FOREST CHECK

Department of Environment and Conservation

Monitoring Biodiversity in Jarrah Forest Managed for Sustainable Forestry

Richard Robinson & Lachie McCaw
Science Division, Manjimup

Monitoring Biodiversity in Jarrah Forest

FORESTCHECK

- Integrated system to monitor changes and trends in key elements of forest biodiversity associated with forest management activities
- Developed to comply with:
    - Conditions placed in Forest Management Plan 1999-2003 through Ministerial conditions and Codd Report (1999)
    - Reporting on ESFM against Montreal Process Criteria
- Focus (at present) on timber harvesting in jarrah forest
- Included as an Operational Program in current Forest Management Plan 2004-13

Monitoring Biodiversity in Jarrah Forest

FORESTCHECK

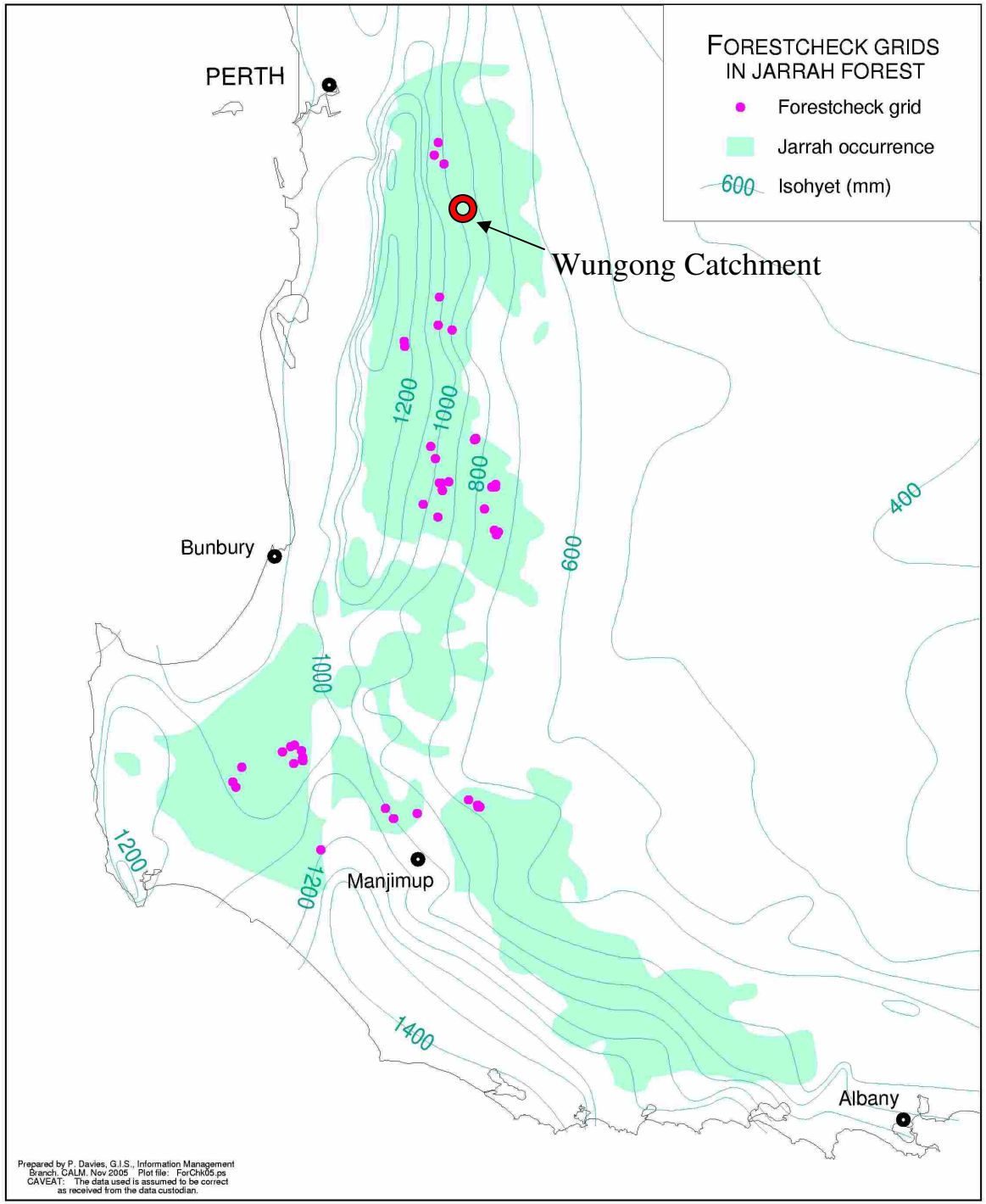
- Initiated in 2001
- 5 locations, 48 monitoring grids
- 1 location monitored each year
- Annual analysis and report
    - http://www.naturebase.net/science/science.html
- Major analysis every 5 years (currently in progress)

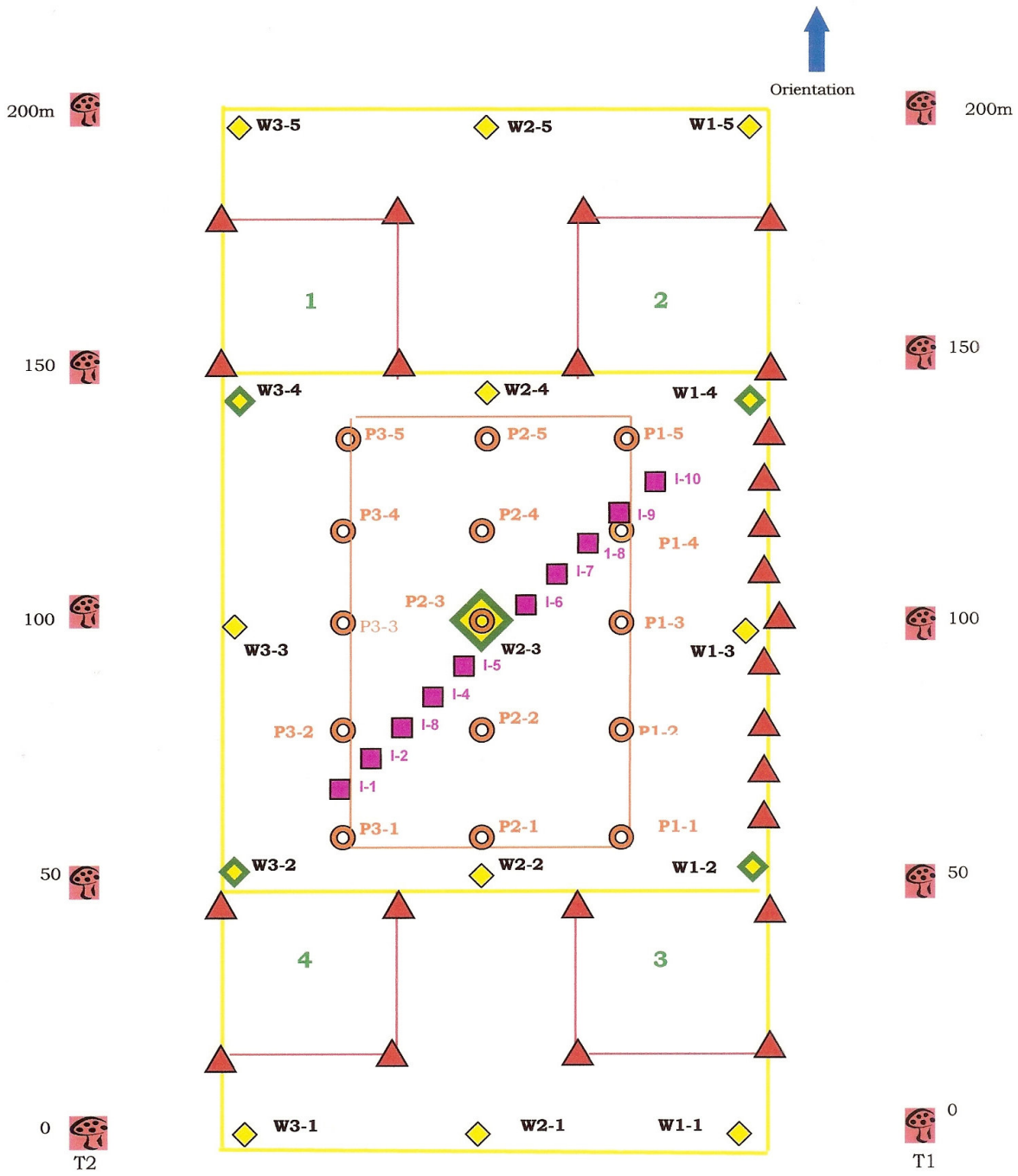
Initiated in 2001

5 locations within the range of jarrah forest

Total of 48 monitoring grids established over 5 years

- 2001 – Southern Jarrah (Donnelly, 10 grids)
- 2002 – Central jarrah (Wellington, 9 grids)
- 2003 – Northern Jarrah (Perth Hills, 8 grids)
- 2004 – Eastern Jarrah (Wellington East, 10 grids)
- 2005 – Sunklands (Blackwood Plateau, 11 grids)





FORESTCHECK

Monitoring grid

- Grid/Plot Centre – overall grid size 100m x 200m
- Corner pegs for main plot (100m x 100m)
- Wire cage x15
- Small vertebrate pit traps x15
- Macrofungi transect 2 x 200m
- Invertebrate pit traps x10
- Vegetation plots 4 x 30x30m
- Cryptogams
- Forest structure and regeneration
- Soil nutrients
- Soil disturbance

Monitoring Forest Attributes - Objectives

Forest Structure and Regeneration

- To describe the stand structure, species composition and developmental stage of tree species present on each sampling grid
- To quantify the basal area removed in past harvesting events, and
- To measure the contribution of mid-storey species to stand structure, density and basal area

Foliar and Soil Nutrients

- To provide information on the nutritional status of the forest on each sampling grid

Monitoring Forest Attributes - Objectives

Soil Disturbance

- To record the extent of machine soil disturbance (snig tracks) where it can be readily identified
- To monitor the intensity of changes to soil physical properties induced by logging, and to monitor further change over time
    - Intensity of disturbance measured as the fine earth bulk density of the soil

Coarse Woody Debris and Litter (Transects and Plots)

- To determine amounts on each sample grid

Monitoring Biodiversity - Objectives

Elements of biodiversity monitored include: Macrofungi, Cryptogams (lichens, mosses & liverworts), Vascular Flora, Invertebrates (> 1cm), Birds, Mammals and Herpetofauna.

For each we:

- Record species richness and abundance on each grid
- Determine species composition within each treatment, and
- Analyse trends in species richness, abundance and composition between treatments,

…as well as other characteristics specific to each group.







Data Management and Analysis

Data Management and Analysis

- All data entered and managed centrally
- Comparisons between treatments (Control (unlogged), Shetterwood and Gap release) or basal area and locations for:
  - total species richness, abundance and composition of all monitored flora and fauna
  - vegetation composition and structure
  - stand structure, regeneration and
  - nutrient status
  - CWD and litter loads
  - soil disturbance

Vs

Ind. element species richness, abundance & composition

FORESTCHECK Team

Resources utilised in FORESTCHECK

- Personnel ~ 4.5 FTE <u>but</u> it draws on the expertise of 14 personnel specialised in a range of disciplines.
  - 5 Research, 9 technical (generally 0.2 – 0.4 FTE each)
  - 3 Research, 1 Admin., 2-5 District and casual support staff
    - 9-12 grids monitored each year
    - Each location monitored every 5 years
    - Annual report
    - Major report and review every 5 years

Advantages of the FORESTCHECK System

- Large (2 ha) plots
- Standardised methods
- Stable team
  - consistent data of high quality
- Diverse and experienced team
  - large proportion of biodiversity monitored (including the 'forgotten flora')
- Integrated and synchronised monitoring
  - valid comparisons from year to year between organisms and attributes measured
- Access to a common database for forest attributes, climatic factors, management history (logging, prescribed fire) and disturbance history such as wildfire

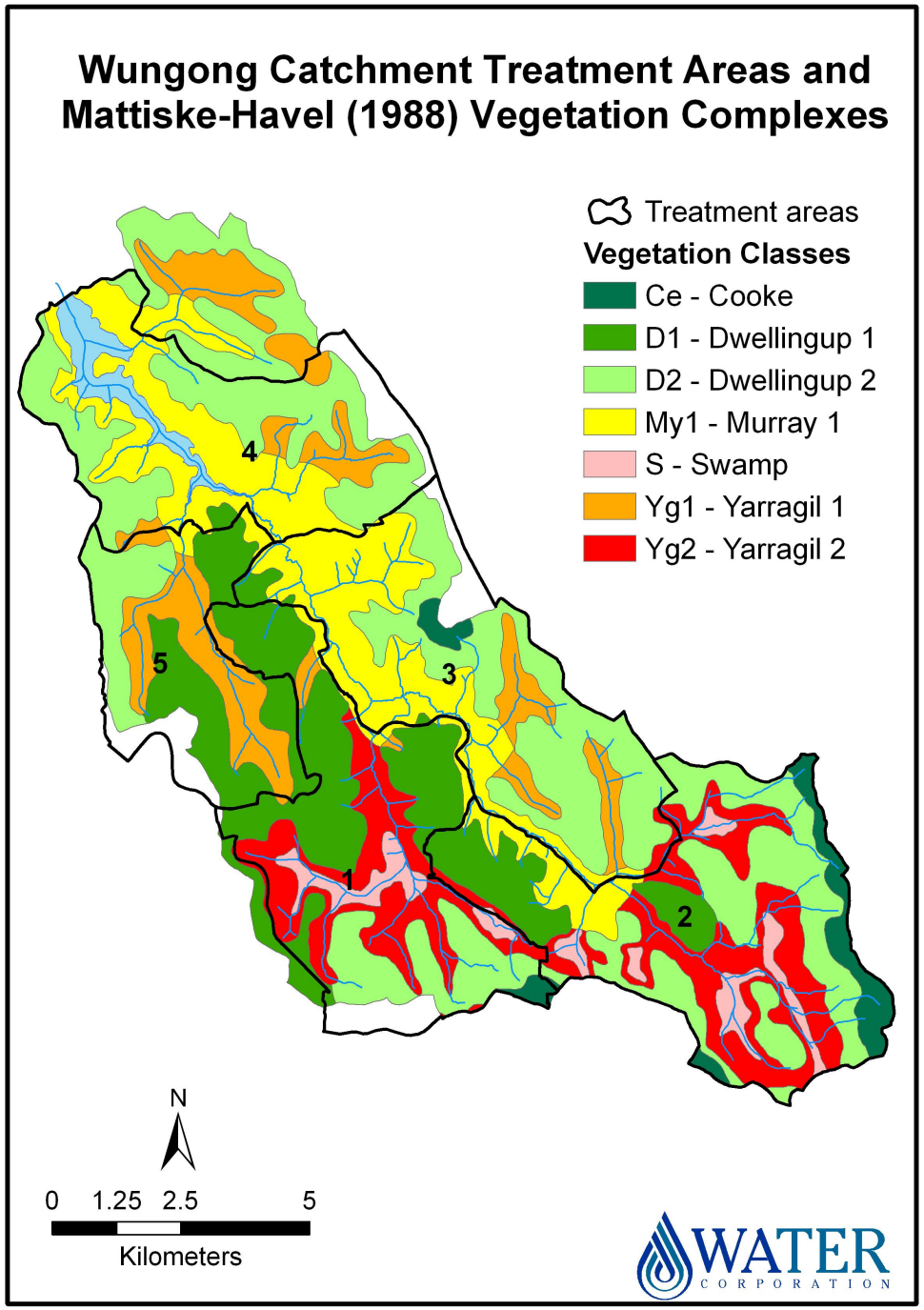
FORESTCHECK in Wungong

Wungong

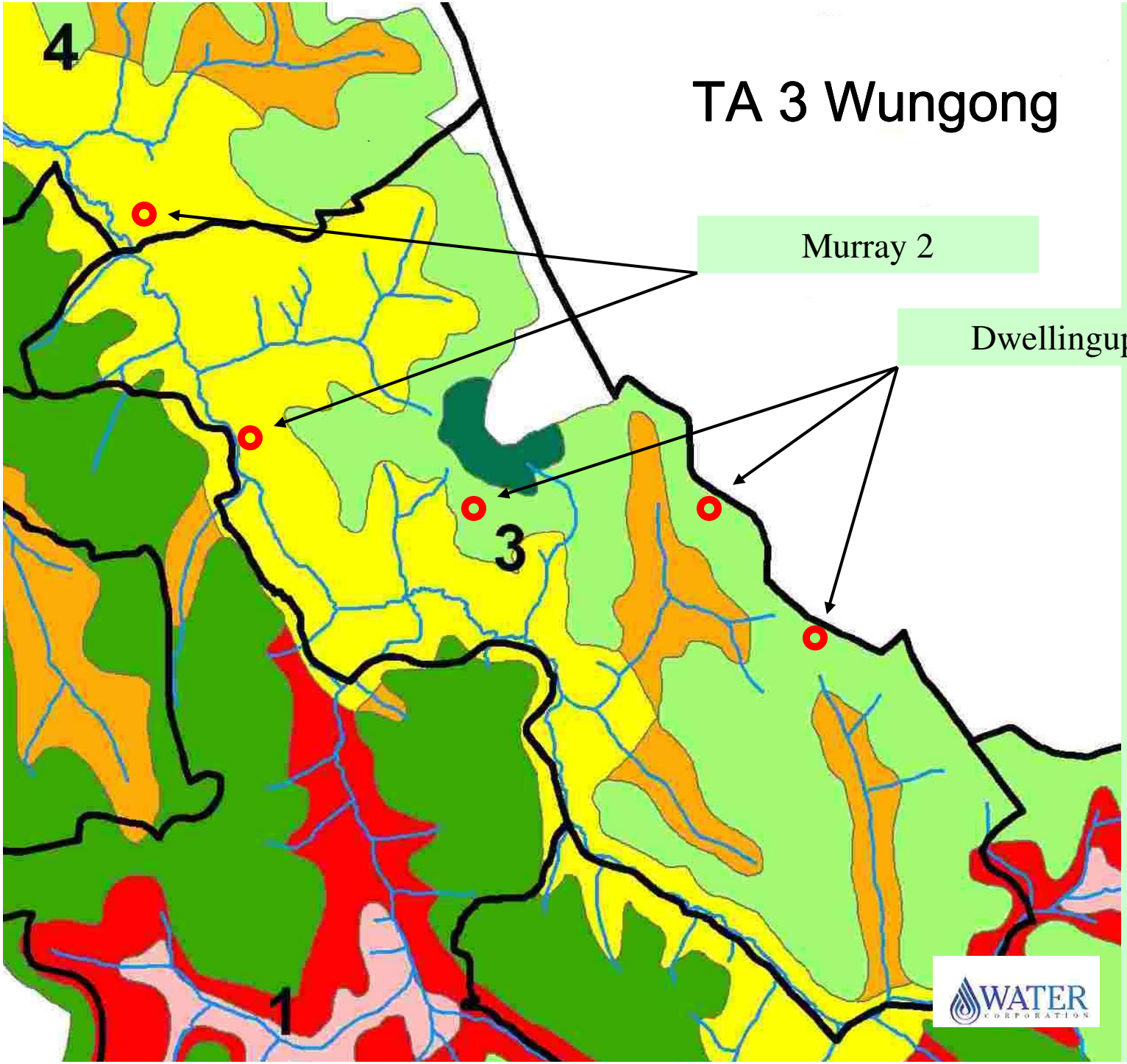
6 sites in Treatment Area 3

- 3 in Murray 1 vegetation type (Havel & Mattiske)
  - Mature stand un-thinned (control)
  - Mature stand (thinned)
  - Sapling/pole stand (thinned)
- 3 in Dwellingup 2 vegetation type
  - Pole stand (control)
  - Pole stand (thinned)
  - Pole stand with dense Allocasuarina (thinned)

Treatment areas and associated Mattiske & Havel vegetation complex in Wungong Catchment



TA 3 Wungong




Murray 1 – Curtis Rd (control, thinned)


Murray 1 – Isopogon Rd (thinned)


Dwellingup 2 – Albany Hwy (control)


Dwellingup 2 – Albany Hwy (thinned)


Dwellingup 2 – Orchard Rd (thinned)

FORESTCHECK in Wungong

Schedule

- Sites chosen - July 2007
- Site establishment and pre-treatment monitoring 2008
- Treatment autumn/winter 2009
- Report – 2009
- Sites monitored – 5 year rotation?

FORESTCHECK in Wungong

Acknowledgements

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THANK YOU