



bushfire&natural  
**HAZARDS**CRC

# IMPACT BASED FORECASTING:

Supporting improved intelligence for emergency services

**Jane Sexton**

Geoscience Australia

© BUSHFIRE AND NATURAL HAZARDS CRC 2017



Australian Government  
Department of Industry,  
Innovation and Science

**Business**

Cooperative Research  
Centres Programme



Australian Government  
Bureau of Meteorology  
Geoscience Australia

BUREAU OF METEOROLOGY

BOM  
Weather



Apple and the Apple logo are trademarks of Apple Inc., registered in the U.S. and other countries. App Store is a service mark of Apple Inc. Android, Google Play, and the Google Play logo are trademarks of Google Inc.



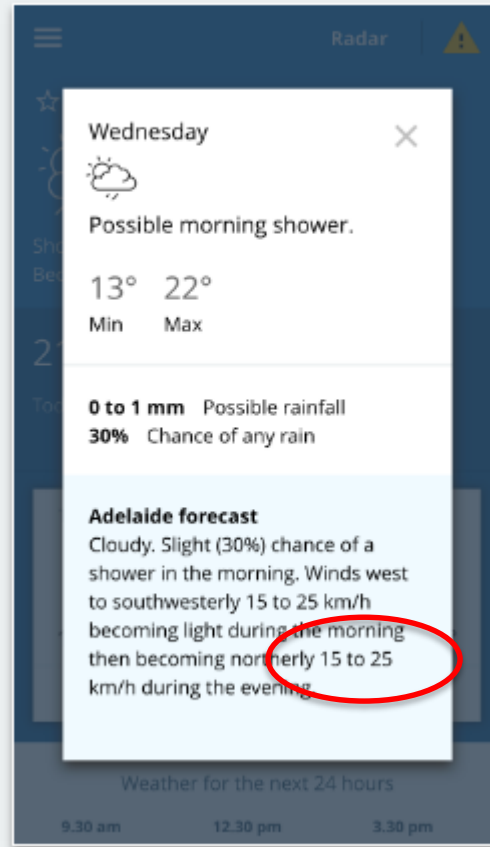
BOM Weather

BOM Weather is the Bureau of Meteorology's weather app, giving you the most accurate weather information as you move around.

## Current conditions



## Forecasts



## Radar



**WHAT DOES THIS MEAN?  
WHAT IS THE LIKELY IMPACT?  
WHAT DO I DO ABOUT IT?**

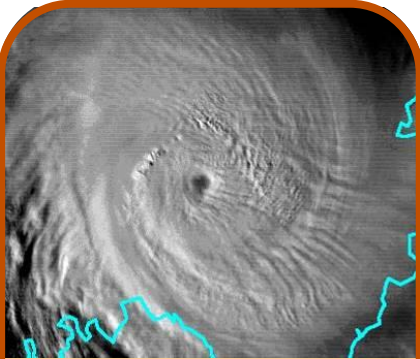
# WHAT ARE WE HEARING FROM END-USERS?

- Pre-deploying assets can take 12-24 hrs
  - Getting the **where** is important for emergency services
  - Improving **intelligence** to support targeted response
- Critical infrastructure, e.g. hospitals, rely on power connection
  - Is there **likely** to be damage to the power network and will lines be down?
- **Don't let perfect get in the way of good**

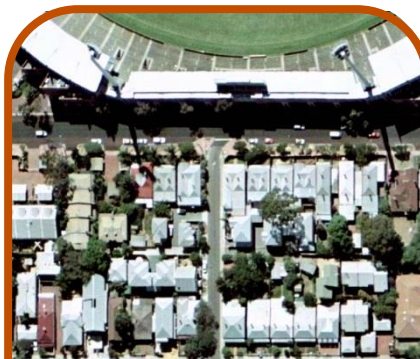


- April 2015 The Australian Photo: John Grainger
- ECL June 2016 impact of wild storms on the NSW South Coast. Photo: Bay Post
- Sep 2016 South Australia ABC News
- Sep 2016 South Australia ABC News

# WHAT IS THE PROJECT GOING TO DO?



Hazard



Exposure



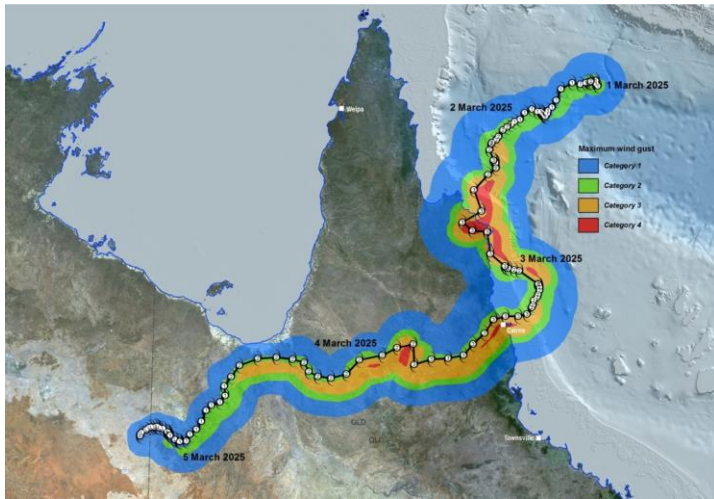
Vulnerability



Impact

# IMPACT ASSESSMENT (hypothetical event)

Tropical Cyclone track and associated wind field



People and assets exposed to the storm

155,000



52,000



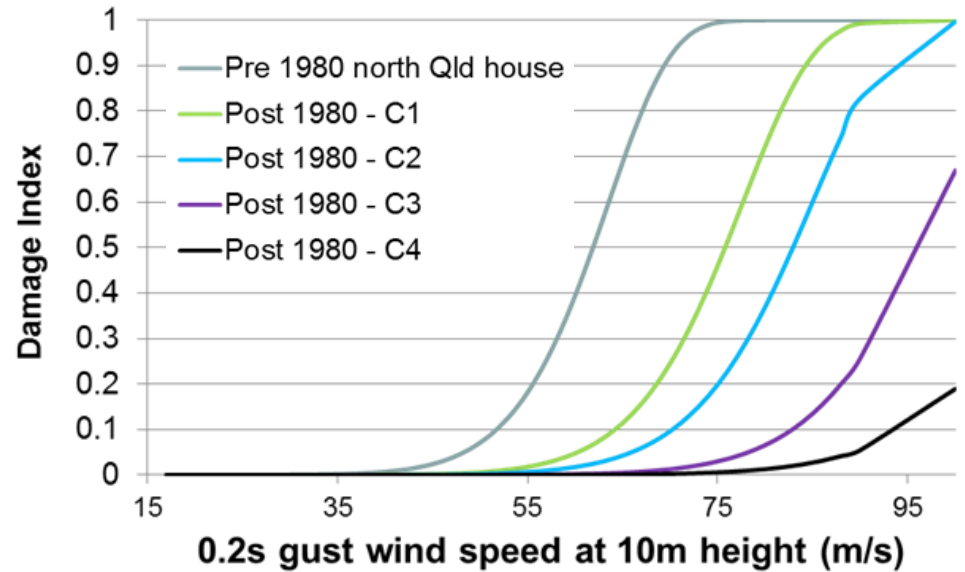
7



52



Vulnerability Models



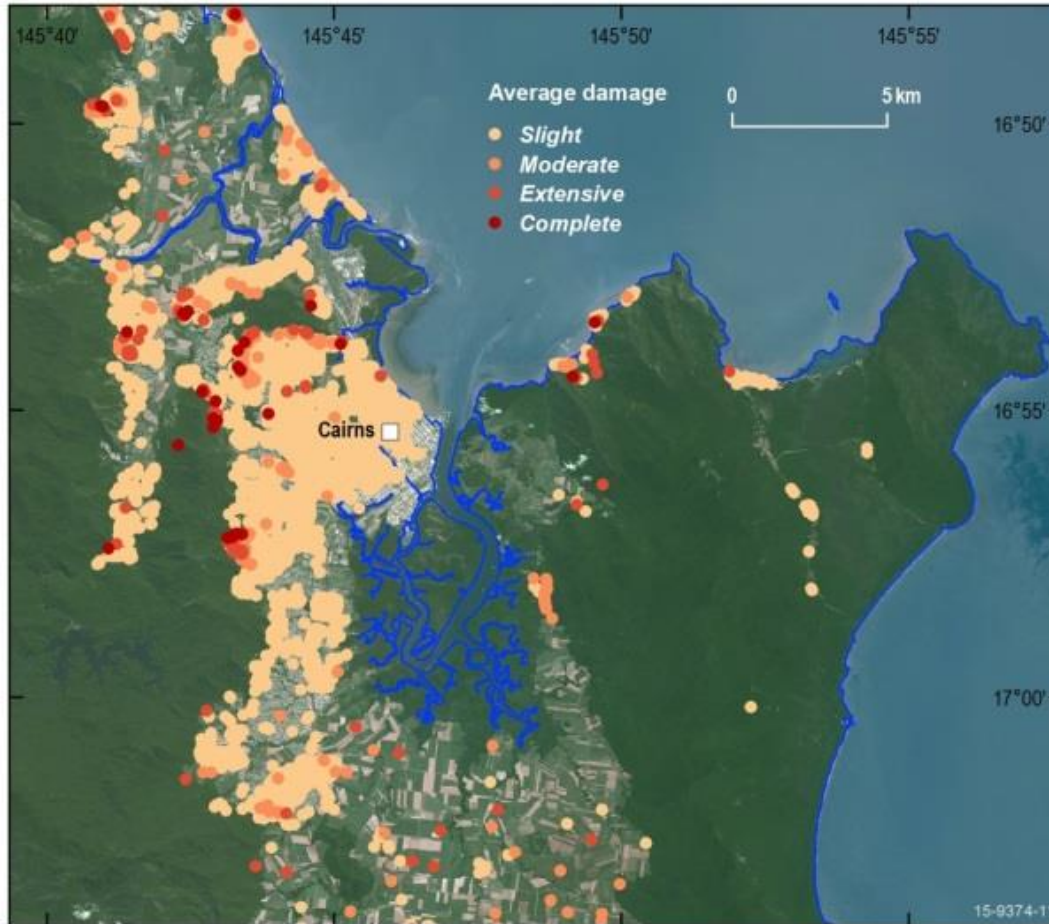
# IMPACT OUTPUTS



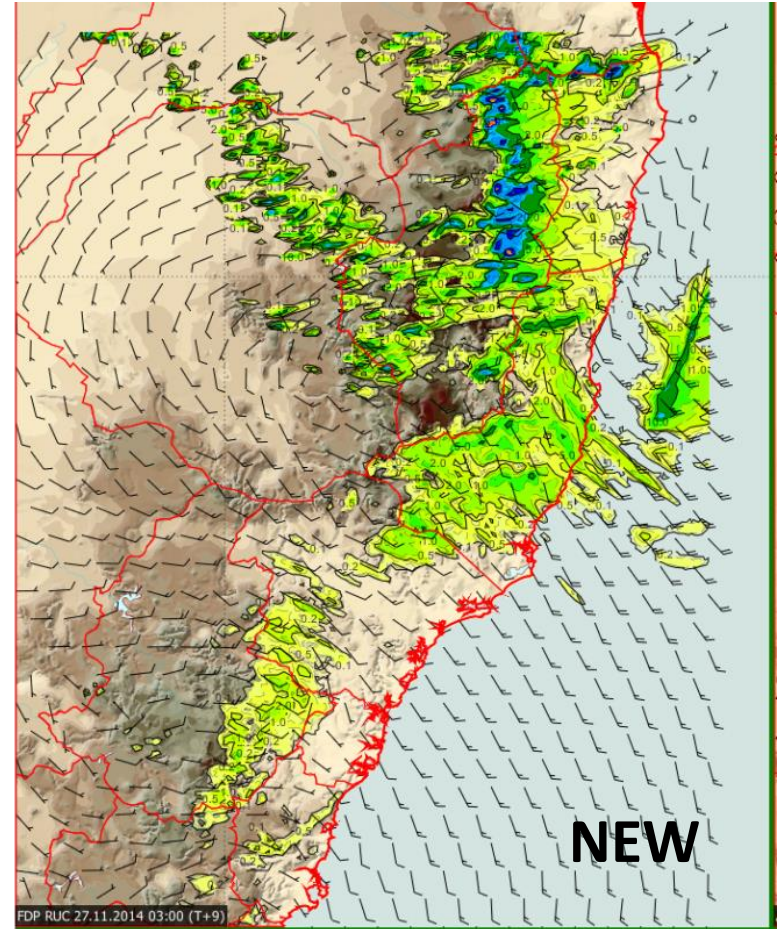
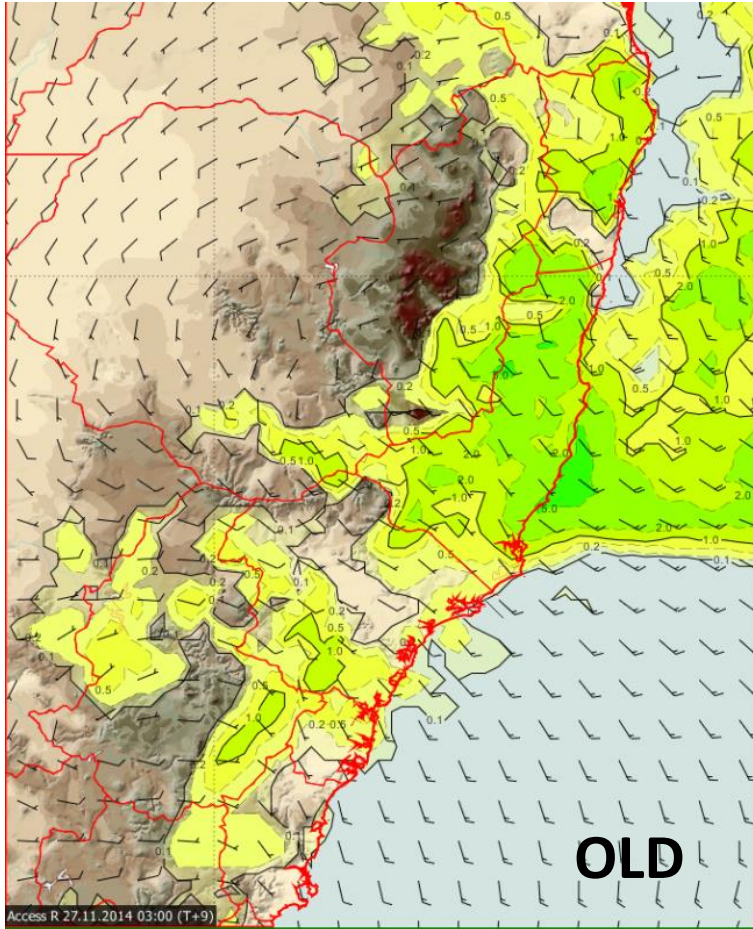
\$446mn



16,645



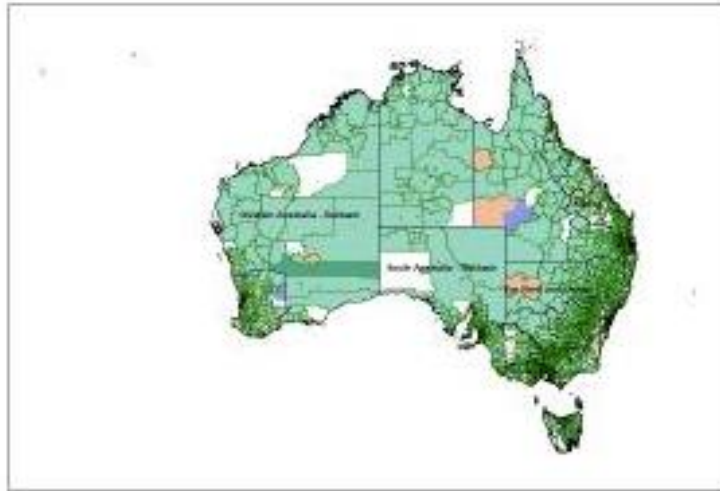
# ESTIMATING IMPACT - HAZARD



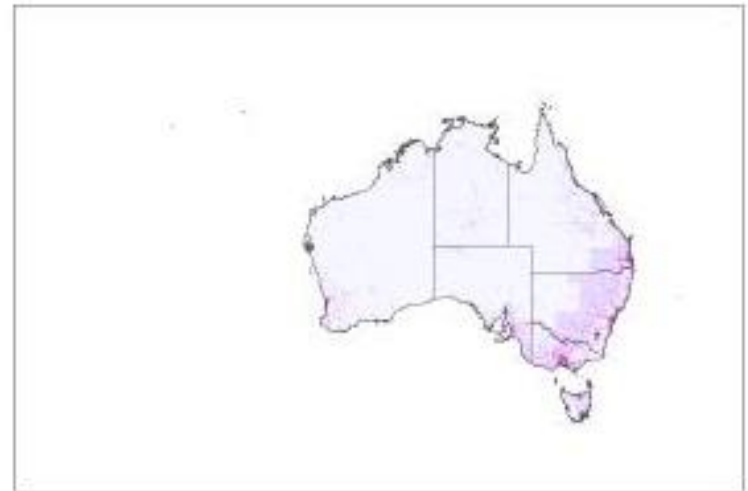


# ESTIMATING IMPACT - EXPOSURE

NEXIS Building Exposure



NEXIS Residential Population Density



Develop maps (e.g. at suburb scale) of:

- age of buildings
- roof type
- number of stories
- etc

# ESTIMATING IMPACT - VULNERABILITY

## Who do you Call?

If you require SES assistance during a flood or storm emergency



Life Threatening Emergency—Call **000**

Request SES assistance—a direct link—no waiting  
[www.132500.qld.gov.au](http://www.132500.qld.gov.au)

### 132 500 SES Assistance App

The App is available for both Apple and Android devices via iTunes and Google play. It enables the you to log a request for SES emergency assistance instead of phoning and waiting on hold during peak times.

The web site and app can also be used to request SES assistance on behalf of someone else.



e.g. RFA, AVL, RDA

POWER STATION

Generates electricity



TRANSMISSION NETWORKS

DISTRIBUTION LINES

to



HOUSES AND BUSINESSES

Electricity is used to power everyday life including appliances, lighting and heating.



damage state

to be developed

forecast wind speed / rainfall

# HOW WILL THE PROJECT OPERATE



South Australian  
State Emergency Service



Government of South Australia  
Department of Environment,  
Water and Natural Resources



METROPOLITAN  
**FIRE**  
SERVICE  
SOUTH AUSTRALIA



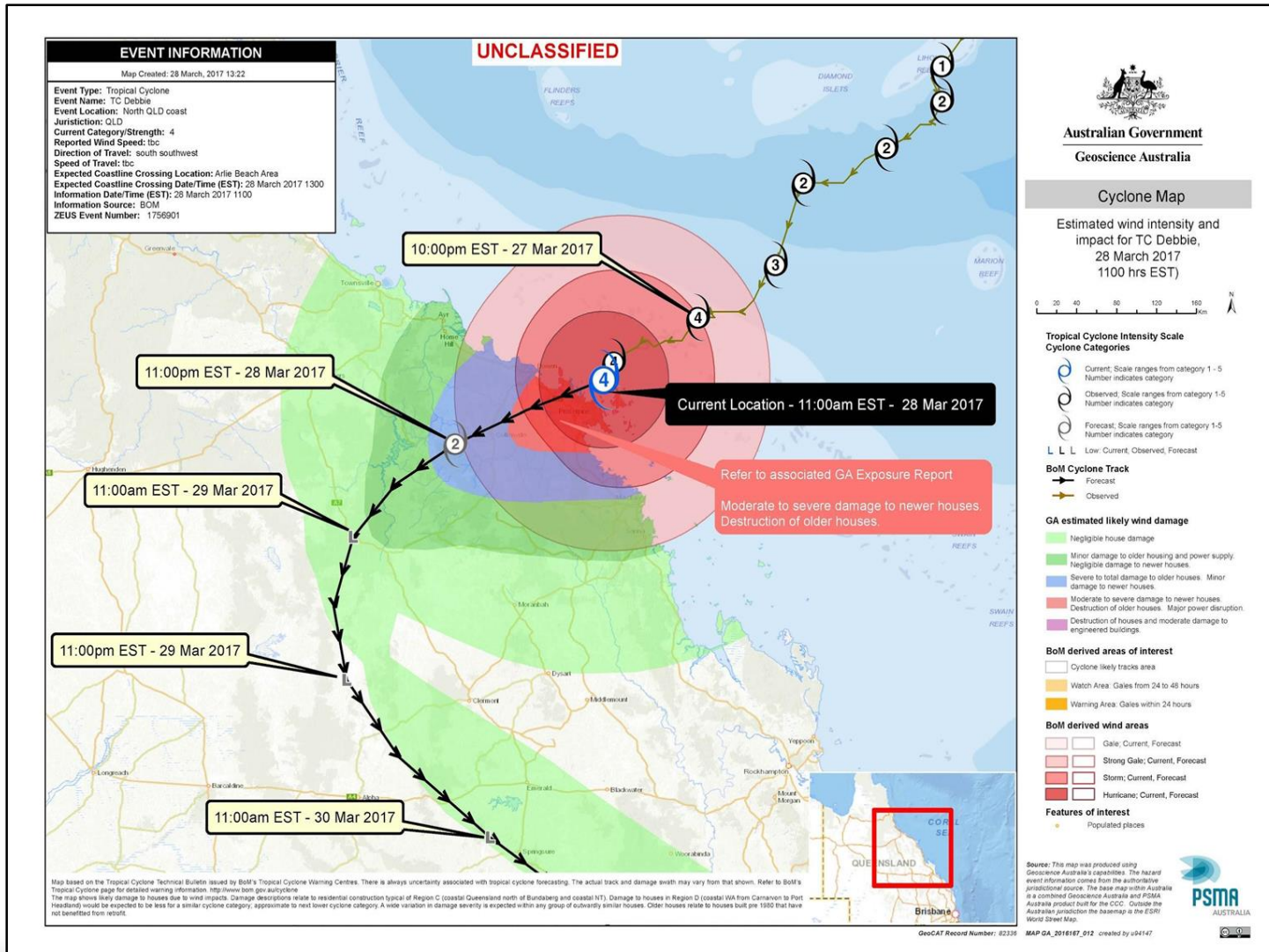
Australian Government  
Bureau of Meteorology



Australian Government  
Geoscience Australia

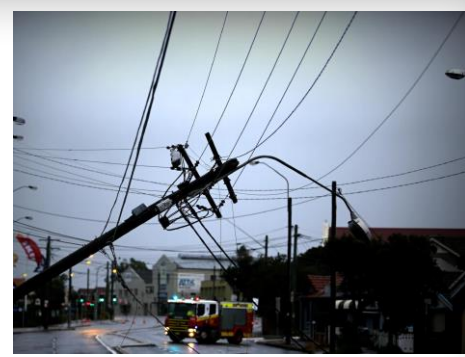
# WHAT MIGHT IT LOOK LIKE

## TRIAL IMPACT PRODUCTS FOR THE CCC



# TAKE HOME MESSAGES

- The aim is to develop a **PILOT** capability for Bureau forecasters and emergency managers **ONLY**
- The availability and useability of historic impact data will be crucial
- The project will need to manage expectations given the high level of interest in the project



# QUESTIONS