



# FIG WORKING WEEK 2017

Shaping the world of tomorrow -

Helsinki Finland 29 May - 2 June 2017

From digitalisation to augmented reality

*Presented at the FIG Working Week 2017,  
May 29 - June 2, 2017 in Helsinki, Finland*

## Australia Exposed

Exposure information for ensuring Australia's community safety

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Australian Government  
Geoscience Australia



Platinum Sponsors:



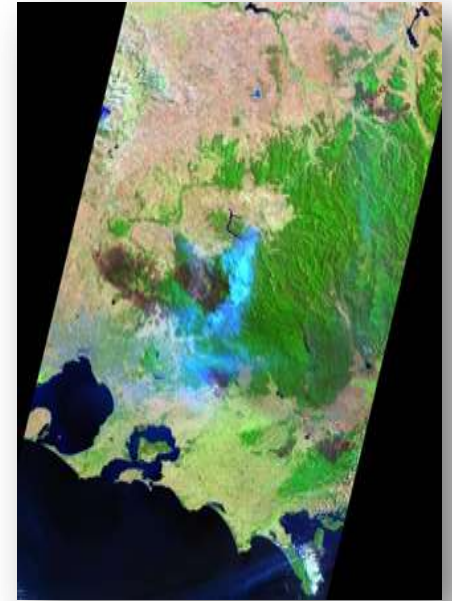
esri



Trimble

## Geoscience Australia (GA)

- Department of Industry, Innovation and Science
  - Custodian of geoscience data and knowledge
  - Technical advisor
  - Key role in ensuring Australia's community safety



## Emergency Management Australia (EMA)

- Attorney General's Department
  - Support States and Territories
  - Policy Development
  - Disaster Recovery Assistance



# Disaster Recovery starts at the same time

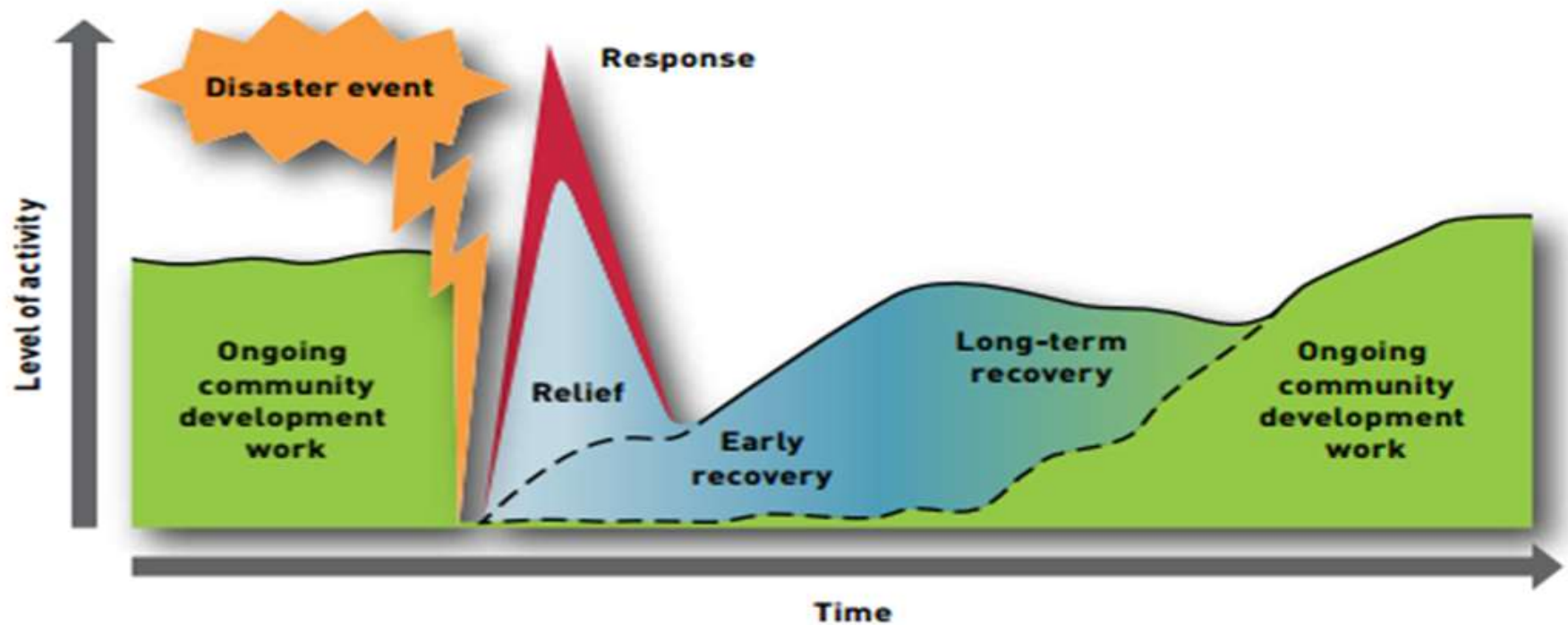
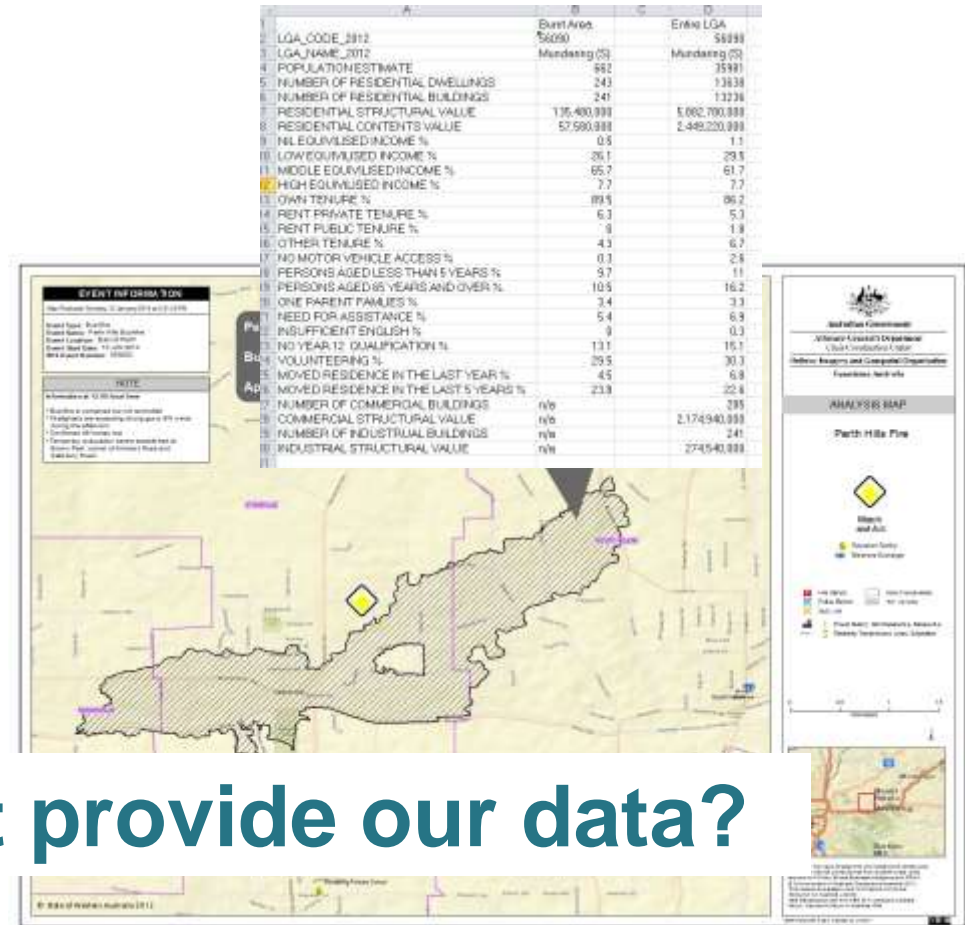


Figure 4.1: Effect of disaster on ongoing community development and interface with relief and recovery

# What's the problem?

- Different datasets from different data sources with different attributes needing different processes
  - Efficient
  - Timely
  - Consistent
- EMA are not data-people
  - Suitable Format
  - Easy-to-interpret

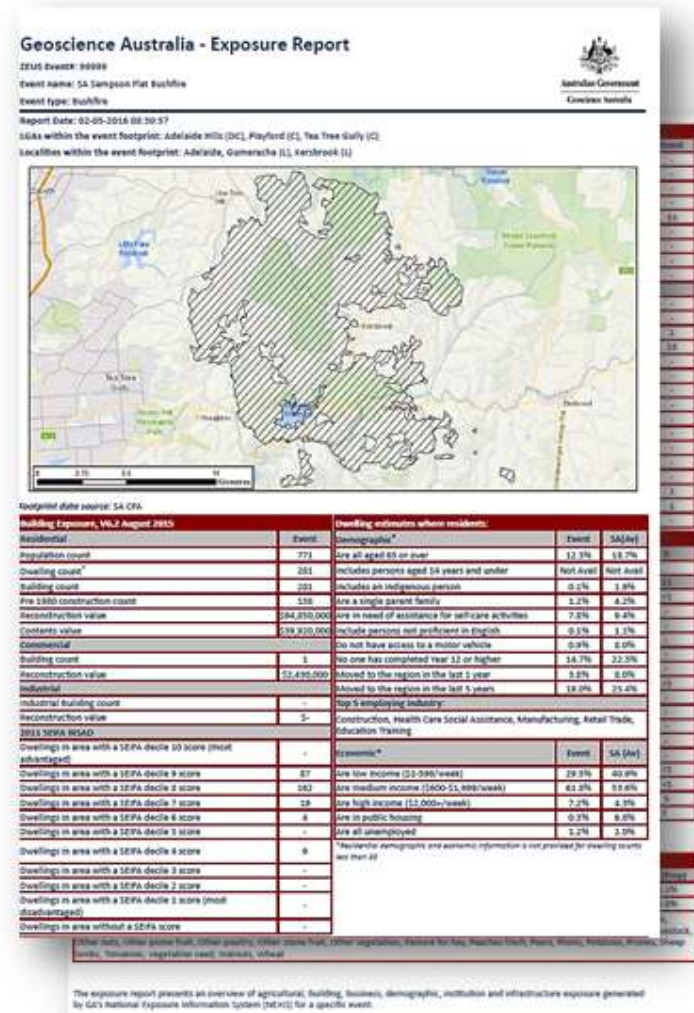


## How can GA best provide our data?



# Geoscience Australia Exposure Report

- Snapshot two-page document
- 95% Automated
- Less than 10 minutes
- Area of interest polygon
  - Hazard footprint
  - Administration boundary
- Building and business counts
- Infrastructure lengths
- Agriculture commodities
- Demographic statistics



ZEUS Event#: 99999

Event name: Sampson Flat Bushfire

Event type: Bushfire

Report Date: 02-03-2017 16:07:16

LGAs within the event footprint: Adelaide Hills (DC) (12.8%), Playford (C) (6.1%), Tea Tree Gully (C) (3.3%)

Localities within the event footprint: Adelaide, Gumeracha (L), Kersbrook (L)

# Exposure Report page 1

- 1.
- 2.
- 3.
- 4.
- 5.

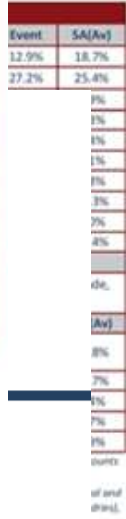
Footprint data source: SA CFA - Line Scan 05/01/2015 12:00

Building Exposure, V6.2 August 2015	
Residential	Event
Population count	771
Dwelling count*	281
Building count	281
Pre 1980 construction count	138
Reconstruction value	\$94,850,000
Contents value	\$39,920,000
Commercial	
Building count	1
Reconstruction value	\$2,430,000
Industrial	
Industrial Building count	-
Reconstruction value	\$-
2011 SEIFA IRSAD	
Dwellings in area with a SEIFA decile 10 score (most advantaged)	-
Dwellings in area with a SEIFA decile 9 score	87
Dwellings in area with a SEIFA decile 8 score	162
Dwellings in area with a SEIFA decile 7 score	19
Dwellings in area with a SEIFA decile 6 score	4
Dwellings in area with a SEIFA decile 5 score	-
Dwellings in area with a SEIFA decile 4 score	9
Dwellings in area with a SEIFA decile 3 score	-
Dwellings in area with a SEIFA decile 2 score	-
Dwellings in area with a SEIFA decile 1 score (most disadvantaged)	-
Dwellings in area without a SEIFA score	-

Dwelling estimates where residents:		
Demographic*	Event	SA(Av)
Are all aged 65 or over	12.3%	18.7%
Includes persons aged 14 years and under	Not Avail	Not Avail
Includes an Indigenous person	0.1%	1.9%
Are a single parent family	1.2%	4.2%
Are in need of assistance for self-care activities	7.8%	9.4%
Include persons not proficient in English	0.1%	1.1%
Do not have access to a motor vehicle	0.9%	8.0%
No one has completed Year 12 or higher	14.7%	22.3%
Moved to the region in the last 1 year	3.8%	8.0%
Moved to the region in the last 5 years	19.0%	25.4%
Top 5 employing industry:		
Construction, Health Care Social Assistance, Manufacturing, Retail Trade, Education Training		
Economic*	Event	SA (Av)
Are low income (\$1-599/week)	29.5%	40.9%
Are medium income (\$600-\$1,999/week)	61.8%	53.6%
Are high income (\$2,000+/week)	7.2%	4.3%
Are in public housing	0.3%	6.8%
Are all unemployed	1.2%	1.0%

\*Residential demographic and economic information is not provided for dwelling counts less than 20

(disadvantaged)	
Dwellings in area without a SEIFA score	-



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ZEUS  
Event  
Event  
Repor  
LGAs  
Locali

# Exposure Report page 2

Institution Exposure		Infrastructure Exposure	
Education	Event	Transport	Event
School - Pre/Primary	2	Airport - Major Areas	-
School - Secondary	-	Airport - Major Terminals	-
School - Tertiary	-	Airport - Landing Grounds	-
School - Other (Combined, Special)	-	Road - Major (km)	-
Health and Welfare	-	Road - Arterial and Sub-arterial (km)	33
Hospital - Public	-	Railway - Station	-

Business Exposure, ABR 2015			
Number of businesses	100	Number of Registered Charity Organisations:	0
Accommodation and Food Services	-		
Administrative and Support Services	8	Number of Primary Producers	11
Agriculture, Forestry and Fishing	11	Agriculture and Fishing Support Services	<5
Arts and Recreation Services	1	Aquaculture	-
Construction	21	Dairy Cattle Farming	-

Agricultural Exposure		
	Event	SA (Prop)
Agriculture Commodity Estimated Value 2013-14:	\$9,274,000	0.2%
Estimated Agricultural Area (Ha):	5,469	0.0%
Commodities include: Apples, Apricots, Broccoli, Cauliflowers, Cereal for hay, Cherries, Chickens layers, Cut flowers, Dairy cattle, Deer, Eggs, Goats, Grapes, Horses other, Horses stud, Lemons, Lettuces, Limes, Meat cattle, Mushrooms, Nectarines, Nurseries, Olives, Other crops for hay, Other livestock, Other nuts, Other pome fruit, Other poultry, Other stone fruit, Other vegetables, Pasture for hay, Peaches fresh, Pears, Plums, Potatoes, Prunes, Sheep lambs, Tomatoes, Vegetables seed, Walnuts, Wheat		

Retail Trade	4	Sheep, Beef Cattle and Grain Farming	5
Transport, Postal and Warehousing	3	<5 - Primary producer information not provided for counts less than 5	
Wholesale Trade	-		
Unclassified businesses	9		

The National Exposure Information System exposure information includes:  
**Agricultural Exposure:** The list of agricultural commodities and estimated value is based on the Australian Bureau of Statistics (ABS)



# How it works...

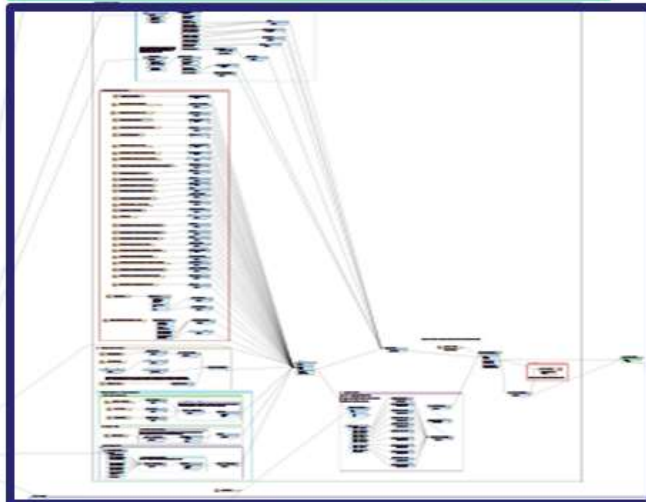


Sources 30 different datasets  
Filters attributes  
Spatial intersection  
Aggregation  
Identifies Localities  
Formatted document

Australian Business Register data



Infrastructure and Institutions data



Control



Agricultural data



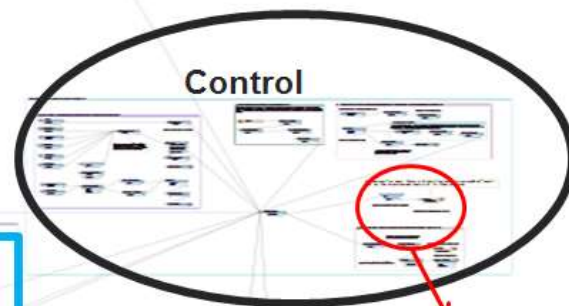
Building, dwelling and demographic data



Locality data



Control

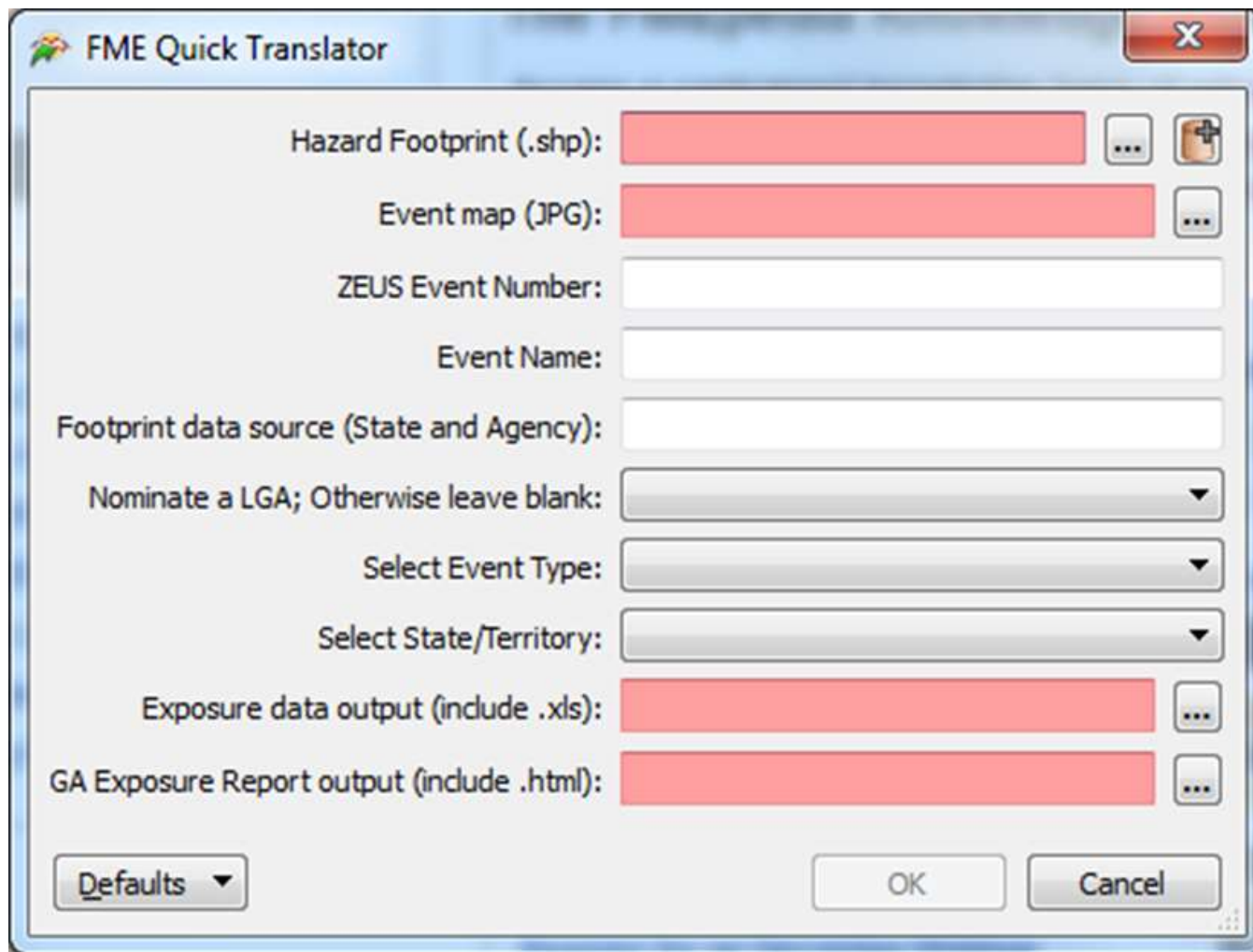


Output





# User Interface – 10 parameters



The screenshot shows the 'FME Quick Translator' dialog box with the following parameters:

- Hazard Footprint (.shp): [Redacted] ... [Add]
- Event map (JPG): [Redacted] ...
- ZEUS Event Number: [Text input]
- Event Name: [Text input]
- Footprint data source (State and Agency): [Text input]
- Nominate a LGA; Otherwise leave blank: [Dropdown menu]
- Select Event Type: [Dropdown menu]
- Select State/Territory: [Dropdown menu]
- Exposure data output (include .xls): [Redacted] ...
- GA Exposure Report output (include .html): [Redacted] ...

At the bottom, there is a 'Defaults' dropdown menu, 'OK' and 'Cancel' buttons, and a help icon.

# How it's being used

## Recovery

- Accurate representation
- Targeted support
- Policy refinements

## Standard Operating Procedures

## Ongoing support ensured uptake

- Training
- Product Description



# Integration

## Incident Management System

- Accountable
- Transparent
- Standardised boundaries
- Accessible

## Batch Script

- 128 Fire Weather Maps
- 544 Local Government Area

## Community Profiles

- Preparation, Planning, Response
- States and Territories

The screenshot displays a web application interface for generating exposure reports. The top section shows a 'New ge exposure report' form with fields for 'Name', 'Report Details', 'Geographical Region', and 'Geographic Report Boundary'. A dropdown menu is open, showing options like 'LGA', 'Electoral', 'State Suburb', 'Topographic Drainage Divisions and River Regions', 'Regional Development', 'Report Boundary', and '(None)'. Below the form, there is a navigation bar with tabs for 'Home', 'GA Analyze', 'GA Graphs', 'GA Exposure Reports - Bushfire Danger Rating Boundaries', and 'GA Exposure Reports'. The main content area is titled 'Bushfire Fire Danger Ratings' and contains a table of reports. The table has columns for report name, file size, and file type. The right side of the interface shows a preview of a 'Geoscience Australia - Exposure Report' for the 'Central Queensland' region, including a map and a table of 'Geographic Regions'.

Report Name	File Size	File Type
AMMS Training Application Form 2016.pdf	44.6kb	File
CCC - New AHQWU TEST Template - 23 April 2016.docx	14kb	File
Exposure Report - Assessment Capital Territory Bushfire Danger Rating Boundary 20151023.pdf	19.9kb	File
GA Exposure Report - Adelaide Metropolitan Bushfire Danger Rating Boundary 20151023.pdf	17.0kb	File
GA Exposure Report - Alice Springs Fire Protection Area Bushfire Danger Rating Boundary 20151023.pdf	22.9kb	File
GA Exposure Report - Arman East Bushfire Danger Rating Boundary 20151023.pdf	19.9kb	File
GA Exposure Report - Arman West Bushfire Danger Rating Boundary 20151023.pdf	20.0kb	File
GA Exposure Report - Arnhem Island Bushfire Danger Rating Boundary 20151023.pdf	25.4kb	File
GA Exposure Report - Arnhem Bushfire Danger Rating Boundary 20151023.pdf	20.0kb	File
GA Exposure Report - Baily North Bushfire Danger Rating Boundary 20151023.pdf	23.3kb	File
GA Exposure Report - Baily South Bushfire Danger Rating Boundary 20151023.pdf	24.3kb	File
GA Exposure Report - Beaufort Bushfire Danger Rating Boundary 20151023.pdf	20.0kb	File
GA Exposure Report - Cairns Bushfire Danger Rating Boundary 20151023.pdf	33.9kb	File
GA Exposure Report - Cairns East Bushfire Danger Rating Boundary 20151023.pdf	20.9kb	File
GA Exposure Report - Cairns West Bushfire Danger Rating Boundary 20151023.pdf	21.7kb	File
GA Exposure Report - Central Bushfire Danger Rating Boundary 20151023.pdf	22.0kb	File
GA Exposure Report - Central Coast and Whitbays Bushfire Danger Rating Boundary 20151023.pdf	16.0kb	File
GA Exposure Report - Central Highlands and Clacka Bushfire Danger Rating Boundary 20151023.pdf	20.0kb	File
GA Exposure Report - Central North Bushfire Danger Rating Boundary 20151023.pdf	21.4kb	File

Geographic Region	Area (km²)	Population	Number of Properties	Number of People
Central Queensland	10,000	1,000,000	100,000	1,000,000
Central South Queensland	10,000	1,000,000	100,000	1,000,000
Central West Queensland	10,000	1,000,000	100,000	1,000,000
Central North Queensland	10,000	1,000,000	100,000	1,000,000
Central South Queensland	10,000	1,000,000	100,000	1,000,000
Central West Queensland	10,000	1,000,000	100,000	1,000,000
Central North Queensland	10,000	1,000,000	100,000	1,000,000







Australian Government  
Geoscience Australia



# Australia Exposed

Exposure information for ensuring Australia's community safety



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