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# MISSING

SINCE THE 1990'S  
THE SUBURBAN BACKYARD  
PLEASE COME HOME



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ALL IS FORGIVEN

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The impact of  
urbanisation on  
biodiversity in climate  
changing times

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# Birding the 'burbs









33°C  
TEMPERATURE  
30°C

Late Afternoon Temperatures (°C)



RURAL

SUBURBAN

WAREHOUSE  
OR INDUSTRIAL

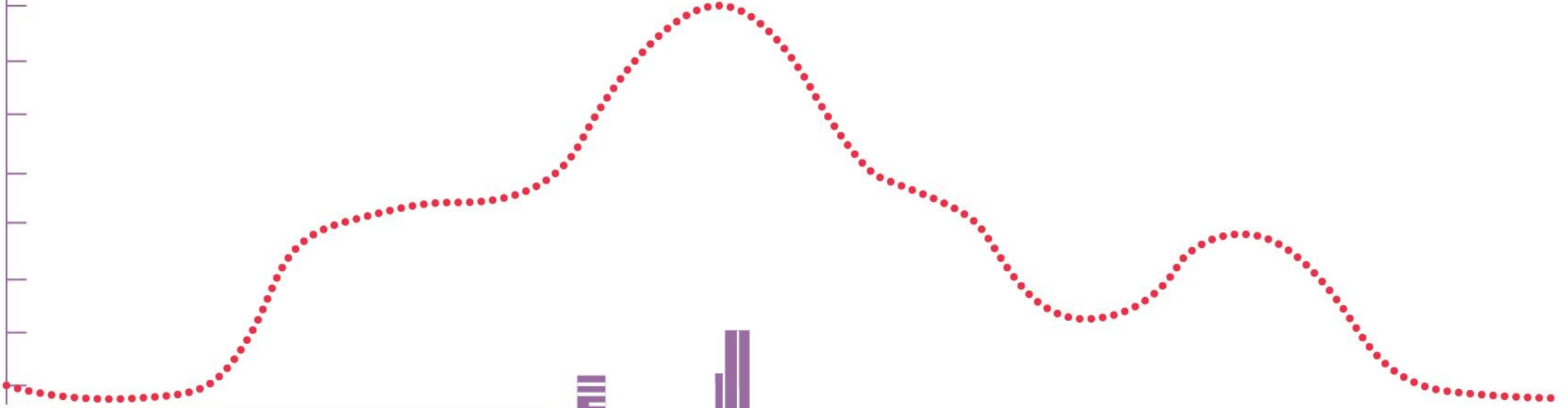
CBD

URBAN  
RESIDENTIAL

PARK

SUBURBAN

RURAL



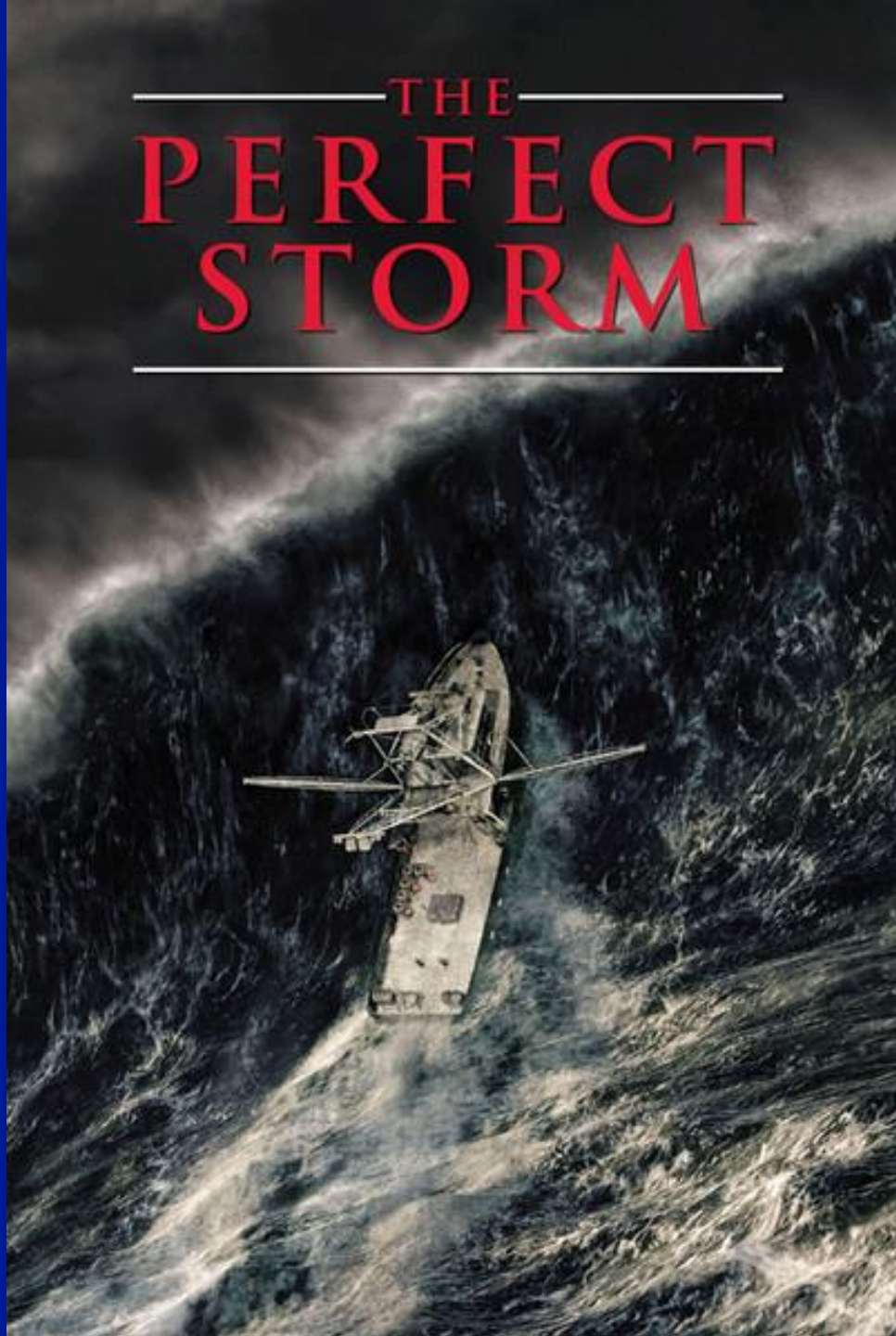








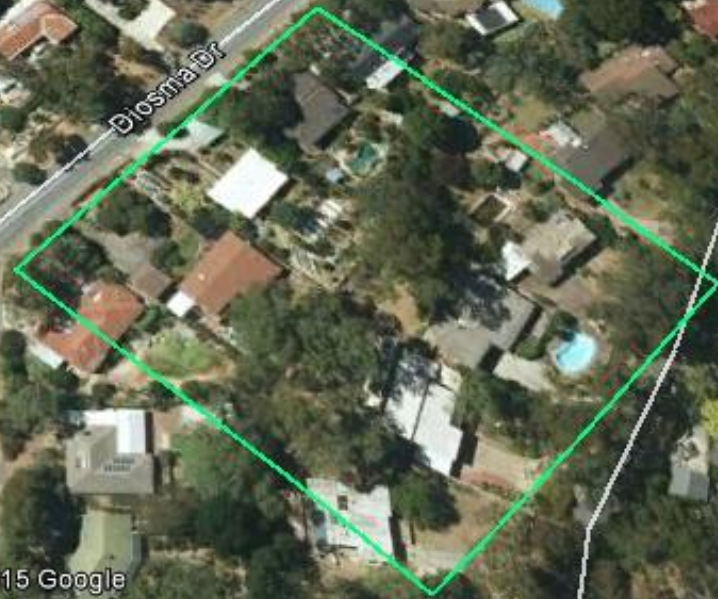
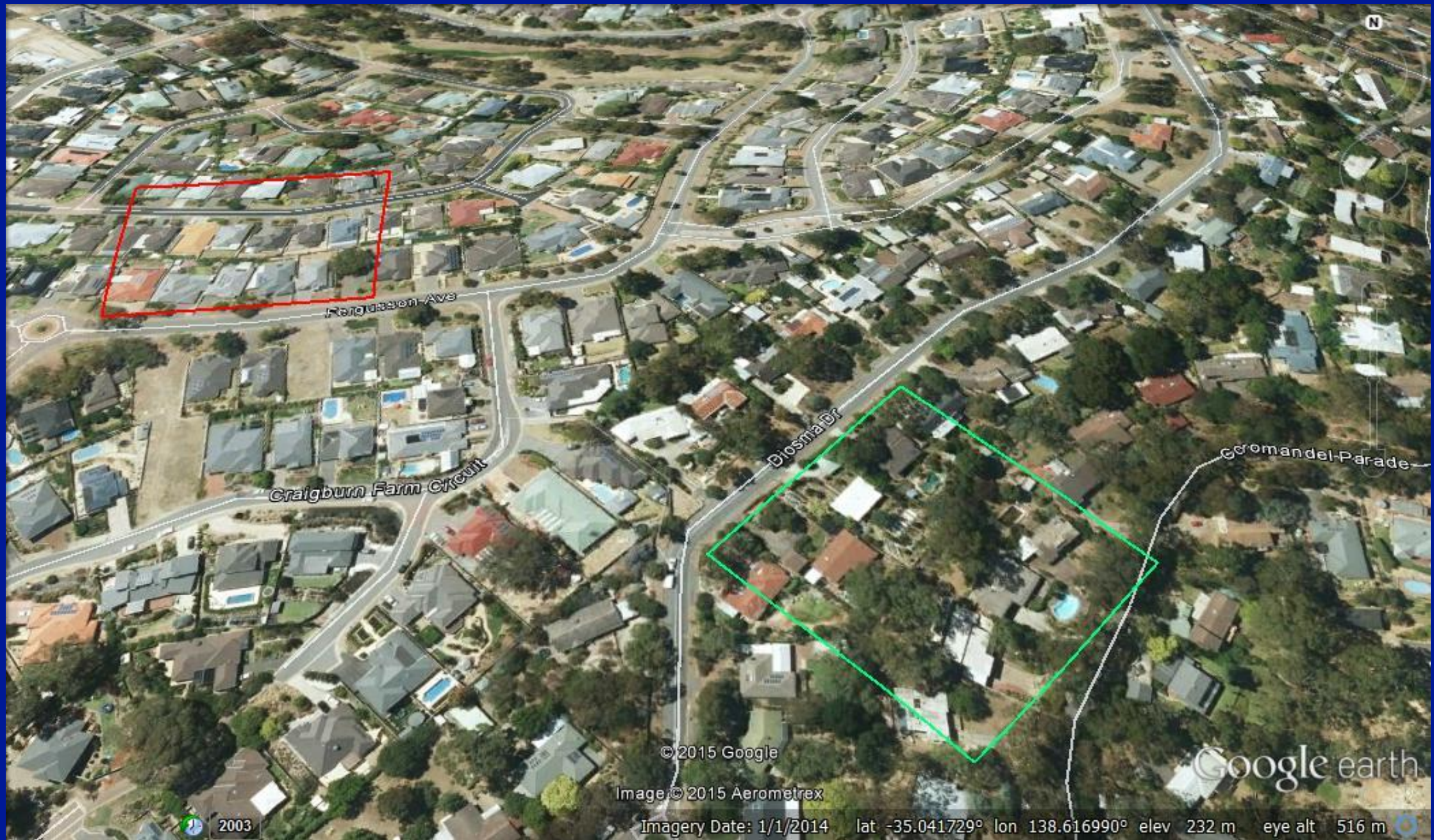
— THE —  
**PERFECT  
STORM**  
—



*With Eyes  
Wide Shut*

The impact of urbanisation  
on biodiversity in climate  
changing times





2003

© 2015 Google

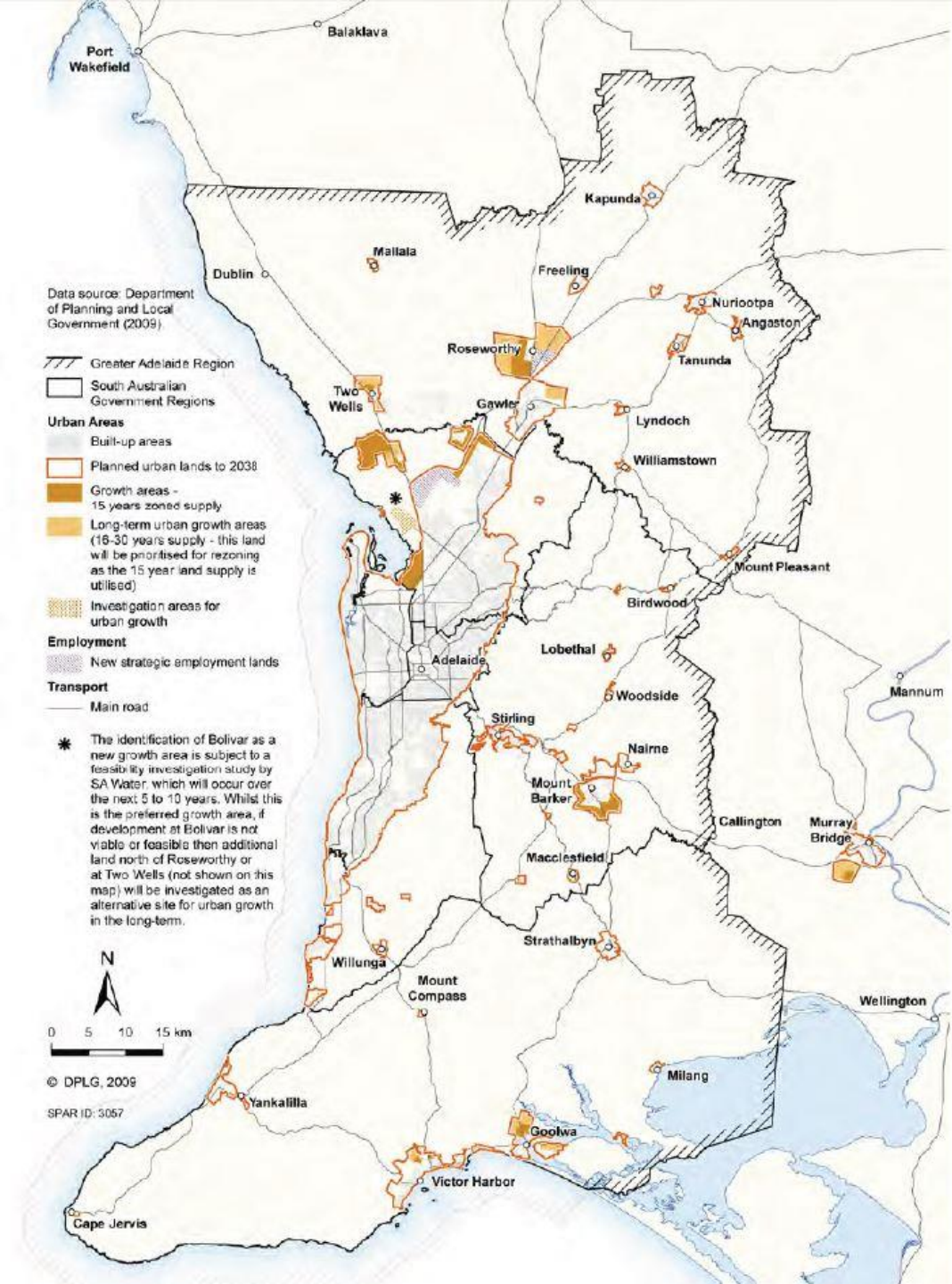
Image © 2015 Aerometrex

Imagery Date: 1/1/2014 lat -35.041729° lon 138.616990° elev 232 m eye alt 516 m

Google earth

# Target growth areas

- 30-year urban growth region
- 14 local government regions
- Approx. 9 000 km<sup>2</sup>
- Diverse land cover & land types
- Over next 30 years:
  - Extra 560 000 people
  - Extra 258 000 dwellings
  - Consuming 14 600 Ha of new land



# What's the problem



- Urbanisation's negative impact on biodiversity
- Biodiversity is good
- How to optimise urbanisation for biodiversity
- People respond to biodiversity





Developing Adelaide with biodiversity



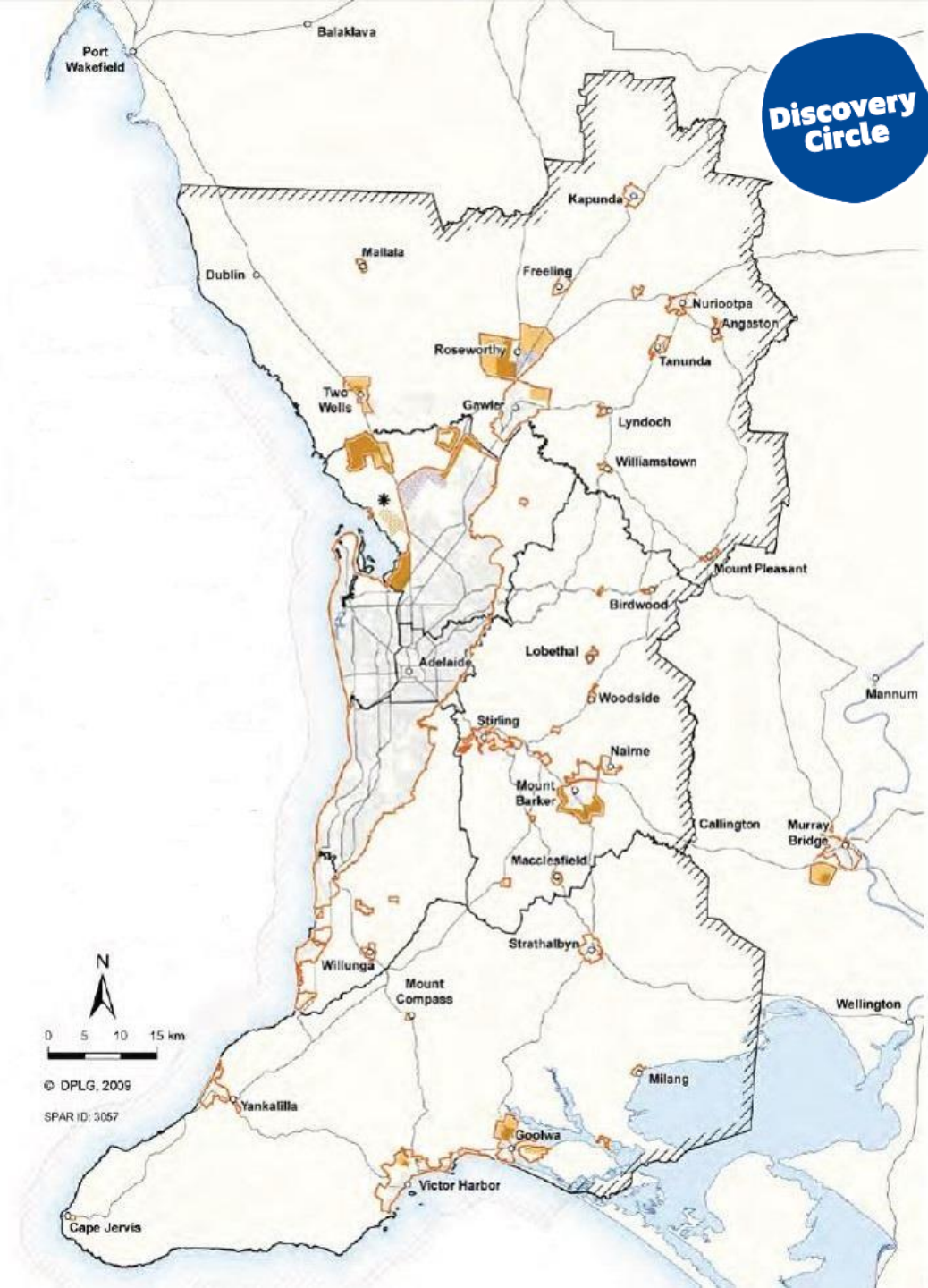
# For Adelaide...

## Why:

- ✓ To provide urban development that maximises biodiversity for people and nature

## Which means... innovation for:

- ✓ Healthier communities
- ✓ A 'sense of place'
- ✓ Aesthetics
- ✓ Attractiveness to buyers
- ✓ Faster sales times for higher prices
- ✓ For climate adaption (reduce ongoing costs)



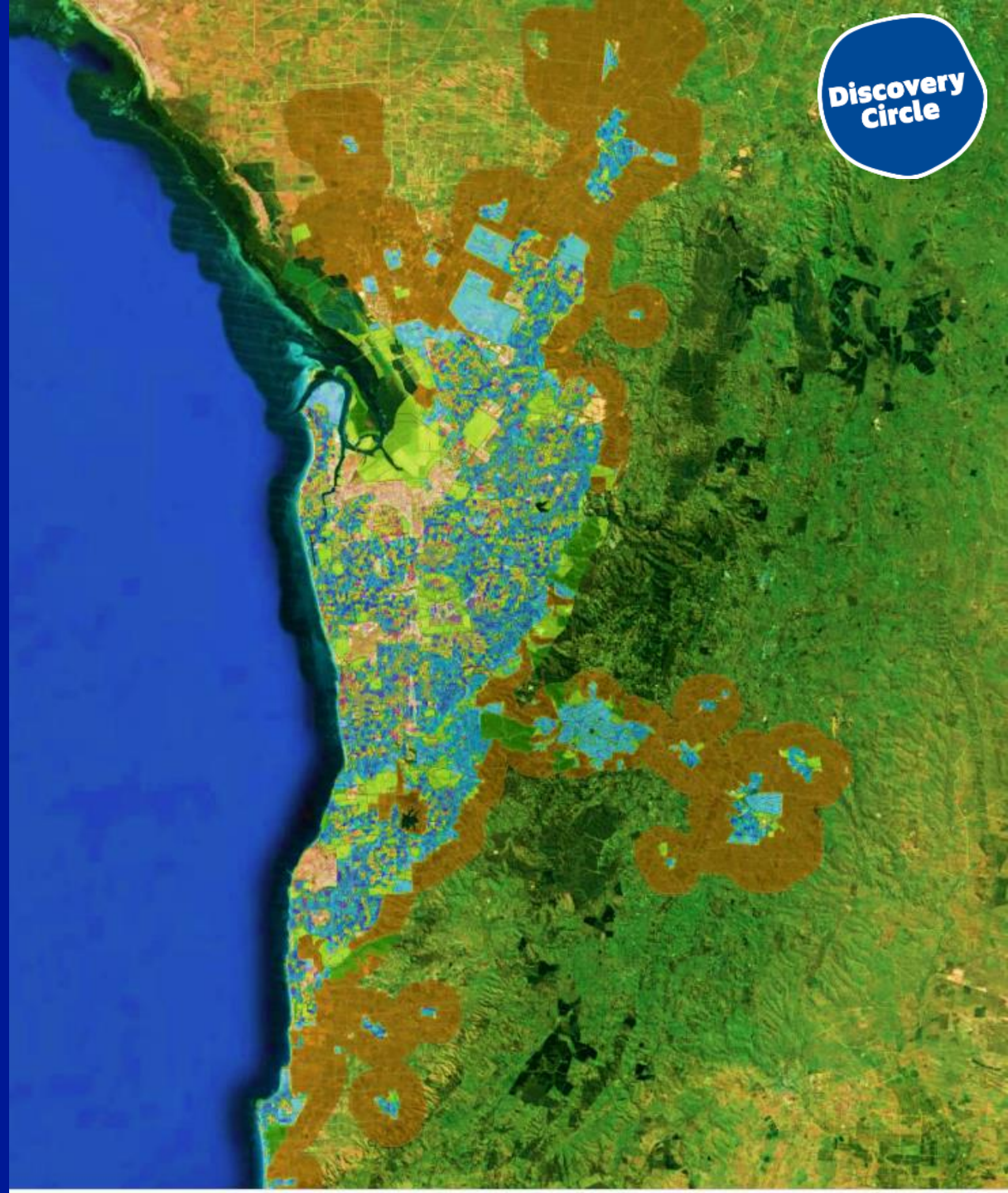
# For Adelaide...

## How:

- ✓ By understanding relationships between urban development and biodiversity

## To develop:

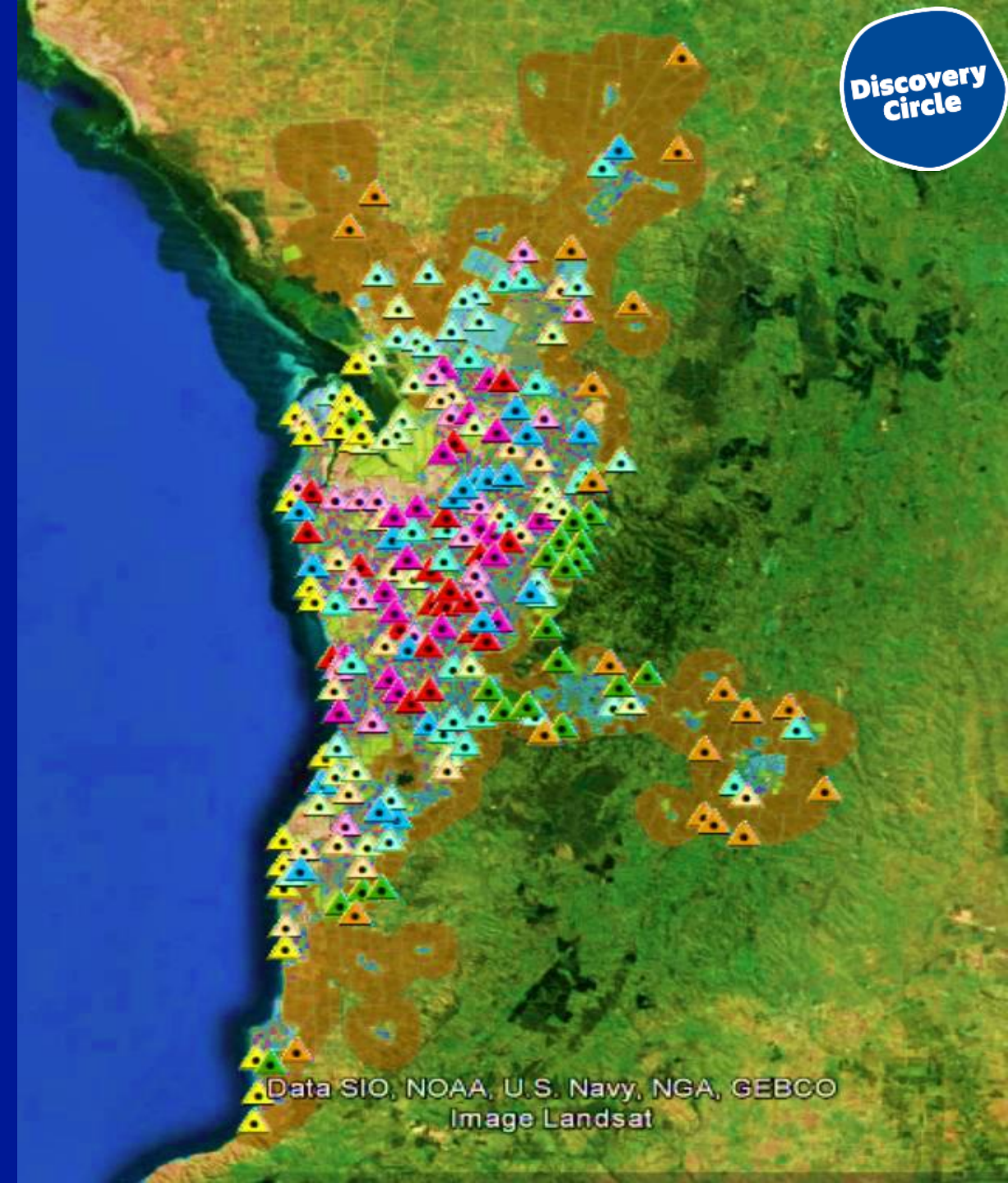
- ✓ **New tools**  
Complimenting existing tools of planners and developers
- ✓ **Increased evidence base**  
Maximising biodiversity AND meeting growth targets
- ✓ **Informing**  
Providing options to help make decisions about space



# For Adelaide...

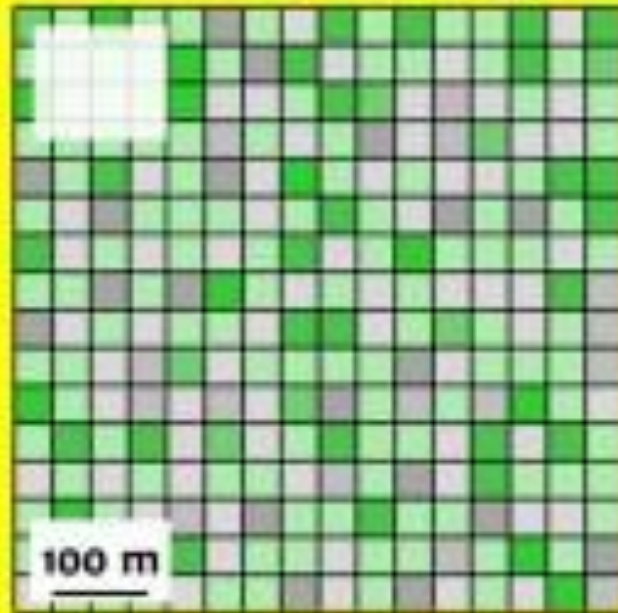
## What:

- ✓ Analysing current situation (citizen science approach)
- ✓ Projections of future scenarios
  - ✓ Strategic: 30-year plan
  - ✓ Larger-scale developments
  - ✓ Down to precinct level
  - ✓ Outcomes:
    - ✓ Tool to assess development
    - ✓ Informed options
    - ✓ Flexibility
    - ✓ Win-win for people and biodiversity

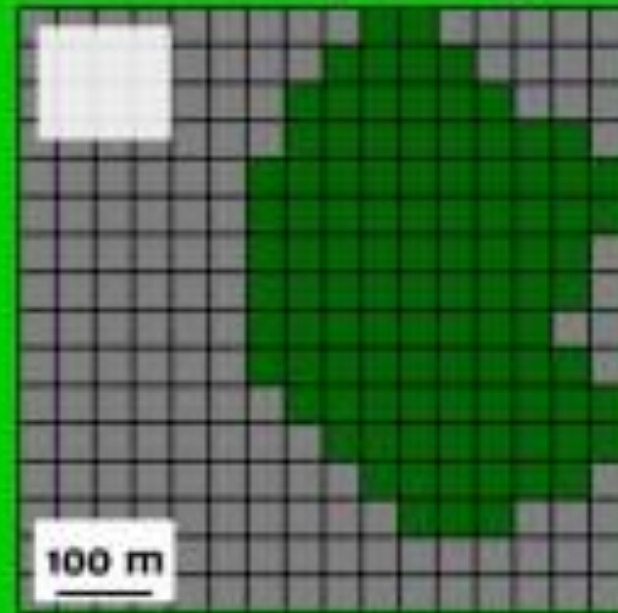




## Land sharing



## Land sparing



# Typical changes along an urban-rural gradient



(moving out from the urban core)

## Typical physical changes:

- ↓ human population density
- ↓ pollution & heat-island effect
- ↓ disturbance
- ↓ imperviousness
- ↑ natural vegetation
- ↑ biodiversity



# Building on previous research

## Only in Brisbane

- × Coarse analysis
- × Not enough data
- × Specific to Brisbane only

## Development types studied:

1. Sprawl – land sharing
2. Infill – land sparing

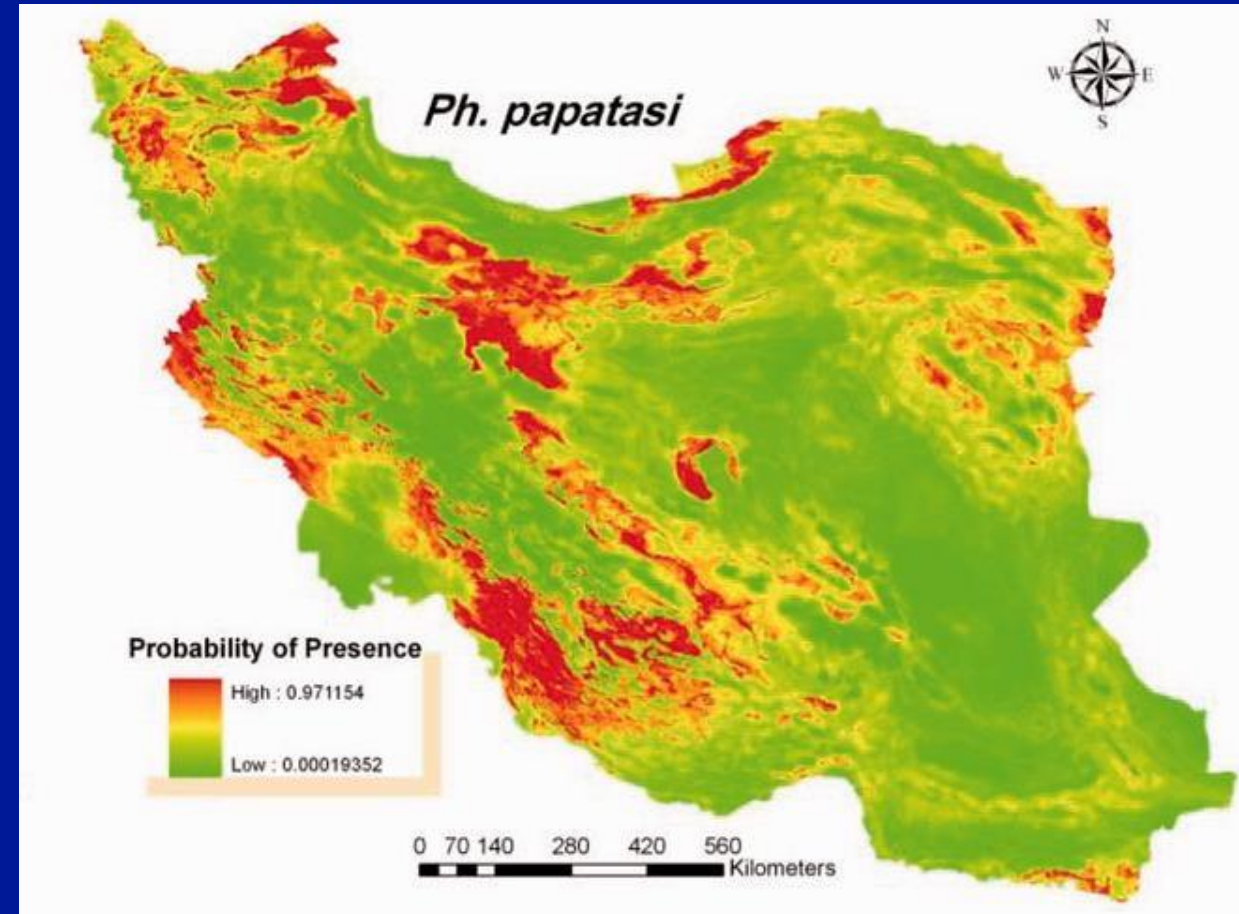
## Found infill better than sprawl

- ✓ Caveat: If good green spaces left



# Example analysis

- Based on 30 year projection
  - Extra 560 000 people
  - Extra 258 000 dwellings
  - Consuming 15 000 Ha of new land
- Current bird biodiversity to infer what's likely to happen in similar urban areas - MaxEnt
- Infer what's the best way to develop Adelaide – infill, sprawl, or something in between
- Not one solution across the region
- Other scenarios can also be tested (impacts of climate change)





# Preliminary analysis - spread



61%



59%



51%



45%



36%

35%



# Preliminary analysis - numbers



15%



13%



9%



8%



6%



5%

# Preliminary analysis – least seen









# Developing Adelaide with biodiversity

# Birds as biodiversity indicators

Taxonomy is well known & relatively stable

Distribution, ecology and life history well understood

Are widespread, mobile and diverse

Birds tend to occur higher up in their food chains

Tend to be sensitive to environmental change (both anthropogenic and natural)

Distribution generally reflects that of many other wildlife groups

Easy to detect, making counts realistic and inexpensive to collect

Survey design & analysis methods are well developed

Long-term historical data available

Birds are iconic - they resonate with people and their lives





ADELAIDE

## **CAUTION**

**MAGPIE-LARKS IN THIS AREA  
MAY SWOOP  
(FROM ABOVE OR BELOW)**

**PROTECT YOURSELF BY;**

- (1) BEING ALERT TO THEIR PRESENCE**
- (2) RAISING AN UMBRELLA / STICK / ARM  
OVER YOUR HEAD**
- (3) WEARING A HAT / BIKE HELMET**
- (4) IF CYCLING, GET OFF BIKE & WALK**

**DO NOT;  
THROW ANYTHING AT MAGPIE-LARK;  
IT MAY ATTACK MORE VIGOROUSLY**

