



Asbestos cement roof hotspots study

The asbestos cement roof hotspots project was commissioned to better understand the residential asbestos cement roofing legacy.

We tested and validated a mixed methods approach, combining urban analytics, high-resolution imagery, and machine learning to detect asbestos cement roofing in specific study localities.

Analytics allowed for the entire of Australia to be scanned (at the Statistical Area 2 or SA2 level), to rank localities for the predicted presence of ACMs anywhere in the home and the potential for disturbance, based on various socio-economic and property development factors.



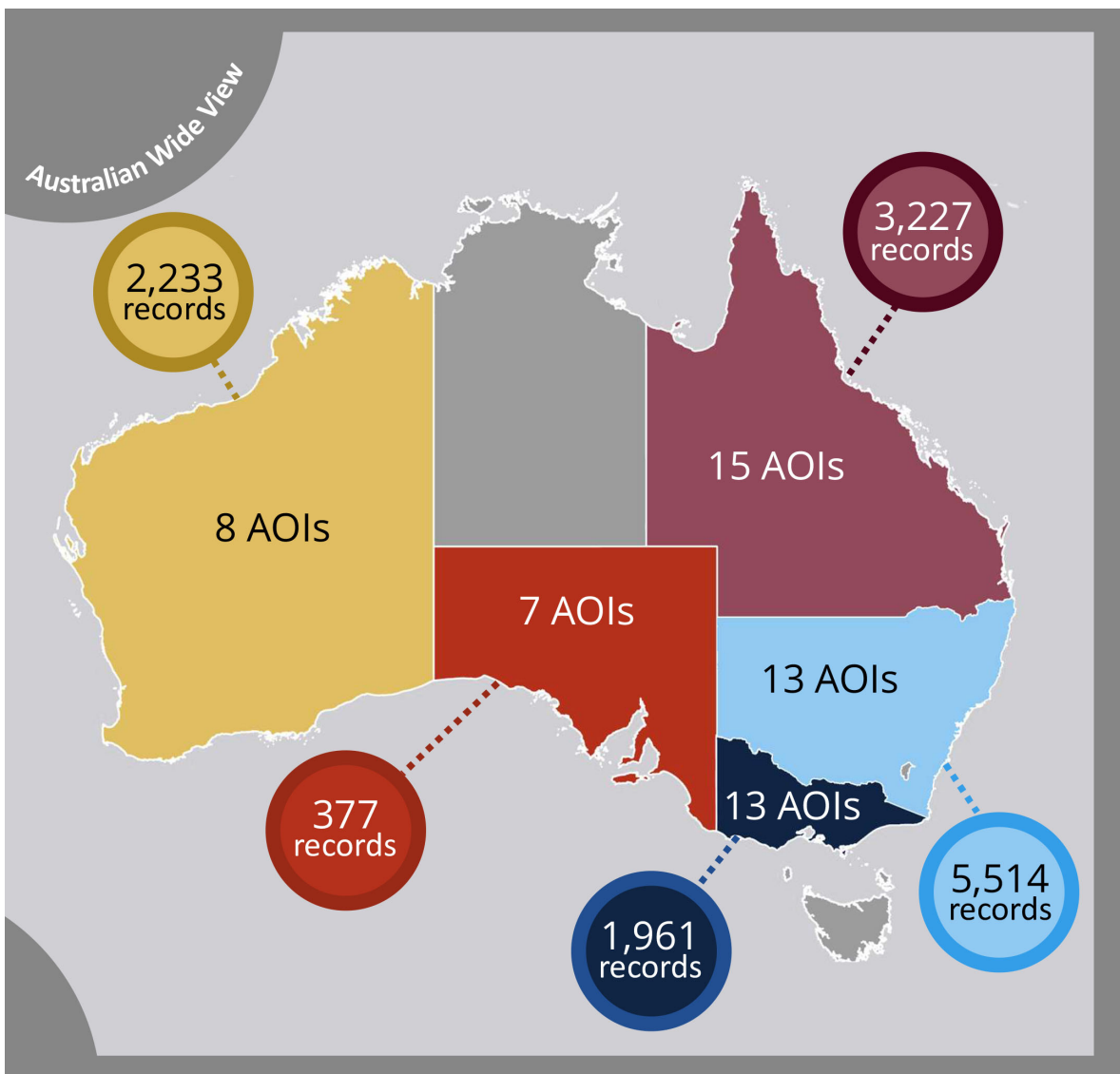
Asbestos National Strategic Plan

Implementation 2019–23

Coverage



In this study, the highest ranked localities in NT, ACT and TAS did not reveal significant amounts of asbestos cement roofing and so these jurisdictions were excluded from further analysis.





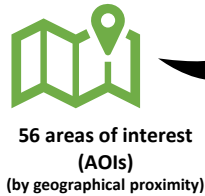
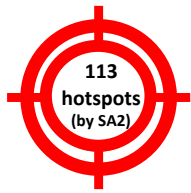
Asbestos cement roof hotspots – summary

RESULTS

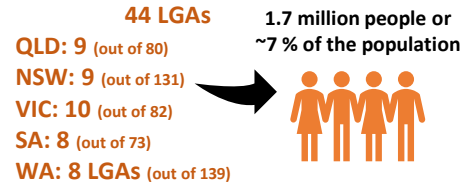
asbestos cement roof count = 13 312
estimated waste volume = 23 105 t
estimated waste area = 1 481 190 m²
estimated waste in football fields = ~207



COVERAGE



15 in QLD
13 in NSW
13 in VIC
7 in SA
8 in WA



RESULTS



ROOFS DETECTED

AVG ROOF FOOTPRINT

DENSITY RANGE (average)



VOLUME

AREA (football fields)

AI MODEL ACCURACY

	QLD	NSW	VIC	SA	WA
ROOFS DETECTED	3227	5514	1961	377	2233
AVG ROOF FOOTPRINT	144 m ²	84 m ²	126 m ²	143 m ²	113 m ²
DENSITY RANGE (average)	0.4–6.0 % (1.5 %)	0.7–5.9 % (2.9 %)	0.4–2.8 % (1.2 %)	0.2–1.6 % (0.5 %)	0.2–6.6 % (2.4 %)
VOLUME	7249 t	7225 t	3854 t	841 t	3936 t
AREA (football fields)	464 688 m ² (~65)	463 176 m ² (~65)	247 086 m ² (~35)	53 911 m ² (~7.5)	252 329 m ² (~35)
AI MODEL ACCURACY	98 %	99 %	99 %	100 %	96 %



Asbestos cement cladding – preliminary insights

COVERAGE

qualitative trends about external wall cladding for 29 SA2s

external wall asbestos cement cladding prevalence estimates in 19 SA2s

- 6 in QLD
- 3 in NSW
- 3 in VIC
- 3 in SA
- 4 in WA

observations in ~0.8 km² of each SA2, covering a total of ~15 km² and 1505 dwellings

RESULTS

Most commonly found in CBD fringing or coastal areas, with a double-pitched non-ACM roof

Commonly associated with:

- iron roofing
- vertical cladding cover strips

Commonly associated with:

- tile roofing
- horizontal cladding cover strips

ESTIMATED DENSITY

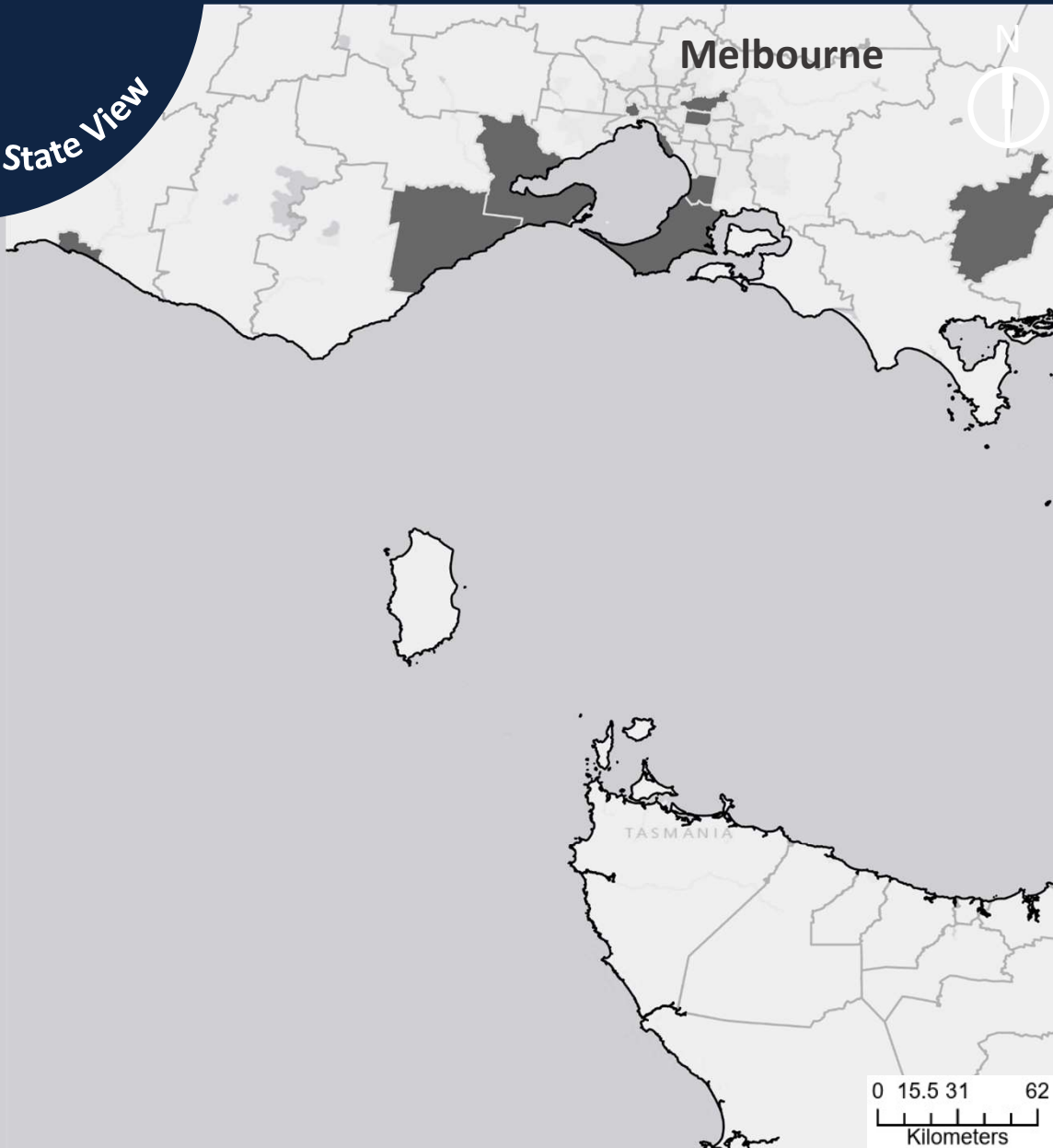
ACM roofing only : ACM roofing and cladding : ACM cladding only

3 : 1 : 6

for every 3 homes with asbestos cement roofing only, there is 1 more home with both asbestos cement roofing and cladding, and 6 more homes with external wall asbestos cement cladding only

Residential Asbestos Roof Hotspots

State View



Hotspots:
10 LGAs



1,961
Total
Buildings

Accuracy



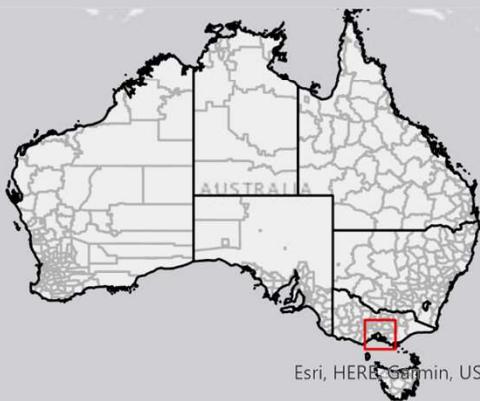
92%



13 Areas of
Interest



143km²
Hotspot
area



Esri, HERE, Garmin, USGS

Legend

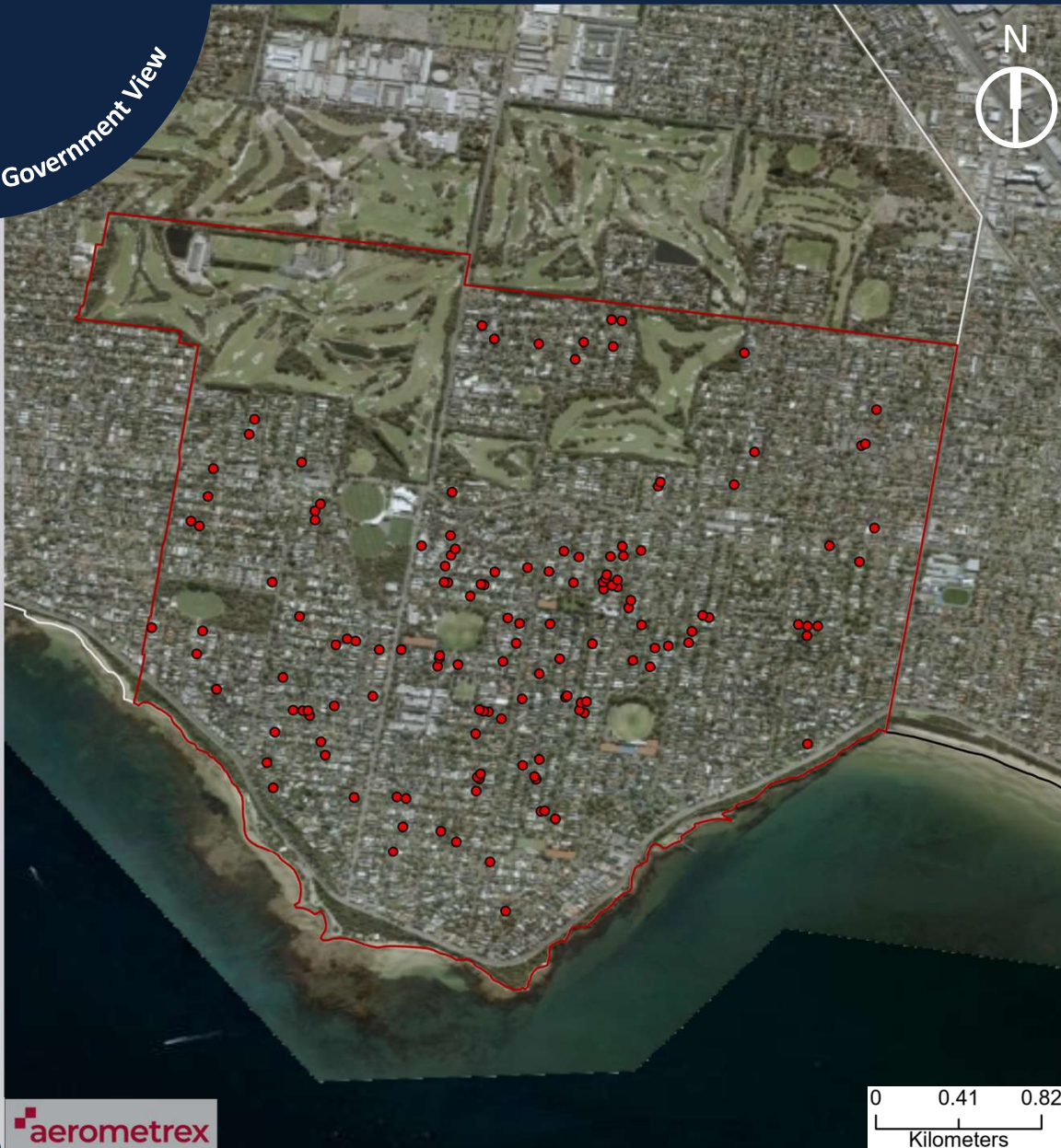
- Local Government Areas with Asbestos Hotspots (VIC)
- Local Government Areas
- State & Territory Boundaries

Victoria

Victoria's asbestos roofing hotspots were identified in the Bayside, Frankston, Greater Geelong, Latrobe, Manningham, Maribyrnong, Mornington Peninsula, Surf Coast, Warrnambool, and Whitehorse local government areas. The Victoria area of interests are distributed across 21 SA2s with a population of 332,669 persons in 2016. In total, 247,086 square metres of asbestos roofing were found in the state, which equates to 3,854 tonnes of ACM.

Residential Asbestos Roof Hotspots

Local Government View



ACM roofing



140 / 5,336 dwellings

ACM area



17,640m²

ACM mass



275.1 t

Density



Absolute: 2.6%
Relative to avg. roof size: 2.8%

Aerial imagery



09/04/2020

Accuracy



100%



Legend

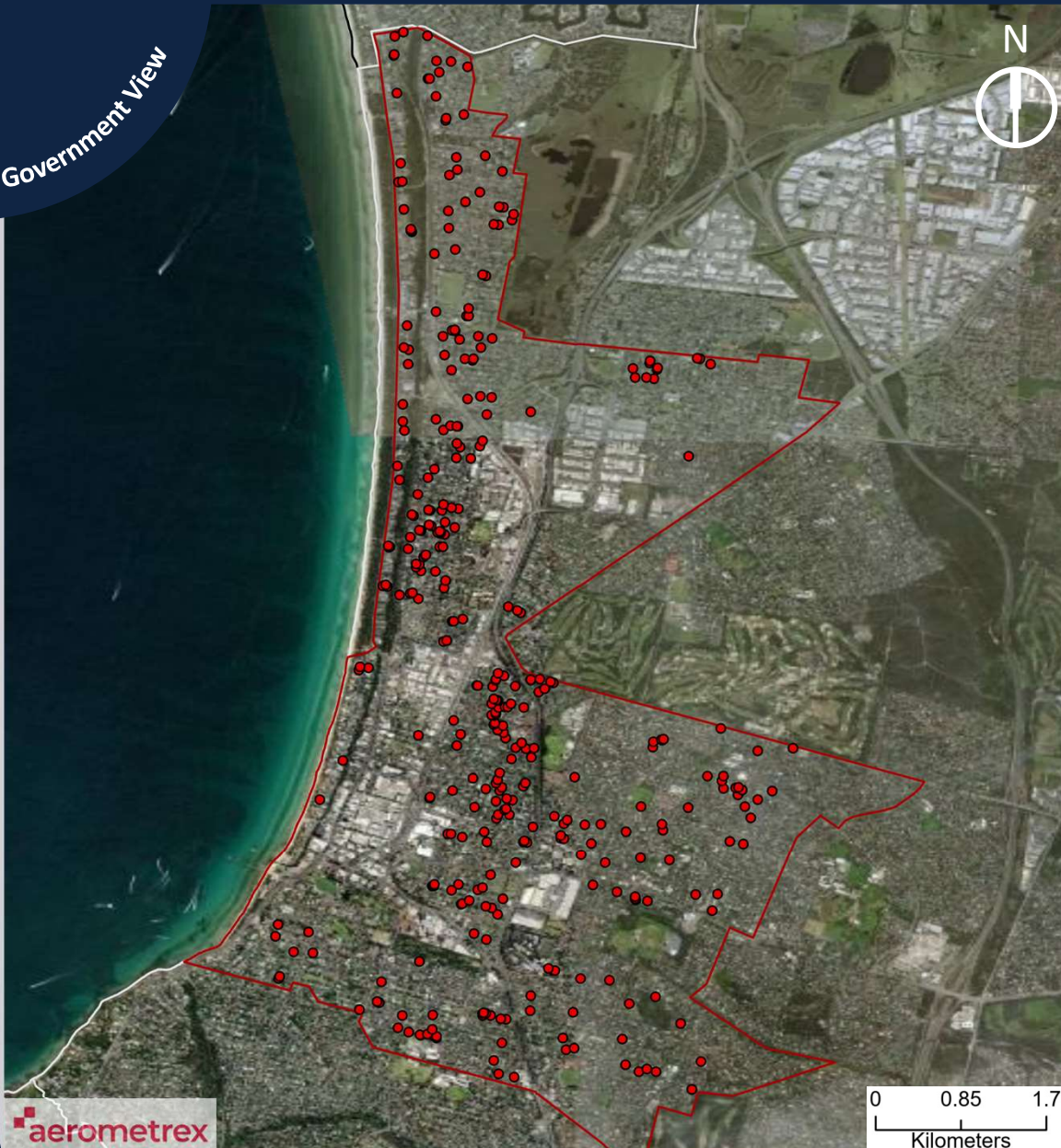
- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Beamaris – 6km²

The Beamaris area of interest is comprised of the 'Beamaris' SA2. This AOI covers an area of 6 square kilometres with a population of 13,488 in 2016, and projected growth of 1,460 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 37.9 degrees.

Residential Asbestos Roof Hotspots

Local Government View



ACM roofing



354 / 27,570 dwellings

ACM area



44,604m²

ACM mass



695.8 t

Density



Absolute: 1.3%
Relative to avg. roof size: 1.4%

Aerial imagery



03/09/2020

Accuracy



68%



Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Frankston – 18.8km²

The Frankston area of interest is comprised of the 'Frankston', 'Frankston North' and 'Seaford (Vic)' SA2s. This AOI covers an area of 18.8 square kilometres with a population of 58,378 in 2016, and projected growth of 8,801 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 38.1 degrees.

Residential Asbestos Roof Hotspots

Local Government View



ACM roofing



198 / 15,039 dwellings

ACM area



24,948m²

ACM mass



389.1 t

Density



Absolute: 1.3%
Relative to avg. roof size: 1.4%

Aerial imagery



25/11/2020

Accuracy



100%



Legend

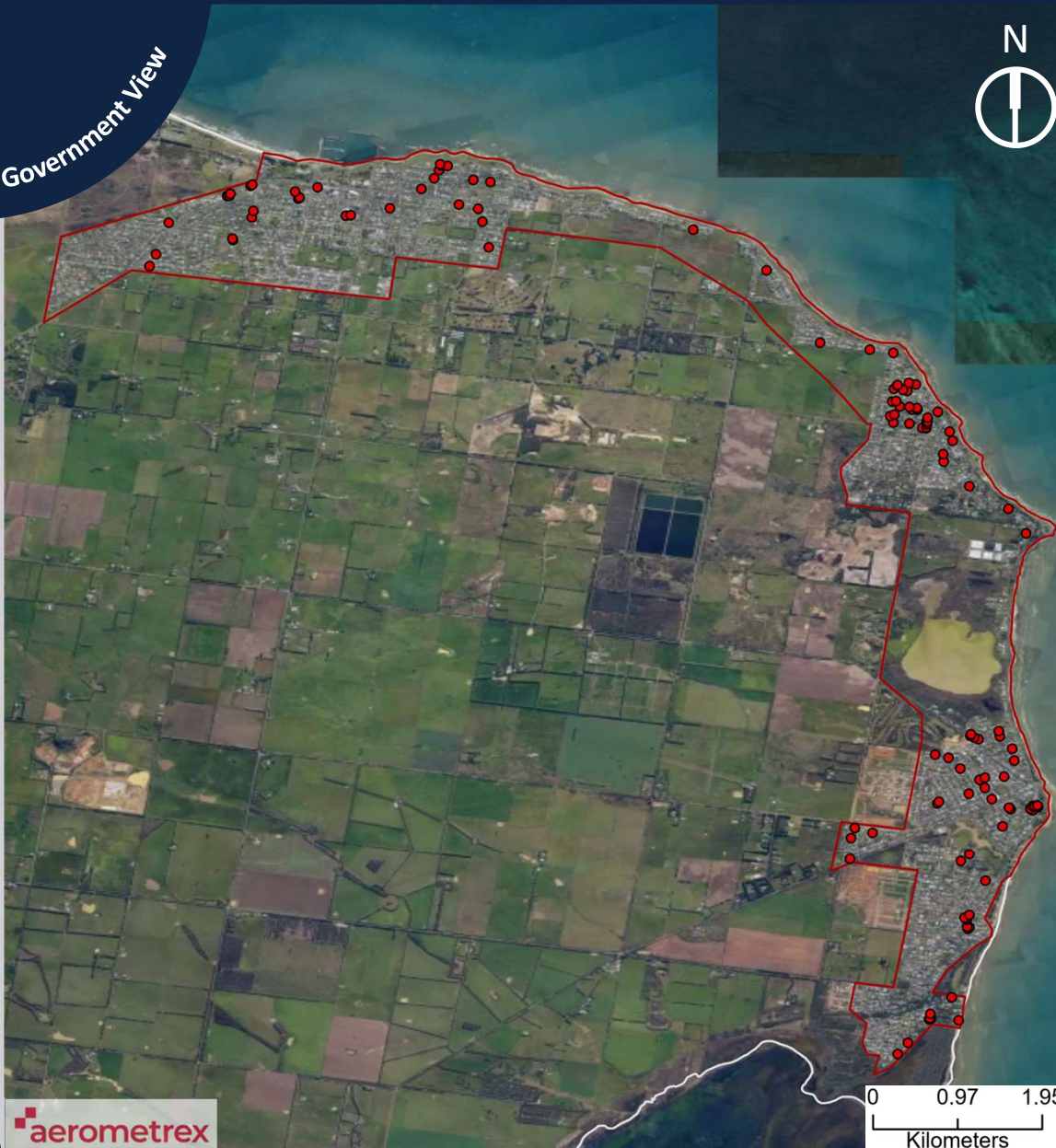
- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Belmont – 9.3km²

The Belmont area of interest is comprised of the 'Belmont' and 'Highton' SA2s. This AOI covers an area of 9.2 square kilometres with a population of 36,113 in 2016, and projected growth of 6,815 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 38.1 degrees.

Residential Asbestos Roof Hotspots

Local Government View



ACM roofing



119 / 6,358
dwellings

ACM area



14,994m²

ACM mass



233.9 t

Density



Absolute: 1.9%
Relative to avg.
roof size: 2.0%

Aerial imagery



30/05/2020

Accuracy



100%



Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Portarlington – 12.2km²

The Portarlington area of interest is comprised of the 'Portarlington' SA2. This AOI covers an area of 12.1 square kilometres with a population of 7,442 in 2016, and projected growth of 2,551 persons between 2016 and 2031. The area is located in Climate Zone 7 (i.e. cool temperate) at a latitude of 38.1 degrees.

Local Government View



ACM roofing



71 / 8,245 dwellings

ACM area



8,946m²

ACM mass



139.5 t

Density



Absolute: 0.9%
Relative to avg. roof size: 0.9%

Aerial imagery



11/12/2020

Accuracy



100%



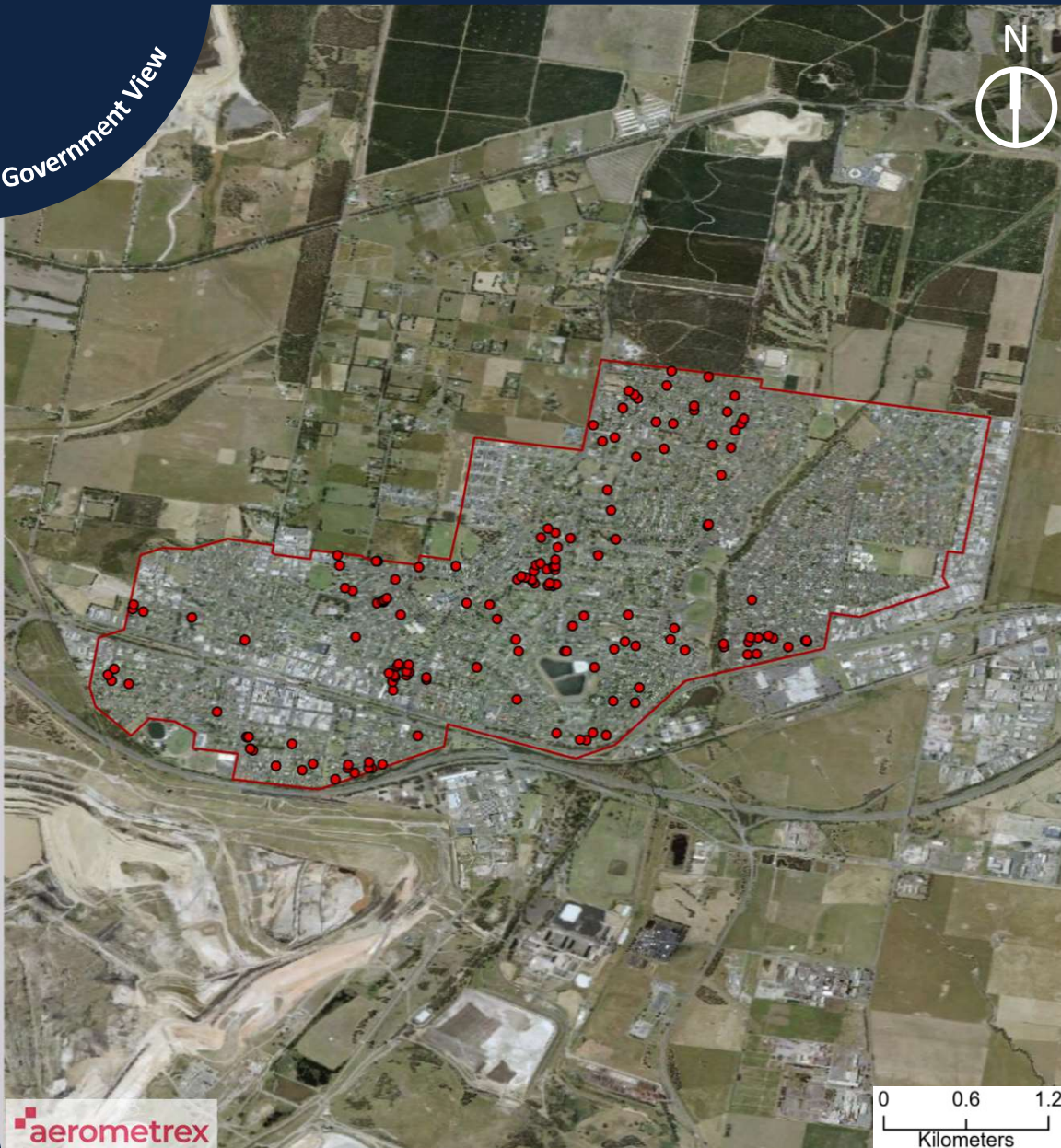
Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Moe Newborough – 10.9km²

The Moe Newborough area of interest is comprised of the 'Moe – Newborough' SA2. This AOI covers an area of 10.9 square kilometres with a population of 16,519 in 2016, and projected growth of 534 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 38.1 degrees.

Local Government View



ACM roofing



151 / 6,964 dwellings

ACM area



19,026m²

ACM mass



296.8 t

Density



Absolute: 2.2%
Relative to avg. roof size: 2.4%

Aerial imagery



11/12/2020

Accuracy



100%



Legend

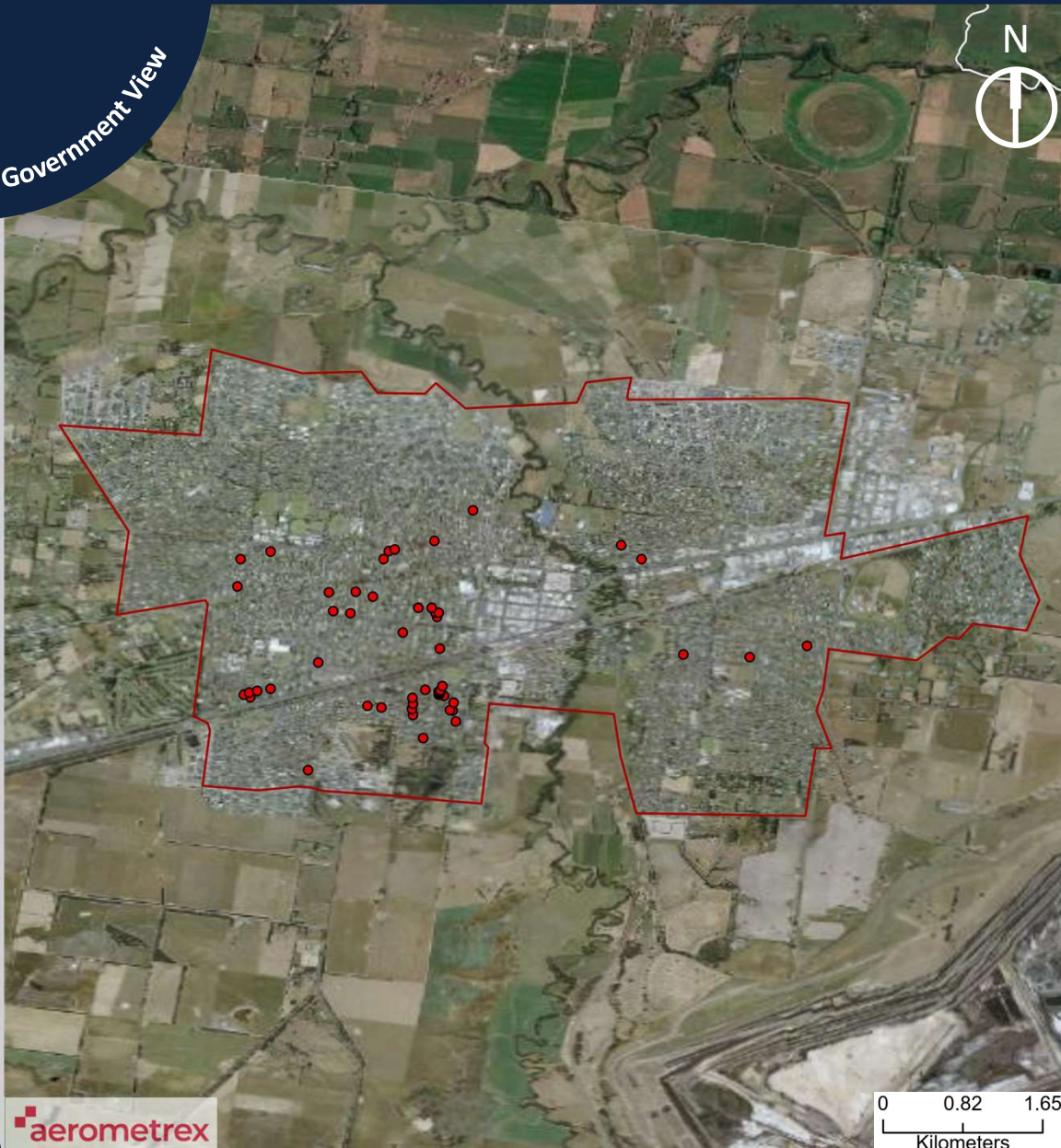
- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Morwell – 8.7km²

The Morwell area of interest is comprised of the 'Morwell' SA2. This AOI covers an area of 8.6 square kilometres with a population of 13,807 in 2016, and projected growth of 360 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 38.2 degrees.

Residential Asbestos Roof Hotspots

Local Government View



aerometrex

ACM roofing



51 / 12,104 dwellings

ACM area



6,426m²

ACM mass



100.2 t

Density



Absolute: 0.4%
Relative to avg. roof size: 0.5%

Aerial imagery



11/12/2020

Accuracy



100%



Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Traralgon – 17.6km²

The Traralgon area of interest is comprised of the 'Traralgon' SA2. This AOI covers an area of 17.5 square kilometres with a population of 26,725 in 2016, and projected growth of 4,705 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 38.1 degrees.

Residential Asbestos Roof Hotspots

Local Government View



ACM roofing



43 / 9,795 dwellings

ACM area



5,418m²

ACM mass



84.5 t

Density



Absolute: 0.4%
Relative to avg. roof size: 0.5%

Aerial imagery



06/09/2020

Accuracy



100%



Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

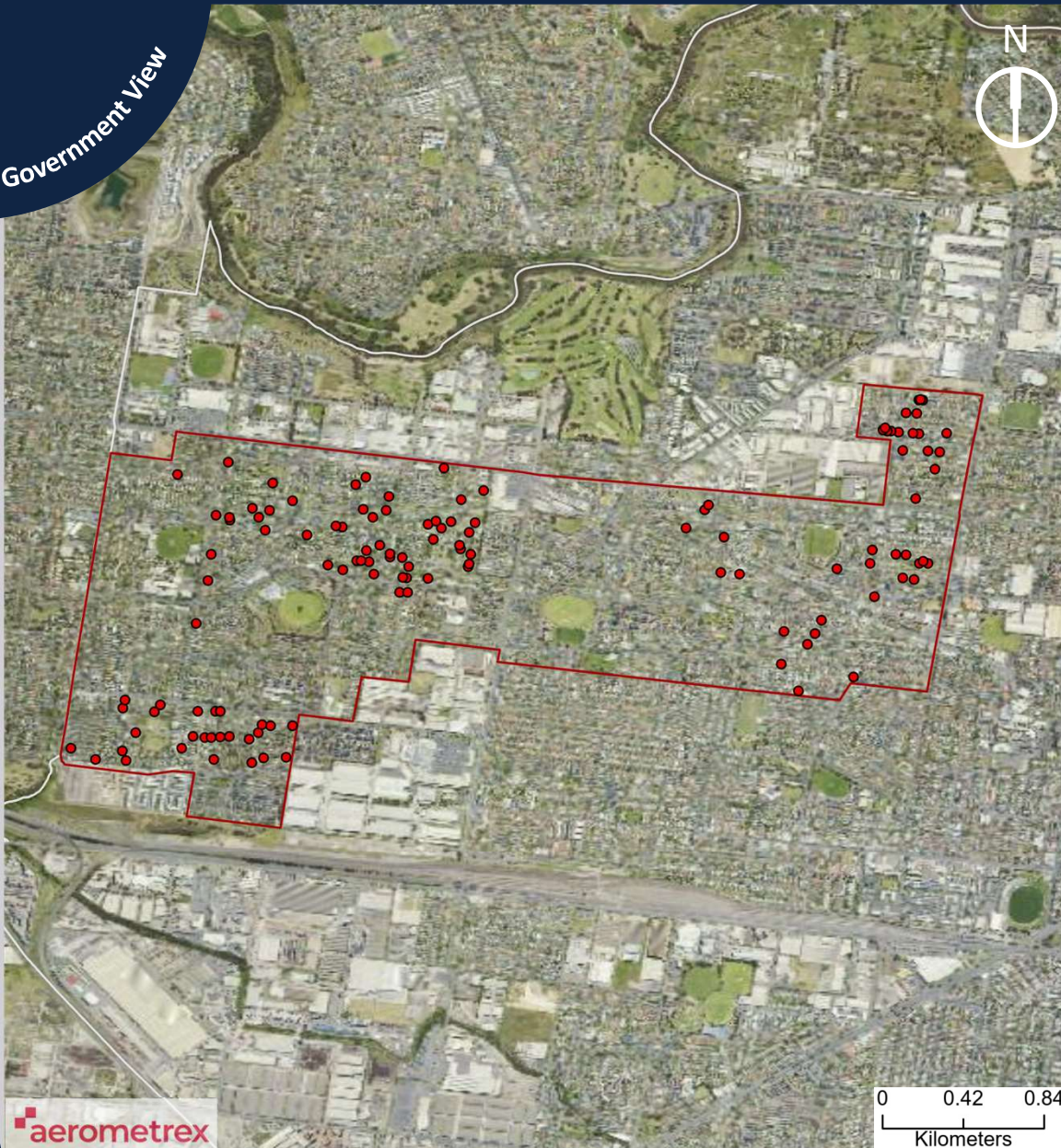
Bulleen – 5.9km²

The Bulleen area of interest is comprised of the 'Bulleen' and 'Templestowe Lower' SA2s. This AOI covers an area of 5.9 square kilometres with a population of 24,645 in 2016, and projected growth of 3,153 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 37.7 degrees.

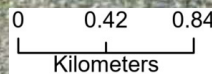


Residential Asbestos Roof Hotspots

Local Government View



aerometrex



ACM roofing



124 / 7,199 dwellings

ACM area



15,624m²

ACM mass



234.7 t

Density



Absolute: 1.7%
Relative to avg. roof size: 1.9%

Aerial imagery



03/11/2020

Accuracy



63%



Earthstar Geographics

Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Braybrook – 4.1km²

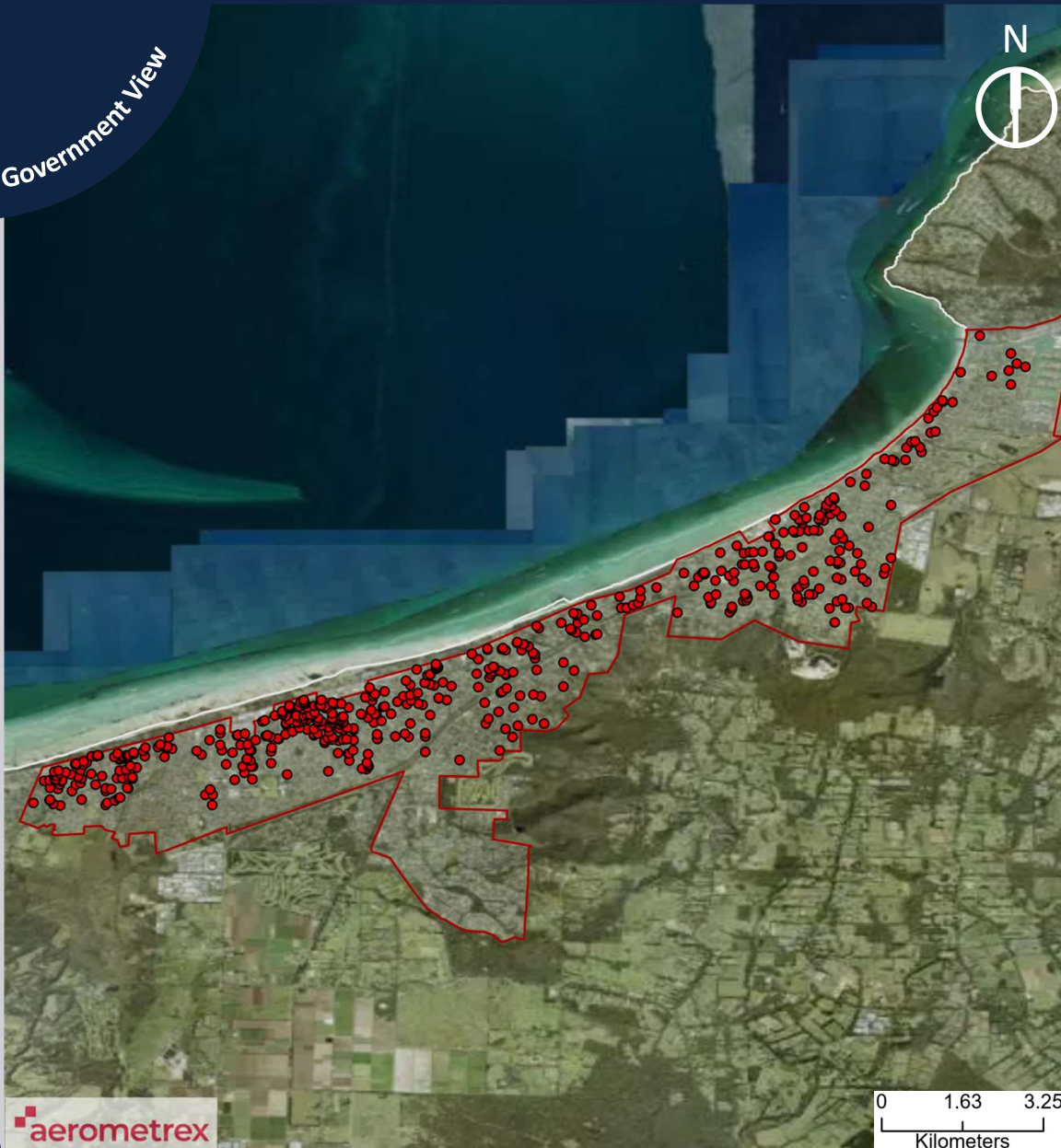
The Braybrook area of interest is comprised of the 'Braybrook' SA2. This AOI covers an area of 4 square kilometres with a population of 18,217 in 2016, and projected growth of 6,717 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 37.7 degrees.



MORNINGTON PENINSULA

Residential Asbestos Roof Hotspots

Local Government View



ACM roofing



509 / 21,782 dwellings

ACM area



64,134m²

ACM mass



1,000.4 t

Density



Absolute: 2.3%
Relative to avg. roof size: 2.5%

Aerial imagery



03/11/2020

Accuracy



100%



Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Mornington Peninsula – 24.8km²

The Mornington Peninsula area of interest is comprised of the 'Dromana' and 'Rosebud – McCrae' SA2s. This AOI covers an area of 24.7 square kilometres with a population of 31,939 in 2016, and projected growth of 7,941 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 38.3 degrees.

Residential Asbestos Roof Hotspots

Local Government View



ACM roofing



82 / 9,104 dwellings

ACM area



10,332m²

ACM mass



161.1 t

Density



Absolute: 0.9%
Relative to avg. roof size: 1.0%

Aerial imagery



23/08/2019

Accuracy



100%



Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Torquay – 7.6km²

The Torquay area of interest is comprised of the 'Torquay' SA2. This AOI covers an area of 7.5 square kilometres with a population of 18,399 in 2016, and projected growth of 10,747 persons between 2016 and 2031. The area is located in Climate Zone 7 (i.e. cool temperate) at a latitude of 38.3 degrees.

Residential Asbestos Roof Hotspots

Local Government View



ACM roofing



60 / 15,232 dwellings

ACM area



7,560m²

ACM mass



117.9 t

Density



Absolute: 0.4%
Relative to avg. roof size: 0.4%

Aerial imagery



17/03/2021

Accuracy



100%



Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Warrnambool – 11.9km²

The Warrnambool area of interest is comprised of the 'Warrnambool – North' and 'Warrnambool – South' SA2s. This AOI covers an area of 11.8 square kilometres with a population of 33,983 in 2016, and projected growth of 4,362 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 38.3 degrees.

Residential Asbestos Roof Hotspots

Local Government View



aerometrex

ACM roofing



59 / 13,167 dwellings

ACM area



7,344m²

ACM mass



115.9 t

Density



Absolute: 0.4%
Relative to avg. roof size: 0.5%

Aerial imagery



03/12/2020

Accuracy



100%



Earthstar Geographics

Legend

- Roofs with Asbestos Containing Material
- Area of Interest Boundaries
- Local Government Areas with Asbestos Hotspots (VIC)
- State & Territory Boundaries

Forest Hill – 5.4km²

The Forest Hill area of interest is comprised of the 'Forest Hill', 'Numawading' and 'Vermont' SA2s. This AOI covers an area of 5.3 square kilometres with a population of 33,014 in 2016, and projected growth of 5,871 persons between 2016 and 2031. The area is located in Climate Zone 6 (i.e. mild temperate) at a latitude of 37.8 degrees.