Burchardia bairdiae* described above.

*Apium prostratum* var. *prostratum* (Apiaceae)
This species is relatively poorly collected considering that it is a common species of river flats and lake edges. It is also found in the freshwater seepages on beaches, now rare habitats. This species is a common species in the forests along the Serpentine River and most likely in intact vegetation on the other rivers.

*Parsonsia diaphanophleba* Lowlands Creeper Priority 4 (Apocynaceae)
This creeper is confined to areas of relatively intact native vegetation on the riverine banks on the Murray and Serpentine Rivers. Four populations have been located recently at Lowlands and Ravenswood. Few naturally vegetated suitable habitats (sandy banks of rivers) remain along these rivers.

*Centipeda cunninghamii* (Asteraceae)
A tall perennial herb, on the Swan Coastal Plain found only along rivers. The first record for the broader Perth region was on the Harvey River and it has since been located in Kooljerrenup Nature Reserve. In the Busselton area it has also been recorded on the Carbunup, Abba and Sabina Rivers.

*Dysphania glomulifera* subsp. *glomulifera* (Chenopodiaceae)
Until recently this taxon was not recorded on the Plain but it is another uncommon and poorly collected species of wet flats, often in lake beds, generally with some calcareous or saline influences. It is now known from wetlands in the Jandakot area (Anstey and Nicholson Roads), Yangedi Road swamps, Ravenswood along the Murray River, Ellis Road in Yalgorup and south to the Possum Nature Reserve west of Busselton.

*Eucalyptus patens* (Myrtaceae)
Blackbutt is a typical species of wet areas in the Jarrah Forest but occurs rarely on the Swan Coastal Plain.

*Callistachys lanceolata* (Papilionaceae)
This taxon is commonly found on the Darling and Whicher Plateaus, coming onto the Plain along river sides (and swamps south of Bunbury). As there are few remaining vegetated river sides it is rarely found on the Plain.

*Grevillea manglesii* subsp. *ornithopoda* Priority 2 (Proteaceae)
Herbarium material of this taxon is confined to the Murray River and one collection from the Helena River.

*Dodonaea viscosa* subsp. *angustissima* and *spatulata* (Sapindaceae)
This is the first record for both subspecies on the Swan Coastal Plain.

### 4.2.4 *Estuaries*

*Tetragonia tetragonoides* (Chenopodiaceae)
Another member of this family that is poorly collected, in this case possibly because people may consider it a weed and because it is not very common. It is principally associated with estuaries and is favoured by rabbits.

*Hypericum gramineum* (Clusiaceae)
An annual erect herb species recorded from riverine and lake environments on the Plain from the Midland/Perth area along the Swan River/Estuary, Carrabungup Reserve and Benger Swamp. It is widespread in the South-West and eastern Australia.

### 4.2.5 *Presumed extinct in the EEEA study area*

Several species listed are presumed extinct in the study area. These represent species recorded in 1900-1905, by Morrison, and Diels and Pritzel in the Pinjarra area. Examples of these are: *Grevillea obtusifolia* (Proteaceae, Photograph 38) and the Native Yam (*Dioscorea hastifolia*, Dioscreaceae, Photograph 39). Several of these specimens were used to describe the species and the extinct populations are well south of their current known ranges.

# 5 FAUNA

The native fauna in the study area is dependent on the bushland that once covered the Swan Coastal Plain and adjacent Darling Scarp and Plateau. There is little known detailed information on the assemblage of faunal species in particular bushland remnants in the EEEA study area. However, it is clear from studies elsewhere that the fauna has particular habitat, area and spatial requirements; and the fauna responds to the effects of fragmentation and its associated perturbations, such as fire, weeds and predators, with the populations of many species having declined significantly since European settlement. In particular, many invertebrate groups are likely to be represented by unique or rare species in the EEEA study area.

## 5.1 Faunal Groups

### 5.1.1 *Mammals*

Prior to European settlement, 33 species of native mammals were known from the Swan Coastal Plain around Perth (How and Dell 1993, Western Australian Museum 2003-). Of these, 22 were known to have occurred in the region of the study area (Appendix 4a).

Surveys are required to determine which of these species still occur in the study area, but there are recent sightings and observations of six: namely Grey Kangaroo, Western Brush Wallaby, Common Brushtail Possum, Quenda (Southern Brown Bandicoot), Water Rat and the White-striped Freetail-bat. Records in FaunaBase (Western Australian Museum 2003-) indicate the likely presence of four other species of bat: Gould's, Greater and Lesser Long-eared Bats, Southern Forest Bat and Gould's Wattled Bat. In addition, the Western False Pipistrelle has recently been recorded on the Swan Coastal Plain both north and south of the study area (Hosken and O'Shea 1994) and is likely to be present in the study area.

The Western Pygmy Possum, Honey Possum, Yellow-footed Antechinus, Brush-tailed Phascogale, Chuditch and Chocolate Bat may be present, as they are known from the nearby Darling Scarp and Plateau.

Unfortunately, the current small to medium sized ground mammal fauna is now dominated by the introduced Cat, House Mouse, Black Rat and Fox.

### 5.1.2 *Birds*

The best known group in the study area is the birds. While Storr and Johnstone (1988) listed 311 species of birds recorded from the Swan Coastal Plain and adjacent seas, 199 species are reliably known to occur or have previously occurred in the study area (Appendix 4b). This determination is based on extensive literature available for sites within the study area, including:

- specific areas - Craig *et al*. (2005), Goodale (2006) and Jaensch *et al.* (1988); and
- the wider region, especially Johnstone and Storr (1998, 2004), Storr and Johnstone (1988), Storr (1991), Sedgwick (1940, 1973), Serventy (1948), Serventy and Whittell (1976), Dell *et al*. (2002) and Alexander (1921).

As discussed in *Bush Forever* (Government of WA 2000), many non-passerine species have decreased in number since European settlement. Some of the waterfowl species and most of the occupants of the lake and swamp edges have suffered serious reductions as these habitats have been cleared or altered. Ducks such as the Freckled Duck, the Australasian Shoveler and Hardhead, the Little, Black and Australasian Bitterns, and the Dusky Moorhen have declined seriously. Birds of prey, including the Square-tailed Kite, Whistling Kite, Brown Falcon, Brown Goshawk and Collared Sparrowhawk, and habitat-specialist species like the Painted Button-quail and Brush Bronzewing, have declined with habitat removal (Photograph 5).

Similarly, nearly half of the passerine bird species have decreased in abundance since European settlement. Nearly all of the insectivorous and nectarivorous species have declined as a direct result of the clearing of the natural vegetation. Some of these species are apparently absent from many parts of the study area; these include the Yellow Robin, Scarlet Robin, Golden Whistler, Grey Shrike-thrush, Weebill, Broad-tailed, Yellow-rumped and Western Thornbills, White-browed Scrubwren, Southern Emu-wren, Red-winged Fairy-

wren, Splendid Fairy-wren, Varied Sittella, Rufous Treecreeper, Tawny-crowned, Western White-naped, New Holland and White-cheeked Honeyeaters, Black-faced and Dusky Woodswallow and the Grey Currawong. Most still occur in the adjacent Darling Scarp and/or Darling Plateau. Some of these are probably surviving in recently isolated remnants but may not persist long-term unless strategic regional ecological linkages are maintained or reconstructed.

At least two non-passerine species, the Western Long-billed Corella and Barking Owl, and two passerine species, the Western Whipbird and Crested Shrike-tit, are now extinct in the area.

Five categories of birds representing species of conservation significance in the study area are shown in Table 8. They include:

- species listed as threatened under the EPBC Act and the WA *Wildlife Conservation Act 1950;*
- species listed under the Japan–Australia (JAMBA) and China–Australia Migratory Bird (CAMBA) Agreements; and
- species which have undergone major status reductions or distributional reductions in the study area and more widely on the Swan Coastal Plain.

The Peel Inlet and Harvey Estuary and associated freshwater wetlands (for example Lake Mealup and Lake McLarty) constitute one of the largest and most diverse estuarine complexes in Western Australia (CALM 2005a). These areas are internationally important as habitat and refuge sites for waterbirds, and are registered as part of the East Asian Australian Flyway Path under the CAMBA. These areas are part of the Peel-Yalgorup System, included on the Ramsar List of Wetlands of International Importance in 1990 (Ramsar 1990; the boundaries were updated and accepted by Ramsar in 2001). In addition, Lake McLarty, together with Lake Mealup and a connecting corridor, is listed on the Register of the National Estate primarily for their significance to waterbirds (AHC 1990). Detailed information on the significance of Lake McLarty is provided in Craig *et al*. (2005) and summarised in CALM (2005a).

Other wetlands throughout the study area are likely to be of regional significance for waterbirds. Some vegetation remnants are likely to be of regional significance for birds, particularly for those assemblages that have greatly reduced distributions or declining populations on the Swan Coastal Plain.

### 5.1.3 *Reptiles*

The reptile fauna (herpetofauna) in the study area consists of at least 45 species (Appendix 4c) based on historic collections (Western Australian Museum 2003-), regional publications (Bush *et al*. 1994, How and Dell 1993, 1994, 2000) and field guides (Storr *et al*. 1983, 1990, 1999, 2002). This is slightly fewer than the number known from the Perth Metropolitan Region (PMR) of the Swan Coastal Plain (How and Dell 1993) and reflects the absence of Quindalup Dune landforms from the study area, and the slightly more southerly location.

The herpetofauna of the study area is relatively poorly known compared to the PMR of the Swan Coastal Plain where there have been numerous studies, as listed in How and Dell (2000). These studies have resulted in a detailed knowledge of the pattern of distribution in that area, which allows a better understanding of the likely patterning in the study area.

Of the reptiles found in the study area, one (Carpet Python) is included in Schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice* 2005 (Table 7). In addition, twelve reptiles recorded from within the study area have been identified as regionally declining species (Table 7), being:

- eight habitat specialists with a reduced distribution on the Swan Coastal Plain and the study area (Category 3) – *Underwoodisaurus milii, Rankinia adelaidensis, Pletholax gracilis, Ctenotus impar, Ctenotus gemmula, Ctenotus labillardieri, Lerista lineata,* and *Ramphotyphlops pinguis*; and
- four wide-ranging species with reduced populations on the Swan Coastal Plain and the study area (Category 4) – *Varanus rosenbergi,Demansia psammophis, Echiopsis curta* and *Elapognathus coronatus.*

As indicated in *Bush Forever,* several species are scarce or rare in the PMR. Some of these are also naturally scarce or rare in the study area and others have suffered significant declines as a consequence of habitat loss. These include all those listed as conservation significant in Table 7. Further surveys are required in the study area to determine the current status of other species which may also warrant elevation to conservation significant.

### 5.1.4 *Amphibians*

Thirteen species of amphibians, representing two families and nine genera (Bush *et al*. 1994, How and Dell 1993, Western Australian Museum 2003-) are known from the Swan Coastal Plain near Perth. Nine of these species, representing two families and six genera, are known from the study area (Western Australian Museum 2003-, Bush *et al*. 1994, and Appendix 4c). No species are listed in Table 7 as regionally conservation significant, but wetlands which have a good assemblage of breeding species and high population levels should be regarded as significant habitats because of population declines in other parts of the Swan Coastal Plain.

Frogs are abundant in some parts of the study area because of the presence of swamps, lakes or streams. However, as indicated by How and Dell (1993) for the Perth area, it is likely that fewer species occur on the Spearwood Dunes in the western part of the study area where deep sands support fewer ephemeral freshwater wetlands.

There is no known information on the changes in abundance or local distribution of amphibians since European settlement in the study area. However, draining of wetlands and extensive replacement of natural ecosystems with agricultural ones would have markedly reduced the habitat available for many species**.** Current and future threats, including the Chytrid fungus, pollutants, and climate change, are likely to cause further population declines.

The distribution of some species, such as *Neobatrachus pelobatoides*, in the study area is unknown. Further north, this species seems to have disappeared as it was located in only one wetland (near Byford) sampled in wetlands on the eastern side of the Swan Coastal Plain (Harvey *et al*. 1997a). Some species are also likely to suffer impacts of fire, as demonstrated by Bamford (1992) who concluded that burrowing species such as *Heleioporus eyrei* were not greatly affected by fire, but that species such as *Limnodynastes dorsalis* probably were affected by fire as they were more abundant in long-unburnt areas.

### 5.1.5 *Inland Fish*

Five species of native inland fish[10] and two species of introduced fish (Appendix 4d) have been identified in wetlands within the study area (Western Australian Museum 2003-, Allen 1982). However, little information is available on their current status or distribution within the study area.

### 5.1.6 *Invertebrates*

Invertebrates are a major, essential and abundant component of the entire area (Photograph 29), but relatively few species have been named. Recent surveys by the Western Australian Museum at a variety of sites in the PMR (How *et al*. 1996, Harvey *et al*. 1997a and b) discovered a very diverse ground fauna, including many undescribed species. Invertebrates of the study area are even less well known than those assemblages in the PMR and no data are available to indicate the level of reduction in species and populations since European settlement.

[10] The term fish here refers to *principle species* as defined by Allen (1982) which are fishes which are mainly restricted to inland waters throughout their life history. In contrast, *secondary species* are basically marine or estuarine forms although they may regularly enter freshwater streams, particularly the lower reaches. The large number of secondary species occupying the Peel/Harvey Estuary and associated lower parts of the Murray and Serpentine Rivers are not included. However, these are significant recreational as well as commercial fishing resources, as well as providing important food resources for a number of bird species.

Three invertebrate species (Table 7) that are known or likely to occur in the study area are listed under Schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2005* as 'fauna that is rare or likely to become extinct': the Graceful Sun Moth *(Synemon gratiosa)*, a Native Bee *(Neopasiphae simplicior)* and the Shield-backed Trapdoor Spider *(Idiosoma nigrum)*. However, surveys are generally inadequate to determine which other threatened species are present. Three other invertebrate species which have been listed as 'Priority' species by DEC are also known from the region of the study area (Table 7) but again surveys are inadequate to determine the extent of Priority species presence. The extent of invertebrate species with limited natural distributions in the study area is also unknown. These types of species are described as Short Range Endemics (Harvey 2002) and localities where they occur are of regional conservation significance.

### 5.1.7 *Subterranean Fauna*

The geology of the Tamala Limestone areas in Spearwood Area 2 indicates the potential presence of Karst features (Photograph 3) which may contain troglofauna as well as possibly stygofauna. Troglofauna are air-breathing subterranean animals found in caves and voids. Stygofauna are aquatic groundwater animals. The presence of these fauna types needs to be investigated as any occurrence of these fauna groups on the Swan Coastal Plain is highly significant at a regional and possible national level.

## 5.2 Significant Fauna

Various categories of significant fauna have been described in the previous sections. This section summarises information on 'Specially Protected' and priority fauna of the study area.

Under the *Wildlife Conservation Act 1950* the Minister for the Environment may declare species of fauna to be 'Specially Protected' if they are likely to become extinct, or are rare, or are otherwise in need of special protection. These species are considered threatened fauna and receive special consideration in management by DEC. This listing includes species that:

- are presumed to be extinct (so that they receive the highest protection in case they are rediscovered, such as happened when Gilbert's Potoroo was recently rediscovered near Albany); and
- require special protection for other reasons, such as the possible effect of excessive harvesting.

Threatened fauna are listed in the *Wildlife Conservation (Specially Protected Fauna) Notice*, last updated in February 2005. Those species of fauna declared Specially Protected are placed in four schedules (R1-R4) under the Notice (see Keys to Table 7 and 8).

Of the 187 Specially Protected Fauna taxa listed for Western Australia as Schedule 1 in the *Wildlife Conservation (Specially Protected Fauna) Notice* 2005, 11 have been recorded from the study area (Tables 7 and 8). Some of the mammals, birds and reptiles that are now locally extinct in this part of the Swan Coastal Plain are included in Tables 7 and 8. These include the Numbat, Quokka, Western Long-billed Corella, Western Whipbird; others may also now be extinct in the study area.

Of the 17 taxa listed as totally extinct for Western Australia as Schedule 2 in the *Wildlife Conservation (Specially Protected Fauna) Notice* 2005, none were recorded from the study area.

Of the 11 Specially Protected Fauna taxa listed for Western Australia as Schedule 4 in the *Wildlife Conservation (Specially Protected Fauna) Notice* 2005, two have been recorded from the study area (Tables 7 and 8).

A number of these Specially Protected Fauna taxa are protected under the Commonwealth *Environment Protection and Biodiversity Act 1999* (see Section 3.6.6 of the Act). Tables 7 and 8 are annotated to indicate the taxa protected by this Act.

As with poorly known flora species, DEC also maintains a supplementary priority list of fauna taxa (CALM 2005b). There are five categories of priority fauna (Table 7). There are 17 taxa of Priority Fauna recently recorded for that part of the Swan Coastal Plain that includes the current study area (Tables 7 and 8).

# 6 ECOLOGICAL LINKAGE

This report describes 10 natural subdivisions of the Swan Coastal Plain EEEA study area, based on major landform elements. The reports and studies used to identify and describe these 10 natural subdivisions are combined with the location of reserve lands to make a preliminary identification of a series of '*Regionally significant sequences of ecological communities within and between the major landform elements'* within the EEEA area. For brevity these sequences are, hereafter referred to as, Ecological Linkages.

Nine preliminary Ecological Linkages are broadly identified in the EEEA area (see below). The preliminary Ecological Linkages are not sufficiently defined to map. The following issues are associated with better identifying these linkages.

- Natural areas in the vicinity of each Linkage have not been identified. The identification of specific areas is dependent on a description of specific area values and a consideration of these values against the criteria for identifying regional significance. This identification process is expected to be achieved through Swan Bioplan and be discussed as part of the public consultation program.
- Some individual natural areas in the Ecological Linkages need to better described and/or identified.
- Naturally vegetated areas (in particular the larger relatively intact remnants) in the area of the linkages will be priorities for retention and protection. These areas are expected to meet the criteria for regional significance against at least two criteria, that is - 'Representation of ecological communities' and 'Maintaining of ecological processes or natural systems'.

Once defined, the area of the Ecological Linkages can provide a focus for the restoration of ecological communities and landscape rehabilitation between and around the small remaining remnants, particularly those on the eastern side of the Swan Coastal Plain.

Two types of linked (or potentially linked) sequences of ecological communities are identified: vegetated sequences and river corridors.

## 6.1 Ecological Linkages: Vegetated Sequences

The vegetated sequences are divided into groups that reflect the direction of the linkage.

- North/south ecological linkages
  These broadly link areas of the same major landform elements thus, similar ecological units. They contribute to the effective size of the habitat area accessible to populations of habitat specialist fauna, facilitating:
  - seasonal movement of species whose food resources shift north-south with the seasons.
  - regular genetic exchanges between flora and fauna populations; and
  - the re-establishment of populations into individual remnants after local extinction following catastrophic events such as fire.

  As a consequence, these linkages contribute to the effective size of populations of both flora and fauna species.

- East/west ecological linkages
  These generally link the different major landform elements and ecological units. They contribute to the understanding of the patterning of the flora and vegetation of the region and to the survival of populations and fauna species that require the seasonal resources available within and between different ecosystems in close proximity.

| Vegetated sequences |
|---|
| **North / South Ecological Linkages** |
| Serpentine River / Murray River deltaic islands / Pinjarra Area 1 |
| Harvey River Delta / Harvey River |
| Perth to Bunbury Railway |
| Bassendean Area 1 (Yangedi Road and Paterson Road) / Murray River (west) and Bassendean Area 2 (north) / Pinjarra Area 1 (north) / Carrabungup NR / Bassendean Area 2 (south) |
| |
| **East / West Ecological Linkages (most of these are relatively sparse)** |
| Nambeelup Brook / Dandalup River (east) |
| Murray River (east) / South Dandalup River (east) |
| Old Bunbury Road |

## 6.2 Ecological Linkages: Rivers

River ecological linkages form some of the most extensive contiguous, though often narrow linkages, remaining and can share some of the characteristics of north/south and east/west linkages.

| **River Corridors or River Ecological Linkages** (directions bracketed) | |
|---|---|
| Serpentine River | Serpentine |
| | Black Lake Chain (east of Serpentine River main channel) |
| | Nambeelup Brook (east/north) |
| Murray River | Murray (east/south/east) |
| | Dandalup River (north/east) |
| | South Dandalup River (east) |
| Harvey River | |

# 7 COMPARISON OF NATURAL AREAS

## 7.1 Regionally Significant Natural Areas in the EEEA Study Area

In the Guidance No. 10 study area (EPA 2003), the mapped vegetation complexes (Table 4a and b) are used as one of the surrogates for ecological communities. Based on the National Land and Water Resources Audit native remnant vegetation mapping (Commonwealth of Australia 2001b, Beeston *et al.* 2001), using circa 1997 images, only two of the 13 vegetation complexes found in the EEEA area, the Yoongarillup and Cottesloe Central and South, have more than 30% of their original extent remaining on the Swan Coastal Plain, within the error margins applied to these statistics. However, the aim is to retain:

> "……at least 30% of the pre-clearing extent of the ecological communities, where >30% of an ecological community remains"[11] (after EPA 2003 and outlined in Appendix 1a of this report).

Also this "at least 30%" needs to be in Good or better condition, which may be difficult to achieve in the natural areas remaining within the Yoongarillup and Cottesloe Central and South vegetation complexes.

As a consequence, all remnants of native vegetation in at least 11 of the vegetation complexes in the EEEA study area are likely to be regionally significant. Of particular concern is the Pinjarra Plain as less than 10% of this major landform element remains, the majority of the remaining remnants are small and most are upland units on sands and do not reflect the original diversity of the plant communities of the Pinjarra Plain.

As a consequence of the low percentage of remaining native vegetation in the study area, the Swan Bioplan project will use the ecological criteria for determining the regional significance of natural areas (EPA 2003) to rank natural areas to contribute to the determination of priorities for protection. A series of other criteria will also need to be addressed in the determination of these priorities.

## 7.2 Natural Area Groups in the EEEA Study Area

The natural areas in the EEEA study area are grouped below after a variety of factors which are of relevance when specific areas are ranked for levels of protection (see Background section).

### 7.2.1 *Areas with insufficient information*

Bassendean Area 1 and adjacent area of Pinjarra Plain Area 2

From the currently available information it can be determined that these two areas have a series of regional and particular values as discussed previously and summarised below.

- Large areas (>>20ha) of contiguous upland and wetland in predominantly Very Good condition.
- *Banksia* Woodlands and wetlands of the Bassendean Complex - Central and South and Southern River Complex.
- Southern extent of the species-rich *Banksia* Woodlands and wetlands of the Bassendean Complex - Central and South (FCT 23a).
- Transitional *Banksia* Woodlands, and possibly wetlands, between the Bassendean Dunes /Pinjarra Plain.
- Creeklines.
- Possible areas of transitional Pinjarra Plain/Foothills woodlands.
- Large conservation category wetlands.
- Habitat areas for woodland birds and reptiles.

At this stage there is insufficient information to say which specific areas have the highest value, particularly in respect to those in the best condition.

[11] No constrained areas have been identified in the EEEA Area

Within the entire study area there are a number of other areas in this category. These are principally areas on private land.

### 7.2.2 *Regional Open Space (ROS) containing highly significant natural areas, including National Parks and Nature Reserves*

The naturally vegetated public lands or proposed public lands (after ROS, Maps 1 and 5) in the EEEA study area are of the highest conservation value. These areas contain outstanding examples of the flora, vegetation and habitats of the estuaries, rivers, Spearwood Dunes, Bassendean Dunes and Pinjarra Plain, and these units are in unique combinations. These areas are listed below. Rows in:

- *italics* contain areas, or are adjacent to areas, of 'Threatened and Poorly Reserved Plant Communities' (EPA 1994);
- **bold** contain areas of TECs or are where TECs have been inferred; and
- underlining indicates where there is uncertainty as to whether the entire area or part is in ROS

*National Parks (NP) and Nature Reserves (NR)*

| National Parks and Nature Reserves | System 6 Area | Plot Code |
|---|---|---|
| Serpentine River NR: includes A44986<br>Goegrup NR C 26351<br>Black Lake NR C 35283 | M 108 Goegrup lakes | - |
| ***Pinjarra NR A 41184*** | Not applicable | - |
| NR part Subm 98 Hampton Road bushland | Not applicable | hamp |
| **Austin Bay NR A4990** | **C50 Peel Inlet** | **AUSTB, CARAB** |
| Itty Bitty NR A 13359 | Not applicable | |
| Mealup Point NR A2738 | | MEAL |
| Lake McLarty NR A24739, 44978<br>Lake Mealup NR A 6627 | C52 Lakes McLarty and Mealup | - |
| **Kooljerrenup NR A23756** | **C51 Harvey Estuary** | **KOOLJ** |
| Nine Mile Lake Nature Reserve | Not applicable | NINE |
| Buller Road NR 22199 | C59 Buller Road Nature Reserve | BULLER |

*State Forest (SF) and other government reserves in ROS*

| State Forest and other government reserves | System 6 Area | Plot Code |
|---|---|---|
| Deltaic Islands Serpentine and Murray Rivers | Unsure if included in C50 Peel Inlet | - |
| Murray River reserves | | - |
| **Reserve 38749 (north Austin Bay NR)** | **C50 Peel Inlet** | **AUSTB, CARAB** |
| Stony Point Reserve 27528 | **C51 Harvey Estuary** | - |
| UCL Reserve 1178 (south of Stony Point) | Not applicable | - |
| **Reserves on the corner of the Old Bunbury Road and Brownes Road** | Not applicable | - |
| Herron Point Reserve | Not applicable | - |
| Harvey River Crossing Reserves , Reserve 13987, Harvey River | Not applicable | DRAIN |
| **SF Lyons Forest Block** | C55 Clifton Management Priority Area | CLIFT, LYONS |
| **SF Treasure Forest Block** | C56 McLarty Management Priority Area | CORON |
| Harvey River | C58 Reserve 23172, Harvey River | C58 |
| Coolup Reserves | C53 Coolup Reserves | waro |

It is fortunate that these lands are in, or proposed to be added to, the public estate. However, many of these areas are small (some absolutely tiny, Photograph 19) and all have large edge to area ratios. As a

consequence, many would benefit from being enlarged for both better representation and management. In many cases there are contiguous areas of bushland in reserves and other ownership. Only some of these reserves are under ROS reservation.

### 7.2.3 *Reserves not in Regional Open Space containing highly significant natural areas*

There are a series of other reserves that contain significant natural areas that are not ROS.

*State Forest and other government reserves not in ROS*

| State Forest and other government reserves | System 6 Area | Plot Code |
|---|---|---|
| **Reserve 34033, adjacent to Pinjarra Nature Reserve and other reserves** | Not applicable | - |
| North Buller Road NR Reserves | Not applicable | - |
| Lake Clifton townsite | Not applicable | **CLIFT** |
| SF Lyons Forest Block | C55 Clifton Management Priority Area | CLIFT, LYONS |
| SF Treasure Forest block | C56 McLarty Management Priority Area | CORON |

### 7.2.4 *Other land*

There are a series of private land areas in the EEEA study area that support substantive natural areas of high conservation value. Some of these were submissions to the System 6 update and their values were investigated in 1995 and 1996. Some areas of private land may well meet the criteria for a high level of protection. Of particular significance are:

- areas of Pinjarra Plain vegetation (less than 10% remaining);
- locations of TECs;
- larger areas of bushland on other landform units, i.e. >20 ha, as a single unit or groups of remnants; and
- remnants and natural areas in the yet to be defined ecological linkages.

### 7.2.5 *Tuart conservation*

Within the EEEA there are significant populations of Tuart, especially the disjunct populations on the Murray and Harvey Rivers and the populations in Spearwood Area 2 (Tables 9 and 10, Photograph 2). The populations of Tuart north of Lakes Road are also of interest as there are no substantive areas with Tuart protected between the Peel Estuary and Bush Forever Site 395.

The mapping of Tuart dominated communities in the EEEA study area in the Tuart Atlas (Government of Western Australia 2003) is, on a few occasions, at variance with the actual extent of Tuart. This is of significance in the locations listed below.

- Stakehill Bridge: No Tuart is mapped in this location in the Atlas. This is a significant location as it is the only known location in the EEEA area where Tuart populations occur on both sides of a river.
- Spearwood Area 3: As discussed previously the eastern flats of this area should be mapped as a Bassendean vegetation complex rather than the Yoongarillup Complex. This is supported by the fact that the only Tuart in this general area is the population in the Harvey River Reserve (Table 10, Area 89; Photograph 31). However, the Atlas maps Tuart in these eastern flats and along the Harvey River north of the Reserve. This is incorrect as the Tuart dominated communities[12] lie to the west on the top of the north-south Spearwood Dune Ridge, and to the south-west from about half way along the thin strip of bushland between the Pine plantation and Domain Road (Photograph 6).

### 7.2.6 *Areas recognised for their international and national significance for conservation*

As outlined earlier, the Peel Inlet, Harvey Estuary and associated freshwater wetlands (including Lake Mealup and Lake McLarty) are some of the most significant in Western Australia and form one of the largest and most diverse estuarine complexes in Western Australia. This area is recognised internationally in the

[12] Marri, Jarrah and *Eucalyptus rudis* have been mistakenly mapped as Tuart as on aerial photography they can have very similar appearance.

CAMBA (1988), JAMBA (1981) and Ramsar (1990) agreements. Lakes McLarty and Mealup, together with a connecting corridor, are also listed on the Register of the National Estate, primarily for their significance to waterbirds (AHC 1990).

A number of plant communities, and flora and fauna species (Appendix 2a and Tables 4-8) in the EEEA area are listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999,* as documented on the Department of Environment and Heritage website (DEH 2005) as of February 2005.

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| | |
|---|---|
| **GIS** after the date in the references | Only a Geographic Information System(GIS) dataset |
| **#** at the beginning of the reference | Some mapping information in these studies is available in a GIS format and, at times, a database |
| **Database** after the date in the reference | A database |

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# 10 TABLES

## TABLE 1: National and regional information sets for System 6 and part System 1 region

(after table prepared by DEP - Conservation Branch in 1997, included in EPA 2003).

LANDFORM AND SOIL (various sources)

VEGETATION AND FLORA
Vegetation Types (Beard 1979, Hopkins *et al.* 1996)*
Vegetation Complexes (Heddle *et al.* 1980 and CALM 1998)
Floristic Community Types (Gibson *et al.* 1994, DEP 1996)

WETLANDS
Wetland Types (Hill *et al.* 1996a&b and as updated periodically by WRC)
Consanguineous suite (Hill *et al.* 1996a&b)
Wetland Management Objective (after Hill *et al.* 1996a&b, Semeniuk V and C Research Group 1998, as updated periodically by WRC)
Lake's EPP (Government of Western Australia 1992)

THREATENED ECOLOGICAL COMMUNITIES
after English and Blyth (1997) and as updated periodically by CALM

THREATENED SPECIES
CALM current Declared Rare Flora, Specially Protected Fauna and Priority Flora and Fauna lists, reports, specific area survey

INTERNATIONAL AND NATIONAL SIGNIFICANCE
Reference to international treaties, Commonwealth *Environment Protection and Biodiversity Act 1999*, listing on the Register of the National Estate etc.

*Not applied in Government of WA (2000 a & b)

**TABLE 2: Specific area information** (after table prepared by DEP – Conservation Branch in 1997, included in EPA 2003). [Note: the limitation of any survey work should be clearly stated.]

| |
|---|
| LANDSCAPE FEATURES |
| VEGETATION AND FLORA<br>any existing information and specific area survey |
| STRUCTURAL UNITS<br>should be mapped and related to on the ground descriptions |
| VEGETATION CONDITION<br>should be mapped or recorded using standard terminology (Government of Western Australia 2000b) |
| TOTAL FLORA<br>including total flora (level of survey should be indicated), significant flora (DRF, priority taxa, range extensions, species at geographic limits etc.) |
| FAUNA<br>including total fauna (level of survey should be indicated), significant fauna (Specially Protected Fauna, priority taxa, range extensions, species at geographic limits etc.) |
| LINKAGE<br>adjacent bushland areas |

**TABLE 3: Major landform element subdivisions within the EEEA study area** (Maps 1 and 5).

| Major Landform Element | Major Landform Element Subdivision |
|---|---|
| **Spearwood Dunes** (wind deposited) | **Spearwood Area 1** – Two areas of the Spearwood Dune System west of the Serpentine River in the north-west corner of the EEEA study area<br>**Spearwood Area 2** – Spearwood Dunes on the north-eastern side of the Harvey Estuary<br>**Spearwood Area 3** - A low Tamala Limestone ridge west of the Harvey River paralleling Old Coast Road |
| **Bassendean Dunes** (wind deposited) | **Bassendean Area 1** - East of the Serpentine River, north of the Murray River, west of Hopelands Road<br>**Bassendean Area 2** - Low to medium relief Bassendean Dunes overlying the Pinjarra Plain between the Murray and Harvey Rivers<br>**Bassendean Area 3** - A north-south band of low relief dunes west of the Harvey River |
| **Pinjarra Plain (and Foothills)** (water & gravity deposited) | **Pinjarra Plain Area 1** - Eastern shores of the Peel Inlet from Murray River to Roberts Bay and the Harvey Estuary from Mills Road (south of Lake McLarty) to the Harvey River<br>**Pinjarra Plain Area 2** - Eastern side of the EEEA study area |
| **Rivers & Estuaries** (water deposited) | **Rivers (Serpentine*, Murray, Harvey Rivers and associated rivers and creeks)**<br>**Estuaries (Peel Inlet and Harvey Estuary)**<br>* The 'Serpentine River' is the only river distinguished as a mapped area; the other rivers and creeks are the river bed and associated fringing vegetation which is generally too narrow to distinguish at the scale of the maps. |

## TABLE 4: Vegetation complexes in the EEEA study area (derived from Table 4, EPA 2003).

**KEY**

**Table 4a gives figures for the System 6/part System 1 area**
**Table 4b gives figures for the EEEA study area**

| | |
|---|---|
| **Column 1** | **Vegetation Complex**<br>Name allocated to the vegetation complex by Heddle *et al.* (1980). Units with an asterisk (*) next to them were allocated a name by Mattiske and Havel (CALM 1998). |
| **Column 2** | **Vegetation Complex No.**<br>Number allocated to the complex by Heddle *et al.* (1980). |
| **Column 3** | **Total pre-1750 extent (ha)**<br>Pre-clearing extent of the vegetation complex<br>This was derived using Heddle *et al.* (1980) and Mattiske and Havel (1998). |
| **Column 4** | **Present extent (circa 1997) (ha)**<br>The remaining area in circa 1997 of each vegetation complex as mapped by the National Land and Water Resource Audit (Beeston *et al.* 2001). |
| **Column 5** | **% of each remaining (circa 1997)**<br>The remaining area of the complex as a percentage of its pre-1750 extent. |
| **Column 6**<br>(Table 4b only) | **Area in secure tenure (2002) (ha)**<br>The remaining area of each complex in secure tenure.<br>Secure tenure = National Parks, Nature Reserves, Conservation Parks and 5(g) Reserves from CALM Managed Lands 2002 GIS database (CALM 2002). |
| **Column 7**<br>(Table 4b only) | **% of each remaining of pre-1750 extent in secure tenure (2002)**<br>The remaining area of the ecosystem in secure tenure as a percentage of its pre-1750 extent. |

**Limitations**

It is important to keep in mind that the remnant native vegetation mapping used in the Region is derived from dated aerial photography (circa 1997), with limited ground truthing. As a consequence, the percentages of ecological communities remaining are generally an overestimate of the native vegetation remaining at present and at the date these figures were determined.

The principal factors contributing to this overestimation are:

- the preferential mapping of treed landscapes, leading to some mapping of areas that are parkland cleared or completely degraded;
- the inclusion of areas that are approved for clearing through development approvals and/or clearing permits; and
- the clearing of some areas since the time of the aerial photography.

It is, therefore, important to bear these issues in mind when the percentages of the vegetation complexes remaining are approaching 10% or 30%. Here 12% and 40% respectively are seen as allowing for these considerations.

## TABLE 4a: Remnant vegetation remaining within the System 6/part System 1 area for each of the vegetation complexes found in the EEEA study area.

**KEY TO SHADING**

| |
|---|
| **≤ 10% remaining OR < 15% reserved (observing the error margin)** |
| **≤ 30% remaining (observing the error margin)** |
| **> 40% remaining** |

| Vegetation Complex (grouped by major landform element) | Vegetation Complex No. | Total pre-1750 extent in the System 6/part System 1 area (ha) | Present extent (circa 1997) in the System 6/part System 1 area (ha) | % of each remaining (circa 1997) in the System 6/part System 1 area | Area in secure tenure (2002) in the System 6/part System 1 area (ha) | % of each remaining of pre-1750 extent in secure tenure (2002) in the System 6/part System 1 area |
|---|---|---|---|---|---|---|
| **Foothills (Ridge Hill Shelf)** | | | | | | |
| Forrestfield Complex | 29 | 20,052 | 3,518 | 17.5 | 61 | 0.3 |
| **Total for Major Landform Element** | | **26,324** | **6,349** | **24.1** | **650** | **2.5** |
| **Pinjarra Plain** | | | | | | |
| Guildford Complex | 32 | 92,497 | 4,662 | 5.0 | 143 | 0.2 |
| Swan Complex | 33 | 15,783 | 2,454 | 15.5 | 0 | 0.0 |
| Dardanup Complex | 34 | 9,504 | 754 | 7.9 | 0 | 0.0 |
| Serpentine River Complex | 35 | 19,855 | 2,103 | 10.6 | 558 | 2.8 |
| **Total for Major Landform Element** | | **239,433** | **21,315** | **8.9** | **1,462** | **0.6** |
| **Combinations of Bassendean Dunes / Pinjarra Plain** | | | | | | |
| Cannington Complex | 40 | 16,661 | 1,659 | 10.0 | 883 | 5.3 |
| Southern River Complex | 42 | 57,979 | 11,501 | 19.8 | 882 | 1.5 |
| **Total for Major Landform Element** | | **74,641** | **13,160** | **17.6** | **1,766** | **2.4** |
| **Bassendean Dunes** | | | | | | |
| Bassendean Complex-Central And South | 44 | 87,477 | 23,624 | 27.0 | 572 | 0.7 |
| **Total for Major Landform Element** | | **181,477** | **95,494** | **52.6** | **31,164** | **17.2** |
| **Spearwood Dunes** | | | | | | |
| Karrakatta Complex-Central And South | 49 | 49,912 | 14,729 | 29.5 | 1,254 | 2.5 |
| Cottesloe Complex-Central And South | 52 | 44,995 | 18,474 | 41.1 | 3,951 | 8.8 |
| **Total for Major Landform Element** | | **165,493** | **70,087** | **42.4** | **9,357** | **5.7** |
| **Wetlands** | | | | | | |
| Herdsman Complex | 53 | 8,309 | 2,875 | 34.6 | 952 | 11.5 |
| **Total for Major Landform Element** | | **13,202** | **4,169** | **31.6** | **976** | **7.4** |
| **Marine (Estuarine and Lagoonal) Deposits** | | | | | | |
| Vasse Complex | 57 | 11,190 | 3,287 | 29.4 | 1,227 | 11.0 |
| Yoongarillup Complex | 56 | 24,767 | 11,140 | 45.0 | 3,449 | 13.9 |
| **Total for Major Landform Element** | | **35,956** | **14,427** | **40.1** | **4,676** | **13.0** |

**TABLE 4b: Remnant vegetation remaining within the EEEA study area for each of the vegetation complexes found in this study area.**
See Map 5 for vegetation complexes (Heddle *et al.* 1980) and remnant native vegetation (Beeston *et al.* 2001)

| Vegetation Complex (grouped by major landform element) | Vegetation Complex No. | Total pre-1750 extent in the EEEA area (ha) | Present extent (circa 1997) in the EEEA area (ha) | % of each remaining (1997/98) in the EEEA area |
|---|---|---|---|---|
| **Foothills (Ridge Hill Shelf)** | | | | |
| Forrestfield Complex | 29 | 341.0 | 10.7 | 3.1 |
| **Total for Major Landform Element** | | **341.0** | **10.7** | **3.1** |
| **Pinjarra Plain** | | | | |
| Guildford Complex | 32 | 21,352.7 | 672.5 | 3.1 |
| Swan Complex | 33 | 1,578.9 | 258.3 | 16.4 |
| Dardanup Complex | 34 | 1,055.9 | 62 | 5.9 |
| Serpentine River Complex | 35 | 4,931.4 | 255.3 | 6.8 |
| **Total for Major Landform Element** | | **28,918.9** | **1,248.1** | **4.3** |
| **Combinations of Bassendean Dunes / Pinjarra Plain** | | | | |
| Cannington Complex | 40 | 14,217.8 | 1,578.4 | 11.1 |
| Southern River Complex | 42 | 3,087.7 | 255.3 | 8.3 |
| **Total for Major Landform Element** | | **17,305.5** | **1,833.7** | **10.6** |
| **Bassendean Dunes** | | | | |
| Bassendean Complex-Central And South | 44 | 14,709.9 | 2,781.5 | 18.9 |
| **Total for Major Landform Element** | | **14,709.9** | **2,781.5** | **18.9** |
| **Spearwood Dunes** | | | | |
| Karrakatta Complex-Central And South | 49 | 4,128.3 | 714.9 | 17.3 |
| Cottesloe Complex-Central And South | 52 | 2,823.6 | 1,605.7 | 56.9 |
| **Total for Major Landform Element** | | **6,951.9** | **2,320.6** | **33.4** |
| **Wetlands** | | | | |
| Herdsman Complex | 53 | 1,555.4 | 674.4 | 43.4 |
| **Total for Major Landform Element** | | **1,555.4** | **674.4** | **43.4** |
| **Marine (Estuarine and Lagoonal) Deposits** | | | | |
| Vasse Complex | 57 | 5,636.6 | 1,845.8 | 32.7 |
| Yoongarillup Complex | 56 | 339.9 | 222.6 | 65.5 |
| **Total for Major Landform Element** | | **5,976.5** | **2,068.4** | **34.6** |

## TABLE 5: Floristic Community Types identified from plots in the EEEA study area
(identified in Gibson *et al*. 1994, and in the System 6 and Part 1 Update, DEP 1996).

**KEY TO COLUMNS**

**Column 1** **Floristic Community Type Codes**
The numbers of the types additional to Gibson *et al.* (1994) are italicised if they are subsets of an existing group (in types 19, 20, 23 and 30) and italicised and preceded by an S if they are supplementary groups.

**Column 2** **General Description of Floristic Community Types**
Descriptions are based on generalised information from all plots in the group. Structural units are categorised into forest, woodlands, shrublands, sedgelands and herblands after Gibson *et al.* (1994).

**Column 3** **Average Species Richness per Floristic Community Type**
Average species richness per 10m x 10m plot, less those species only occurring in a single plot (single records). Some community types can have a high proportion of single records and thus estimates of average species richness are underestimates in some cases.

**Bold text for the row indicates this Floristic Community Type is a Threatened Ecological Community** (after English and Blyth 1997, Val English pers. com.)

**KEY TO SHADING**

Shaded rows are Floristic Community Types inferred to occur in the area

| FCT | FCT Description | Av. Species Richness |
|---|---|---|
| **Supergroup 1 - Foothills/Pinjarra Plain** | | |
| **3a** | ***Eucalyptus calophylla - Kingia australis* woodlands on heavy soils** | **58.2** |
| **3b** | ***Eucalyptus calophylla - Eucalyptus marginata* woodlands on sandy clay soils** | **57.3** |
| **Supergroup 2 - Seasonal Wetlands** | | |
| 4 | *Melaleuca preissiana* damplands | 33.2 |
| 5 | Mixed shrub damplands | 38.4 |
| **7** | **Herb rich saline shrublands in clay pans** | **44.8** |
| **8** | **Herb rich shrublands in clay pans** | **50.8** |
| **9** | **Dense shrublands on clay flats** | **34.8** |
| **10a** | **Shrublands on dry clay flats** | **45.9** |
| 11 | Wet forests and woodlands | 28.0 |
| 12 | *Melaleuca teretifolia* and/or *Astartea* aff. *fascicularis* shrublands | 27.3 |
| 13 | Deeper wetlands on heavy soils | 16.9 |
| **15** | **Forests and woodlands of deep seasonal wetlands** | **16.8** |
| 16 | Highly saline seasonal wetlands | 11.2 |
| 17 | *Melaleuca rhaphiophylla - Gahnia trifida* seasonal wetlands | 13.4 |
| *S1* | *Astartea* aff. *fascicularis*/*Melaleuca* species dense shrublands | *22.4* |
| *S7* | Northern woodlands to forests over tall sedgelands alongside permanent wetlands | *17.7* |
| *S17* | *Eucalyptus rudis*/*Agonis linearifolia* wetlands in Bassendean Dunes | *15.2* |
| **Supergroup 3 - Uplands centred on Bassendean Dunes and the Dandaragan Plateau** | | |
| **20b** | **Eastern *Banksia attenuata* and/or *Eucalyptus marginata* woodlands** | **59.7** |
| 21a | Central *Banksia attenuata - Eucalyptus marginata* woodlands | 52.0 |
| 21c | Low lying *Banksia attenuata* woodlands or shrublands | 38.5 |
| 22 | *Banksia ilicifolia* woodlands | 30.0 |
| 23a | Central *Banksia attenuata - Banksia menziesii* woodlands | 59.0 |
| **Supergroup 4 - Uplands centred on Spearwood and Quindalup Dunes** | | |
| 25 | Southern *Eucalyptus gomphocephala – Agonis flexuosa* woodlands | 48.1 |
| **26a** | ***Melaleuca huegelii - Melaleuca acerosa* shrublands on Limestone ridges** | **49.6** |
| 26b | Woodlands and mallees on Limestone | 49.8 |

**TABLE 6: Plots, Floristic Community Types and Threatened Ecological Communities in the EEEA study area** (from Gibson *et al*. 1994, and System 6 and Part 1 Update DEP 1996)

**KEY TO SHADING**

| | |
|---|---|
| white | Plot or inferred FCT (#) on the Pinjarra Plain |
| pale gray | Plot on the Pinjarra Plain/Bassendean Dunes |
| medium grey | Plot or inferred FCT (#) on the Bassendean Dunes |
| dark grey | Plot on the Spearwood Dunes |
| dots | Plot on the River |

**KEY TO COLUMNS**

**Column 1** **Area Name**
* near/adjacent to EEEA area

**Column 2** **Plot Codes**
* near/adjacent to EEEA area

**Column 3** **Floristic Community Type Codes**

**Column 4** **Threatened Ecological Communities (**after English and Blyth 1997, Val English pers. comm.)
- CR Critically Endangered
- EN Endangered
- VU Vulnerable
- \+ Listed as 'endangered' under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999

**Column 5** **Dataset**
- SCP Plots from Gibson *et al*. (1994)
- SYSENV Plots from System 6 and Part 1 Update in 1994 (DEP 1996)
- SYSENV2 Plots from System 6 and Part 1 Update in 1995 (DEP 1996)

| Area Name | Plot | FCT | TEC | Dataset |
|---|---|---|---|---|
| **Supergroup 5 - Foothills/Pinjarra Plain** | | | | |
| Subm Reserve 34033, adjacent to Pinjarra Nature Reserve and other reserves | pind01 | 03a | CR+ | SYS6ENV2 |
| C53 Coolup Reserves | waro 06 | 03a | CR+ | SCP |
| C51 Kooljerrenup NR | KOOLJ-5 | 03b | VU | SCP |
| *Bush Forever Site 78 | *PAGE 01 | 03b | VU | SYS6ENV2 |
| C53 Coolup Reserves | *waro 01, 02 | 03b | VU | SCP |
| **Supergroup 2 - Seasonal Wetlands** | | | | |
| C58 Reserve 23172, Harvey River | C58-1 | 04 | | SCP |
| Subm 98 Hampton Road bushland | hamp01 | 04 | | SYS6ENV2 |
| C51 Kooljerrenup NR | KOOLJ-1 | 04 | | SCP |
| Subm 280 Ravenswood | ravs01 | 04 | | SYS6ENV2 |
| C50 Austin Bay NR | AUSTB-4, 5, 6 | 05 | | SCP |
| Subm 98 Hampton Road bushland | hamp02 | 05 | | SYS6ENV2 |
| *Bush Forever Site 395 | *PAGA 01, 03 | 05 | | SCP |
| C50 Austin Bay NR | AUSTB-1, 2,7, 8 | 07 | VU | SCP |
| C50 Carrabungup NR | CARAB-2 | 07 | VU | SCP |
| C58 Reserve 23172, Harvey River | C58-3 | 08 | VU | SCP |
| C53 Coolup Reserves | waro 03, 04 | 08 | VU | SCP |

| Area Name | Plot | FCT | TEC | Dataset |
|---|---|---|---|---|
| Reserve 34033, adjacent to Pinjarra Nature Reserve and other reserves | pind02 | 09 | VU | SYS6ENV2 |
| C58 Reserve 23172, Harvey River | C58-4 | 10a | EN | SCP |
| C51 Kooljerrenup NR | KOOLJ-6, 7 | 10a | EN | SCP |
| C53 Coolup Reserves | waro 05 | 10a | EN | SCP |
| C50 Austin Bay NR | AUSTB-3 | 11 | | SCP |
| C50 Carrabungup NR | CARAB-3 | 11 | | SCP |
| Subm 98 Hampton Road bushland | hamp04 | 12 | | SYS6ENV2 |
| *Bush Forever Site 395 | *PAGA 02 | 13 | | SCP |
| C58 Reserve 23172, Harvey River | C58-2 | 13 | | SCP |
| C52 McLarty NR | McLART-1 | 13 | | SCP |
| C50 Carrabungup NR | CARAB-1 | 15 | VU | SCP |
| *Bush Forever Site 77 | YANG 01 | 15 | VU | SYS6ENV2 |
| *Bush Forever Site 77 | YANG 03 | S1 | not determined | SYS6ENV2 |
| Subm 280 Ravenswood | raven04 | S1 | not determined | SYS6ENV2 |
| Subm 280 Ravenswood | raven02 | S17 | not determined | SYS6ENV2 |
| **Supergroup 3 - Uplands centred on Bassendean Dunes and the Dandaragan Plateau** | | | | |
| Remnant | | 20b (inferred) | EN | |
| *C59 Buller Road Nature Reserve | *BULLER-1, 2 | 21a | | SCP |
| *Bush Forever Site 395 | *PAGA 04, 07 | 21a | | SCP |
| Lake Clifton Townsite | CLIFT-1 | 21a | | SCP |
| Reserve 13987, Harvey River | DRAIN-1 | 21a | | SCP |
| Subm 98 Hampton Road bushland, | hamp03 | 21a | | SYS6ENV2 |
| C51 Kooljerrenup Nature Reserve | KOOLJ-2, 3, 4 | 21a | | SCP |
| Nine Mile Lake Nature Reserve | NINE-1, 2 | 21a | | SCP |
| *C59 Buller Road Nature Reserve | *BULLER-3 | 21c | | SCP |
| Subm 280 Ravenswood | raven03 | 21c | | SYS6ENV2 |
| Subm 280 Ravenswood | raven05 | 22 | | SYS6ENV2 |
| *Bush Forever Site 77 | YANG 02 | 23a | | SYS6ENV2 |
| **Supergroup 4 - Uplands centred on Spearwood and Quindalup Dunes** | | | | |
| *Bush Forever Site 395 | *PAGA 06, 08 | 25 | | SCP |
| C56 SF Treasure Forest block | CORON-2 | 25 | | SCP |
| SF Lyons Forest Block | LYONS-2 | 25 | | SCP |
| Mealup Point Nature Reserve | MEAL-1 | 25 | | SCP |
| Lake Clifton Townsite | CLIFT--2, 3 | 26a | EN | SCP |
| Mealup Point Nature Reserve | MEAL-2 | 26b | | SCP |

## TABLE 7: Conservation significant mammals, reptiles and invertebrates known or likely to occur in the EEEA study area

**KEY**

**Column 1 Scientific Name**

**Column 2 Common Name**

**Column 3 Conservation Significance**

- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (see Section 3.6.6) (DEH 2005)
  E = Endangered
  VU = Vulnerable

- *Wildlife Conservation (Specially Protected Fauna) Notice 2005* (Government of Western Australia 2005)
  R1 Schedule 1 — being fauna that is rare or likely to become extinct;
  R2 Schedule 2 — being fauna that is presumed to be extinct;
  R4 Schedule 4 — being fauna that is in need of special protection otherwise than for the reasons mentioned under Schedules 1, 2 and 3.

- CALM Priority Fauna List (CALM 2005b)

  **P1 Priority One**
  **Taxa with few, poorly known populations on threatened lands.** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

  **P2 Priority Two**
  **Taxa with few, poorly known populations on conservation lands.** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

  **P3 Priority Three**
  **Taxa with several, poorly known populations, some on conservation lands.** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened flora.

  **P4 Priority Four**
  **Taxa in need of monitoring.** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.'

  **P5 Priority Five**
  **Taxa in need of monitoring.** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

- Regionally declining species (Government of Western Australia 2000b)
  Category 3 = habitat specialists with a reduced distribution on the Swan Coastal Plain and the EEEA Project Area;
  Category 4 = wide-ranging species with reduced populations on the Swan Coastal Plain and the EEEA Project Area

| Scientific Name | Common Name | Conservation Significance |
|---|---|---|
| **MAMMALS** | | |
| *Antechinus flavipes* | Yellow-footed Antechinus | Category3 |
| *Sminthopsis gilberti* | Gilbert's Dunnart | Category3 |
| *Dasyurus geoffroii* | Chuditch or Western Quoll | VU, R1 |
| *Phascogale tapoatafa* | Brush-tailed Phascogale | P3 |
| *Myrmecobius fasciatus* | Numbat | R1,(locally extinct) |
| *Isoodon obesulus fusciventer* | Quenda or Southern Brown Bandicoot | P5 |
| *Macropus irma* | Western Brush Wallaby | P4 |
| *Setonix brachyurus* | Quokka | VU, R1,(locally extinct) |
| *Trichosurus vulpecula* | Common Brushtail Possum | Category4 |
| *Tarsipes rostratus* | Honey Possum | Category3 |
| *Cercartetus concinnus* | Western Pygmy-possum | Category3 |
| *Falsistrellus mackenziei* | Western False Pipistrelle | P4 |
| *Hydromys chrysogaster* | Water Rat | P4 |
| **REPTILES** | | |
| *Underwoodisaurus milii* | Barking Gecko | Category3 |
| *Rankinia adelaidensis* | Western Heath Dragon | Category3 |
| *Pletholax gracilis* | Keeled Legless Lizard | Category3 |
| *Ctenotus impar* | Odd-striped Ctenotus | Category3 |
| *Ctenotus gemmula* | Jewelled Ctenotus | Category3 |
| *Ctenotus labillardieri* | Red-legged Skink | Category3 |
| *Lerista lineata* | Perth Lined Lerista | Category3 |
| *Varanus rosenbergi* | Southern Heath Monitor | Category4 |
| *Ramphotyphlops pinguis* | Fat Blind Snake | Category3 |
| *Demansia psammophis* | Reticulated Whip snake | Category4 |
| *Echiopsis curta* | Bardick | Category4 |
| *Elapognathus coronatus* | Crowned Snake | Category4 |
| *Morelia spilota imbricata* | Carpet Python | R4 |
| **BIVALVIA (Bivalves)** | | |
| *Westralunio carteri* | | P4 |
| **ARACHNIDS** | | |
| *Idiosoma nigrum* | Shield-backed Trapdoor Spider | R1 |
| **INSECTA (Insects)** | | |
| **NATIVE BEES** | | |
| *Leioproctus contrarius* | | P3 |
| *Neopasiphae simplicior* | | R1 |
| **CRICKETS** | | |
| *Throscodectes xiphos* | | P3 |
| **MOTHS** | | |
| *Synemon gratiosa* | Graceful Sun Moth | R1 |

## TABLE 8: Conservation significant birds known or likely to occur in the EEEA study area

**KEY**

**Column 1 Scientific Name**

**Column 2 Common Name**

**Column 3 Conservation Significance**

- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (DEH 2005)
  E = Endangered
  VU = Vulnerable
  I = Internationally Protected Migratory Species
- JAMBA/CAMBA agreements
- *Wildlife Conservation (Specially Protected Fauna) Notice 2005* (Government of Western Australia 2005)
  R1 Schedule 1 — being fauna that is rare or likely to become extinct;
  R2 Schedule 2 — being fauna that is presumed to be extinct;
  R3 Schedule 3 — being birds that are protected under an international agreement;
  R4 Schedule 4 — being fauna that is in need of special protection otherwise than for the reasons mentioned under Schedules 1, 2 and 3.
- CALM Priority Fauna List (CALM 2005b), see Table 7 for key to codes
- Regionally declining species (Government of Western Australia 2000b)
  Category 3 = habitat specialists with a reduced distribution on the Swan Coastal Plain and the EEEA Project Area
  Category 4 = wide-ranging species with reduced populations on the Swan Coastal Plain and the EEEA Project Area

| Scientific Name | Common Name | Conservation Significance |
|---|---|---|
| **Order STRUTHIONIFORMES** | | |
| Family CASUARIIDAE | | |
| *Dromaius novaehollandiae* | Emu | Category 4 |
| **Order ANSERIFORMES** | | |
| Family ANATIDAE | | |
| *Stictonetta naevosa* | Freckled Duck | Category 3 |
| *Oxyura australis* | Blue-billed Duck | Category 3 |
| *Biziura lobata* | Musk Duck | Category 3 |
| *Anas rhynchotis* | Australasian Shoveler | Category 3 |
| *Malacorhynchus membranaceus* | Pink-eared Duck | Category 3 |
| *Aythya australis* | Hardhead | Category 3 |
| **Order CICONIIFORMES** | | |
| Family ARDEIDAE | | |
| *Nycticorax caledonicus* | Rufous Night Heron | Category 4 |
| *Ixobrychus minutus* | Little Bittern | P4, Category 4 |
| *Ixobrychus flavicollis* | Black Bittern | P2, Category 4 |
| *Botaurus poiciloptilus* | Australasian Bittern | R1, VU, Category 4 |
| **Order FALCONIFORMES** | | |
| Family ACCIPITRIDAE | | |
| *Hamirostra isura* | Square-tailed Kite | Category 4 |
| *Haliastur sphenurus* | Whistling Kite | Category 4 |

| Scientific Name | Common Name | Conservation Significance |
|---|---|---|
| *Accipiter fasciatus* | Brown Goshawk | Category 4 |
| *Accipiter cirrocephalus* | Collared Sparrowhawk | Category 4 |
| *Aquila morphnoides* | Little Eagle | Category 4 |
| *Aquila audax* | Wedge-tailed Eagle | Category 4 |
| *Circus approximans* | Swamp Harrier | Category 3 |
| Family FALCONIDAE | | |
| *Falco berigora* | Brown Falcon | Category 4 |
| *Falco peregrinus* | Peregrine Falcon | R4, Category 4 |
| **Order GRUIFORMES** | | |
| Family RALLIDAE | | |
| *Gallinula tenebrosa* | Dusky Moorhen | Category 3 |
| Family OTIDIDAE | | |
| *Ardeotis australis* | Australian Bustard | Category 4 |
| **Order TURNICIFORMES** | | |
| Family TURNICIDAE | | |
| *Turnix varia* | Painted Button-quail | Category 4 |
| **Order CHARADRIIFORMES** | | |
| Family SCOLOPACIDAE | | |
| *Limosa limosa* | Black-tailed Godwit | JAMBA/CAMBA |
| *Limosa lapponica* | Bar-tailed Godwit | JAMBA/CAMBA |
| *Numenius minutus* | Little Curlew | JAMBA/CAMBA |
| *Numenius phaeopus* | Whimbrel | JAMBA/CAMBA |
| *Numenius madagascariensis* | Eastern Curlew | JAMBA/CAMBA, P4 |
| *Tringa stagnatilis* | Marsh Sandpiper | JAMBA/CAMBA |
| *Tringa nebularia* | Common Greenshank | JAMBA/CAMBA |
| *Tringa glareola* | Wood Sandpiper | JAMBA/CAMBA |
| *Tringa hypoleucos* | Common Sandpiper | JAMBA/CAMBA |
| *Tringa brevipes* | Grey-tailed Tattler | JAMBA/CAMBA |
| *Arenaria interpres* | Ruddy Turnstone | JAMBA/CAMBA |
| *Calidris canutus* | Red Knot | JAMBA/CAMBA |
| *Calidris tenuirostris* | Great Knot | JAMBA/CAMBA |
| *Calidris alba* | Sanderling | JAMBA/CAMBA |
| *Calidris ruficollis* | Red-necked Stint | JAMBA/CAMBA |
| *Calidris minuta* | Little Stint | JAMBA/CAMBA |
| *Calidris subminuta* | Long-toed Stint | JAMBA/CAMBA |
| *Calidris melanotos* | Pectoral Sandpiper | JAMBA/CAMBA |
| *Calidris acuminata* | Sharp-tailed Sandpiper | JAMBA/CAMBA |
| *Calidris ferruginea* | Curlew Sandpiper | JAMBA/CAMBA |
| *Limicola falcinellus* | Broad-billed Sandpiper | JAMBA/CAMBA |
| *Philomachus pugnax* | Ruff | JAMBA/CAMBA |
| Family BURHINIDAE | | |
| *Burhinus grallarius* | Bush Stone-curlew | P4 |
| Family ROSTRATULIDAE | | |
| *Rostratula benghalensis* | Painted Snipe | P3, Category 4 |
| Family CHARADRIIDAE | | |
| *Pluvialis fulva* | Pacific Golden Plover | JAMBA/CAMBA |
| *Pluvialis squatarola* | Grey Plover | JAMBA/CAMBA |
| *Charadrius dubius* | Little Ringed Plover | JAMBA/CAMBA |

| Scientific Name | Common Name | Conservation Significance |
|---|---|---|
| *Charadrius mongolus* | Lesser Sand Plover | JAMBA/CAMBA |
| *Charadrius leschenaultii* | Greater Sand Plover | JAMBA/CAMBA |
| *Charadrius rubricollis* | Hooded Plover | P4 |
| *Charadrius veredus* | Oriental Plover | JAMBA/CAMBA |
| *Erythrogonys cinctus* | Red-kneed Dotterel | JAMBA/CAMBA |
| **Order COLUMBIFORMES** | | |
| Family ALCEDINIDAE | | |
| *Phaps chalcoptera* | Common Bronzewing | Category 3 |
| *Phaps elegans* | Brush Bronzewing | Category 3 |
| **Order PSITTACIFORMES** | | |
| Family PSITTACIDAE | | |
| *Cacatua pastinator pastinator* | Western Long-billed Corella | VU, R1,(locally extinct) |
| *Calyptorhynchus banksii naso* | Forest Red-tailed Black Cockatoo | P3, VU,(locally extinct)[13] |
| *Calyptorhynchus latirostris* | Carnaby's Cockatoo | E, R1, Category 4 |
| *Calyptorhynchus baudinii* | Baudin's Cockatoo | VU, R1, Category 4 |
| *Glossopsitta porphyrocephala* | Purple-crowned Lorikeet | Category 4 |
| *Platycercus icterotis* | Western Rosella | Category 4 |
| **Order STRIGIFORMES** | | |
| Family STRIGIDAE | | |
| *Ninox connivens connivens* | Barking Owl (south-west population) | P2 |
| Family TYTONIDAE | | |
| *Tyto novaehollandiae* | Masked Owl | P3, Category 4 |
| **Order CAPRIMULGIFORMES** | | |
| Family PODARGIDAE | | |
| *Podargus strigoides* | Tawny Frogmouth | Category 4 |
| Family AEGOTHELIDAE | | |
| *Aegotheles cristatus* | Australian Owlet-nightjar | Category 4 |
| **Order PASSERIFORMES** | | |
| Family CLIMACTERIDAE | | |
| *Climacteris rufa* | Rufous Treecreeper | Category 3 |
| Family MALURIDAE | | |
| *Malurus elegans* | Red-winged Fairy-wren | Category 3 |
| *Malurus splendens* | Splendid Fairy-wren | Category 3 |
| *Malurus leucopterus* | White-winged Fairy-wren | Category 3 |
| *Stipiturus malachurus* | Southern Emu-wren | Category 3 |
| Family ACANTHIZIDAE | | |
| *Sericornis frontalis* | White-browed Scrubwren | Category 3 |
| *Smicrornis brevirostris* | Weebill | Category 3 |
| *Acanthiza apicalis* | Broad-tailed Thornbill | Category 3 |
| *Acanthiza inornata* | Western Thornbill | Category 3 |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | Category 3 |
| Family MELIPHAGIDAE | | |
| *Melithreptus chloropsis* | Western White-naped Honeyeater | Category 4 |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | Category 4 |
| *Phylidonyris nigra* | White-cheeked Honeyeater | Category 4 |
| *Phylidonyris melanops* | Tawny-crowned Honeyeater | Category 4 |

[13] Since the date of this report, the Forest Red-tailed Black Cockatoo has been added to Schedule 1.

| Scientific Name | Common Name | Conservation Significance |
|---|---|---|
| *Acanthorhynchus superciliosus* | Western Spinebill | Category 4 |
| *Lichenostomus ornatus* | Yellow-plumed Honeyeater | Category 3 |
| *Anthochaera lunulata* | Western Little Wattlebird | Category 4 |
| *Manorina flavigula* | Yellow-throated Miner | Category 4 |
| Family PETROICIDAE | | |
| *Microeca fascinans* | Jacky Winter | Category 3 |
| *Petroica multicolor* | Scarlet Robin | Category 3 |
| *Petroica cucullata* | Hooded Robin | Category 3 |
| *Eopsaltria australis* | Yellow Robin | Category 3 |
| *Eopsaltria georgiana* | White-breasted Robin | Category 3 |
| Family CINCLOSOMATIDAE | | |
| *Psophodes nigrogularis* | Western Whipbird | R1,(locally extinct) |
| Family NEOSITTIDAE | | |
| *Daphoenositta chrysoptera* | Varied Sittella | Category 3 |
| Family PACHYCEPHALIDAE | | |
| *Pachycephala pectoralis* | Golden Whistler | Category 3 |
| *Colluricincla harmonica* | Grey Shrike-thrush | Category 3 |
| Family DICRURIDAE | | |
| *Myiagra inquieta* | Restless Flycatcher | Category 3 |
| Family CAMEPHAGIDAE | | |
| *Coracina maxima* | Ground Cuckoo-shrike | Category 3 |
| Family ARTAMIDAE | | |
| *Artamus cinereus* | Black-faced Woodswallow | Category 4 |
| *Artamus cyanopterus* | Dusky Woodswallow | Category 4 |
| Family CRACTICIDAE | | |
| *Strepera versicolor* | Grey Currawong | Category 4 |
| Family PASSERIDAE | | |
| *Stagonopleura oculata* | Red-eared Firetail | Category 3 |

**TABLE 9: Significant Tuart populations in reserves in the EEEA study area** (from Table 4f: Natural populations of Tuart predominantly on the Spearwood Dune areas in the Mandurah to Sabina River area south of the PMR, in BJ Keighery *et al.* 2002)

| Tuart Area No. | Area Name (System 6 designation) | Information Source | Tuart Area/ Abundance Score | Tuart Condition Score | Plot | FCT |
|---|---|---|---|---|---|---|
| **75** | Reserve 860 (part C51) | BJK/GJK | | | | |
| **76** | Carrabungup Nature Reserve (part C50) | GJK | 1 | 3 | | |
| **77** | Stony Point Reserve 27528 (C51) | BJK/GJK | 3 | 3 | | |
| **78** | Mealup Point Nature Reserve | Gibson *et al.* (1994) | 3 | 3 | MEAL-I | 25 |
| **80** | Clifton Management Priority Area (C55) | BJK/GJK | 5* | 5/3* | | |
| **81** | McLarty Management Priority Area (C56) | Gibson *et al.* (1994) | 5* | 5/3* | CORON-2 | 25 |

* While still significant Tuart conservation areas, the decline of Tuart in the Yalgorup area over the last decade will have altered these assessments.

**TABLE 10: Significant Tuart populations associated with rivers in the EEEA study area** (from Table 4g: Natural populations of Tuart predominantly outside the Quindalup and Spearwood Dunes in the Mandurah to Sabina River area south of the PMR, in BJ Keighery *et al.* 2002)

| Tuart Area No. | Area Name (System 6 designation) | Information Source | Tuart Area/ Abundance Score | Tuart Condition Score | Plot | FCT |
|---|---|---|---|---|---|---|
| **NA** | Murray River flats Ravenswood – private land and road reserve | BJK/GJK | 4 | 1 | | |
| **89** | Harvey River Reserve (Res 13987) | Gibson *et al.* (1994) | 3 | ?3 | DRAIN-1 | 21a |

# 11 PHOTOGRAPHS

All photographs are by BJ Keighery and were taken in spring 2004/2005 and summer 2005.

**PHOTOGRAPH 1**: A view west towards the Harvey Estuary across the flat Swan Coastal Plain in the study area from Marrarup Nature Reserve, a reserve on the Darling Scarp along the Murray River.

**PHOTOGRAPH 2:** Spearwood Area 2 – Tuart Woodland on the Tamala Limestone ridge in the McLarty Nature Reserve on the eastern side the Harvey Estuary.

**PHOTOGRAPH 3**: Spearwood Area 2 – Tamala Limestone underlying the McLarty Nature Reserve. A possible location of Karst features.

**PHOTOGRAPH 4**: Spearwood Area 2 - Estuarine edging wetlands in McLarty Nature Reserve below ridge in Photograph 2. Rottnest Island Laceflower (*Trachymene coerulea*) in the foreground.

**PHOTOGRAPH 5**: Spearwood Area 2 - A stagged Tuart forms a suitable location for Sea Eagle nest. A family of five Sea Eagles was using this nest on the eastern bank of the Harvey estuary in 2005.

**PHOTOGRAPH 6**: Spearwood Area 3 – Tuart, Peppermint and Banksia Woodlands on Spearwood sands along Domain Road.

**PHOTOGRAPH 7:** Spearwood Area 2 - Spearwood Dune *Banksia* Woodlands in the McLarty Nature Reserve.

**PHOTOGRAPH 8**: Spearwood Area 2 - Spearwood Dune *Banksia* Woodlands (FCT 25) in the McLarty Nature Reserve.

**PHOTOGRAPH 9:** Persistent water in a wetland north-west of Lake McLarty in the McLarty Nature Reserve (Summer 2005).

**PHOTOGRAPH 10:** Bassendean Dunes Area 2 - Rich annually renewed flora of a clay based wetland (thin Bassendean sands over Pinjarra Plain).

**PHOTOGRAPH 11:** Pinjarra Plain Area 2 (northern section) - A private remnant with the appearance of FCT20b.

**PHOTOGRAPHS 12 AND 13:** Bassendean Area 2 - The most southern known area of *Banksia menziesii* Woodland north of Buller Road. Scattered *Banksia menziesii* trees are located in the Buller Road Nature Reserve. Photograph 13 (below) shows a close up of a *Banksia menziesii* flower head.

**PHOTOGRAPH 14:** Bassendean Dune Area 2 - *Banksia* Woodland on a low sand rise.

**PHOTOGRAPH 15:** Bassendean Dune Area 2 – Sandy wetland dominated by scattered *Melaleuca preissiana*.

**PHOTOGRAPH 16:** Clay based wetland adjacent to Bassendean sands.

**PHOTOGRAPH 17:** Nardoo – a close up of the floor of the wetland shown in Photograph 16.

**PHOTOGRAPH 18:** An example of the heavily cleared Pinjarra Plain with *Kingia australis* being the only remaining native vegetation.


**PHOTOGRAPH 19:** A 3.46ha Nature Reserve on the Pinjarra Plain where every 'Itty Bit' counts.

**PHOTOGRAPH 20:** Pinjarra Plain Area 2 – System 6 Area C53 Coolup Reserves in spring, just north of Waroona.

**PHOTOGRAPH 21:** Pinjarra Plain Area 2 – System 6 Area C53 in spring, just north of Waroona. A closer view of *Verticordia huegelii*, sedges and the annually renewed flora of C53.

**PHOTOGRAPH 22:** Serpentine River adjacent to eastern bend in Fowler Road. Samphire shrubland and sedges fringe the water. Tuart dominates the western rise.

**PHOTOGRAPH 23:** Serpentine River adjacent eastern bend in Fowler Road. *Casuarina obesa* Forest, *Baumea articulata* Sedgeland and Samphire shrubland.

**PHOTOGRAPH 24:** Serpentine River fresh water wetland adjacent to Fowler Road. *Eucalyptus rudis* and *Banksia littoralis* Forest.

**PHOTOGRAPH 25:** Murray River in Pinjarra, lined by *Eucalyptus rudis* and *Melaleuca rhaphiophylla.*

**PHOTOGRAPH 26:** Harvey River Reserve, south of the delta where it is surrounded by farmland. Note the understorey of *Watsonia.*

**PHOTOGRAPH 27:** Eastern bank of the Harvey Estuary - The 'beach' and fringing forests at McLarty Nature Reserve.

**PHOTOGRAPH 28:** Eastern bank Harvey Estuary - The Holocene sands at McLarty Nature Reserve.

**PHOTOGRAPH 29:** The study area supports a diverse flora. These plants provide food and shelter for a large variety of animals. *Astartea affinis*, a widespread wetland species which flowers in summer, provides an important food source for invertebrates.

**PHOTOGRAPH 30:** A small wattle (*Acacia semitrullata,* Priority 3) restricted to Spearwood and Bassendean Dunes between the study area and Capel.

**PHOTOGRAPH 31:** Sandy riverine rise with an outlying Tuart population (FCT 21a, plot DRAIN-1).

**PHOTOGRAPH 32:** *Caladenia huegelii* (R) from sandy riverine rise.

**PHOTOGRAPH 33:** Aquatic plants in a Pinjarra Plain wetland - *Villarsia submersa* (oval leaves), *Aponogeton hexatepalus* (short thin stalked leaves lying flat on water), *Triglochin* (long thin upright leaves) and *Schoenus natans* (brown plant in the water).

**PHOTOGRAPHS 34 and 35:** *Dillwynia dillwynioides* (Priority 3) found in the sandy clay wetlands of the Pinjarra plain wetlands.

**PHOTOGRAPH 36:** A Pinjarra Plain endemic, *Anthotium junciforme,* flowering in dried mud in summer.

**PHOTOGRAPH 37:** A closer look at the flowers of *Anthotium junciforme.*

**PHOTOGRAPH 38:** *Grevillea obtusifolia* – apparently extinct in the study area.

**PHOTOGRAPH 39:** Native Yam, an important aboriginal food plant apparently lost from the study area.

## 12 MAPS

**MAP 1: Major landform subdivisions, conservation areas, study sites and key locations in the EEEA study area**

**MAP 2: Area covered by Guidance Statement No. 10 and some areas referred to in this report**

**MAP 3: Swan Bioplan study area boundaries**

**MAP 4: Some natural values and planning boundaries in the EEEA study area**

**MAP 5: Vegetation complexes and mapped remnant vegetation in the EEEA study area**

**MAP 1: Major landform subdivisions, conservation areas, study sites and key locations in the EEEA study area**

**KEY**

**Base maps and overlays**

**2005 Digital orthophotograph of Perth Metropolitan South-West** (DLI 2005e)

**Estuary and coast boundaries** (DLI 2005a)

**EEEA Study Area**
Boundary showing the Eastern Estuary Area Catchment Environmental Assessment (EEEA) study area.

**Major Towns** (DLI 2005c)

**Railways** (DLI 2005d)

**Study sites**
Bushland locations with vegetation and flora information referenced in this report. See names on map, Table 6 and sections 2 and 3.

**Major Landform Subdivisions**
Boundaries of areas referred to in the vegetation text.

**Main Roads** (Main Roads Western Australia 2005)

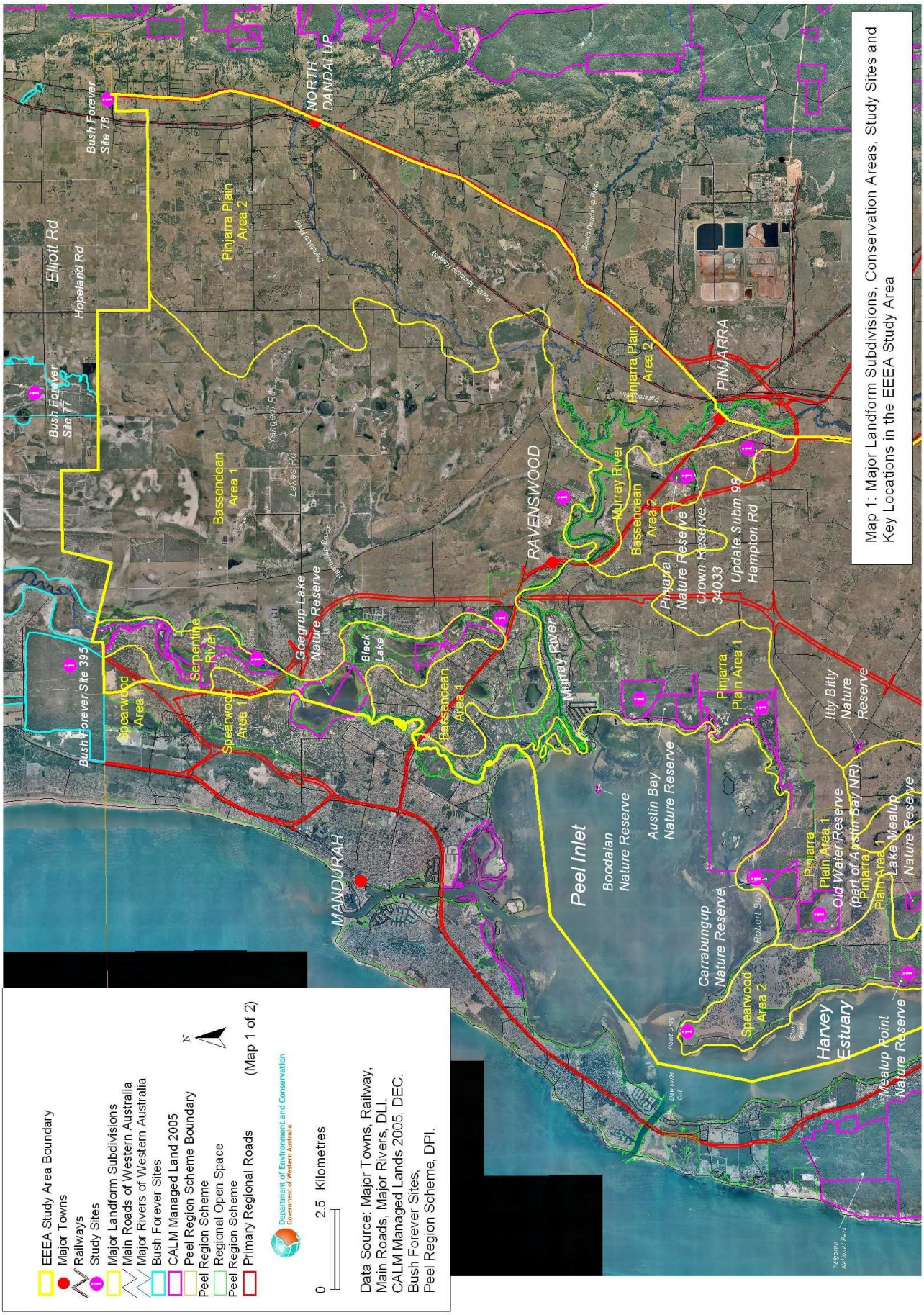
**Major Rivers** (DLI 2005b)

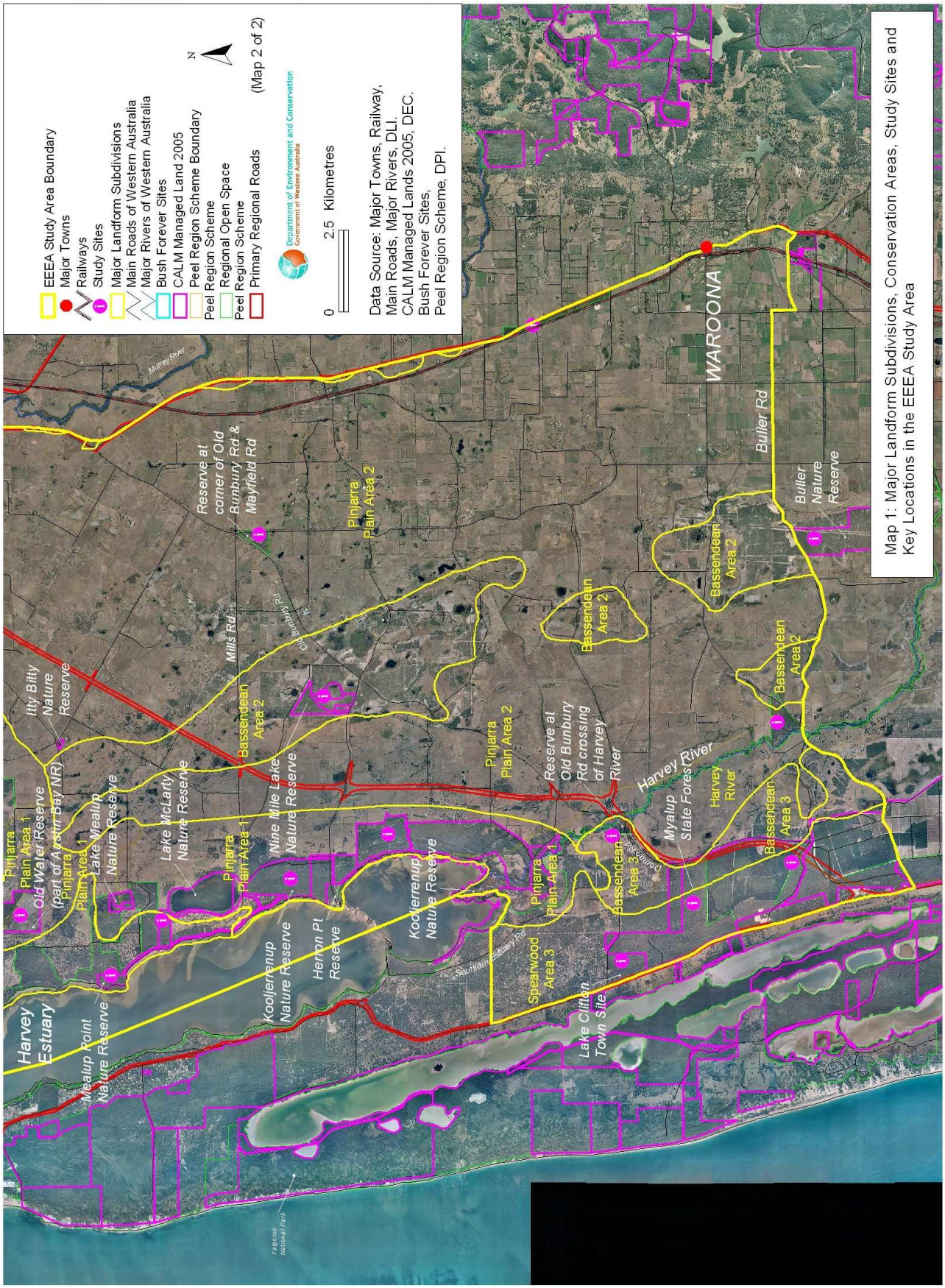
**Bush Forever sites** (DPI 2005a)

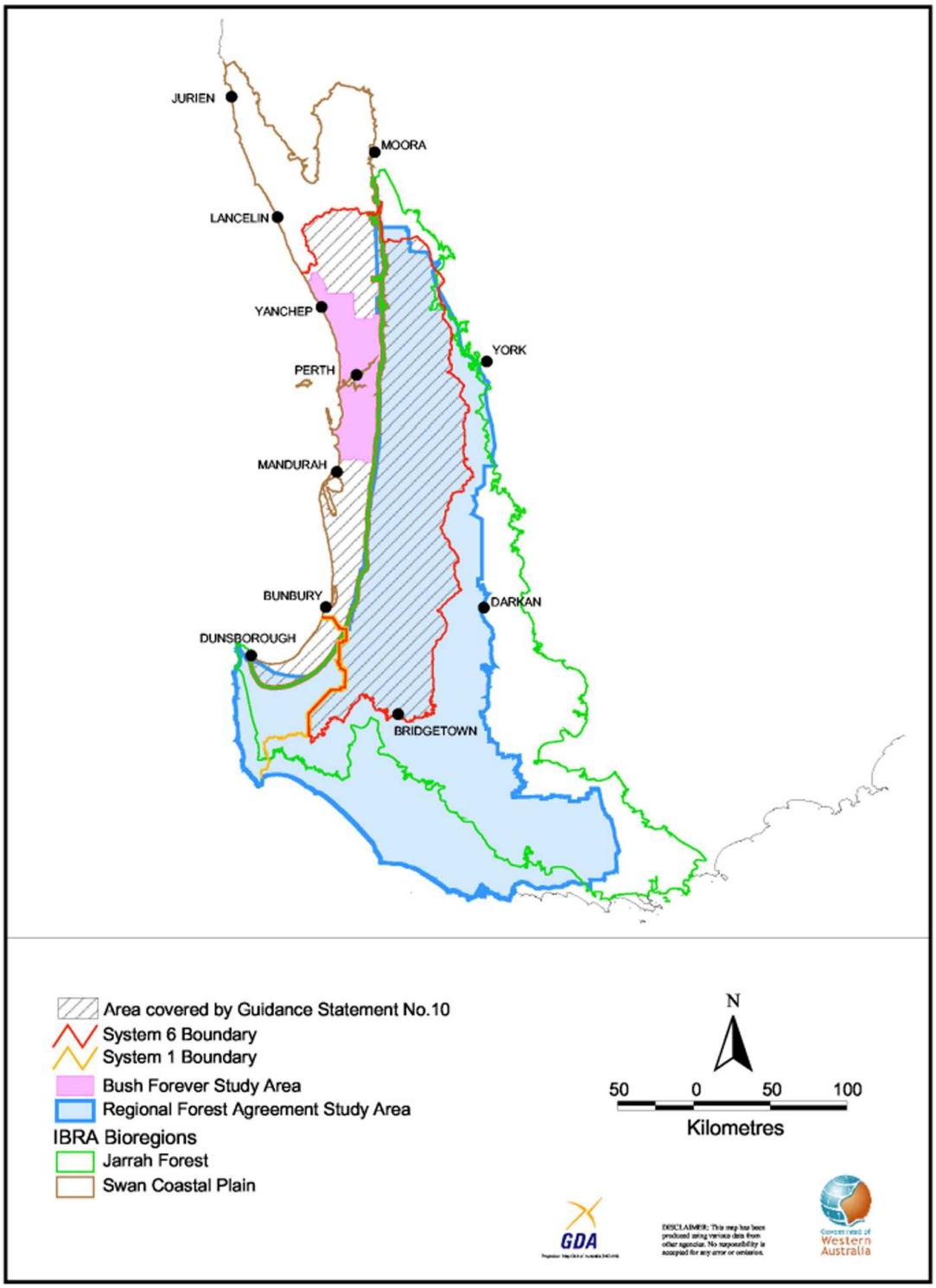
**CALM Managed Land 2005** (CALM 2005e)

**Peel Region Scheme Boundary** (DPI 2005b)
Location of Peel Region Boundary as identified in the Peel Region Scheme Western Australian Planning Commission 1999 (Government of WA 2003c).

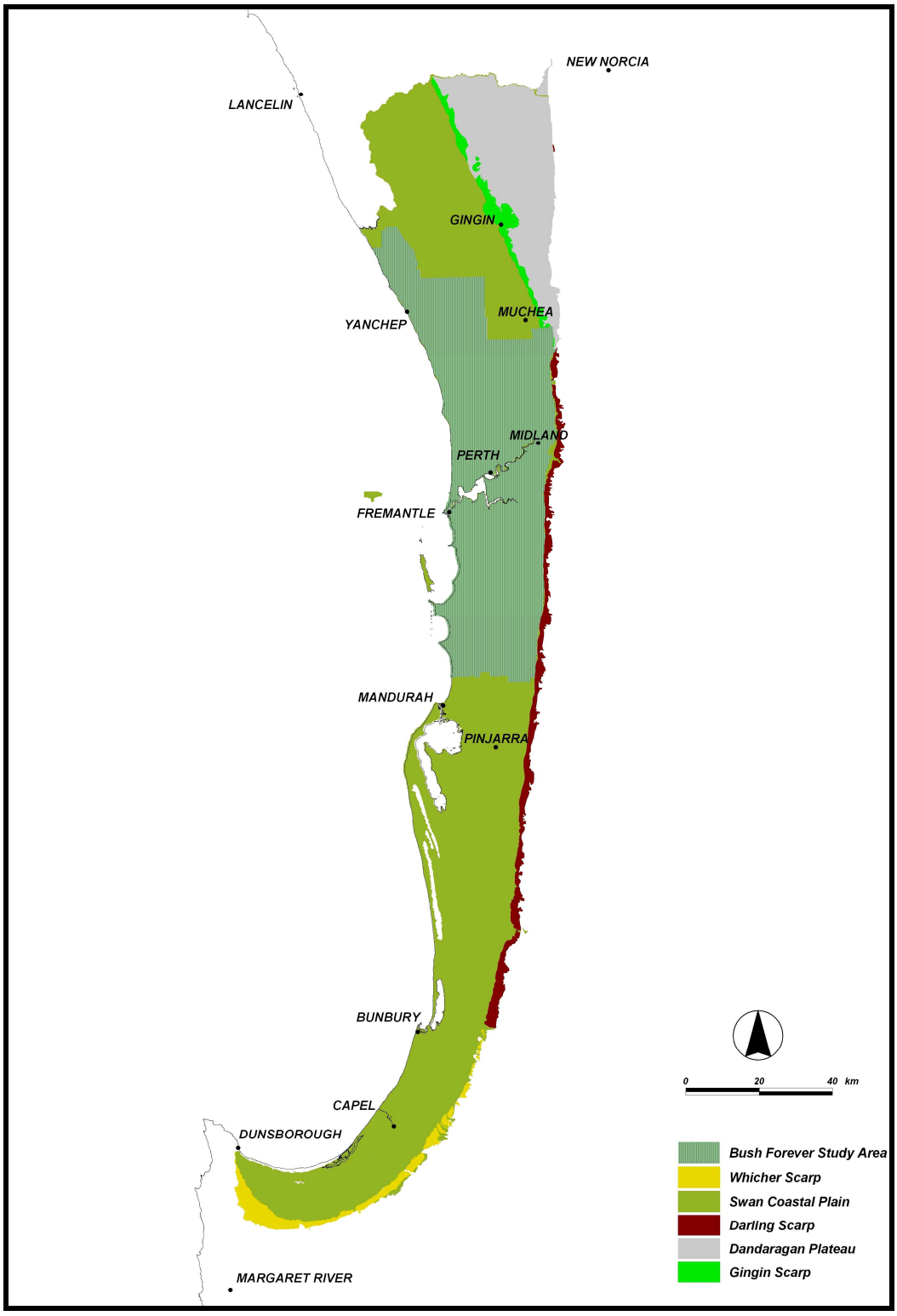
**Regional Open Space** (DPI 2005b)
As identified in the Peel Region Scheme Western Australian Planning Commission 1999 (Government of WA 2003c)


Map 1: Major Landform Subdivisions, Conservation Areas, Study Sites and Key Locations in the EEEA Study Area
EEEA Study Area Boundary
Major Towns
Railways
Study Sites
Major Landform Subdivisions
Main Roads of Western Australia
Major Rivers of Western Australia
Bush Forever Sites
CALM Managed Land 2005
Peel Region Scheme Boundary
Peel Region Scheme
Regional Open Space
Peel Region Scheme
Primary Regional Roads
(Map 1 of 2)
Department of Environment and Conservation
Government of Western Australia
0
2.5
Kilometres
N
Data Source: Major Towns, Railway, Main Roads, Major Rivers, DLI. CALM Managed Lands 2005, DEC. Bush Forever Sites, Peel Region Scheme, DPI.
Bush Forever Site 78
Bush Forever Site 77
Bush Forever Site 395
Elliott Rd
Hopeland Rd
NORTH DANDALUP
Pinjarra Plain Area 2
Bassendean Area 1
Spearwood Area 1
Serpentine River
Goegrup Lake Nature Reserve
Black Lake
Yangedi Rd
Lakes Rd
RAVENSWOOD
Murray River
Bassendean Area 2
Pinjarra Nature Reserve
Crown Reserve 34033
Update Subm 98
Hampion Rd
PINJARRA
Pinjarra Plain Area 2
Itty Bitty Nature Reserve
Pinjarra Plain Area 1
Peel Inlet
Boodalan Nature Reserve
Austin Bay Nature Reserve
MANDURAH
Carrabungup Nature Reserve
Spearwood Area 2
Pinjarra Plain Area 1 Old Water Reserve (part of Austin Bay NR)
Pinjarra Plain Area 1
Lake Mealup Nature Reserve
Harvey Estuary
Mealup Point Nature Reserve
Yalbroo National Park


EEEA Study Area Boundary
Major Towns
Railways
Study Sites
Major Landform Subdivisions
Main Roads of Western Australia
Major Rivers of Western Australia
Bush Forever Sites
CALM Managed Land 2005
Peel Region Scheme Boundary
Peel Region Scheme
Regional Open Space
Peel Region Scheme
Primary Regional Roads
(Map 2 of 2)
N
Department of Environment and Conservation
Government of Western Australia
0
2.5 Kilometres
Data Source: Major Towns, Railway, Main Roads, Major Rivers, DLI.
CALM Managed Lands 2005, DEC.
Bush Forever Sites,
Peel Region Scheme, DPI.
Map 1: Major Landform Subdivisions, Conservation Areas, Study Sites and Key Locations in the EEEA Study Area
WAROONA
Buller Rd
Buller Nature Reserve
Bassendean Area 2
Bassendean Area 3
Pinjarra Plain Area 2
Pinjarra Plain Area 1
Reserve at corner of Old Bunbury Rd & Mayfield Rd
Reserve at Old Bunbury Rd crossing of Harvey River
Mills Rd
Old Bunbury Rd
Itty Bitty Nature Reserve
Lake McLarty Nature Reserve
Nine Mile Lake Nature Reserve
Lake Mealup Nature Reserve
Pinjarra Plain Area 1 (part of Austin Bay NR)
Pinjarra Plain Area 1 Old Water Reserve
Mealup Point Nature Reserve
Kooljerrenup Nature Reserve
Herron Pt Reserve
Kooljerrenup Nature Reserve
Harvey Estuary
Harvey River
Harvey River
Myalup State Forest
Spearwood Area 3
Lake Clifton Town Site
Southern Estuary Rd
Murray River
Yalbarup National Park




**MAP 2:** **Area covered by Guidance Statement No. 10 and some areas referred to in this report** (from EPA 2003)




**MAP 3: Swan Bioplan study area boundaries**

## MAPS 4 and 5

These two maps are provided to better interpret this document and combine a series of sets of digital geographic information. To better describe the information presented in the maps, the keys on the maps are expanded below.

### MAP 4: Some natural values and planning boundaries in the EEEA study area

**KEY**

**Base map and overlays**

**2005 Digital orthophotograph of Perth Metropolitan South-West** (DLI 2005e)

**EEEA Study Area**
Boundary showing the Eastern Estuary Area Catchment Environmental Assessment (EEEA) study area.

**Peel Region Scheme Boundary** (DPI 2005b)
Location of Peel Region Boundary as identified in the Peel Region Scheme Western Australian Planning Commission 1999 (Government of WA 2003c)

**Natural Attributes**
These attributes are shown on the maps to indicate general locations of plant communities (FCTs), threatened ecological communities (TECs) and DRF and Priority Flora in CALM databases. Additional locations for DRF, Priority Flora and inferred locations of TECs from this study are not in the CALM databases.

**CALM Threatened Ecological Communities**
General location of TECs after CALM GIS database 2005 (CALM 2005c). See Tables 5 and 6 for individual FCTs, and general location of plots (i.e. bushland area in which the plots are located).

**CALM Listed Flora**
General location of threatened (declared rare, DRF) and priority flora populations from CALM GIS database 2005 (CALM 2005d) which covers all land tenures within WA. See Appendix 2 for listings of DRF and Priority Flora.

**Floristic Survey Sites of the Swan Coastal Plain**
See Table 6 for individual FCTs, and general location of plots (i.e. bushland area in which the plots are located); the sources of these plots are outlined below.

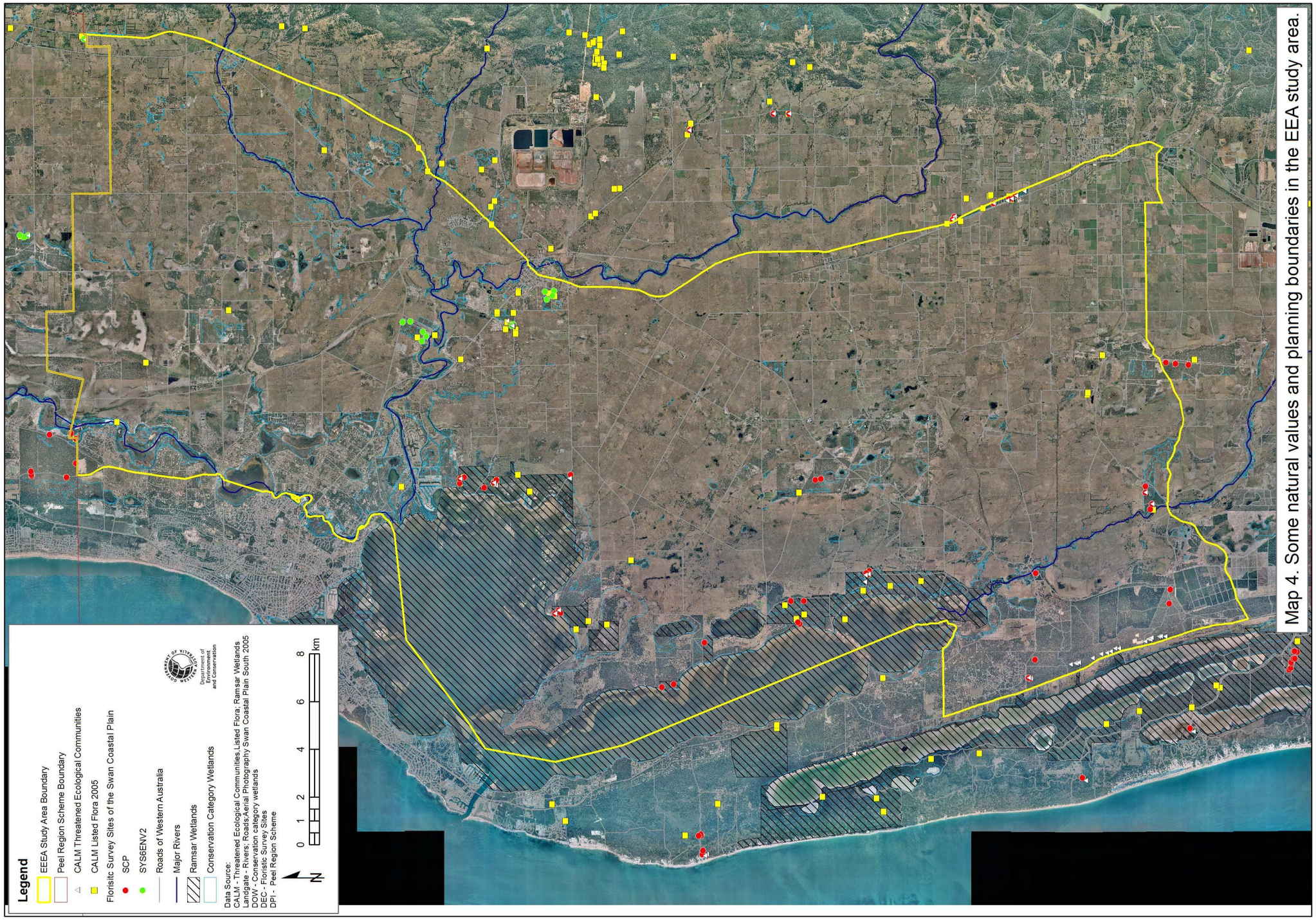
| | |
|---|---|
| SCP | plots from Gibson *et al*. (1994) |
| SYSENV2 | plots from System 6 and Part 1 Update in 1995 (DEP 1996) |

**Main Roads** (Main Roads Western Australia 2005)

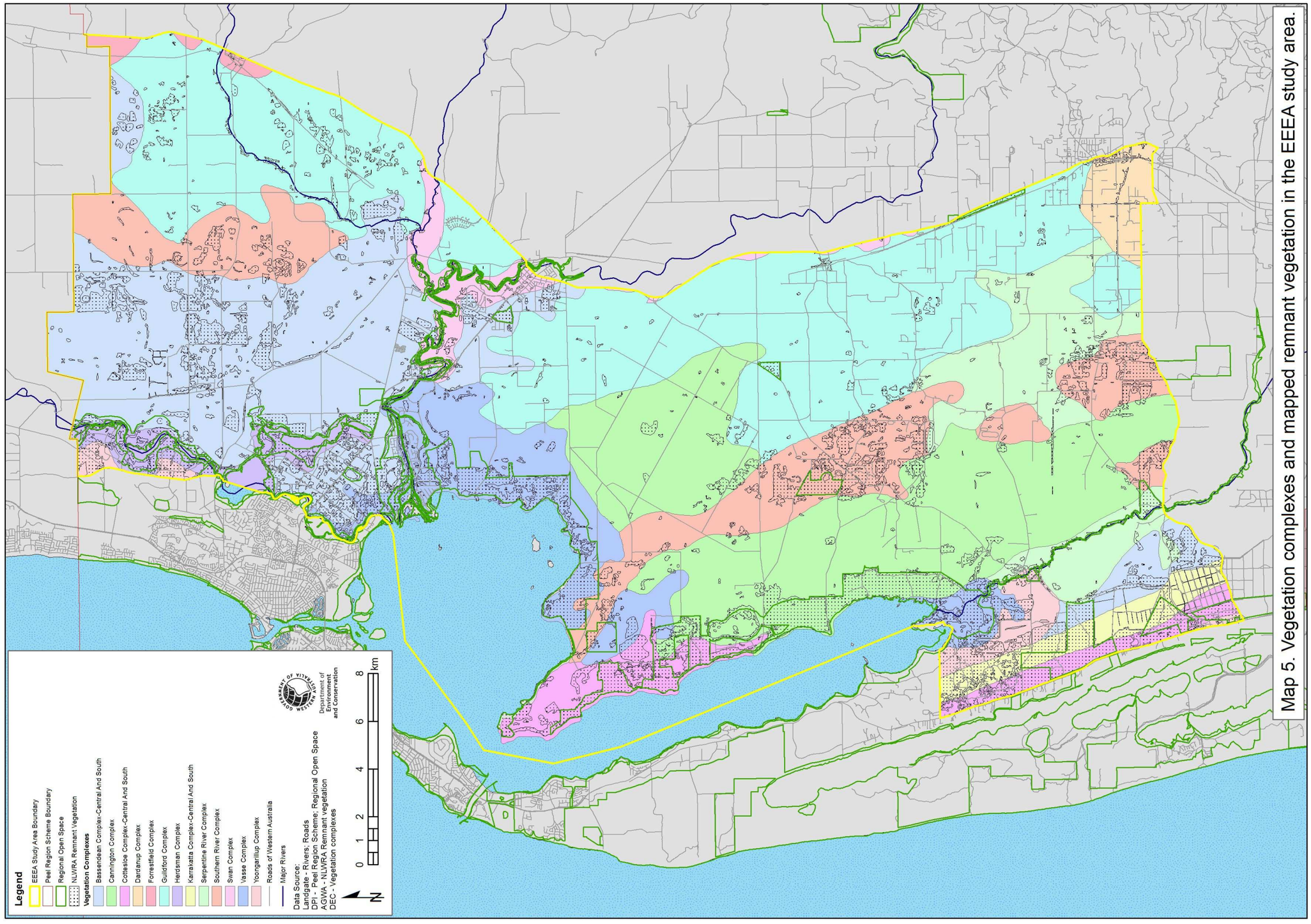
**Major Rivers** (DLI 2005b)

**Ramsar Wetland Areas** (CALM 2005f)
Areas subject to the Ramsar agreement (Ramsar 1990) are indicated on the map; the boundaries used are those updated and accepted by Ramsar in 2001.

**Conservation Category Wetlands**
This data set describes the wetlands of the Swan Coastal Plain representing two main aspects, physical classification and environmental evaluation; the physical classification is not shown. After DoW (2004a), based on original data from V and C Semeniuk (1997) and updated periodically; custodian in 2006 is Wetlands Coordinator Catchment Management Branch, DEC.




Map 4. Some natural values and planning boundaries in the EEA study area.




Map 5. Vegetation complexes and mapped remnant vegetation in the EEEA study area.

## MAP 5: Vegetation complexes and mapped remnant vegetation in the EEEA study area

**KEY**

**Base map and overlays**

**EEEA Study Area**
Boundary showing the Eastern Estuary Area Catchment Environmental Assessment (EEEA) study area.

**Peel Region Scheme Boundary** (DPI 2005b)
Location of Peel Region Boundary, as identified in the Peel Region Scheme Western Australian Planning Commission 1999.

**Regional Open Space** (DPI 2005b)
As identified in the Peel Region Scheme Western Australian Planning Commission 1999 (Government of WA 2003c).

**NLWRA Remnant Vegetation**
From Beeston *et al*. (2001). This was provided to DEP by the National Land and Water Resources Audit (NLWRA Remnant Vegetation) and has been modified to remove plantation datasets. See Tables 4a and 4b for area of intersection with each vegetation complex.

**Heddle Vegetation Complexes** (DCE 1990)
See Table 4 for listing of complexes.

**Main Roads** (Main Roads Western Australia 2005)

**Major Rivers** (DLI 2005b)

## 13 FIGURES

**FIGURE1: A 'typical' transect of the major landform elements of the Swan Coastal Plain from the western bank of the Peel and Harvey Estuaries east towards the Darling Scarp** (after Anon 1977 & 78 & Gozzard 1987)

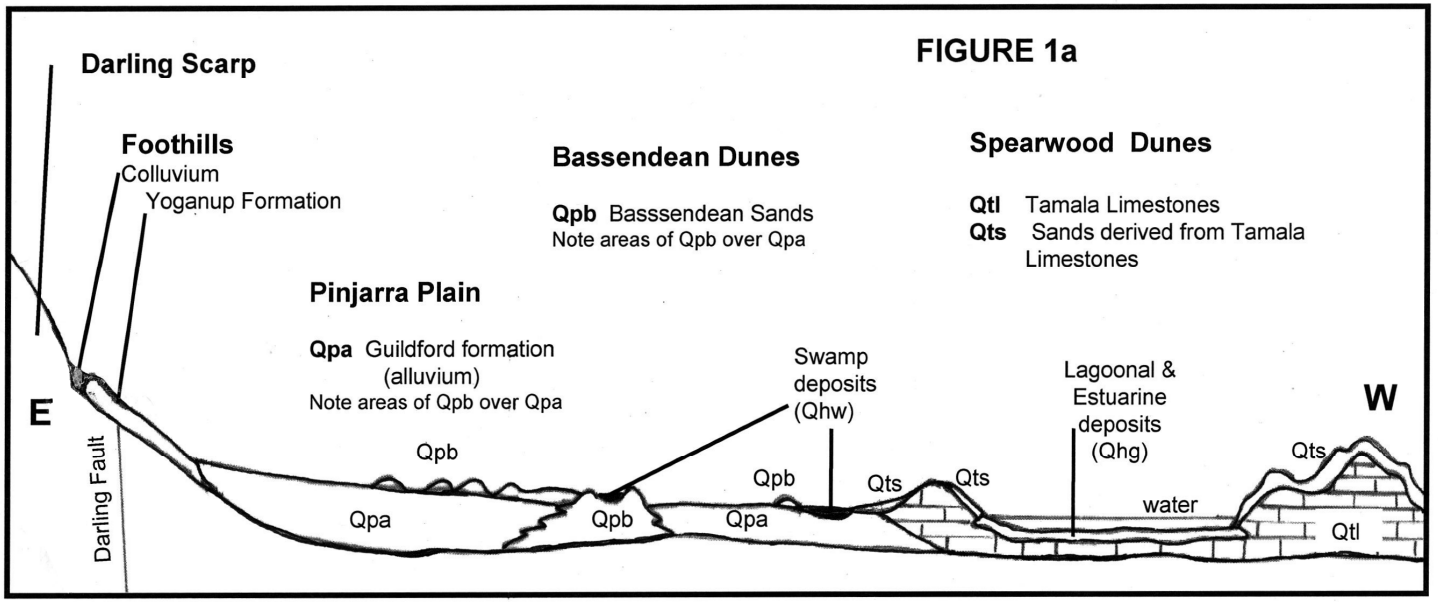



**FIGURE 1a:** A 'typical' transect from the Harvey Estuary (south of the Point Grey area) to the Darling Scarp. Note the Tamala Limestone ridge on both sides of the Estuary.

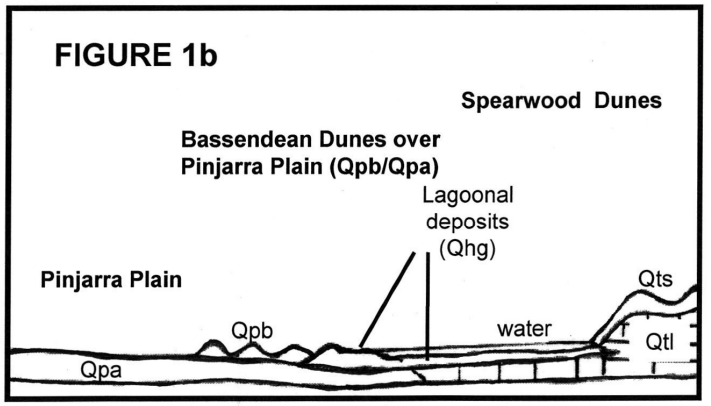



**FIGURE 1b:** A subset of the 'typical' transect from the Peel Estuary (Austin Bay area) to the Pinjarra Plain. Note the Tamala Limestone ridge on the west side of the Estuary only.

# APPENDIX 1: Information from Guidance Statement No. 10 for the Assessment of Environmental Factors

**APPENDIX 1a: Strategy and criteria for the identification of regionally significant natural areas in the System 6 and part System 1 region (outside the Bush Forever study area)** (Appendix 3 from Guidance No. 10, EPA 2003)

**APPENDIX 1b: Summary of natural attributes against relevant criteria from Guidance No. 10**

# APPENDIX 1a: Strategy and criteria for the identification of regionally significant natural areas in the System 6 and part System 1 region (outside the Bush Forever study area) (Appendix 3 from Guidance No. 10, EPA 2003)

## 1 Introduction

Six criteria, developed for *Bush Forever*, updated to current policy standards and adapted to a largely rural environment, are proposed for use in the System 6 and part System 1 Region (Table 1). This is the approach recently developed for the EPA's Greater Bunbury Region Strategy (EPA 2002).

The criteria relate to ecological communities as the basis for addressing regional representation, as this is the level:

- at which the most comprehensive regional plot and map based information on the biological diversity of the area is available (see Table 2 in Guidance No. 10 or Table 1 in this report); and
- on which both the National policies and *Urban Bushland Strategy* focus.

For the System 6 and part System 1 Region ecological communities are determined at the regional level using the most comprehensive Swan Coastal Plain regional datasets (Table 2) and, as necessary reference to specific area information (Table 3 in Guidance No. 10 or Table 2 in this report). Within the terms of this Guidance vegetation complexes, floristic community types and, those ecological communities listed as threatened, are considered to meet the definition of ecological communities.

## 2 Application of the Criteria

To determine if a particular natural area is regionally significant the area's natural values (according to Table 2 and 3) are measured against the selection criteria. It is necessary to stage the application of the criteria as one aspect of 'Representation of Ecological Communities' requires consideration of all remaining areas of the ecological communities, here principally expressed as native vegetation. Other aspects of 'Representation of Ecological Communities' criterion and the remaining five criteria are then addressed.

### 2.1 Application of Representation of Ecological Communities Criterion in relation to the remaining areas of native vegetation

To encompass current recognised levels of remnant native vegetation retention this Guidance uses a standard level of native vegetation retention of at least 30% of the pre-clearing extent of the ecological communities. These levels have been most recently recognised in the *National Objectives and Targets for Biodiversity Conservation 2001-2005* (Commonwealth of Australia 2001a) which recognised that the retention of 30%, or more, of the pre-clearing extent of each ecological community was necessary if Australia's biological diversity was to be protected. This level of recognition is in keeping with the targets set in the EPA's Position Statement No. 2 *Environmental Protection of Native Vegetation in Western Australia. Clearing of Native Vegetation, with particular reference to the agricultural area* (EPA 2000).[1]

Within the terms of this criterion, vegetation complexes, which are mapped for the entire extent of the Swan Coastal Plain in the System 6 and System 1 Region (Heddle *et al.* 1980; CALM 1998) and the area covered by the Regional Forest Agreement, which includes the Jarrah Forest Bioregion within System 6 (CALM 1998), are used as the base mapping of ecological communities.

This means the objective is to seek to:

- retain at least 30% of the pre-clearing extent of the ecological communities, where >30% of an ecological community remains; and

[1] It is important to note that the 'at least 10%' target adopted in the *Urban Bushland Strategy* (based on the IUCN 1991 guidelines) was only ever intended to apply to constrained urban environments. It is now well recognised that the 'at least 10%' target is inadequate to provide effective conservation of biodiversity. In 1997, in the preliminary stages of the Draft, GBRS the DEP advised MfP that it was becoming increasingly recognised that '20% of the land surface should be retained under natural vegetation cover for biodiversity and soil conservation.'

- preferentially locate developments in cleared areas, where 30% or <30% of the pre-clearing extent of the ecological community remains.

It is evident from Table 4 (in Guidance No. 10)[2] that much of the Swan Coastal Plain is altered to such an extent that all remnant vegetation from many of the vegetation complexes present is regionally significant and in need of retention and some level of protection based on 1997/1998 mapping. In recognition of this situation the following specific policy statement is applied:

> ***The general protection of remnant native vegetation on the Swan Coastal Plain portion of the System 6 and part System 1 region can be achieved through the preferential location of developments in cleared areas.***

In the remainder of the Region (Darling and Blackwood Plateaux and the Darling and Whicher Scarps), the Conservation Commission (2002) shows that generally more than 30% of each ecological community identified occurs on lands vested in the Conservation Commission as either conservation reserves, state forest or timber reserves. The key exception is the ecological communities of the Darling Scarp for which 34% remains but only 8% occurs on lands vested in the Conservation Commission (Conservation Commission 2002). Therefore, protection of the Darling Scarp ecological communities on non-CALM lands is a high priority.

These levels may be modified for 'Constrained Areas'. Such areas include the Swan Coastal Plain portion of the Perth Metropolitan Region (the *Bush Forever* study area), and may include urban, urban deferred and industrial zoned lands, and lands with development approvals. It is expected that these 'Constrained Areas' will be defined in conjunction with the Department of Planning and Infrastructure.

The modified objective for Constrained Areas being to seek to:
- retain at least 10% of the pre-clearing extent of the ecological community where >10% of the ecological community remains, or
- retain all remaining areas of each ecological community where <10% of this ecological community remains.

However this does not limit application of all the criteria, especially the 'Rarity' and 'Maintaining Ecological Processes or Natural Systems' criteria. An area in the 'Constrained Area' can be considered regionally significant if selection of the natural area is:
- from an ecological community below 10% pre-clearing extent;
- a threatened ecological community; and/or
- part of a regionally significant sequence of ecological communities.

## 2.2 Application of all of the Criteria

The remaining criteria are then addressed in order to:
- **identify the particular area/s** of those ecological communities in the System 6 and part System 1 Region where >30% of an ecological community (that is, the actual areas, that will be identified, to collectively constitute at least 30% of the extent each of these ecological communities); or
- in the 'Constrained Area' where >10% of an ecological community remains (that is, the actual areas, that will be identified, to collectively constitute at least 10% of the extent of each of these ecological communities in the 'Constrained Area'); and
- **recommend** appropriate levels of protection for regionally significant areas identified by application of the criteria.

In applying the other aspects of 'Representation of Ecological Communities' criterion and the remaining five criteria a series of individual area attributes that apply to several criteria need to be highlighted. These are briefly outlined below. The criterion to which they apply is given in brackets after each attribute.

[2] See Table 4a in this report for selected vegetation complexes in the EEEA study area.

*Size and Shape* **(Representation of Ecological Communities, Maintaining Ecological Processes or Natural Systems)**
Size is of key importance in determining the viability of natural areas for long term retention. In general, the capacity of an area to support the full species range of a given community will diminish with decreasing size. Shape determines the ratio of perimeter to area, the ratio being greater in more elongate patches. Elongate remnants may have value as connecting links, but the more extended they are the greater will be their susceptibility to weed invasion and disturbance.

Area selection is guided by the following general principles:
- a large remnant is preferable to a small one;
- a compact shape is preferable to an irregular or an elongate shape;
- replicates across the range of a community are preferable to a single area; and
- areas close to others or linked by natural areas are preferable to isolated ones.

The lower size limit of 20ha given in the *Urban Bushland Strategy* is accepted as a preferred lowest area limit, but smaller areas are significant where a community is seriously threatened or poorly reserved (less than 10% protected). Account is also taken of evidence from recent observations through comprehensive regional survey programs, which indicates that very small areas (to as small as 1ha) on certain soil types are resistant to weed invasion. Small areas may also be significant for fauna that have large home ranges extending beyond single areas. These areas also facilitate movement between patches, especially dispersal of offspring to new territories.

*Vegetation Condition* **(Representation of Ecological Communities, Maintaining Ecological Processes or Natural Systems)**
Remnants in largely undisturbed condition which retain the highest values are preferred; remnants with basic vegetation structure and floristics intact (bushland) are the next best alternative. However, in cases where no other choices are available (generally where <30% remains), remnants in lesser condition are included. Areas containing scattered native species, especially a tree canopy, can retain vital roles as fauna habitat and ecological linkage for some species.

*Uplands and Wetlands* **(Representation of Ecological Communities, Diversity, Maintaining Ecological Processes or Natural Systems)**
The patterning of ecological communities on the Swan Coastal Plain is driven by the presence of wetlands, where the soils are seasonally or intermittently waterlogged and/or inundated, and uplands, where the soils are not subject to this process. Natural areas containing both ecological community groups (uplands and wetlands) support the highest biodiversity and are a focus for protection.

*Ecological Communities below 10 percent pre-clearing extent and threatened ecological communities* **(Representation of Ecological Communities, Rarity)**
For those ecological communities where less than 10% remain, all areas are regionally significant, irrespective of the level of constraint on the land. Most communities in this category are communities typical of the eastern side of the Coastal Plain (principally the Pinjarra Plain), where the communities are highly fragmented and the remnants too numerous to be individually assessed at the strategic level. All of these remnants are regionally significant under the Rarity criterion, most containing threatened ecological communities. In keeping with Bush Forever these areas are not the subject of individual recommendations and are covered by the following specific policy statement:

> ***There is a presumption that all areas of remnant native vegetation containing threatened ecological communities or vegetation of the major landform elements of which less that 10% currently remains will be retained and conserved.***

In these areas there is also a need to consider restoration of ecological function. This can be approached through the identification of a series of regionally significant linkage opportunities. Within these 'linkage

areas' the restoration of ecological communities and landscape rehabilitation between and around the small remaining remnants on the eastern side of the Plain will be a priority. This issue can be covered by the following specific policy statement.

> ***That there be proactive planning for the restoration of ecological communities and landscape rehabilitation between and around selected sequences of the small remaining remnants on the eastern side of the Swan Coastal Plain in the System 6 and part System 1 Region.***

*Relationship to other areas* **(Maintaining Ecological Processes or Natural Systems)**
The importance of looking at the region's natural areas as an integrated ecological system is recognised, and the maintenance or establishment of linkage corridors is given a high priority. Areas adjacent to, or contiguous with, different communities may provide a necessary combination of habitats for particular fauna species.

Several other attributes are also taken into account. These are not related to the criteria for the identification of regionally significant natural areas.

*Opportunities Outside the System 6 and part System 1 Region*
This Guidance focuses on the System 6 Region and the Swan Coastal Plain portion of the System 1 Region; however, this is an administrative boundary and does not encompass the entirety of the Swan Coastal Plain or Jarrah Forest Biogeographic Regions (see Figure 1). The possibilities for protecting additional areas, or to identify substitute areas outside the System 6 and part System 1 Region to secure the desired minimum representation of ecological communities, is taken into consideration in the selection of areas. However, since the majority of the Swan Coastal Plain is represented in the System 6 and part System 1 Region and the characteristics of a particular community will vary along its extent and with specific soil and moisture characteristics, replacement is not simply a matter of area-for-area exchange.

*Ownership or reservation status*
The objective of these criteria is to identify areas of regional significance and to provide for their protection. Although it is important to recognise and take into account the values of natural areas in the planning process, the selection process should also recognise existing land use proposals. Hence, for example, publicly owned areas are preferred to those in private ownership; and, if privately owned, land zoned Rural is preferred to that zoned Urban, where opportunities to protect are more restricted. Where more than 30% of an ecological community is publicly owned or reserved and provides effective representation of the variation in the ecological community, the ecological community identified is provisionally considered to be adequately protected. The selection process then concentrates on landform units for which less than 30% of the ecological community has some degree of protection.

**Table 1: Criteria for the determination of the regional significance of natural areas in the System 6/part System 1 region** (adapted from Government of WA 2000a & b)

**REPRESENTATION OF ECOLOGICAL COMMUNITIES**

***A number of areas selected to represent the range of ecological communities and the places in which these communities merge.***

**Scope**

- Regional representation will be primarily based upon the target of achieving:
    - comprehensive and adequate representation of each floristic community type within each vegetation complex (in uplands and vegetated wetlands);
    - comprehensive and adequate representation of each natural wetland group and wetland types within each group.

**Inclusion guidelines**

- Areas which are good examples of each floristic community type, selected to be representative of the vegetation of a geomorphic unit.
- Areas contributing to at least 30 percent of each vegetation complex in at least ten separate areas. In the defined constrained area this may be modified to at least 10%.
- Best available examples of each natural wetland group and wetland types within each group.
- Areas identified as being of national or international significance through treaty/convention/policy.

**Exclusion guidelines**

- Vegetation which does not satisfy the definition of bushland (unless it is the best example of its type with particular reference to fauna habitat).
- Areas which are not the best available examples of particular ecological communities (floristic community type/vegetation complexes/threatened ecological communities) because there are more appropriate (bigger, better condition, richer/more diverse) areas elsewhere.

**DIVERSITY**

***Areas with a high diversity of landforms, flora and/or fauna species or communities in close association***

**Scope**

The conservation of important areas, by virtue of their richness, diversity or complexity for their physical or biological attributes at the community, species or genetic level. This will be primarily based on areas supporting:

- a wide variety of landform units;
- a wide variety of flora and/or fauna species;
- unusual concentrations of subspecies or varieties occurring together;
- a wide representation of floristic community types in close proximity;
- species-rich examples of communities of their type;
- a wide variety of plant associations, assemblages or communities;

This criterion will commonly support other criteria for selection of representative areas.

**Inclusion guidelines**

- Areas with high flora diversity at the community, species or genetic level.
- Areas with a high diversity of plant associations, assemblages or communities relative to the area.
- Areas with a high diversity of faunal assemblages.

**Exclusion guidelines**
- Significantly altered or man-made landform units
- Floristic community types which are replicated in many areas.
- Areas with low to moderate diversity at the community, species or generic level.

**RARITY**

***Areas containing rare or threatened communities or species, or species of restricted distribution***

**Scope**
This criterion applies to aspects of the environment which are rare or relatively rare, and can encompass any environmental, biological or ecological feature or phenomenon which can be regarded as outstanding because it is one of the few of its type.

**Inclusion guidelines**
- Threatened ecological communities.
- Habitats of rare, uncommon or restricted flora and/or fauna species and/or species outside of or at the limit of their range.
- Areas supporting rare, uncommon or restricted communities and/or communities outside of or at the limit of their normal range.

**Exclusion guidelines**
- Habitats of species or communities whose significance (as described above) is not established.
- Areas which, if supporting outlying species or communities, are replicated by better examples elsewhere.

**MAINTAINING ECOLOGICAL PROCESSES OR NATURAL SYSTEMS**

***Maintenance of ecological processes or natural systems at a regional or national scale***

**Scope**
This criterion applies to areas which are important in the maintenance of existing processes or natural systems. This criterion would normally be used in conjunction with other criteria for the selection of representative areas.

**Inclusion guidelines**
- Large areas in natural condition with natural processes intact or largely so.
- Fauna habitats providing specific requirements for feeding/breeding/nursery functions.
- Substantive wildlife corridors connecting bushland areas.
- Habitats for significant populations of migratory birds.

**Exclusion guidelines**
- Areas which are replicated by other areas supporting significant populations or in better condition.
- Areas not recognised as being of national or international significance for migratory birds.

**SCIENTIFIC OR EVOLUTIONARY IMPORTANCE**

***Areas containing evidence of evolutionary processes either as fossilised material or as relict species and areas containing unusual or important geomorphological or geological sites. Areas of recognised scientific and educational interest as reference sites or as examples of the important environmental processes at work***

**Scope**
This criterion applies generally to areas which contain evidence of past ecological or biological processes, and unusual or important geomorphological or geological sites and to areas which have recognised value as research sites, type localities or to sites having reference or benchmark value.
This criterion will usually support other criteria for selection of representative areas.

**Inclusion guidelines**
- Areas with unusual or important geomorphological or geological sites.
- Areas with remains of flora and fauna now extinct (fossil sites).
- Areas with primitive or relict flora or fauna surviving from earlier times.
- Areas with fossil or other records of identifiable past climates or environments.
- Long-term scientific/educational monitoring sites or study areas.

**Exclusion guidelines**
- Areas in which the evidence of past processes is not clearly established.
- Areas which are replicated by places with clearer evidence of the above or in better condition.
- Areas not identified as important geomorphological sites.
- Areas not identified as important geological sites.

**GENERAL CRITERIA FOR PROTECTION OF WETLAND, STREAMLINE, AND ESTUARINE FRINGING VEGETATION AND COASTAL VEGETATION**

***Conservation Category Wetland areas including fringing vegetation and associated upland vegetation; coastal vegetation within the accepted coastal management zone***

**Scope**
This criterion applies to Conservation management category wetlands, their vegetation (including fringing vegetation) and associated upland vegetation; streamline/riverine/estuarine fringing vegetation; and to coastal vegetation within the accepted coastal management zone.

**Inclusion Guidelines**
- Conservation Category Wetlands and their native vegetation (including fringing vegetation) and associated upland vegetation.
- Streamline/riverine (channel wetlands) and estuarine fringing native vegetation.
- Coastal vegetation and natural landform units within the accepted coastal management zone. These areas may also be included in regionally significant natural areas that go beyond the coastal zone.
- Streamline/riverine (channel wetlands), estuarine and coastal areas that are part of a regional linked (or potentially linked) sequences of communities.

**Exclusion Guidelines**
- Significantly altered wetlands, such as Resource Enhancement and Multiple Use management category wetlands. At times, altered wetlands, may be considered to be regionally significant natural areas under other criteria.
- Cleared or developed coastlines.

## APPENDIX 1b: Summary of natural attributes against relevant criteria from Guidance No. 10

| **Consideration Against Criteria** | **Criterion Met** |
|---|---|
| **Representation of Ecological Communities** | **YES/NO** |
| *Regional vegetation representation* | |
| Vegetation Complexes | representative of a Vegetation Complex with less than 30% remaining in the Swan Bioplan Area |
| Floristic Community types | typical of a FCT |
| Comment | |
| *Size and Shape*<br>A large remnant is preferable to a small one (>20 ha preferred);<br>A compact shape is preferable to an irregular or an elongate shape;<br>Replicates across the range of a community are preferable to a single area; and<br>Areas close to others or linked by natural areas are preferable to isolated ones. | |
| *Contiguous Upland/Wetlands areas* (also Size and Shape Vegetation Condition*)* | |
| *Vegetation Condition* - vegetation in Good or better condition preferred | |
| *Habitat Value* (areas of mud, sand, native vegetation in <Good condition etc) | |
| Comment: | |
| **Diversity** | **YES/NO** |
| Vegetation Complexes | |
| Floristic Community Types | |
| Vegetation units | |
| Flora | |
| Fauna | |
| Comment: | |
| **Rarity** | **YES/NO** |
| Vegetation Complex <10% remaining | No further clearing |
| Comment: | |
| **Maintaining Ecological Processes or Natural Systems** | **YES/NO** |
| *Relationship/proximity to:*<br>Regionally significant link<br>Protected areas<br>Naturally vegetated areas<br>Creekline/River/Estuary | |
| *Contains areas suitable for ecological restoration* | |
| *Size and Shape, Uplands and Wetlands & Vegetation Condition* - see Representation of Ecological Communities | |
| Comment: | |
| **Scientific or Evolutionary Importance** | **YES/NO** |
| Comment: | |
| **General Criteria for Protection of Wetland, Streamline and Estuarine fringing vegetation and Coastal vegetation** | **YES/NO** |
| Comment: | |

# APPENDIX 2: Vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation/weediness status

**APPENDIX 2a: Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status** (Keighery *et al.* 2006c)

**APPENDIX 2b**: **Weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and weediness status** (GJ Keighery and BJ Keighery 2006)

These lists should be referenced as:

Keighery BJ, Keighery GJ, Longman VM and Clarke KA 2006 *Native and weedy vascular plants in the Eastern Estuary Environmental Assessment (EEEA) study area with reference to their habitat preferences, growth and life forms and conservation status.* January 2006. A report for Swan Bioplan, Department of Environment and Department of Conservation and Land Management, Western Australia.

Keighery GJ and Keighery BJ 2006 *Weedy vascular plants in the Eastern Estuary Environmental Assessment (EEEA) study area with reference to their habitat preferences, growth and life forms and weediness status.* August 2006. A report for Swan Bioplan, Department of Environment and Conservation, Western Australia.

# APPENDIX 2a: Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status

## KEY

**Column 1** **Family (Families are grouped into Ferns, Gymnosperms, Monocotyledons and Dicotyledons)**

**Column 2** **Scientific Name**
Genus + Species + Infra Species Rank + Infra Species Name + Informal Name from BJ Keighery *et al*. (2006b) database as of January 2006**.** Therefore, species names may be modified from original sources of information: DEP (1996), Gibson *et al*. (1994) and GJ Keighery (1996). Some taxa yet to be formally described and named may have a reference collection number from the relevant collector. Taxa (species, sub-species and varieties) are listed alphabetically within genera.

| | |
|---|---|
| * | Weed |
| subsp. | Subspecies |
| var. | Variety |
| MS | A manuscript name yet to be published |
| PN | A phrase name for a taxa yet to be described and published. |

**Column 3, 4 & 5** **Significant Taxa**

**Column 3** **WA = State listed species**
State listed significant plant taxa (species, sub-species and varieties) listed under the *Wildlife Conservation Act 1950* by the Department of Conservation and Land Management (Atkins 2005)

| | |
|---|---|
| R | Declared Rare Flora |
| 1 | Priority 1: Poorly Known Taxa |
| 2 | Priority 2: Poorly Known Taxa |
| 3 | Priority 3: Poorly Known Taxa |
| 4 | Priority 4: Rare Taxa |

**Column 4** **Com = Commonwealth listed species**
Commonwealth listed significant plant taxa (species, sub-species and varieties) listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as documented on the Department of Environment and Heritage website (DEH 2005).

| | |
|---|---|
| EN | Species that are endangered |
| VU | Species that are vulnerable |
| TD | Species that are extinct |

**Column 5** **OS = Other significant taxa**
**Significant due to geographical location**

| | |
|---|---|
| r | Populations at the northern/southern limit of their known geographic range |
| d | Populations disjunct from their known geographic range |
| p | Considered to be poorly reserved (applies to all Declared Rare Flora and Priority taxa) |
| s | Significant populations (applies to all Declared Rare Flora and Priority taxa) |
| u | Uncommon in the area |
| x | Considered lost in the Swan Coastal Plain portion of the Peel Area |

**Significant due to ecological preferences**

| | |
|---|---|
| eSWA | Taxa endemic to the Swan Coastal Plain |
| eSWA(P) | Taxa endemic to the Swan Coastal Plain portion of the Peel Area |
| eSWA(BF/P) | Taxa endemic to the Swan Coastal Plain portion of the Perth Metropolitan Region and Peel Area |
| h | Taxa with distinct habitat preference |

**Significant due to morphological varition**

| | |
|---|---|
| v | Variant, not at taxonomic level |
| t | Variant, significant taxonomically |

**Column 6 to 10** **Frequency in major landform elements within the study area**
Based on number of records in plots and vegetation units, except for Rivers and Estuaries which is based on observations of Bronwen Keighery and Greg Keighery.

X = occurs
**X** = common

**Column 6** S = Spearwood Dunes

**Column 7** B = Bassendean Dunes

**Column 8** P = Pinjarra Plain

**Column 9** R = Riverine

**Column 10** E = Estuarine

**Column 11** **Endemic**
Taxa (species, sub-species and varieties) endemic to Western Australia (WA) or Australia (AUST) (>AUST = cosmopolitan). No records are given for weeds; see Hussey *et al.* (1997) for country of origin, unless the plant is also native to WA.

**Column 12** **Growth Form** (See Key to Growth Forms at the end of this key for definitions)

**Woody Plants**

| | |
|---|---|
| T | Tree |
| M | Mallee |
| SH/T | Shrub/tree |
| SH | Shrub |
| SH-H | Shrub which is often called a herb |

**Non-woody Plants: non-grass-like**

| | |
|---|---|
| H | Herb |
| H-SH | Herb which is often called a shrub |

**Non-woody Plants: grass-like**

| | |
|---|---|
| G | Grass |
| S-C | Sedge – Cyperaceae and others |
| S-R | Sedge – Restionaceae |
| S-J | Sedge – Juncaceae and others |

**Column 13** **All Growth Forms** (See Key to terms at the end of this key for definitions)

| | |
|---|---|
| CL | Climber |
| PR | Prostrate |

**Column 14** **Life Form**

| | |
|---|---|
| A | Annual |
| A2 | Biennial |
| P | Perennial |
| PAA | Perennial annually renewed from above ground part |
| PAB | Perennial annually renewed from below ground part |
| A-PAR | Annual - Parasite or Semi-parasite |
| P-PAR | Perennial - Parasite or Semi-parasite |

**Column 15** **Life Form – aquatics**

- AQD Aquatic – damp flowering. Grows in water, flowers in damp mud
- AQE Aquatic – emergent. Grows and flowers in water with some parts emergent above water (e.g. leaves, flowers)
- AQF Aquatic – floating. Whole plant floats on water
- AQS Aquatic – supported. Grows and flowers in water with most parts supported by water (e.g. leaves), flowers may be emergent above water

**Column 16** **Common Swan Coastal Plain Wetland Species**
Most commonly encountered wetland species on the Southern Swan Coastal Plain based on an analysis of >1000 plots. Commonly encountered species were determined to be those that occurred in 10 or more plots of wetland floristic community types 75% or more of the time.

## KEY TO GROWTH FORM DEFINTIONS

Definitions adapted from Keighery (1994), McDonald *et al.* (1990) and Executive Steering Committee for Australian Vegetation Information (2003).

### WOODY PLANTS

**Plants with special thick-walled cells in their trunks and stems that form wood to support the plant. Trees are able to build up layer upon layer of this woody support tissue to form trunks and branches. All woody plants are perennial.**

| | |
|---|---|
| Tree | Plants with a single trunk and a canopy. The canopy is less than or equal to two thirds of the height of the trunk. No lignotuber is evident. |
| Shrub/Tree | Shrub or tree |
| Mallee | Plants with many trunks (usually 2-5) arising from a lignotuber. The canopy is usually well above the base of the plant. Most are from the genus *Eucalyptus*. |
| Shrub | Plants with one or more woody stems and foliage all or part of the total height of the plant. Includes palms, grass trees (*Xanthorrhoea* and *Kingia* species) and cycads (*Zamia* species). |
| Shrub-Herb | Shrub that appears herb-like. Plants with a woody stem/s that is lax enough to give the shrub a non-woody herb-like appearance, often called sub-shrubs. |

### NON-WOODY PLANTS

**Plants with no (or insufficient) special thick-walled support cells in their stems to form wood for support. May be either annuals or perennials. Sub-divided according to growth form, pollination method and plant family.**

#### NON-WOODY PLANTS - NON GRASS-LIKE **Generally not pollinated by wind, monocots and dicots.**

| | |
|---|---|
| Herb | Plants with non-woody stems that are not grasses or sedges. Generally under half a metre tall. Most monocots are herbs except for the larger ones which are classed as shrubs such as palms, grass trees (*Xanthorrhoea* and *Kingia* species) and cycads (*Zamia* species). |
| Herb-Shrub | Herb that appears shrub-like. Plants with non-woody stems that are stiff enough to give the herb a woody shrub-like appearance, often called sub-shrubs. |

**NON-WOODY PLANTS - GRASS-LIKE Generally pollinated by wind and from the families Poaceae, Cyperaceae, Centrolepidaceae, Hydatellaceae, Juncaginaceae, Restionaceae, Juncaceae, Typhaceae or Xyridaceae.**

**Grasses - leaf sheath always split, ligule present, leaf usually flat, stem cross-section circular, evenly spaced internodes.**

| | |
|---|---|
| Grass | Tufted or spreading plants from the family Poaceae. Some species form hummocks but none of these occur in south-west Western Australia. |

**Sedges - leaf sheath never split (except in some Restionaceae), usually no ligule, leaf not always flat, extended internode below inflorescence.**

| | |
|---|---|
| Sedge – Cyperaceae and others | Tufted or spreading plants from the families Cyperaceae, Centrolepidaceae, Hydatellaceae or Juncaginaceae. |
| Sedge – Restionaceae | Tufted or spreading plants from the family Restionaceae. Commonly called rushes. |
| Sedge – Juncaceae and others | Tufted or spreading plants from the families Juncaceae, Typhaceae or Xyridaceae. Some of these are also called rushes. |

**ALL GROWTH FORMS**

| | |
|---|---|
| Climber | Plants in need of other plants or objects for support. |
| Prostrate | Spreading plants, often supported by the ground. |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| **Fern** | | | | | | | | | | | | | | | |
| Adiantaceae | Cheilanthes austrotenuifolia | | | d,h | | | **X** | | | >AUST | H | | PAB | | |
| Dennstaedtiaceae | Pteridium esculentum | | | | **X** | | **X** | **X** | | AUST | H | | P | | |
| Isoetaceae | Isoetes australis | | | h | | | **X** | | | AUST | H | | PAB | AQD | |
| Isoetaceae | Isoetes drummondii subsp. drummondii | | | h | | | **X** | | | AUST | H | | PAB | AQD | |
| Lycopodiaceae | Phylloglossum drummondii | | | h | | | **X** | | | >AUST | H | | PAB | AQD | y |
| Marsileaceae | Marsilea drummondii | | | d,h | | | **X** | | | AUST | H | | PAB | AQS | |
| Marsileaceae | Marsilea ?hirsuta (BJ Keighery 18.02.2005) | | | d,eSWA(P),h | | | **X** | | | WA | H | | PAB | AQS | |
| Marsileaceae | Marsilea sp. Austin Bay (BJ Keighery & N Gibson 084) | | | d,eSWA(P),h | | | **X** | | | ?WA | H | | PAB | AQS | |
| Marsileaceae | Pilularia novae-hollandiae | | | h | | | **X** | | | AUST | H | | PAB | AQD | |
| Ophioglossaceae | Ophioglossum gramineum | | | h | | | **X** | | | >AUST | H | | PAB | AQD | |
| Selaginellaceae | Selaginella gracillima | | | h | x | | **X** | | | >AUST | H | | A | | |
| | | | | | | | | | | | | | | | |
| **Gymnosperm** | | | | | | | | | | | | | | | |
| Cupressaceae | Actinostrobus pyramidalis | | | h | | | **X** | | **X** | WA | T | | P | | y |
| Zamiaceae | Macrozamia riedlei | | | | **X** | x | **X** | | | WA | SH-H | | P | | |
| | | | | | | | | | | | | | | | |
| **Monocot** | | | | | | | | | | | | | | | |
| Alliaceae | * Allium triquetrum | | | | x | | | | | | H | | PAB | | |
| Amaryllidaceae | * Amaryllis belladonna | | | | | | x | | | | H | | PAB | | |
| Amaryllidaceae | * Narcissus tazetta | | | | | | x | | | | H | | PAB | | |
| Anthericaceae | Agrostocrinum hirsutum | | | d,h | | | x | | | WA | H | | P | | |
| Anthericaceae | Agrostocrinum scabrum | | | | x | x | **X** | | | WA | H | | P | | |
| Anthericaceae | Arnocrinum preissii | | | r,d | x | | | x | | WA | H | | PAB | | |
| Anthericaceae | Arthropodium capillipes | | | | x | **X** | **X** | | | WA | H | | PAB | | |
| Anthericaceae | Arthropodium preissii | | | h | | | **X** | | | WA | H | | PAB | | y |
| Anthericaceae | Caesia micrantha | | | | x | x | **X** | | | WA | H | | PAB | | |
| Anthericaceae | Caesia micrantha (Blue flowered form) (GJ Keighery 10857) | | | e | | | **X** | | | WA | H | | PAB | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Anthericaceae | Caesia micrantha (Large swamp form) (BJ Keighery and N Gibson 094) | | | | | | **X** | | | WA | H | | PAB | | |
| Anthericaceae | Caesia occidentalis | | | | x | x | **X** | | | WA | H | | PAB | | |
| Anthericaceae | Chamaescilla corymbosa var. corymbosa | | | | **X** | **X** | **X** | | | AUST | H | | PAB | | |
| Anthericaceae | Chamaescilla gibsonii | P3 | | p,s,eSWA,h | | | **X** | | | WA | H | | PAB | AQD | |
| Anthericaceae | Corynotheca micrantha var. micrantha | | | | | | **X** | | | WA | H-SH | | PAB | | |
| Anthericaceae | Laxmannia sessiliflora subsp. australis | | | | x | | | | | WA | H | | P | | |
| Anthericaceae | Laxmannia squarrosa | | | | **X** | **X** | x | | | WA | H | | P | | |
| Anthericaceae | Sowerbaea laxiflora | | | | x | **X** | **X** | | | WA | H | | PAB | | |
| Anthericaceae | Thysanotus arbuscula | | | | **X** | **X** | **X** | | | WA | H | | A/P | | |
| Anthericaceae | Thysanotus arenarius | | | | x | **X** | | | | WA | H | | PAB | | |
| Anthericaceae | Thysanotus asper | | | | x | | | | | WA | H | | PAB | | |
| Anthericaceae | Thysanotus dichotomus | | | | | | x | | | WA | H | | PAB | | |
| Anthericaceae | Thysanotus manglesianus | | | | x | x | **X** | | | WA | H | CL | PAB | | |
| Anthericaceae | Thysanotus manglesianus/patersonii complex | | | | | **X** | **X** | | | WA | H | CL | PAB | | |
| Anthericaceae | Thysanotus multiflorus | | | | x | | **X** | | | WA | H | | P | | |
| Anthericaceae | Thysanotus patersonii | | | | x | | **X** | | | WA | H | CL | PAB | | |
| Anthericaceae | Thysanotus sparteus | | | | x | | **X** | | | WA | H | | P | | |
| Anthericaceae | Thysanotus thyrsoideus | | | | x | | **X** | | | WA | H | | PAB | | |
| Anthericaceae | Thysanotus triandrus | | | | | | x | | | WA | H | | P | | |
| Anthericaceae | Tricoryne elatior | | | | | x | | | | AUST | H | | P | | |
| Anthericaceae | Tricoryne tenella | | | | **X** | | x | | | WA | H | | P | | |
| Aponogetonaceae | Aponogeton hexatepalus | P4 | | p,s,eSWA,h | x | | **X** | | | WA | H | | PAB | AQF | y |
| Araceae | * Zantedeschia aethiopica | | | | x | | x | | | | H | | PAB | | |
| Asparagaceae | * Asparagus asparagoides | | | | | | **X** | | | | H | CL | PAB | | |
| Asphodelaceae | * Asphodelus fistulosus | | | | | | x | | | | H | | A/P | | |
| Asphodelaceae | Bulbine semibarbata | | | | | | **X** | | | AUST | H | | A | | |
| Asphodelaceae | * Trachyandra divaricata | | | | x | | | | | | H | | P | | |
| Boryaceae | Borya scirpoidea | | | h | | | **X** | | | WA | H | | P | | y |

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| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Boryaceae | Borya sphaerocephala | | | h | | | x | | | WA | H | | P | | y |
| Centrolepidaceae | Aphelia brizula | | | | | | x | | | WA | S-C | | A | AQD | |
| Centrolepidaceae | Aphelia cyperoides | | | | x | | **X** | | | WA | S-C | | A | | y |
| Centrolepidaceae | Aphelia drummondii | | | h | | | x | | | WA | S-C | | A | AQD | |
| Centrolepidaceae | Aphelia nutans | | | h | | | **X** | | | WA | S-C | | A | AQD | y |
| Centrolepidaceae | Centrolepis alepyroides | | | h | | | **X** | | | WA | S-C | | A | AQD | y |
| Centrolepidaceae | Centrolepis aristata | | | | x | | **X** | | | AUST | S-C | | A | | |
| Centrolepidaceae | Centrolepis caespitosa | R | EN | p,s,h | | | x | | | WA | S-C | | A | AQD | |
| Centrolepidaceae | Centrolepis drummondiana | | | | x | x | **X** | | | AUST | S-C | | A | | |
| Centrolepidaceae | Centrolepis glabra | | | | | | **X** | | | AUST | S-C | | A | | y |
| Centrolepidaceae | Centrolepis inconspicua | | | | x | | x | | | WA | S-C | | A | | |
| Centrolepidaceae | Centrolepis mutica | | | | x | | **X** | | | WA | S-C | | A | | y |
| Centrolepidaceae | Centrolepis pilosa | | | | | | **X** | | | WA | S-C | | A | | |
| Centrolepidaceae | Centrolepis polygyna | | | | | | **X** | | | AUST | S-C | | A | | |
| Colchicaceae | Burchardia bairdiae | | | r,s | | | | x | | WA | H | | PAB | | y |
| Colchicaceae | Burchardia congesta | | | | **X** | x | **X** | | | WA | H | | PAB | | |
| Colchicaceae | Burchardia multiflora | | | | | | **X** | | | WA | H | | PAB | | y |
| Colchicaceae | Wurmbea dioica subsp. Brixton (GJ Keighery 12803) | | | h,t | | | x | | | WA | H | | PAB | AQD | |
| Colchicaceae | Wurmbea monantha | | | | | **X** | | | | WA | H | | PAB | | |
| Commelinaceae | Cartonema philydroides | | | | | | x | | | WA | H | | P | | |
| Cyperaceae | Baumea acuta | | | | | | **X** | | | AUST | S-C | | P | AQE | |
| Cyperaceae | Baumea articulata | | | | x | | x | | | >AUST | S-C | | P | AQE | y |
| Cyperaceae | Baumea juncea | | | | x | x | **X** | | | >AUST | S-C | | P | | y |
| Cyperaceae | Baumea preissii subsp. laxa MS | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Baumea rubiginosa | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Baumea vaginalis | | | | x | | | | | WA | S-C | | P | | y |
| Cyperaceae | Bolboschoenus caldwellii | | | | | | **X** | **X** | | >AUST | S-C | | P | AQE | |
| Cyperaceae | Carex preissii | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Carex tereticaulis | | | d,p,s | | | | | | AUST | S-C | | P | AQE | |
| Cyperaceae | Chorizandra enodis | | | h | | | **X** | | | AUST | S-C | | P | AQD | y |
| Cyperaceae | Cyathochaeta avenacea | | | | x | | **X** | | | WA | S-C | | P | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Cyperaceae | Cyathochaeta equitans | | | r,d,s,h | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Cyathochaeta teretifolia | P3 | | p,s,h | x | | | | | WA | S-C | | P | AQD | |
| Cyperaceae | Cyperus alterniflorus | | | | | | x | | | AUST | S-C | | P | | |
| Cyperaceae | * Cyperus congestus | | | | | | x | | | | S-C | | P | | |
| Cyperaceae | * Cyperus eragrostis | | | | | | x | | | | S-C | | P | | |
| Cyperaceae | * Cyperus tenellus | | | | | | **X** | | | | S-C | | P | | |
| Cyperaceae | Eleocharis keigheryi | R | VU | p,s,h | | | x | | | WA | S-C | | PAB | AQE | |
| Cyperaceae | Evandra pauciflora | | | r,d,s,h | x | | x | | | WA | S-C | | P | | y |
| Cyperaceae | Ficinia nodosa | | | | | | x | | **X** | >AUST | S-C | | P | | |
| Cyperaceae | Gahnia trifida | | | | | | 8 | | | AUST | S-C | | P | | y |
| Cyperaceae | Isolepis cernua | | | | x | | **X** | | | >AUST | S-C | | A | | |
| Cyperaceae | Isolepis cyperoides | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Isolepis hookeriana | | | | | | x | | | AUST | S-C | | A | | |
| Cyperaceae | * Isolepis hystrix | | | | | | x | | | | S-C | | A | | |
| Cyperaceae | * Isolepis marginata | | | | x | **X** | **X** | | | | S-C | | A | | |
| Cyperaceae | Isolepis oldfieldiana | | | | x | | **X** | | | WA | S-C | | A | | y |
| Cyperaceae | Isolepis producta | | | | | | x | | | AUST | S-C | | A | AQE | |
| Cyperaceae | * Isolepis prolifera | | | | | | x | | | | S-C | | P | | |
| Cyperaceae | Isolepis setiformis | | | | | | x | | | WA | S-C | | A | | |
| Cyperaceae | Isolepis stellata | | | | | | x | | | AUST | S-C | | A | | |
| Cyperaceae | Lepidosperma gladiatum | | | h | | | | | x | AUST | S-C | | P | | |
| Cyperaceae | Lepidosperma longitudinale | | | | **X** | | **X** | | **X** | AUST | S-C | | P | | y |
| Cyperaceae | Lepidosperma sp. (Eastern terete) (BJ Keighery and N Gibson 232) | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Lepidosperma squamatum | | | | **X** | **X** | **X** | | | WA | S-C | | P | | |
| Cyperaceae | Lepidosperma tenue | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Mesomelaena graciliceps | | | | x | | **X** | | | WA | S-C | | P | | |
| Cyperaceae | Mesomelaena stygia subsp. stygia | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Mesomelaena tetragona | | | d | | | **X** | | | WA | S-C | | P | | |
| Cyperaceae | Schoenoplectus validus | | | | | | x | | | >AUST | S-C | | P | AQE | |
| Cyperaceae | Schoenus asperocarpus | | | | | | x | | | WA | S-C | | P | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Cyperaceae | Schoenus benthamii | P3 | | p,s | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus bifidus | | | | | | x | | | WA | S-C | | P | | y |
| Cyperaceae | Schoenus breviculmis | | | | x | | x | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus brevifolius | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus brevisetis | | | | x | | x | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus capillifolius | P2 | | p,s,h | | | x | | | WA | S-C | | A | AQS | |
| Cyperaceae | Schoenus clandestinus | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus cruentus | | | | x | | | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus curvifolius | | | | x | | **X** | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus discifer | | | | | | x | | | >AUST | S-C | | A | | |
| Cyperaceae | Schoenus efoliatus | | | | x | | **X** | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus humilis | | | | | | x | | | WA | S-C | | A | | y |
| Cyperaceae | Schoenus maschalinus | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus natans | P4 | | p,s,h | | | x | | | WA | S-C | | A | AQS | |
| Cyperaceae | Schoenus nitens | | | | | | x | | | >AUST | S-C | | P | | |
| Cyperaceae | Schoenus odontocarpus | | | | x | | **X** | | | WA | S-C | | A | | y |
| Cyperaceae | Schoenus plumosus | | | | | | **X** | | | WA | S-C | | A | | y |
| Cyperaceae | Schoenus rigens | | | | | | **X** | | | WA | S-C | | P | | y |
| Cyperaceae | Schoenus sculptus | | | | | | x | | | AUST | S-C | | A | | |
| Cyperaceae | Schoenus sp. Waroona (GJ Keighery 12235) PN | P3 | | r,p,s,eSWA,h | | | x | | | WA | S-C | | A | AQD | |
| Cyperaceae | Schoenus subbulbosus | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus subfascicularis | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Schoenus tenellus | | | | | | **X** | | | WA | S-C | | A | AQE | y |
| Cyperaceae | Schoenus unispiculatus | | | | | | x | | | WA | S-C | | P | | y |
| Cyperaceae | Schoenus variicellae | | | | x | | **X** | | | WA | S-C | | A | | |
| Cyperaceae | Tetraria australiensis | R | VU | p,s,eSWA | | | | | | WA | S-C | | P | | |
| Cyperaceae | Tetraria capillaris | | | | | | x | | | WA | S-C | | P | | |
| Cyperaceae | Tetraria octandra | | | | | x | **X** | | | WA | S-C | | P | | |
| Cyperaceae | Tricostularia neesii var. neesii | | | | | | x | | | WA | S-C | | P | | |
| Dasypogonaceae | Acanthocarpus canaliculatus | | | h | | | x | | | WA | H-SH | | P | | |
| Dasypogonaceae | Acanthocarpus preissii | | | | | x | | | | WA | H-SH | | P | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Dasypogonaceae | Calectasia narragara | | | | | | x | | | WA | H-SH | | P | | |
| Dasypogonaceae | Dasypogon bromeliifolius | | | | **X** | x | **X** | | | WA | SH-H | | P | | |
| Dasypogonaceae | Kingia australis | | | h | | | **X** | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra brittanii | | | | | | x | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra caespitosa | | | | x | **X** | **X** | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra hermaphrodita | | | | x | **X** | **X** | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra integra | | | | | | x | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra maritima | | | | | **X** | | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra micrantha subsp. micrantha | | | | | x | **X** | | | AUST | H | | P | | |
| Dasypogonaceae | Lomandra nigricans | | | | **X** | x | x | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra odora | | | | | | x | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra preissii | | | | x | x | x | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra purpurea | | | | x | x | x | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra sericea | | | | **X** | **X** | **X** | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra sonderi | | | | | | x | | | WA | H | | P | | |
| Dasypogonaceae | Lomandra suaveolens | | | | **X** | | **X** | | | WA | H | | P | | |
| Dioscoreaceae | Dioscorea hastifolia | | | d,x | | | x | | | WA | H | CL | PAB | | |
| Haemodoraceae | Anigozanthos humilis subsp. humilis | | | | | | x | | | WA | H | | PAB | | |
| Haemodoraceae | Anigozanthos manglesii subsp. manglesii | | | | | | **X** | | | WA | H | | PAB | | |
| Haemodoraceae | Anigozanthos manglesii x viridis | | | | | | x | | | WA | H | | PAB | | |
| Haemodoraceae | Anigozanthos viridis subsp. viridis | | | | | | **X** | | | WA | H | | PAB | | y |
| Haemodoraceae | Conostylis aculeata subsp. aculeata | | | | x | x | **X** | | | WA | H | | P | | |
| Haemodoraceae | Conostylis candicans subsp. candicans | | | | | | | | x | WA | H | | P | | |
| Haemodoraceae | Conostylis juncea | | | | **X** | **X** | **X** | | | WA | H | | P | | |
| Haemodoraceae | Conostylis laxiflora | | | | | x | | | | WA | H | | P | | |
| Haemodoraceae | Conostylis setigera subsp. setigera | | | | | | **X** | | | WA | H | | P | | |
| Haemodoraceae | Conostylis vaginata | | | | x | | | | | WA | H | | P | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Haemodoraceae | Haemodorum brevisepalum | | | s | | | x | | | WA | H | | PAB | | |
| Haemodoraceae | Haemodorum laxum | | | | | | **X** | | | WA | H | | PAB | | |
| Haemodoraceae | Haemodorum paniculatum | | | | | | x | | | WA | H | | PAB | | |
| Haemodoraceae | Haemodorum simplex | | | h | | | **X** | | | WA | H | | PAB | | y |
| Haemodoraceae | Haemodorum sparsiflorum | | | | | | **X** | | | WA | H | | PAB | | y |
| Haemodoraceae | Haemodorum spicatum | | | | | | **X** | | | WA | H | | PAB | | |
| Haemodoraceae | Phlebocarya ciliata | | | | **X** | **X** | **X** | | | WA | H | | P | | |
| Haemodoraceae | Tribonanthes australis | | | | | | **X** | | | WA | H | | PAB | | y |
| Haemodoraceae | Tribonanthes brachypetala | | | | | | x | | | WA | H | | PAB | | |
| Haemodoraceae | Tribonanthes uniflora | | | s | | | **X** | | | WA | H | | PAB | AQD | |
| Haemodoraceae | Tribonanthes violacea | | | s | x | | **X** | | | WA | H | | PAB | | y |
| Hydatellaceae | Hydatella dioica | R | EN | p,s,h | | | x | | | WA | S-C | | A | AQE | |
| Hydatellaceae | Hydatella sp. Austin Bay (N Gibson & M Lyons 2387) PN | | | p,s,u, eSWA(P),h | | | single | | | WA | S-C | | A | AQE | |
| Hydatellaceae | Trithuria bibracteata | | | h | | | **X** | | | WA | S-C | | A | AQE/AQD | y |
| Hydatellaceae | Trithuria submersa | | | h | | | **X** | | | WA | S-C | | A | AQE/AQD | |
| Hypoxidaceae | Hypoxis glabella var. glabella | | | | | | **X** | | | >AUST | H | | PAB | | |
| Hypoxidaceae | Hypoxis occidentalis var. occidentalis | | | | | | **X** | | | WA | H | | PAB | | y |
| Iridaceae | * Babiana angustifolia | | | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Chasmanthe floribunda | | | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Freesia alba x leichtlinii | | | | x | | | | | | H | | PAB | | |
| Iridaceae | * Gladiolus angustus | | | | | | x | | | | H | | PAB | | |
| Iridaceae | * Gladiolus caryophyllaceus | | | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Gladiolus undulatus | | | | | | x | | | | H | | PAB | | |
| Iridaceae | * Juncus acutus subsp. acutus | | | | | | **X** | | **X** | | S-J | | P | | |
| Iridaceae | Orthrosanthus laxus var. laxus | | | | | | x | | | WA | H | | P | | |
| Iridaceae | Patersonia juncea | | | | x | | **X** | | | WA | H | | P | | |
| Iridaceae | Patersonia occidentalis | | | | **X** | x | **X** | | | AUST | H | | P | | |
| Iridaceae | Patersonia occidentalis (Swamp form) (N Gibson and MN Lyons 554) | | | h | x | | x | | | WA | H | | P | | y |
| Iridaceae | * Romulea flava var. minor | | | | | | **X** | | | | H | | PAB | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Iridaceae | * Romulea rosea var. australis | | | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Sisyrinchium exile | | | | | | x | | | | H | | PAB | | |
| Iridaceae | * Sparaxis bulbifera | | | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Watsonia marginata | | | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Watsonia meriana var. bulbillifera | | | | x | | **X** | | | | H | | PAB | | |
| Juncaceae | * Juncus articulatus | | | | | | x | | | | S-J | | P | | |
| Juncaceae | Juncus bufonius | | | | | | x | | | >AUST | S-J | | A | | |
| Juncaceae | * Juncus bufonius | | | | **X** | | **X** | | | >AUST | S-J | | A | | |
| Juncaceae | Juncus caespiticius | | | | | | **X** | | | >AUST | S-J | | P | | |
| Juncaceae | * Juncus capitatus | | | | | | **X** | | | | S-J | | A | | |
| Juncaceae | Juncus holoschoenus | | | | | | x | | | >AUST | S-J | | P | AQD | |
| Juncaceae | Juncus kraussii subsp. australiensis | | | | | | **X** | | | >AUST | S-J | | P | | y |
| Juncaceae | Juncus pallidus | | | | x | x | **X** | | | >AUST | S-J | | P | | y |
| Juncaceae | Juncus pauciflorus | | | | | | x | | | >AUST | S-J | | P | | |
| Juncaceae | Luzula meridionalis | | | | | **X** | x | | | AUST | S-J | | PAB | | |
| Juncaginaceae | Triglochin centrocarpa | | | | | | x | | | WA | S-C | | A | | |
| Juncaginaceae | Triglochin huegelii | | | | | | x | | | WA | S-C | | PAB | AQE | |
| Juncaginaceae | Triglochin incurva | | | | | x | | | | AUST | S-C | | A | AQD | |
| Juncaginaceae | Triglochin linearis | | | | | x | **X** | | | WA | S-C | | PAB | AQE | y |
| Juncaginaceae | Triglochin minutissima | | | | | | **X** | | | AUST | S-C | | A | | |
| Juncaginaceae | Triglochin mucronata | | | | | | **X** | | | AUST | S-C | | A | | y |
| Juncaginaceae | Triglochin muelleri subsp. muelleri | | | | | | x | | | WA | S-C | | PAB | AQE | |
| Juncaginaceae | Triglochin muelleri subsp. recurvum | | | | | x | **X** | | | WA | S-C | | PAB | AQE | |
| Juncaginaceae | Triglochin nana | | | | | | x | | | AUST | S-C | | A | | |
| Juncaginaceae | Triglochin striata | | | | | | x | | | >AUST | S-C | | P | | |
| Juncaginaceae | Triglochin trichophora | | | | | **X** | x | | | WA | S-C | | A | | |
| Lemnaceae | Lemna disperma | | | | | | x | | | >AUST | H | | P | AQF | |
| Orchidaceae | Caladenia denticulata | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia discoidea | | | | x | | | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia ferruginea | | | | | | **X** | | | WA | H | | PAB | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
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| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Orchidaceae | Caladenia flava subsp. flava | | | | **X** | **X** | **X** | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia huegelii | R | EN | p,s,eSWA | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia latifolia | | | | | **X** | x | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia longicauda subsp. longicauda | | | | | | **X** | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia longiclavata | | | | x | x | x | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia marginata | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia paludosa | | | | | | **X** | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia radiata | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia reptans subsp. reptans | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia serotina | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia speciosa | P4 | | p,s | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Caladenia vulgata | | | | | x | x | | | WA | H | | PAB | | |
| Orchidaceae | Cryptostylis ovata | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Cyanicula deformis | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Cyanicula gemmata | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Cyrtostylis huegelii | | | | | **X** | x | | | WA | H | | PAB | | |
| Orchidaceae | Cyrtostylis robusta | | | | | **X** | x | | | AUST | H | | PAB | | |
| Orchidaceae | * Disa bracteata | | | | x | x | **X** | | | | H | | PAB | | |
| Orchidaceae | Diuris amplissima | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Diuris carinata | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Diuris corymbosa | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Diuris drummondii | R | | p | | | | | | WA | H | | PAB | | |
| Orchidaceae | Diuris laxiflora | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Diuris longifolia | | | | x | **X** | x | | | WA | H | | PAB | | |
| Orchidaceae | Diuris micrantha | R | VU | p,s | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Diuris purdiei | R | EN | p,s,eSWA | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Drakaea elastica | R | EN | p,s | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Drakaea glyptodon | | | | x | | | | | WA | H | | PAB | | |
| Orchidaceae | Drakaea livida | | | | | | | | | WA | H | | PAB | | |
| Orchidaceae | Drakaea micrantha MS | R | VU | p,s | x | | | | | WA | H | | PAB | | |
| Orchidaceae | Drakea gracilis | | | | | x | x | | | WA | H | | PAB | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Orchidaceae | Elythranthera brunonis | | | | x | x | x | | | WA | H | | PAB | | |
| Orchidaceae | Elythranthera emarginata | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Eriochilus dilatatus subsp. dilatatus MS | | | | x | **X** | x | | | WA | H | | PAB | | |
| Orchidaceae | Eriochilus dilatatus subsp. multiflorus MS | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Eriochilus helonomos MS | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Leporella fimbriata | | | | x | | x | | | WA | H | | PAB | | |
| Orchidaceae | Leptoceras menziesii | | | | | | x | | | AUST | H | | PAB | | |
| Orchidaceae | Lyperanthus serratus | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Microtis atrata | | | | | | x | | | AUST | H | | PAB | | |
| Orchidaceae | Microtis media subsp. media | | | | **X** | x | **X** | | | WA | H | | PAB | | |
| Orchidaceae | Microtis media subsp. quadrata | P4 | | p | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Microtis orbicularis | | | | x | | x | | | AUST | H | | PAB | | |
| Orchidaceae | Paracaleana hortiorum MS | | | | | | | | | WA | H | | PAB | | |
| Orchidaceae | Paracaleana nigrita | | | | x | | | | | WA | H | | PAB | | |
| Orchidaceae | Prasophyllum cyphochilum | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Prasophyllum drummondii | | | | x | | **X** | | | WA | H | | PAB | | y |
| Orchidaceae | Prasophyllum elatum | | | | | | | | | WA | H | | PAB | | |
| Orchidaceae | Prasophyllum fimbria | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Prasophyllum gibbosum | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Prasophyllum hians | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Prasophyllum macrostachyum | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Prasophyllum parvifolium | | | | x | | x | | | WA | H | | PAB | | |
| Orchidaceae | Pterostylis brevisepala MS | | | | | x | | | | WA | H | | PAB | | |
| Orchidaceae | Pterostylis pyramidalis | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Pterostylis recurva | | | | x | x | x | | | WA | H | | PAB | | |
| Orchidaceae | Pterostylis sanguinea | | | | x | x | x | | | AUST | H | | PAB | | |
| Orchidaceae | Pterostylis sp. cauline leaves (N Gibson & MN Lyons 1490) PN | | | d,s | | x | | | | WA | H | | PAB | | |
| Orchidaceae | Pterostylis sp. Slender Snail Orchid (GJ Keighery 14516) PN | | | | **X** | **X** | **X** | | | WA | H | | PAB | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Orchidaceae | Pterostylis vittata | | | | | **X** | **X** | | | WA | H | | PAB | | |
| Orchidaceae | Pyrorchis nigricans | | | | **X** | | **X** | | | AUST | H | | PAB | | |
| Orchidaceae | Thelymitra antennifera | | | | | | **X** | | | WA | H | | PAB | | y |
| Orchidaceae | Thelymitra benthamiana | | | | x | | | | | WA | H | | PAB | | |
| Orchidaceae | Thelymitra campanulata | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Thelymitra crinita | | | | x | | **x** | | | WA | H | | PAB | | |
| Orchidaceae | Thelymitra flexuosa | | | | x | | **X** | | | WA | H | | PAB | | y |
| Orchidaceae | Thelymitra fuscolutea | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Thelymitra graminea | | | | | | x | | | WA | H | | PAB | | |
| Orchidaceae | Thelymitra paludosa MS | | | | | | | | | WA | H | | PAB | | |
| Orchidaceae | Thelymitra vulgaris | | | | | | x | | | WA | H | | PAB | | |
| Philydraceae | Philydrella drummondii | | | | | | **X** | | | WA | H | | PAB | | y |
| Philydraceae | Philydrella pygmaea subsp. pygmaea | | | | | | **X** | | | WA | H | | PAB | | y |
| Phormiaceae | Dianella brevicaulis | | | | | x | | | | AUST | H | | P | | |
| Phormiaceae | Dianella revoluta var. divaricata | | | | x | **X** | **X** | | | WA | H | | P | | |
| Phormiaceae | Stypandra glauca | | | | x | | | | | AUST | H | | P | | |
| Poaceae | * Aira caryophyllea | | | | **X** | **X** | **X** | | | | G | | A | | |
| Poaceae | * Aira cupaniana | | | | | | x | | | | G | | A | | |
| Poaceae | Amphibromus nervosus | | | h | x | | **X** | | | WA | G | | P | | y |
| Poaceae | Amphipogon amphipogonoides | | | | | | x | | | WA | G | | P | | |
| Poaceae | Amphipogon debilis | | | | | | x | | | WA | G | | P | | |
| Poaceae | Amphipogon laguroides | | | | x | | | | | WA | G | | P | | y |
| Poaceae | Amphipogon turbinatus | | | | x | | x | | | WA | G | | P | | |
| Poaceae | * Anthoxanthum odoratum | | | | | x | x | | | | G | | A | | |
| Poaceae | Aristida ramosa | | | h | | | x | | | AUST | G | | P | | |
| Poaceae | Austrodanthonia caespitosa | | | | | | x | | | AUST | G | | P | | |
| Poaceae | Austrodanthonia occidentalis | | | | **X** | **X** | **X** | | | WA | G | | P | | |
| Poaceae | Austrodanthonia setacea | | | | | | **X** | | | AUST | G | | P | | |
| Poaceae | Austrostipa campylachne | | | | | | x | | | WA | G | | P | | |
| Poaceae | Austrostipa compressa | | | | **X** | **x** | **X** | | | WA | G | | P | | |
| Poaceae | Austrostipa flavescens | | | | | **X** | x | | | AUST | G | | P | | |
| Poaceae | Austrostipa hemipogon | | | | | | x | | | WA | G | | P | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Poaceae | | Austrostipa pycnostachya | | | | x | | | | | WA | G | | P | | |
| Poaceae | | Austrostipa semibarbata | | | | | | x | | | AUST | G | | P | | |
| Poaceae | | Austrostipa tenuifolia | | | | | | x | | | AUST | G | | P | | |
| Poaceae | * | Avellinia michelii | | | | | | x | | | | G | | A | | |
| Poaceae | * | Avena barbata | | | | x | x | x | | | | G | | A | | |
| Poaceae | * | Avena fatua | | | | | | x | | | | G | | A | | |
| Poaceae | * | Briza maxima | | | | **X** | **X** | **X** | | | | G | | A | | |
| Poaceae | * | Briza minor | | | | **X** | **X** | **X** | | | | G | | A | | |
| Poaceae | * | Bromus catharticus | | | | | | x | | | | G | | A | | |
| Poaceae | * | Bromus diandrus | | | | | 2 | x | | | | G | | A | | |
| Poaceae | * | Bromus hordeaceus | | | | | | x | | | | G | | A | | |
| Poaceae | * | Bromus madritensis | | | | | | x | | | | G | | A | | |
| Poaceae | * | Cynodon dactylon | | | | | | **X** | | | | G | | P | | |
| Poaceae | | Deyeuxia quadriseta var. quadriseta | | | | | | x | | | AUST | G | | P | | |
| Poaceae | | Dichelachne crinita | | | | | x | x | | | >AUST | G | | P | | |
| Poaceae | * | Digitaria sanguinalis | | | | | | x | | | | G | | A | | |
| Poaceae | * | Ehrharta calycina | | | | **X** | | x | | | | G | | P | | |
| Poaceae | * | Ehrharta longiflora | | | | **X** | | **X** | | | | G | | A | | |
| Poaceae | * | Eragrostis curvula | | | | | | **x** | | | | G | | P | | |
| Poaceae | | Eragrostis elongata | | | | | | x | | | AUST | G | | P | | |
| Poaceae | * | Glyceria maxima | | | | | | x | | | | G | | A | | |
| Poaceae | * | Hainardia cylindrica | | | | | | x | | | | G | | A | | |
| Poaceae | | Hemarthria uncinata var. uncinata | | | | | | x | | x | AUST | G | | P | | y |
| Poaceae | * | Holcus lanatus | | | | | | x | | | | G | | A | | |
| Poaceae | * | Holcus setiger | | | | | x | x | | | | G | | A | | |
| Poaceae | * | Hordeum geniculatum | | | | | | x | | | | G | | A | | |
| Poaceae | * | Hordeum leporinum | | | | | | x | | | | G | | A | | |
| Poaceae | | Lachnagrostis filiformis | | | | x | | **X** | | | >AUST | G | | A | | y |
| Poaceae | | Lachnagrostis plebeia | | | | | | **X** | | | WA | G | | A | | |
| Poaceae | | Lachnagrostis preissii | | | | | | x | | | WA | G | | A | | |
| Poaceae | * | Lagurus ovatus | | | | | | **X** | | | | G | | A | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Poaceae | * Lolium multiflorum | | | | | | x | | | | G | | A | | |
| Poaceae | * Lolium perenne | | | | x | | x | | | | G | | A | | |
| Poaceae | * Lolium rigidum | | | | | | x | | | | G | | A | | |
| Poaceae | Microlaena stipoides var. stipoides | | | | x | **X** | x | | | >AUST | G | | P | | |
| Poaceae | Neurachne alopecuroidea | | | | | | **X** | | | AUST | G | | P | | |
| Poaceae | * Parapholis incurva | | | | | | x | | | | G | | A | | |
| Poaceae | * Paspalum dilatatum | | | | | | x | | | | G | | P | | |
| Poaceae | * Phalaris minor | | | | | | x | | | | G | | A | | |
| Poaceae | * Poa annua | | | | | x | **X** | | | | G | | A | | |
| Poaceae | Poa drummondiana | | | | | **X** | x | | | AUST | G | | P | | |
| Poaceae | Poa poiformis var. poiformis | | | h | | | x | | x | AUST | G | | P | | |
| Poaceae | Poa porphyroclados | | | h | | x | | | x | WA | G | | P | | |
| Poaceae | * Polypogon monspeliensis | | | | | | **X** | | | | G | | A | | |
| Poaceae | Polypogon tenellus | | | | | | **X** | | | WA | G | | A | | y |
| Poaceae | Spinifex longifolius | | | | | | x | | x | >AUST | G | | P | | |
| Poaceae | Sporobolus virginicus | | | | | | x | | x | >AUST | G | | P | | y |
| Poaceae | * Stenotaphrum secundatum | | | | | | x | | | | G | | P | | |
| Poaceae | Tetrarrhena laevis | | | | | | x | | | WA | G | | P | | |
| Poaceae | * Vulpia bromoides | | | | | | **X** | | | | G | | A | | |
| Poaceae | * Vulpia fasciculata | | | | | | x | | | | G | | A | | |
| Poaceae | * Vulpia myuros | | | | | | **x** | | | | G | | A | | |
| Poaceae | * Vulpia myuros var. myuros | | | | x | **X** | **X** | | | | G | | A | | |
| Potamogetonaceae | Ruppia megacarpa | | | | | | x | | | >AUST | H | | P | AQS | |
| Restionaceae | Alexgeorgea nitens | | | d | | | x | | | WA | S-R | | P | | |
| Restionaceae | Apodasmia ceramophila MS | P2 | | p,s | | | x | | | WA | S-R | | P | | |
| Restionaceae | Chaetanthus aristatus | | | | | | **X** | | | WA | S-R | | P | | |
| Restionaceae | Cytogonidium leptocarpoides | | | | | | x | | | WA | S-R | | P | | y |
| Restionaceae | Desmocladus asper | | | | | | x | | | WA | S-R | | P | | |
| Restionaceae | Desmocladus fasciculatus | | | | **X** | | **X** | | | WA | S-R | | P | | |
| Restionaceae | Desmocladus flexuosus | | | | **X** | **X** | x | | | WA | S-R | | P | | |
| Restionaceae | Hypolaena exsulca | | | | **X** | x | **X** | | | WA | S-R | | P | | |
| Restionaceae | Hypolaena pubescens | | | | | | **X** | | | WA | S-R | | P | | y |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Restionaceae | Lepyrodia glauca | | | | x | x | x | | | WA | S-R | | P | | |
| Restionaceae | Lepyrodia macra | | | | | | **X** | | | WA | S-R | | P | | y |
| Restionaceae | Lepyrodia muirii | | | | x | x | x | | | WA | S-R | | P | | y |
| Restionaceae | Loxocarya cinerea | | | | | | x | | | WA | S-R | | P | | |
| Restionaceae | Lyginia barbata | | | | x | **X** | **X** | | | WA | S-R | | P | | |
| Restionaceae | Meeboldina cana | | | | x | | **X** | | | WA | S-R | | P | | y |
| Restionaceae | Meeboldina coangustata | | | | | x | **X** | | | WA | S-R | | P | | y |
| Restionaceae | Meeboldina roycei MS | | | | x | x | **X** | | | WA | S-R | | P | | y |
| Restionaceae | Meeboldina scariosa | | | | | | x | | | WA | S-R | | P | | y |
| Restionaceae | Tremulina tremula | | | d | | | | | | WA | S-R | | P | | |
| Typhaceae | Typha domingensis | | | | | | x | | | >AUST | S-J | | PAB | AQE | |
| Typhaceae | * Typha orientalis | | | | x | | x | | | | S-J | | PAB | AQE | |
| Xanthorrhoeaceae | Xanthorrhoea brunonis | | | | | | x | | | WA | SH | | P | | |
| Xanthorrhoeaceae | Xanthorrhoea preissii | | | | **X** | **X** | **X** | | | WA | SH | | P | | |
| Zannichelliaceae | Lepilaena preissii | | | u | | | x | | | AUST | H | | A | AQE | |
| | | | | | | | | | | | | | | | |
| **Dicot** | | | | | | | | | | | | | | | |
| Aizoaceae | * Carpobrotus aequilaterus | | | | | | 2 | | | | SH-H | PR | P | | |
| Aizoaceae | * Carpobrotus edulis | | | | | | x | | | | SH-H | PR | P | | |
| Aizoaceae | Carpobrotus virescens | | | d,h | | | | | x | WA | H-SH | PR | P | | |
| Aizoaceae | * Tetragonia decumbens | | | u | | | x | | | | H | PR | P | | |
| Amaranthaceae | Alternanthera nodiflora | | | | | | x | | | WA | H | PR | A | | |
| Amaranthaceae | * Amaranthus lividus | | | | | | x | | | | H | | A | | |
| Amaranthaceae | Ptilotus drummondii var. drummondii | | | | | | x | | | WA | H | | P | | |
| Amaranthaceae | Ptilotus manglesii | | | | | | x | | | WA | H | | PAB | | |
| Amaranthaceae | Ptilotus polystachyus var. polystachyus | | | | | | x | | | AUST | H-SH | | A/P | | |
| Amaranthaceae | Tetragonia tetragonoides | | | u | | | | | x | >AUST | H-SH | PR | P | | |
| Apiaceae | Actinotus glomeratus | | | | x | | | | | WA | H-SH | | P | | |
| Apiaceae | Actinotus leucocephalus | | | | | | x | | | WA | H | | A | | |
| Apiaceae | Apium annuum | | | | | | **X** | | | AUST | H | | A | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Apiaceae | Apium prostratum var. prostratum | | | h | | | x | **X** | | AUST | H | | P | | |
| Apiaceae | Centella asiatica | | | | | | x | | | >AUST | H | PR | P | | y |
| Apiaceae | Daucus glochidiatus | | | | | **X** | **X** | | | >AUST | H | | A | | |
| Apiaceae | Eryngium ferox MS | P3 | | p,s | | | x | | | WA | H | | PAB | | |
| Apiaceae | Eryngium pinnatifidum subsp. palustre MS | | | p,s,h | | | x | | | WA | H | | PAB | | y |
| Apiaceae | Eryngium pinnatifidum subsp. pinnatifidum MS | | | | | x | **X** | | | WA | H | | PAB | | |
| Apiaceae | * Foeniculum vulgare | | | | | | x | | | | H | | P | | |
| Apiaceae | Homalosciadium homalocarpum | | | | **X** | **X** | **X** | | | WA | H | | A | | |
| Apiaceae | Hydrocotyle alata | | | | | | **X** | | | WA | H | | A | | y |
| Apiaceae | Hydrocotyle blepharocarpa | | | | | x | | | | WA | H | | A | | |
| Apiaceae | Hydrocotyle callicarpa | | | | x | | **X** | | | AUST | H | | A | | |
| Apiaceae | Hydrocotyle diantha | | | | | | **X** | | | WA | H | | A | | |
| Apiaceae | Hydrocotyle hispidula var. hispidula | | | | | | x | | | WA | H | | A | | |
| Apiaceae | Hydrocotyle pilifera | | | | | | x | | | AUST | H | | A | | |
| Apiaceae | Hydrocotyle tetragonocarpa | | | | | x | | | | WA | H | | A | | |
| Apiaceae | Pentapeltis peltigera | | | | | | x | | | WA | H | PR | P | | |
| Apiaceae | Platysace compressa | | | | x | | x | | | WA | H-SH | | P | | |
| Apiaceae | Platysace filiformis | | | | | | | | | WA | H-SH | | P | | |
| Apiaceae | Schoenolaena juncea | | | | | | **X** | | | WA | H | | PAB | | y |
| Apiaceae | Trachymene coerulea subsp. coerulea | | | s | | x | x | | | WA | H | | A | | |
| Apiaceae | Trachymene pilosa | | | | **X** | **X** | **X** | | | AUST | H | | A | | |
| Apiaceae | Xanthosia ciliata | | | | x | | | | | WA | H-SH | | P | | |
| Apiaceae | Xanthosia huegelii subsp. huegelii MS | | | | **X** | **X** | **X** | | | WA | H-SH | | P | | |
| Apocynaceae | Parsonsia diaphanophleba | P4 | | p,s | | | | x | | WA | SH | CL | P | | |
| Asclepiadaceae | * Gomphocarpus fruticosus | | | | | | x | | | | H-SH | | A/P | | |
| Asteraceae | Amblysperma minor | | | p,s,h | | | x | | | WA | H | | PAB | AQD | |
| Asteraceae | Amblysperma spathulata | | | s | | | x | | | WA | H | | PAB | | |

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| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Asteraceae | Angianthus drummondii | | | | | | **X** | | | WA | H | | A | | |
| Asteraceae | Angianthus preissianus | | | | | | **X** | | | AUST | H | | A | | y |
| Asteraceae | * Arctotheca calendula | | | | **X** | x | **X** | | | | H | | A | | |
| Asteraceae | Asteridea nivea | | | | x | | | | | WA | H | | A | | |
| Asteraceae | Asteridea pulverulenta | | | | | **X** | x | | | WA | H | | A | | |
| Asteraceae | Blennospora doliiformis | P3 | | p,s | | | x | | | WA | H | | A | | y |
| Asteraceae | Brachyscome bellidioides | | | | | | **X** | | | WA | H | | A | | y |
| Asteraceae | Brachyscome iberidifolia | | | | | x | | | | AUST | H | | A | | |
| Asteraceae | * Carduus pycnocephalus | | | | | | x | | | | H | | A | | |
| Asteraceae | * Centaurea melitensis | | | | | | x | | | | H | | A | | |
| Asteraceae | Centipeda cunninghamii | | | p,s,u | | | x | | | AUST | H | | A | | |
| Asteraceae | * Cirsium vulgare | | | | | | x | | | | H | | P | | |
| Asteraceae | * Conyza sumatrensis | | | | | | **X** | | | | H | | A | | |
| Asteraceae | Cotula australis | | | | | | x | | | AUST | H | | A | | |
| Asteraceae | Cotula coronopifolia | | | | | | **X** | | | >AUST | H | | A/P | AQE/AQD | y |
| Asteraceae | Cotula cotuloides | | | | | | **X** | | | AUST | H | | A | AQE/AQD | y |
| Asteraceae | Cotula sp. Kooljerrenup (GJ Keighery 16786) | | | s,eSWA(P),t | | | | | | WA | H | | A | AQD | |
| Asteraceae | * Cotula turbinata | | | | | | x | | | | H | | A | | |
| Asteraceae | Craspedia arenicola MS | | | d,s,h | | x | | | | WA | H | | PAB | | |
| Asteraceae | * Dittrichia graveolens | | | | | | x | | | | H | | A | | |
| Asteraceae | Euchiton collinus | | | | | | x | | | AUST | H | | A | | |
| Asteraceae | Euchiton sphaericus | | | | | x | x | | | >AUST | H | | P | | |
| Asteraceae | Gnephosis drummondii | | | | | | x | | | WA | H | | A | | |
| Asteraceae | Hyalosperma cotula | | | | x | | **X** | | | WA | H | | A | | |
| Asteraceae | * Hypochaeris glabra | | | | **X** | **X** | **X** | | | | H | | A | | |
| Asteraceae | Ixiolaena viscosa | | | | x | x | x | | | WA | H | | A | | |
| Asteraceae | Lagenophora huegelii | | | | **X** | **X** | **X** | | | AUST | H | | PAB | | |
| Asteraceae | Millotia myosotidifolia | | | | | | | | | AUST | H | | A | | |
| Asteraceae | Millotia tenuifolia var. tenuifolia | | | | x | **X** | x | | | AUST | H | | A | | |
| Asteraceae | Myriocephalus helichrysoides | | | eSWA | | | **X** | | | WA | H | | A | AQD | y |
| Asteraceae | Myriocephalus isoetes | | | | | | x | | | WA | H | | A | AQD | |

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Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Asteraceae | Olearia axillaris | | | | | | | | x | AUST | SH | | P | | |
| Asteraceae | Olearia elaeophila | | | | | | x | | | WA | SH | | P | | |
| Asteraceae | Olearia paucidentata | | | | | | x | | | WA | SH | | P | | |
| Asteraceae | Podolepis gracilis | | | | | x | x | | | AUST | H | | A | | |
| Asteraceae | Podolepis gracilis (Swamp form) (GJ Keighery 13126) | | | h,v | x | | **X** | | | WA | H | | A | | y |
| Asteraceae | Podolepis lessonii | | | | | x | | | | WA | H | | A | | |
| Asteraceae | Podotheca angustifolia | | | | | | x | | | AUST | H | | A | | |
| Asteraceae | Podotheca chrysantha | | | | x | | x | | | WA | H | | A | | |
| Asteraceae | Podotheca gnaphalioides | | | | | | x | | | WA | H | | A | | |
| Asteraceae | Pogonolepis stricta | | | | | | **X** | | | AUST | H | | A | | y |
| Asteraceae | * Pseudognaphalium luteoalbum | | | | | | x | | | | H | | P | | |
| Asteraceae | Pterochaeta paniculata | | | | x | | | | | WA | H | | A | | |
| Asteraceae | Quinetia urvillei | | | | x | **X** | **X** | | | AUST | H | | A | | |
| Asteraceae | Rhodanthe citrina | | | | x | x | x | | | AUST | H | | A | | |
| Asteraceae | Rhodanthe corymbosa | | | | | x | | | | WA | H | | A | | |
| Asteraceae | Rhodanthe pyrethrum | P3 | | p,s,h | x | | x | | | WA | H | | A | AQD | |
| Asteraceae | Senecio glomeratus | | | | | | x | | | AUST | H | | A | | |
| Asteraceae | Senecio minimus | | | | x | | | | | AUST | H | | A | | |
| Asteraceae | Senecio multicaulis subsp. multicaulis | | | | | | x | | | AUST | H | | P | | |
| Asteraceae | Senecio pinnatifolius var. maritimus | | | | | | x | | | WA | H | | P | | |
| Asteraceae | Senecio quadridentatus | | | | | | x | | | AUST | H | | P | | |
| Asteraceae | Siloxerus humifusus | | | | x | | **X** | | | WA | H | | A | | |
| Asteraceae | Siloxerus multiflorus | | | | | | x | | | WA | H | | A | | |
| Asteraceae | * Sonchus asper subsp. glaucescens | | | | | | x | | | | H | | A | | |
| Asteraceae | Sonchus hydrophilus | | | h | | | x | **x** | | AUST | H | | A/P | | |
| Asteraceae | * Sonchus oleraceus | | | | x | x | **X** | | | | H | | A | | |
| Asteraceae | * Symphyotrichum subulatum | | | | | x | **x** | | | | H | | A/P | | |
| Asteraceae | * Urospermum picroides | | | | | | x | | | | H | | A | | |
| Asteraceae | * Ursinia anthemoides | | | | **X** | **X** | **X** | | | | H | | A | | |

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| Group/Family | | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Asteraceae | * | Vellereophyton dealbatum | | | | | | x | | | | H | | A | | |
| Asteraceae | | Waitzia nitida | | | | | | x | | | WA | H | | A | | |
| Asteraceae | | Waitzia suaveolens var. suaveolens | | | | x | | x | | | WA | H | | A | | |
| Brassicaceae | * | Brassica tournefortii | | | | | | x | | | | H | | A | | |
| Brassicaceae | * | Cakile maritima | | | | | | x | | | | H | | A | | |
| Brassicaceae | | Cardamine paucijuga | P2 | | p,s | | x | | | | WA | H | | A | | |
| Brassicaceae | * | Heliophila pusilla | | | | | x | x | | | | H | | A | | |
| Brassicaceae | | Menkea australis | | | d | | | x | | | AUST | H | | P | | |
| Brassicaceae | * | Raphanus raphanistrum | | | | x | | x | | | | H | | A | | |
| Brassicaceae | | Stenopetalum gracile | | | | | | x | | | WA | H | | A | | |
| Callitrichaceae | * | Callitriche hamulata | | | | | | x | | | | H | | P | AQE | |
| Callitrichaceae | * | Callitriche stagnalis | | | | | | x | | | | H | | P | AQE | |
| Campanulaceae | * | Wahlenbergia capensis | | | | | | x | | | | H | | A | | |
| Campanulaceae | | Wahlenbergia preissii | | | | x | x | **X** | | | AUST | H | | A | | |
| Campanulaceae | | Wahlenbergia stricta | | | d | | | x | | | AUST | H | | P | | |
| Caryophyllaceae | * | Cerastium glomeratum | | | | | **X** | x | | | | H | | A | | |
| Caryophyllaceae | * | Corrigiola litoralis | | | | | | x | | | | H | | A | | |
| Caryophyllaceae | * | Petrorhagia dubia | | | | | x | x | | | | H | | A | | |
| Caryophyllaceae | * | Sagina apetala | | | | | x | x | | | | H | | A | | |
| Caryophyllaceae | * | Silene gallica | | | | | x | | | | | H | | A | | |
| Caryophyllaceae | * | Silene nocturna | | | | | | x | | | | H | | A | | |
| Caryophyllaceae | * | Spergularia marina | | | | | | x | | | | H | | A | | |
| Caryophyllaceae | * | Stellaria media | | | | | x | x | | | | H | | A | | |
| Casuarinaceae | | Allocasuarina fraseriana | | | | **X** | **X** | x | | | WA | T | | P | | |
| Casuarinaceae | | Allocasuarina humilis | | | | x | x | x | | | WA | SH | | P | | |
| Casuarinaceae | | Casuarina obesa | | | | | | **X** | **X** | **X** | WA | T | | P | | y |
| Chenopodiaceae | | Atriplex hypoleuca | | | | | | x | | | WA | SH | | P | | |
| Chenopodiaceae | | Atriplex isatidea | | | | | | x | | | WA | SH | | P | | |
| Chenopodiaceae | * | Atriplex prostrata | | | | | | x | | | | H-SH | PR | A | | |
| Chenopodiaceae | * | Chenopodium ambrosioides var. ambrosioides | | | | | | x | | | | H | | A | | |
| Chenopodiaceae | * | Chenopodium murale | | | | | | x | | | | H | | A | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Chenopodiaceae | Dysphania glomulifera subsp. glomulifera | | | r,s,u | x | | | | | WA | H | | A | | |
| Chenopodiaceae | Halosarcia halocnemoides subsp. halocnemoides | | | | | | | | x | AUST | SH | | P | | y |
| Chenopodiaceae | Halosarcia indica subsp. bidens | | | | | | x | | x | >AUST | SH | | P | | y |
| Chenopodiaceae | Halosarcia lepidosperma | | | | | | x | | x | AUST | SH | | P | | y |
| Chenopodiaceae | Halosarcia leptoclada subsp. inclusa | | | | | | x | | x | WA | SH | | P | | y |
| Chenopodiaceae | Halosarcia pergranulata subsp. pergranulata | | | | | | | | x | AUST | SH | | P | | y |
| Chenopodiaceae | Rhagodia baccata subsp. baccata | | | | | | x | | x | WA | SH | | P | | |
| Chenopodiaceae | Sarcocornia quinqueflora | | | | | | x | | x | >AUST | SH | | P | | y |
| Chenopodiaceae | Suaeda australis | | | | | | x | | | AUST | H-SH | | P | | |
| Clusiaceae | Hypericum gramineum | | | u | | | x | | | >AUST | SH | | P | | |
| Convolvulaceae | Wilsonia backhousei | | | | | | x | | | AUST | H | PR | P | | |
| Crassulaceae | * Crassula alata var. alata | | | | | | x | | | | H | | A | | |
| Crassulaceae | Crassula closiana | | | | x | | x | | | AUST | H | | A | | |
| Crassulaceae | Crassula colorata var. colorata | | | | **X** | **X** | **X** | | | >AUST | H | | A | | |
| Crassulaceae | Crassula decumbens var. decumbens | | | | | | x | | | >AUST | H | | A | | |
| Crassulaceae | Crassula exserta | | | | | | x | | | AUST | H | | A | | |
| Crassulaceae | * Crassula natans var. minus | | | | | | **X** | | | | H | | A | AQS/AQE/ AQD | |
| Crassulaceae | Crassula peduncularis | | | | | | x | | | >AUST | H | | A | | |
| Cuscutaceae | * Cuscuta epithymum | | | | | | x | | | | H | CL | A-PAR | | |
| Dilleniaceae | Hibbertia acerosa | | | | **X** | | **X** | | | WA | SH | | P | | |
| Dilleniaceae | Hibbertia aurea | | | | | | x | | | WA | SH | | P | | |
| Dilleniaceae | Hibbertia hypericoides | | | | **X** | **X** | **X** | | | WA | SH | | P | | |
| Dilleniaceae | Hibbertia racemosa | | | | x | x | x | | | WA | SH | | P | | |
| Dilleniaceae | Hibbertia spicata subsp. leptotheca | P3 | | p,s,eSWA,h | | x | | | | WA | SH | | P | | |
| Dilleniaceae | Hibbertia stellaris | | | | x | | x | | | WA | SH | | P | | y |
| Dilleniaceae | Hibbertia subvaginata | | | | **X** | x | x | | | WA | SH | | P | | |
| Dilleniaceae | Hibbertia vaginata | | | | **X** | x | **X** | | | WA | SH | | P | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Droseraceae | Drosera bulbigena | | | eSWA | | | x | | | WA | H | | PAB | | |
| Droseraceae | Drosera bulbosa subsp. bulbosa | | | | | | **X** | | | WA | H | | PAB | | y |
| Droseraceae | Drosera erythrorhiza subsp. erythrorhiza | | | | **X** | **X** | **X** | | | WA | H | | PAB | | |
| Droseraceae | Drosera erythrorhiza subsp. squamosa | | | | x | | x | | | WA | H | | PAB | | |
| Droseraceae | Drosera gigantea subsp. geniculata | | | s | x | | x | | | WA | H | | PAB | | |
| Droseraceae | Drosera gigantea subsp. gigantea | | | | x | | **X** | | | WA | H | | PAB | | y |
| Droseraceae | Drosera glanduligera | | | | | | **X** | | | AUST | H | | A | | |
| Droseraceae | Drosera macrantha subsp. macrantha | | | | x | x | **X** | | | WA | H | | PAB | | |
| Droseraceae | Drosera marchantii subsp. marchantii | | | | | | x | | | WA | H | | PAB | | |
| Droseraceae | Drosera menziesii subsp. menziesii | | | | | | **X** | | | WA | H | | PAB | | |
| Droseraceae | Drosera menziesii subsp. penicillaris | | | | x | x | **X** | | | WA | H | | PAB | | |
| Droseraceae | Drosera neesii (Pink flowered sthn form)(BJ Keighery & N Gibson 96) | | | | | | x | | | WA | H | | PAB | | |
| Droseraceae | Drosera neesii subsp. neesii | | | | | | x | | | WA | H | | PAB | | y |
| Droseraceae | Drosera nitidula subsp. nitidula | | | | **X** | | x | | | WA | H | | PAA | | y |
| Droseraceae | Drosera occidentalis subsp. occidentalis | P4 | | p,s,eSWA | | | x | | | WA | H | | PAA | | |
| Droseraceae | Drosera paleacea subsp. paleacea | | | | **X** | | | | | WA | H | | PAA | | |
| Droseraceae | Drosera pallida | | | | x | **X** | x | | | WA | H | | PAB | | |
| Droseraceae | Drosera pulchella | | | | | | x | | | WA | H | | PAA | | |
| Droseraceae | Drosera rosulata | | | | | | **X** | | | WA | H | | PAB | | y |
| Droseraceae | Drosera stolonifera subsp. porrecta | | | | x | **X** | **X** | | | WA | H | | PAB | | |
| Droseraceae | Drosera stolonifera subsp. stolonifera | | | | | 2 | x | | | WA | H | | PAB | | |
| Droseraceae | Drosera tubaestylis | | | | | | x | | | WA | H | | PAB | | |
| Droseraceae | Drosera zonaria | | | | x | | x | | | WA | H | | PAB | | |
| Elatinaceae | Elatine gratioloides | | | | | | x | | | AUST | H | | A/P | AQE/AQD | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Epacridaceae | Andersonia involucrata | | | | | | x | | | WA | SH | | P | | |
| Epacridaceae | Andersonia lehmanniana subsp. lehmanniana | | | | | x | | | | WA | SH | | P | | |
| Epacridaceae | Astroloma ciliatum | | | | x | x | **X** | | | WA | SH | | P | | |
| Epacridaceae | Astroloma pallidum | | | | x | | **X** | | | WA | SH | | P | | |
| Epacridaceae | Brachyloma preissii | | | s | x | | x | | | WA | SH | | P | | |
| Epacridaceae | Conostephium pendulum | | | | **X** | **X** | x | | | WA | SH | | P | | |
| Epacridaceae | Conostephium preissii | | | | x | x | x | | | WA | SH | | P | | |
| Epacridaceae | Leucopogon australis subsp. australis | | | | x | | | | | AUST | SH | | P | | |
| Epacridaceae | Leucopogon conostephioides | | | | **X** | | x | | | WA | SH | | P | | |
| Epacridaceae | Leucopogon gracillimus | | | | x | | | | | WA | SH | | P | | |
| Epacridaceae | Leucopogon parviflorus | | | | x | **X** | | | | WA | SH | | P | | |
| Epacridaceae | Leucopogon polymorphus | | | | | x | | | | WA | SH | | P | | |
| Epacridaceae | Leucopogon propinquus | | | | x | **X** | **X** | | | WA | SH | | P | | |
| Epacridaceae | Leucopogon racemulosus | | | | | **X** | x | | | WA | SH | | P | | |
| Epacridaceae | Leucopogon squarrosus | | | | x | | | | | WA | SH | | P | | |
| Epacridaceae | Lysinema ciliatum | | | | | | x | | | WA | SH | | P | | |
| Euphorbiaceae | Adriana quadripartita | | | | | x | | x | | WA | SH | | P | | |
| Euphorbiaceae | Amperea ericoides | | | | x | | | | | WA | SH | | P | | |
| Euphorbiaceae | * Euphorbia peplus | | | | | | x | | | | H | | A | | |
| Euphorbiaceae | Monotaxis occidentalis | | | | x | | x | | | WA | H-SH | | P | | |
| Euphorbiaceae | Phyllanthus calycinus | | | | | **X** | **X** | | | WA | H | | P | | |
| Euphorbiaceae | Poranthera microphylla | | | | x | **X** | **X** | | | WA | H-SH | | P | | |
| Euphorbiaceae | Stachystemon vermicularis | | | | x | | x | | | WA | SH | | P | | |
| Frankeniaceae | Frankenia pauciflora var. pauciflora | | | | | | x | | | AUST | SH | | P | | |
| Fumariaceae | * Fumaria capreolata subsp. capreolata | | | | | | x | | | | H | | A | | |
| Fumariaceae | * Fumaria muralis | | | | | | x | | | | H | CL | A | | |
| Gentianaceae | * Centaurium erythraea | | | | | | x | | | | H | | A | | |
| Gentianaceae | * Cicendia filiformis | | | | x | | **X** | | | | H | | A | | |
| Geraniaceae | * Erodium botrys | | | | x | x | x | | | | H | | A | | |

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| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Geraniaceae | * Erodium cicutarium | | | | | | x | | | | H | | A | | |
| Geraniaceae | * Geranium molle | | | | | | x | | | | H | | A | | |
| Geraniaceae | Geranium retrorsum | | | | | x | x | | | >AUST | H | | A/P | | |
| Geraniaceae | Geranium solanderi | | | | | | x | | | AUST | H | | A/P | | |
| Geraniaceae | * Pelargonium capitatum | | | | | | x | | x | | H-SH | | P | | |
| Geraniaceae | Pelargonium littorale subsp. littorale | | | | | x | x | | | AUST | H | | A/P | | |
| Goodeniaceae | Anthotium junciforme | P4 | | p,s | | | x | | | WA | H | | A/P | | |
| Goodeniaceae | Dampiera alata | | | | | | x | | | WA | H-SH | | P | | |
| Goodeniaceae | Dampiera linearis | | | | **X** | **X** | **X** | | | WA | H-SH | | P | | |
| Goodeniaceae | Dampiera trigona | | | | | | x | | | WA | H-SH | | P | | |
| Goodeniaceae | Goodenia coerulea | | | | | | x | | | WA | H-SH | | P | | |
| Goodeniaceae | Goodenia micrantha | | | | | | **X** | | | WA | H | | P | | y |
| Goodeniaceae | Goodenia pulchella | | | | x | x | **X** | | | WA | H | | P | | y |
| Goodeniaceae | Goodenia pulchella subsp. Coastal Plain B (L.W. Sage 2336) PN | | | | | | x | | | WA | H | | P | | |
| Goodeniaceae | Lechenaultia biloba | | | | | | x | | | WA | H-SH | | P | | |
| Goodeniaceae | Lechenaultia expansa | | | | x | | x | | | WA | H-SH | | P | | |
| Goodeniaceae | Lechenaultia floribunda | | | | | | x | | | WA | H-SH | | P | | |
| Goodeniaceae | Scaevola crassifolia | | | | | | x | | | AUST | SH | | P | | |
| Goodeniaceae | Scaevola lanceolata | | | | | | x | | | WA | H-SH | | P | | y |
| Goodeniaceae | Scaevola phlebopetala | | | | | | **X** | | | WA | H-SH | | P | | |
| Goodeniaceae | Velleia trinervis | | | | | | **X** | | | WA | H | | P | | y |
| Haloragaceae | Gonocarpus nodulosus | | | | | | x | | | WA | H | | A | | |
| Haloragaceae | Gonocarpus pithyoides | | | | x | | x | | | WA | H | | P | | |
| Haloragaceae | Haloragis brownii | | | h | | | x | | | AUST | H | | P | AQS/AQE | |
| Haloragaceae | Haloragis tenuifolia | P3 | | p,s,h | | | x | | | WA | H | | A | AQE | |
| Haloragaceae | Myriophyllum drummondii | | | | | | x | | | WA | H | | A | AQD | |
| Haloragaceae | Myriophyllum echinatum | P3 | | p,eSWA | x | | x | | | WA | H | | A | AQD | y |
| Haloragaceae | Myriophyllum limnophilum | | | | | | x | | | WA | H | | A | AQE | |
| Haloragaceae | Myriophyllum verrucosum | | | | | | | | | AUST | H | | P | AQE | |
| Lamiaceae | Hemiandra linearis | | | h,v | x | | | | | WA | SH | PR | P | | |

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| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Lamiaceae | Hemiandra 'linearis' group (at least 3 taxa in the area) | | | h,v | | **X** | | | | WA | SH | PR | P | | |
| Lamiaceae | Hemiandra pungens | | | h,v | x | | x | | | WA | SH | PR | P | | |
| Lamiaceae | Hemigenia microphylla | P3 | | p,s | | | x | | | WA | SH | | P | | |
| Lamiaceae | * Mentha x piperita | | | | | | x | | | | H | | P | AQD | |
| Lamiaceae | * Stachys arvensis | | | | x | | x | | | | H | | P | | |
| Lauraceae | Cassytha flava | | | | x | x | x | | | WA | H | CL | P-PAR | | |
| Lauraceae | Cassytha glabella | | | | x | | x | | | WA | H | CL | P-PAR | | |
| Lauraceae | Cassytha micrantha | | | | | | x | | | WA | H | CL | P-PAR | | y |
| Lauraceae | Cassytha pomiformis | | | | | | x | | | WA | H | CL | P-PAR | | |
| Lauraceae | Cassytha racemosa | | | | **X** | x | **X** | | | AUST | H | CL | P-PAR | | |
| Lentibulariaceae | Utricularia inaequalis | | | h | | | x | | | WA | H | | A | AQD | |
| Lentibulariaceae | Utricularia menziesii | | | h | | | x | | | WA | H | | PAB | AQD | |
| Lentibulariaceae | Utricularia multifida | | | h | | | **X** | | | WA | H | | A | AQD | y |
| Lentibulariaceae | Utricularia tenella | | | h | | | x | | | AUST | H | | A | AQD | y |
| Lentibulariaceae | Utricularia violacea | | | h | | | **X** | | | AUST | H | | A | AQD | y |
| Linaceae | Linum marginale | | | | | | x | | | AUST | H | | PAB | | |
| Lobeliaceae | Isotoma hypocrateriformis | | | | | | x | | | WA | H | | A | | |
| Lobeliaceae | Isotoma pusilla | | | | | | x | | | WA | H | | A | | |
| Lobeliaceae | Isotoma scapigera | | | | | | x | | | WA | H | | A | | |
| Lobeliaceae | Lobelia alata | | | | | x | x | | | >AUST | H | | P | | y |
| Lobeliaceae | Lobelia tenuior | | | | x | **X** | x | | | WA | H | | A | | |
| Lobeliaceae | * Monopsis debilis | | | | x | | **X** | | | | H | | A | | |
| Loganiaceae | Phyllangium divergens | | | | x | | | | | WA | H | | A | | |
| Loganiaceae | Phyllangium palustre | P2 | | p,h | | | x | | | WA | H | | A | AQD | |
| Loganiaceae | Phyllangium paradoxum | | | | x | x | **X** | | | WA | H | | A | | |
| Loganiaceae | Phyllangium sulcatum | | | | x | | | | | WA | H | | A | | |
| Loranthaceae | Amyema linophylla subsp. linophylla | | | | | | x | | | AUST | SH | | P-PAR | | |
| Loranthaceae | Amyema miquelii | | | | | | x | | | AUST | SH | | P-PAR | | |
| Loranthaceae | Lysiana casuarinae | | | | | | x | | | WA | SH | | P-PAR | | |
| Loranthaceae | Nuytsia floribunda | | | | x | | **X** | | | WA | T | | P-PAR | | |
| Lythraceae | * Lythrum hyssopifolia | | | | | | x | | | | H | | A | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Malvaceae | Lawrencia spicata | | | | | | x | | | AUST | H-SH | | P | | |
| Meliaceae | * Melia azedarach | | | | x | | | | | | T | | P | | |
| Menyanthaceae | Villarsia albiflora | | | | x | | x | | | WA | H | | PAB | AQE | y |
| Menyanthaceae | Villarsia capitata | | | | | | **X** | | | WA | H | | A | AQD | y |
| Menyanthaceae | Villarsia submersa | P4 | | p,s | | | x | | | WA | H | | PAB | AQS | |
| Menyanthaceae | Villarsia violifolia | | | | | | x | | | WA | H | | PAB | AQD | |
| Mimosaceae | Acacia applanata | | | | | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia barbinervis subsp. barbinervis | | | | | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia benthamii | P2 | | p,s, eSWA(BF/P) | | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia cochlearis | | | | | x | | | | WA | SH | | P | | |
| Mimosaceae | Acacia cyclops | | | | | | x | | | AUST | SH | | P | | |
| Mimosaceae | Acacia dentifera | | | | | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia extensa | | | | x | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia huegelii | | | | **X** | x | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia incurva | | | | | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia lasiocarpa (Pinjarra form) (BJ Keighery 2230) | | | eSWA(BF/P), h | x | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia lasiocarpa var. bracteolata long peduncle variant (GJ Keighery 5026) PN | P1 | | p,s,eSWA,h | | | x | | | WA | SH | | P | | y |
| Mimosaceae | Acacia lateriticola | | | | | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia nervosa | | | | | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia pulchella | | | | x | **X** | **X** | | | WA | SH | | P | | |
| Mimosaceae | Acacia pulchella var. glaberrima | | | | x | | **X** | | | WA | SH | | P | | |
| Mimosaceae | Acacia rostellifera | | | | | x | | | | WA | SH/T | | P | | |
| Mimosaceae | Acacia saligna | | | | | x | **X** | | | WA | SH | | P | | |
| Mimosaceae | Acacia semitrullata | P3 | | p,s | x | | | | | WA | SH | | P | | |
| Mimosaceae | Acacia stenoptera | | | | x | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia truncata | | | | | x | | | | WA | SH | | P | | |
| Mimosaceae | Acacia urophylla | | | | | | x | | | WA | SH | | P | | |
| Mimosaceae | Acacia willdenowiana | | | | | x | x | | | WA | SH-H | | P | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Molluginaceae | Macarthuria apetala | | | s,h,v | x | | | | | WA | H-SH | | P | | |
| Molluginaceae | Macarthuria australis | | | | x | | x | | | WA | H-SH | | P | | |
| Myoporaceae | Eremophila glabra subsp. ?chlorella | | | p,s,u,h | | | x | | | AUST | SH | | P | | |
| Myoporaceae | Myoporum caprarioides | | | | | | x | | | WA | SH | | P | | |
| Myrtaceae | Agonis flexuosa var. flexuosa | | | r,s | | x | x | | | WA | T | | P | | |
| Myrtaceae | Astartea aff. fascicularis (Gibson et al. 1994) | | | | **X** | | x | | | WA | SH | | P | | y |
| Myrtaceae | Astartea affinis MS | | | | x | | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Astartea scoparia | | | | x | | | | | WA | SH | | P | | |
| Myrtaceae | Baeckea camphorosmae | | | h,v | x | | **X** | | | WA | SH | | P | | |
| Myrtaceae | Baeckea tenuiflora | | | h,v | | x | | | | WA | SH | | P | | |
| Myrtaceae | Calothamnus lateralis | | | | x | x | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Calytrix angulata | | | | x | | x | | | WA | SH | | P | | |
| Myrtaceae | Calytrix aurea | | | | | | x | | | WA | SH | | P | | |
| Myrtaceae | Calytrix flavescens | | | | x | **X** | x | | | WA | SH | | P | | |
| Myrtaceae | Calytrix fraseri | | | | | | x | | | WA | SH | | P | | |
| Myrtaceae | Darwinia citriodora | | | | | | x | | | WA | SH | | P | | |
| Myrtaceae | Eremaea pauciflora var. pauciflora | | | | x | | | | | WA | SH | | P | | |
| Myrtaceae | Eucalyptus calophylla | | | | x | x | **X** | | | WA | T | | P | | |
| Myrtaceae | Eucalyptus gomphocephala var. gomphocephala | | | | | **X** | | | | WA | T/M | | P | | |
| Myrtaceae | Eucalyptus marginata subsp. marginata | | | | **X** | **X** | **X** | | | WA | T | | P | | |
| Myrtaceae | Eucalyptus patens | | | d,u | x | | | x | | WA | T/M | | P | | |
| Myrtaceae | Eucalyptus rudis subsp. cratyantha | P4 | | p,s | | | | x | | WA | T/M | | P | | |
| Myrtaceae | Eucalyptus rudis subsp. rudis | | | | x | x | **X** | | | WA | T | | P | | y |
| Myrtaceae | Hypocalymma angustifolium | | | | x | | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Hypocalymma robustum | | | | x | **X** | x | | | WA | SH | | P | | |
| Myrtaceae | Kunzea glabrescens | | | | **X** | x | **X** | | | WA | SH | | P | | |
| Myrtaceae | Kunzea micrantha subsp. micrantha | | | | | | **X** | | | WA | SH | | P | | y |

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Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Myrtaceae | Kunzea recurva | | | | | | x | | | WA | SH | | P | | y |
| Myrtaceae | * Leptospermum laevigatum | | | | | | x | | | | SH | | P | | |
| Myrtaceae | Melaleuca brevifolia | | | d,p | | | x | | | WA | SH | | P | | |
| Myrtaceae | Melaleuca cuticularis | | | | | | **X** | | | WA | T | | P | | y |
| Myrtaceae | Melaleuca huegelii subsp. huegelii | | | | | x | | | | WA | SH | | P | | |
| Myrtaceae | Melaleuca incana subsp. incana | | | | x | | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Melaleuca lateriflora subsp. acutifolia | | | | | | x | | | WA | SH | | P | | y |
| Myrtaceae | Melaleuca lateritia | | | | x | | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Melaleuca osullivani | | | | | | **X** | | | WA | SH | | P | | |
| Myrtaceae | Melaleuca pauciflora | | | | | x | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Melaleuca preissiana | | | | **X** | | **X** | | | WA | T | | P | | y |
| Myrtaceae | Melaleuca rhaphiophylla | | | | **X** | x | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Melaleuca scabra | | | | | x | | | | WA | SH | | P | | |
| Myrtaceae | Melaleuca systena | | | | | x | | | | WA | SH | | P | | |
| Myrtaceae | Melaleuca teretifolia | | | | x | | x | | | WA | SH | | P | | y |
| Myrtaceae | Melaleuca thymoides | | | | **X** | **X** | x | | | WA | SH | | P | | |
| Myrtaceae | Melaleuca viminea subsp. viminea | | | | x | | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Pericalymma ellipticum var. ellipticum | | | | **X** | | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Pericalymma ellipticum var. floridum | | | | | | x | | | WA | SH | | P | | |
| Myrtaceae | Regelia ciliata | | | | x | | **X** | | | WA | SH | | P | | y |
| Myrtaceae | Regelia inops | | | | x | | | | | WA | SH | | P | | |
| Myrtaceae | Scholtzia involucrata | | | | x | | | | | WA | SH | | P | | |
| Myrtaceae | Taxandria linearifolia MS | | | | x | | | | | WA | SH | | P | | y |
| Myrtaceae | Verticordia densiflora var. densiflora | | | | | | **X** | | | WA | SH | | P | | |
| Myrtaceae | Verticordia huegelii var. stylosa | | | | | | x | | | WA | SH | | P | | |
| Myrtaceae | Verticordia pennigera | | | | | | x | | | WA | SH | | P | | |
| Myrtaceae | Verticordia serrata | | | | | | x | | | WA | SH | | P | | |
| Onagraceae | Epilobium billardiereanum subsp. billardiereanum | | | | | | x | | | WA | H | | P | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Onagraceae | Epilobium hirtigerum | | | | | | x | | | WA | H | | P | | |
| Onagraceae | * Oenothera glazioviana | | | | | | x | | | | H | | P | | |
| Orobanchaceae | * Orobanche minor | | | | x | x | x | | | | H | | A-PAR | | |
| Oxalidaceae | Oxalis perennans | | | | | **X** | x | | | AUST | H | | PAB | | |
| Oxalidaceae | * Oxalis pes-caprae | | | | x | | x | | | | H | | PAB | | |
| Oxalidaceae | * Oxalis polyphylla | | | | x | | x | | | | H | | PAB | | |
| Oxalidaceae | * Oxalis purpurea | | | | x | | x | | | | H | | PAB | | |
| Papilionaceae | Aotus intermedia | | | | x | | x | | | WA | SH | | P | | y |
| Papilionaceae | Aotus procumbens | | | | x | | | | | WA | SH | PR | P | | |
| Papilionaceae | Bossiaea eriocarpa | | | | **X** | **X** | **X** | | | WA | SH | | P | | |
| Papilionaceae | Bossiaea sp. Waroona (BJ Keighery & N Gibson 229) PN | | | t | | | x | | | WA | SH | | P | | |
| Papilionaceae | Callistachys lanceolata | | | t | x | | | | | WA | SH/T | | P | | |
| Papilionaceae | * Chamaecytisus palmensis | | | | x | | | | | | SH | | P | | |
| Papilionaceae | Daviesia angulata | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Daviesia costata | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Daviesia decurrens subsp. decurrens MS | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Daviesia divaricata subsp. divaricata MS | | | | x | | | | | WA | SH | | P | | |
| Papilionaceae | Daviesia inflata | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Daviesia longifolia | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Daviesia physodes | | | | x | | **X** | | | WA | SH | | P | | |
| Papilionaceae | Daviesia podophylla | | | | x | | | | | WA | SH | | P | | |
| Papilionaceae | Daviesia preissii | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Dillwynia dillwynioides | P3 | | p,s,eSWA | x | | x | | | WA | SH | | P | | |
| Papilionaceae | Euchilopsis linearis | | | | x | | x | | | WA | SH | | P | | y |
| Papilionaceae | Eutaxia virgata | | | | x | | **X** | | | WA | SH | | P | | y |
| Papilionaceae | Gastrolobium capitatum | | | | x | | **X** | | | WA | SH | | P | | |
| Papilionaceae | Gastrolobium linearifolium | | | h | | x | | | | WA | SH | | P | | |
| Papilionaceae | Gastrolobium sp. Harvey (GJ Keighery 16821) | | | eSWA(P),h,t | | | x | x | | WA | SH | | P | | |
| Papilionaceae | Gompholobium aristatum | | | | | | x | | | WA | SH | | P | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Papilionaceae | Gompholobium capitatum | | | | x | | | | | WA | SH | | P | | |
| Papilionaceae | Gompholobium confertum | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Gompholobium knightianum | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Gompholobium marginatum | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Gompholobium polymorphum | | | | x | x | x | | | WA | SH | CL | P | | |
| Papilionaceae | Gompholobium scabrum | | | | x | | | | | WA | SH | | P | | |
| Papilionaceae | Gompholobium tomentosum | | | | **X** | **X** | **X** | | | WA | SH | | P | | |
| Papilionaceae | Hardenbergia comptoniana | | | | x | **X** | x | | | WA | SH | CL | P | | |
| Papilionaceae | Hovea trisperma var. grandiflora | | | t | | | x | | | WA | SH | | P | | |
| Papilionaceae | Hovea trisperma var. trisperma | | | t | **X** | **X** | x | | | WA | SH | | P | | |
| Papilionaceae | Isotropis cuneifolia subsp. cuneifolia | | | | | **X** | x | | | WA | H-SH | | P | | |
| Papilionaceae | Jacksonia angulata | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | Jacksonia furcellata | | | | **X** | x | **X** | | | WA | SH/T | | P | | |
| Papilionaceae | Jacksonia gracillima ms | | | | | x | x | | | WA | SH/T | | P | | |
| Papilionaceae | Jacksonia sternbergiana | | | | x | x | **X** | | | WA | SH/T | | P | | |
| Papilionaceae | Kennedia coccinea | | | s,h,v | | x | x | | | WA | H | PR | P | | |
| Papilionaceae | Kennedia prostrata | | | | x | x | x | | | AUST | H | PR | P | | |
| Papilionaceae | Latrobea tenella | | | | x | | | | | WA | SH | | P | | |
| Papilionaceae | * Lotus angustissimus | | | | x | | **X** | | | | H | | A | | |
| Papilionaceae | * Lotus subbiflorus | | | | | | **X** | | | | H | | A | | |
| Papilionaceae | * Lupinus angustifolius | | | | | | x | | | | H | | A | | |
| Papilionaceae | * Lupinus cosentinii | | | | x | | x | | | | H | | A | | |
| Papilionaceae | * Medicago polymorpha | | | | | | x | | | | H | | A | | |
| Papilionaceae | * Melilotus indicus | | | | | | x | | | | H | | A | | |
| Papilionaceae | Nemcia reticulata | | | | | x | | | | WA | SH | | P | | |
| Papilionaceae | * Ornithopus compressus | | | | x | | **X** | | | | H | | A | | |
| Papilionaceae | * Ornithopus pinnatus | | | | | | x | | | | H | | A | | |
| Papilionaceae | Oxylobium lineare | | | | x | | | | | WA | SH/T | | P | | |
| Papilionaceae | Pultenaea ochreata | | | | x | | x | | | WA | SH | | P | | |
| Papilionaceae | Pultenaea reticulata | | | | x | | x | | | WA | SH | | P | | |
| Papilionaceae | Sphaerolobium calcicola MS | | | h | | x | | | | WA | SH | | P | | |

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| Group/Family | | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Papilionaceae | | Sphaerolobium medium | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | | Sphaerolobium vimineum | | | | | | | | | AUST | SH | | P | | y |
| Papilionaceae | | Templetonia biloba | | | | | | x | | | WA | SH | | P | | |
| Papilionaceae | | Templetonia retusa | | | | | x | | | | AUST | SH | | P | | |
| Papilionaceae | * | Trifolium angustifolium var. angustifolium | | | | | | x | | | | H | | A | | |
| Papilionaceae | * | Trifolium arvense var. arvense | | | | | x | x | | | | H | | A | | |
| Papilionaceae | * | Trifolium campestre var. campestre | | | | | **X** | x | | | | H | | A | | |
| Papilionaceae | * | Trifolium dubium | | | | | | x | | | | H | | A | | |
| Papilionaceae | * | Trifolium hybridum var. hybridum | | | | | | x | | | | H | | A | | |
| Papilionaceae | * | Vicia hirsuta | | | | | | x | | | | H | | A | | |
| Papilionaceae | * | Vicia sativa subsp. nigra | | | | | | x | | | | H | | A | | |
| Papilionaceae | | Viminaria juncea | | | | x | | **X** | | | AUST | SH/T | | P | | y |
| Phytolaccaceae | * | Phytolacca octandra | | | | | | x | | | | H-SH | | P | | |
| Pittosporaceae | | Billardiera fraseri | | | | x | | x | | | WA | SH | CL | P | | |
| Pittosporaceae | | Billardiera heterophylla | | | | x | x | | | | AUST | SH | CL | P | | |
| Pittosporaceae | | Billardiera variifolia | | | | x | x | x | | | WA | SH | CL | P | | |
| Polygalaceae | | Comesperma calymega | | | | x | | x | | | AUST | SH-H | | P | | |
| Polygalaceae | | Comesperma drummondii | | | | | | x | | | WA | SH-H | | P | | |
| Polygalaceae | | Comesperma flavum | | | | | | x | | | WA | SH-H | | P | | |
| Polygalaceae | | Comesperma integerrimum | | | | | x | x | | | WA | SH | CL | P | | |
| Polygalaceae | | Comesperma polygaloides | | | | | | x | | | WA | SH-H | | P | | |
| Polygalaceae | | Comesperma virgatum | | | | **X** | | x | | | WA | SH-H | | P | | |
| Polygonaceae | * | Acetosella vulgaris | | | | | | x | | | | H | | P | | |
| Polygonaceae | | Muehlenbeckia adpressa | | | | | | x | | | AUST | SH | CL | P | | |
| Polygonaceae | | Persicaria hydropiper | | | h | | | | x | | >AUST | H | | P | | |
| Polygonaceae | * | Rumex brownii | | | | | | x | | | | H | | P | | |
| Polygonaceae | * | Rumex pulcher subsp. pulcher | | | | | | x | | | | H | | P | | |
| Portulacaceae | | Calandrinia brevipedata | | | | | x | x | | | AUST | H | | A | | |
| Portulacaceae | | Calandrinia calyptrata | | | | | | x | | | AUST | H | | A | | |
| Portulacaceae | | Calandrinia composita | | | | | | x | | | WA | H | | A | | |

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| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Portulacaceae | Calandrinia corrigioloides | | | | | | x | | | AUST | H | | A | | |
| Portulacaceae | Calandrinia granulifera | | | | | x | **X** | | | AUST | H | | A | | |
| Portulacaceae | Calandrinia polypetala | | | | | | x | | | AUST | H | | A | | |
| Primulaceae | * Anagallis arvensis | | | | | **X** | **X** | | | | H | | A | | |
| Primulaceae | Samolus junceus | | | | | | x | | | WA | H | | P | | y |
| Primulaceae | Samolus repens var. repens | | | | | | x | | | >AUST | H | | P | | |
| Proteaceae | Adenanthos cygnorum subsp. cygnorum | | | | x | | x | | | WA | SH | | P | | |
| Proteaceae | Adenanthos meisneri | | | | x | | x | | | WA | SH | PR | P | | |
| Proteaceae | Adenanthos obovatus | | | | x | | x | | | WA | SH | | P | | |
| Proteaceae | Banksia attenuata | | | | **X** | **X** | x | | | WA | T | | P | | |
| Proteaceae | Banksia grandis | | | | x | x | x | | | WA | T | | P | | |
| Proteaceae | Banksia ilicifolia | | | | **X** | **X** | x | | | WA | T | | P | | |
| Proteaceae | Banksia littoralis | | | | | | x | | | WA | T | | P | | y |
| Proteaceae | Banksia menziesii | | | s | x | | | | | WA | T | | P | | |
| Proteaceae | Conospermum capitatum subsp. glabratum | | | | x | x | x | | | WA | SH | | P | | |
| Proteaceae | Conospermum stoechadis subsp. stoechadis | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Dryandra lindleyana var. lindleyana | | | | | | **X** | | | WA | SH | | P | | |
| Proteaceae | Dryandra sessilis var. sessilis | | | | | x | | | | WA | SH | | P | | |
| Proteaceae | Grevillea bipinnatifida subsp. bipinnatifida | | | h | | | x | | | WA | SH | | P | | |
| Proteaceae | Grevillea bipinnatifida subsp. pagna | P1 | | p,s | | | x | | | WA | SH | | P | | |
| Proteaceae | Grevillea crithmifolia | | | | | x | | | | WA | SH | | P | | |
| Proteaceae | Grevillea manglesii subsp. ornithopoda | P2 | | p,s | | | | x | | WA | SH | | P | | |
| Proteaceae | Grevillea obtusifolia | | EN | p,s,x,eSWA | | | x | | | WA | SH | PR | P | | |
| Proteaceae | Grevillea pilulifera | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Grevillea preissii subsp. preissii | | | h | | x | | | | WA | SH | | P | | |
| Proteaceae | Hakea candolleana | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Hakea ceratophylla | | | | | | x | | | WA | SH | | P | | y |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Proteaceae | Hakea incrassata | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Hakea lissocarpha | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Hakea marginata | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Hakea prostrata | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Hakea sp. Austin Bay (BJ Keighery & N Gibson 1180) | | | eSWA(P),t | | | x | | | WA | SH | | P | | |
| Proteaceae | Hakea sulcata | | | | | | x | | | WA | SH | | P | | y |
| Proteaceae | Hakea trifurcata | | | | | x | x | | | WA | SH | | P | | |
| Proteaceae | Hakea varia | | | h,t | x | x | **X** | | | WA | SH | | P | | y |
| Proteaceae | Isopogon asper | | | s | | | x | | | WA | SH | | P | | |
| Proteaceae | Persoonia elliptica | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Persoonia saccata | | | | x | **X** | x | | | WA | SH | | P | | |
| Proteaceae | Petrophile juncifolia | | | | | | **X** | | | WA | SH | | P | | |
| Proteaceae | Petrophile linearis | | | | **X** | **X** | **X** | | | WA | SH | | P | | |
| Proteaceae | Petrophile seminuda | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Petrophile striata | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Stirlingia latifolia | | | | **X** | | x | | | WA | SH | | P | | |
| Proteaceae | Synaphea acutiloba | | | p,s,eSWA | | | x | | | WA | SH | | P | | |
| Proteaceae | Synaphea aff. gracillima (BJ Keighery and N Gibson 442) | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Synaphea petiolaris subsp. petiolaris | | | | x | | x | | | WA | SH | | P | | |
| Proteaceae | Synaphea sp. Pinjarra(R Davis 6578) | | | | | | | | | WA | SH | | P | | |
| Proteaceae | Synaphea spinulosa subsp. spinulosa | | | | | | x | | | WA | SH | | P | | |
| Proteaceae | Synaphea stenoloba | R | | p,s | | | x | | | WA | SH | | P | | |
| Proteaceae | Xylomelum occidentale | | | | x | | x | | | WA | T | | P | | |
| Ranunculaceae | Clematis pubescens | | | | | x | x | | | WA | H-SH | CL | P | | |
| Ranunculaceae | Ranunculus colonorum | | | | | x | | | | WA | H | | P | | |
| Ranunculaceae | * Ranunculus muricatus | | | | | | x | | | | H | | A | | |
| Ranunculaceae | Ranunculus pumilio | | | | | x | | | | AUST | H | | A | | |
| Ranunculaceae | Ranunculus sessiliflorus var. sessiliflorus | | | | | | x | | | AUST | H | | A | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Rhamnaceae | Spyridium globulosum | | | | | | x | | | AUST | SH | | P | | |
| Rhamnaceae | Trymalium ledifolium var. ledifolium | | | | | x | | | | WA | SH | | P | | |
| Rubiaceae | * Galium murale | | | | | x | x | | | | H | | A | | |
| Rubiaceae | Opercularia apiciflora | | | | | | x | | | WA | SH-H | | P | | |
| Rubiaceae | Opercularia hispidula | | | | x | x | **X** | | | AUST | SH-H | | P | | |
| Rubiaceae | Opercularia vaginata | | | | | x | **X** | | | WA | SH-H | | P | | |
| Rubiaceae | * Sherardia arvensis | | | | | | x | | | | H | | A | | |
| Rutaceae | Boronia capitata subsp. gracilis | P2 | | p,s | | | x | | | WA | SH | | P | | |
| Rutaceae | Boronia crenulata | | | | | | x | | | WA | SH | | P | | |
| Rutaceae | Boronia crenulata subsp. viminea | | | s | x | | | | | WA | SH | | P | | |
| Rutaceae | Boronia dichotoma | | | | x | | | | | WA | SH | | P | | |
| Rutaceae | Boronia ramosa | | | | | | x | | | WA | SH | | P | | |
| Rutaceae | Boronia spathulata | | | | x | | **X** | | | WA | SH | | P | | |
| Rutaceae | Philotheca spicata | | | | **X** | **X** | **X** | | | AUST | SH | | P | | |
| Santalaceae | Exocarpos sparteus | | | | | | x | | | AUST | SH | | P-PAR | | |
| Santalaceae | Leptomeria cunninghamii | | | | | | x | | | AUST | SH | | P-PAR | | |
| Santalaceae | Santalum acuminatum | | | | | x | | | | AUST | SH/T | | P-PAR | | |
| Sapindaceae | Dodonaea aptera | | | | | x | | | | WA | SH | | P | | |
| Sapindaceae | Dodonaea viscosa subsp. angustissima | | | d,p,s,u | x | | | x | | AUST | SH/T | | P | | |
| Sapindaceae | Dodonaea viscosa subsp. spatulata | | | d,u | | | | x | | AUST | SH | | P | | |
| Scrophulariaceae | * Bartsia trixago | | | | | x | **X** | | | | H | | A | | |
| Scrophulariaceae | * Dischisma arenarium | | | | | x | x | | | | H | | A | | |
| Scrophulariaceae | * Dischisma capitatum | | | | | | x | | | | H | | A | | |
| Scrophulariaceae | Glossostigma diandrum | | | | | | x | | | AUST | H | | A | | |
| Scrophulariaceae | Glossostigma drummondii | | | | | | x | | | AUST | H | | A | | |
| Scrophulariaceae | Gratiola pubescens | | | | x | | **X** | | | AUST | H | | A | | y |
| Scrophulariaceae | * Parentucellia latifolia | | | | | | x | | | | H | | A | | |
| Scrophulariaceae | * Parentucellia viscosa | | | | | x | **X** | | | | H | | A | | |
| Scrophulariaceae | * Veronica arvensis | | | | | | x | | | | H | | A | | |
| Scrophulariaceae | Veronica stolonifera | | | p,s,u | | | x | | | WA | H | PR | P | | |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Solanaceae | Anthocercis ilicifolia | | | | | x | | | | WA | SH | | P | | |
| Solanaceae | Anthocercis littorea | | | | | x | | | | WA | SH | | P | | |
| Solanaceae | * Solanum americanum | | | | | | x | | | | H | | A | | |
| Solanaceae | * Solanum nigrum | | | | 1 | | x | | | | H | | A | | |
| Solanaceae | Solanum symonii | | | | | | x | | | AUST | SH | | P | | |
| Stackhousiaceae | Stackhousia huegelii | | | | | | x | | | WA | H-SH | | P | | |
| Stackhousiaceae | Stackhousia monogyna | | | | | | x | | | AUST | H-SH | | P | | |
| Stackhousiaceae | Stackhousia pubescens | | | | | | x | | | WA | H-SH | | P | | |
| Stackhousiaceae | Tripterococcus brunonis | | | | x | | x | | | WA | H-SH | | P | | |
| Stackhousiaceae | Tripterococcus paniculatus MS | P1 | | p,s, eSWA(BF/P) | | | x | | | WA | H-SH | | P | | |
| Sterculiaceae | Thomasia grandiflora | | | | | | x | | | WA | SH | | P | | |
| Stylidiaceae | Levenhookia pusilla | | | | x | | **X** | | | AUST | H | | A | | |
| Stylidiaceae | Levenhookia stipitata | | | | x | | **X** | | | WA | H | | A | | |
| Stylidiaceae | Stylidium amoenum | | | | | | x | | | WA | H | | P | | |
| Stylidiaceae | Stylidium araeophyllum | | | | x | | | | | WA | H | | P | | |
| Stylidiaceae | Stylidium brunonianum subsp. brunonianum | | | | **X** | x | **X** | | | WA | H | | P | | |
| Stylidiaceae | Stylidium bulbiferum | | | | | | x | | | WA | H | | P | | |
| Stylidiaceae | Stylidium calcaratum | | | | x | **X** | **X** | | | AUST | H | | A | | |
| Stylidiaceae | Stylidium canaliculatum | | | | | | x | | | WA | H | | P | | |
| Stylidiaceae | Stylidium carnosum | | | | x | x | x | | | WA | H | | P | | |
| Stylidiaceae | Stylidium crassifolium | | | | | | x | | | WA | H | | P | | |
| Stylidiaceae | Stylidium dichotomum | | | | | | **X** | | | WA | H | | P | | |
| Stylidiaceae | Stylidium divaricatum | | | | x | | x | | | WA | H | | P | | y |
| Stylidiaceae | Stylidium diversifolium | | | | | | | | | WA | H | | P | | |
| Stylidiaceae | Stylidium ecorne | | | | | | x | | | AUST | H | | A | | y |
| Stylidiaceae | Stylidium guttatum | | | | x | | x | | | WA | H | | P | | y |
| Stylidiaceae | Stylidium hispidum | | | | | | | | | WA | H | | P | | |
| Stylidiaceae | Stylidium inundatum | | | | | | x | | | AUST | H | | A | | y |
| Stylidiaceae | Stylidium junceum subsp. junceum | | | | | x | x | | | WA | H | | P | | |
| Stylidiaceae | Stylidium longitubum | P3 | | p,s | x | | x | | | WA | H | | A | | y |

**Native and weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and conservation status**
Appendix 2a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Significant Taxa | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet Taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WA | Com | OS | S | B | P | R | E | | | | | AQ | C |
| Stylidiaceae | Stylidium mimeticum | | | p,s | x | | **X** | | | WA | H | | A | | y |
| Stylidiaceae | Stylidium paludicola | | | | | | x | | | WA | H | | P | | |
| Stylidiaceae | Stylidium periscelianthum | | | | | | **X** | | | WA | H | | P | | |
| Stylidiaceae | Stylidium perpusillum | | | | | | x | | | AUST | H | | A | | |
| Stylidiaceae | Stylidium petiolare | | | eSWA | | | x | | | WA | H | | P | | y |
| Stylidiaceae | Stylidium piliferum subsp. piliferum | | | | **X** | **X** | **X** | | | WA | H | | P | | |
| Stylidiaceae | Stylidium pulchellum | | | | | | **X** | | | WA | H | | P | | y |
| Stylidiaceae | Stylidium repens | | | | x | | x | | | WA | H | | P | | |
| Stylidiaceae | Stylidium roseo-alatum | | | p,s | | | x | | | WA | H | | A | | |
| Stylidiaceae | Stylidium roseonanum | | | | | | x | | | WA | H | | A | | |
| Stylidiaceae | Stylidium schoenoides | | | | **X** | x | x | | | WA | H | | P | | |
| Stylidiaceae | Stylidium utricularioides | | | s | x | | x | | | WA | H | | A | | y |
| Thymelaeaceae | Pimelea angustifolia | | | | | | | | | WA | SH | | P | | |
| Thymelaeaceae | Pimelea imbricata var. major | | | s,h | | | x | | | WA | SH | | P | | y |
| Thymelaeaceae | Pimelea imbricata var. piligera | | | | x | | | | | WA | SH | | P | | y |
| Thymelaeaceae | Pimelea lanata | | | | | | | | | WA | SH | | P | | |
| Thymelaeaceae | Pimelea leucantha | | | | x | | | | | WA | SH | | P | | |
| Thymelaeaceae | Pimelea rosea subsp. rosea | | | | | x | x | | | WA | SH | | P | | |
| Tremandraceae | Platytheca galioides | | | | | | x | | | WA | SH | | P | | |
| Tremandraceae | Tetratheca hirsuta | | | | x | | x | | | WA | SH | | P | | |
| Urticaceae | Parietaria debilis | | | | | **X** | x | | | >AUST | H | | A | | |
| Violaceae | Hybanthus calycinus | | | | | x | x | | | WA | H-SH | | P | | |
| Violaceae | Hybanthus floribundus subsp. floribundus | | | | | | x | | | AUST | SH-H | | P | | |

# APPENDIX 2b: Weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and weediness status.

## KEY

**Column 1** **Family (Families are grouped into Ferns, Gymnosperms, Monocotyledons and Dicotyledons)**

**Column 2** **Scientific Name**
Genus + Species + Infra Species Rank + Infra Species Name + Informal Name from BJ Keighery *et al*. (2006b) database as of January 2006**.** Therefore, species names may be modified from original sources of information: DEP (1996), Gibson *et al*. (1994) and GJ Keighery (1996). Some taxa yet to be formally described and named may have a reference collection number from the relevant collector. Taxa (species, sub-species and varieties) are listed alphabetically within genera.

| | |
|---|---|
| * | Weed |
| subsp. | Subspecies |
| var. | Variety |
| MS | A manuscript name yet to be published |
| PN | A phrase name for a taxa yet to be described and published. |

**Column 3, 4 & 5** **Weed Ranking**

**Column 3** 1 = Widespread serious weeds of many habitats, highly invasive

**Column 4** 2 = Locally serious weeds of specific habitats

**Column 5** 3 = Minor weeds or highly localised in specific habitats

**Column 6 to 10** **Frequency in major landform elements within the study area**
Based on number of records in plots and vegetation units, except for Rivers and Estuaries which is based on observations of Bronwen Keighery and Greg Keighery.

X = occurs
**X** = common

**Column 6** S = Spearwood Dunes

**Column 7** B = Bassendean Dunes

**Column 8** P = Pinjarra Plain

**Column 9** R = Riverine

**Column 10** E = Estuarine

**Column 11** **Endemic**
Taxa (species, sub-species and varieties) endemic to Western Australia (WA) or Australia (AUST) (>AUST = cosmopolitan). No records are given for weeds; see Hussey *et al.* (1997) for country of origin, unless the plant is also native to WA.

**Column 12** **Growth Form** (See the Key to terms attached to the Key for Appendix 2)

| | |
|---|---|
| T | Tree |
| M | Mallee |
| SH/T | Shrub/tree |
| SH | Shrub |
| SH-H | Shrub which is often called a herb |

**Non-woody Plants: non-grass-like**

| | |
|---|---|
| H | Herb |
| H-SH | Herb which is often called a shrub |

**Non-woody Plants: grass-like**

| | |
|---|---|
| G | Grass |
| S-C | Sedge – Cyperaceae and others |
| S-R | Sedge – Restionaceae |
| S-J | Sedge – Juncaceae and others |

**Column 13** **All Growth Forms** (See the Key to terms attached to the Key for Appendix 2)

| | |
|---|---|
| CL | Climber |
| PR | Prostrate |

**Column 14** **Life Form**

| | |
|---|---|
| A | Annual |
| A2 | Biennial |
| P | Perennial |
| PAA | Perennial annually renewed from above ground part |
| PAB | Perennial annually renewed from below ground part |
| A-PAR | Annual - Parasite or Semi-parasite |
| P-PAR | Perennial - Parasite or Semi-parasite |

**Column 15** **Life Form – aquatics**

| | |
|---|---|
| AQD | Aquatic – damp flowering. Grows in water, flowers in damp mud |
| AQE | Aquatic – emergent. Grows and flowers in water with some parts emergent above water (e.g. leaves, flowers) |
| AQF | Aquatic – floating. Whole plant floats on water |
| AQS | Aquatic – supported. Grows and flowers in water with most parts supported by water (e.g. leaves), flowers may be emergent above water |

**Column 16** **Common Swan Coastal Plain Wetland Species**

Most commonly encountered wetland species on the Southern Swan Coastal Plain based on an analysis of >1000 plots. Commonly encountered species were determined to be those that occurred in 10 or more plots of wetland floristic community types 75% or more of the time.

**Weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and weediness status**
Appendix 2b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Weed Rank | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | S | B | P | R | E | | | | | AQ | C |
| **Monocot** | | | | | | | | | | | | | | | |
| Alliaceae | * Allium triquetrum | **X** | | | x | | | | | | H | | PAB | | |
| Amaryllidaceae | * Amaryllis belladonna | | | **X** | | | x | | | | H | | PAB | | |
| Amaryllidaceae | * Narcissus tazetta | | | **X** | | | x | | | | H | | PAB | | |
| Araceae | * Zantedeschia aethiopica | **X** | | | x | | x | | | | H | | PAB | | |
| Asparagaceae | * Asparagus asparagoides | **X** | | | | | **X** | | | | H | CL | PAB | | |
| Asphodelaceae | * Asphodelus fistulosus | | **X** | | | | x | | | | H | | A/P | | |
| Asphodelaceae | * Trachyandra divaricata | | **X** | | x | | | | | | H | | P | | |
| Cyperaceae | * Cyperus congestus | | **X** | | | | x | | | | S-C | | P | | |
| Cyperaceae | * Cyperus eragrostis | | **X** | | | | x | | | | S-C | | P | | |
| Cyperaceae | * Cyperus tenellus | | **X** | | | | **X** | | | | S-C | | P | | |
| Cyperaceae | * Isolepis hystrix | **X** | | | | | x | | | | S-C | | A | | |
| Cyperaceae | * Isolepis marginata | | **X** | | x | **X** | **X** | | | >AUST | S-C | | A | | |
| Cyperaceae | * Isolepis prolifera | **X** | | | | | x | | | | S-C | | P | | |
| Iridaceae | * Babiana angustifolia | **X** | | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Chasmanthe floribunda | | **X** | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Freesia alba x leichtlinii | **X** | | | x | | | | | | H | | PAB | | |
| Iridaceae | * Gladiolus angustus | | | **X** | | | x | | | | H | | PAB | | |
| Iridaceae | * Gladiolus caryophyllaceus | **X** | | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Gladiolus undulatus | **X** | | | | | x | | | | H | | PAB | | |
| Iridaceae | * Romulea flava var. minor | | **X** | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Romulea rosea var. australis | | **X** | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Sisyrinchium exile | | | **X** | | | x | | | | H | | PAB | | |
| Iridaceae | * Sparaxis bulbifera | **X** | | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Watsonia bulbillifera | **X** | | | x | | **X** | | | | | | | | |
| Iridaceae | * Watsonia marginata | | **X** | | | | **X** | | | | H | | PAB | | |
| Iridaceae | * Watsonia meriana var. meriana | | **X** | | | | **X** | | | | H | | PAB | | |
| Juncaceae | * Juncus articulatus | | | **X** | | | x | | | | S-J | | P | | |
| Juncaceae | * Juncus bufonius | | | **X** | **X** | | **X** | | | | S-J | | A | | |
| Juncaceae | * Juncus capitatus | | | **X** | | | **X** | | | | S-J | | A | | |
| Orchidaceae | * Disa bracteata | | **X** | | x | x | **X** | | | | H | | PAB | | |

**Weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and weediness status**
Appendix 2b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Weed Rank | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | S | B | P | R | E | | | | | AQ | C |
| Poaceae | * Aira caryophyllea | | X | | X | X | X | | | | G | | A | | |
| Poaceae | * Aira cupaniana | | X | | | | x | | | | G | | A | | |
| Poaceae | * Anthoxanthum odoratum | | X | | | x | x | | | | G | | A | | |
| Poaceae | * Avellinia michelii | | X | | | | x | | | | G | | A | | |
| Poaceae | * Avena barbata | X | | | x | x | x | | | | G | | A | | |
| Poaceae | * Avena fatua | | X | | | | x | | | | G | | A | | |
| Poaceae | * Briza maxima | | X | | X | X | X | | | | G | | A | | |
| Poaceae | * Briza minor | | X | | X | X | X | | | | G | | A | | |
| Poaceae | * Bromus catharticus | | | X | | | x | | | | G | | A | | |
| Poaceae | * Bromus diandrus | X | | | | x | x | | | | G | | A | | |
| Poaceae | * Bromus hordeaceus | | X | | | | x | | | | G | | A | | |
| Poaceae | * Bromus madritensis | | | X | | | x | | | | G | | A | | |
| Poaceae | * Cynodon dactylon | | | X | | | X | | | | G | | P | | |
| Poaceae | * Digitaria sanguinalis | | | X | | | x | | | | G | | A | | |
| Poaceae | * Ehrharta calycina | X | | | X | | x | | | | G | | P | | |
| Poaceae | * Ehrharta longiflora | | X | | X | | X | | | | G | | A | | |
| Poaceae | * Eragrostis curvula | X | | | | | x | | | | G | | P | | |
| Poaceae | * Glyceria maxima | | X | | | | x | | | | G | | A | | |
| Poaceae | * Hainardia cylindrica | | X | | | | x | | | | G | | A | | |
| Poaceae | * Holcus lanatus | | X | | | | x | | | | G | | A | | |
| Poaceae | * Holcus setiger | | X | | | x | x | | | | G | | A | | |
| Poaceae | * Hordeum geniculatum | | X | | | | x | | | | G | | A | | |
| Poaceae | * Hordeum leporinum | | X | | | | x | | | | G | | A | | |
| Poaceae | * Lagurus ovatus | | X | | | | X | | | | G | | A | | |
| Poaceae | * Lolium multiflorum | | X | | | | x | | | | G | | A | | |
| Poaceae | * Lolium perenne | | | X | x | | x | | | | G | | A | | |
| Poaceae | * Lolium rigidum | | | X | | | x | | | | G | | A | | |
| Poaceae | * Parapholis incurva | | X | | | | x | | | | G | | A | | |
| Poaceae | * Paspalum dilatatum | | X | | | | x | | | | G | | P | | |
| Poaceae | * Phalaris minor | | X | | | | x | | | | G | | A | | |
| Poaceae | * Poa annua | | | X | | x | X | | | | G | | A | | |

**Weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and weediness status**
Appendix 2b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Weed Rank | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | S | B | P | R | E | | | | | AQ | C |
| Poaceae | * Polypogon monspeliensis | | **X** | | | | **X** | | | | G | | A | | |
| Poaceae | * Stenotaphrum secundatum | **X** | | | | | x | | | | G | | P | | |
| Poaceae | * Vulpia bromoides | | **X** | | | | **X** | | | | G | | A | | |
| Poaceae | * Vulpia fasciculata | | **X** | | | | x | | | | G | | A | | |
| Poaceae | * Vulpia myuros | | **X** | | x | **X** | **x** | | | | G | | A | | |
| Poaceae | * Vulpia myuros var. myuros | | **X** | | | | **X** | | | | | | | | |
| Poaceae | * Vulpia sp. scps | | **X** | | | | **X** | | | | G | | A | | |
| Typhaceae | * Typha orientalis | **X** | | | x | | x | | | | S-J | | PAB | AQE | |
| | | | | | | | | | | | | | | | |
| **Dicot** | | | | | | | | | | | | | | | |
| Aizoaceae | * Carpobrotus aequilaterus | | | **X** | | | x | | | | SH-H | PR | P | | |
| Aizoaceae | * Carpobrotus edulis | | **X** | | | | x | | | | SH-H | PR | P | | |
| Aizoaceae | * Tetragonia decumbens | **X** | | | | | x | | | | H | PR | P | | |
| Amaranthaceae | * Amaranthus lividus | | | **X** | | | x | | | | H | | A | | |
| Apiaceae | * Foeniculum vulgare | | | **X** | | | x | | | | H | | P | | |
| Asclepiadaceae | * Gomphocarpus fruticosus | | **X** | | | | x | | | | H-SH | | A/P | | |
| Asteraceae | * Arctotheca calendula | | | **X** | **X** | x | **X** | | | | H | | A | | |
| Asteraceae | * Carduus pycnocephalus | | **X** | | | | x | | | | H | | A | | |
| Asteraceae | * Centaurea melitensis | | **X** | | | | x | | | | H | | A | | |
| Asteraceae | * Cirsium vulgare | | **X** | | | | x | | | | H | | P | | |
| Asteraceae | * Conyza sumatrensis | | | **X** | | | **X** | | | | H | | A | | |
| Asteraceae | * Cotula turbinata | | | **X** | | | x | | | | H | | A | | |
| Asteraceae | * Dittrichia graveolens | | | **X** | | | x | | | | H | | A | | |
| Asteraceae | * Hypochaeris glabra | | **X** | | **X** | **X** | **X** | | | | H | | A | | |
| Asteraceae | * Pseudognaphalium luteoalbum | | | **X** | | | x | | | | H | | P | | |
| Asteraceae | * Sonchus asper subsp. glaucescens | | | **X** | | | x | | | | H | | A | | |
| Asteraceae | * Sonchus oleraceus | | | **X** | x | x | **X** | | | | H | | A | | |
| Asteraceae | * Symphyotrichum subulatum | | **X** | | | x | **x** | | | | H | | A/P | | |
| Asteraceae | * Urospermum picroides | | **X** | | | | x | | | | H | | A | | |
| Asteraceae | * Ursinia anthemoides | | **X** | | **X** | **X** | **X** | | | | H | | A | | |
| Asteraceae | * Vellereophyton dealbatum | | | **X** | | | x | | | | H | | A | | |

**Weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and weediness status**
Appendix 2b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Weed Rank | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | S | B | P | R | E | | | | | AQ | C |
| Brassicaceae | * Brassica tournefortii | **X** | | | | | x | | | | H | | A | | |
| Brassicaceae | * Cakile maritima | | | **X** | | | x | | | | H | | A | | |
| Brassicaceae | * Heliophila pusilla | | | **X** | | x | x | | | | H | | A | | |
| Brassicaceae | * Raphanus raphanistrum | | | **X** | x | | x | | | | H | | A | | |
| Callitrichaceae | * Callitriche hamulata | | | **X** | | | x | | | | H | | P | AQE | |
| Callitrichaceae | * Callitriche stagnalis | | | **X** | | | x | | | | H | | P | AQE | |
| Campanulaceae | * Wahlenbergia capensis | | | **X** | | | x | | | | H | | A | | |
| Caryophyllaceae | * Cerastium glomeratum | | | **X** | | **X** | x | | | | H | | A | | |
| Caryophyllaceae | * Corrigiola litoralis | | | **X** | | | x | | | | H | | A | | |
| Caryophyllaceae | * Petrorhagia dubia | | | **X** | | x | x | | | | H | | A | | |
| Caryophyllaceae | * Sagina apetala | | | **X** | | x | x | | | | H | | A | | |
| Caryophyllaceae | * Silene gallica | | | **X** | | x | | | | | H | | A | | |
| Caryophyllaceae | * Silene nocturna | | | **X** | | | x | | | | H | | A | | |
| Caryophyllaceae | * Spergularia marina | | | **X** | | | x | | | | H | | A | | |
| Caryophyllaceae | * Stellaria media | | | **X** | | x | x | | | | H | | A | | |
| Chenopodiaceae | * Atriplex prostrata | | **X** | | | | x | | | | H-SH | PR | A | | |
| Chenopodiaceae | * Chenopodium murale | | | **X** | | | x | | | | H | | A | | |
| Crassulaceae | * Crassula alata var. alata | | | **X** | | | x | | | | H | | A | | |
| Crassulaceae | * Crassula natans var. minus | | | **X** | | | **X** | | | | H | | A | AQS/ AQE/ AQD | |
| Cuscutaceae | * Cuscuta epithymum | | | **X** | | | x | | | | H | CL | A-PAR | | |
| Euphorbiaceae | * Euphorbia peplus | | **X** | | | | x | | | | H | | A | | |
| Euphorbiaceae | * Euphorbia terracina | **X** | | | **X** | | | | | | H | | P | | |
| Fumariaceae | * Fumaria capreolata subsp. capreolata | | **X** | | | | x | | | | | | | | |
| Fumariaceae | * Fumaria muralis | | | **X** | | | x | | | | H | CL | A | | |
| Gentianaceae | * Centaurium erythraea | | | **X** | | | x | | | | H | | A | | |
| Gentianaceae | * Cicendia filiformis | | | **X** | x | | **X** | | | | H | | A | | |
| Geraniaceae | * Erodium botrys | | | **X** | x | x | x | | | | H | | A | | |
| Geraniaceae | * Erodium cicutarium | | | **X** | | | x | | | | H | | A | | |
| Geraniaceae | * Geranium molle | | | **X** | | | x | | | | H | | A | | |

**Weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and weediness status**
Appendix 2b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Weed Rank | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | S | B | P | R | E | | | | | AQ | C |
| Geraniaceae | * Pelargonium capitatum | **X** | | | | | x | | x | | H-SH | | P | | |
| Lamiaceae | * Mentha x piperita | | | **X** | | | x | | | | H | | P | AQD | |
| Lamiaceae | * Stachys arvensis | | | **X** | x | | x | | | | H | | P | | |
| Lobeliaceae | * Monopsis debilis | | | **X** | x | | **X** | | | | H | | A | | |
| Lythraceae | * Lythrum hyssopifolia | | | **X** | | | x | | | | H | | A | | |
| Myrtaceae | * Agonis flexuosa | | **X** | | | | x | | | Aust | SH | | P | | |
| Myrtaceae | * Chamelaucium uncinatum | | **X** | | | | x | | | Aust | SH | | P | | |
| Myrtaceae | * Leptospermum laevigatum | **X** | | | | | x | | | Aust | SH | | P | | |
| Onagraceae | * Oenothera glazioviana | | | **X** | | | x | | | | H | | P | | |
| Orobanchaceae | * Orobanche minor | | | **X** | x | x | x | | | | H | | A-PAR | | |
| Oxalidaceae | * Oxalis pes-caprae | **X** | | | x | | x | | | | H | | PAB | | |
| Oxalidaceae | * Oxalis polyphylla | **X** | | | x | | x | | | | H | | PAB | | |
| Oxalidaceae | * Oxalis purpurea | **X** | | | x | | x | | | | H | | PAB | | |
| Papilionaceae | * Chamaecytisus palmensis | | **X** | | x | | | | | | SH | | P | | |
| Papilionaceae | * Lotus angustissimus | | **X** | | x | | **X** | | | | H | | A | | |
| Papilionaceae | * Lotus subbiflorus | | **X** | | | | **X** | | | | H | | A | | |
| Papilionaceae | * Lupinus angustifolius | | | **X** | | | x | | | | H | | A | | |
| Papilionaceae | * Lupinus cosentinii | **X** | | | x | | x | | | | H | | A | | |
| Papilionaceae | * Medicago polymorpha | | **X** | | | | x | | | | H | | A | | |
| Papilionaceae | * Melilotus indicus | | | **X** | | | x | | | | H | | A | | |
| Papilionaceae | * Ornithopus compressus | | | **X** | x | | **X** | | | | H | | A | | |
| Papilionaceae | * Ornithopus pinnatus | | | **X** | | | x | | | | H | | A | | |
| Papilionaceae | * Trifolium angustifolium var. angustifolium | | | **X** | | | x | | | | H | | A | | |
| Papilionaceae | * Trifolium arvense var. arvense | | | **X** | | x | x | | | | H | | A | | |
| Papilionaceae | * Trifolium campestre var. campestre | | **X** | | | **X** | x | | | | H | | A | | |
| Papilionaceae | * Trifolium dubium | | | **X** | | | x | | | | H | | A | | |
| Papilionaceae | * Trifolium hybridum var. hybridum | | | **X** | | | x | | | | H | | A | | |
| Papilionaceae | * Vicia hirsuta | | | **X** | | | x | | | | H | | A | | |
| Papilionaceae | * Vicia sativa subsp. nigra | | | **X** | | | x | | | | H | | A | | |
| Phytolaccaceae | * Phytolacca octandra | | **X** | | | | x | | | | H-SH | | P | | |

**Weedy vascular plants in the EEEA study area with reference to their habitat preferences, growth and life forms and weediness status**
Appendix 2b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Group/Family | Name | Weed Rank | | | Major Landform Element | | | | | Aust / WA | Growth / Life Forms | | | Wet taxa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | S | B | P | R | E | | | | | AQ | C |
| Polygonaceae | * Acetosella vulgaris | | | **X** | | | x | | | | H | | P | | |
| Polygonaceae | * Rumex brownii | | | **X** | | | x | | | | H | | P | | |
| Polygonaceae | * Rumex pulcher subsp. pulcher | | | **X** | | | x | | | | H | | P | | |
| Primulaceae | * Anagallis arvensis | | | **X** | | **X** | **X** | | | | H | | A | | |
| Ranunculaceae | * Ranunculus muricatus | | | **X** | | | x | | | | H | | A | | |
| Rubiaceae | * Galium murale | | | **X** | | x | x | | | | H | | A | | |
| Rubiaceae | * Sherardia arvensis | | | **X** | | | x | | | | H | | A | | |
| Scrophulariaceae | * Bartsia trixago | | | **X** | | x | **X** | | | | H | | A | | |
| Scrophulariaceae | * Dischisma arenarium | | | **X** | | x | x | | | | H | | A | | |
| Scrophulariaceae | * Dischisma capitatum | | | **X** | | | x | | | | H | | A | | |
| Scrophulariaceae | * Parentucellia latifolia | | | **X** | | | x | | | | H | | A | | |
| Scrophulariaceae | * Parentucellia viscosa | | | **X** | | x | **X** | | | | H | | A | | |
| Scrophulariaceae | * Veronica arvensis | | | **X** | | | x | | | | H | | A | | |
| Solanaceae | * Solanum americanum | | **X** | | | | x | | | | H | | A | | |
| Solanaceae | * Solanum nigrum | | **X** | | 1 | | x | | | | H | | A | | |

# APPENDIX 3: Vascular plants in the EEEA study area by major landform

**APPENDIX 3a: EEEA study area Spearwood Dune species list** (Keighery *et al.* 2006d)

**APPENDIX 3b: EEEA study area Bassendean Dune species list** (Keighery *et al.* 2006e)

**APPENDIX 3c: EEEA study area Pinjarra Plain species list** (Keighery *et al*. 2006f)

These lists should be referenced as

Keighery BJ, Keighery GJ and Longman VM 2006 *Eastern Estuary Environmental Assessment (EEEA) study area Spearwood Dune species list.* January 2006. A report for Swan Bioplan, Department of Environment and Department of Conservation and Land Management, Western Australia.

Keighery BJ, Keighery GJ and Longman VM 2006 *Eastern Estuary Environmental Assessment* (*EEEA) study area Bassendean Dune species list.* January 2006. A report for Swan Bioplan, Department of Environment and Department of Conservation and Land Management, Western Australia.

Keighery BJ, Keighery GJ and Longman VM 2006 *Eastern Estuary Environmental Assessment (EEEA) study area Pinjarra Plain species list.* January 2006. A report for Swan Bioplan, Department of Environment and Department of Conservation and Land Management, Western Australia.

## APPENDIX 3a: EEEA study area Spearwood Dune species list

**KEY**

**Column 1** **Family (Families are grouped into Ferns, Gymnosperms, Monocotyledons and Dicotyledons)**

**Column 2** **Scientific Name**
Genus + Species + Infra Species Rank + Infra Species Name + Informal Name from BJ Keighery *et al*. (2006b) database as of January 2006**.** Therefore, species names may be modified from original sources of information: DEP (1996), Gibson *et al*. (1994) and GJ Keighery (1996). Some taxa yet to be formally described and named may have a reference collection number from the relevant collector. Taxa (species, sub-species and varieties) are listed alphabetically within genera.

| | |
|---|---|
| * | Weed |
| subsp. | Subspecies |
| var. | Variety |
| MS | A manuscript name yet to be published |
| PN | A phrase name for a taxa yet to be described and published. |

**Column 3 →** **Plots included in list**

**KEY TO ROW SHADING**

| | |
|---|---|
| white | within EEEA area |
| pale gray | near/adjacent to EEEA area or included here |

**KEY TO COLUMNS**

**Column 1: Bushland Area Name**
**Column 2: Plot Code**
**Column 3: Floristic Community Type Code**
**Column 4: Threatened Ecological Community (**after English and Blyth 1997, English pers. comm., 2000)

| | |
|---|---|
| CR | Critically Endangered |
| EN | Endangered |
| VU | Vulnerable |
| + | Listed as 'endangered' under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 |

**Column 5: Source Plot Dataset**

| | |
|---|---|
| SCP | Plot from Gibson *et al*. (1994) |
| SYSENV | Plot from System 6 and Part 1 Update in 1994 (DEP 1996) |
| SYSENV2 | Plot from System 6 and Part 1 Update in 1995 (DEP 1996) |

| Bushland Area | Plot Code | FCT | TEC | Source Plot |
|---|---|---|---|---|
| Bush Forever Site 395 | PAGA 02 | 13 | | SCP |
| Lake Clifton Townsite | CLIFT-1 | 21a | | SCP |
| Reserve 13987, Harvey River | DRAIN-1 | 21a | | SCP |
| C56 SF Treasure Fforest Bblock | CORON-2 | 25 | | SCP |
| C56 SF Treasure Fforest Bblock | CORON-1 | 21a | | SCP |
| SF Lyons Forest Block | LYONS-2 | 25 | | SCP |
| Mealup Point Nature Reserve | MEAL-1 | 25 | | SCP |
| Lake Clifton townsite | CLIFT-2, 3 | 26a | EN | SCP |
| Mealup Point Nature Reserve | MEAL-2 | 26b | | SCP |
| C52 McLarty NR | McLART-1 | 13 | | SCP |

| Family | Species Name | CLIFT01 | CLIFT02 | CLIFT03 | CORON-1 | CORON-2 | DRAIN-1 | McLART-1 | MEAL-1 | MEAL-2 | PAGA-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Gymnosperm** | | | | | | | | | | | |
| Zamiaceae | Macrozamia riedlei | X | | | | X | | | X | | |
| | | | | | | | | | | | |
| **Monocot** | | | | | | | | | | | |
| Anthericaceae | Agrostocrinum scabrum | | | | | | X | | | | |
| Anthericaceae | Arthropodium capillipes | | | | | | X | | X | | |
| Anthericaceae | Caesia micrantha | | | | | | | | | X | |
| Anthericaceae | Caesia occidentalis | | | | | | X | | | | |
| Anthericaceae | Chamaescilla corymbosa var. corymbosa | X | | | X | X | X | | | | |
| Anthericaceae | Laxmannia squarrosa | | | | X | | X | | | | |
| Anthericaceae | Sowerbaea laxiflora | X | X | | | X | X | | X | | |
| Anthericaceae | Thysanotus arbuscula | | | | X | | | | | | |
| Anthericaceae | Thysanotus arenarius | | | | | | | | | X | |
| Anthericaceae | Thysanotus manglesianus | | | | | | X | | | | |
| Anthericaceae | Thysanotus manglesianus/patersonii complex | X | X | X | | | | | | | |
| Anthericaceae | Tricoryne elatior | | | | | X | | | | X | |
| Centrolepidaceae | Centrolepis drummondiana | | | X | | X | | | | X | |
| Colchicaceae | Burchardia congesta | | | | X | | X | | | | |
| Colchicaceae | Wurmbea monantha | | X | X | | | | | | | |
| Cyperaceae | Baumea juncea | | | | | | | X | | | X |
| Cyperaceae | * Isolepis marginata | X | X | X | | | | X | X | X | |
| Cyperaceae | Lepidosperma squamatum | | X | | X | X | X | | X | X | |
| Cyperaceae | Tetraria octandra | | | | | X | | | | | |
| Dasypogonaceae | Acanthocarpus preissii | | | | | | | | | X | |
| Dasypogonaceae | Dasypogon bromeliifolius | | | | | | X | | | | |
| Dasypogonaceae | Lomandra caespitosa | X | | | X | X | X | | X | | |
| Dasypogonaceae | Lomandra hermaphrodita | X | | | | | X | | | | |
| Dasypogonaceae | Lomandra maritima | | X | | | | | | | X | |
| Dasypogonaceae | Lomandra micrantha subsp. micrantha | | | | | X | | | | | |
| Dasypogonaceae | Lomandra nigricans | | | | | | X | | | | |
| Dasypogonaceae | Lomandra preissii | | | | | | X | | | | |
| Dasypogonaceae | Lomandra purpurea | | | | | | X | | | | |
| Dasypogonaceae | Lomandra sericea | X | | | | X | X | | | | |
| Haemodoraceae | Conostylis aculeata | X | | | X | X | X | | | | |
| Haemodoraceae | Conostylis juncea | X | | | X | | X | | | | |
| Haemodoraceae | Phlebocarya ciliata | X | | | X | | X | | | | |
| Iridaceae | Patersonia occidentalis | | | | | | | | X | | |
| Juncaceae | Juncus pallidus | | | | | | | X | | | X |
| Juncaceae | Luzula meridionalis | X | | | | X | | | | | |
| Juncaginaceae | Triglochin incurva | | | | | | | | | X | |

**EEEA study area Spearwood Dune species list**
Appendix 3a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | CLIFT01 | CLIFT02 | CLIFT03 | CORON-1 | CORON-2 | DRAIN-1 | McLART-1 | MEAL-1 | MEAL-2 | PAGA-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Juncaginaceae | Triglochin linearis | | | | | | | | | | X |
| Juncaginaceae | Triglochin muelleri subsp. recurvum | | | | | X | | | | | |
| Juncaginaceae | Triglochin trichophora | | X | X | | | | | | | |
| Orchidaceae | Caladenia flava subsp. flava | X | | | X | | X | | | | |
| Orchidaceae | Caladenia latifolia | | X | | | X | | | | X | |
| Orchidaceae | Caladenia vulgata | | | | | | X | | | | |
| Orchidaceae | Cyrtostylis huegelii | | | | | | | | | X | |
| Orchidaceae | Cyrtostylis robusta | | | | | | | | | X | |
| Orchidaceae | * Disa bracteata | | | | | | X | | | | |
| Orchidaceae | Diuris longifolia | | | | X | | X | | | | |
| Orchidaceae | Elythranthera brunonis | X | | | | | | | | | |
| Orchidaceae | Eriochilus dilatatus subsp. dilatatus MS | X | X | | | | | | | | |
| Orchidaceae | Microtis media | | | | | | | | | | X |
| Orchidaceae | Pterostylis recurva | X | | | X | | | | | | |
| Orchidaceae | Pterostylis sp. cauline leaves (N. Gibson & M.N. Lyons 1490) PN | | | | | | | | | | X |
| Orchidaceae | Pterostylis sp. Slender Snail Orchid (G.J. Keighery 14516) PN | X | X | | | | | | | X | |
| Orchidaceae | Pterostylis vittata | X | | | | | | | | | |
| Phormiaceae | Dianella brevicaulis | | | | | | | | | X | |
| Phormiaceae | Dianella revoluta var. divaricata | | | | X | X | | | | | |
| Poaceae | * Aira caryophyllea | X | X | X | | X | | | X | X | |
| Poaceae | * Anthoxanthum odoratum | | | | | X | | | | | |
| Poaceae | Austrodanthonia occidentalis | | | | X | | X | | | | |
| Poaceae | Austrostipa compressa | | X | | | | | | | | |
| Poaceae | Austrostipa flavescens | | X | X | X | | | | | X | |
| Poaceae | * Briza maxima | X | | | X | X | X | | X | | |
| Poaceae | * Briza minor | | | | | X | | | X | | |
| Poaceae | * Bromus catharticus | | | | | | | | | | |
| Poaceae | * Bromus diandrus | | | | | X | | | X | | |
| Poaceae | Dichelachne crinita | | | | | | | | X | | |
| Poaceae | * Holcus setiger | | X | | | | | | | | |
| Poaceae | Microlaena stipoides | X | | X | | X | X | | X | X | |
| Poaceae | * Poa annua | | | | | | | | | | X |
| Poaceae | Poa drummondiana | | | | | | | | X | X | |
| Poaceae | Poa porphyroclados | | X | | | | | | | | |
| Poaceae | * Vulpia myuros | | X | X | | X | | | | | |
| Restionaceae | Desmocladus flexuosus | X | X | X | | X | X | | | | |
| Restionaceae | Hypolaena exsulca | | | | X | | X | | | | |
| Restionaceae | Lepyrodia glauca | | | | | | | | | | X |
| Restionaceae | Lepyrodia muirii | | | | | | | | | | X |
| Restionaceae | Lyginia barbata | X | | | X | | X | | | | |
| Restionaceae | Meeboldina coangustata | | | | | | | X | | | |

**EEEA study area Spearwood Dune species list**
Appendix 3a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | CLIF01 | CLIF02 | CLIF03 | CORON-1 | CORON-2 | DRAIN-1 | McLART-1 | MEAL-1 | MEAL-2 | PAGA-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Restionaceae | | Meeboldina roycei MS | | | | | | | | | | X |
| Xanthorrhoeaceae | | Xanthorrhoea preissii | | | | | X | | | | X | |
| | | | | | | | | | | | | |
| **Dicot** | | | | | | | | | | | | |
| Apiaceae | | Daucus glochidiatus | X | X | | | X | X | | | X | |
| Apiaceae | | Eryngium pinnatifidum subsp. pinnatifidum MS | | | | | X | | | | | |
| Apiaceae | | Homalosciadium homalocarpum | X | X | | X | X | X | | X | | |
| Apiaceae | | Hydrocotyle blepharocarpa | | | | | | | | | X | |
| Apiaceae | | Hydrocotyle tetragonocarpa | | X | X | | | | | | | |
| Apiaceae | | Trachymene coerulea subsp. coerulea | | | | | X | | | | | |
| Apiaceae | | Trachymene pilosa | X | X | X | X | X | X | | X | X | |
| Apiaceae | | Xanthosia huegelii subsp. huegelii MS | X | | | X | | X | | | | |
| Asteraceae | * | Arctotheca calendula | | | | | | | X | | | |
| Asteraceae | | Asteridea pulverulenta | | | | | X | X | | | | |
| Asteraceae | | Brachyscome iberidifolia | | X | | | | | | | | |
| Asteraceae | | Craspedia arenicola MS | | | | | | X | | | | |
| Asteraceae | | Euchiton sphaericus | | X | | | | | | | | |
| Asteraceae | * | Hypochaeris glabra | X | X | X | X | | X | X | X | X | |
| Asteraceae | | Ixiolaena viscosa | | | | | | | | | X | |
| Asteraceae | | Lagenophora huegelii | X | | | X | X | X | | | | |
| Asteraceae | | Millotia tenuifolia var. tenuifolia | X | X | X | | X | X | | | | |
| Asteraceae | | Podolepis gracilis | | | | | | | | X | | |
| Asteraceae | | Podolepis lessonii | | X | X | | | | | X | | |
| Asteraceae | | Quinetia urvillei | X | X | X | X | X | | | | | |
| Asteraceae | | Rhodanthe citrina | | X | X | | | | | | X | |
| Asteraceae | | Rhodanthe corymbosa | | | | | | X | | | | |
| Asteraceae | * | Sonchus oleraceus | | X | X | | X | X | | X | X | |
| Asteraceae | * | Symphyotrichum subulatum | | | | | | | | | | X |
| Asteraceae | * | Ursinia anthemoides | X | | | | X | X | | | | |
| Brassicaceae | | Cardamine paucijuga | | | | | | | | | X | |
| Brassicaceae | * | Heliophila pusilla | | | | | | | | X | | |
| Campanulaceae | | Wahlenbergia preissii | X | | | | | | | | | |
| Caryophyllaceae | * | Cerastium glomeratum | | X | X | | | | | | X | |
| Caryophyllaceae | * | Petrorhagia dubia | | | | | X | | | X | | |
| Caryophyllaceae | * | Sagina apetala | | X | | | | | | | | |
| Caryophyllaceae | * | Silene gallica | | | X | | | | | | | |
| Caryophyllaceae | * | Stellaria media | | | | | X | | | | | |
| Casuarinaceae | | Allocasuarina fraseriana | X | | | X | | | | | | |
| Casuarinaceae | | Allocasuarina humilis | | | | | | X | | | | |
| Crassulaceae | | Crassula colorata var. colorata | | X | X | | | | | | X | |
| Dilleniaceae | | Hibbertia hypericoides | X | X | | X | X | X | | X | X | |

**EEEA study area Spearwood Dune species list**
Appendix 3a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | CLIFT01 | CLIFT02 | CLIFT03 | CORON-1 | CORON-2 | DRAIN-1 | McLART-1 | MEAL-1 | MEAL-2 | PAGA-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dilleniaceae | Hibbertia racemosa | X | X | | | | | | | | |
| Dilleniaceae | Hibbertia spicata subsp. leptotheca | | X | | | | | | | | |
| Dilleniaceae | Hibbertia subvaginata | | | | X | | | | | | |
| Dilleniaceae | Hibbertia vaginata | X | | | | | | | | | |
| Droseraceae | Drosera erythrorhiza subsp. erythrorhiza | | X | | X | X | | | | | |
| Droseraceae | Drosera macrantha subsp. macrantha | | | | X | | | | X | | |
| Droseraceae | Drosera menziesii subsp. penicillaris | | | | | | X | | | | |
| Droseraceae | Drosera pallida | | X | | X | | X | | | | |
| Droseraceae | Drosera stolonifera subsp. porrecta | | X | X | X | X | X | | X | X | |
| Droseraceae | Drosera stolonifera subsp. stolonifera | X | | | | | | | | | |
| Epacridaceae | Andersonia lehmanniana subsp. lehmanniana | | | | X | | | | | | |
| Epacridaceae | Astroloma ciliatum | X | | | | | | | | | |
| Epacridaceae | Conostephium pendulum | X | | | X | | | | | | |
| Epacridaceae | Conostephium preissii | X | | | | | | | X | | |
| Epacridaceae | Leucopogon parviflorus | | X | | | | | | | X | |
| Epacridaceae | Leucopogon polymorphus | | | | X | | | | | | |
| Epacridaceae | Leucopogon propinquus | X | | | | X | | | X | | |
| Epacridaceae | Leucopogon racemulosus | | | | | | | | X | X | |
| Euphorbiaceae | Phyllanthus calycinus | | X | X | | X | | | X | | |
| Euphorbiaceae | Poranthera microphylla | | X | | | | | | X | X | |
| Geraniaceae | * Erodium botrys | | | X | | | | | | | |
| Geraniaceae | Geranium retrorsum | | | | | X | | | X | | |
| Geraniaceae | Pelargonium littorale subsp. littorale | | | X | | | | | | | |
| Goodeniaceae | Dampiera linearis | X | | | X | | | | | | |
| Goodeniaceae | Goodenia pulchella | | | | | | | X | | | |
| Lauraceae | Cassytha flava | | | | X | | | | | | |
| Lauraceae | Cassytha racemosa | | | | | | | X | | | X |
| Lobeliaceae | Lobelia alata | | | | | | | X | | | |
| Lobeliaceae | Lobelia tenuior | X | X | | | | X | | | X | |
| Loganiaceae | Phyllangium paradoxum | | X | X | | | | | | | |
| Mimosaceae | Acacia cochlearis | | | | | | | | | X | |
| Mimosaceae | Acacia huegelii | X | | | | | | | | | |
| Mimosaceae | Acacia pulchella | | | X | X | | X | | | | |
| Mimosaceae | Acacia rostellifera | | | | | | | | | X | |
| Mimosaceae | Acacia saligna | | | | | | | | | | X |
| Mimosaceae | Acacia truncata | | X | | | | | | | | |
| Mimosaceae | Acacia willdenowiana | X | | | | | | | | | |
| Myrtaceae | Agonis flexuosa | X | | | | X | | | | | |
| Myrtaceae | Calothamnus lateralis | | | | | | | X | | | |
| Myrtaceae | Calytrix flavescens | X | | | X | | | | | | |
| Myrtaceae | Eucalyptus calophylla | | | | X | | | | | | |

**EEEA study area Spearwood Dune species list**
Appendix 3a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | CLIF01 | CLIF02 | CLIF03 | CORON-1 | CORON-2 | DRAIN-1 | McLART-1 | MEAL-1 | MEAL-2 | PAGA-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Myrtaceae | | Eucalyptus gomphocephala var. gomphocephala | | | | X | X | X | | X | | |
| Myrtaceae | | Eucalyptus marginata subsp. marginata | X | | | X | | | | | | |
| Myrtaceae | | Eucalyptus rudis subsp. rudis | | | | | | | | | | X |
| Myrtaceae | | Hypocalymma robustum | X | | | X | | X | | | | |
| Myrtaceae | | Kunzea glabrescens | | | | X | | X | | | | |
| Myrtaceae | | Melaleuca huegelii subsp. huegelii | | X | X | | | | | | | |
| Myrtaceae | | Melaleuca pauciflora | | | | | | | X | | | |
| Myrtaceae | | Melaleuca rhaphiophylla | | | | | | | X | | | X |
| Myrtaceae | | Melaleuca scabra | | | | X | | | | | | |
| Myrtaceae | | Melaleuca systena | | X | | X | | | | | | |
| Myrtaceae | | Melaleuca thymoides | X | | | X | | X | | | | |
| Orobanchaceae | * | Orobanche minor | | | | | X | | | X | | |
| Oxalidaceae | | Oxalis perennans | | | | | X | | | X | X | |
| Papilionaceae | | Bossiaea eriocarpa | X | | | X | | X | | | | |
| Papilionaceae | | Gompholobium polymorphum | | | | | X | | | | | |
| Papilionaceae | | Gompholobium tomentosum | | X | | X | | X | | | | |
| Papilionaceae | | Hardenbergia comptoniana | X | | | | X | X | | | X | |
| Papilionaceae | | Hovea trisperma var. trisperma | X | | | X | X | | | X | | |
| Papilionaceae | | Isotropis cuneifolia subsp. cuneifolia | X | | | | | X | | | | |
| Papilionaceae | | Jacksonia furcellata | | | | | X | X | | | | |
| Papilionaceae | | Jacksonia sternbergiana | X | | | | | | | | | |
| Papilionaceae | | Kennedia prostrata | | | | | X | | | | | |
| Papilionaceae | | Nemcia reticulata | | | | X | | | | | | |
| Papilionaceae | | Templetonia retusa | | | X | | | | | | X | |
| Papilionaceae | * | Trifolium arvense var. arvense | | | | | | X | | | | |
| Papilionaceae | * | Trifolium campestre var. campestre | X | X | | | X | | | X | | |
| Pittosporaceae | | Billardiera variifolia | X | | | | | | | | | |
| Pittosporaceae | | Sollya heterophylla | | | | | | | | | X | |
| Polygalaceae | | Comesperma integerrimum | | | | | | | | | X | |
| Portulacaceae | | Calandrinia brevipedata | | X | X | | | | | | | |
| Portulacaceae | | Calandrinia granulifera | | | X | | | | | | | |
| Primulaceae | * | Anagallis arvensis | | X | X | | X | X | | X | X | |
| Proteaceae | | Banksia attenuata | X | | | X | | X | | X | | |
| Proteaceae | | Banksia grandis | | | | | X | | | | | |
| Proteaceae | | Banksia ilicifolia | X | | | X | | | | | | |
| Proteaceae | | Conospermum capitatum subsp. glabratum | | | | | | X | | | | |
| Proteaceae | | Dryandra lindleyana | | X | X | | X | | | | | |
| Proteaceae | | Dryandra sessilis var. sessilis | | X | X | | | | | | | |
| Proteaceae | | Grevillea crithmifolia | | | | | | | | | X | |
| Proteaceae | | Grevillea preissii subsp. preissii | | X | X | | | | | | | |
| Proteaceae | | Hakea trifurcata | | X | | | | | | | | |

**EEEA study area Spearwood Dune species list**
Appendix 3a in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | CLIFT01 | CLIFT02 | CLIFT03 | CORON-1 | CORON-2 | DRAIN-1 | McLART-1 | MEAL-1 | MEAL-2 | PAGA-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Proteaceae | | Hakea varia | | | | | | | X | | | X |
| Proteaceae | | Persoonia saccata | X | | | X | | | | | | |
| Proteaceae | | Petrophile linearis | X | | | X | | | | | | |
| Ranunculaceae | | Clematis pubescens | | | | | X | | | | | |
| Ranunculaceae | | Ranunculus colonorum | | | | | | | | X | | |
| Ranunculaceae | | Ranunculus pumilio | | X | X | | | | | | | |
| Rhamnaceae | | Trymalium ledifolium var. ledifolium | | X | | | | | | | | |
| Rubiaceae | * | Galium murale | | X | X | | | | | | | |
| Rubiaceae | | Opercularia hispidula | X | | | | | | | | | |
| Rubiaceae | | Opercularia vaginata | | X | | | | | | | | |
| Rutaceae | | Philotheca spicata | X | | | X | | | | | | |
| Sapindaceae | | Dodonaea aptera | | X | | | | | | | | |
| Scrophulariaceae | * | Bartsia trixago | | X | | | X | | | | | |
| Scrophulariaceae | * | Dischisma arenarium | | X | X | | | | | | | |
| Scrophulariaceae | * | Parentucellia viscosa | | | X | | | | | | X | |
| Stylidiaceae | | Stylidium brunonianum subsp. brunonianum | | | | X | | | | | | |
| Stylidiaceae | | Stylidium calcaratum | X | | | | | | | | X | |
| Stylidiaceae | | Stylidium carnosum | X | | | | | | | | | |
| Stylidiaceae | | Stylidium junceum subsp. junceum | | X | | | | | | | | |
| Stylidiaceae | | Stylidium piliferum subsp. piliferum | X | | | X | | | | | | |
| Stylidiaceae | | Stylidium schoenoides | X | | | | | | | | | |
| Thymelaeaceae | | Pimelea rosea subsp. rosea | | | | | | | | X | | |
| Urticaceae | | Parietaria debilis | | X | X | | X | | | | | |
| Violaceae | | Hybanthus calycinus | | X | | | | | | | | |

## APPENDIX 3b: EEEA study area Bassendean Dune species list

**KEY**

**Column 1** **Family (Families are grouped into Ferns, Gymnosperms, Monocotyledons and Dicotyledons)**

**Column 2** **Scientific Name**
Genus + Species + Infra Species Rank + Infra Species Name + Informal Name from BJ Keighery *et al*. (2006b) database as of January 2006**.** Therefore, species names may be modified from original sources of information: DEP (1996), Gibson *et al*. (1994) and GJ Keighery (1996). Some taxa yet to be formally described and named may have a reference collection number from the relevant collector. Taxa (species, sub-species and varieties) are listed alphabetically within genera.

| | |
|---|---|
| * | Weed |
| subsp. | Subspecies |
| var. | Variety |
| MS | A manuscript name yet to be published |
| PN | A phrase name for a taxa yet to be described and published. |

**Column 3 →** **Species list and plots included in list**

**Species list:** Nine Mile Lake Nature Reserve Vegetation Units from *Native and Weed Flora of Nine Mile Lake Nature Reserve* (GJ Keighery 2005a)

| Vegetation unit code | Vegetation unit |
|---|---|
| NineMileLake B.ilic | *Banksia ilicifolia* woodland |
| NineMileLake D | Disturbed |
| NineMileLake J/B | Jarrah/*Banksia* woodland |
| NineMileLake Mp | *Melaleuca preissiana* woodland |

## Plots:

**KEY TO COLUMNS**

**Column 1: Bushland Area Name**

**Column 2: Plot Code**

**Column 3: Floristic Community Type Code**

**Column 4: Threatened Ecological Community (**after English and Blyth 1997, English pers. comm., 2000)

- CR Critically Endangered
- EN Endangered
- VU Vulnerable
- \+ Listed as 'endangered' under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999

**Column 5: Source Plot Dataset**

- SCP Plot from Gibson *et al*. (1994)
- SYSENV Plot from System 6 and Part 1 Update in 1994 (DEP 1996)
- SYSENV2 Plot from System 6 and Part 1 Update in 1995 (DEP 1996)

| Bushland Area | Plot Code | FCT | TEC | Source Plot |
|---|---|---|---|---|
| Subm 98 Hampton Road bushland | hamp01 | 04 | | SYS6ENV2 |
| Subm 280 Ravenswood | ravs01 | 04 | | SYS6ENV2 |
| Subm 98 Hampton Road bushland | hamp02 | 05 | | SYS6ENV2 |
| Reserve 34033 | pind02 | 09 | VU | SYS6ENV2 |
| Subm 98 Hampton Road bushland | hamp04 | 12 | | SYS6ENV2 |
| Subm 280 Ravenswood | raven04 | s01 | not determined | SYS6ENV2 |
| Subm 280 Ravenswood | raven02 | s17 | not determined | SYS6ENV2 |
| C59 Buller Road Nature Reserve | BULLER-1, 2 | 21a | | SCP |
| Subm 98 Hampton Road | hamp03 | 21a | | SYS6ENV2 |
| Nine Mile Lake Nature Reserve | NINE-1, 2 | 21a | | SCP |
| C59 Buller Road Nature Reserve | BULLER-3 | 21c | | SCP |
| Subm 280 Ravenswood | raven03 | 21c | | SYS6ENV2 |
| Subm 280 Ravenswood | raven05 | 22 | | SYS6ENV2 |
| Reserve 13987, Harvey River | DRAIN-1 | 21a | | SCP |

**EEEA study area Bassendean Dune species list**
Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fern** | | | | | | | | | | | | | | | | | | | | | |
| Dennstaedtiaceae | | Pteridium esculentum | | | | | | | | | | | | | | | X | X | | | |
| Lycopodiaceae | | Phylloglossum drummondii | | | | | | X | | | | | | | | | | | | | |
| Selaginellaceae | | Selaginella gracillima | | | | | X | X | | | | | | | | X | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| **Gymnosperm** | | | | | | | | | | | | | | | | | | | | | |
| Zamiaceae | | Macrozamia riedlei | | X | | | | | | | X | | X | | X | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| **Monocot** | | | | | | | | | | | | | | | | | | | | | |
| Alliaceae | * | Allium triquetrum | | | | | | | | | | | | X | | | | | | | |
| Anthericaceae | | Agrostocrinum scabrum | X | | | X | | | | | X | | | | X | | | | | | |
| Anthericaceae | | Arnocrinum preissii | | | | | | | | | | | | | | | | X | | | |
| Anthericaceae | | Arthropodium capillipes | | | | X | | | | | | | | | X | | | | | | |
| Anthericaceae | | Caesia micrantha | X | | | | | | | | | | | | | | | | | | |
| Anthericaceae | | Caesia occidentalis | | | | X | | | | | | | | | X | | | | | | |
| Anthericaceae | | Chamaescilla corymbosa var. corymbosa | X | X | X | X | X | X | X | | X | X | | | X | | | | | | |
| Anthericaceae | | Laxmannia ?sessiliflora | | | | | | | | | | | | | | X | | | | | |
| Anthericaceae | | Laxmannia squarrosa | | X | | X | | | | | | X | | | X | X | | | | | |
| Anthericaceae | | Sowerbaea laxiflora | | | | X | | | | | | | | | | | | X | | | |
| Anthericaceae | | Thysanotus arbuscula | | | X | | | | X | | | | | | | | | | | | |
| Anthericaceae | | Thysanotus arenarius | | | | | | | | | | | | | | | | X | | | |
| Anthericaceae | | Thysanotus asper | | | | | | | | | | | | | X | | | | | | |
| Anthericaceae | | Thysanotus manglesianus | X | | | X | | | | | | X | | | | | | | | | |
| Anthericaceae | | Thysanotus multiflorus | | | | | | | X | | | X | | | X | | | X | | | |

**EEEA study area Bassendean Dune species list**

Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anthericaceae | | Thysanotus patersonii | | | X | | | | | | | | | | | | | | | | |
| Anthericaceae | | Thysanotus sparteus | X | | | | | | | | X | | | | X | | | | | | |
| Anthericaceae | | Thysanotus thyrsoideus | | X | | | | | | | | | | | X | | | | | | |
| Anthericaceae | | Tricoryne tenella | X | | | | | | | | | | | | X | | | X | | | |
| Aponogetonaceae | | Aponogeton hexatepalus | | | | | | | | X | | | | | | | | | | | |
| Araceae | * | Zantedeschia aethiopica | | | | | | | | | | | | X | | | | | | | |
| Asphodelaceae | * | Trachyandra divaricata | | | | | | | | | | | | X | | | | | | | |
| Centrolepidaceae | | Aphelia cyperoides | | | | | | X | | | | | | | | X | | | X | | |
| Centrolepidaceae | | Centrolepis aristata | | | | | X | X | | X | | | | | | | | | | | |
| Centrolepidaceae | | Centrolepis drummondiana | | X | X | | | | | | | | | | X | X | | | | | |
| Centrolepidaceae | | Centrolepis inconspicua | | | | | X | X | | | | | | | | | | | | | |
| Centrolepidaceae | | Centrolepis mutica | | | | | | X | | X | | | | | | | | | X | | |
| Colchicaceae | | Burchardia congesta | X | X | X | X | X | | X | | X | X | | | X | X | | X | | | |
| Cyperaceae | | Baumea articulata | | | | | | | | | | | | | | X | X | | | | |
| Cyperaceae | | Baumea juncea | | | | | | | | | | | | | | X | | | | | |
| Cyperaceae | | Baumea vaginalis | | | | | | | | | | | | | | | X | | | | |
| Cyperaceae | | Cyathochaeta avenacea | | | | | | | | X | | | | | | | | | | | |
| Cyperaceae | | Cyathochaeta teretifolia | | | | | | | | | | | | | | | X | | | | |
| Cyperaceae | | Evandra pauciflora | | | | | | | | | | | | | | X | | | | | |
| Cyperaceae | | Isolepis cernua | | | | | | | | X | | | | | | | | | | | |
| Cyperaceae | * | Isolepis marginata | | | | | | | | | | | | | X | | | | | | X |
| Cyperaceae | | Isolepis oldfieldiana | | | | | | | | X | | | | | | | | | | | |
| Cyperaceae | | Lepidosperma longitudinale | | | | | | X | | X | | | | | | X | X | | X | | |
| Cyperaceae | | Lepidosperma squamatum | X | | | X | X | | X | | X | X | | | X | | | X | | | |

**EEEA study area Bassendean Dune species list**
Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cyperaceae | | Lepidosperma tenue | | | | | | | | | | | | | | | | | | | |
| Cyperaceae | | Mesomelaena graciliceps | | X | | | X | | | | | | | | | | | | | | |
| Cyperaceae | | Schoenus breviculmis | | X | X | | | | | | | | | | | | | | | | |
| Cyperaceae | | Schoenus brevisetis | | | X | | | | | | | | | | | | | | | | |
| Cyperaceae | | Schoenus cruentus | | | | | | | | | | | | | | X | | | | | |
| Cyperaceae | | Schoenus curvifolius | | | X | | X | | | | | | | | X | | | | | | |
| Cyperaceae | | Schoenus efoliatus | | | | | X | X | | | | | | | | X | | | | | X |
| Cyperaceae | | Schoenus odontocarpus | | | | | | X | | X | | | | | | | | | X | | |
| Cyperaceae | | Schoenus variicellae | | | | | | | | X | | | | | | | | | | | |
| Dasypogonaceae | | Dasypogon bromeliifolius | X | X | X | X | X | X | X | | | X | | | X | | | | | X | X |
| Dasypogonaceae | | Lomandra caespitosa | | | X | X | | | | | | X | | | X | | | | | | |
| Dasypogonaceae | | Lomandra hermaphrodita | X | X | X | X | X | | X | | | X | | | X | | | X | | | X |
| Dasypogonaceae | | Lomandra nigricans | X | X | | X | | | | | | | | | | | | | | | |
| Dasypogonaceae | | Lomandra preissii | | | | X | X | | | | | | | | | | | X | | | |
| Dasypogonaceae | | Lomandra purpurea | X | | | X | | | | | | | | | X | | | | | | |
| Dasypogonaceae | | Lomandra sericea | X | X | | X | X | | | | X | X | | | X | | | | | | |
| Dasypogonaceae | | Lomandra suaveolens | | | X | | | X | | | | | X | | X | | | | | | |
| Haemodoraceae | | Anigozanthos viridis subsp. viridis | | | | | | X | | | | | | | | | | | | | |
| Haemodoraceae | | Conostylis aculeata | | | | X | | X | X | X | X | | | | X | | | | | X | |
| Haemodoraceae | | Conostylis juncea | X | X | | X | | | X | | X | X | | | | | | X | | X | |
| Haemodoraceae | | Conostylis vaginata | | | | | | | | | | | X | | X | | | | | | |
| Haemodoraceae | | Phlebocarya ciliata | X | X | X | X | X | | X | | X | X | | | X | | | X | | | X |
| Haemodoraceae | | Tribonanthes violacea | | | | | | X | | X | | | | | | | | | | | |
| Iridaceae | * | Freesia alba x leichtlinii | | | | | | | | | | | | X | | | | | | | |

**EEEA study area Bassendean Dune species list**

Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Iridaceae | | Patersonia juncea | | | | | | | | | | | | | X | | | | | | |
| Iridaceae | | Patersonia occidentalis | X | X | X | | X | | | | | X | | | X | | | X | | X | |
| Iridaceae | | Patersonia occidentalis (Swamp form) (N Gibson and MN Lyons 554) | | | | | | | | | | | | | | | X | | | | |
| Iridaceae | * | Watsonia bulbillifera | | | | | | | | | | | | X | | | | | | | |
| Juncaceae | * | Juncus bufonius | | | | | | | | | | | | X | | X | | | X | | |
| Juncaceae | * | Juncus capitatus | | | | | | X | | | | | | | | | | | | | |
| Juncaceae | | Juncus pallidus | | | | | | | | | | | | | | | X | X | | | |
| Orchidaceae | | Caladenia discoidea | | | | | | | | | | | | | X | | | | | | |
| Orchidaceae | | Caladenia flava subsp. flava | X | | X | X | | | | | | X | | | X | | | | | | X |
| Orchidaceae | | Caladenia vulgata | | | | X | | | | | | | | | | | | | | | |
| Orchidaceae | * | Disa bracteata | | | | X | X | X | | | | | | | X | | | X | | | |
| Orchidaceae | | Diuris longifolia | | | | X | | | | | X | | | | | | | | | | |
| Orchidaceae | | Drakaea glyptodon | | | | | | | | | | | | | X | | | | | | |
| Orchidaceae | | Elythranthera brunonis | | | | | | | | | | | | | X | X | | | | | |
| Orchidaceae | | Eriochilus dilatatus | | | | | | | | | | | | | X | | | | | | |
| Orchidaceae | | Eriochilus dilatatus subsp. dilatatus MS | | | | | | | | | X | | | | | | | | | | |
| Orchidaceae | | Leporella fimbriata | | | | | X | | | | | | | | X | | | | | | |
| Orchidaceae | | Microtis media | | | | | | | | X | | | | | X | X | | | | | |
| Orchidaceae | | Microtis orbicularis | | | | | | | | X | | | | | | | | | | | |
| Orchidaceae | | Paracaleana nigrita | | | | | | | | | | | | | X | | | | | | |
| Orchidaceae | | Prasophyllum drummondii | | | | | | | | X | | | | | | | | | | | |
| Orchidaceae | | Prasophyllum parvifolium | | | | | | | | | | | | | X | | | | | | |
| Orchidaceae | | Pterostylis recurva | | | | | | | | | | | | | X | | | | | | |
| Orchidaceae | | Pterostylis sanguinea | | | | | | | | | X | | | | X | | | | | | |

**EEEA study area Bassendean Dune species list**
Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orchidaceae | | Pterostylis sp. Slender Snail Orchid (G.J. Keighery 14516) PN | X | | | | | | | X | | X | | | | | | | | | X |
| Orchidaceae | | Pyrorchis nigricans | | X | X | | X | | | | X | | | | | | | | | | |
| Orchidaceae | | Thelymitra antennifera | | | | | | X | | | | | | | | | | | | | |
| Orchidaceae | | Thelymitra benthamiana | | | | | | | | | | | X | | X | | | | | | |
| Orchidaceae | | Thelymitra crinita | | | | | | | | | | | | | X | | | | | | |
| Orchidaceae | | Thelymitra flexuosa | | | | | | X | | | | | | | | X | | | | | |
| Philydraceae | | Philydrella drummondii | | | | | | X | | | | | | | | | | | | | |
| Phormiaceae | | Dianella revoluta var. divaricata | | | | | | | | | | | | | X | | | | | | |
| Phormiaceae | | Stypandra glauca | | | | | X | | | | | | | | | | | | | | |
| Poaceae | * | Aira caryophyllea | | | X | | X | | X | | | X | | | | | | X | | | |
| Poaceae | | Amphibromus nervosus | | | | | | | | X | | | | | | | | | | | |
| Poaceae | | Amphipogon laguroides | | | | | X | | | | | | | | | | | | | | |
| Poaceae | | Amphipogon turbinatus | | | | | | | | | | X | | | X | | | | | | |
| Poaceae | | Austrodanthonia occidentalis | | | | X | X | | X | | X | X | | | X | | | | | | |
| Poaceae | | Austrostipa compressa | | | | | X | | | | | X | | | X | | | | | | |
| Poaceae | | Austrostipa pycnostachya | | | | | | | | | | | | | X | | | | | | |
| Poaceae | * | Briza maxima | | X | X | X | X | X | X | X | X | X | | | X | | | X | | | |
| Poaceae | * | Briza minor | X | | X | | X | X | | X | | | | | | | | | | | X |
| Poaceae | * | Ehrharta calycina | | | | | | | | | | | | | | X | | X | | | |
| Poaceae | * | Ehrharta longiflora | | | | | | | | | | | | X | X | | | | | | |
| Poaceae | | Lachnagrostis filiformis | | | | | | | | X | | | | | | | | | X | | |
| Poaceae | * | Lolium perenne | X | | | | | | | | | | | | | | | | | | |
| Poaceae | | Microlaena stipoides | | | | X | | | | | | | | | | | | | | | |
| Poaceae | | Microlaena stipoides var. stipoides | | | | | | | | | | | | | X | | | | | | |

**EEEA study area Bassendean Dune species list**

Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Poaceae | * | Vulpia myuros | | | | | | | | | | | | | | | | X | | | |
| Restionaceae | | Chaetanthus aristatus | | | | | | X | | | | | | | | | | | | | |
| Restionaceae | | Desmocladus fasciculatus | X | X | | | | | | | | | | | | | | | | | |
| Restionaceae | | Desmocladus flexuosus | X | X | | X | | | X | | X | X | | | X | | | X | | | |
| Restionaceae | | Hypolaena exsulca | | X | X | X | X | X | | | | X | | | X | | | | | X | X |
| Restionaceae | | Lepyrodia glauca | | | | | | | | | | | | | | | | | X | | |
| Restionaceae | | Lepyrodia muirii | | | | | | | | | | | | | | X | | | | | |
| Restionaceae | | Lyginia barbata | | X | | X | | X | X | | | X | | | X | X | | X | | X | |
| Restionaceae | | Meeboldina cana | | | | | | | | | | | | | | X | | | X | | |
| Restionaceae | | Meeboldina roycei MS | | | | | | X | | X | | | | | | | | | | | |
| Typhaceae | * | Typha orientalis | | | | | | | | | | | | | | X | X | | | | |
| Xanthorrhoeaceae | | Xanthorrhoea preissii | | | X | | X | | X | | | X | X | | X | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| **Dicot** | | | | | | | | | | | | | | | | | | | | | |
| Apiaceae | | Actinotus glomeratus | | | | | X | | | | | | | | | | | | | | |
| Apiaceae | | Daucus glochidiatus | | | | X | | | | | | | | | | | | | | | |
| Apiaceae | | Homalosciadium homalocarpum | | | X | X | X | | X | | | X | | | X | | | | | | X |
| Apiaceae | | Hydrocotyle callicarpa | | | X | | X | X | | | | | | | | | | | | | |
| Apiaceae | | Platysace compressa | | | X | | | | | | | X | | | X | | | | | | |
| Apiaceae | | Trachymene pilosa | X | X | X | X | X | | X | | X | X | | | X | | | X | | | |
| Apiaceae | | Xanthosia ciliata | | X | | | | | | | | | | | | | | | | | |
| Apiaceae | | Xanthosia huegelii subsp. huegelii MS | | | X | X | X | | | | | X | | | X | | | | | | |
| Asteraceae | * | Arctotheca calendula | X | | | | | | | | | | | X | X | | | | | | |
| Asteraceae | | Asteridea nivea | | | | | | | | | | | | | X | | | | | | |

**EEEA study area Bassendean Dune species list**
Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Asteraceae | | Asteridea pulverulenta | | | | X | | | | | | | | | | | | | | | |
| Asteraceae | | Brachyscome bellidioides | | | | | | X | | | | | | | | | | | | | |
| Asteraceae | | Craspedia arenicola MS | | | | X | | | | | | | | | | | | | | | |
| Asteraceae | | Hyalosperma cotula | | X | X | | | X | | | | | | | | | | | | | |
| Asteraceae | * | Hypochaeris glabra | X | X | X | X | X | X | X | X | X | X | | | X | | | | | | X |
| Asteraceae | | Ixiolaena viscosa | | | | | | | | | | | X | | X | | | | | | |
| Asteraceae | | Lagenophora huegelii | X | | | X | | | X | | | | | | X | | | | | | |
| Asteraceae | | Millotia tenuifolia var. tenuifolia | | X | X | X | | | | | | | | | | | | | | | |
| Asteraceae | | Podolepis gracilis (Swamp form) (GJ Keighery 13126) | | | | | | | | X | | | | | | | | | | | |
| Asteraceae | | Podotheca chrysantha | | | | | | | | | | | | | | X | | | | | |
| Asteraceae | | Pterochaeta paniculata | | | | | | | | | | | | | X | | | | | | |
| Asteraceae | | Quinetia urvillei | | X | | | | | | | | | | | X | | | | | | X |
| Asteraceae | | Rhodanthe citrina | | | | | | | | | | | | | X | | | | | | |
| Asteraceae | | Rhodanthe corymbosa | | | | X | | | | | | | | | | | | | | | |
| Asteraceae | | Rhodanthe pyrethrum | | | | | | | | X | | | | | | | | | | | |
| Asteraceae | | Senecio minimus | | | | | | | | | | | | | X | | | | | | |
| Asteraceae | | Siloxerus humifusus | | | | | X | X | | | | | | | | | | | X | | |
| Asteraceae | * | Sonchus oleraceus | | | | X | | | X | | | | | | | | | | | | |
| Asteraceae | * | Ursinia anthemoides | | X | | X | X | | X | | | | | | X | | | X | | | X |
| Asteraceae | | Waitzia suaveolens var. suaveolens | | | X | | | | | | | | | | | | | | | | |
| Brassicaceae | * | Raphanus raphanistrum | | | | | | | | | | | | X | | | | | | | |
| Campanulaceae | | Wahlenbergia preissii | | | | | | | | | | | | | X | | | X | | | X |
| Casuarinaceae | | Allocasuarina fraseriana | X | | | | | | X | | X | | | | X | | | X | | | |
| Casuarinaceae | | Allocasuarina humilis | | | | X | | | | | | | | | X | | | | | | |

**EEEA study area Bassendean Dune species list**

Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chenopodiaceae | Dysphania glomulifera subsp. glomulifera | | | | | | | | | | | | | | | | | X | | |
| Crassulaceae | Crassula closiana | | | X | | | | | | | | | | | | | | | | |
| Crassulaceae | Crassula colorata var. colorata | | | X | | | | | | | | | | X | | | | | | X |
| Dilleniaceae | Hibbertia acerosa | X | X | | | | | X | | | | | | | | | | | | |
| Dilleniaceae | Hibbertia hypericoides | X | X | | X | | | | | X | X | | | X | | | | | | |
| Dilleniaceae | Hibbertia racemosa | | | | | | | X | | | | | | | | | | | | |
| Dilleniaceae | Hibbertia stellaris | | | | | | | X | | | | | | | X | | | X | | |
| Dilleniaceae | Hibbertia subvaginata | X | | | | | | | | X | | | | X | | | | | | |
| Dilleniaceae | Hibbertia vaginata | | X | X | | | | X | | | | | | X | | | | | | |
| Droseraceae | Drosera erythrorhiza subsp. erythrorhiza | X | X | | | | | | | | X | | | X | | | | | | |
| Droseraceae | Drosera erythrorhiza subsp. squamosa | | | X | | | | | | | | | | | | | | | | |
| Droseraceae | Drosera gigantea subsp. geniculata | | | | | X | X | | | | | | | | | | | | | |
| Droseraceae | Drosera gigantea subsp. gigantea | | | | | | | | | | | | | | X | | | | | |
| Droseraceae | Drosera macrantha subsp. macrantha | | | | | | | | | X | X | | | X | | | | | | |
| Droseraceae | Drosera menziesii subsp. penicillaris | | X | | X | | | | | | | | | X | | | | | | |
| Droseraceae | Drosera nitidula subsp. nitidula | | | | | | | | X | | | | | X | | | | X | | |
| Droseraceae | Drosera occidentalis subsp. occidentalis | | | | | | X | | | | | | | | | | | | | |
| Droseraceae | Drosera paleacea subsp. paleacea | | X | X | | | | | | | | | | | | | | | | X |
| Droseraceae | Drosera pallida | X | | X | X | | | | | | | | | | | | | | | |
| Droseraceae | Drosera stolonifera subsp. porrecta | X | | | X | | | | | X | | | | X | | | | | | |
| Droseraceae | Drosera zonaria | | | | | | | | | | | | | X | | | | | | |
| Epacridaceae | Astroloma ciliatum | | | | | | | | | | | | | X | | | | | | |
| Epacridaceae | Astroloma pallidum | | X | | | | | | | | | | | | | | | | | |
| Epacridaceae | Brachyloma preissii | | | | | | | | | | | | | | | | X | | X | |

**EEEA study area Bassendean Dune species list**
Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Epacridaceae | | Conostephium pendulum | X | X | | | | | X | | X | X | | | X | | | | | | |
| Epacridaceae | | Conostephium preissii | | | | | | | X | | | | | | X | | | | | | |
| Epacridaceae | | Leucopogon australis subsp. australis | | | | | | | | | | | | | X | | | X | | | |
| Epacridaceae | | Leucopogon conostephioides | | X | X | | | | | | | | | | X | | | X | | X | |
| Epacridaceae | | Leucopogon gracillimus | | | | | | | | | | | | | X | | | | X | | |
| Epacridaceae | | Leucopogon parviflorus | | | | | | | | | | | | | X | | | | | | |
| Epacridaceae | | Leucopogon propinquus | | | | | | | | | | | | | X | | | | | | |
| Epacridaceae | | Leucopogon squarrosus | | | | | | | | | | X | | | X | | | | | | |
| Euphorbiaceae | | Amperea ericoides | | | | | | | | | | | | | X | | | | | | |
| Euphorbiaceae | | Monotaxis occidentalis | | | | | X | | X | | | | | | | X | | | | | |
| Euphorbiaceae | | Poranthera microphylla | | | X | | | | | | | | | | X | | | | | | |
| Euphorbiaceae | | Stachystemon vermicularis | | | | | | | X | | X | | | | X | | | | | | |
| Gentianaceae | * | Cicendia filiformis | | | | | | | | X | | | | | | | | | | | |
| Geraniaceae | * | Erodium botrys | | | | | | | | | | | | X | | | | | | | |
| Goodeniaceae | | Dampiera linearis | X | X | | | X | X | X | | X | | | | X | | | | | | |
| Goodeniaceae | | Goodenia pulchella | | | | | | | | | | | | | | | | | X | | |
| Goodeniaceae | | Lechenaultia expansa | | | | | X | | | | | | | | X | | | | | | |
| Haloragaceae | | Gonocarpus pithyoides | | | | | X | | | | | | | | | | | | | | |
| Haloragaceae | | Myriophyllum echinatum | | | | | | | | X | | | | | | | | | | | |
| Lamiaceae | | Hemiandra linearis | | | | | | | | | | | | | X | | | | | | |
| Lamiaceae | | Hemiandra pungens | | | | | | | | X | | | | | | | | | | | |
| Lamiaceae | * | Stachys arvensis | | | | | | | | | | | | X | | | | | | | |
| Lauraceae | | Cassytha flava | | | | | | | | | X | X | | | X | | | | | | |
| Lauraceae | | Cassytha glabella | | X | | | | | | | | | | | | | | | | | |

**EEEA study area Bassendean Dune species list**

Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lauraceae | | Cassytha micrantha | | | | | | X | | | | | | | | | | | | | |
| Lauraceae | | Cassytha racemosa | | | | | | | | X | | | | | | X | | | X | | |
| Lobeliaceae | | Lobelia tenuior | | | | X | X | | X | | | | | | X | | | X | | | |
| Lobeliaceae | * | Monopsis debilis | | | | | | | | | | | | | | | | | X | | |
| Loganiaceae | | Phyllangium divergens | | | | | | | | | | | | | | X | | | | | |
| Loganiaceae | | Phyllangium paradoxum | | | X | | X | X | | | | | | | | | | X | | | |
| Loganiaceae | | Phyllangium sulcatum | | | | | | | | | | | | | X | | | | | | |
| Loranthaceae | | Nuytsia floribunda | | | | | X | | | | | X | | | X | | | | | | |
| Meliaceae | | Melia azedarach | | | | | | | | | | | | X | | | | | | | |
| Menyanthaceae | | Villarsia albiflora | | | | | | | | | | | | | | X | | | | | |
| Mimosaceae | | Acacia extensa | | | | | | | | | | | | | | X | | | | | |
| Mimosaceae | | Acacia huegelii | | | | | | | X | | | X | | | X | | | X | | | |
| Mimosaceae | | Acacia lasiocarpa (Pinjarra form) (BJ Keighery 2230) | | | | | X | X | | | | | | | | | | | | | X |
| Mimosaceae | | Acacia pulchella | | | X | X | | | | | | X | | | | | | | | | |
| Mimosaceae | | Acacia pulchella var. glaberrima | | | | | | | | | | | | | X | | | | | | |
| Mimosaceae | | Acacia saligna | | | | | | X | | | | | | | | | | | | | |
| Mimosaceae | | Acacia stenoptera | | X | | | X | | | | | | | | X | | | | | | |
| Molluginaceae | | Macarthuria apetala | | | | | | | | | | | | | X | X | | | | | |
| Molluginaceae | | Macarthuria australis | | | | | | | | | | | | | X | | | | | | |
| Myrtaceae | | Astartea aff. fascicularis (Gibson et al. 1994) | | | | | X | | | X | | | | | | | X | X | X | | |
| Myrtaceae | | Astartea affinis MS | | | | | | | | X | | | | | | | X | | | | |
| Myrtaceae | | Astartea fascicularis | | | | | | | | | | | | | | X | | | | | |
| Myrtaceae | | Baeckea camphorosmae | X | | | | | | | | | | | | | | | | | | |
| Myrtaceae | | Calothamnus lateralis | | | | | | X | | | | | | | | X | | | | | |

**EEEA study area Bassendean Dune species list**
Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Myrtaceae | Calytrix angulata | | | | | | | | | | | | | X | | | | | | |
| Myrtaceae | Calytrix flavescens | | | | | | | | | | X | | | | | | | | | |
| Myrtaceae | Eremaea pauciflora var. pauciflora | | | | | | | | | | X | | | | | | | | X | |
| Myrtaceae | Eucalyptus calophylla | | | | | X | | | | | | | | | | | | | | |
| Myrtaceae | Eucalyptus gomphocephala var. gomphocephala | | | | X | | | | | | | | | | | | | | | |
| Myrtaceae | Eucalyptus marginata subsp. marginata | X | X | | | X | | X | | X | | | | X | | | | | | |
| Myrtaceae | Eucalyptus patens | | | | | | | | | | | | | | | X | | | | |
| Myrtaceae | Eucalyptus rudis subsp. rudis | | | | | | | | | | | | | | | X | X | | | |
| Myrtaceae | Hypocalymma angustifolium | | | X | | X | | | | | | | | | X | | | | | X |
| Myrtaceae | Hypocalymma robustum | X | X | | X | | | | | | | | | | | | | | | |
| Myrtaceae | Kunzea glabrescens | | | | X | X | | X | | | X | | | X | | | X | | X | X |
| Myrtaceae | Melaleuca incana subsp. incana | | | | | | | | X | | | | | | | | | X | | |
| Myrtaceae | Melaleuca lateritia | | | | | | | | X | | | | | | X | | | X | | |
| Myrtaceae | Melaleuca preissiana | | | X | | X | X | | | | | | | | X | X | | | | X |
| Myrtaceae | Melaleuca rhaphiophylla | | | | | | X | | X | | | | | | X | X | X | X | | |
| Myrtaceae | Melaleuca teretifolia | | | | | | | | | | | | | | X | | | | | |
| Myrtaceae | Melaleuca thymoides | | X | X | X | X | | X | | | X | | | X | | | | | X | |
| Myrtaceae | Melaleuca viminea subsp. viminea | | | | | | | | | | | | | | | | | X | | |
| Myrtaceae | Pericalymma ellipticum | | | X | | X | X | | X | | | | | | X | | | | | X |
| Myrtaceae | Regelia ciliata | | | | | | | | | | | | | | | | | X | | X |
| Myrtaceae | Regelia inops | | | | | | | | | | | | | | X | | | | | |
| Myrtaceae | Scholtzia involucrata | | | X | | | | X | | | X | | | X | | | | | | |
| Myrtaceae | Taxandria linearifolia MS | | | | | | | | | | | | | | | X | X | | | |
| Myrtaceae | Verticordia densiflora | | | | | | X | | | | | | | | | | | | | |

**EEEA study area Bassendean Dune species list**

Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orobanchaceae | * | Orobanche minor | | | | | | | | | | | | | | X | | | | | |
| Oxalidaceae | * | Oxalis pes-caprae | | | | | | | | | | | | X | | | | | | | |
| Oxalidaceae | * | Oxalis polyphylla | | | | | | | | | | | | X | | | | | | | |
| Oxalidaceae | * | Oxalis purpurea | | | | | | | | | | | | X | | | | | | | |
| Papilionaceae | | Aotus intermedia | | | | | | | | | | | | | | X | | | | | |
| Papilionaceae | | Aotus procumbens | | | | | | | | | | | | | | X | | | | X | |
| Papilionaceae | | Bossiaea eriocarpa | X | X | | X | X | | X | | X | X | | | X | | | | | | |
| Papilionaceae | | Callistachys lanceolata | | | | | | | | | | | | | | | X | X | | | |
| Papilionaceae | * | Chamaecytisus palmensis | | | | | | | | | | | | X | | | | | | | |
| Papilionaceae | | Daviesia divaricata subsp. divaricata MS | X | X | | | | | | | | | | | | | | | | | |
| Papilionaceae | | Daviesia physodes | | | | | | | X | | | | | | | | | | | | |
| Papilionaceae | | Daviesia podophylla | | | | | | | | | | | | | | X | | | | | |
| Papilionaceae | | Dillwynia dillwynioides | | | | | | | | | | | | | | X | | | | | |
| Papilionaceae | | Euchilopsis linearis | | | | | | | X | | | | | | | X | | | | | X |
| Papilionaceae | | Eutaxia virgata | | | | | X | X | | | | | | | | | | | | | X |
| Papilionaceae | | Gastrolobium capitatum | | | | | | | | | | X | | | | | | | | | |
| Papilionaceae | | Gompholobium capitatum | | | | | | | | | | | | | X | | | | | | |
| Papilionaceae | | Gompholobium polymorphum | | | | | | | | | | | | | X | | | | | | |
| Papilionaceae | | Gompholobium scabrum | | | | | | | | | | | | | X | | | | | | |
| Papilionaceae | | Gompholobium tomentosum | | | | X | X | | X | | X | X | | | X | | | X | | X | |
| Papilionaceae | | Hardenbergia comptoniana | | | | X | | | | | X | | | | X | | X | | | | |
| Papilionaceae | | Hovea trisperma var. trisperma | X | | | | | | X | | | X | | | X | | | X | | | |
| Papilionaceae | | Isotropis cuneifolia subsp. cuneifolia | | | | X | | | | | | | | | | | | | | | |
| Papilionaceae | | Jacksonia furcellata | | | | X | X | | | | X | | | | X | | | X | | | |

**EEEA study area Bassendean Dune species list**
Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Papilionaceae | | Jacksonia sternbergiana | | | | | | | | | | | | | X | | | X | | | |
| Papilionaceae | | Kennedia prostrata | | | | | | | | | X | | | | X | | | | | | |
| Papilionaceae | | Latrobea tenella | | | | | | | | | | | | | | X | | | | | |
| Papilionaceae | * | Lotus angustissimus | | | | | X | | | X | | | | | | | | | X | | |
| Papilionaceae | * | Lupinus cosentinii | | | | | | | | | | | | X | | | | | | | |
| Papilionaceae | * | Ornithopus compressus | | | | | | | | | | | | X | | | | | | | |
| Papilionaceae | | Oxylobium lineare | | | | | | | | | | | | | | X | X | | | | |
| Papilionaceae | | Pultenaea ochreata | | | | | | | | | | | | | | X | | | | | |
| Papilionaceae | | Pultenaea reticulata | | | | | | | | | | | | | | X | | X | | | |
| Papilionaceae | * | Trifolium arvense var. arvense | | | | X | | | | | | | | | | | | | | | |
| Papilionaceae | | Viminaria juncea | | | | | | | | | | | | | | X | | | | | |
| Pittosporaceae | | Billardiera variifolia | | X | | | | | | | | | | | | | | | | | |
| Pittosporaceae | | Pronaya fraseri | | | | | | | | | | | | | X | | | | | | |
| Pittosporaceae | | Sollya heterophylla | | | | | | | | | | | | | X | | | | | | |
| Polygalaceae | | Comesperma calymega | | X | | | | | | | | | | | X | | | | | | |
| Polygalaceae | | Comesperma virgatum | X | X | | | | | | | | | | | X | X | | | | | |
| Primulaceae | * | Anagallis arvensis | | | | X | | | | | | | | | | | | | | | |
| Proteaceae | | Adenanthos cygnorum subsp. cygnorum | | | | | | | | | | | | | | | | X | | X | |
| Proteaceae | | Adenanthos meisneri | | | | | | | | | | X | | | X | | | | | | |
| Proteaceae | | Adenanthos obovatus | | | | | | | | | | | | | | X | | | | | |
| Proteaceae | | Banksia attenuata | X | X | X | X | | | X | | X | X | | | X | | | | | X | |
| Proteaceae | | Banksia grandis | | X | | | | | | | | | | | X | | | | | | |
| Proteaceae | | Banksia ilicifolia | | | X | | | | X | | | X | X | | | | | | | | |
| Proteaceae | | Banksia menziesii | | | | | | | | | | X | | | X | | | | | X | |

**EEEA study area Bassendean Dune species list**

Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Proteaceae | | Conospermum capitatum subsp. glabratum | | | | X | | | | | | | | | X | | | | | | |
| Proteaceae | | Hakea sulcata | | | | | | X | | | | | | | | | | | | | |
| Proteaceae | | Hakea varia | | | | | | X | | X | | | | | | | | | | | |
| Proteaceae | | Persoonia saccata | | X | | | | | | | | | | | X | | | | | | |
| Proteaceae | | Petrophile linearis | X | X | X | | | | X | | X | X | | | X | | | | | X | |
| Proteaceae | | Stirlingia latifolia | X | X | | | | | | | | | | | X | | | | | | |
| Proteaceae | | Synaphea petiolaris | | | | | | | | | | | | | X | | | | | | |
| Proteaceae | | Xylomelum occidentale | X | X | | | | | | | | | | | | | | | | | |
| Rubiaceae | | Opercularia hispidula | | | | | | | | | X | | | | X | | | | | | |
| Rutaceae | | Boronia crenulata subsp. viminea | | | | | | | | | | | | | X | | | | | | |
| Rutaceae | | Boronia dichotoma | | | | | | | | | | | | | | X | | | | | |
| Rutaceae | | Boronia spathulata | | | | | | | | | | | | | | X | | | | | |
| Rutaceae | | Philotheca spicata | X | | | | X | | | | X | X | | | X | | | | | | |
| Sapindaceae | | Dodonaea hackettiana | | | | | | | | | | | | | | | | X | | | |
| Scrophulariaceae | | Gratiola pubescens | | | | | | | | X | | | | | | X | | | | | |
| Scrophulariaceae | * | Parentucellia viscosa | | | | | | X | | | | | | | | | | | | | |
| Solanaceae | * | Solanum nigrum | | | | | | | | | | | | X | | | | | | | |
| Stackhousiaceae | | Tripterococcus brunonis | | | | | | | | | | | | | | X | | | | | |
| Stylidiaceae | | Levenhookia pusilla | | | | | | | | | | | | | X | | | | | | |
| Stylidiaceae | | Levenhookia stipitata | | | | | X | | | | | | | | | | | | | | |
| Stylidiaceae | | Stylidium brunonianum subsp. brunonianum | | X | | | X | | X | | | | X | | X | | | X | | | |
| Stylidiaceae | | Stylidium calcaratum | | | X | | X | | | | | | | | | | | | | | |
| Stylidiaceae | | Stylidium carnosum | X | X | X | | | | | | | | | | | | | | | | |
| Stylidiaceae | | Stylidium divaricatum | | | | | | | | X | | | | | | | | | | | |

**EEEA study area Bassendean Dune species list**
Appendix 3b in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | BULLER-1 | BULLER-2 | BULLER-3 | DRAIN-1 | Hamp01 | Hamp02 | Hamp03 | Hamp04 | NINE-1 | NINE-2 | NineMileLakeB_ilic | NineMileLakeD | NineMileLakeJ/B | NineMileLakeMp | raven02 | raven03 | raven04 | raven05 | Ravs01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stylidiaceae | Stylidium guttatum | | | | | | X | | | | | | | | | | | X | | |
| Stylidiaceae | Stylidium junceum | | | | | | | | | | | | | | X | | | | | |
| Stylidiaceae | Stylidium longitubum | | | | | | | | X | | | | | | | | | | | |
| Stylidiaceae | Stylidium mimeticum | | | | | | X | | | | | | | | X | | | | | |
| Stylidiaceae | Stylidium piliferum subsp. piliferum | | | X | | | | X | | X | | | | X | | | | | | |
| Stylidiaceae | Stylidium repens | | | | | | | | | | X | | | X | X | | | | | |
| Stylidiaceae | Stylidium schoenoides | X | X | X | | | | | | X | | | | X | | | | | | |
| Stylidiaceae | Stylidium utricularioides | | | | | | X | | X | | | | | | | | | X | | |
| Thymelaeaceae | Pimelea imbricata var. piligera | | | | | | | | | | | | | X | | | | | | |
| Thymelaeaceae | Pimelea leucantha | | | | | | | | | | | | | X | | | | | | |
| Tremandraceae | Tetratheca hirsuta | X | | | | | | X | | | | | | X | | | | | | |

## APPENDIX 3c: EEEA study area Pinjarra Plain species list

**KEY**

**Column 1** **Family (Families are grouped into Ferns, Gymnosperms, Monocotyledons and Dicotyledons)**

**Column 2** **Scientific Name**
Genus + Species + Infra Species Rank + Infra Species Name + Informal Name from BJ Keighery *et al*. (2006b) database as of January 2006**.** Therefore, species names may be modified from original sources of information: DEP (1996), Gibson *et al*. (1994) and GJ Keighery (1996). Some taxa yet to be formally described and named may have a reference collection number from the relevant collector. Taxa (species, sub-species and varieties) are listed alphabetically within genera.

| | |
|---|---|
| * | weed |
| subsp. | subspecies |
| var. | variety |
| MS | a manuscript name yet to be published |
| PN | a phrase name for a taxa yet to be described and published. |

**Column 3 →** **Species list and plots included in list**

**Species list:**
Austin Bay Nature Reserve Vegetation Units from *Native and Weed Flora of Austin Bay Nature Reserve* (GJ Keighery 2005b)
C53 Coolup Reserves Vegetation Units from *Native and Weed Flora of C53 Coolup Reserves* (GJ Keighery 2005c, updated from GJ Keighery *et al.* 1994)

| Vegetation unit code | Vegetation unit |
|---|---|
| Austin Bay bch | Beach flats and dunes |
| Austin Bay clyp | Claypans |
| Austin Bay D | Disturbed areas |
| Austin Bay J/M | Bushland upland areas dominated by Tuart, *Banksia* and Jarrah, Marri |
| Austin Bay sand | Bushland upland areas dominated by Tuart, *Actinostrobus*, *Banksia* |
| Austin Bay WM | Wetland mosaic areas dominated by *Melaleuca* species |
| Waroona c53 1 | *Melaleuca viminea* claypans |
| Waroona c53 2 | Marri woodland |
| Waroona c53 3 | Jarrah woodland |
| Waroona c53 4 | *Melaleuca* low woodland over *Pericalymma* or *Viminaria* |
| Waroona c53 5 | Disturbed areas: pines, drains, road verges, tracks |

## Plots:

**KEY TO COLUMNS**

**Column 1: Bushland Area Name**

**Column 2: Plot Code**

**Column 3: Floristic Community Type Code**

**Column 4: Threatened Ecological Community (**after English and Blyth 1997, English pers. comm., 2000)

- CR Critically Endangered
- EN Endangered
- VU Vulnerable
- \+ Listed as 'endangered' under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999

**Column 5: Source Plot Dataset**

- SCP Plot from Gibson *et al*. (1994)
- SYSENV Plot from System 6 and Part 1 Update in 1994 (DEP 1996)
- SYSENV2 Plot from System 6 and Part 1 Update in 1995 (DEP 1996)

| Bushland Area | Plot Code | FCT | TEC | Source Plot |
|---|---|---|---|---|
| Subm Reserve 34033, adjacent to Pinjarra Nature Reserve and other reserves | pind01 | 03a | CR+ | SYS6ENV2 |
| C53 Coolup Reserves | waro 06 | 03a | CR+ | SCP |
| C51 Kooljerrenup NR | KOOLJ-5 | 03b | VU | SCP |
| C53 Coolup Reserves | *waro 01, 02 | 03b | VU | SCP |
| C58 Reserve 23172, Harvey River | C58-1 | 04 | | SCP |
| C51 Kooljerrenup NR | KOOLJ-1 | 04 | | SCP |
| C50 Austin Bay NR | AUSTB-4, 5, 6 | 05 | | SCP |
| C50 Austin Bay NR | AUSTB-1, 2, 7, 8 | 07 | VU | SCP |
| C50 Carrabungup NR | CARAB-2 | 07 | VU | SCP |
| C58 Reserve 23172, Harvey River | C58-3 | 08 | VU | SCP |
| C53 Coolup Reserves | waro 03, 04 | 08 | VU | SCP |
| Reserve 34033 | pind02 | 09 | VU | SYS6ENV2 |
| C58 Reserve 23172, Harvey River | C58-4 | 10a | EN | SCP |
| C51 Kooljerrenup NR | KOOLJ-6, 7 | 10a | EN | SCP |
| C53 Coolup Reserves | waro 05 | 10a | EN | SCP |
| C50 Austin Bay NR | AUSTB-3 | 11 | | SCP |
| C50 Carrabungup NR | CARAB-3 | 11 | | SCP |
| C58 Reserve 23172, Harvey River | C58-2 | 13 | | SCP |
| C50 Carrabungup NR | CARAB-1 | 15 | VU | SCP |
| C51 Kooljerrenup Nature Reserve | KOOLJ-2, 3,4 | 21a | | SCP |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fern** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adiantaceae | Cheilanthes austrotenuifolia | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Dennstaedtiaceae | Pteridium esculentum | | | | | | | | | | X | | | | | | | | | | | | | | | X | | |
| Isoetaceae | Isoetes australis | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Isoetaceae | Isoetes drummondii | | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| Isoetaceae | Isoetes drummondii subsp. drummondii | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Lycopodiaceae | Phylloglossum drummondii | | | | | | | | | | | | | | | | | | | | | X | | X | | | | X |
| Marsileaceae | Marsilea drummondii | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Marsileaceae | Pilularia novae-hollandiae | | | | | | X | | | X | | | | | | | | | | | | | | X | | | | |
| Selaginellaceae | Selaginella gracillima | | | | | X | X | | | X | | | | | | | | | X | | X | X | | X | | | | X |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gymnosperm** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cupressaceae | Actinostrobus pyramidalis | | | | | | | | | | | | | | | | | | | X | X | | | | | | | X |
| Zamiaceae | Macrozamia riedlei | | | | X | | | | | | X | | | | | | | X | | X | | | X | X | | X | X | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Monocot** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Amaryllidaceae | * Amaryllis belladonna | | | | | | | | | | X | | | | | | | | | | | | X | | X | | | |
| Amaryllidaceae | * Narcissus tazetta | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Anthericaceae | Agrostocrinum hirsutum | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Anthericaceae | Agrostocrinum scabrum | | | | X | | | | X | | X | X | | | | | | | | | | | | | | | | |
| Anthericaceae | Arthropodium capillipes | | | X | X | | | | | | X | | | | | | | | | | | | | | | X | X | |
| Anthericaceae | Arthropodium preissii | | | | | X | X | | | X | | | | | | | | | | | | | | X | | | | X |
| Anthericaceae | Caesia micrantha | | | X | X | | X | | | X | | X | | | | | | | | | | | | | | X | | X |
| Anthericaceae | Caesia occidentalis | | | | X | | | | X | X | | | X | | | | | | | | | | | | | | | X |

**EEEA study area Pinjarra Plain species list**
Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anthericaceae | Chamaescilla corymbosa var. corymbosa | | | X | X | | | | | | X | | | | | | | X | X | | X | X | | | | X | X | |
| Anthericaceae | Chamaescilla gibsonii | X | | | | | X | | | X | | | | | | | | | | | | | | X | | | | |
| Anthericaceae | Corynotheca micrantha var. micrantha | | | | | | | | | | | X | | | | | | | | | | | X | | | | X | |
| Anthericaceae | Laxmannia squarrosa | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Anthericaceae | Sowerbaea laxiflora | X | | X | X | | | | | X | X | X | X | | | | | | | | | | | | | X | | |
| Anthericaceae | Thysanotus arbuscula | | | | | | | | | | | | | | | | | | | | | | | | | X | X | |
| Anthericaceae | Thysanotus dichotomus | | | | | | | | | X | | X | | | | | | | | | | | | | | | | |
| Anthericaceae | Thysanotus manglesianus | | | | | | | | | | | | | | | | | | | X | | X | | | | X | X | |
| Anthericaceae | Thysanotus manglesianus/patersonii complex | | X | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Anthericaceae | Thysanotus multiflorus | | | | | | | | | | | X | | | | | | | | | | | X | X | | | X | |
| Anthericaceae | Thysanotus patersonii | | | | | | | | | X | X | | | | | | | | X | | X | | | | | X | X | |
| Anthericaceae | Thysanotus sparteus | | | | | | | | X | | X | X | | | | | | | | | | | | | | | | |
| Anthericaceae | Thysanotus thyrsoideus | | | X | X | | | X | | | X | X | | | | | | | X | | | | | | | X | X | |
| Anthericaceae | Thysanotus triandrus | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Anthericaceae | Tricoryne elatior | X | | | | | | | X | | X | X | | | | | | | | | | | X | | | X | X | |
| Anthericaceae | Tricoryne tenella | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Aponogetonaceae | Aponogeton hexatepalus | | | | | X | X | | | X | | | | | | | | | | | | | | | | | | |
| Araceae | * Zantedeschia aethiopica | | | | | | | | | | | | | | | | | | | | | | | | X | | | X |
| Asparagaceae | * Asparagus asparagoides | | | | | | | | | | | X | | | | | | | | | | | X | | X | | | |
| Asphodelaceae | * Asphodelus fistulosus | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Asphodelaceae | Bulbine semibarbata | | | | | | | | | | | | | | | | | | | | | | X | X | | | | |
| Boryaceae | Borya scirpoidea | X | | X | | | | | X | X | X | X | X | | | | | | | | X | | | | | X | | X |
| Boryaceae | Borya sphaerocephala | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Centrolepidaceae | Aphelia brizula | | | | | | | | | | | | | | | | | | | | | | | X | | | | |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Centrolepidaceae | Aphelia cyperoides | | | X | | | | X | | | | X | | | | X | | | X | | | X | | | | X | | X |
| Centrolepidaceae | Aphelia drummondii | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Centrolepidaceae | Aphelia nutans | | | | | | | | | X | | | | | | | | | | | X | X | | | | | | |
| Centrolepidaceae | Centrolepis alepyroides | | | | | | | | | X | | | | | | X | | | | | | | | X | | | | X |
| Centrolepidaceae | Centrolepis aristata | X | X | | | X | X | X | | X | X | X | | | | X | X | | X | | X | X | | | | | X | X |
| Centrolepidaceae | Centrolepis caespitosa | | X | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Centrolepidaceae | Centrolepis drummondiana | | | X | X | | | | | | | X | | | | | | | X | X | | | | | | X | X | |
| Centrolepidaceae | Centrolepis glabra | | X | | | X | | | | X | | | | | X | | X | | | | | | | X | | | | |
| Centrolepidaceae | Centrolepis mutica | | X | | | | | | | X | | | | | | | X | | | | X | X | | X | | | | X |
| Centrolepidaceae | Centrolepis pilosa | | | | | | | | | | | | | | | | | X | | X | | | | | | X | | X |
| Centrolepidaceae | Centrolepis polygyna | | | | | | | X | | | | | | | | X | | | | | X | | X | X | | | | |
| Colchicaceae | Burchardia congesta | | | | X | | | | | | X | X | | | | | | | | | | | | X | | X | X | |
| Colchicaceae | Burchardia multiflora | X | | | | X | X | X | X | X | | | | | | | | | | | | | | | | | | X |
| Colchicaceae | Wurmbea dioica subsp. alba | X | | | | | | | | X | | | | | | | | | | | | | | X | | | | |
| Colchicaceae | Wurmbea dioica subsp. Brixton (GJ Keighery 12803) | | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| Commelinaceae | Cartonema philydroides | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Cyperaceae | Baumea acuta | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Cyperaceae | Baumea articulata | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Cyperaceae | Baumea juncea | | | | | | | | | | | | X | | | | | X | | X | X | | X | X | | | | X |
| Cyperaceae | Baumea preissii subsp. laxa MS | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Cyperaceae | Baumea rubiginosa | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Cyperaceae | Bolboschoenus caldwellii | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Cyperaceae | Carex preissii | | | | | | | | | | | | | | | | | | | | | | | | | X | | |

**EEEA study area Pinjarra Plain species list**
Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cyperaceae | Chorizandra enodis | | | | | X | X | | | X | | | | | | | | | | | | | | X | | | | X |
| Cyperaceae | Cyathochaeta avenacea | X | | X | X | | | X | X | | X | X | | | | | | | | | | | | | | X | | |
| Cyperaceae | Cyperus alterniflorus | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Cyperaceae | * Cyperus congestus | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Cyperaceae | * Cyperus eragrostis | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Cyperaceae | * Cyperus tenellus | | | | | X | X | X | | X | | | X | | | X | | | | | | X | X | | | | | X |
| Cyperaceae | Eleocharis keigheryi | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Cyperaceae | Ficinia nodosa | | | | | | | | | | | | | | | | | | | | | | X | | | | | X |
| Cyperaceae | Gahnia trifida | | | | | | | | | | | | | | | | | | | | | | | X | | | | X |
| Cyperaceae | Isolepis cernua | | | X | | X | | | | X | | | | | | | | | | | | X | X | | | | | |
| Cyperaceae | Isolepis cyperoides | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Cyperaceae | Isolepis hookeriana | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Cyperaceae | * Isolepis hystrix | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Cyperaceae | * Isolepis marginata | | | | | | | | | | X | | | | | X | X | | | | X | X | | | | X | | X |
| Cyperaceae | Isolepis oldfieldiana | | | | | | | X | | X | X | | | | | X | X | | | | | | | | | | | X |
| Cyperaceae | Isolepis producta | | | | | | | | | | | | | | | | | | | | | | | X | | | | X |
| Cyperaceae | * Isolepis prolifera | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Cyperaceae | Isolepis setiformis | | | | | X | | X | | | | | | | | | | | | | | | | | | | | |
| Cyperaceae | Isolepis stellata | | | | | | | | | | | | | | | | X | | | | | | | X | | | | X |
| Cyperaceae | Lepidosperma longitudinale | | X | | | | | | | X | | | X | | | | X | X | X | | X | X | X | | | | | X |
| Cyperaceae | Lepidosperma squamatum | X | | X | X | | | X | | | | X | | | | | | | | | | | | X | | X | X | |
| Cyperaceae | Lepidosperma tenue | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Cyperaceae | Mesomelaena graciliceps | | | X | X | | | | | | X | X | | | | | | | | | | | | | | | | |
| Cyperaceae | Mesomelaena stygia subsp. stygia | | | | | | | | | | X | | | | | | | | | | | | | | | X | X | |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cyperaceae | Mesomelaena tetragona | X | | X | X | | | X | X | | X | | | | | | | | | | | | | | | X | | |
| Cyperaceae | Schoenoplectus validus | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Cyperaceae | Schoenus asperocarpus | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cyperaceae | Schoenus benthamii | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Cyperaceae | Schoenus bifidus | X | | | | | | | X | X | | | | | | | | | | | | | | | | | | |
| Cyperaceae | Schoenus brevifolius | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Cyperaceae | Schoenus capillifolius | | | | | X | | | | X | | | | | | | | | | | | | | | | | | |
| Cyperaceae | Schoenus curvifolius | | | | | | | | X | | X | X | | | | | | | | | | | | X | | X | X | |
| Cyperaceae | Schoenus discifer | | | | | | | | | | | | | | | | | | | | X | X | | | | | | |
| Cyperaceae | Schoenus efoliatus | | | | | | | | | | | | | | | | | | | | | | | | | X | | X |
| Cyperaceae | Schoenus humilis | | | | | | | X | | X | | | | | | | | | | | | | | | | | | |
| Cyperaceae | Schoenus maschalinus | | | | | | | | | X | | | | | | | | | | | | | | X | | | | |
| Cyperaceae | Schoenus natans | | | | | X | | | | X | | | | | X | | | | | | | | | X | | | | |
| Cyperaceae | Schoenus nitens | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Cyperaceae | Schoenus odontocarpus | X | | X | | | X | | | X | | | | | | X | | | | | X | X | | | | | | |
| Cyperaceae | Schoenus plumosus | | | | | | | | | X | | | | | X | X | | | | | X | X | | X | | | | |
| Cyperaceae | Schoenus rigens | | | | | | | X | | | | | X | | | | | | X | | | | | | | | | X |
| Cyperaceae | Schoenus sculptus | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Cyperaceae | Schoenus sp. Waroona (G.J. Keighery 12235) PN | | | | | | | | | X | | | | | | | | | | | | | | X | | | | |
| Cyperaceae | Schoenus subfascicularis | | | | | | | | | | | | | | | | | | X | | | | | | | | | X |
| Cyperaceae | Schoenus tenellus | | X | | | X | | | | X | | | | | | | | | | | | | | X | | | | |
| Cyperaceae | Schoenus unispiculatus | | | | | | | | | | X | X | | | | | | | | | | | | | | | | |
| Cyperaceae | Schoenus variicellae | | | | | | | | | | | | | | | | | | | | | X | | X | | | | |
| Cyperaceae | Tetraria capillaris | | | | | | | | | X | | | | | | | | | | | | | | | | | | |

**EEEA study area Pinjarra Plain species list**
Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cyperaceae | Tetraria octandra | X | | X | X | | | | X | | X | X | | | | | | | | | | | | | | | | |
| Cyperaceae | Tricostularia neesii var. neesii | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Dasypogonaceae | Acanthocarpus canaliculatus | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Dasypogonaceae | Calectasia narragara | | | | | | | | | | | X | | | | | | | | | | | | | | X | | |
| Dasypogonaceae | Dasypogon bromeliifolius | | | | X | | | | | | X | | | | | | | | | | | | | X | | X | X | |
| Dasypogonaceae | Kingia australis | | | X | | | | X | X | | X | X | X | | | | | | | | | | | | | | | |
| Dasypogonaceae | Lomandra brittanii | | | X | X | | | | | | X | | | | | | | | | | | | | | | | | |
| Dasypogonaceae | Lomandra caespitosa | | | | X | | | | X | | X | X | | | | | | | | | | | | | | X | | |
| Dasypogonaceae | Lomandra hermaphrodita | | | X | X | | | | | | | X | | | | | | | | | | | | | | | X | |
| Dasypogonaceae | Lomandra micrantha subsp. micrantha | | | | | | | | | | X | | X | | | | | | | | | | | | | | | |
| Dasypogonaceae | Lomandra nigricans | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Dasypogonaceae | Lomandra odora | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Dasypogonaceae | Lomandra preissii | | | | | | | | | | X | | | | | | | | | | | | | | | X | | |
| Dasypogonaceae | Lomandra purpurea | | | | | | | | | | X | | | | | | | | | | | | | | | X | | |
| Dasypogonaceae | Lomandra sericea | | | | X | | | | | | X | | | | | | | | | | | | | | | | | |
| Dasypogonaceae | Lomandra sonderi | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Dasypogonaceae | Lomandra suaveolens | | | | | | | | | | | X | | | | | | | | | | | | | | X | X | |
| Haemodoraceae | Anigozanthos humilis subsp. humilis | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Haemodoraceae | Anigozanthos manglesii subsp. manglesii | | | | X | | | | | | | X | | | | | | | | | | | | | | X | | |
| Haemodoraceae | Anigozanthos manglesii x viridis | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Haemodoraceae | Anigozanthos viridis subsp. viridis | X | | | | | | | | | X | | | | | | | | | | | | | | | X | | X |
| Haemodoraceae | Conostylis aculeata | | | X | | | | X | | | | | | | | | | | X | X | | | | | | X | X | |
| Haemodoraceae | Conostylis aculeata subsp. aculeata | | | | | | | | | | X | X | X | | | | | | | | | | | | | | | |
| Haemodoraceae | Conostylis juncea | | | X | X | | | | | | X | X | | | | | | | | | | | | | | X | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Haemodoraceae | Conostylis setigera subsp. setigera | X | | | | | | | | | X | | X | | | | | | | | | | | | | X | | |
| Haemodoraceae | Haemodorum brevisepalum | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Haemodoraceae | Haemodorum laxum | X | | X | X | | | X | X | | X | X | | | | | | | | | | | | | | | | |
| Haemodoraceae | Haemodorum paniculatum | | | | | | | | | | | X | | | | | | | | | | | | | | | X | |
| Haemodoraceae | Haemodorum simplex | X | | | | | X | | | X | | | | | | | | | | | | | | | | | | |
| Haemodoraceae | Haemodorum sparsiflorum | | | X | | | | X | | X | X | | | | | | | | | | | | | X | | | | X |
| Haemodoraceae | Haemodorum spicatum | | | | | | | | | | X | X | | | | | | X | | | | | | | | X | X | X |
| Haemodoraceae | Phlebocarya ciliata | | | | X | | | | | | X | X | | | | | | | | | | | | | | | X | |
| Haemodoraceae | Tribonanthes australis | X | | | | | | | | X | | | | | | | | | | | | | | X | | | | X |
| Haemodoraceae | Tribonanthes brachypetala | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Haemodoraceae | Tribonanthes uniflora | | | | | X | X | | | X | | | | | | | | | | | | | | X | | | | |
| Haemodoraceae | Tribonanthes violacea | | | | | | | | | | | | | | X | X | | | | | X | | | X | | | | |
| Hydatellaceae | Hydatella dioica | | | | | | | | | | | | | | X | | | | | | | | | | | | | |
| Hydatellaceae | Hydatella sp. Austin Bay (N. Gibson & M. Lyons 2387) PN | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Hydatellaceae | Trithuria bibracteata | | | | | | | X | | X | | | | | | | | | | | | X | | X | | | | |
| Hydatellaceae | Trithuria submersa | | X | | | X | X | | | X | | | | | | | | | | | | | | X | | | | |
| Hypoxidaceae | Hypoxis glabella var. glabella | | | | | | | | | X | X | | | | | | | | | | X | | | | | X | | X |
| Hypoxidaceae | Hypoxis occidentalis var. occidentalis | X | | | | X | X | X | | X | | | | | | | | | | | | | | X | | | | X |
| Iridaceae | * Babiana angustifolia | | | | | | | | | X | | | | X | | | | | | | | | | | | | | |
| Iridaceae | * Chasmanthe floribunda | | | | | | | | | | | | | X | | | | | | | | | | | X | | | |
| Iridaceae | * Gladiolus caryophyllaceus | | | | | | | | | | | | | | | | | | | | | | X | | X | | X | |
| Iridaceae | * Gladiolus undulatus | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Iridaceae | Orthrosanthus laxus var. laxus | | | | | | | | | | | | | | | | | | | | | | | | | X | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Iridaceae | Patersonia juncea | | | X | | | | | X | | X | | | | | | | | | | | | | | | | | |
| Iridaceae | Patersonia occidentalis | X | | X | | | | X | X | | | X | X | | | | | | | | | | | | | | X | |
| Iridaceae | Patersonia occidentalis (Swamp form) (N Gibson and MN Lyons 554) | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Iridaceae | * Romulea flava var. minor | | | | | | | | | | | | | | | | | | | | | | X | | | X | | X |
| Iridaceae | * Romulea rosea | | | | | | | | | | X | X | X | X | | | | | | | | | X | X | | X | | X |
| Iridaceae | * Romulea rosea var. australis | | | | | | X | | | X | | | | | | | | | | | | | | | | | | |
| Iridaceae | * Sparaxis bulbifera | | | | | | | | | X | | | | X | | | | | | | | | | | X | X | | |
| Iridaceae | * Watsonia bulbillifera | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Iridaceae | * Watsonia marginata | | | | | | | | | X | | | | X | | | | | | | | | | | | | | |
| Iridaceae | * Watsonia meriana var. bulbillifera | | | | | | | | | | | | | | | | | | | | | | X | | X | X | | |
| Juncaceae | * Juncus articulatus | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Juncaceae | Juncus bufonius | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Juncaceae | * Juncus bufonius | | | | | | | | | | | | | | | | X | | | | | | X | X | X | X | | X |
| Juncaceae | Juncus caespiticius | | | | | | | | | | | | | | | | | | | | | | | X | X | | | |
| Juncaceae | * Juncus capitatus | | | X | X | | | | | | X | X | | | | X | | | | | X | X | X | X | X | | | X |
| Juncaceae | Juncus holoschoenus | | | | | | | X | | X | X | | | | | | | | | | | | | | | | | |
| Juncaceae | Juncus kraussii subsp. australiensis | | | | | | | | | | | | | | | | | | | | | | X | X | | | | |
| Juncaceae | Juncus pallidus | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Juncaceae | Juncus pauciflorus | | | | | | | | | | | | X | | | | | | | | | | | | | | | X |
| Juncaceae | Luzula meridionalis | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Juncaginaceae | Triglochin centrocarpa | | | | | | | | | | X | | | | | | | | | | X | | | | | | | |
| Juncaginaceae | Triglochin linearis | | | | | X | X | | | X | X | | | | X | | X | | | | | | | X | | | | X |
| Juncaginaceae | Triglochin minutissima | | | | | | | | | | | | | | | | | | | | | | X | X | | X | | |
| Juncaginaceae | Triglochin mucronata | | | | | | | | | | | | | | | | | | | | | | X | X | | X | | |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Juncaginaceae | Triglochin muelleri subsp. muelleri | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Juncaginaceae | Triglochin muelleri subsp. recurvum | | | | | | | X | | X | X | | | | X | X | | | | | | | | X | | | | |
| Juncaginaceae | Triglochin striata | | | | | | | | | | | | | | | | | | | | | | X | | | X | | |
| Juncaginaceae | Triglochin trichophora | | | | | | | | | | | | | | | | | | | | | | X | X | | | | |
| Lemnaceae | Lemna disperma | | | | | | | | | | | | | | | | | | | | | | | | | X | | X |
| Orchidaceae | Caladenia denticulata | | | | X | | | | | | X | | | | | | | | | | | | | | | | | |
| Orchidaceae | Caladenia ferruginea | X | | X | X | | | | | | | | X | | | | | | | | | | | | | | | |
| Orchidaceae | Caladenia flava subsp. flava | | | | X | | | | | | | X | | | | | | X | X | X | | X | | | | X | X | X |
| Orchidaceae | Caladenia huegelii | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Orchidaceae | Caladenia latifolia | | | | | | | | | | | | | | | | | | | | | | X | | | | X | |
| Orchidaceae | Caladenia longicauda | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Orchidaceae | Caladenia longicauda subsp. longicauda | | | | X | | | | | | X | X | | | | | | | | | | | | | | | | |
| Orchidaceae | Caladenia paludosa | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Orchidaceae | Caladenia radiata | | | | | | | | | | | | | | | | | | | | | X | | X | | | | X |
| Orchidaceae | Cyanicula gemmata | | | | | | | | | | | | | | | | | | | | | | | | | X | X | |
| Orchidaceae | Cyrtostylis huegelii | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Orchidaceae | Cyrtostylis robusta | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Orchidaceae | * Disa bracteata | | | | | | | | | | | | | | | | | | | | | X | X | | | X | X | X |
| Orchidaceae | Diuris amplissima | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Orchidaceae | Diuris carinata | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| Orchidaceae | Diuris corymbosa | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Orchidaceae | Diuris laxiflora | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Orchidaceae | Diuris longifolia | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| Orchidaceae | Elythranthera brunonis | | | | | | | | | | | | | | | | | | | | | | | | | X | | |

**EEEA study area Pinjarra Plain species list**
Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orchidaceae | Eriochilus dilatatus subsp. multiflorus MS | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Orchidaceae | Eriochilus helonomos MS | | | | | | | | | X | | | | | | | | | | | | | | | | | | X |
| Orchidaceae | Leporella fimbriata | | | | | | | | | | X | X | | | | | | | | | | | | | | X | | |
| Orchidaceae | Leptoceras menziesii | | | | | | | | | | | | | | | | | | | | | | X | | | X | | |
| Orchidaceae | Lyperanthus serratus | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Orchidaceae | Microtis atrata | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Orchidaceae | Microtis media | | | | | | | X | | | | X | | | | | | | X | | | X | | | | X | | X |
| Orchidaceae | Microtis orbicularis | | | | | | | | | X | | | | | | | | | | | | | | X | | | | |
| Orchidaceae | Pheladenia deformis | | | | | | | | | | | | | | | | | | | | | | | | | X | X | |
| Orchidaceae | Prasophyllum cyphochilum | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Orchidaceae | Prasophyllum drummondii | | | X | | | | | | X | | | | | | | | | | | | | | X | | | | X |
| Orchidaceae | Prasophyllum fimbria | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Orchidaceae | Prasophyllum hians | | | | | | | | | | | X | | | | | | | | | | | | | | X | | X |
| Orchidaceae | Prasophyllum macrostachyum | | | | | | | | | | X | X | | | | | | | | | | | | X | | | | |
| Orchidaceae | Prasophyllum parvifolium | | | | | | | | | | | X | | | | | | | | | | | | | | X | | |
| Orchidaceae | Pterostylis recurva | | | | | | | | | | | | | | | | | | | | | | | | | X | X | |
| Orchidaceae | Pterostylis sanguinea | | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| Orchidaceae | Pterostylis sp. Slender Snail Orchid (G.J. Keighery 14516) PN | | | | | | | | | | | X | | | | | | | | | X | X | | | | X | X | |
| Orchidaceae | Pterostylis vittata | | | | | | | | | | | X | | | | | | | X | | | | | | | X | X | |
| Orchidaceae | Pyrorchis nigricans | | | | | | | | | | X | X | | | | | | X | | | | | | | | X | X | |
| Orchidaceae | Thelymitra antennifera | | | | | | | X | | X | | | | | | | | | | | | | | | | | | |
| Orchidaceae | Thelymitra crinita | | | | | | | | | | | X | | | | | | | | | | | | | | X | | |
| Orchidaceae | Thelymitra flexuosa | | | | | | | | | X | | | | | | | | | | | | | | | | X | | X |
| Orchidaceae | Thelymitra graminea | | | | | | | | | | | | | | | | | | | | | | | | | X | | |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orchidaceae | Thelymitra vulgaris | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Philydraceae | Philydrella drummondii | | | | | X | X | X | | X | | | | | | | | | | | | | | | | | | |
| Philydraceae | Philydrella pygmaea subsp. pygmaea | X | | X | | | | X | | X | | | X | | X | X | | | | | X | X | | | | | | X |
| Phormiaceae | Dianella revoluta var. divaricata | | | | | | | | | | | X | | | | | | X | | | | | X | X | | | | |
| Poaceae | Agrostis plebeia | | | | | X | | | | X | | | | | | | | | | | | | | | | | | |
| Poaceae | Agrostis preissii | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Poaceae | * Aira caryophyllea | | X | X | | | | | | X | X | X | X | | | | | | | X | X | X | | | | | | |
| Poaceae | * Aira cupaniana | | | | X | | | | | | | | | | | | | | | | | | X | X | | | | X |
| Poaceae | Amphibromus nervosus | | | | | X | X | | | X | | | | | | | | | | | | | | X | | X | | |
| Poaceae | Amphipogon amphipogonoides | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Poaceae | Amphipogon debilis | X | | | | | | | | X | | | | | | | | | | | X | | | | | X | | |
| Poaceae | Amphipogon turbinatus | | | | | | | | X | | | X | | | | | | | | | | | | | | X | X | |
| Poaceae | * Anthoxanthum odoratum | | | | | | | | | X | | | | | | | | | | | | | | X | X | X | | X |
| Poaceae | Aristida ramosa | | | | | | | | | | X | | X | | | | | | | | | | | | | | | |
| Poaceae | Austrodanthonia caespitosa | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| Poaceae | Austrodanthonia occidentalis | X | | | | | | | | | X | X | X | | | | | | | | | | X | | | | | |
| Poaceae | Austrodanthonia setacea | | | X | | | | | X | | | | | | | | | | | | | | | X | | | | X |
| Poaceae | Austrostipa campylachne | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| Poaceae | Austrostipa compressa | | | | | | | | | | X | X | | | | | | | | X | | | | | | X | X | X |
| Poaceae | Austrostipa flavescens | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Poaceae | Austrostipa hemipogon | | | | | | | | | | | | | | | | | | | | | | | X | | X | | |
| Poaceae | Austrostipa semibarbata | | | | | | | | | | X | X | | | | | | | | | | | | | | | | |
| Poaceae | Austrostipa tenuifolia | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Poaceae | * Avena barbata | | | | | | | | | | | | | | | | | | | | | | X | | X | X | | |

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Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Poaceae | * Avena fatua | | | | | | | | | X | | | | | | | | | | | | | | X | X | | | |
| Poaceae | * Briza maxima | X | X | X | X | | | X | X | | | X | | | | | | | X | X | X | X | | X | X | X | | X |
| Poaceae | * Briza minor | | | X | X | | | X | | X | X | X | | | | X | X | | X | | X | X | | X | X | X | X | X |
| Poaceae | * Bromus catharticus | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Poaceae | * Bromus diandrus | | | | | | | | | X | | | | | | | | | | | | | X | | X | | | |
| Poaceae | * Bromus hordeaceus | | | | | | | | | | | | | | | | | | | | | | X | | | X | | |
| Poaceae | * Bromus madritensis | | | | | | | | | X | | | | | | | | | | | | | | X | | | | |
| Poaceae | * Cynodon dactylon | | | | | | | | | X | | | | X | | | | | | | | | X | | X | X | | X |
| Poaceae | Deyeuxia quadriseta var. quadriseta | | | | | | | | | | | | | | | | | | | | | | | | | X | | X |
| Poaceae | * Digitaria sanguinalis | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Poaceae | * Ehrharta calycina | | | | | | | | | | | X | | | | | | | | | | | | X | | | | |
| Poaceae | * Ehrharta longiflora | | | | | | | | | | | X | | | | | | | | | | | X | | X | | X | |
| Poaceae | * Eragrostis curvula | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Poaceae | * Glyceria maxima | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Poaceae | * Hainardia cylindrica | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Poaceae | Hemarthria uncinata var. uncinata | | | | | | | | | | | | | | | | | | | | | | | | | X | X | |
| Poaceae | * Holcus lanatus | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Poaceae | * Holcus setiger | | | | | | | | | | | | | | | X | | | | | | | | X | | | | |
| Poaceae | * Hordeum geniculatum | | | | | | | | | | | | | | | | | | | | | | X | X | | X | | |
| Poaceae | * Hordeum leporinum | | | | | | | | | | | | | | X | | | | | | | | X | | | X | | |
| Poaceae | Lachnagrostis filiformis | | | | | | | | | X | | | | | | | | | | | | | | X | | | | X |
| Poaceae | Lachnagrostis plebeia | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Poaceae | * Lagurus ovatus | | | | | | | | | | | | | | | | | | | | | | X | X | X | X | X | |
| Poaceae | * Lolium multiflorum | | | | | | | | | X | | | | | | | | | | | | | X | | X | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Poaceae | * Lolium rigidum | | | | | | | | | | | | | | | | | | | | | | X | | X | | | X |
| Poaceae | Microlaena stipoides | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Poaceae | Microlaena stipoides var. stipoides | | | | | | | | | | X | X | | | | | | | | | | | | | | X | | X |
| Poaceae | Neurachne alopecuroidea | X | | X | | | | | | X | X | X | | | | | | | | | | | | | | X | | |
| Poaceae | * Parapholis incurva | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Poaceae | * Paspalum dilatatum | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Poaceae | * Phalaris minor | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Poaceae | * Poa annua | | | | | | | | | X | X | | | | | | | | | | | | X | X | X | | X | |
| Poaceae | Poa drummondiana | | | | | | | | | | | X | | | | | | | | | | | | | | | X | |
| Poaceae | Poa poiformis var. poiformis | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Poaceae | * Polypogon monspeliensis | | | | | | | | | | | | | | | | | | | | | | X | | X | | | X |
| Poaceae | Polypogon tenellus | | | | | X | X | | | X | | | | | X | X | | | | | X | | | X | | | | |
| Poaceae | Spinifex longifolius | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Poaceae | Sporobolus virginicus | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Poaceae | * Stenotaphrum secundatum | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Poaceae | Tetrarrhena laevis | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Poaceae | * Vulpia bromoides | | | | | | | | | | | | | | | | | | | | | X | X | X | | | | |
| Poaceae | * Vulpia fasciculata | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Poaceae | * Vulpia myuros | | | | X | | | | | | | | | | | | X | | | | X | | | | | | | |
| Poaceae | * Vulpia myuros var. myuros | | | | | | | | | X | X | | | | | | | | | | | | | X | X | X | | X |
| Poaceae | * Vulpia sp. scps | | | | | X | | | | | | | | | | | | X | X | X | | | | | | | | |
| Potamogetonaceae | Ruppia megacarpa | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Restionaceae | Apodasmia ceramophila MS | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Restionaceae | Chaetanthus aristatus | | | | | | | | | | | | | | X | X | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Restionaceae | Cytogonidium leptocarpoides | | | | | | | | | | | | | | | | | | X | | | | | | | | | X |
| Restionaceae | Desmocladus fasciculatus | X | | X | X | | | X | X | | | X | | | | | | | | | | | | | | X | X | |
| Restionaceae | Desmocladus flexuosus | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Restionaceae | Hypolaena exsulca | X | | | X | | | | X | | X | X | | | | | | X | X | | | | | | | | X | |
| Restionaceae | Hypolaena pubescens | | | | | | | | | | | | | | | | | | X | | | | | X | | | | X |
| Restionaceae | Lepyrodia glauca | | | | | | | | | | | | | | | | | | | | | X | | X | | X | | |
| Restionaceae | Lepyrodia macra | X | | | | | | X | X | | | | X | | | | | | | | | | | | | | | |
| Restionaceae | Lepyrodia muirii | | | | | | | | | X | | | | | | | | | | | | | | | | | | X |
| Restionaceae | Loxocarya cinerea | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Restionaceae | Lyginia barbata | | | | | | | | | | X | X | | | | | | | | | | | | | | | X | X |
| Restionaceae | Meeboldina cana | | X | | | X | X | | X | X | | | | | X | | | | | | X | | | X | | | | |
| Restionaceae | Meeboldina coangustata | | | | | X | | X | | X | | | | | | | X | | | | | | | X | | | | X |
| Restionaceae | Meeboldina roycei MS | | X | | | | | | | | | | X | | | | | | | | | X | | X | | | | |
| Typhaceae | Typha domingensis | | | | | | | | | X | | | | | | | | | | | | | | | | X | | |
| Typhaceae | * Typha orientalis | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Xanthorrhoeaceae | Xanthorrhoea brunonis | X | | | | | | | | | X | X | | | | | | | | | | | | | | | | |
| Xanthorrhoeaceae | Xanthorrhoea preissii | X | | X | X | | | X | X | | | X | X | | | | | | X | | | | | X | | | | |
| Zannichelliaceae | Lepilaena preissii | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Dicot** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aizoaceae | * Carpobrotus aequilaterus | | | | | | | | | | | | | | | | | | | | | | X | | | X | | |
| Aizoaceae | * Carpobrotus edulis | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Aizoaceae | Carpobrotus virescens | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Aizoaceae | * Tetragonia decumbens | | | | | | | | | | | | | | | | | | | | | | X | | | | X | |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Amaranthaceae | Alternanthera nodiflora | | | | | | | | | X | | | | | | | | | | | | | | | X | | | X |
| Amaranthaceae | * Amaranthus lividus | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Amaranthaceae | Ptilotus drummondii var. drummondii | | | | | | | | | | X | | | | | | | | | | | | X | | | | | |
| Amaranthaceae | Ptilotus manglesii | | | | | | | | | | | X | | | | | | | | | | | X | | | | | |
| Amaranthaceae | Ptilotus polystachyus var. polystachyus | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Apiaceae | Actinotus leucocephalus | X | | | | | | | | | | | | | | | | | | | | | | | | X | X | |
| Apiaceae | Apium annuum | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X |
| Apiaceae | Apium prostratum var. prostratum | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Apiaceae | Centella asiatica | | | | | | | | | | | | | | | | | | | | | | | | | X | | X |
| Apiaceae | Daucus glochidiatus | | | | | | | | | | | | | | | | | | | | | | X | | | X | | |
| Apiaceae | Eryngium ferox MS | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Apiaceae | Eryngium pinnatifidum subsp. palustre MS | | | | | | | | | X | | | | | | | | | | | | | | X | | | | |
| Apiaceae | Eryngium pinnatifidum subsp. pinnatifidum MS | | | X | | | | | | | X | X | | | | | | | | | | | | | | X | | |
| Apiaceae | * Foeniculum vulgare | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Apiaceae | Homalosciadium homalocarpum | X | | | X | | | | | | X | | | | | | | | X | | X | | | | | X | | |
| Apiaceae | Hydrocotyle alata | X | | | | | | | | | | | | | | X | | | | | X | X | | X | | X | | |
| Apiaceae | Hydrocotyle callicarpa | | | | | | | X | | X | X | | | | | | | | X | X | | X | X | | | | | |
| Apiaceae | Hydrocotyle diantha | | | | | | | | | | | | X | | | | | | | | | | | | | X | | X |
| Apiaceae | Hydrocotyle hispidula var. hispidula | | | | | | | | | | | | | | | | | | | | | | | X | | X | | |
| Apiaceae | Hydrocotyle pilifera | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| Apiaceae | Pentapeltis peltigera | | | | | | | | | | X | X | | | | | | | | | | | | | | | | |
| Apiaceae | Platysace compressa | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Apiaceae | Schoenolaena juncea | | | | | X | | X | X | X | | | X | | | | | | | | | | | X | | X | | X |
| Apiaceae | Trachymene coerulea subsp. coerulea | | | | | | | | | | | | | | | | | | | | | | | X | | | X | |

**EEEA study area Pinjarra Plain species list**
Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apiaceae | Trachymene pilosa | | | | X | | | | | | | X | | | | | | X | | X | X | | | | | X | X | |
| Apiaceae | Xanthosia huegelii subsp. huegelii MS | X | | X | X | | | | X | | X | X | | | | | | | | | | | | | | X | | |
| Asclepiadaceae | * Gomphocarpus fruticosus | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Asteraceae | Amblysperma minor | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Asteraceae | Amblysperma spathulata | | | | X | | | | | | | X | | | | | | | | | | | | | | | | |
| Asteraceae | Angianthus drummondii | | | | | X | X | | | X | | | | | | | | | | | | | | X | | | | |
| Asteraceae | Angianthus preissianus | | | | | X | | | | X | | | | | | X | | | | | X | | | X | | | | |
| Asteraceae | * Arctotheca calendula | | | | | | | | | | | | | | | X | | | | | | | | | X | X | X | |
| Asteraceae | Asteridea pulverulenta | X | | | | | | | | | | | | | | | | | | | | | | | | X | X | |
| Asteraceae | Blennospora doliiformis | | | | | | | | | | | | | | | X | | | | | X | | | X | | | | |
| Asteraceae | Brachyscome bellidioides | | | | | X | X | X | | X | | | | | | X | | | | | X | X | | X | | | | X |
| Asteraceae | * Carduus pycnocephalus | | | | | | | | | | | | | | | | | | | | | | X | | X | | X | |
| Asteraceae | * Centaurea melitensis | | | | | | | | | | | | | | | | | | | | | | X | | X | X | | |
| Asteraceae | * Cirsium vulgare | | | | | | | | | | | | | | | | | | | | | | X | X | X | X | | |
| Asteraceae | * Conyza sumatrensis | | | | | | | | | | | | | | | | | | | | | X | X | | X | | X | |
| Asteraceae | Cotula coronopifolia | | | | | | | | | X | | | | | X | | X | | | | | | | | X | | | X |
| Asteraceae | Cotula cotuloides | | | | | | | | | X | | | | | | | | | | X | | | | X | X | | | X |
| Asteraceae | * Cotula turbinata | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Asteraceae | * Dittrichia graveolens | | | | | | | | | | | | | X | | | | | | | | | X | | X | | | |
| Asteraceae | Euchiton collinus | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Asteraceae | Euchiton sphaericus | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Asteraceae | Gnephosis drummondii | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Asteraceae | Hyalosperma cotula | X | | | | | X | | | X | X | | X | | | | | | | | | | | X | | | | |
| Asteraceae | * Hypochaeris glabra | | X | X | X | | | | | | X | X | X | X | | | X | X | X | X | X | X | X | X | X | X | | X |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Asteraceae | Ixiolaena viscosa | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X |
| Asteraceae | Lagenophora huegelii | | | | X | | | | | | | X | | | | | | | | | | | | | | X | X | X |
| Asteraceae | Millotia tenuifolia var. tenuifolia | | | | | | | | | | | X | | | | | | | | X | | | | | | X | X | |
| Asteraceae | Myriocephalus helichrysoides | | | | | | | | | X | | | | | X | | | | | | | | | X | | | | X |
| Asteraceae | Myriocephalus isoetes | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Asteraceae | Olearia axillaris | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Asteraceae | Olearia paucidentata | | | | | | | | | | | X | X | | | | | | | | | | | | | | | |
| Asteraceae | Podolepis gracilis | | | | | X | | | | | X | X | | | | | | | | | | | | | | | | |
| Asteraceae | Podolepis gracilis (Swamp form) (GJ Keighery 13126) | X | | | | | | | | X | | | | | | | | | | | | | | | | X | | X |
| Asteraceae | Podotheca angustifolia | | | | | | | | | | | | | | | | | | | X | | | X | X | | | | |
| Asteraceae | Podotheca gnaphalioides | | | | | | | | | | | | | | | | | | | | | | | X | | X | | |
| Asteraceae | Pogonolepis stricta | | | | | | | | | | | | | | X | | | | | | X | | | X | | | | |
| Asteraceae | * Pseudognaphalium luteoalbum | | | | | | | | | | | | | | | | | | | | | | X | | X | | | X |
| Asteraceae | Quinetia urvillei | | | X | X | | | | | | | X | | | | | | | | X | X | | | | | X | X | |
| Asteraceae | Rhodanthe citrina | | | | | | | | | | | | | | | | | | | X | | | | | | X | | |
| Asteraceae | Rhodanthe pyrethrum | | X | | | X | | | | X | | | | | | | | | | | | | | | | | | |
| Asteraceae | Senecio glomeratus | | | | | | | | | | | | | | | | | | | | | | | | | X | | X |
| Asteraceae | Senecio multicaulis subsp. multicaulis | | | | | | | | | | | X | X | | | | | | | | | | | | | | | |
| Asteraceae | Senecio pinnatifolius var. maritimus | | | | | | | | | | | | | | | | | | | | | | X | | | X | | |
| Asteraceae | Senecio quadridentatus | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X |
| Asteraceae | Siloxerus humifusus | X | | | | | | | | | X | X | | | | X | | X | X | | X | X | | | | | | X |
| Asteraceae | Siloxerus multiflorus | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Asteraceae | * Sonchus asper subsp. glaucescens | | | | | | | | | | | | | | | | | | | | | | X | | X | | | X |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Asteraceae | Sonchus hydrophilus | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Asteraceae | * Sonchus oleraceus | | | | | | | | | | X | | | | | | X | | | | | X | X | | X | X | | |
| Asteraceae | * Symphyotrichum subulatum | | | | | | | | | | | | | | | | | | | | | | | | X | | | X |
| Asteraceae | * Urospermum picroides | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Asteraceae | * Ursinia anthemoides | | | | X | | | | | | | X | | | | | | X | | X | | | X | | X | X | X | |
| Asteraceae | * Vellereophyton dealbatum | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Asteraceae | Waitzia suaveolens var. suaveolens | | | | | | | | | | | X | | | | | | | | | | | | | | X | | |
| Brassicaceae | * Brassica tournefortii | | | | | | | | | | | | | X | | | | | | | | | X | | X | | | |
| Brassicaceae | * Cakile maritima | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Brassicaceae | * Heliophila pusilla | | | | | | | | | | | | | | | | | | | | | | X | | X | | X | |
| Brassicaceae | Menkea australis | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Brassicaceae | * Raphanus raphanistrum | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Brassicaceae | Stenopetalum gracile | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Callitrichaceae | * Callitriche hamulata | | | | | X | | | | X | | | | | | | | | | | | | | | | | | |
| Callitrichaceae | * Callitriche stagnalis | | | | | X | | | | X | | | | | | | | | | | | | | | X | | | |
| Campanulaceae | * Wahlenbergia capensis | | | | | | | | | | | X | | | | | | | | | | | | | X | | X | |
| Campanulaceae | Wahlenbergia preissii | X | | | | | | | | | X | X | | | | | | | | X | | | | | | X | X | X |
| Campanulaceae | Wahlenbergia stricta | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Caryophyllaceae | * Cerastium glomeratum | | | | | | | | | | | | | X | | | | | | | | | X | | X | | | |
| Caryophyllaceae | * Corrigiola litoralis | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Caryophyllaceae | * Petrorhagia dubia | | | | | | | | | | | | | X | | | | | | | | | X | | X | X | | |
| Caryophyllaceae | * Sagina apetala | | | | | | | | | | | | | | | | | | | X | | | X | X | X | | | |
| Caryophyllaceae | * Silene nocturna | | | | | | | | | | | | | X | | | | | | | | | | | | | | |
| Caryophyllaceae | * Spergularia marina | | | | | | | | | | | | | | | | | | | | | | | X | X | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Caryophyllaceae | * Stellaria media | | | | | | | | | | | | | X | | | | | | | | | X | | X | | | |
| Casuarinaceae | Allocasuarina humilis | | | | | | | | | | X | X | | | | | | | | | | | | | | X | | |
| Casuarinaceae | Casuarina obesa | | | | | | | | | | | | | | X | | | | | | X | | X | X | | | | |
| Chenopodiaceae | Atriplex hypoleuca | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Chenopodiaceae | Atriplex isatidea | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Chenopodiaceae | * Atriplex prostrata | | | | | | | | | | | | | | | | | | | | | | X | X | | | | |
| Chenopodiaceae | Chenopodium ambrosioides var. ambrosioides | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Chenopodiaceae | * Chenopodium murale | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Chenopodiaceae | Halosarcia indica subsp. bidens | | | | | | | | | | | | | | | | | | | | | | X | X | | | | |
| Chenopodiaceae | Halosarcia lepidosperma | | | | | | | | | | | | | | | | | | | | | | X | X | | | | |
| Chenopodiaceae | Halosarcia leptoclada subsp. inclusa | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Chenopodiaceae | Rhagodia baccata subsp. baccata | | | | | | | | | | | | | | | | | | | | | | X | X | | | | |
| Chenopodiaceae | Sarcocornia quinqueflora | | | | | | | | | | | | | | X | | | | | | | | X | X | | | | |
| Chenopodiaceae | Suaeda australis | | | | | | | | | | | | | | | | | | | | | | X | X | | | | |
| Convolvulaceae | Wilsonia backhousei | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Crassulaceae | * Crassula alata var. alata | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Crassulaceae | Crassula closiana | | | | | | | | | X | | | | | | | | | | | | | | | | | X | X |
| Crassulaceae | Crassula colorata var. colorata | | | | X | | | | | | X | X | X | | | | | | | X | | | | | | | X | |
| Crassulaceae | Crassula decumbens var. decumbens | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Crassulaceae | Crassula exserta | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Crassulaceae | * Crassula natans var. minus | | | | | X | | | | X | | | | | | | | | | | | | | | | | | X |
| Crassulaceae | Crassula peduncularis | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| Cuscutaceae | * Cuscuta epithymum | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Dilleniaceae | Hibbertia acerosa | | | X | | | | | X | | X | X | | | | | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dilleniaceae | Hibbertia hypericoides | | | X | X | | | | | | X | X | | | | | | | | | | | | | | X | X | |
| Dilleniaceae | Hibbertia racemosa | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Dilleniaceae | Hibbertia stellaris | | | | | | | | X | | | | X | | | | | | | | | | | | | | | X |
| Dilleniaceae | Hibbertia subvaginata | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Dilleniaceae | Hibbertia vaginata | | | X | | | | | | | X | | | | | | | | | | | | | | | X | | |
| Droseraceae | Drosera bulbigena | X | | | | | | | | X | X | | | | | | | | | | | | | | | | | |
| Droseraceae | Drosera bulbosa subsp. bulbosa | | | X | | | X | | X | | | | | | | | | | | | | | | | | | | |
| Droseraceae | Drosera erythrorhiza subsp. erythrorhiza | | | | X | | | | | | X | X | | | | | | | | | | | | | | X | X | |
| Droseraceae | Drosera gigantea subsp. gigantea | X | | X | | | | X | X | X | X | | X | | | X | | | | | | | | | | | | X |
| Droseraceae | Drosera glanduligera | | | X | X | | | | | | | X | | | | X | | | | | X | X | | | | X | X | X |
| Droseraceae | Drosera macrantha subsp. macrantha | | | | X | | | | | | | X | | | | | | | | | | X | | | | | | X |
| Droseraceae | Drosera marchantii subsp. marchantii | | | X | | | | | | X | X | | | | | | | | | | | | | | | | | |
| Droseraceae | Drosera menziesii subsp. menziesii | | X | | | | | X | X | | | | | | | | | | | | X | X | | | | X | | X |
| Droseraceae | Drosera menziesii subsp. penicillaris | | | X | | | | | | | X | X | | | | | | | | | | X | | | | X | | X |
| Droseraceae | Drosera neesii subsp. neesii | X | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Droseraceae | Drosera neesii (Pink flowered sthn form)(BJ Keighery & N Gibson 96) | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| Droseraceae | Drosera nitidula subsp. nitidula | | | | | | | | | X | | | | | | | | | | | | | | | | | X | |
| Droseraceae | Drosera pulchella | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Droseraceae | Drosera rosulata | X | | | | | | | | X | | | | | | | | | | | | X | | | | | | X |
| Droseraceae | Drosera stolonifera subsp. porrecta | | | | X | | | | | | X | X | | | | X | | X | | | | | | | | X | | X |
| Droseraceae | Drosera stolonifera subsp. stolonifera | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| Droseraceae | Drosera tubaestylis | | | | | | | X | | X | X | X | | | | | | | | | | | | | | | | |
| Droseraceae | Drosera zonaria | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Elatinaceae | Elatine gratioloides | | | | | X | | | | X | | | | | | | | | | | | | | | | | | |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Epacridaceae | Astroloma ciliatum | | | | | | | | | | | X | | | | | | | | | | | | | | X | X | |
| Epacridaceae | Astroloma pallidum | X | | X | | | | | | | X | X | X | | | | | | | | | | | | | X | | |
| Epacridaceae | Brachyloma preissii | | | | | | | | | | | | | | | | | | | X | | | | | | X | X | |
| Epacridaceae | Conostephium pendulum | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Epacridaceae | Conostephium preissii | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Epacridaceae | Leucopogon propinquus | | | | X | | | | | | X | X | | | | | | | | | | | | | | | X | |
| Epacridaceae | Lysinema ciliatum | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Euphorbiaceae | * Euphorbia peplus | | | | | | | | | | | | | X | | | | | | | | | X | | X | | | |
| Euphorbiaceae | Monotaxis occidentalis | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Euphorbiaceae | Phyllanthus calycinus | | | | X | | | | | | | X | | | | | | | | | | | | | | X | X | X |
| Euphorbiaceae | Poranthera microphylla | | | | | | | | | | X | X | | | | | | | | X | X | | | | | | X | |
| Euphorbiaceae | Stachystemon vermicularis | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Frankeniaceae | Frankenia pauciflora var. pauciflora | | | | | | | | | | | | | | | | | | | | | | X | | X | X | | |
| Fumariaceae | * Fumaria capreolata subsp. capreolata | | | | | | | | | | | | | | | | | | | | | | X | | X | X | | |
| Fumariaceae | * Fumaria muralis | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Gentianaceae | * Centaurium erythraea | | | | | | | | | X | X | X | | | | | | | | | | | X | X | | | | |
| Gentianaceae | * Cicendia filiformis | | X | X | | X | X | X | | X | | | | | | X | | | | | X | X | | | | | | X |
| Geraniaceae | * Erodium botrys | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Geraniaceae | * Erodium cicutarium | | | | | | | | | | X | X | | | | | | | | | | | X | | | | | |
| Geraniaceae | * Geranium molle | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Geraniaceae | Geranium retrorsum | | | | | | | | | | | | | | | | | | | | | | X | | | X | | |
| Geraniaceae | Geranium solanderi | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Geraniaceae | * Pelargonium capitatum | | | | | | | | | | | | | X | | | | | | | | | X | | X | | | |
| Geraniaceae | Pelargonium littorale subsp. littorale | | | | | | | | | | | X | | | | | | | | | | | X | | | X | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Goodeniaceae | Anthotium junciforme | | | | | | | | | X | | | | | | | | | | | | | | X | | | | X |
| Goodeniaceae | Dampiera alata | | | | | | | | | | X | X | | | | | | | | | | | | | | | | |
| Goodeniaceae | Dampiera linearis | | X | X | X | | | | X | | X | X | X | | | | | | X | | | X | | | | X | X | X |
| Goodeniaceae | Dampiera trigona | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Goodeniaceae | Goodenia caerulea | X | | | | | | | X | | | X | | | | | | | | | | | | | | | | |
| Goodeniaceae | Goodenia micrantha | | | | | X | | X | | X | | | | | | X | | | | | X | | | X | | | | X |
| Goodeniaceae | Goodenia pulchella | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| Goodeniaceae | Goodenia pulchella subsp. Coastal Plain B (L.W. Sage 2336) PN | | | | | | | | | | X | X | | | | | | | | | | | | X | | | | X |
| Goodeniaceae | Lechenaultia biloba | | | | X | | | | | | | X | | | | | | | | | | | | | | | | |
| Goodeniaceae | Lechenaultia expansa | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Goodeniaceae | Scaevola crassifolia | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Goodeniaceae | Scaevola lanceolata | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Goodeniaceae | Scaevola phlebopetala | | | X | X | | | | | | | X | | | | | | | | | | | | | | X | X | X |
| Goodeniaceae | Velleia trinervis | | | | | | | | | X | | | | | | | | | X | | | X | | | | X | | X |
| Haloragaceae | Gonocarpus nodulosus | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Haloragaceae | Gonocarpus pithyoides | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Haloragaceae | Haloragis tenuifolia | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Haloragaceae | Myriophyllum drummondii | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| Haloragaceae | Myriophyllum echinatum | | | | | | X | | | X | | | | | | | | | | | X | | | X | | | | |
| Haloragaceae | Myriophyllum limnophilum | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Lamiaceae | Hemiandra pungens | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| Lamiaceae | Hemiandra pungens var. pungens | | | | | | | | | | | | X | | | | | | | | | | | | | | | X |
| Lamiaceae | Hemigenia microphylla | | | | | | | | | | | | | | | | | | | | | X | | X | | | | |
| Lamiaceae | * Stachys arvensis | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |

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Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lauraceae | Cassytha flava | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Lauraceae | Cassytha glabella | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Lauraceae | Cassytha micrantha | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| Lauraceae | Cassytha pomiformis | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Lauraceae | Cassytha racemosa | | X | | | | | | | | | X | | | | | | | | | | X | | X | | | X | |
| Lentibulariaceae | Utricularia inaequalis | | | | | | | | | | | | | | | | | | | | | | | X | | | | X |
| Lentibulariaceae | Utricularia menziesii | | | | | | | | | | | | | | | X | | | | | | | | X | | | | X |
| Lentibulariaceae | Utricularia multifida | | | | | | X | | | X | | | X | | X | X | | | | | X | X | | X | | | | X |
| Lentibulariaceae | Utricularia tenella | | | | | | | | | X | | | X | | | | | | | | | | | X | | | | X |
| Lentibulariaceae | Utricularia violacea | | | | | | | | | | | | | | X | X | | | | | | | | X | | | | |
| Linaceae | Linum marginale | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Lobeliaceae | Isotoma hypocrateriformis | | | | | | | | | | X | X | | | | | | | | | | | | X | | | | X |
| Lobeliaceae | Isotoma pusilla | | | | | X | | | | X | | | | | | | | | | | | | | | | | | |
| Lobeliaceae | Isotoma scapigera | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Lobeliaceae | Lobelia alata | | | | | | | | | | | | | | | | | | | | | | X | | | | | X |
| Lobeliaceae | Lobelia tenuior | | | | | | | | | | X | X | | | | | | | | | | | | | | X | X | |
| Lobeliaceae | * Monopsis debilis | | | | | | | | | | | | | | | | X | | | | | | | X | X | | | X |
| Loganiaceae | Phyllangium palustre | | | | | | | | | X | | | | | | | | | | | | | | X | | | | |
| Loganiaceae | Phyllangium paradoxum | | X | | | | | | | | | X | | | | X | | X | X | X | X | X | | | | X | X | X |
| Loranthaceae | Amyema linophylla subsp. linophylla | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X |
| Loranthaceae | Amyema miquelii | | | | | | | | | | | | | | | | | | | | | | | | | X | | X |
| Loranthaceae | Lysiana casuarinae | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X |
| Loranthaceae | Nuytsia floribunda | X | | | | | | | | | X | X | | | | | | | | | | | | | | | X | X |
| Lythraceae | * Lythrum hyssopifolia | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Malvaceae | Lawrencia spicata | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Menyanthaceae | Villarsia albiflora | | X | | | | | | | | | | | | | | X | | | | | | | | | | | X |
| Menyanthaceae | Villarsia capitata | | X | | | | | | | | | | | | X | | X | | | | | | | X | | | | X |
| Menyanthaceae | Villarsia submersa | | | | | X | | | | X | | | | | X | | | | | | | | | X | | | | |
| Menyanthaceae | Villarsia violifolia | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Mimosaceae | Acacia applanata | | | X | | | | | | | | X | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia barbinervis subsp. barbinervis | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia cyclops | | | | | | | | | | | | | | | | | | | | | | X | | | X | | X |
| Mimosaceae | Acacia dentifera | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia extensa | | | | | | | | | | | | X | | | | | | | | | | | X | | | | X |
| Mimosaceae | Acacia huegelii | | | | | | | | | | X | X | | | | | | | | | | | | | | | X | |
| Mimosaceae | Acacia incurva | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia lasiocarpa | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia lasiocarpa var. bracteolata | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Mimosaceae | Acacia lasiocarpa var. bracteolata long peduncle variant (G.J. Keighery 5026) PN | | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| Mimosaceae | Acacia lateriticola | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia nervosa | | | X | | | | | | | X | X | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia pulchella | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia pulchella var. glaberrima | | | | | | | | | | X | X | | | | | | | | | | | X | X | | X | X | |
| Mimosaceae | Acacia saligna | | | | | | | | | | X | X | | | | | X | X | X | X | | | | | | X | X | X |
| Mimosaceae | Acacia stenoptera | | | X | | | | | | | | X | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia urophylla | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Mimosaceae | Acacia willdenowiana | | | | X | | | | | | | | | | | | | | | | | | | | | X | | |
| Molluginaceae | Macarthuria australis | | | | | | | | | | | | | | | | | | | | | | | | | | X | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Myoporaceae | Eremophila glabra | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Myoporaceae | Myoporum caprarioides | | | | | | | | | | | | | | | | | | | | | | X | | | X | | X |
| Myrtaceae | Agonis flexuosa var. flexuosa | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Myrtaceae | Astartea aff. fascicularis (Gibson et al. 1994) | | X | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| Myrtaceae | Astartea affinis MS | | | | | | | | | X | | | X | | | | X | | X | | | | X | X | | | | X |
| Myrtaceae | Baeckea camphorosmae | | | X | X | | | | | | | X | | | | | | | | | | | | | | X | | |
| Myrtaceae | Calothamnus lateralis | | X | | | | | | | | | | | | | | X | | X | | | | | | | | | X |
| Myrtaceae | Calytrix angulata | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Myrtaceae | Calytrix flavescens | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Myrtaceae | Calytrix fraseri | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Myrtaceae | Darwinia citriodora | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Myrtaceae | Eucalyptus calophylla | | | X | | | | | X | | X | X | | | | | | | | | | | | | | X | | |
| Myrtaceae | Eucalyptus gomphocephala var. gomphocephala | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Myrtaceae | Eucalyptus marginata subsp. marginata | | | X | X | | | | | | X | X | | | | | | | | | | | | | | X | | |
| Myrtaceae | Eucalyptus rudis subsp. rudis | | | | | | | | | | | | | | | | X | | X | | | | X | | | | | X |
| Myrtaceae | Hypocalymma angustifolium | X | | | | | | | | | | | X | | | | | | | | | | | | | | | X |
| Myrtaceae | Hypocalymma robustum | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Myrtaceae | Kunzea glabrescens | | | | | | | | | | | | | | | | | X | | X | | | | | | X | X | |
| Myrtaceae | Kunzea micrantha subsp. micrantha | X | | | | | | X | | | X | X | X | | | | | | | | | | | | | | | X |
| Myrtaceae | Kunzea recurva | | | | | | | | | | | X | | | | | | | | | | | | | | | | X |
| Myrtaceae | * Leptospermum laevigatum | | | | | | | | | | | | | X | | | | | | | | | | | | | | |
| Myrtaceae | Melaleuca brevifolia | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Myrtaceae | Melaleuca cuticularis | | | | | | | | | | | | | | | X | | | | | | | | X | | | | |
| Myrtaceae | Melaleuca incana subsp. incana | | X | | | | | | | | | | | | | | X | | X | | | X | | | | | | X |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Myrtaceae | Melaleuca lateriflora subsp. acutifolia | | | | | | | | | | | | | | | | | | | | | X | | X | | | | |
| Myrtaceae | Melaleuca lateritia | | X | | | | | | | X | | | | | | | X | | | | | X | | X | | | | |
| Myrtaceae | Melaleuca pauciflora | | | | | X | | | | X | | | | | | | | | | | | X | | X | | | | X |
| Myrtaceae | Melaleuca preissiana | | | | | | | | | | | | X | | | | | | | | | | | | | X | | X |
| Myrtaceae | Melaleuca rhaphiophylla | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Myrtaceae | Melaleuca teretifolia | | | | | | | | | | | | | | | | | | | | | | | X | | | | X |
| Myrtaceae | Melaleuca thymoides | | | | | | | | | X | | | | | | | | | | | | | | | | X | X | X |
| Myrtaceae | Melaleuca uncinata | | | | | | | | | | | | | | | | | | X | X | X | X | | X | | | | |
| Myrtaceae | Melaleuca viminea subsp. viminea | | X | | | X | | | | X | | | | | | | | | X | X | X | X | | X | | | | |
| Myrtaceae | Pericalymma ellipticum | | X | | | | | X | X | | | | | | | | | X | X | | | | | | | | | X |
| Myrtaceae | Pericalymma ellipticum var. floridum | | | | | | | | | X | | | X | | | | | | | | | | | | | | | |
| Myrtaceae | Regelia ciliata | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Myrtaceae | Verticordia densiflora | X | | | | | | X | | | | | | | | | | | | | | | | | | | | |
| Myrtaceae | Verticordia densiflora var. densiflora | | | | | | | | | X | | | X | | | | | | | | | | | X | | | | |
| Myrtaceae | Verticordia huegelii var. stylosa | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Myrtaceae | Verticordia pennigera | X | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Myrtaceae | Verticordia serrata | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Onagraceae | Epilobium billardiereanum | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| Onagraceae | Epilobium billardiereanum subsp. billardiereanum | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Onagraceae | Epilobium hirtigerum | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Onagraceae | * Oenothera glazioviana | | | | | | | | | | | | | X | | | | | | | | | | | | | | |
| Orobanchaceae | * Orobanche minor | | | | | | | | | | X | X | | | | | | | | | | | X | | | | | X |
| Oxalidaceae | Oxalis perennans | | | | | | | | | | | | X | | | | | | | | | | | | | X | | |
| Oxalidaceae | * Oxalis pes-caprae | | | | | | | | | | | | | | | | | | | | | | X | | X | X | | X |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oxalidaceae | * Oxalis polyphylla | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Oxalidaceae | * Oxalis purpurea | | | | | | | | | | X | | | X | | | | | | | | | | | X | X | | |
| Papilionaceae | Bossiaea eriocarpa | | | X | X | | | | | | X | X | | | | | | | | | | | | | | X | | |
| Papilionaceae | Bossiaea sp. Waroona (B.J. Keighery & N. Gibson 229) PN | | | | X | | | | | | X | X | | | | | | | | | | | | | | | | |
| Papilionaceae | Daviesia angulata | | | | | | | | X | | X | X | | | | | | | | | | | | | | | | |
| Papilionaceae | Daviesia costata | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Papilionaceae | Daviesia decurrens subsp. decurrens MS | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Papilionaceae | Daviesia inflata | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Papilionaceae | Daviesia longifolia | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Papilionaceae | Daviesia physodes | | | | X | | | | | | X | | | | | | | | | | | | | | | X | | |
| Papilionaceae | Daviesia preissii | | | | | | | | | | X | X | | | | | | | | | | | | | | X | | |
| Papilionaceae | Dillwynia dillwynioides | | | | | | | | | | | | | | | | X | | X | | | | | X | | | | X |
| Papilionaceae | Euchilopsis linearis | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Papilionaceae | Eutaxia virgata | | X | | | | X | | | X | | | | | | | | | | | | X | | | | | | X |
| Papilionaceae | Gastrolobium capitatum | | | | X | | | | X | | | X | | | | | | | | | | | | | | | | |
| Papilionaceae | Gompholobium aristatum | | | | X | | | | | | | X | | | | | | | | | | | | | | | | |
| Papilionaceae | Gompholobium confertum | | | | | | | | | | | X | | | | | | | | | | | | | | X | | |
| Papilionaceae | Gompholobium knightianum | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Papilionaceae | Gompholobium marginatum | | | X | | | | | | | | X | | | | | | | | | | | | | | | | |
| Papilionaceae | Gompholobium polymorphum | X | | | X | | | | | | | X | | | | | | | | | | | | | | | | |
| Papilionaceae | Gompholobium tomentosum | | | | | | | | | | | | | | | | | X | X | X | | | | | | | X | |
| Papilionaceae | Hardenbergia comptoniana | | | | | | | | | | | X | | | | | | | | | | | X | X | | | X | |
| Papilionaceae | Hovea trisperma var. grandiflora | | | X | | | | | | | | | | | | | | | | | | | | | | | | |

**EEEA study area Pinjarra Plain species list**
Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Papilionaceae | Hovea trisperma var. trisperma | | | | X | | | | | | | X | | | | | | | | | | | | | | X | | |
| Papilionaceae | Isotropis cuneifolia subsp. cuneifolia | | | | | | | | | | | X | | | | | | | | | | | | | | X | X | |
| Papilionaceae | Jacksonia angulata | | | | X | | | | | | X | | | | | | | | | | | | | | | | | |
| Papilionaceae | Jacksonia furcellata | | | | | | | | | | | | | | | | | X | X | | | | X | | | X | X | |
| Papilionaceae | Jacksonia sternbergiana | | | | | | | | | | | X | | | | | | | | X | | | | | | X | X | X |
| Papilionaceae | Kennedia coccinea | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Papilionaceae | Kennedia prostrata | | | X | | | | | | | | X | | | | | | | | | | | | | | X | X | |
| Papilionaceae | * Lotus angustissimus | | | | | | X | | | X | X | X | | | | | | | | | X | | | | X | X | X | X |
| Papilionaceae | * Lotus subbiflorus | | | | | | | | | | | | | | | X | | | | | | X | | | | | | |
| Papilionaceae | * Lotus subbiflorus | | | | | | | | | | | | | | | | | | | | | | | | X | | | X |
| Papilionaceae | * Lupinus angustifolius | | | | | | | | | | | | | | | | | | | | | | | | X | X | | |
| Papilionaceae | * Lupinus cosentinii | | | | | | | | | | | | | | | | | | | | | | | | X | | X | |
| Papilionaceae | * Medicago polymorpha | | | | | | | | | | | | | X | | | | | | | | | X | | X | | | |
| Papilionaceae | * Melilotus indicus | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Papilionaceae | Nemcia capitata | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Papilionaceae | * Ornithopus compressus | | | X | | | X | X | | X | X | | | | | | | | | | | | | | | | | |
| Papilionaceae | * Ornithopus pinnatus | | | | | | | | | | | | | | | | | | | | | | | | X | | | X |
| Papilionaceae | Pultenaea ochreata | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Papilionaceae | Pultenaea reticulata | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Papilionaceae | Sphaerolobium medium | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Papilionaceae | Templetonia biloba | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Papilionaceae | * Trifolium angustifolium var. angustifolium | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Papilionaceae | * Trifolium arvense | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Papilionaceae | * Trifolium arvense var. arvense | | | | | | | | | | X | | | | | | | | | | | | X | | | | | |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Papilionaceae | * Trifolium campestre var. campestre | | | | | | | | | X | X | X | | | | | | | | | | | | | X | X | | |
| Papilionaceae | * Trifolium dubium | | | | | | | | | | | | | | | | | | | | | X | | | X | X | | |
| Papilionaceae | * Trifolium hybridum var. hybridum | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Papilionaceae | * Vicia hirsuta | | | | | | | | | | | | | | | | | | | | | | X | | X | | | |
| Papilionaceae | * Vicia sativa subsp. nigra | | | | | | | | | | | | | | | | | | | | | | | | X | | | X |
| Papilionaceae | Viminaria juncea | | | X | | X | | | X | X | | | X | | | | | | | | | | | | | | | X |
| Phytolaccaceae | * Phytolacca octandra | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Pittosporaceae | Billardiera variifolia | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Pittosporaceae | Pronaya fraseri | | | | X | | | | | | X | X | | | | | | | | | | | | | | | | |
| Polygalaceae | Comesperma calymega | | | | | | | | | | | | X | | | | | X | | | | | | | | | X | |
| Polygalaceae | Comesperma drummondii | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Polygalaceae | Comesperma integerrimum | | | | | | | | | | | | | | | | | | | | | | X | | | | | X |
| Polygalaceae | Comesperma polygaloides | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Polygalaceae | Comesperma virgatum | | | X | | | | | | | | X | | | | | | | | | | | | | | | | |
| Polygonaceae | * Acetosella vulgaris | | | | | | | | | | | | | | | | | | | | | | | | X | X | | |
| Polygonaceae | Muehlenbeckia adpressa | | | | | | | | | | | | | | | | | | | | | | X | | | X | | |
| Polygonaceae | * Rumex brownii | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Polygonaceae | * Rumex pulcher subsp. pulcher | | | | | | | | | | | | | | | | | | | | | | | | X | | | X |
| Portulacaceae | Calandrinia brevipedata | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Portulacaceae | Calandrinia calyptrata | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Portulacaceae | Calandrinia composita | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Portulacaceae | Calandrinia corrigioloides | | | | | | | | | | | X | | | | | | | | | | | X | | | | X | |
| Portulacaceae | Calandrinia granulifera | | | | | | | | | | | X | | | X | X | | | | | X | | | | | | X | |
| Primulaceae | * Anagallis arvensis | | | | | | | | | X | X | | X | | | | | | | | X | X | X | | X | X | | |

**EEEA study area Pinjarra Plain species list**
Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Primulaceae | Samolus junceus | | | | | | | | | | | | | | X | X | | | | | | | | X | | | | X |
| Primulaceae | Samolus repens var. repens | | | | | | | | | | | | | | | | | | | | | | X | | | | | X |
| Proteaceae | Adenanthos cygnorum subsp. cygnorum | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Proteaceae | Adenanthos meisneri | | | | | | | | | | X | X | | | | | | | | | | | | | | | | |
| Proteaceae | Banksia attenuata | | | | | | | | | | | | | | | | | X | | | | | | | | | X | |
| Proteaceae | Banksia grandis | | | X | | | | | | | X | X | | | | | | | | | | | | | | X | | |
| Proteaceae | Banksia ilicifolia | | | | | | | | | | | | | | | | | X | | | | | | | | | | X |
| Proteaceae | Banksia littoralis | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Proteaceae | Conospermum capitatum subsp. glabratum | | | | X | | | | | | | X | | | | | | | | | | | | | | | | |
| Proteaceae | Conospermum stoechadis subsp. stoechadis | | | | X | | | | | | | X | | | | | | | | | | | | | | | | |
| Proteaceae | Dryandra lindleyana | X | | X | X | | | X | X | | | X | | | | | | | | | | | | | | | | |
| Proteaceae | Dryandra lindleyana var. lindleyana | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Proteaceae | Grevillea bipinnatifida | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Proteaceae | Grevillea bipinnatifida subsp. pagna | | | | | | | | | | X | | X | | | | | | | | | | | | | | | |
| Proteaceae | Grevillea pilulifera | | | X | | | | | | | | X | | | | | | | | | | | | | | | | |
| Proteaceae | Hakea candolleana | X | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Proteaceae | Hakea ceratophylla | | | | | | | | X | X | | | X | | | | | | | | | | | | | | | |
| Proteaceae | Hakea incrassata | | | | | | | X | X | | | | | | | | | | | | | | | | | | | |
| Proteaceae | Hakea lissocarpha | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Proteaceae | Hakea marginata | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Proteaceae | Hakea prostrata | | | | | | | | | | | X | | | | | | | | | | | | | | X | X | |
| Proteaceae | Hakea sulcata | | | | | | | X | | | | | X | | | | | | | | | | | | | | | |
| Proteaceae | Hakea trifurcata | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Proteaceae | Hakea varia | X | | | | | | X | | | | | X | | | | | | X | | | X | | | | | | X |

**EEEA study area Pinjarra Plain species list**

Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Proteaceae | Isopogon asper | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Proteaceae | Persoonia elliptica | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Proteaceae | Persoonia saccata | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Proteaceae | Petrophile juncifolia | X | | | | | | | X | | X | | | | | | | | | | | | | | | X | | X |
| Proteaceae | Petrophile linearis | | | | X | | | | | | | X | | | | | | | | | | | | | | X | X | |
| Proteaceae | Petrophile seminuda | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Proteaceae | Petrophile striata | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Proteaceae | Stirlingia latifolia | | | | | | | | | | X | X | X | | | | | | | | | | | | | | X | X |
| Proteaceae | Synaphea acutiloba | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Proteaceae | Synaphea petiolaris | X | | | | | | X | X | | | | | | | | | | | | | | | | | | | |
| Proteaceae | Synaphea petiolaris subsp. petiolaris | X | | | | | | | | | X | X | | | | | | | | | | | | | | | | |
| Proteaceae | Synaphea spinulosa subsp. spinulosa | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Proteaceae | Xylomelum occidentale | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Ranunculaceae | Clematis pubescens | | | | | | | | | | | | | | | | | | | | | | | | | X | X | |
| Ranunculaceae | * Ranunculus muricatus | | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| Ranunculaceae | Ranunculus sessiliflorus var. sessiliflorus | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| Rhamnaceae | Spyridium globulosum | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Rubiaceae | * Galium murale | | | | | | | | | | | X | | | | | | | | | | | X | | | | | |
| Rubiaceae | Opercularia apiciflora | | | X | | | | | | | X | X | | | | | | | | | | | | | | | | |
| Rubiaceae | Opercularia hispidula | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X |
| Rubiaceae | Opercularia vaginata | | | | | | | | | | | X | | | | | | | | | | | | | | | | X |
| Rubiaceae | * Sherardia arvensis | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Rutaceae | Boronia crenulata | | | | | | | | | | | X | | | | | | | | | | | | | | | | X |
| Rutaceae | Boronia spathulata | | | | | | | | X | | X | | X | | | | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rutaceae | Philotheca spicata | | | X | X | | | | X | | X | X | | | | | | | | | | | | | | X | X | |
| Santalaceae | Exocarpos sparteus | | | | | | | | | | | | | | | | | X | | | | | X | X | | X | X | |
| Santalaceae | Leptomeria cunninghamii | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Sapindaceae | Dodonaea viscosa subsp. spatulata | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Scrophulariaceae | * Bartsia trixago | | | | | | | | | X | | | | X | | | | | | | X | X | | | X | | | X |
| Scrophulariaceae | * Dischisma arenarium | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Scrophulariaceae | * Dischisma capitatum | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Scrophulariaceae | Glossostigma diandrum | | | | | | | | | | | | | | X | | | | | | | | | X | | | | |
| Scrophulariaceae | Glossostigma drummondii | | | | | X | X | | | X | | | | | | | | | | | | | | | | | | |
| Scrophulariaceae | Gratiola pubescens | | X | | | X | X | | | X | | | | | | | X | | | | | | | | | | | X |
| Scrophulariaceae | * Parentucellia latifolia | | | X | | | | | | | | | X | X | | | | | | | | | | | | X | | X |
| Scrophulariaceae | * Parentucellia viscosa | X | | | | | | | | | | | | | | | | | | | | | X | | X | | | X |
| Scrophulariaceae | * Veronica arvensis | | | | | | | | | | | | | | | | | | | | X | | X | | X | | | X |
| Scrophulariaceae | Veronica sp. | | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| Scrophulariaceae | Veronica stolonifera | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Solanaceae | * Solanum americanum | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Solanaceae | * Solanum nigrum | | | | | | | | | | X | | | X | | | | | | | | | X | | | | | X |
| Solanaceae | Solanum symonii | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Stackhousiaceae | Stackhousia huegelii | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Stackhousiaceae | Stackhousia pubescens | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Stackhousiaceae | Tripterococcus brunonis | | | | | | | | | | X | | | | | | | | | | | | | | | X | | |
| Stackhousiaceae | Tripterococcus paniculatus MS | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sterculiaceae | Thomasia grandiflora | | | X | | | | | | | | X | | | | | | | | | | | | | | | | |
| Stylidiaceae | Levenhookia pusilla | | | X | X | | | | | X | | | | | | | | | X | X | X | X | | X | | X | | X |

**EEEA study area Pinjarra Plain species list**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stylidiaceae | Levenhookia stipitata | X | | | X | | | | | | | X | | | | | | | | | | | | X | | X | X | |
| Stylidiaceae | Stylidium amoenum | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Stylidiaceae | Stylidium brunonianum subsp. brunonianum | X | | | | | | | X | | X | X | | | | | | X | X | | | | | | | | X | |
| Stylidiaceae | Stylidium calcaratum | | X | | X | | | | | | X | X | | | | | | | X | | | | | X | | X | | |
| Stylidiaceae | Stylidium canaliculatum | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Stylidiaceae | Stylidium carnosum | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Stylidiaceae | Stylidium crassifolium | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Stylidiaceae | Stylidium dichotomum | X | | | | | | | | X | | | | | | | | | X | | | | | X | | | | X |
| Stylidiaceae | Stylidium divaricatum | | | | | X | | | | X | | | | | | | | | | | | | | | | | | |
| Stylidiaceae | Stylidium ecorne | | | | | | | | | X | | | | | | | | | | | | | | X | | | | X |
| Stylidiaceae | Stylidium guttatum | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Stylidiaceae | Stylidium inundatum | | X | | | | | | | | | | | | | | | | | | X | X | | X | | | | |
| Stylidiaceae | Stylidium junceum subsp. junceum | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Stylidiaceae | Stylidium longitubum | | X | | | | | | | | | | | | | | X | | | | | | | | | | | X |
| Stylidiaceae | Stylidium mimeticum | | | | | | | | | X | | | | | | | | | | | | X | | X | | | | X |
| Stylidiaceae | Stylidium periscelianthum | | | | | | | | | | | | | | X | X | | | | | X | | | X | | | | X |
| Stylidiaceae | Stylidium petiolare | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Stylidiaceae | Stylidium piliferum subsp. piliferum | | | | X | | | | | | X | X | | | | | | | | | | | | | | X | X | X |
| Stylidiaceae | Stylidium pulchellum | | | | | | | | | | | | | | | | | | | | X | | | | | | | X |
| Stylidiaceae | Stylidium repens | | | | | | | | | | | X | | | | | | | | | | | | | | | X | |
| Stylidiaceae | Stylidium roseo-alatum | | | | | | | | | | | | | | | X | | | | | | | | X | | | | X |
| Stylidiaceae | Stylidium roseonanum | | | | | | | | | X | | | | | X | | | | | | | | | X | | | | X |
| Stylidiaceae | Stylidium schoenoides | | | | | | | | | | | | | | | | | | | | | | | | | X | X | |
| Stylidiaceae | Stylidium utricularioides | | X | | | | | | | X | | | | | | | | | | | | | | | | | | |

**EEEA study area Pinjarra Plain species list**
Appendix 3c in The Vegetation, Flora, Fauna and Natural Areas of the Peel Harvey Eastern Estuary Area Catchment

| Family | Species Name | Pind01 | Pind02 | waro 01 | waro 02 | waro 03 | waro 04 | waro 05 | waro 06 | Waroonac531 | Waroonac532 | Waroonac533 | Waroonac534 | Waroonac535 | AUSTB-1 | AUSTB-2 | AUSTB-3 | AUSTB-4 | AUSTB-5 | AUSTB-6 | AUSTB-7 | AUSTB-8 | AustinBaybch | AustinBayclyp | AustinBayD | AustinBayJ/M | AustinBaysand | AustinBayWM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thymelaeaceae | Pimelea imbricata var. major | | | | | **X** | | | | **X** | | | | | | | | | | | | | | | | | | |
| Thymelaeaceae | Pimelea rosea subsp. rosea | | | | | | | | | | | | | | | | | | | | | | **X** | | | | **X** | |
| Tremandraceae | Platytheca galioides | | | | | | | | | | | | | | | | | | | | | | | | | **X** | | |
| Tremandraceae | Tetratheca hirsuta | | | | | | | | | | | | | | | | | | | | | | | | | **X** | | |
| Urticaceae | Parietaria debilis | | | | | | | | | | | | | | | | | | | | | | **X** | | | | | |
| Violaceae | Hybanthus calycinus | | | | | | | | | | | **X** | | | | | | | | | | | | | | | | |
| Violaceae | Hybanthus floribundus subsp. floribundus | | | | | | | | | | | | | | | | | | | | | | | | | **X** | | |

# APPENDIX 4: Vertebrate fauna known or likely to occur in the EEEA study area

**APPENDIX 4a: Mammals known or likely to occur in the EEEA study area**

**APPENDIX 4b: Birds known or likely to occur in the EEEA study area**

**APPENDIX 4c: Amphibians and reptiles known or likely to occur in the EEEA study area**

**APPENDIX 4d: Freshwater fish known or likely to occur in the EEEA study area**

## APPENDIX 4a: Mammals known or likely to occur in the EEEA study area

** Introduced Species*

| Scientific Name | Common Name |
|---|---|
| TACHYGLOSSIDAE<br>*Tachyglossus aculeatus* | Short-beaked Echidna |
| DASYURIDAE<br>*Antechinus flavipes*<br>*Dasyurus geoffroii*<br>*Phascogale tapoatafa*<br>*Sminthopsis gilberti* | Yellow-footed antechinus<br>Chuditch or Western Quoll<br>Brush-tailed Phascogale<br>Gilbert's Dunnart |
| MYRMECOBIIDAE<br>*Myrmecobius fasciatus* | Numbat |
| PERAMELIDAE<br>*Isoodon obesulus fusciventer* | Quenda or Southern Brown Bandicoot |
| BURRAMYIDAE<br>*Cercartetus concinnus* | Western Pygmy Possum |
| TARSIPEDIDAE<br>*Tarsipes rostratus* | Honey Possum |
| PHALANGERIDAE<br>*Trichosurus vulpecula vulpecula* | Common Brushtail Possum |
| MACROPODIDAE<br>*Macropus fuliginosus*<br>*Macropus irma*<br>*Setonix brachyurus* | Western Grey Kangaroo<br>Western Brush Wallaby<br>Quokka |
| MOLOSSIDAE<br>*Tadarida australis* | White-striped Freetail-bat |
| VESPERTILIONIDAE<br>*Chalinolobus gouldii*<br>*Chalinolobus morio*<br>*Falsistrellus mackenziei*<br>*Nyctophilus geoffroyi*<br>*Nyctophilus gouldii*<br>*Nyctophilus timoriensis*<br>*Vespadelus regulus* | Gould's Wattle Bat<br>Chocolate Wattled Bat<br>Western False Pipistrelle<br>Lesser Long-eared Bat<br>Gould's Long-eared Bat<br>Greater Long-eared Bat<br>Southern Forest Bat |
| MURIDAE<br>*Hydromys chrysogaster*<br>**Mus musculus*<br>**Rattus rattus* | Water Rat<br>House Mouse<br>Black Rat |
| CANIDAE<br>**Vulpes vulpes* | Fox |
| FELIDAE<br>**Felis catus* | Cat |
| LEPORIDAE<br>**Oryctolagus cuniculus* | Rabbit |

## APPENDIX 4b: Birds known or likely to occur in the EEEA study area

** Introduced Species*

| Scientific Name | Common Name |
|---|---|
| **Order STRUTHIONIFORMES** | |
| Family CASUARIIDAE | |
| *Dromaius novaehollandiae* | Emu |
| Family PHASIANIDAE | |
| *Coturnix pectoralis* | Stubble Quail |
| **Order ANSERIFORMES** | |
| Family ANATIDAE | |
| *Oxyura australis* | Blue-billed Duck |
| *Biziura lobata* | Musk Duck |
| *Stictonetta naevosa* | Freckled Duck |
| *Cygnus atratus* | Black Swan |
| *Tadorna tadornoides*) | Australian Shelduck |
| *Chenonetta jubata* | Australian Wood Duck |
| *Anas gracilis* | Grey Teal |
| *Anas castanea* | Chestnut Teal |
| *Anas platyrhynchos* | Mallard |
| *Anas superciliosa* | Pacific Black Duck |
| *Anas clypeata* | Northern Shoveler |
| *Anas rhynchotis* | Australasian Shoveler |
| *Malacorhynchus membranaceus* | Pink-eared Duck |
| *Aythya australis* | Hardhead |
| **Order PODICIPEDIFORMES** | |
| Family PODICIPEDIDAE | |
| *Tachybaptus novaehollandiae* | Australasian Grebe (Black-throated Grebe) |
| *Poliocephalus poliocephalus* | Hoary-headed Grebe |
| *Podiceps cristatus* | Great Crested Grebe |
| **Order PELECANIFORMES** | |
| Family ANHINGIDAE | |
| *Anhinga melanogaster* | Darter |
| Family PHALACROCORACIDAE | |
| *Phalacrocorax carbo* | Great Cormorant |
| *Phalacrocorax varius* | Pied Cormorant |
| *Phalacrocorax sulcirostris* | Little Black Cormorant |
| *Phalacrocorax melanoleucos* | Little Pied Cormorant |
| Family PELECANIDAE | |
| *Pelecanus conspicillatus* | Australian Pelican |
| Family ARDEIDAE | |
| *Ardea pacifica* | White-necked Heron |
| *Ardea novaehollandiae* | White-faced Heron |
| *Ardea alba* | Great Egret |
| *Ardea intermedia* | Intermediate Egret |
| *Ardea garzetta* | Little Egret |
| *Ardea ibis* | Cattle Egret |
| *Nycticorax caledonicus* | Rufous Night Heron |
| *Ixobrychus minutus* ) | Little Bittern |
| *Ixobrychus flavicollis* | Black Bittern |
| *Botaurus poiciloptilus* | Australasian Bittern |

| Scientific Name | Common Name |
|---|---|
| Family THRESKIORNITHIDAE | |
| *Plegadis falcinellus* | Glossy Ibis |
| *Threskiornis molucca* | Australian White Ibis |
| *Threskiornis spinicollis* | Straw-necked Ibis |
| *Platalea regia* | Royal Spoonbill |
| *Platalea flavipes* | Yellow-billed Spoonbill |
| **Order FALCONIFORMES** | |
| Family ACCIPITRIDAE | |
| *Pandion haliaetus* | Osprey |
| *Elanus caeruleus* | Black-shouldered Kite |
| *Hamirostra isura* | Square-tailed Kite |
| *Haliastur sphenurus* | Whistling Kite |
| *Accipiter fasciatus*) | Brown Goshawk |
| *Accipiter cirrocephalus* | Collared Sparrowhawk |
| *Aquila morphnoides* | Little Eagle |
| *Aquila audax* | Wedge-tailed Eagle |
| *Haliaeetus leucogaster* | White-bellied Sea-Eagle |
| *Circus approximans* | Swamp Harrier |
| Family FALCONIDAE | |
| *Falco berigora* | Brown Falcon |
| *Falco cenchroides* | Australian Kestrel |
| *Falco longipennis* | Australian Hobby |
| *Falco peregrinus* | Peregrine Falcon |
| Family RALLIDAE | |
| *Gallirallus philippensis* | Buff-banded Rail |
| *Porzana pusilla* | Baillon`s Crake |
| *Porzana fluminea* | Australian Spotted Crake |
| *Porzana tabuensis* | Spotless Crake |
| *Porphyrio porphyrio* | Purple Swamphen |
| *Gallinula ventralis* | Black-tailed Native-hen |
| *Gallinula tenebrosa* | Dusky Moorhen |
| *Fulica atra* | Eurasian Coot |
| Family OTIDIDAE | |
| *Ardeotis australis* | Australian Bustard |
| **Order TURNICIFORMES** | |
| Family TURNICIDAE | |
| *Turnix varia* | Painted Button-quail |
| **Order CHARADRIIFORMES** | |
| Family SCOLOPACIDAE | |
| *Limosa limosa* | Black-tailed Godwit |
| *Limosa lapponica* | Bar-tailed Godwit |
| *Numenius minutes* | Little Curlew |
| *Numenius phaeopus* | Whimbrel |
| *Numenius madagascariensis* | Eastern Curlew |
| *Tringa stagnatilis* | Marsh Sandpiper |
| *Tringa nebularia* | Common Greenshank |
| *Tringa glareola* | Wood Sandpiper |
| *Tringa hypoleucos* | Common Sandpiper |
| *Tringa brevipes* | Grey-tailed Tattler |
| *Arenaria interpres* | Ruddy Turnstone |
| *Calidris canutus* | Red Knot |
| *Calidris tenuirostris* | Great Knot |
| *Calidris alba* | Sanderling |
| *Calidris ruficollis* | Red-necked Stint |

| Scientific Name | Common Name |
|---|---|
| *Calidris minuta* | Little Stint |
| *Calidris subminuta* | Long-toed Stint |
| *Calidris melanotos* | Pectoral Sandpiper |
| *Calidris acuminata* | Sharp-tailed Sandpiper |
| *Calidris ferruginea* | Curlew Sandpiper |
| *Limicola falcinellus* | Broad-billed Sandpiper |
| *Philomachus pugnax* | Ruff |
| Family ROSTRATULIDAE | |
| *Rostratula benghalensis* | Painted Snipe |
| Family BURHINIDAE | |
| *Burhinus grallarius* | Bush Stone-curlew |
| Family HAEMATOPODIDAE | |
| *Haematopus longirostris* | Pied Oystercatcher |
| Family RECURVIROSTRIDAE | |
| *Himantopus himantopus* | Black-winged Stilt |
| *Cladorhynchus leucocephalus* | Banded Stilt |
| *Recurvirostra novaehollandiae* | Red-necked Avocet |
| Family CHARADRIIDAE | |
| *Vanellus miles* | Masked Lapwing |
| *Vanellus tricolor* | Banded Lapwing |
| *Pluvialis squatarola* | Grey Plover |
| *Pluvialis fulva* | Pacific Golden Plover |
| *Charadrius dubius* | Little Ringed Plover |
| *Charadrius ruficapillus* | Red-capped Plover |
| *Charadrius mongolus* | Lesser Sand Plover |
| *Charadrius leschenaultii* | Greater Sand Plover |
| *Charadrius melanops* | Black-fronted Dotterel |
| *Charadrius rubricollis* | Hooded Plover |
| *Charadrius veredus* | Oriental Plover |
| *Erythrogonys cinctus* | Red-kneed Dotterel |
| Family GLAREOLIDAE | |
| *Glareola maldivarum* | Oriental Pratincole |
| Family LARIDAE | |
| *Larus novaehollandiae* | Silver Gull |
| *Sterna nilotica* | Gull-billed Tern |
| *Sterna caspia* | Caspian Tern |
| *Sterna bergii* | Crested Tern |
| *Sterna nereis* | Fairy Tern |
| *Sterna hybrida* | Whiskered Tern |
| *Sterna leucoptera* | White-winged Black Tern |
| **Order COLUMBIFORMES** | |
| Family COLUMBIDAE | |
| **Columba livia* | Domestic Pigeon |
| **Streptopelia senegalensis* | Laughing Turtle-Dove |
| *Phaps chalcoptera* | Common Bronzewing |
| *Phaps elegans* | Brush Bronzewing |
| *Ocyphaps lophotes* | Crested Pigeon |
| **Order PSITTACIFORMES** | |
| Family PSITTACIDAE | |
| *Calyptorhynchus banksii naso* | Forest Red-tailed Black Cockatoo |
| *Calyptorhynchus latirostris* | Carnaby`s Cockatoo |
| *Calyptorhynchus baudinii* | Baudin`s Cockatoo |
| *Cacatua roseicapilla* | Galah |

| Scientific Name | Common Name |
|---|---|
| *Cacatua pastinator* | Western Long-billed Corella |
| *Cacatua galerita* | Sulphur-crested Cockatoo |
| *Glossopsitta porphyrocephala* | Purple-crowned Lorikeet |
| *Polytelis anthopeplus* | Regent Parrot |
| *Platycercus zonarius* | Australian Ringneck (Ring-necked Parrot) |
| *Platycercus spurius* | Red-capped Parrot |
| *Platycercus icterotis* | Western Rosella |
| *Neophema elegans* | Elegant Parrot |
| **Order CUCULIFORMES** | |
| Family CUCULIDAE | |
| *Cuculus pallidus* | Pallid Cuckoo |
| *Cacomantis flabelliformis* | Fan-tailed Cuckoo |
| *Chrysococcyx basalis* | Horsfield`s Bronze Cuckoo |
| *Chrysococcyx lucidus* | Shining Bronze Cuckoo |
| **Order STRIGIFORMES** | |
| Family STRIGIDAE | |
| *Ninox connivens* | Barking Owl |
| *Ninox novaeseelandiae* | Boobook Owl |
| Family TYTONIDAE | |
| *Tyto novaehollandiae* | Masked Owl |
| *Tyto alba* | Barn Owl |
| **Order CAPRIMULGIFORMES** | |
| Family PODARGIDAE | |
| *Podargus strigoides* | Tawny Frogmouth |
| Family CAPRIMULGIDAE | |
| *Eurostopodus argus* | Spotted Nightjar |
| Family AEGOTHELIDAE | |
| *Aegotheles cristatus* | Australian Owlet-nightjar |
| **Order APODIFORMES** | |
| Family APODIDAE | |
| *Apus pacificus* | Fork-tailed Swift |
| **Order CORACIIFORMES** | |
| Family HALCYONIDAE | |
| **Dacelo novaeguineae* | Laughing Kookaburra |
| *Todiramphus sanctus* | Sacred Kingfisher |
| Family MEROPIDAE | |
| *Merops ornatus* | Rainbow Bee-eater |
| **Order PASSERIFORMES** | |
| Family CLIMACTERIDAE | |
| *Climacteris rufa* | Rufous Treecreeper |
| Family MALURIDAE | |
| *Malurus splendens* | Splendid Fairy-wren |
| *Malurus elegans* | Red-winged Fairy-wren |
| *Stipiturus malachurus* | Southern Emu-wren |
| Family PARDALOTIDAE | |
| *Pardalotus punctatus* | Spotted Pardalote |
| *Pardalotus striatus* | Striated Pardalote |
| Family ACANTHIZIDAE | |
| *Sericornis frontalis* | White-browed Scrubwren |
| *Smicrornis brevirostris* | Weebill |
| *Gerygone fusca* | Western Gerygone |

| Scientific Name | Common Name |
|---|---|
| *Acanthiza apicalis* | Broad-tailed Thornbill (Inland Thornbill) |
| *Acanthiza inornata* | Western Thornbill |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill |
| Family MELIPHAGIDAE | |
| *Lichmera indistincta* | Brown Honeyeater |
| *Lichenostomus virescens* | Singing Honeyeater |
| *Melithreptus brevirostris* | Brown-headed Honeyeater |
| *Melithreptus chloropsis* | Western White-naped Honeyeater |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater |
| *Phylidonyris nigra* | White-cheeked Honeyeater |
| *Phylidonyris melanops* | Tawny-crowned Honeyeater |
| *Acanthorhynchus superciliosus* | Western Spinebill |
| *Manorina flavigula* | Yellow-throated Miner |
| *Anthochaera lunulate* | Western Little Wattlebird |
| *Anthochaera carunculata* | Red Wattlebird |
| *Epthianura albifrons* | White-fronted Chat |
| Family PETROICIDAE | |
| *Petroica multicolor* | Scarlet Robin |
| *Petroica cucullata* | Hooded Robin |
| *Eopsaltria australis* | Yellow Robin |
| Family NEOSITTIDAE | |
| *Daphoenositta chrysoptera* | Varied Sittella |
| Family PACHYCEPHALIDAE | |
| *Pachycephala pectoralis* | Golden Whistler |
| *Pachycephala rufiventris* | Rufous Whistler |
| *Colluricincla harmonica* | Grey Shrike-thrush |
| Family DICRURIDAE | |
| *Myiagra inquieta* | Restless Flycatcher |
| *Rhipidura fuliginosa* | Grey Fantail |
| *Rhipidura leucophrys* | Willie Wagtail |
| *Grallina cyanoleuca* | Magpie-lark |
| Family CAMPEPHAGIDAE | |
| *Coracina novaehollandiae* | Black-faced Cuckoo-shrike |
| *Coracina maxima* | Ground Cuckoo-shrike |
| *Lalage tricolor* | White-winged Triller |
| Family ARTAMIDAE | |
| *Artamus cinereus* | Black-faced Woodswallow |
| *Artamus cyanopterus* | Dusky Woodswallow |
| Family CRACTICIDAE | |
| *Cracticus torquatus* | Grey Butcherbird |
| *Cracticus tibicen* | Australian Magpie |
| *Strepera versicolor* | Grey Currawong |
| Family CORVIDAE | |
| *Corvus coronoides* | Australian Raven |
| Family HIRUNDINIDAE | |
| *Cheramoeca leucosternus* | White-backed Swallow |
| *Hirundo neoxena* | Welcome Swallow |
| *Hirundo nigricans* | Tree Martin |
| Family ZOSTEROPIDAE | |
| *Zosterops lateralis* | Grey-breasted White-eye (Silvereye) |
| Family SYLVIIDAE | |
| *Acrocephalus australis* | Australian Reed Warbler |

| Scientific Name | Common Name |
|---|---|
| *Megalurus gramineus*<br>*Cincloramphus mathewsi*<br>*Cincloramphus cruralis* | Little Grassbird<br>Rufous Songlark<br>Brown Songlark |
| Family DICAEIDAE<br>*Dicaeum hirundinaceum* | <br>Mistletoebird |
| Family PASSERIDAE<br>*Stagonopleura oculata* | <br>Red-eared Firetail |
| Family MOTACILLIDAE<br>*Anthus australis*<br>*Motacilla flava* | <br>Australian Pipit<br>Yellow Wagtail |

## APPENDIX 4c: Amphibians and reptiles known or likely to occur in the EEEA study area

| Scientific Name | Common Name |
|---|---|
| **AMPHIBIANS** | |
| HYLIDAE | |
| *Litoria adelaidensis* | Slender Tree Frog |
| *Litoria moorei* | Motorbike Frog |
| MYOBATRACHIDAE | |
| *Crinia georgiana* | Quacking Frog |
| *Crinia glauerti* | Clicking Froglet |
| *Crinia insignifera* | Sandplain Froglet |
| *Heleioporus eyrei* | Moaning Frog |
| *Limnodynastes dorsalis* | Western Banjo Frog or Pobblebonk |
| *Neobatrachus pelobatoides* | Humming Frog |
| *Pseudophryne guentheri* | Guenther's Toadlet |
| **REPTILES** | |
| CHELUIDAE | |
| *Chelodina oblonga* | Long-necked Turtle |
| GEKKONIDAE | |
| *Christinus marmoratus* | Marbled Gecko |
| *Underwoodisaurus milii* | Barking Gecko |
| PYGOPODIDAE | |
| *Aprasia repens* | South-western Sandplain Worm Lizard |
| *Delma fraseri* | Fraser's Legless Lizard |
| *Delma grayii* | Gray's Legless Lizard |
| *Lialis burtonis* | Burton's Legless Lizard |
| *Pletholax gracilis* | Keeled Legless Lizard |
| *Pygopus lepidopodus* | Common Scaly Foot |
| SCINCIDAE | |
| *Acritoscincus trilineatum* | South-western Cool Skink |
| *Cryptoblepharus plagiocephalus* | Fence Skink |
| *Ctenotus australis* | Western Limestone Ctenotus |
| *Ctenotus fallens* | West Coast Ctenotus |
| *Ctenotus gemmula* | Jewelled Ctenotus |
| *Ctenotus impar* | South-western Odd-striped Ctenotus |
| *Ctenotus labillardieri* | Red-legged Ctenotus |
| *Egernia kingii* | King's Skink |
| *Egernia luctuosa* | Swamp Egernia |
| *Egernia napoleonis* | South-western Crevice Egernia |
| *Hemiergis quadrilineata* | Two-toed Earless Skink |
| *Lerista elegans* | West Coast Four-toed Lerista |
| *Lerista lineata* | Perth Lined Lerista |
| *Lerista lineopunctulata* | West Coast Line-spotted Lerista |
| *Menetia greyii* | Common Dwarf Skink |
| *Morethia lineoocellata* | Western Pale-flecked Morethia |
| *Morethia obscura* | Southern Pale-flecked Morethia |
| *Tiliqua occipitalis* | Western Bluetongue |
| *Tiliqua rugosa* | Bobtail |
| AGAMIDAE | |
| *Pogona minor* | Western Bearded Dragon |
| *Rankinia adelaidensis* | Western Heath Dragon |

| Scientific Name | Common Name |
|---|---|
| VARANIDAE | |
| *Varanus gouldii* | Gould's Monitor |
| *Varanus rosenbergi* | Southern Heath Monitor |
| *Varanus tristis* | Black-tailed Monitor |
| BOIDAE | |
| *Morelia spilota* | Carpet Python |
| TYPHLOPIDAE | |
| *Ramphotyphlops australis* | Southern Blind Snake |
| *Ramphotyphlops pinguis* | Fat Blind Snake |
| ELAPIDAE | |
| *Brachyurophis semifasciata* | Southern Half-girdled Snake |
| *Demansia psammophis* | Reticulated Whip Snake |
| *Echiopsis curta* | Bardick |
| *Elapognathus coronatus* | Crowned Snake |
| *Neelaps bimaculatus* | Black-naped Snake |
| *Neelpas calonotos* | Black-striped Snake |
| *Notechis scutatus* | Western Tiger Snake |
| *Parasuta gouldii* | Gould's Hooded Snake |
| *Parasuta nigriceps* | Black-backed Snake |
| *Pseudonaja affinis* | Dugite |
| *Simoselaps bertholdi* | Jan's Banded Snake |

## APPENDIX 4d: Freshwater fish known or likely to occur in the EEEA study area

** Introduced Species*

| Scientific Name | Common Name |
|---|---|
| GALAXIIDAE<br>*Galaxias occidentalis*<br>*Galaxiella munda* | <br>Western Minnow<br>Mud Minnow |
| PLOTOSIDAE<br>*Tandanus bostockii* | <br>Freshwater Cobbler |
| PERCICHTHYIDAE<br>*Bostockia porosa* | <br>Nightfish |
| NANNOPERCIDAE<br>*Edelia vittata* | <br>Western Pygmy Perch |
| CYPRINIDAE<br>**Carassius auratus* | <br>Goldfish |
| POECILIDAE<br>**Gambusia affinis* | <br>Mosquitofish |

# APPENDIX 5: A preliminary vegetation map and flora list for recommendation C53 Shire of Waroona

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**(Note: Names in this appendix follow those in Gibson *et al.* 1994; names used in Appendices 2 and 3 in this report have been updated after Keighery *et al.* 2006b)**

## Introduction

The study area comprises a narrow strip of land commencing about 2 kilometres north of Waroona, approximately 100 kilometres south of Perth (Figure 1). It is listed in the CTRC review of reserves of System Six are as C53 (Annon, 1983).

## Vegetation and Flora

### Vegetation

The vegetation of the area (Figure 2) contains a small area of Jarrah woodland on sandy soils in the north-east sector. This grades into tall to low Marri woodland on lateritic loams (north-east section only) or sandy clays (southern sector), winter-wet sand over clays or sandy clays. Other wetter areas have an open low woodland of *Melaleuca preissiana* over *Kingia australis* or dense stands of *Pericalymma elliptica*. Lateritic clays or clays have a shrubland of *Viminaria* or a mixed heathland of *Verticordia* species. Claypans are either open or a open to dense shrublands of *Melaleuca viminea*.

### Flora

A flora list of 435 taxa (including 55 weeds), has been made within the boundaries of the area. These records are listed under the structural vegetation communities listed above in Table one.

### Declared Rare Flora

Three species of declared rare flora occur within the site.

*Schoenus natans*
Previously presumed extinct species. The population is large (further information is held in the species file).

*Aponogeton hexatepalus*
The area contains the largest known population of this species, occurring in the same area as *Schoenus natans*.

*Centrolepis caespitosa*
This species is also present in the same area as the previous species, but has not been surveyed in detail. This is still often listed as presumed extinct, but extends from Perth to the Stirling Range area.

### Significant species

Priority Species
The following are listed on CALM's list of priority flora:

*Anthotium junciforme*
*Eleocharis* ?*orbicis*
*Schoenus capillifolius*
*Schoenus* sp (GK 12,721)
*Tribonanthes uniflora*
*Eryngium pinnatifidum* ssp. *palustris*
*Eryngium subdecumbens*
*Hyalospermum pyrethrum*
*Anthotium junciforme*
*Myriophyllum echinatum*
*Villarsia submersa*
*Petrophile media* var *junciforme*

Poorly Known Species and Geographically Significant Species, abound in the area.

1) Poorly Known Species
The population of *Mitrasacme paradoxa* is the first record on the coastal plain since the type collection in 1905. One other population is known from the Beaufort River area.

The record of *Aristida racemosa* is the only record on the plain. There is a 30 year old record (the only other) from Serpentine.

*Chamaescilla spiralis* ssp. nov (also known from Brixton St., and Ellen Brook), *Schoenus* sp (GK 13,721- also known from Mundijong Rd. and Brixton St.) and *Pogonolepis* sp. (also found on Mundijong Road) appear to be previously unrecognised taxa confined to the Eastern Swan Coastal Plain, now confined to small bushland remnants.

2) Geographically Significant Species
The following are normally associated with the Darling Scarp and/or Jarrah forest, and are uncommon on the Swan Coastal Plain, being found only on the eastern side of the plain.

*Acanthocarpus canaliculus*
*Lomandra brittanii*
*Lomandra purpurea*
*Lomandra sonderi*
*Tribonanthes brachypetala*
*Caladenia filamentosa*
*Thelymitra antennifera*
*Agrostocrinum scabrum*

*Pentapeltis peltigera*
*Trichocline scapigera*
*Wahlenbergia multicaulis*
*Astroloma ciliatum*
*Stachystemon vermicularis*
*Lechenaultia biloba*

*Acacia dentifera*
*Acacia latericola*
*Acacia urophylla*
*Darwinia citriodora*
*Verticordia huegelii*
*Verticordia pennigera*
*Bossiaea* aff. *eriocarpa*
*Daviesia longifolia*
*Kennedia coccinea*
*Grevillea bipinnatifida*
*Grevillea pilulifera*
*Isopogon asper*
*Persoonia elliptica*
*Thomasia grandiflora*
*Stylidium amoenum*
*Stylidium canaliculatum*

The records of *Caladenia filamentosa, Acacia latericola* and *Daviesia longifolia* appear to be the only extant records of these species on the Swan Coastal Plain. The records of *Wahlenbergia multicaulis* and *Bossiaea* aff. *eriocarpa* are rarely recorded on the coastal plain in public lands.

Occurrences of the following species on the Swan Coastal Plain are confined to the heavy soils of the eastern side of the plain. Generally these species are confined to very small remnants of native vegetation.

*Wurmbea dioica* ssp. *alba*
*Schoenus benthamii*
*Schoenus bifidus*
*Stipa tenuifolia*
*Lomandra odora*
*Haemodorum sparsiflorum*
*Tribonanthes uniflora*
*Opercularia apiciflora*
*Stylidium carnosum*
*Stylidium ecorne*

## References

Anon (1983) Conservation Reserves for Western Australia. The Darling System-System Six. Part 2: Recommendations for Specific Localities.

## Acknowledgments

This area was surveyed as part of the Swan Coastal Plain Survey, partially funded by a grant from the Australian Heritage Commission.

## C53 COOLUP RESERVES

The recommended area is situated adjacent to the South Western Highway, about 12km south of Pinjarra, and comprises Reserves A20585, for Stopping Place, C31437, for Government Requirements, C31438, for Camping, and C31439, for Drainage, all not vested (Figure 39).

The area could be affected by future improvements of South Western Highway which may require additional land.

The area is almost flat, with a few shallow depressions which become wet in winter. It carries low woodland and open-woodland of marri and jarrah. There are several populations of black gin. The depressions carry closed to open-heath dominated by swamp tea-tree and *Hakea ceratophylla*. These Reserves are important because they contain the only uncleared land between Pinjarra and Waroona. They also carry the only vegetation of its type along the South Western Highway, and so are valuable for tourists.

**Recommendations:**

C53.1 That the purpose of Reserve A20585 be amended to Conservation of Flora and Fauna and that the Reserve be vested in the W.A. Wildlife Authority.

C53.2 That Reserves C31437, C31438 and C31439 be cancelled and their respective areas amalgamated to form a single Reserve for Roadside Verge Conservation, and that the Reserve be vested in the Shire of Waroona.

C53.3 That any management plan for Reserves C31437, C31438 and C31439 be prepared in consultation with the Department of Fisheries and Wildlife.

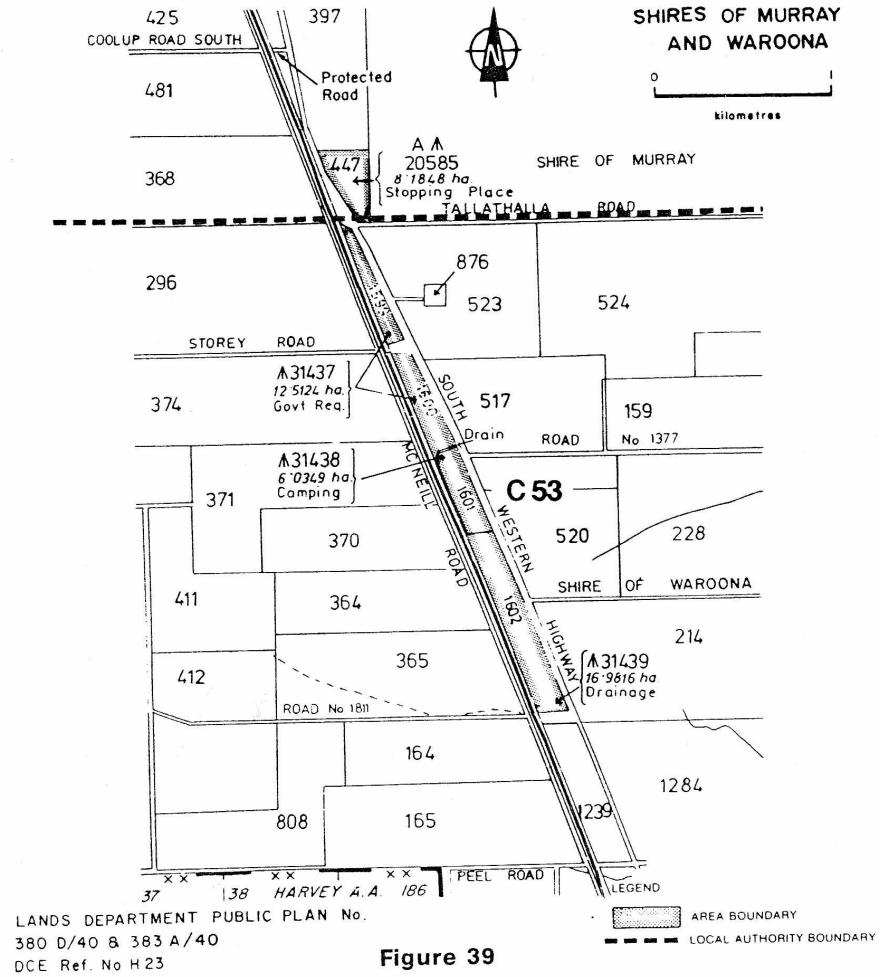


**Figure 39**

FIGURE I: LOCATION OF C53; CTRC Report

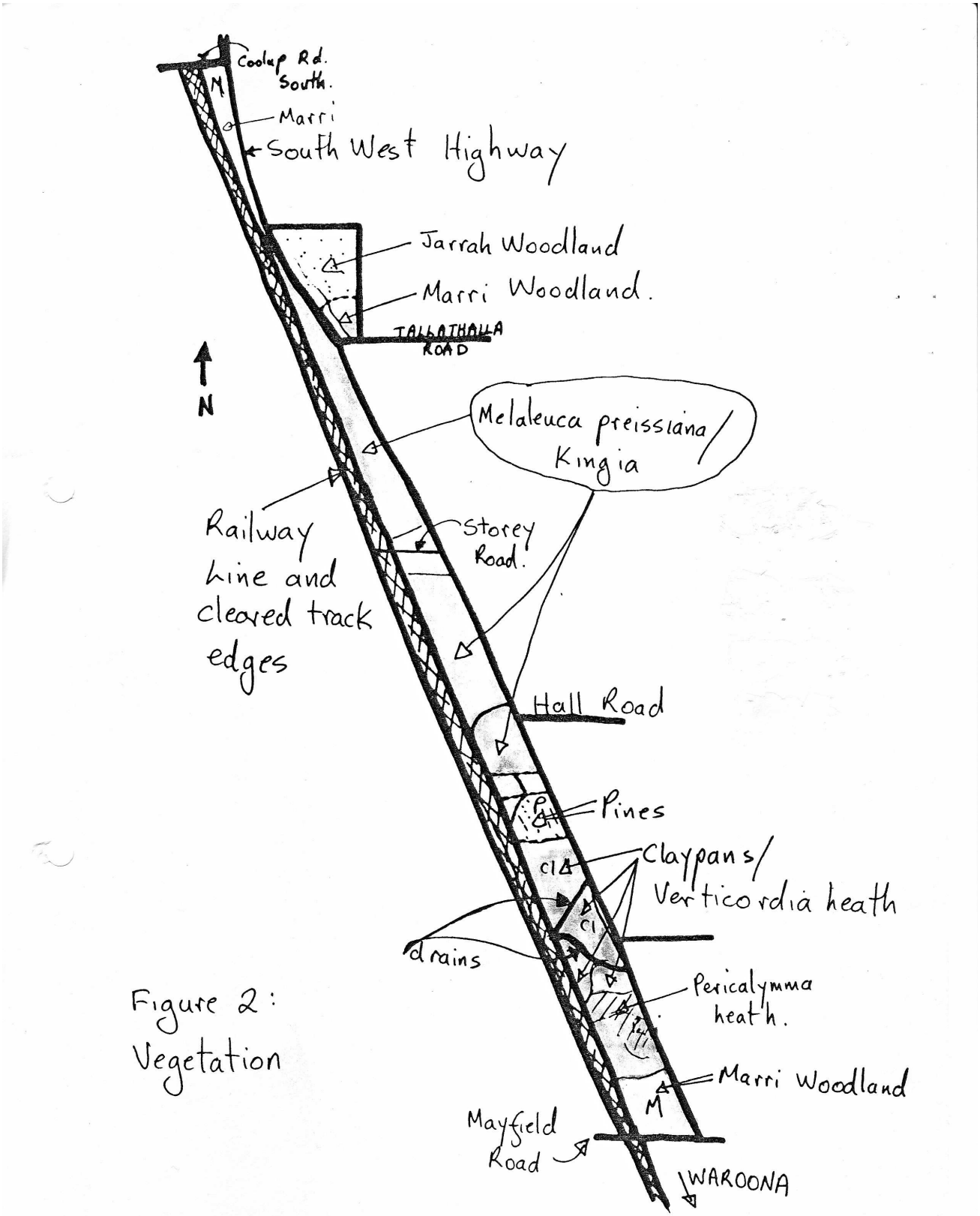


Figure 2: Vegetation

## APPENDIX ONE: WAROONA C53 FLORA LIST

KEY
1: MELALEUCA VIMINEA CLAYPANS
2: MARRI WOODLAND
3: JARRAH WOODLAND
4: MELALEUCA LOW WOODLAND OVER PERICALYMMA OR VIMINARIA
5: DISTURBED AREAS; PINES, DRAINS, ROAD VERGES, TRACKS

Rare or priority taxa are given in bold face
Species listed in text as significant are underlined

| **TAXON** | **Vegetation Type** |
|---|---|
| **PTERIDOPHYTA (ferns)** | |
| Pilularia novae-hollandiae | 1 |
| Pteridium esculentum | 2 |
| Selaginella gracillima | 1 |
| Isoetes australis | 1 |
| Cheilanthes austrotenuifolia | 2 |
| **GYMNOPHYTA** | |
| ZAMIACEAE | |
| Macrozamia riedlei | 2 |
| **ANGIOSPERMAE (flowering plants)** | |
| MONOCOTYLEDONS | |
| AMARYLLIDACEAE | |
| *Amaryllis belladonna | 2 |
| Anthericaceae | |
| Arthropodium capillipes | 2 |
| Arthropodium preissii | 1 |
| Borya scirpoidea | 1,2,3,4 |
| Borya sphaerocephala | 1 |
| Caesia micrantha | 1,3 |
| Caesia occidentalis | 1,4 |
| Chamaescilla corymbosa | 2 |
| **Chamaescilla spiralis ssp nov** | 1 |
| Corynotheca micrantha | 3 |
| Sowerbaea laxiflora | 1,2,3,4 |
| Thysanotus dichotomus | 1,3 |
| Thysanotus multiflorus | 3 |
| Thysanotus patersonii | 1,2 |
| Thysanotus sparteus | 2,3 |
| Thysanotus thyrsoideus | 2,3 |
| Thysanotus triandrus | 3 |
| Tricoryne elatior | 2,3 |
| Tricoryne tenella | 3 |
| APONOGETONACEAE | |
| **Aponogeton hexatepalus** | 1 |

| | |
|---|---|
| Asparagaceae | |
| *Myrsiphyllum asparagoides | 3 |
| CENTROLEPIDACEAE | |
| Aphelia cyperoides | 3 |
| Brizula drummondii | 1 |
| Brizula nutans | 1 |
| Centrolepis alepyroides | 1 |
| **Centrolepis caespitosa** | 1 |
| Centrolepis aristata | 1,2,3 |
| Centrolepis drummondii | 3 |
| Centrolepis glabra | 1 |
| Centrolepis mutica | 1 |
| Trithuria bibracteata | 1 |
| Trithuria submersa | 1 |
| COLCHICACEAE | |
| Burchardia umbellata | 2,3 |
| Burchardia multiflora | 1 |
| Wurmbea dioica ssp. alba | 1 |
| CYPERACEAE | |
| Baumea acuta | 1 |
| Baumea juncea | 4 |
| Baumea preissii | 1,4 |
| Chorizandra enodis | 1 |
| Cyathochaeta avenacea | 2,3 |
| Cyperus alterniflorus | 1 |
| Cyperus tenellus | 1,4 |
| **Eleocharis ?orbicis** | 1 |
| Isolepis cernua | 1 |
| Isolepis marginata | 2 |
| Isolepis oldfieldiana | 1,2 |
| Lepidosperma angustatum | 3 |
| Lepidosperma longitudinale | 1,4 |
| Mesomelaena graciliceps | 2,3 |
| Mesomelaena ?stygia | 2 |
| Mesomelaena tetragona | 2 |
| Schoenus benthamii | 4 |
| Schoenus bifidus | 1 |
| **Schoenus capillifolius** | 1 |
| Schoenus curvifolius | 2,3 |
| Schoenus humilis | 1 |
| **Schoenus natans** | 1 |
| Schoenus odontocarpus | 1 |
| Schoenus rigens | 4 |
| Schoenus tenellus | 1 |
| Schoenus unispiculatus | 2,3 |
| **Schoenus sp**(GK 13,721) | 1 |
| Tetraria octandra | 2,3 |
| Tetraria capillaris | 1 |
| Tricostularia neesii | 4 |

| | |
|---|---|
| DASYPOGONACEAE | |
| Acanthocarpus canaliculatus | 2 |
| Calectasia cyanea | 3 |
| Dasypogon bromeliifolius | 2 |
| Kingia australis | 2,3,4 |
| Lomandra brittanii | 2 |
| Lomandra caespitosa | 2,3 |
| Lomandra hermaphrodita | 3 |
| Lomandra micrantha | 2,4 |
| Lomandra odora | 2 |
| Lomandra preissii | 2 |
| Lomandra purpurea | 2 |
| Lomandra sericea | 2 |
| Lomandra sonderi | 2 |
| Lomandra suaveolens | 3 |
| HAEMODORACEAE | |
| Anigozanthos manglesii | 3 |
| Anigozanthos manglesii x viridis | 2 |
| Anigozanthos viridis | 2 |
| Conostylis aculeata ssp. aculeata | 2,3,4 |
| Conostylis juncea | 2,3 |
| Conostylis setigera | 2,4 |
| Haemodorum laxum | 2,3 |
| Haemodorum sparsiflorum | 1,2 |
| Haemodorum spicatum | 2,3 |
| Haemodorum paniculatum | 3 |
| Haemodorum simplex | 1 |
| Phlebocarya ciliata | 2,3 |
| Tribonanthes australis | 1 |
| Tribonanthes brachypetala | 4 |
| Tribonanthes uniflora | 1 |
| HYPOXIDACEAE | |
| Hypoxis occidentalis | 1 |
| Hypoxis glabella | 1,2 |
| IRIDACEAE | |
| *Babiana stricta | 1,5 |
| *Chasmanthe floribunda | 5 |
| Patersonia juncea | 2 |
| Patersonia occidentalis | 3,4 |
| *Romulea rosea var rosea | 2,3,4,5 |
| *Romulea rosea var australis | 1 |
| *Sparaxis bulbifera | 1,5 |
| *Watsonia bulbillifera | 2 |
| *Watsonia marginata | 1,5 |
| JUNCACEAE | |
| Juncus articulatus | 1 |
| Juncus bufonius | 1 |
| *Juncus capitatus | 2,3 |

| | |
|---|---|
| Juncus holoschoenus | 1,2 |
| JUNCAGINACEAE | |
| Triglochin calcitrapa | 1,2 |
| Triglochin centrocarpa | 2 |
| Triglochin procera | 1,2 |
| ORCHIDACEAE | |
| Acianthus reniformis var. huegelii | 2 |
| Caladenia filamentosa | 2 |
| Caladenia flava | 3 |
| Caladenia longicauda | 2,3 |
| Lyperanthus nigricans | 2,3 |
| Lyperanthus serratus | 2 |
| Diuris carinata | 1 |
| Diuris longifolia | 2 |
| Eriochilus heleomus | 1 |
| Leporella fimbriata | 2,3 |
| Microtis atrata | 1 |
| Microtis media | 3 |
| Microtis orbicularis | 1 |
| Prasophyllum cyphochilum | 1 |
| Prasophyllum drummondii | 1 |
| Prasophyllum ?hians | 3 |
| Prasophyllum parviflorum | 3 |
| Prasophyllum macrostachyum | 2,3 |
| Pterostylis nana | 3 |
| Pterostylis vittata | 3 |
| Thelymitra antennifera | 1 |
| Thelymitra crinita | 3 |
| Thelymitra flexuosa | 1 |
| Thelymitra pauciflora | 2 |
| PHORMIACEAE | |
| Agrostocrinum scabrum | 2,3 |
| Dianella divaricata | 3 |
| PHILYDRACEAE | |
| Philydrella drummondii | 1 |
| Philydrella pygmaea | 1,4 |
| POACEAE | |
| Agrostis avenacea | 1 |
| Agrostis preissii | 1 |
| Agrostis ?pleibia | 1 |
| *Aira caryophyllea | 1,2,3,4 |
| Amphibromus neesii | 1 |
| Amphipogon amphipogonoides | 1 |
| Amphipogon debilis | 1 |
| Amphipogon turbinatus | 3 |
| *Anthoxanthum odoratum | 1 |
| **Aristida racemosa** | 2,4 |
| *Avena fatua | 1 |
| *Briza maxima | 3 |

| | |
|---|---|
| *Briza minor | 1,2,3 |
| Bromus madritensis | 1 |
| *Bromus ?diandrus | 1 |
| *Cynodon dactylon | 1,5 |
| Danthonia setacea | 2,3,4 |
| *Ehrharta calycina | 3 |
| *Ehrharta longiflora | 3 |
| *Lolium multiflora | 1 |
| Microlaena stipoides | 2,3 |
| Neurachne alopecuroidea | 1,2,3 |
| Polypogon tenellus | 1 |
| *Poa annua | 1,2 |
| Poa drummondiana | 3 |
| Stipa compressa | 2,3 |
| Stipa semibarbata | 2,3 |
| Stipa tenuifolia | 1 |
| Tetrarrhena laevis | 2 |
| *Vulpia membranacea | 1 |
| *Vulpia myuros | 1,2 |

RESTIONACEAE

| | |
|---|---|
| Hypolaena exsulca | 2,3 |
| Leptocarpus canus | 1 |
| Leptocarpus coangustatus | 1 |
| Leptocarpus roycei | 4 |
| Lepyrodia macra | 4 |
| Lepyrodia muirii | 1 |
| Loxocarya cinerea | 3 |
| Loxocarya fascicularis | 3 |
| Lyginia barbata | 2,3 |

TYPHACEAE

| | |
|---|---|
| Typha domingensis | 1 |

XANTHORRHOEACEAE

| | |
|---|---|
| Xanthorrhoea brunonis | 2,3 |
| Xanthorrhoea preissii | 3,4 |

DICOTYLEDONS

AMARANTHACEAE

| | |
|---|---|
| Ptilotus drummondii | 2 |
| Ptilotus polystachyus | 3 |
| Ptilotus sp | 3 |

APIACEAE

| | |
|---|---|
| Eryngium pinnatifidum ssp. pinnatifidum | 2,3 |
| **Eryngium pinnatifidum ssp palustris** | 1 |
| **Eryngium subdecumbens** | 1 |
| Homalosciadium homalocarpum | 2 |
| Hydrocotyle callicarpa | 1,2 |
| Hydrocotyle diantha | 4 |
| Hydrocotyle callicarpa | 2 |

| | |
|---|---|
| Pentapeltis peltigera | 2,3 |
| Schoenolaena juncea | 1,4 |
| Trachymene pilosa | 3 |
| Xanthosia huegelii | 2,3 |
| ASTERACEAE | |
| Brachycome bellidioides | 1 |
| Cotula coronopifolia | 1 |
| Cotula cotuloides | 1 |
| *Dittrichia graveolens | 5 |
| Gnaphalium sp | 3 |
| Gnaphalium sphaericum | 3 |
| Hyalospermum cotula | 1,2,4 |
| **Hyalospermum pyrethrum** | 1 |
| *Hypochaeris glabra | 2,3,4,5 |
| Lagenifera huegelii | 3 |
| Millotia tenuifolia | 3 |
| Myriocephalus helichrysoides | 1 |
| Myriocephalus isoetes | 1 |
| Olearia paucidentata | 3,4 |
| Podolepis gracilis | 2,3 |
| Podolepis gracilis (Swamp) | 1 |
| Pogonolepis stricta (green) | 1 |
| **Pogonolepis sp** (GK13,741) | 1 |
| Quinetia urvillei | 3 |
| Senecio minimus | 3,4 |
| Siloxerus humifusus | 2,3 |
| *Sonchus oleraceus | 2 |
| Trichocline scapigera | 4 |
| Trichocline sp | 1 |
| *Ursinia anthemoides | 3 |
| Waitzia suaveolens | 3 |
| BRASSICACEAE | |
| *Brassica tournefortii | 5 |
| CAMPANULACEAE | |
| *Wahlenbergia capensis | 3 |
| Wahlenbergia preissii | 2,3 |
| Wahlenbergia multicaulis | 2 |
| CALLITRICHACEAE | |
| Callitriche stagnalis | 1 |
| **Callitriche hamata** | 1 |
| CARYOPHYLLACEAE | |
| *Cerastium glomeratum | 5 |
| *Petrorhagia velutina | 5 |
| *Silene nocturna | 5 |
| *Stellaria media | 5 |
| CASUARINACEAE | |
| Allocasuarina humilis | 2,3 |

| | |
|---|---|
| CONVOLVULACEAE | |
| *Cuscuta epithymum | 1 |
| CRASSULACEAE | |
| Crassula colorata | 2,3,4 |
| Crassula exserta | 3 |
| *Crassula natans | 1 |
| Crassula pedicellosa | 1 |
| DILLENIACEAE | |
| Hibbertia acerosa | 2,3 |
| Hibbertia hypericoides | 2,3 |
| Hibbertia stellaris | 4 |
| Hibbertia subvaginata | 3 |
| Hibbertia vaginata | 2 |
| DROSERACEAE | |
| Drosera bulbigena | 1,2 |
| Drosera erythrorhiza | 2,3 |
| Drosera gigantea | 1,2,4 |
| Drosera glanduligera | 3 |
| Drosera macrantha | 3 |
| Drosera marchantii | 1,2 |
| Drosera menziesii | 2,3 |
| Drosera nitidula | 1 |
| Drosera pulchella | 1 |
| Drosera rosulata | 1 |
| Drosera stolonifera | 2,3 |
| Drosera tubaestylis | 1,2,3 |
| Drosera zonaria | 3 |
| ELATINACEAE | |
| **Elatine gratioloides** | 1 |
| EPACRIDACEAE | |
| Astroloma ciliatum | 3 |
| Astroloma pallidum | 2,3,4 |
| Leucopogon propinquus | 2,3 |
| Lysinema ciliatum | 3 |
| EUPHORBIACEAE | |
| *Euphorbia peplus | 5 |
| Phyllanthus calycinus | 3 |
| Poranthera microphylla | 2,3 |
| Stachystemon vermicularis | 4 |
| GENTIANACEAE | |
| *Centaurium erythraea | 1,2,3 |
| *Cicendia filiformis | 1 |
| GERANIACEAE | |
| *Erodium cicutarium | 2,3 |
| Geranium solanderi | 2 |
| *Pelargonium capitatum | 5 |

| | |
|---|---|
| Pelargonium littorale | 3 |
| GOODENIACEAE | |
| **Anthotium junciforme** | 1 |
| Dampiera alata | 2,3 |
| Dampiera linearis | 2,3,4 |
| Goodenia caerulea | 3 |
| Goodenia micrantha | 1 |
| Goodenia pulchella | 2,3 |
| Lechenaultia biloba | 3 |
| Scaevola lanceolata | 3 |
| Scaevola phlebopetala | 3 |
| Vellea trinervis | 1 |
| HALORAGACEAE | |
| Gonocarpus pithyoides | 3 |
| **Myriophyllum echinatum** | 1 |
| LAMIACEAE | |
| Hemiandra pungens | 4 |
| LAURACEAE | |
| Cassytha flava | 4 |
| Cassytha glabella | 4 |
| Cassytha pomiformis | 1 |
| Cassytha racemosa | 3 |
| LENTIBULARIACEAE | |
| Polypomphylx multifida | 1,4 |
| Polypomphylx tenella | 1,4 |
| LOBELIACEAE | |
| Isotoma hypocrateriformis | 2,3 |
| Isotoma pusilla | 1 |
| Isotoma scapigera | 1 |
| Lobelia tenuior | 2,3 |
| LOGANIACEAE | |
| Mitrasacme paradoxa | 3 |
| **Mitrasacme palustris** | 1 |
| LORANTHACEAE | |
| Nuytsia floribunda | 2,3 |
| MALVACEAE | |
| MENYANTHACEAE | |
| **Villarsia submersa** | 1 |
| MIMOSACEAE | |
| Acacia applanata | 3 |
| Acacia barbinervis | 2 |
| Acacia dentifera | 2 |
| Acacia extensa | 4 |
| Acacia huegelii | 2,3 |

| | |
|---|---|
| Acacia latericola | 2 |
| Acacia lasiocarpha | 2 |
| Acacia nervosa | 2,3 |
| Acacia pulchella var. glaberrima | 2,3 |
| Acacia incurva | 2 |
| Acacia saligna | 2,3 |
| Acacia stenoptera | 3 |
| Acacia urophylla | 2 |
| **MYOPORACEAE** | |
| Eremophila glabra | 4 |
| **MYRTACEAE** | |
| Astartea fascicularis | 1,4 |
| Baeckea camphorosmae | 3 |
| Calytrix angulata | 3 |
| Darwinia citriodora | 2 |
| Eucalyptus calophylla | 2,3 |
| Eucalyptus marginata | 2,3 |
| Hypocalymma angustifolium | 4 |
| Hypocalymma robustum | 3 |
| Kunzea micrantha | 2,3,4 |
| Kunzea recurva | 3 |
| *Leptospermum laevigatum | 5 |
| Melaleuca lateritia | 1 |
| Melaleuca leptoclada | 1 |
| Melaleuca preissiana | 4 |
| Melaleuca viminea | 1 |
| Melaleuca thymoides | 1 |
| Pericalymma elliptica | 1,4 |
| Verticordia densiflora | 1,4 |
| Verticordia huegelii | 1 |
| Verticordia pennigera | 1 |
| Verticordia serrata | 1 |
| **ONAGRACEAE** | |
| *Oenothera glazioviana | 5 |
| **OROBANCHACEAE** | |
| *Orobanche minor | 2,3 |
| **OXALIDACEAE** | |
| Oxalis perennans | 4 |
| *Oxalis polyphylla | 2 |
| *Oxalis purpurea | 2,5 |
| **PAPILIONACEAE** | |
| Bossiaea eriocarpa | 2,3 |
| Bossiaea aff. eriocarpa | 2,3 |
| Burtonia conferta | 3 |
| Daviesia angulata | 2,3 |

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|---|---|
| Daviesia inflata | 2 |
| Daviesia longifolia | 2 |
| Daviesia physodes | 2 |
| Daviesia preissii | 2,3 |
| Eutaxia virgata | 1 |
| Gompholobium aristatum | 3 |
| Gompholobium marginatum | 3 |
| Gompholobium polymorphum | 3 |
| Hardenbergia comptoniana | 3 |
| Hovea trisperma | 3 |
| Isotropis cuneifolia | 3 |
| Jacksonia angulata | 2 |
| Jacksonia sternbergiana | 3 |
| Kennedia coccinea | 3 |
| Kennedia prostrata | 3 |
| *Lotus angustissimus | 1,2,3 |
| *Medicago polymorpha | 5 |
| Nemcia capitatum | 3 |
| *Ornithopus compressus | 1,2 |
| Sphaerolobium ?medium | 3 |
| Templetonia biloba | 3 |
| *Trifolium campestre | 1,2,3 |
| *Trifolium arvense | 2 |
| Viminaria juncea | 1,4 |
| PITTOSPORACEAE | |
| Pronaya fraseri | 2,3 |
| POLYGALACEAE | |
| Comesperma calymega | 4 |
| Comesperma ?polygaloides | 1 |
| Comesperma virgatum | 3 |
| PORTULACACEAE | |
| Calandrinia brevipedata | 3 |
| Calandrinia corrigioloides | 3 |
| Calandrinia granulifera | 3 |
| PRIMULACEAE | |
| *Anagallis arvensis | 1,2,4 |
| PROTEACEAE | |
| Adenanthos meisneri | 2,3 |
| Banksia grandis | 2,3 |
| Conospermum capitatum | 3 |
| Conospermum stoechadis | 3 |
| Dryandra nivea | 3 |
| Grevillea bipinnatifida | 2,4 |
| Grevillea pilulifera | 3 |
| Hakea ceratophylla | 1,4 |
| Hakea incrassata | 4 |
| Hakea lissocarpha | 3 |
| Hakea prostrata | 3 |
| Hakea sulcata | 4 |

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| Hakea varia | 4 |
| Isopogon asper | 2 |
| Persoonia elliptica | 3 |
| Persoonia saccata | 3 |
| Petrophile linearis | 3 |
| **Petrophile media var juncifolia** | 2 |
| Stirlingia latifolia | 2,3,4 |
| Synaphea petiolaris | 2,3 |
| Xylomelum occidentale | 3 |
| RUBIACEAE | |
| *Galium murale | 3 |
| Opercularia apiciflora | 2,3 |
| Opercularia vaginata | 3 |
| RUTACEAE | |
| Boronia crenulata | 3 |
| Boronia spathulata | 2,4 |
| Eriostemon spicatus | 2,3 |
| SANTALACEAE | |
| Leptomeria empetriformis | 2 |
| SCROPHULARIACEAE | |
| Glossostigma drummondii | 1 |
| Gratiola peruviana | 1 |
| *Bellardia trixago | 1,5 |
| *Parentucellia latifolia | 4,5 |
| SOLANACEAE | |
| *Solanum nigrum | 2,5 |
| STACKHOUSIACEAE | |
| Stackhousia pubescens | 3 |
| Tripterococcus brunonis | 2 |
| STERCULIACEAE | |
| Thomasia grandiflora | 3 |
| STYLIDIACEAE | |
| Levenhookia pusilla | 1 |
| Levenhookia stipitata | 3 |
| Stylidium amoenum | 2 |
| Stylidium brunonianum | 2,3 |
| Stylidium calcaratum | 2,3 |
| Stylidium canaliculatum | 1 |
| Stylidium carnosum | 2 |
| Stylidium crassifolium | 1 |
| Stylidium dichotomum | 1 |
| Stylidium divaricatum | 1 |
| Stylidium ecorne | 1 |
| Stylidium junceum | 2 |
| Stylidium mimeticum | 1 |

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|---|---|
| Stylidium piliferum | 2,3 |
| Stylidium repens | 3 |
| Stylidium roseonanum | 1 |
| Stylidium utricularioides | 1 |
| THYMELAEACEAE | |
| Pimelea imbricata var major | 1 |
| VIOLACEAE | |
| Hybanthus calycinus | 3 |

# APPENDIX 6: Invasive species: text prepared in late 2006 for insertion in the report *State of Play Peel Harvey Eastern Estuary Catchment Environmental Assessment Discussion Paper* (URS 2007)

# APPENDIX 6: Invasive species: text prepared in late 2006 for insertion in the report *State of Play Peel Harvey Eastern Estuary Catchment Environmental Assessment Discussion Paper* (URS 2007)

(General text adapted from the Department and Environment and Heritage (DEH) website, DEH 2006)

Australia's native plants and animals adapted to life on an isolated continent over millions of years. Since European settlement, this native flora and fauna has had to compete with a range of introduced species for habitat, food and shelter. Such species, and some native species whose range and frequency have been altered by European settlement, have been termed invasive species. An invasive species is defined as:

> "…a species occurring, as a result of human activities, beyond its accepted normal distribution and which threatens valued environmental, agricultural or personal resources by the damage it causes".

Invasive species have a major impact on Australia's environment, threatening individual species and reducing overall species abundance and diversity. Invasive species include:

- diseases, fungi and parasites
- weeds; and
- feral animals.

## Diseases, Fungi and Parasites in Australia

Invasive diseases, fungi and parasites in Australia affect many native plants and animals and agricultural crops. Quite often when plants and animals have come into contact with introduced diseases, fungi or parasites they do not respond well to treatment. Some of the diseases, fungi and parasites currently of concern because of their impact on native species include:

- Chytrid amphibian fungus (Chytridiomycosis); and
- Phytophthora root rot (*Phytophthora cinnamomi*).

Diseases, fungi and parasites can affect the health of native species, reducing their ability to reproduce or survive. Threatened species with reduced and restricted populations due to other factors are particularly vulnerable to outbreaks caused by these introduced organisms. For threatened species, even a small reduction in the number of young being born, or of individuals reaching adulthood, can lead to the eventual extinction of the species.

## Weeds

Weeds are among the most serious threats to Australia's natural environment and primary production. They displace native species, contribute significantly to land degradation, and reduce farm and forest productivity.

An environmental weed is any plant that:

- has, or has the potential to have, a negative impact on a valuable natural resource; and
- requires some form of action to reduce that impact.

Many plants introduced into Australia in the last 200 years are now environmental weeds. Major invasions change the natural diversity and balance of ecological communities. These changes threaten the survival of many plants and animals as the weeds compete with native plants for space, nutrients and sunlight.

Garden and ornamental plants and pasture grasses are brought to Australia from all over the world and many of them spread from gardens and farms into natural environments. Some plants are introduced to stop erosion or to provide shelter belts and feed for livestock. Others are introduced by accident; for example in the past soil ballast in sailing ships, and today imported grain may contain other (potentially weedy) plant seeds.

Weeds typically produce large numbers of seeds, assisting their spread. Seeds spread into natural environments, including waterways, via wind, people, vehicles, machinery, birds and other animals. Weeds rapidly invade disturbed sites. Human activities and introduced animals, such as rabbits, cattle, horses, goats and pigs create good conditions for weed growth. They contribute to soil disturbance, loss of plant cover, soil compaction or changed burning patterns. Weeds also thrive where fertilizers, oil and other wastes are washed into bushland, leaving extra nutrients in the soil.

Environmental weeds threaten the survival of many native plants and animals because they:

- usually grow faster than native plants and successfully compete for the available nutrients, water, space and sunlight;
- often survive better than native plants as they may not be affected by the pests or diseases that would normally control them in their natural habitats;
- reduce natural diversity by smothering native plants or preventing them from growing back after clearing, fire or other disturbance; and
- replace the native plants that animals use for shelter, food and nesting.

Over 160 weeds are listed the study area in Appendix 1. The weeds are ranked under a three categories being:

- Category 1 Widespread serious weeds of many habitats, highly invasive;
- Category 2 Locally serious weeds of specific habitats; and
- Category 3 Minor weeds or highly localised in specific habitats.

## Feral Animals

Since European settlement, our native fauna has had to compete with a range of introduced animals for habitat, food and shelter. Some have also had to face new predators. These new pressures have also caused a major impact on our country's soil and waterways and on its native plants and animals.

Feral animals of significant concern present in the study area include:

- European Wild Rabbit (*Oryctolagus cuniculus*);
- European Red Fox (*Vulpes vulpes*);
- Feral Cat (*Felis catus*); and
- Feral Pig (*Sus scrofa*).

In Australia, feral animals typically have few natural predators or fatal diseases and some have high reproductive rates. As a result, their populations have not naturally diminished and they can multiply rapidly if conditions are favourable.

Feral animals impact on native species by predation, competition for food and shelter, destroying habitat, and spreading diseases.

Feral animals such as rabbits graze or degrade vegetation that provides food and shelter for them and other native animals. If vegetation is destroyed or eaten by feral animals, native species are placed under greater pressure. Feral cats and foxes hunt and kill native birds, mammals, reptiles, amphibians and insects. Feral pigs hunt and kill native reptiles, amphibians and insects, and eat bulbs and rhizomes of native plants.

Feral animals can cause soil erosion. While managed domestic livestock can be removed from degraded areas until these areas are revegetated, it is much more difficult to keep feral animals out of these same areas.