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Landscape Master Planning: A Strategic Framework for Adapting to Climate Change

Streetscape Advisory Committee ï 7 October 2009

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Discussion

- Context of the project
- Threats to Public Open Space
- Project Approach and Outcomes
  - Strategic Framework Development
  - Key Focus Areas
  - Pilot Projects
  - Iconic Roads
- Ground Water Allocation and Consumption

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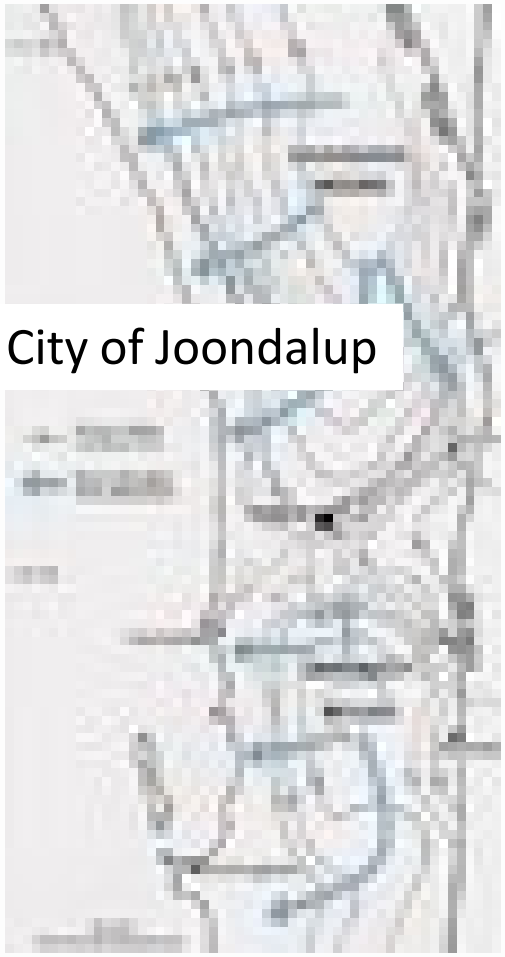
Swan Coastal Plain

- SW Western Australia
- 20-30 km wide
- 150 km long
- Coastal Belt
  - Calcareous dunes
  - Siliceous dunes
- Bassendean Sands
  - Quartzose dunes
- Annual Rainfall
  - 500mm (N)
  - 1200mm (S)



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Aquifers

- Unconfined aquifer
  - Gnangara mound
    - City of Joondalup
  - Jandakot mound
- Confined aquifers
  - Leederville (650m)
  - Yarragadee (3000m)
    - Recharge to coast 30,000 years

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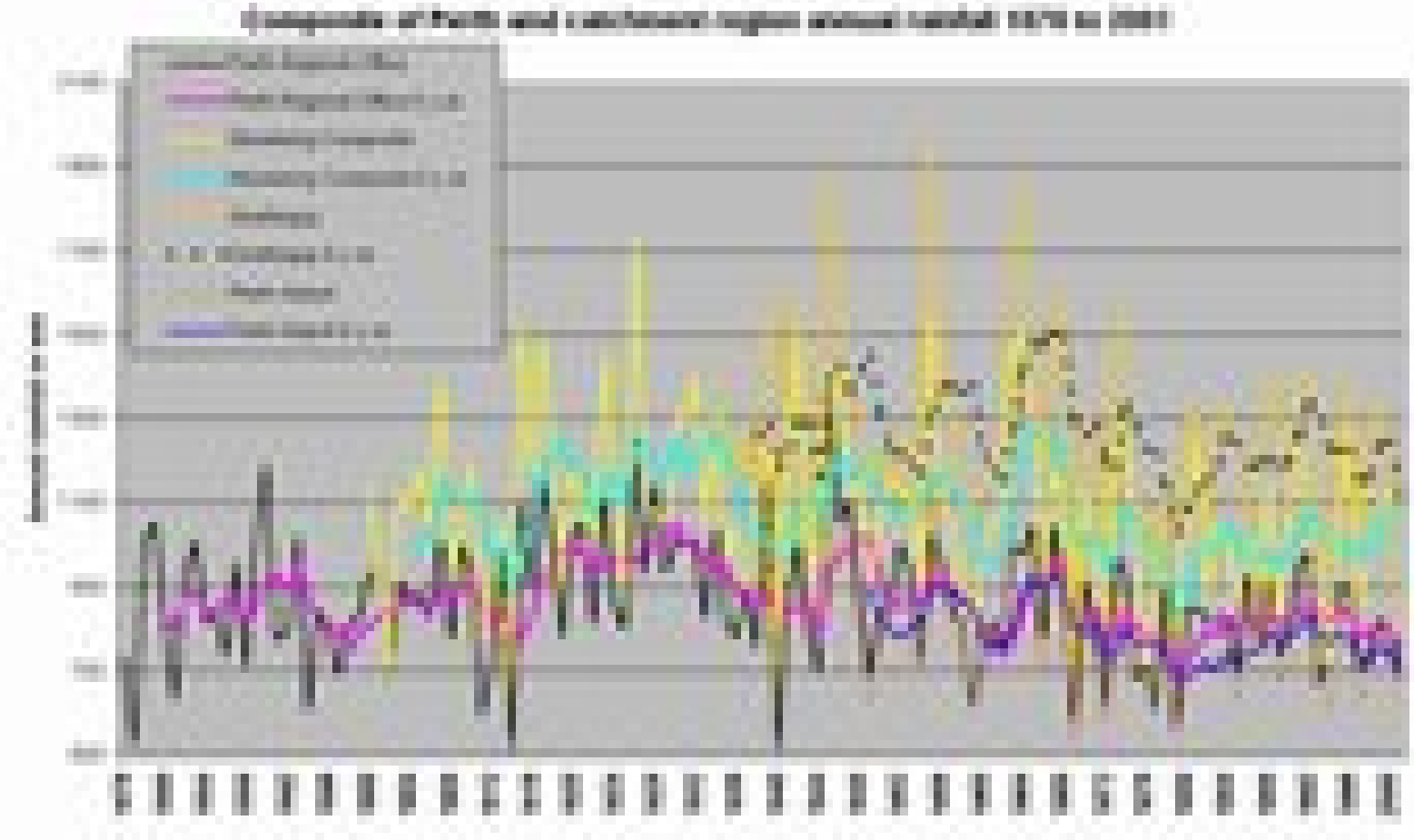
Western Australian Rainfall



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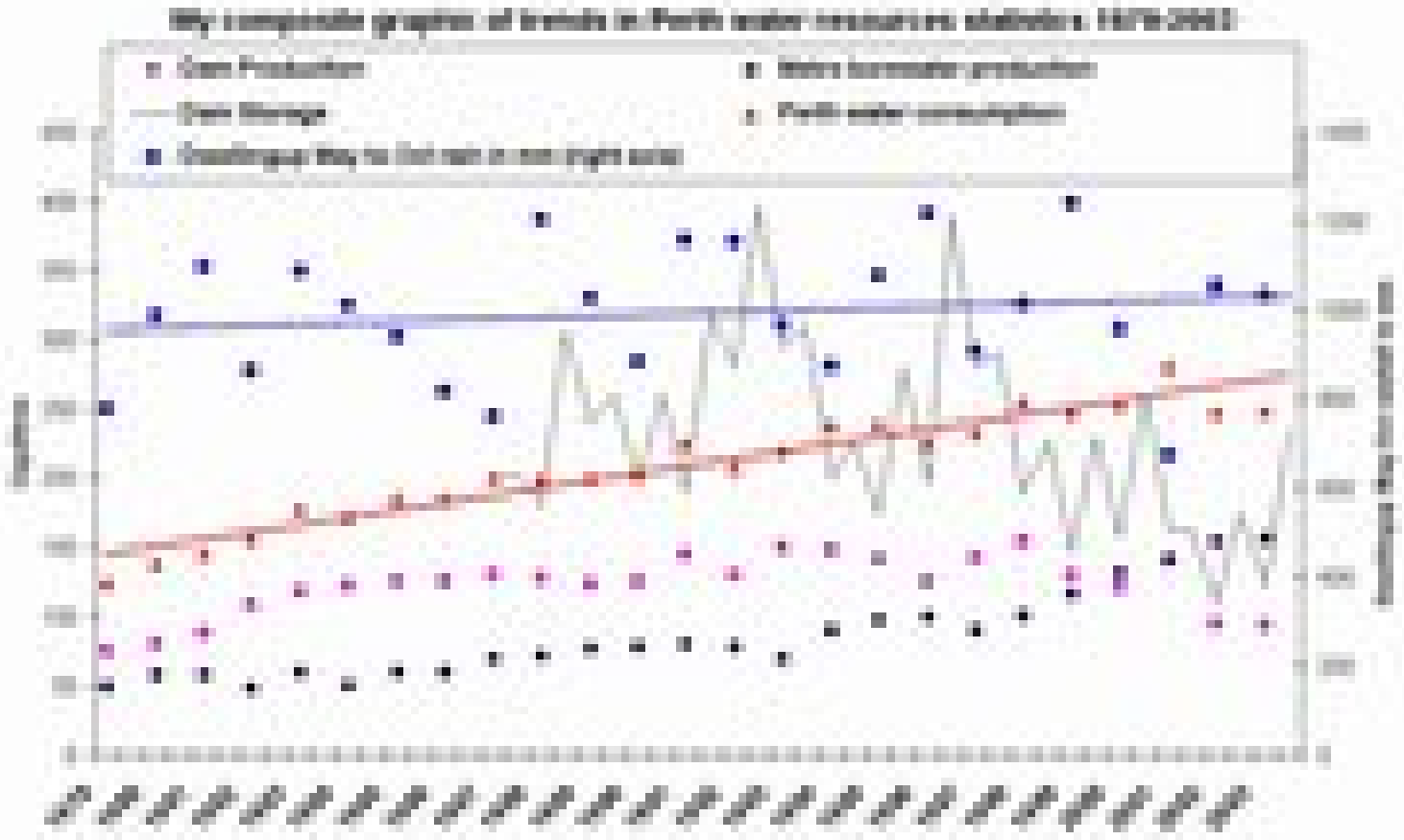
Western Australian Rainfall



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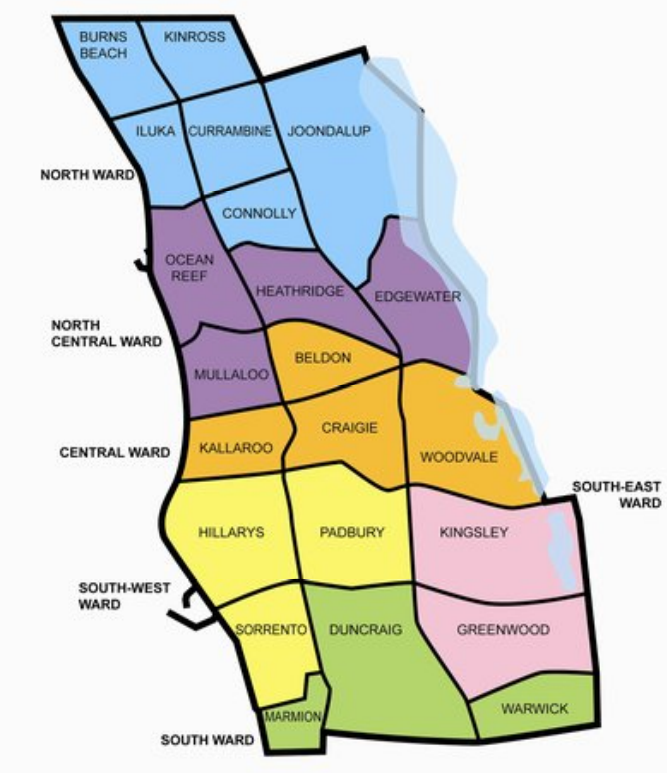
- Originally part of Wanneroo – now 10 years old
- Population 160,000
- Area – 99 square kilometres
- Coast - 17 kilometres
- Number of Parks – 365 (POS)
- Number of irrigated parks – 241
- Number of bores – 192
- Natural bushland – 505 ha



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Threats to Provision of Open Space

- Climate change (hotter, dryer, intense weather, rising sea level)
- Socio-cultural (disruption to sport, higher costs, less service so higher demand)
- Water shortage (less quantity and quality, decreased vegetation)
- Competing Users (City vs schools, government, private sporting facilities)
- Community Expectations (why is my park brown?)

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Approach to Planning Process

- Stage 1: Benchmarking and Research
- Stage 2: Assessing Community Expectation
- Stage 3: Gaining Political Direction ï the Vision
- Stage 4: A Strategic Framework
- Stage 5: Implementation
- Stage 6: Pilot Projects
- Stage 7: Iconic Road Projects

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Outcomes of Planning Process

- Stage 1: Benchmarking and Research
  - Desk top exercise
  - Public Open Space audit
  - Governance and management audit
  - Internal workshops
- Stage 2: Assessing Community Expectation
  - Edith Cowan University research project with Joondalup and neighbouring Wanneroo residents

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Outcomes of Planning Process

- Stage 3: Gaining Political Direction – the Vision

  "Landscaping in the City of Joondalup will be innovative, distinctive, functional and appealing, and valued by residents and visitors and will evoke a sense of ownership and pride amongst its residents.

  This vision will be achieved by the application of sustainable principles that will underpin all landscaping practices, with a focus on environmental best practice and the preservation, enhancement and showcasing of local natural biodiversity."

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Outcomes of Planning Process

- Stage 4: A Strategic Framework

STRATEGIC MODEL FOR LANDSCAPE MANAGEMENT PLANNING

Planning Framework

Environment Plan 2007-2011

Develop a Landscape Master Plan (LMP)

LANDSCAPE MASTER PLAN
1. Outlines strategic Direction for Managing POSMV
2. Outlines key objectives for different types of POSMV
3. Contains strategic guidelines and decision-making approaches to determine levels of landscaping for POSMV
4. Contains a set of strategic actions to support the LMP process (eg. Improved reticulation systems and water monitoring, community education an awareness raising programs)
5. Provides summary of all POS, Median and Verges and an assessment of priority of works for each.

Develop Generic Parks Management Plan (GPMP))

GENERIC MANAGEMENT PLAN CONTAINS THE TOOLSTO SUPORT THE LMP.
1. Toolkits (Classification and Prioritisation tools)
2. Species List
3. Dbase
4. Project Management template

Develop Individual Parks Management Plans (IPMP)
(All POSVM are prioritised and IPMPs are developed in house to concept design stage using GPMP tools)

Chichester
MacNaughton
Heathridge Park
Ocean Reef
Joondalup Drive
Shenton Median
Heathridge
Whitfords
Craigie Leisure Centre

IPMPs are developed to contract level with specifications and detailed plans for implementation by Operation Services or External contractors

All IPMP once produced are entered into POS Dbase and GIS and maintained as works are completed

STRATEGY
TOOLS
OPERATIONAL

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Outcomes of Planning Process

- Stage 5: Implementation (Key Focus Areas)
  1. A City-Wide Landscaping Image
  2. Management and Development
  3. Joondalup City Centre
  4. Parks
  5. Verges and Medians
  6. Community Buildings Surrounds

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Outcomes of Planning Process

Å Stage 5: Implementation (Ecozones and Hydrozones)

Before

Zones	Ha
Rainfed	0.0
Passive	1.5
Passive plus	0.0
Active	3.5
Car park	0.2
Paths	0.1
Drainage basins	0.5
Total	**5.8**

Water use (kl/yr) 54,265

Water allocation (kl/ha/yr) 9,413

Maintenance/yr $70,000

Base case for scenario planning

After

Zones	Ha
Rainfed	1.3
Passive	0
Passive plus	2.2
Active	1.5
Car park	0.2
Paths	0.1
Drainage basins	0.5
Total	**5.8**

Water use (kl/yr) 31,535

Water allocation (kl/ha/yr) 5,470

Maintenance/yr $37,000

Capital cost of scenario $278,000

Low shrubs and groundcovers to maintain passive surveillance

Scenario 3: Improvements in irrigation, introduction of hydrozones, introduction of rain-fed ecozones. Image showing green active areas of turf surrounded by yellowish passive areas and rain-fed gardens.

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Outcomes of Planning Process

- Stage 6: Pilot Projects
  - Ocean Reef Road Direct Seeding
  - Mullaloo Beach Waterwise Garden
  - Local Provenance Nursery



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Outcomes of Planning Process

- Stage 6: Pilot Projects
  - Hydrozoning Heathridge Park and Elcar Park
  - Joondalup Drive Landscaping
  - Whitfords Avenue Landscaping



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Outcomes of Planning Process

- Stage 7: Iconic Road Projects
  - Seven east-west arterial roads
  - Unique image with indigenous species
  - Reduce water consumption
  - Re-introduce local provenance species
  - Awareness of local biodiversity
  - Create biodiversity corridors

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Outcomes of Planning Process

- Burns Beach Iconic Road Project
  - Hard surfacing and local soils
  - Indigenous (provenance) species
  - Iconic plant contract
  - Whole of life costings
  - Temporary irrigation systems
  - Water allocation

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Ground Water Allocation and Consumption

- Department of Water (7,500 kL/ha/yr for 549ha)
- Meters on all 192 bores
- 241 reticulated parks (615ha)
- 26 dry parks
- New bores required
- New irrigation regime (evaporation rates)
  - Active reserves reduced from 80% to 70%
  - Passive reserves reduced from 60% to 40%

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Ground Water Allocation and Consumption

- City of Joondalup 2009/10 targets:
  - 6264 kL/ha/yr
  - 16% reduction on Department of Water allocation rate
  - 6% reduction on actual allocation
- Improved turf management (renovation and fertilisation)
- Commitment to 20% reduction or 6000 kL/ha/yr by 2030

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