

# Local Biodiversity Program

## Native Vegetation by Vegetation complex dataset for Perth and Peel

Representation status and conservation significance of vegetation complexes occurring in the Perth and Peel Region Schemes were determined after spatial and statistical analysis of 2010 remnant vegetation extent data by vegetation complexes and administrative planning categories across IBRA sub-regions and in Perth and Peel.

This information can be used to inform the representation and rarity criteria when assessing conservation significance of representative vegetation in Perth and Peel, and for the basis for local natural area prioritisation in the Regional Framework for Local Biodiversity Conservation Priorities.

Since the 2010 publication of the statistical analysis presented here, datasets providing the regional context for the vegetation status in Perth and Peel have been updated using the 2013 remnant vegetation mapping prepared by the Department of Agriculture and Food (April 2013). The 2013 update of native vegetation retention and protection status can be downloaded as separate set of tables from <http://pbp.walga.asn.au/Publications.aspx>

As the 2013 remnant vegetation mapping does not affect the threshold levels for vegetation retention and protection levels, the 2010 results are still relevant to local biodiversity conservation planning in Perth and Peel. The updated dataset will be made available in due course.

The datasets below include:

- 2010 Native vegetation extent by vegetation complexes and administrative planning categories in the Metropolitan Region Scheme and Peel Region Scheme areas.
- 2010 Native vegetation extent by vegetation complexes and land use categories based on the Metropolitan Region Scheme and the Peel Region Scheme is included.

Metadata statement explains how the methodology and lists the spatial datasets used is included.

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<b>Total for major landform element:</b>	173619.96	137983.56	79.47							26656.67	26656.67	15.35	15.35	28.74	23237.79	739.44	74635.59			33098.52	
<b>Darling Plateau Total:</b>	377131.56	300765.09	79.75			77.05	30.18			48557.60	48587.78	12.88	12.88	22.85	37625.53	1645.34	178018.91			63501.34	278.81

**KEY:**

	Formal Protection 1 = DEC conservation estate only (IUNC Reserves 1-4) (DECCON+BFDECCON)
	Formal Protection 2 = DEC conservation estate, BF on DEC managed lands and BF in Regional Parks
	Some level of protection 3 = Formal Protection 2 and Bush Forever (not included on Formal Protection 2) and Informal Reserves
	>90% of pre-European regional extent within limited to the study area (Perth and Peel Scheme Regions)*
	60-90% of pre-European regional extent limited to the study area (Perth and Peel Scheme Regions)*
	<30% of pre-European extent in the Perth and Peel Scheme Regions (<40%)
	< 10% of pre-European extent in the Perth and Peel Scheme Regions (<15%)

Note: To allow for vegetation type and extent mapping error due to the mapping scale used, the extent of remnant vegetation is considered an overestimate. Therefore, the 30% and 10% thresholds are assessed at actual 40% and 15% levels.

\*Regional extent calculations consider Swan Coastal Plain extent south of Moore River.

Formal Reserves (formal protection 1) = Existing National Parks, Nature Reserves, Cons Parks, 5(g) Reserves (DEC Conservation Reserves)

Formal Protection & BF (Formal Protection 2) = DEC conservation estate, BF on DEC managed lands and BF in regional Parks

Informal protection = Informal reserves, areas in Regional Parks and land classed as DEC Other

INFRES = Informal Reserves including Fauna Habitat Zones and Forest Conservation Areas within DEC managed estate

BF = all 5 Bush Forever categories (no differentiation by implementation category)

BFREG = Bush Forever sites in Regional Parks

DECOTH = not in any other DEC estate categories

DECSF = State Forest except portions identified as regionally significant in the Peel Swan Bioplan

DECSFEPP = portions of State Forest identified as regionally significant in the Peel Bioplan Study

DECSFBF = Parts of State Forest that are also bush Forever sites

LNA = Local Natural Areas in the Perth Metropolitan Region and those not identified as regionally significant natural areas in the Peel Swan Bioplan study

LNAEPPPEEL = Local Natural Areas identified as regionally significant in the Peel Swan Bioplan

REG = Local Natural Areas in Regional Parks

The sum of these administrative planning categories is equal to the 2010 remnant vegetation extent for each vegetation complex:



# Perth Biodiversity Project

## 2010 Vegetation complex dataset for Perth and Peel

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**Acknowledgements:** The Perth Biodiversity Project acknowledges the advice and direction provided by Bronwen Keighery, Office of EPA and Karen Clarke, Department of Environment and Conservation in this project.

# 1 Background

In 2009, the Perth Biodiversity Project received funding to develop a *Regional Framework for Local Biodiversity Conservation Priorities for the Perth and Peel Scheme Region*, including a spatial plan. The purpose of the Regional Framework is to inform land use planning and provide for adequate consideration of local biodiversity conservation issues.

The Regional Framework consists of several components:

- Conservation significance criteria supported by spatial datasets (3 levels)
- Updated dataset on native vegetation extent by vegetation complexes and their level of protection
- Datasets based on Local Biodiversity Strategies

One of the key criteria for determining the conservation significance of natural areas is the representativeness of ecological communities and ensuring that they are maintained above or at accepted threshold levels (EPA, 2008). Vegetation complex mapping is used as a surrogate for ecological communities in the south west of Western Australia.

## 2 Native Vegetation Extent by Vegetation Complex

This dataset categorises native vegetation extent according to vegetation complexes. For the Perth and Peel Scheme Regions vegetation complexes represent the most appropriate level to interpret ecological communities for establishing assessments of representation levels based on area.

These vegetation complexes are based on the patterning of vegetation at a regional scale reflected by the underlying key determining factors of landform, soil and climate. The Perth and Peel Scheme Regions are covered by two sets of vegetation complex mapping:

- Vegetation complex mapping by Heddle *et al* (1980)
- Vegetation complex mapping by Mattiske & Havel (1998).

While the extent of the above datasets does not cover the extent of the biogeographical regions (Interim Biogeographical Regionalisation of Australia 6.1, 2010) within which Perth and Peel Regions occur, the above listed vegetation complex datasets are the most appropriate datasets available.

To determine the representation levels of vegetation complexes across a study area, pre-European extent and current extent of vegetation complexes is assessed at two levels:

1. At the biogeographical region level (IBRA regions)
2. At the study area level (Perth and Peel Region Scheme areas).

Perth and Peel Regions are spread over two IBRA regions; the Swan Coastal Plain and Jarrah Forest. Jarrah Forest IBRA region can be divided into two subregions: Northern Jarrah Forest and Southern Jarrah Forest. Perth and Peel Regions extend only to the Northern Jarrah Forest IBRA sub-region.

There are 27 and 18 vegetation complexes represented within the Swan Coastal Plain and Jarrah Forest portions of the Perth and Peel Scheme Regions.

Some areas mapped as native vegetation are outside the extent of vegetation complex mapping used. These areas are identified as 'Native vegetation outside vegetation complex mapping' and are quantified in tables listing vegetation extent by administrative planning categories.

### **3 Native Vegetation Extent by Administrative Planning Categories**

This dataset provides a broad overview of the different themes of native vegetation according to existing administrative planning and protection categories. Importantly this dataset quantifies the spatial extent of vegetated Local Natural Areas because it is Local Natural Areas that will be the major focus of Local Governments biodiversity strategies and the Regional Framework. Local Natural Areas are all natural areas outside the DEC conservation estate, State Forest and Bush Forever Sites (del Marco *et al*, 2004).

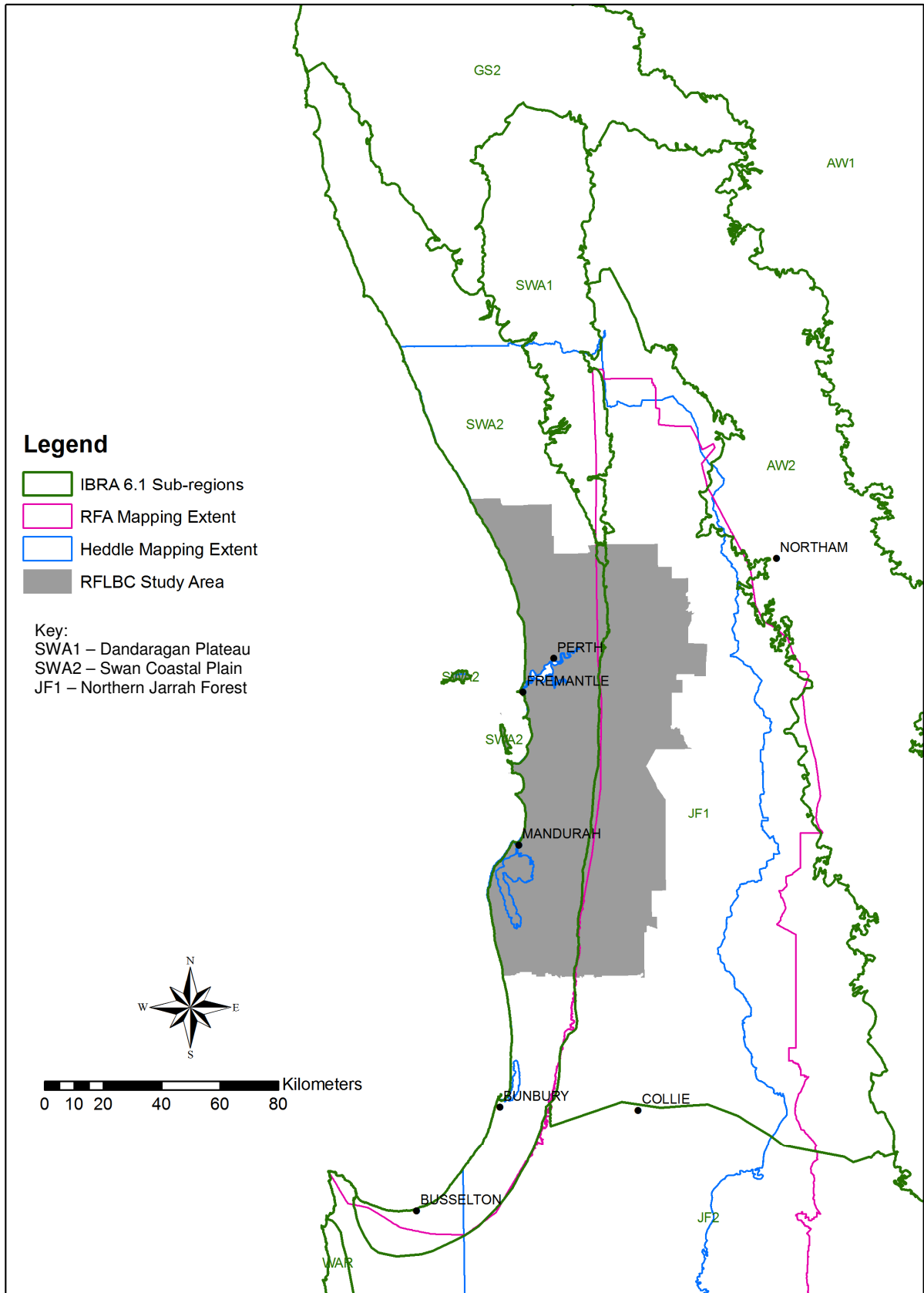
### **4 Native Vegetation Extent by Land Use Categories**

This dataset was derived from 2010 native vegetation extent by vegetation complexes and by Metropolitan Region Scheme and Peel Region Scheme land use categories (zones and reserves). The derived table shows an area in hectares of native vegetation by vegetation complexes according to Metropolitan Region Scheme and Peel Region Scheme zoning current as in August 2011.

### **5 Spatial Extent of the Data**

Vegetation complex mapping covers the extent of the vegetation complex mapping by Heddle *et al* (1980) and Matiske and Havel (1998). The two vegetation complex mapping datasets overlap and as such the Perth Biodiversity Project team undertook a process to join the two datasets along appropriate complexes so as to create one vegetation complex mapping layer. This is further explained in the metadata statement following.

Figure 1 shows the extent of vegetation complex mapping, IBRA regions and the Perth and Peel Scheme Regions.



**Figure 1: Regional Framework for Local Biodiversity Conservation Priorities in Perth and Peel (RFLBC) study area, IBRA sub-regions and the extent of vegetation complex mapping covering the study area.**



## 5 Contacts

Any questions or queries relating to the maps provided or intended future instalments of mapping and information can be directed to:

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## 6 Bibliography

Del Marco A, Miles C, Taylor R, Clarke K and Savage K (2004) *Local Government Biodiversity Planning Guidelines for Natural Area Protection and Management in the Perth Metropolitan Region*. Western Australian Local Government Association, Perth.

Environmental Protection Authority (2008) *Guidance Statement No 33: Environmental Guidance for Planning and Development*, Environmental Protection Authority, Perth.

## 7 Metadata

### 7.1 2010 Native Vegetation Extent by Vegetation Complex

<b>Dataset Title:</b>	Native Vegetation Extent by Vegetation Complex Filename: (Veg_by_complex_full_extent.shp)
<b>Custodian:</b>	Western Australian Local Government Association (Perth Biodiversity Project)
<b>Contact:</b>	Renata Zelinova (08) 9213 2047 <a href="mailto:rzelinova@walga.asn.au">rzelinova@walga.asn.au</a>
<b>Description:</b>	This dataset categorises native vegetation extent according to vegetation complexes, as mapped in the Jarrah Forest by Mattiske and Havel (1998) and on the Swan Coastal Plain by Heddle et al. (2002)
<b>Data Creation:</b>	<p>This dataset was derived by intersecting the 2010 native vegetation dataset (DAFWA, 2010) with Pre1750 Vegetation Complexes and further removing areas identified as plantations in the FPC Annual Report (2010). The vegetation complexes used are by Mattiske and Havel for the Regional Forest Agreement (CALM, February 2003) and Vegetation complex types and geomorphology captured by Heddle, E. M., Loneragan, O. W., and Havel, J. J. (DEP, 2002).</p> <p>All areas mapped as plantation in the DEC's Annual Report (2010) dataset have been removed from the native vegetation extent.</p> <p>Coast definition based on the coastal line provided by Geoscience as this is used to define the IBRA regions.</p>

### Changes to the dataset:

The northern extent of the vegetation complex mapping does not include the portion mapped by Heddle *et al* (2002) north of Moore River.

The two vegetation complex datasets overlap and in some instances different vegetation types are assigned to the same area.

As a general principle, vegetation complexes mapped by Heddle *et al* (2002) on the Swan Coastal Plain form the eastern boundary of the Swan Coastal Plain.

Figure 2 below demonstrates the implications on an example of Wannamal and Cullula vegetation complexes. The extent of Wannamal vegetation complex as mapped by Mattiske and Havel (1998) (black hatching) overlaps Heddle's Cullula (in yellow). The area of the overlap is 2654.69ha and has been allocated as Cullula. When the pre-European extent for Cullula and Wannamal following this change to the dataset are compared with figures published in the EPA's Guidance statement No 10 (2003), the areas are comparable.



Figure 2: Overlap of two types of vegetation complex mapping datasets.

Heddle’s vegetation complex mapping does not extend to the whole length of the Swan Coastal Plain south of Bunbury. Various vegetation complexes mapped within Quindalup Dune systems by Matisse and Havel (1998) were added to those complexes mapped by Heddle using the following formula:

- Qd and Qu were added to Quindalup complex
- Qwy were added to Vasse
- Abba vegetation complex consists of all Abba type complexes mapped.

Native vegetation outside vegetation complex mapping is marked as ‘native vegetation outside vegetation complex mapping’. This is mostly occurring along the coast, estuaries and watercourses.

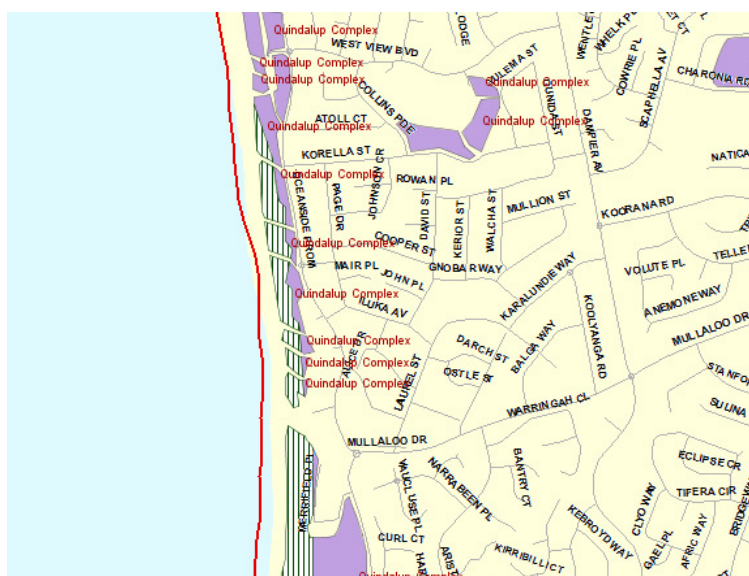


Figure 3: An example of native vegetation extent outside the vegetation complex mapping.

**Data Currency:** February 2011  
**Spatial Extent:** South of Moore River covering the extent of Heddle (1980) and Mattiske and Havel (1998) mapping. (See Figure 1)  
**Datum:** Geocentric Datum of Australia (GDA)  
**Grid Coordinates:** Map Grid of Australia 1994 (MGA94)  
**UTM Zone:** 50  
**Available Formats:** Arc View Shape files.

### **Polygon Attributes**

**SOURCE:** Source from which vegetation complex was derived

- HEDDLE - Vegetation complex types and geomorphology captured by Heddle, E. M., Loneragan, O. W., and Havel, J. J. (DEP, 2002)
- RFA - Pre1750 Vegetation Complexes - Complete Coverage captured by Mattiske and Havel for the Regional Forest Agreement (CALM, February 2003),

**COMP:** Vegetation Complex (assigned to an area in the joint dataset)

## 7.2 2010 Native Vegetation Extent by Administrative Planning Categories

<b>Dataset Title:</b>	Native Vegetation Extent by Administrative Planning Category File Name: (APC3.shp)
<b>Custodian:</b>	Western Australian Local Government Association (Perth Biodiversity Project)
<b>Contact:</b>	Renata Zelinova (08) 9213 2047 <a href="mailto:rzelinova@walga.asn.au">rzelinova@walga.asn.au</a>
<b>Description:</b>	Provides a broad overview of the different themes (eg Bush Forever, Local Natural Areas etc) of native vegetation according to existing administrative planning categories relevant to biodiversity protection and management in the Perth and Peel Region Scheme areas.
<b>Data Creation:</b>	This dataset was derived by combining the 2010 Native vegetation extent after removing areas identified as plantations in the FPC Annual Report (2010): <ul style="list-style-type: none"><li>• DEC Managed Lands and Waters (DEC, 2010),</li><li>• Bush Forever 2009 – Site boundaries (Department of Planning, 2009),</li><li>• Regional Parks – Regional Park Boundaries (DEC, 2010)</li><li>• Swan Bioplan Peel Regionally Significant Areas (OEPA, 2011)</li><li>•</li></ul>
<b>Data Currency:</b>	February 2011
<b>Spatial Extent:</b>	Western Australia
<b>Datum:</b>	Geocentric Datum of Australia (GDA)
<b>Grid Coordinates:</b>	Map Grid of Australia 1994 (MGA94)
<b>UTM Zone:</b>	50
<b>Available Formats:</b>	Arc View Shape files.

### Polygon Attributes

<b>THEME:</b>	Native Vegetation Extent by Administrative Planning Category: <ul style="list-style-type: none"><li>• BF – native vegetation contained within Bush Forever sites excluding that native vegetation categorised as BFREG, DECSFBB;</li><li>• BFDECCON – native vegetation in a Bush Forever site within DEC's conservation estate defined as: National Parks, Nature Reserves, Conservation parks, 5 (g) Reserves;</li><li>• BFDECCONREG – native vegetation in a Bush Forever site classified as a Regional Park within DEC's conservation estate defined as: National Parks, Nature Reserves, Conservation parks, 5 (g) Reserves;</li><li>• BFDECOTH – native vegetation in a Bush Forever site within a DEC estate that has not been recognised in any of the above categories.</li><li>• BFDECSF – native vegetation in a Bush Forever site within a State Forest</li><li>• BFREG – native vegetation contained within Bush Forever Sites that also exist within the Regional Parks;</li><li>• DECCON – native vegetation within DEC's conservation estate defined as: National Parks, Nature Reserves, Conservation parks, 5 (g) Reserves;</li><li>• DECCONREG – native vegetation in a Regional Park within DEC's conservation estate defined as: National Parks, Nature Reserves, Conservation parks, 5 (g) Reserves;</li><li>• DECSF – native vegetation in State Forest;</li><li>• DECOTH – native vegetation in DEC estate that has not been recognised in any of the above categories.</li></ul>
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- REG – Native Vegetation that exists within Regional Parks that has not been recognised in any of the above categories.
- LNA – Local Natural Areas being native vegetation areas not within CALM estate (CALM and CALMREG), Bush Forever (BF and BFREG) sites or Regional Parks (REG).