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# Biodiversity Mapping in the South West Metropolitan Region

## Presented to the WALGA Strategic Assessment of Perth and Peel Region Workshop

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Mick McCarthy – Director South West Group

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# Member Council and Partners in the South West Group Regional Natural Resources Management (NRM) Strategy

City of Kwinana

City of Fremantle

Town of East Fremantle 1897

City of Cockburn wetlands to waves

City of Melville

City of Rockingham

## Local Biodiversity Program is supported by:

WALGA

The Government of Western Australia

Government of Western Australia Department of Planning

The Government of Western Australia Department of Parks and Wildlife

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# Background

- Regional NRM Strategy an initiative of the South West Group – Adopted in August 2013
- Aimed at addressing regional NRM issues and identifying large scale, cross boundary NRM initiatives
- WALGA LBP Team engaged to undertake regional biodiversity mapping and analysis
- South West Group implementing Regional NRM Strategy based on priority projects and initiatives
- Promotes working together, active participation in biodiversity conservation, collaboration, information and resource sharing

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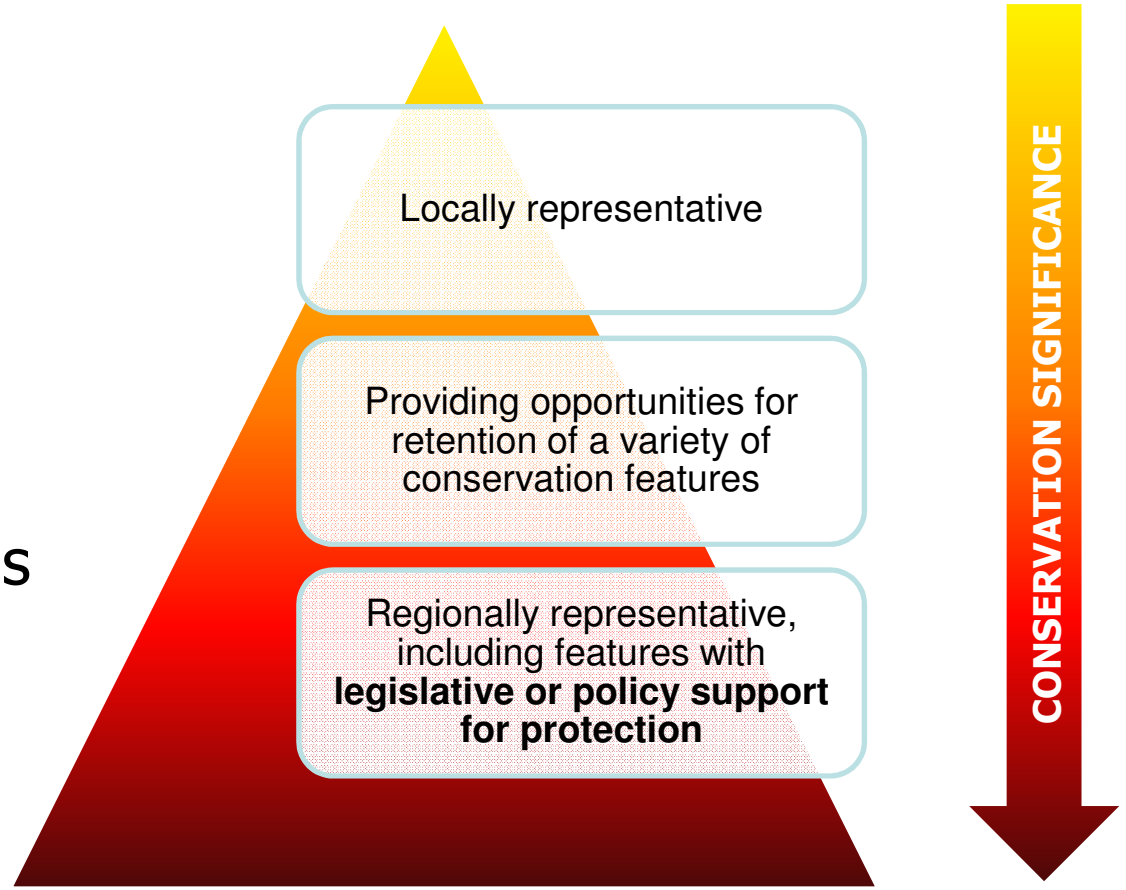
# Outline of Presentation

- Methodology for biodiversity mapping
- Identification of areas for priority action
- Identifying local ecological linkages
- Applying a connectivity analysis
- Key findings
  - Vegetation Extent and Current Provisions for Protection
  - Connectivity and Building a Green Network
- Conclusions

# Local Natural Area
## Level 1 Prioritisation criteria

- Regional retention & protection
- Rarity
- Maintenance of ecological functions
- Local retention

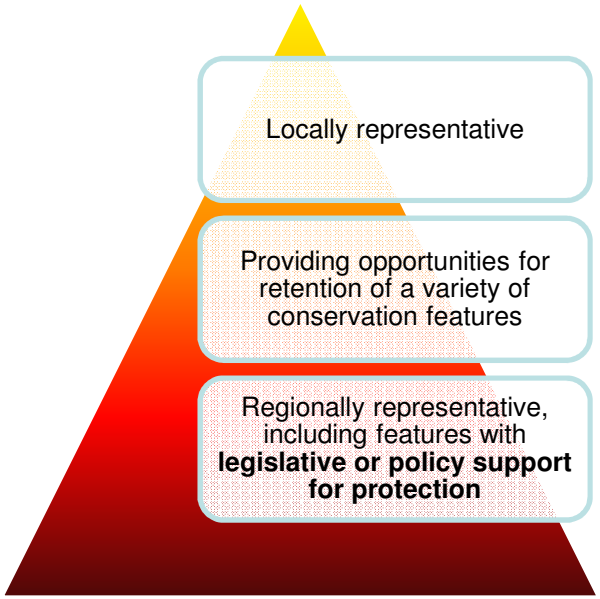


# Level 2 Prioritisation

## Conservation significance & opportunities for, and constraints to, conservation

**Protected**

(eg. Bush Forever or DPaW lands, conservation reserves)




**With varied opportunities for native vegetation retention/protection**

(eg. zoned rural smallholdings, special use etc)

**With good opportunities for native vegetation retention/protection**

(eg. zoned parks & rec., rural landscape protection, state forest etc.)

**With limited opportunities for native vegetation retention/protection**

(eg. zoned urban or urban deferred)

# Level 3 Prioritisation

## Identification of potentially threatened vegetation complexes

**Based on hypothetical simplified assumptions:**

- Current extent (***2010 data***) of vegetation complexes & their regional distribution
- All vegetation reserved for Parks & Recreation **will be retained**
- Vegetation zoned/reserved Urban, Urban deferred, Industrial, Roads, Railways, City Centre, Ports **will be cleared**
- Various retention scenarios applied to vegetation within zones/reserves Rural, Public Purposes, Special Use (30%, 50% and Bush Forever contribution)
- Consideration of local biodiversity conservation objectives adopted through **Local Biodiversity Strategies**

POTENTIALLY THREATENED VEGETATION COMPLEXES

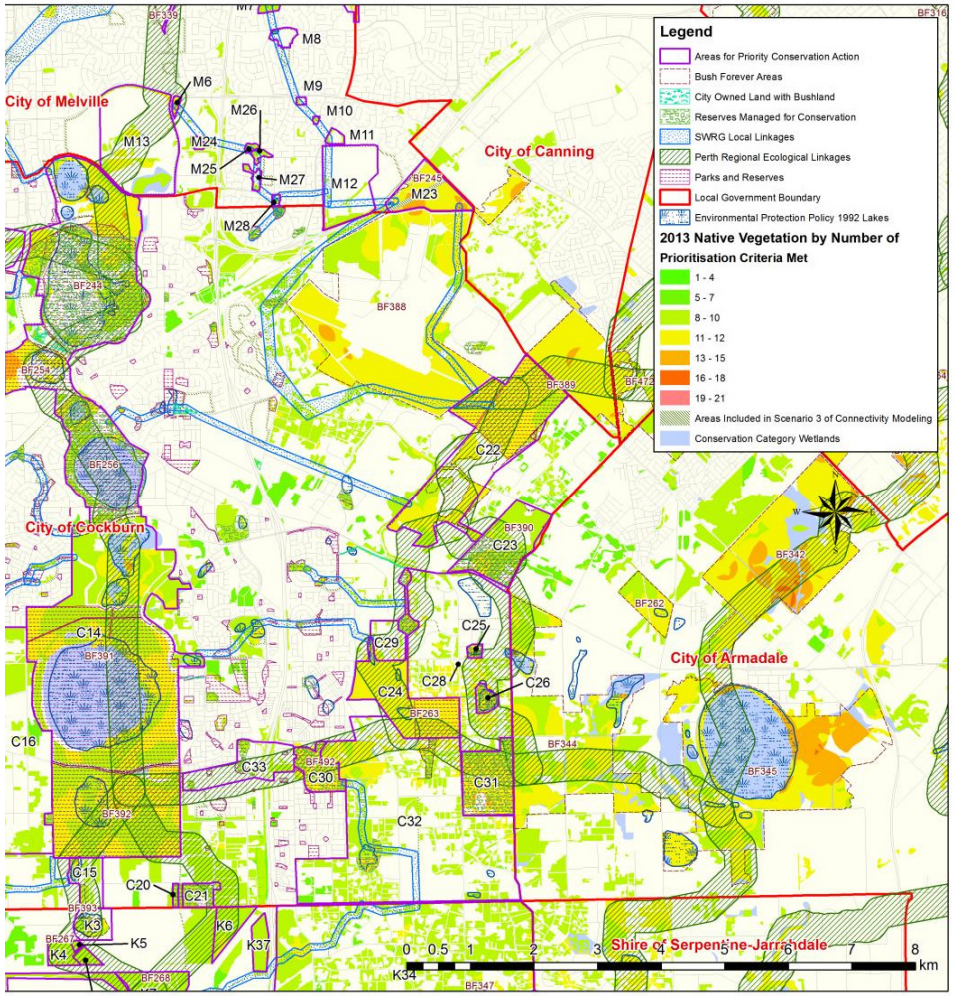
# Potentially threatened vegetation complexes

| | Level of retention of vegetation complexes relative to pre-European extent | |
|---|---|---|
| Conservation Priority Category | Current (2010) regional extent within the study area (%) | Assumed (future) retention in the study area (%) |
| 1 | > 90 | < 10 |
| 2 | > 90 | < 30 |
| 3 | > 60 | < 10 |
| 4 | > 60 | < 30 |
| 5 | | < 10 |
| 6 | | < 30 |

# Areas of Priority Conservation Action (APCAs) for Cross Boundary Initiatives

APCA's identify areas where **cross boundary cooperation** would provide opportunities to work collaboratively, access external funding and prioritise actions at local level that will contribute to biodiversity conservation actions at regional level.

***NB**: There are **numerous natural areas** of high conservation value that are **not included** in the APCAs because they can be readily managed locally by the LGA's and community groups without the need for cross boundary cooperation*



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# Regional and Local Ecological Linkages

- **Regional linkages** were mapped in 2006 as part WALGA's Perth Biodiversity Project and form a metro wide network of existing and potential corridors
- **Local ecological linkages** were identified to link regionally significant natural areas not connected through the Regional Ecological Linkages.
- Some local linkages were proposed to link to POS that has no remnant native vegetation, recognising that **POS can support biodiversity conservation** when local species are introduced.

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# Connectivity Analysis

A connectivity analysis was then applied to three potential scenarios:

**Scenario 1:** Remnant vegetation and Conservation Category wetlands existing in **2013** - the "**current status**"

**Scenario 2:** The "*current status*" with **further loss of all unprotected vegetation** modelled as the removal of all remnant vegetation outside Bush Forever areas, DPaW managed lands and LGA conservation reserves based on the full development of local planning scheme zones

**Scenario 3:** Represented by Scenario 2, with the **addition** of selected POS and other potential 'green spaces' that would require active biodiversity management and resources.

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# The Connectivity Analysis Measures…

**Regional Connectivity:** A measure of how a patch of remnant vegetation within a connected network deviates from the "ideal" (circular) shape of a well-connected network.

**Connectivity Reach:** A measure of the size of the connected network a patch is part of, regardless of the pattern (or shape) of the network.

**Fragmentation:** A measure for a patch and its immediate surrounds and how this deviates from the "ideal" (circular) shape.

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# Key Findings – Extent and Protection

1. **< 30%** (2010 data) of the pre-European vegetation extent **remains**, with the majority in the Cities of Cockburn, Kwinana and Rockingham

2. **< 10%** of the pre-European extent is formally **protected for conservation.**

3. There are **ten** vegetation complexes represented in the SWG study area. **Eight out of ten** are listed as potentially **threatened**.

4. The City of Rockingham is one of only two Local Governments in the Perth/Peel where the **Serpentine River** vegetation complex remains

5. The Cities of Kwinana and Rockingham have particular opportunities to protect the **Karrakatta Central and South** vegetation complex

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# Key Findings - Connectivity & Green Network

1. Many priority conservation areas are isolated. **Further loss** of vegetation will **increase the isolation** of **additional** protected natural areas.

2. **Extending the current network** by restoration and revegetation within regional and local linkages **will maintain or improve current levels of connectivity.**

3. Establishing additional native vegetation within existing POS areas only **will not be sufficient** to maintain or improve connectivity.

4. Establishing a **secure east-west linkage is a high priority**. The best opportunity exists on the **boundary of the Cities of Rockingham and Kwinana** and/or the **boundary of the Cities of Kwinana and Cockburn.**

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# Key Findings - Connectivity & Green Network

5. Improving protection status and vegetation condition is critical to facilitating fauna movement **in coastal areas**.

6. The long term viability of the relatively well established South-North linkages is **dependent on the ability to protect** vegetation within several currently unprotected areas

7. **Adding new, small areas** of vegetation increases connectivity, however the maintenance of a network of numerous small narrow parcels will be more resource intensive.

8. Connectivity characteristics of native vegetation in the study area will be significantly **worsened with the clearing proposed** within the Latitude 32 Structure Plan area and Jandakot Airport.

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# Conclusions – Green Network

- The LBP / SWG study has provided extremely valuable, objective data to guide regional and local NRM and biodiversity planning and management decisions.
- Regional scale planning and management is critical for improving biodiversity outcomes.
- Increased cooperation and coordination between LGA's, and between LGA's and State and Federal agencies, is essential for improving regional biodiversity outcomes.
- To maintain or improve the integrity of the green network requires:
  - environmentally sensitive planning decisions and developments
  - increasing the protection status of high conservation value vegetation
  - active maintenance and/or improvement of existing vegetation condition
  - innovative measures to encourage more native vegetation in POS, road and rail reserves, and on private land

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# Conclusions – SAPPR

- The SAPPR Team has been provided with the datasets and shape files developed through the WALGA/SWG Green Network Report.
- Potential to combine the Green Network Report spatial biodiversity conservation mapping with State and Federal species data (Canaby's, DRF, TEC, Conservation Category Wetlands) to build landscape scale response in SAPPR.
- South West Group is working with member Councils in the region to identify biodiversity offsets that can be met locally or regionally.
- South West Metropolitan Region is open to trailing pilot projects or ideas and canvassing SAPPR implementation responses in partnership with State Government.