

## SECTOR IN-DEPTH

12 April 2018

Rate this Research &gt;&gt;

## TABLE OF CONTENTS

Summary	1
NATIONAL PERFORMANCE	2
PERFORMANCE BY REGION	7
PERFORMANCE BY POSTCODE	9
STATES IN FOCUS	11
Moody's related publications	17

## Contacts

Alena Chen +61.2.9270.8131  
 VP-Senior Analyst  
 alena.chen@moody's.com

## CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

RMBS - Australia

## Mortgage delinquency map - Home loan arrears will increase moderately on housing slowdown

### Summary

Australian mortgage delinquencies will increase moderately through 2018 on softer housing market conditions, following a decline in home loan arrears over the year to November 2017.

- » **Mortgage delinquencies have declined.** The proportion of Australian residential mortgages that were more than 30 days in arrears (30-plus delinquency rate) was 1.45% in November 2017, compared with 1.52% in November 2016. Delinquencies declined in all states except New South Wales (NSW) over the year. Despite an increase, delinquencies in NSW remained low compared to most other states and territories. Delinquency rates were lower in capital cities than other regions of each state or territory.
- » **Delinquencies will increase moderately through 2018.** Softening housing market conditions, particularly in the key states of NSW and Victoria, will drive delinquencies moderately higher. Less favourable income dynamics and ongoing volatility in the resources sector will also weigh on mortgage performance.
- » **Western Australia and Queensland dominate the list of worst-performing regions.** Nine of the 10 regions with the highest 30-plus delinquency rates in November 2017 were in either Western Australia or Queensland, and many of these regions are exposed to employment industries directly or indirectly related to mining and resources. Postcode 4680 (Barney Point) in Queensland had the highest 30-plus delinquency rate in Australia.
- » **Sydney regions are performing strongly.** Eight of the 10 regions with the lowest mortgage delinquency rates in November 2017 were in NSW and seven of these were in Sydney. Ten of the 20 postcodes with the lowest mortgage delinquencies in Australia were in Sydney, while six were in Melbourne.

Our semi-annual delinquency map report provides a detailed analysis of the rate of residential mortgage arrears at a national, regional and postcode level in Australia. The report is based on the data contained in our supplementary excel report, titled "[Australian residential mortgage delinquency map — November 2017](#)" published on 12 April 2018.

## NATIONAL PERFORMANCE

### Delinquencies down, but will increase through 2018 on property market slowdown

The 30-plus delinquency rate for Australian residential mortgages decreased to 1.45% in November 2017 from 1.52% in November 2016.<sup>1</sup> Despite this improvement, we expect Australian mortgage delinquencies to increase moderately on average over 2018, because of softening housing market conditions, particularly in the key states of NSW and Victoria. Less favourable income dynamics and ongoing volatility in the resources sector will also weigh on mortgage performance.

Mortgage delinquencies declined in all states except NSW over the year to November 2017 (Exhibit 1). Delinquencies in NSW remained low compared to most other states and territories, despite the increase over the year to November 2017. Western Australia, South Australia and the Northern Territory, where 30-plus delinquency rates declined from record highs, remained the worst performing states or territories in Australia.<sup>2</sup>

Exhibit 1

#### 30-plus delinquency rate for Australian states and territories

State/Territory	2011	2012	Nov-13	Nov-14	Nov-15	Nov-16	Nov-17	Nov-17 - Nov-16 change (% pts)
Western Australia	2.14%	1.82%	1.38%	1.23%	1.71%	2.76%	2.50%	-0.26
South Australia	1.42%	1.58%	1.43%	1.54%	1.63%	2.16%	1.89%	-0.27
Northern Territory	0.94%	0.75%	0.88%	0.49%	0.98%	2.23%	1.81%	-0.42
Queensland	2.17%	1.98%	1.36%	1.41%	1.37%	1.75%	1.69%	-0.06
Victoria	1.43%	1.51%	1.10%	1.18%	1.19%	1.43%	1.28%	-0.15
Tasmania	1.60%	1.44%	1.17%	1.12%	1.68%	1.84%	1.26%	-0.58
New South Wales	2.02%	1.99%	1.24%	1.02%	0.85%	0.94%	1.00%	0.06
Australian Capital Territory	1.00%	0.83%	0.68%	0.76%	0.82%	0.91%	0.76%	-0.15
<b>Australia</b>	<b>1.87%</b>	<b>1.81%</b>	<b>1.24%</b>	<b>1.19%</b>	<b>1.20%</b>	<b>1.52%</b>	<b>1.45%</b>	<b>-0.07</b>

Sources: Moody's Investors Service, periodic investor/servicer reports

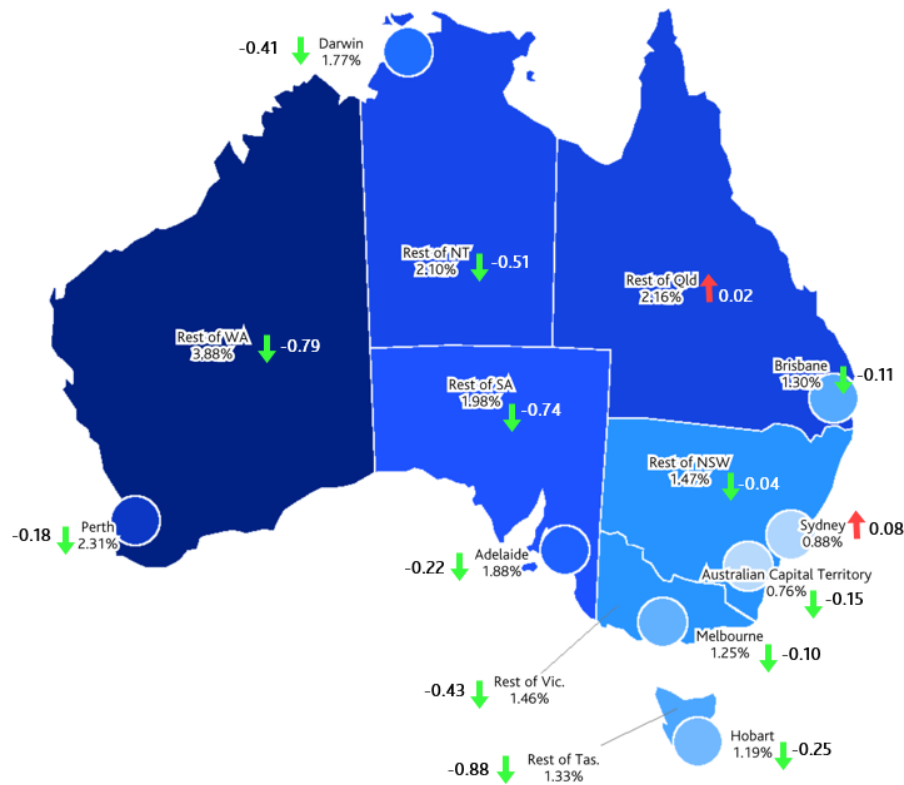
Delinquency rates were lower in capital cities than other regions of each state or territory, reflecting the higher levels of economic diversity and employment stability in city areas (Exhibit 2). Delinquencies declined in most capital cities and the areas outside capital cities in most states. Sydney was the only capital city exception; delinquencies increased slightly but remained very low compared to the rest of Australia. Delinquencies also increased on average in Queensland areas outside of Brisbane.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on [www.moody's.com](http://www.moody's.com) for the most updated credit rating action information and rating history.

Exhibit 2

**30-plus delinquency rates for capital cities and other parts of each state**

↑ Increase from Nov-16 (% pts.) ↓ Decrease from Nov-16 (% pts.)



Note: ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; QLD = Queensland; SA = South Australia; TAS = Tasmania; VIC = Victoria; and WA = Western Australia.

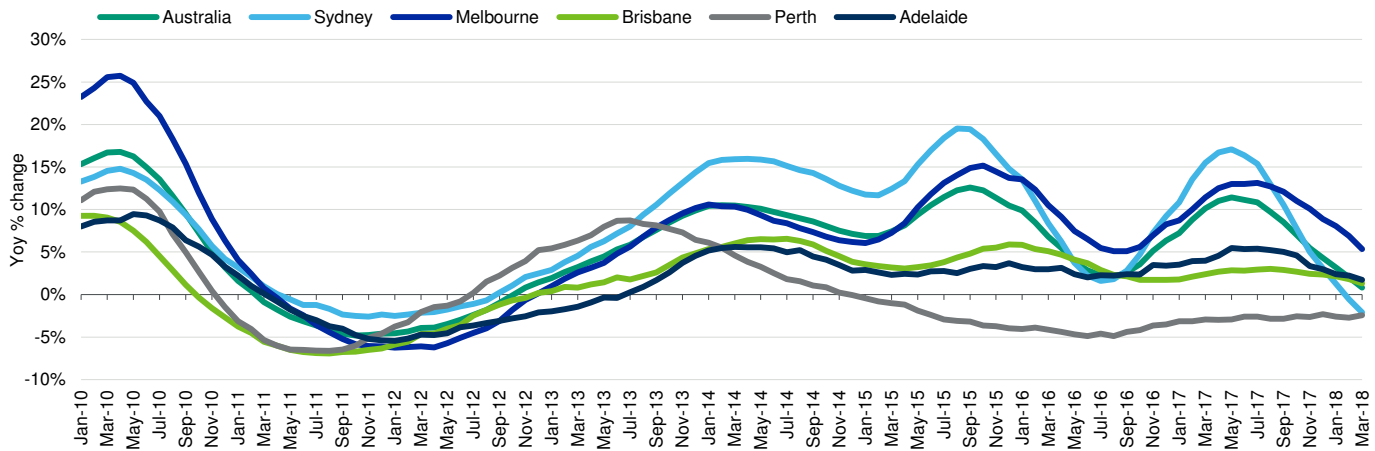
Sources: Moody's Investors Service, periodic investor/servicer reports

**Delinquencies increased in NSW, improved in other states and territories**

Delinquencies in NSW increased by 0.06 percentage points to 1% over the year to November 2017. Despite the increase, delinquencies in NSW remained low by state historical standards and lower than all other Australian states and territories except the Australian Capital Territory (ACT).

House prices in Sydney, which rose rapidly over the previous five years and were supportive of mortgage performance in NSW, declined for seven consecutive months to March 2018. House prices in Sydney increased 5.01% over the year to November 2017 but declined 2.1% over the year to March 2018 (Exhibit 3).

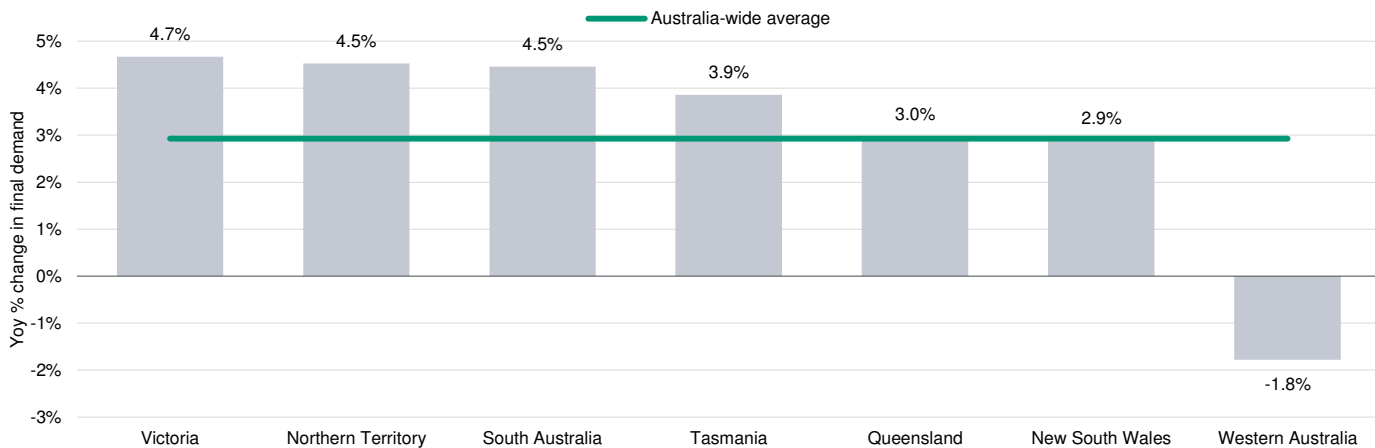
Exhibit 3  
**Australian house prices changes**



Source: CoreLogic

The housing market has slowed in NSW, but mortgage performance continues to benefit from relatively good economic and labour market conditions in the state. Low interest rates and a low Australian dollar have resulted in strong household consumption, private and public investment and a pickup in the education and tourism sectors. NSW final demand (a measure of domestic economic growth that excludes exports) increased 2.9% over the year to December 2017 (Exhibit 4). NSW also has the lowest unemployment rate (4.84% in February 2018 and 4.66% in November 2017) of any state or territory in the country.

Exhibit 4  
**Change in state final demand (year to December 2017)**



Note: State final demand is a subset of Gross State Product (GSP) and includes 1) general government final consumption expenditure, 2) household final consumption expenditure 3) private gross capital formation and 4) public gross capital formation. It differs from GSP in that it excludes exports and imports.  
 Source: Australian Bureau of Statistics

In Victoria, the 30-plus delinquency rate declined 0.15 percentage points to 1.28% over the year to November 2017. Like NSW, Victoria's diverse economy benefited from a low Australian dollar and supportive interest rate environment. The housing market in Melbourne has also cooled but to a lesser extent than Sydney. House prices in Melbourne declined for four consecutive months to March 2018, but still increased by 10.09% over the year to November 2017 and 5.33% over the year to March 2018.

The ACT had the lowest 30-plus delinquency rate (0.76%) of any state or territory in Australia in November 2017. A high proportion of borrowers in the ACT are employed by the government, which offers more secure and stable employment compared with jobs in the private sector.<sup>3</sup>

The 30-plus delinquency rate in Tasmania improved 0.58 percentage points to 1.26% over the year to November 2017, the biggest improvement of any state or territory in Australia.

Mortgage delinquency rates in the resource sector-reliant states and territories of Western Australia, the Northern Territory and Queensland declined over the year November 2017, but remain among the highest in the country. The resource sector benefitted from higher prices and an improved balance between supply and demand in 2017. Favorable economic growth globally will support solid fundamentals again in 2018 but the same level of upward trend in prices is not anticipated. Conditions in the resource sector will remain volatile and subject to downside and environmental risks.

In Western Australia, the 30-plus delinquency rate fell 0.26 percentage points over the year to November 2017. However, at 2.5%, the mortgage delinquency rate in Western Australia remains the highest in the country.

The Western Australian economy has benefitted from healthy export volumes for key commodities in 2017. However, excluding exports, Western Australia's final demand fell by 1.8% over the year to December 2017 because of declines in business investment (Exhibit 4). We expect Western Australia's economy to remain soft over the three years to 2021.<sup>4</sup>

House prices in Perth have declined year-on-year since December 2014, though the rate of decline has slowed over the last two years. Prices in Perth fell by 2.62% over the year to November 2017 and 2.41% over the year to March 2018. The underemployment rate (a measure of employed persons who want to work more hours than are available to them) in Western Australia was 9.12% in November 2017, higher than the national average of 8.34%.<sup>5</sup>

In the Northern Territory, the 30-plus delinquency rate fell 0.42 percentage points to 1.81% over the year to November 2017. The Northern Territory's final demand grew strongly at 4.5% over the year to December 2017, driven by business development in the mining and energy sectors, including the Ichthys Liquefied Natural Gas project. We expect the Northern Territory's final demand growth to moderate in 2018 and 2019 following completion of the construction phase of Ichthys.<sup>6</sup> House prices in Darwin fell 5.47% over the year to November 2017 and 7.52% over the year to March 2018.

In Queensland, the 30-plus delinquency rate improved marginally by 0.06 percentage points to 1.69% over the year to November 2017. Queensland's final demand increased 3% over the year to December 2017. Queensland's economy is relatively more diversified and less reliant on resources compared to Western Australia.

In South Australia, the 30-plus delinquency rate fell 0.27 percentage points to 1.89% over the year to November 2017, with mortgage performance benefitting from economic expansion, which was supported by growth in service-based industries. South Australia's final demand grew 4.5% over 2017.

Despite the decline, the delinquency rate in South Australia is the second highest in the country behind Western Australia. The unemployment and underemployment rates in South Australia were 6.3% and 9.58% in February 2018, the highest and the second highest rates in Australia respectively. We expect the cessation of auto manufacturing in South Australia in 2017 will weigh on the state economy in 2018.<sup>7</sup>

### Delinquencies will increase moderately through 2018

We expect mortgage delinquencies to increase moderately in 2018, because of softening housing market conditions, particularly in the key states of NSW and Victoria. Less favourable income dynamics and continued volatility in the resources sector will also weigh on mortgage performance.

NSW and Victoria are the two states most susceptible to a slowdown in the housing market, given that house prices in both states increased considerably over the five years before prices declined in recent months. On average across Australia, house prices declined over six consecutive months to March 2018, driven by declines in Sydney and, to a lesser extent, in Melbourne.

Strong mortgage performance in NSW and Victoria over the last three years, supported by rapidly rising house prices, has offset rising delinquency rates in resource sector reliant states. However, as the housing market cools, weaker mortgage performance in NSW and Victoria will drive the Australia-wide mortgage delinquency rate up. NSW and Victoria account for the largest proportions (31.41% and 25.17% respectively) of mortgage loans in our residential mortgage-backed securities (RMBS) portfolio.

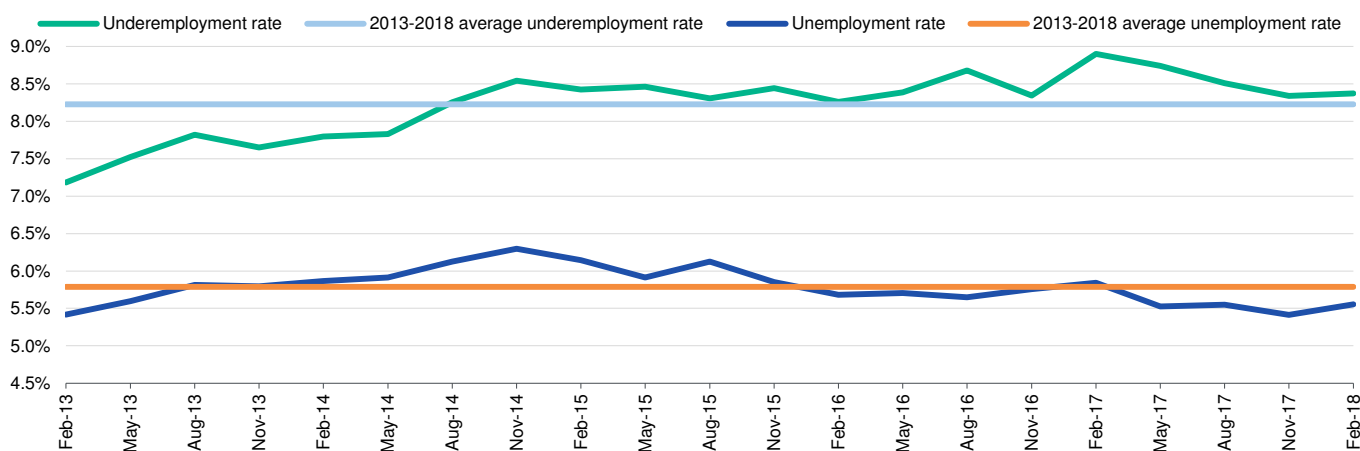
In addition, average weekly earnings in Australia have increased just 10%<sup>8</sup> over the five years to March 2018, a period over which house prices have increased by an average of 40%. As a result, households have accumulated record levels of mortgage debt in the past few years. Household debt as a proportion of disposable income was 188% in September 2017 compared with 161% in September 2012.<sup>9</sup>

This increase in household leverage poses a downside risk for mortgage performance. Higher debt levels make households more vulnerable to economic or housing market shocks, and make meeting mortgage repayments more difficult, increasing the risk of delinquencies.

Persistently high underemployment could also lead to higher mortgage delinquencies in 2018. Australia's unemployment rate was 5.56% in February 2018, slightly below the 5.79% average for the last five years. However, the underemployment rate is much higher at 8.37%, and is above the 8.23% average for the last five years (Exhibit 5). Underemployment results in lower income and reduced capacity to make mortgage repayments, increasing the risk of delinquencies and defaults.

Exhibit 5

#### Australian unemployment and underemployment rates



Source: Australian Bureau of Statistics

The unwinding of the mining investment boom has weighed on mortgage performance in resource-reliant states such as Western Australia, the Northern Territory and Queensland, over the last three years. The bulk of the economic adjustment from the unwinding of the mining investment boom has now occurred, but we expect ongoing volatility in the resources sector will continue to weigh on mortgage performance for some time.

## PERFORMANCE BY REGION

Mortgage performance varied significantly between different regions in Australia over the year to November 2017. The 30-plus delinquency rate increased in 32 regions over the year and fell in 55 regions.

### Worst regions: Western Australia and Queensland continue to underperform

Regions with exposure to the resource and mining sectors dominated the list of areas with the highest delinquencies in November 2017. Nine of the 10 regions with the highest 30-plus delinquency rates were in either Western Australia or Queensland, and many of these regions are exposed to employment industries directly or indirectly related to mining and resources.

Six of the 10 worst regions — Western Australia Outback, Queensland Outback, Mackay, Western Australia Wheat Belt, Mandurah and Fitzroy — have consistently been among the worst performing regions in the country over the last three to four years. Among these worst performing regions, Fitzroy recorded the biggest increase in delinquencies over the year to November 2017.

The weighted average current loan to value ratios for the worst performing regions were typically higher than the national average of 63.2%.

Exhibit 6

#### Australia's 10 worst performing regions

Region	State/Territory	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
Western Australia - Outback	Western Australia	66.2%	6.54%	5.33%	-1.21
Western Australia - Wheat Belt	Western Australia	62.9%	3.80%	4.37%	0.57
Queensland - Outback	Queensland	68.4%	5.51%	4.23%	-1.28
Mackay	Queensland	67.4%	4.24%	3.91%	-0.33
Fitzroy	Queensland	67.6%	2.82%	3.53%	0.71
Mandurah	Western Australia	67.6%	3.46%	3.08%	-0.38
Townsville	Queensland	67.0%	3.14%	2.76%	-0.38
Darling Downs - Maranoa	Queensland	65.5%	2.71%	2.69%	-0.02
South Australia - Outback	South Australia	67.3%	3.55%	2.66%	-0.89
Perth - North East	Western Australia	66.2%	2.97%	2.62%	-0.35

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

### Best regions: Sydney regions performing strongly

Eight of the 10 regions with the lowest mortgage delinquency rates over the year to November 2017 were in NSW and seven of these were in Sydney.

The South East region in Tasmania was also among the best performing and most improved regions in the country. However, there are only a limited number of loans (523) from this region in our RMBS portfolio. The small sample makes performance trends in the region relatively more volatile compared to regions with thousands of loans.

The main industries for the top performing regions are professional services industries, characteristic of metropolitan areas. These occupations tend to earn higher wages and have more stable economic and employment conditions compared to mining- and construction-related employment.

The weighted average current loan to value ratios for the best-performing regions were typically lower than the national average of 63.2%.

Exhibit 7

## Australia's 10 best performing regions

Region	State/Territory	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
Sydney - Northern Beaches	New South Wales	54.8%	0.68%	0.34%	-0.34
Sydney - Eastern Suburbs	New South Wales	54.8%	0.43%	0.36%	-0.07
Melbourne - Inner East	Victoria	59.4%	0.71%	0.47%	-0.24
Sydney - Ryde	New South Wales	58.3%	0.48%	0.53%	0.05
Sydney - North Sydney and Hornsby South East	New South Wales Tasmania	56.1% 62.2%	0.36% 2.28%	0.58% 0.62%	0.22 -1.66
Sydney - Baulkham Hills and Hawkesbury	New South Wales	57.9%	0.75%	0.71%	-0.04
Sydney - City and Inner South	New South Wales	61.3%	0.62%	0.73%	0.11
Coffs Harbour - Grafton	New South Wales	64.0%	1.45%	0.73%	-0.72
Sydney - Inner West	New South Wales	58.2%	0.75%	0.75%	0.00

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports



## PERFORMANCE BY POSTCODE<sup>10</sup>

### Worst postcodes: Queensland and Western Australian suburbs have highest delinquencies

Postcode 4680 (Barney Point) in Queensland had the highest 30-plus delinquency rate (4.95%) in Australia in November 2017, followed by postcodes 4825 (Alpurrurulam) in Queensland and 6066 (Ballajura) in Western Australia. In postcode 4825 (Alpurrurulam), the delinquency rate declined significantly (3.45 percentage points) over the year to November 2017, but remained among the highest in the country.

The 30-plus delinquency rate in each of the 20 worst-performing postcodes exceeded 2.8%, compared with the national average of 1.45%. Delinquency rates in four of the 20 worst-performing postcodes deteriorated by more than one percentage point over the year to November 2017. Six of the 20 worst-performing postcodes were in Queensland and nine were in Western Australia.

The weighted average current loan to value ratios for the worst performing postcodes were typically higher than the national average of 63.2%.

Exhibit 8

### Australia's 20 worst performing postcodes

Postcode	Locality	Region	State/Territory	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
4680	Barney Point	Fitzroy	Queensland	69.1%	3.00%	4.95%	1.95
4825	Alpurrurulam	Queensland - Outback	Queensland	72.5%	7.76%	4.31%	-3.45
6066	Ballajura	Perth - North East	Western Australia	65.8%	4.78%	4.00%	-0.78
6056	Baskerville	Perth - North East	Western Australia	64.8%	4.25%	3.72%	-0.53
6030	Clarkson	Perth - North West	Western Australia	70.2%	2.96%	3.69%	0.73
4114	Kingston	Logan - Beaudesert	Queensland	71.1%	3.53%	3.69%	0.16
6430	Binduli	Western Australia - Outback	Western Australia	71.5%	3.42%	3.49%	0.07
6330	Albany	Western Australia - Wheat Belt	Western Australia	61.9%	2.84%	3.45%	0.61
4815	Condon	Townsville	Queensland	70.0%	4.10%	3.35%	-0.75
6230	Bunbury	Bunbury	Western Australia	66.8%	3.52%	3.23%	-0.29
6076	Bickley	Perth - South East	Western Australia	58.8%	3.16%	3.11%	-0.05
3020	Albion	Melbourne - West	Victoria	64.8%	2.73%	3.03%	0.30
3840	Driffield	Latrobe - Gippsland	Victoria	66.6%	2.63%	3.03%	0.40
6210	Coodanup	Mandurah	Western Australia	67.2%	3.44%	3.01%	-0.43
6064	Alexander Heights	Perth - North West	Western Australia	68.1%	2.83%	2.99%	0.16
4019	Clontarf	Moreton Bay - North	Queensland	67.0%	1.39%	2.95%	1.56
4817	Alice River	Townsville	Queensland	66.7%	3.20%	2.93%	-0.27
2759	Erskine Park	Sydney - Outer West and Blue	New South Wales	62.6%	0.66%	2.90%	2.24
3023	Burnside	Melbourne - West	Victoria	66.2%	3.50%	2.88%	-0.62
3173	Keysborough	Melbourne - South East	Victoria	63.6%	1.14%	2.88%	1.74

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

### Best postcodes: Sydney suburbs strong

Six postcodes had zero mortgage delinquencies in November 2017, making them the best performing in the country. Ten of the 20 best-performing postcodes in Australia were in Sydney, while six were in Melbourne.

Most best-performing postcodes were located in capital city regions where employment is concentrated in professional services.

The weighted average current loan to value ratios for the best performing regions were typically lower than the national average of 63.2%.

Exhibit 9

## Australia's 20 best performing postcodes

Postcode	Locality	Region	State/Territory	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
2065	Crows Nest	Sydney - North Sydney and Hornsby	New South Wales	57.8%	0.00%	0.00%	0.00
2088	Mosman	Sydney - North Sydney and Hornsby	New South Wales	49.2%	0.27%	0.00%	-0.27
2118	Carlingford	Sydney - Parramatta	New South Wales	60.4%	0.79%	0.00%	-0.79
3146	Glen Iris	Melbourne - Inner East	Victoria	55.6%	0.94%	0.00%	-0.94
3204	Bentleigh	Melbourne - Inner South	Victoria	59.2%	0.97%	0.00%	-0.97
4160	Ormiston	Brisbane - East	Queensland	61.8%	1.20%	0.00%	-1.20
2010	Darlinghurst	Sydney - City and Inner South	New South Wales	59.5%	0.02%	0.02%	0.00
3084	Banyule	Melbourne - North East	Victoria	55.2%	0.00%	0.10%	0.10
2093	Balgowlah	Sydney - Northern Beaches	New South Wales	53.7%	0.95%	0.13%	-0.82
3131	Brentford Square	Melbourne - Outer East	Victoria	61.9%	0.17%	0.17%	0.00
4210	Guanaba	Gold Coast	Queensland	68.1%	1.54%	0.18%	-1.36
2160	Merrylands	Sydney - Parramatta	New South Wales	61.3%	0.28%	0.20%	-0.08
2067	Chatswood	Sydney - North Sydney and Hornsby	New South Wales	60.3%	0.10%	0.20%	0.10
4109	Macgregor	Brisbane - South	Queensland	63.7%	0.68%	0.22%	-0.46
2210	Lugarno	Sydney - Inner South West	New South Wales	58.6%	0.28%	0.23%	-0.05
3040	Aberfeldie	Melbourne - Inner	Victoria	58.5%	1.02%	0.24%	-0.78
2460	Alumy Creek	Coffs Harbour - Grafton	New South Wales	64.5%	1.78%	0.25%	-1.53
2122	Eastwood	Sydney - Ryde	New South Wales	60.8%	0.18%	0.25%	0.07
2200	Bankstown	Sydney - Inner South West	New South Wales	61.2%	0.98%	0.26%	-0.72
3133	Vermont	Melbourne - Outer East	Victoria	59.2%	0.16%	0.26%	0.10

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

## STATES IN FOCUS

## NSW

Exhibit 10

## 30-plus delinquency rates for NSW regions

Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
Far West and Orana	68.3%	4.55%	2.53%	-2.02
Central West	66.5%	2.07%	2.47%	0.40
New England and North West	66.1%	1.40%	2.04%	0.64
Hunter Valley exc Newcastle	68.4%	1.62%	1.81%	0.19
Richmond - Tweed	61.0%	1.43%	1.64%	0.21
Sydney - Blacktown	63.3%	1.21%	1.53%	0.32
Capital Region	62.8%	1.93%	1.52%	-0.41
Sydney - Outer West and Blue Mountains	62.6%	1.03%	1.44%	0.41
Murray	66.4%	1.21%	1.42%	0.21
Sydney - Sutherland	56.2%	0.81%	1.39%	0.58
Sydney - South West	60.8%	1.19%	1.35%	0.16
Southern Highlands and Shoalhaven	59.9%	1.16%	1.32%	0.16
Mid North Coast	64.2%	1.95%	1.31%	-0.64
Riverina	65.3%	1.51%	1.24%	-0.27
Newcastle and Lake Macquarie	64.6%	1.01%	1.24%	0.23
Sydney - Outer South West	63.4%	1.18%	1.23%	0.05
Central Coast	63.5%	1.55%	1.16%	-0.39
Illawarra	60.5%	1.17%	1.07%	-0.10
Sydney - Parramatta	63.1%	0.95%	0.91%	-0.04
Sydney - Inner South West	59.6%	0.83%	0.89%	0.06
Sydney - Inner West	58.2%	0.75%	0.75%	0.00
Coffs Harbour - Grafton	64.0%	1.45%	0.73%	-0.72
Sydney - City and Inner South	61.3%	0.62%	0.73%	0.11
Sydney - Baulkham Hills and Hawkesbury	57.9%	0.75%	0.71%	-0.04
Sydney - North Sydney and Hornsby	56.1%	0.36%	0.58%	0.22
Sydney - Ryde	58.3%	0.48%	0.53%	0.05
Sydney - Eastern Suburbs	54.8%	0.43%	0.36%	-0.07
Sydney - Northern Beaches	54.8%	0.68%	0.34%	-0.34

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

Exhibit 11

## NSW' 10 worst performing postcodes

Postcode	Locality	Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
2759	Erskine Park	Sydney - Outer West and Blue Mountains	62.6%	0.66%	2.90%	2.24
2770	Bidwill	Sydney - Blacktown	66.7%	1.81%	2.71%	0.90
2290	Bennetts Green	Newcastle and Lake Macquarie	64.4%	0.76%	2.58%	1.82
2320	Aberglasslyn	Hunter Valley exc Newcastle	69.8%	1.61%	2.45%	0.84
2795	Abercrombie	Central West	64.1%	1.61%	2.34%	0.73
2760	Colyton	Sydney - Outer West and Blue Mountains	69.0%	0.71%	2.34%	1.63
2480	Bentley	Richmond - Tweed	63.1%	1.66%	2.21%	0.55
2800	Belgravia	Central West	68.8%	2.53%	2.21%	-0.32
2168	Ashcroft	Sydney - South West	62.6%	2.53%	2.18%	-0.35
2234	Alfords Point	Sydney - Sutherland	55.9%	0.17%	2.11%	1.94

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

Exhibit 12

## NSW' 10 best performing postcodes

Postcode	Locality	Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
2065	Crows Nest	Sydney - North Sydney and Hornsby	57.8%	0.00%	0.00%	0.00
2088	Mosman	Sydney - North Sydney and Hornsby	49.2%	0.27%	0.00%	-0.27
2118	Carlingford	Sydney - Parramatta	60.4%	0.79%	0.00%	-0.79
2010	Darlinghurst	Sydney - City and Inner South	59.5%	0.02%	0.02%	0.00
2093	Balgowlah	Sydney - Northern Beaches	53.7%	0.95%	0.13%	-0.82
2160	Merrylands	Sydney - Parramatta	61.3%	0.28%	0.20%	-0.08
2067	Chatswood	Sydney - North Sydney and Hornsby	60.3%	0.10%	0.20%	0.10
2210	Lugarno	Sydney - Inner South West	58.6%	0.28%	0.23%	-0.05
2460	Alumy Creek	Coffs Harbour - Grafton	64.5%	1.78%	0.25%	-1.53
2122	Eastwood	Sydney - Ryde	60.8%	0.18%	0.25%	0.07

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

## Victoria

Exhibit 13

## 30-plus delinquency rates for Victorian regions

Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
Warrnambool and South West	63.7%	1.74%	1.95%	0.21
Bendigo	63.1%	1.65%	1.84%	0.19
Melbourne - West	66.4%	1.96%	1.77%	-0.19
Melbourne - South East	64.9%	1.53%	1.64%	0.11
Latrobe - Gippsland	64.0%	2.36%	1.63%	-0.73
Melbourne - North West	64.9%	2.07%	1.61%	-0.46
Mornington Peninsula	62.6%	1.87%	1.55%	-0.32
Shepparton	65.4%	2.35%	1.41%	-0.94
Melbourne - North East	63.2%	1.47%	1.39%	-0.08
North West	67.0%	1.71%	1.38%	-0.33
Geelong	63.1%	1.36%	1.25%	-0.11
Ballarat	66.2%	1.86%	1.23%	-0.63
Hume	66.0%	2.88%	1.19%	-1.69
Melbourne - Outer East	60.9%	1.26%	1.13%	-0.13
Melbourne - Inner	63.2%	0.85%	0.95%	0.10
Melbourne - Inner South	57.9%	1.12%	0.77%	-0.35
Melbourne - Inner East	59.4%	0.71%	0.47%	-0.24

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

Exhibit 14

## Victoria's 10 worst performing postcodes

Postcode	Locality	Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
3020	Albion	Melbourne - West	64.8%	2.73%	3.03%	0.30
3840	Driffield	Latrobe - Gippsland	66.6%	2.63%	3.03%	0.40
3023	Burnside	Melbourne - West	66.2%	3.50%	2.88%	-0.62
3173	Keysborough	Melbourne - South East	63.6%	1.14%	2.88%	1.74
3021	Albanvale	Melbourne - West	64.3%	2.48%	2.47%	-0.01
3024	Mambourin	Melbourne - West	71.3%	1.55%	2.44%	0.89
3064	Craigieburn	Melbourne - North West	70.2%	3.14%	2.36%	-0.78
3172	Dingley Village	Melbourne - South East	60.1%	1.20%	2.29%	1.09
3037	Calder Park	Melbourne - West	63.4%	2.38%	2.19%	-0.19
3429	Sunbury	Melbourne - North West	66.3%	1.64%	2.12%	0.48

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

Exhibit 15

## Victoria's 10 best performing postcodes

Postcode	Locality	Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
3146	Glen Iris	Melbourne - Inner East	55.6%	0.94%	0.00%	-0.94
3204	Bentleigh	Melbourne - Inner South	59.2%	0.97%	0.00%	-0.97
3084	Banyule	Melbourne - North East	55.2%	0.00%	0.10%	0.10
3131	Brentford Square	Melbourne - Outer East	61.9%	0.17%	0.17%	0.00
3040	Aberfeldie	Melbourne - Inner	58.5%	1.02%	0.24%	-0.78
3133	Vermont	Melbourne - Outer East	59.2%	0.16%	0.26%	0.10
3070	Northcote	Melbourne - Inner	57.0%	0.67%	0.27%	-0.40
3006	South Wharf	Melbourne - Inner	69.5%	0.51%	0.36%	-0.15
3130	Blackburn	Melbourne - Inner East	59.0%	0.84%	0.36%	-0.48
3056	Brunswick	Melbourne - Inner	63.5%	0.02%	0.42%	0.40

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

## Queensland

Exhibit 16

## 30-plus delinquency rates for Queensland regions

Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
Queensland - Outback	68.4%	5.51%	4.23%	-1.28
Mackay	67.4%	4.24%	3.91%	-0.33
Fitzroy	67.6%	2.82%	3.53%	0.71
Townsville	67.0%	3.14%	2.76%	-0.38
Darling Downs - Maranoa	65.5%	2.71%	2.69%	-0.02
Wide Bay	65.8%	2.20%	1.96%	-0.24
Logan - Beaudesert	68.1%	2.48%	1.93%	-0.55
Ipswich	69.3%	1.85%	1.93%	0.08
Cairns	64.7%	1.76%	1.82%	0.06
Moreton Bay - North	67.3%	2.07%	1.75%	-0.32
Gold Coast	66.6%	1.52%	1.69%	0.17
Sunshine Coast	63.4%	1.75%	1.57%	-0.18
Toowoomba	67.3%	1.40%	1.53%	0.13
Moreton Bay - South	66.6%	1.36%	1.30%	-0.06
Brisbane - West	60.9%	1.04%	1.17%	0.13
Brisbane - East	64.1%	1.37%	1.07%	-0.30
Brisbane - South	63.6%	1.04%	0.93%	-0.11
Brisbane - North	65.5%	0.79%	0.89%	0.10
Brisbane Inner City	64.0%	0.86%	0.88%	0.02

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

Exhibit 17

## Queensland's 10 worst performing postcodes

Postcode	Locality	Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
4680	Barney Point	Fitzroy	69.1%	3.00%	4.95%	1.95
4825	Alpurrurulam	Queensland - Outback	72.5%	7.76%	4.31%	-3.45
4114	Kingston	Logan - Beaudesert	71.1%	3.53%	3.69%	0.16
4815	Condon	Townsville	70.0%	4.10%	3.35%	-0.75
4019	Clontarf	Moreton Bay - North	67.0%	1.39%	2.95%	1.56
4817	Alice River	Townsville	66.7%	3.20%	2.93%	-0.27
4818	Beach Holm	Townsville	72.4%	3.04%	2.77%	-0.27
4740	Alexandra	Mackay	67.3%	4.06%	2.77%	-1.29
4123	Rochedale	Logan - Beaudesert	65.3%	1.37%	2.73%	1.36
4812	Currajong	Townsville	65.7%	3.02%	2.63%	-0.39

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

Exhibit 18

## Queensland's 10 best performing postcodes

Postcode	Locality	Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
4160	Ormiston	Brisbane - East	61.8%	1.20%	0.00%	-1.20
4210	Guanaba	Gold Coast	68.1%	1.54%	0.18%	-1.36
4109	Macgregor	Brisbane - South	63.7%	0.68%	0.22%	-0.46
4032	Chermside	Brisbane - North	67.9%	0.81%	0.27%	-0.54
4105	Moorooka	Brisbane - South	64.2%	1.01%	0.40%	-0.61
4051	Alderley	Brisbane Inner City	62.3%	0.65%	0.43%	-0.22
4573	Coolum Beach	Sunshine Coast	64.2%	0.47%	0.46%	-0.01
4171	Balmoral	Brisbane Inner City	63.0%	1.77%	0.50%	-1.27
4000	Brisbane Adelaide	Brisbane Inner City	65.7%	0.50%	0.52%	0.02
4068	Chelmer	Brisbane - West	60.6%	0.30%	0.52%	0.22

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

## Western Australia

Exhibit 19

## 30-plus delinquency rates for Western Australian regions

Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
Western Australia - Outback	66.2%	6.54%	5.33%	-1.21
Western Australia - Wheat Belt	62.9%	3.80%	4.37%	0.57
Mandurah	67.6%	3.46%	3.08%	-0.38
Perth - North East	66.2%	2.97%	2.62%	-0.35
Perth - South East	66.4%	2.51%	2.33%	-0.18
Perth - North West	65.5%	2.46%	2.33%	-0.13
Bunbury	65.1%	3.04%	2.22%	-0.82
Perth - South West	65.9%	2.64%	2.21%	-0.43
Perth - Inner	57.6%	1.33%	1.66%	0.33

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

Exhibit 20

## Western Australia's 10 worst performing postcodes

Postcode	Locality	Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
6066	Ballajura	Perth - North East	65.8%	4.78%	4.00%	-0.78
6056	Baskerville	Perth - North East	64.8%	4.25%	3.72%	-0.53
6030	Clarkson	Perth - North West	70.2%	2.96%	3.69%	0.73
6430	Binduli	Western Australia - Outback	71.5%	3.42%	3.49%	0.07
6330	Albany	Western Australia - Wheat Belt	61.9%	2.84%	3.45%	0.61
6230	Bunbury	Bunbury	66.8%	3.52%	3.23%	-0.29
6076	Bickley	Perth - South East	58.8%	3.16%	3.11%	-0.05
6210	Coodanup	Mandurah	67.2%	3.44%	3.01%	-0.43
6064	Alexander Heights	Perth - North West	68.1%	2.83%	2.99%	0.16
6054	Ashfield	Perth - North East	64.1%	1.41%	2.87%	1.46

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

Exhibit 21

## Western Australia's 10 best performing postcodes

Postcode	Locality	Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
6019	Scarborough	Perth - North West	62.4%	0.62%	0.76%	0.14
6152	Como	Perth - South East	59.7%	0.96%	0.88%	-0.08
6060	Joondanna	Perth - North West	65.5%	2.22%	0.94%	-1.28
6062	Embleton	Perth - North East	62.6%	1.89%	1.11%	-0.78
6028	Burns Beach	Perth - North West	62.9%	1.54%	1.12%	-0.42
6018	Churchlands	Perth - North West	61.0%	0.47%	1.32%	0.85
6171	Baldivis	Perth - South West	74.7%	2.20%	1.53%	-0.67
6155	Canning Vale	Perth - South East	62.1%	1.27%	1.60%	0.33
6069	Aveley	Perth - North East	72.1%	2.88%	1.71%	-1.17
6055	Brabham	Perth - North East	71.9%	4.15%	1.76%	-2.39

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

## South Australia

Exhibit 22

### 30-plus delinquency rates for South Australian regions

Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
South Australia - Outback	67.3%	3.55%	2.66%	-0.89
Adelaide - North	67.3%	2.77%	2.24%	-0.53
Adelaide - Central and Hills	61.6%	1.75%	1.90%	0.15
Barossa - Yorke - Mid North	64.7%	2.79%	1.85%	-0.94
South Australia - South East	65.2%	2.33%	1.76%	-0.57
Adelaide - South	63.8%	1.98%	1.73%	-0.25
Adelaide - West	62.6%	1.69%	1.48%	-0.21

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports

Exhibit 23

### 30-plus delinquency rates for South Australian postcodes

Postcode	Locality	Region	WACLTV	Nov-16 30-plus delinquency	Nov-17 30-plus delinquency	Nov-17 - Nov-16 change (% pts)
5159	Aberfoyle Park	Adelaide - South	63.5%	2.63%	2.70%	0.07
5125	Golden Grove	Adelaide - North	63.0%	1.54%	2.52%	0.98
5109	Brahma Lodge	Adelaide - North	65.8%	4.00%	2.46%	-1.54
5162	Morphett Vale	Adelaide - South	67.1%	2.28%	2.16%	-0.12
5108	Paralowie	Adelaide - North	69.1%	4.11%	1.99%	-2.12
5114	Andrews Farm	Adelaide - North	70.4%	2.79%	1.66%	-1.13
5095	Mawson Lakes	Adelaide - North	69.7%	2.38%	1.23%	-1.15
5158	Hallett Cove	Adelaide - South	63.9%	1.15%	0.87%	-0.28

Note: WACLTV — Weighted average current loan to value ratio, weighted by current balance

Sources: Moody's Investors Service, periodic investor/servicer reports



## Moody's related publications

### Sector Comments:

- » [Heard from the market: Global structured finance conference 2018](#) February 2018
- » [RMBS - Australia: Deeper market for green deals will be credit positive](#) February 2018
- » [Mitigating factors will minimize risks posed by aging populations](#) January 2018
- » [Delinquencies rising, issuance strong](#) September 2017
- » [Rising defaults in Western Australia underscore housing investment loan risks](#), August 2017
- » [Structured finance - Australia: Bank downgrades have limited impact on structured finance](#), June 2017
- » [Australia's RMBS Will Benefit from Proposal to Expand Regulator's Powers over Mortgage Lending, May 2017](#)
- » [New Limits on Interest-Only Mortgages Will Curb Riskier Lending](#), April 2017
- » [Alt-Doc Mortgages Subject to Stricter Underwriting than Pre-2008 Low-Doc Mortgages](#), March 2017
- » [Housing Market Imbalances Growing in Some States, March 2017](#)
- » [Heard from the Market: Global Structured Finance Conference 2017](#), March 2017
- » [Rising Housing Prices Provide Equity Cushion to Absorb Losses](#), January 2017

### Outlook:

- » [Australia : 2018 outlook - Delinquencies will increase moderately from low levels](#), November 2017

### Performance:

- » [Global Structured Finance Collateral Performance Review](#)
- » [Australian RMBS Performance Update - Q4 2017 - Excel Data](#)

### Rating Methodology:

- » [Moody's Approach to Rating RMBS Using the MILAN Framework](#)
- » [RMBS Rating Methodology Supplement - Australia](#)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

## Endnotes

- [1](#) This report compares delinquencies between November 2017 and November 2016 rather than May 2017 (the period for our previous mortgage delinquency map report) to avoid differences caused by seasonal fluctuations.
- [2](#) Our records began in 2005. See [Australian Residential Mortgage Delinquency Map — November 2017](#) for all historical 30-plus delinquency rates.
- [3](#) The populations in the ACT, the Northern Territory, South Australia, and Tasmania are all relatively small. Mortgages from these states and territories account for just 2.2% (ACT), 0.76% (the Northern Territory), 4.71% (South Australia) and 1.04% (Tasmania) of the loans in our RMBS portfolio. See [Australian Residential Mortgage Delinquency Map — November 2017](#), Appendix 1.
- [4](#) See [\(State of\), Western Australia: Update to discussion of key credit factors, 3 November 2017](#).
- [5](#) Source: Australian Bureau of Statistics.
- [6](#) See [Northern Territory of Australia: Update to Discussion of Key Credit Factors](#), 31 July 2017.
- [7](#) See [South Australia \(State of\): Update to discussion of key credit factors](#), 5 October 2017.
- [8](#) Source: Australian Bureau of Statistics.
- [9](#) Source: Reserve Bank of Australia. The household debt level is based on gross household debt and does not account for deposits in mortgage offset accounts.
- [10](#) Postcode analysis has several deficiencies, including the fact that it is difficult to apply meaningful analytical judgment at such a granular level. To ensure that results are meaningful, we have excluded postcodes with less than 400 loans.

© 2018 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MOODY'S PUBLICATIONS MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER. ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for appraisal and rating services rendered by it fees ranging from \$1,500 to approximately \$2,500,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at [www.moody's.com](http://www.moody's.com) under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors. It would be reckless and inappropriate for retail investors to use MOODY'S credit ratings or publications when making an investment decision. If in doubt you should contact your financial or other professional adviser.

Additional terms for Japan only: Moody's Japan K.K. ("MJJK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJJK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJJK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJJK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJJK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJJK or MSFJ (as applicable) for appraisal and rating services rendered by it fees ranging from JPY200,000 to approximately JPY350,000,000.

MJJK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

## CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454