



Government of **Western Australia**
Department of **Health**

Local government public health indicators and regulatory surveillance report for Western Australia

2019/2020 financial year

Kimberley

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Report description

This document forms a summary of the results received from local government combined reporting for the 2019/2020 financial year (FY).

At the completion of the 2019/2020 FY, the Department of Health (DOH) sent a combination of survey questions to local governments related to their regulatory functions. Survey questions sent to local government under the *Food Act 2008* was part of an established mandatory process to record the activities of enforcement agencies under this legislation. As part of the *Food Act 2008* process, local governments were also invited to participate in a *Public Health Act 2016* survey on a range of activities associated with environmental health risks and management options. While the Public Health Act 2016 survey was non-mandatory, local government was strongly encouraged to participate and assist in developing the survey instrument as it is likely that this instrument will be used as a guide for future mandatory reporting under this legislation. DOH values and appreciates the input from local governments to inform this report.

The data collected under the combined reporting will form part of the evidence base to make informed decisions about the public health risks in WA. Analysis of the data will determine how risks are being managed or need to be managed and will provide insight into how the current legislation is being used. Future data collections will be able to provide ongoing analysis on how risks may change with time.

A total of 66 of 137 (48%) of Western Australia local governments responded to the *Public Health Act 2016 questionnaire* and 137 of 137 (100%) of Western Australia local governments responded to the *Food Act 2008 questionnaire*; For the *Public Health Act 2016 questionnaire* the least represented regions were the Pilbara and the South West regions (at 25% representation) and the greatest representation was from the Kimberley where 75% of LGAs in this region responded. A visual regional representation is shown in Figure 1.

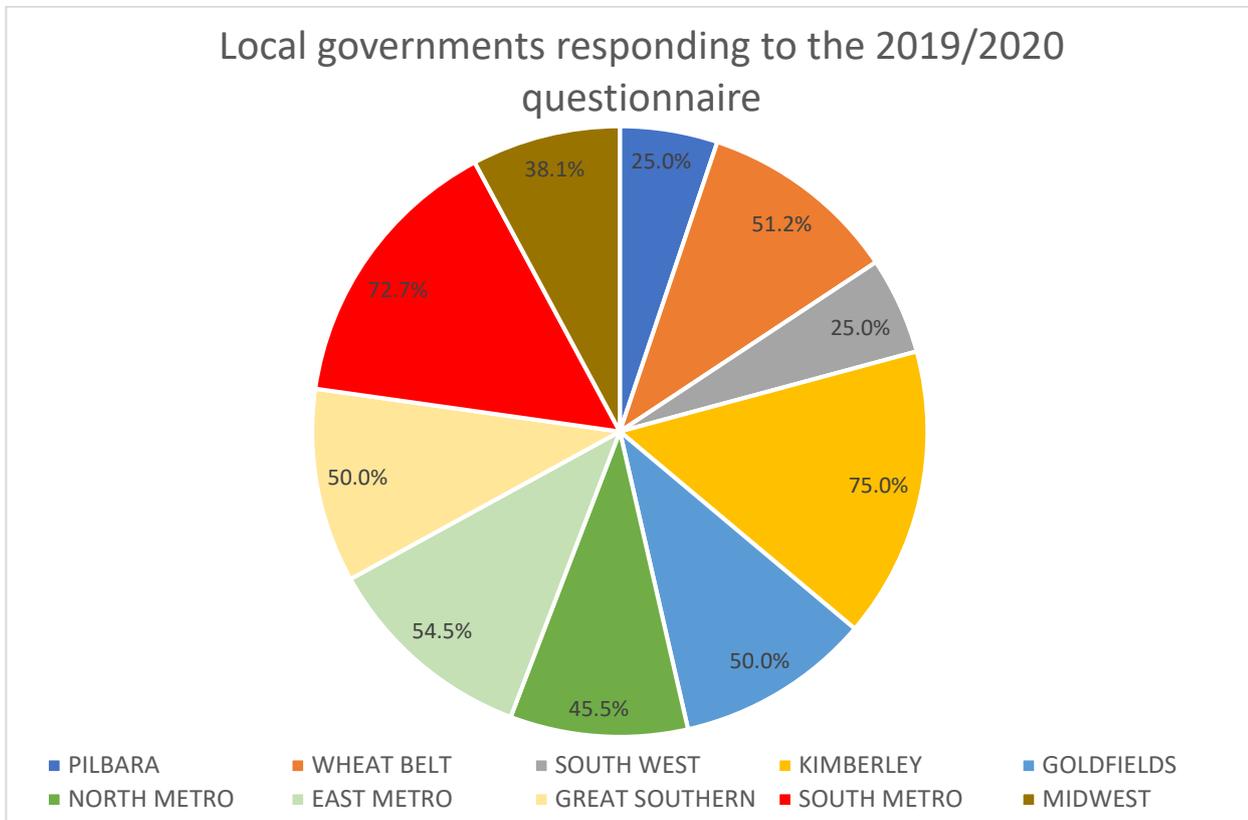


Figure 1 Regional representation (% of all LGAs located in that region that responded).

The regions listed in this report are DOH health regions. A summary of the regional representation is available in Table 1.

Table 1 *Public Health Act 2016* questionnaire regional representation

Survey instrument	Region	State	LG return rate	Representation
Local government (optional reporting)	Kimberley	WA	3 from 4	75.00%
Local government (optional reporting)	South Metro	WA	8 from 11	72.73%
Local government (optional reporting)	East Metro	WA	6 from 11	54.54%
Local government (optional reporting)	Wheat belt	WA	22 from 43	51.15%
Local government (optional reporting)	Great Southern	WA	6 from 12	50.00%
Local government (optional reporting)	Goldfields	WA	4 from 8	50.00%
Local government (optional reporting)	North Metro	WA	5 from 11	45.45%
Local government (optional reporting)	Midwest	WA	8 from 21	38.10%
Local government (optional reporting)	South West	WA	3 from 12	25.00%
Local government (optional reporting)	Pilbara	WA	1 from 4	25.00%

This report represents the public health risks across the **Kimberley** region.

This report has been arranged into general public health risks areas that consider drivers of environmental and public health issues as well as management considerations for these issues.

Representation in the Kimberley region was 3 out of 4 local governments for the *Public Health Act 2016* questionnaire response which equates to a 75.00% representation. The *Food Act 2008* annual reporting questionnaire had 100% representation across this region.

Percentage values within this report have all been presented to two decimal figures. These values have been brought over directly in database format and have not been altered for the purposes of the report.

Analysis across this region will include comparisons to neighbouring metro regions and WA averages as well as discussion about potential trends or points of interest within the region. Projections in this report are constructed using regional and population-based weighted averages.

Report and data prepared by Z Alach and A Radomiljac, Science and Policy Unit, Environmental Health Directorate, Public and Aboriginal Health Division.

Regulatory workforce and common drivers for public health

This report represents the public health risks across the **Kimberley** region. In order to understand how this region relates to other regions, Appendices 1 and 2 provide maps of Western Australia (WA) metropolitan health regions and WA country health service regions respectively and Appendix 3 provides a list of local governments within each of these regions.

The report begins with the available data relating to population numbers, area, dwelling types and the regulatory workforce. It follows with sections relating to chronic and notifiable disease. These are all fundamental considerations for environmental health risk management for which local government has regulatory oversight. Many of the remaining sections of this report use these fundamental considerations for analytical purposes.

Population, area and housing

WA in 2019/2020 had 2,663,561 people and 959,483 dwellings across an area of 2,526,646 square kilometres. Figure 2 provides an overview of WA population showing a gradual increase in total number over time.

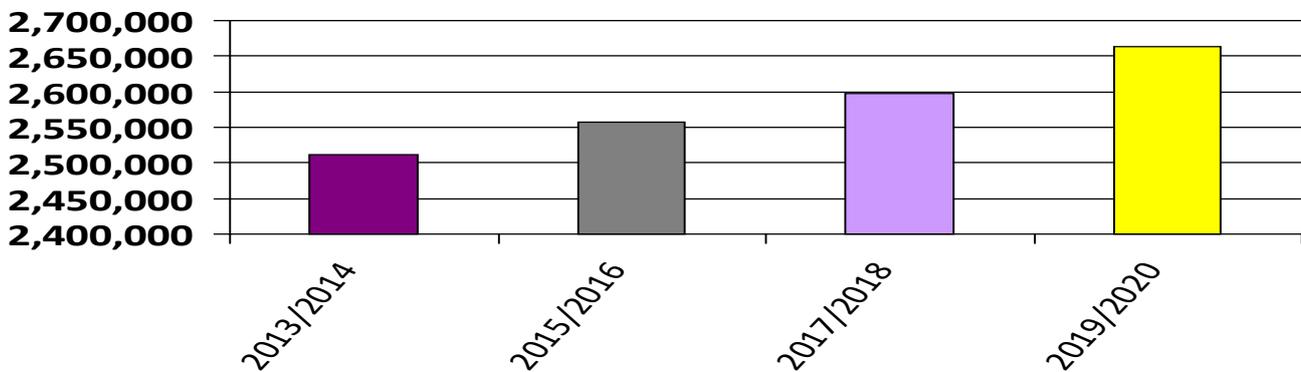


Figure 2 WA population by intermittent FY

The combined metro area has a land area of 8,090 square kilometres (0.32% of WA total) yet has 79.97% of the population and 75.86% of total dwellings. This includes 74.47% of separate houses, 86.51% of semi-detached or terrace houses, and 88.65% of flats / units / apartments. The relative high density of population and dwellings in the metro area can sometimes be significant in terms of the relative distribution of risks and risk management across the state. This report will attempt to identify when a particular risk distribution is skewed by the metro regions.

The Kimberley region represents 36,054 people (1.35% of WA total), 15,671 dwellings (1.63% of WA total) and has an area of 419,260 square kilometres (16.59% of WA total). This represents a density of about 0.09 persons per square kilometre.

The population percentage for the Kimberley region represents a particular reference marker for the purpose of this report. The special reference marker for Kimberley region is **1.35% of WA total**. This reference marker can be used in all sections of the report to determine whether the proportion of any issue is relative to the expected regional proportion based on population.

Populations and dwelling numbers in the neighbouring Pilbara region were 62,841 population (2.36% of WA total), 20,386 dwellings and area of 506,780 square kilometres (representing a density of 0.12 persons per square kilometre) and Midwest were 62,031 population (2.33% of WA total), 31,613 dwellings and area of 601,869 square kilometres (representing a density of 0.10 persons per square kilometre) were both slightly more densely populated than the Kimberley region.

Increased density can create potential negative impacts such as noise, odour, light and other lifestyle activities. These potential negative impacts can often be anticipated and addressed at the planning and development stage. To minimise the adverse impacts of high density residential living, local governments can recommend structural requirements such as sound proofing / insulation, double glazing on windows, or design aspects related to location of air conditioning units as well as other appropriate building/construction measures.

A lower proportion of separate houses or a higher proportion of semi-detached or terrace houses and/or flats / units / apartments as a residential dwelling type, can be indicators for an increased proximity of residents living near to each other in a community.

The Department of Communities provides Local Government Area Housing Snapshots across WA regions which provides useful data for this report. Table 2 provides a summary of housing types across the South Metro, WA and comparative regions.

Table 2 Residential dwelling types across WA and regions

Dwelling type / Region	Separate houses	Semi-detached houses	Flats / units / apartments	Temporary type dwellings	All dwellings
Western Australia	751,024	103,999	84,480	19,980	959,483
Kimberley region	8,953	1017	766	4935	15,671
Western Australia dwelling proportionality	78.27%	10.84%	8.80%	2.08%	100.00% of WA total
Kimberley region dwelling proportionality	57.13%	6.49%	4.89%	31.49%	1.63% of WA total
Pilbara region dwelling proportionality	67.45%	12.15%	8.16%	12.24%	2.12% of WA total
Midwest region dwelling proportionality	76.19%	4.81%	4.97%	14.03%	3.29% of WA total
Western Australia per 10,000 people	2,820	391	317.2	75	3,602
Metro region per 10,000 people	2626.6	420.4	350.8	17.8	3417.2
Kimberley region per 10,000 people	2,483	282.1	212.5	1368.8	4346.5
Pilbara region per 10,000 people	2,188	394.2	264.6	397.2	3244.1
Midwest region per 10,000 people	3,883	245.2	253.3	715.1	5096.3

Across the metro region, the proportion of separate houses was 2626.6 per 10,000 people, the proportion of semi-detached houses was 420.4 per 10,000 people and the proportion of flats was 350.8 units per 10,000 people.

The housing type within the Kimberley region reflects a low-density housing stock when compared to the three metro regions and the remainder of the state.

The number of temporary type dwellings across WA was 19,980 (at 75 temporary dwellings per 10,000 people).

The Kimberley had a much larger representation of temporary type dwellings (cabins, caravans, tents etc) in total figures at 1368.8 per 10,000 people (4935 total) when compared to the Pilbara at 397.2 temporary dwellings per 10,000 people and the Midwest at 715.1 temporary dwellings per 10,000 people. There are public health implications with a larger proportion of people living in temporary accommodation. The public health implications of temporary type dwellings may be compounded with other social drivers such as socio-economic pressures.

Enforcement agencies

Across WA there were a total of 281.8 *Public Health Act 2016* full-time equivalent (FTE) authorised officers. There was 58.1 persons that assisted with the duties of authorised officers. Figure 3 provides an overview of Total FTE PH Act authorised officers showing some small variation in total number over 3 years.

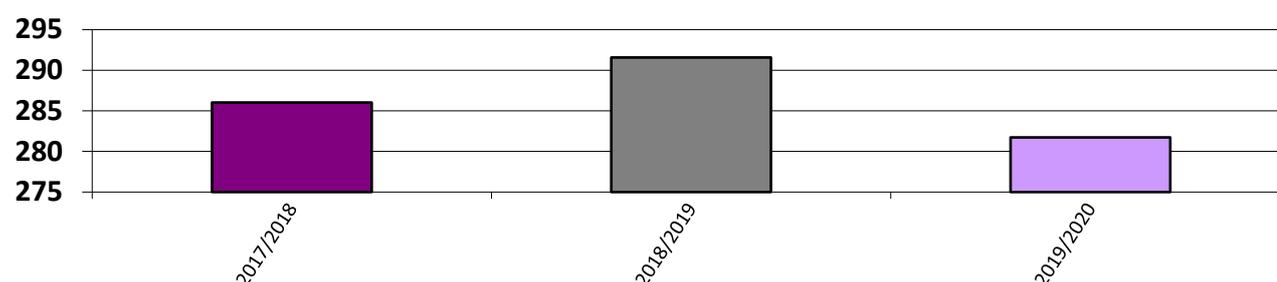


Figure 3 Total FTE Public Health Act authorised officers by FY

Table 3 provides a summary overview of PH Act authorised officers and persons that assisted with authorised officers for each region showing a range of analytical variation across regions.

Table 3 Regulatory numbers by authorised officers and authorised officer assistants by region

Region	No. FTE authorised officers	% of WA FTE authorised officers	FTE authorised officers per 10,000 people	FTE authorised officers per 10,000 square kilometres	No. FTE authorised officer assistants	% of WA FTE authorised officer assistants	FTE authorised officer assistants per 10,000 people
Kimberley	10	3.55%	2.8	0.2	1.2	2.07%	0.3
Pilbara	8	2.84%	1.3	0.2	2.2	3.79%	0.4
Midwest	11.4	4.05%	1.8	0.2	3.2	5.51%	0.5
Goldfields	5.6	1.99%	1.1	0.1	3.3	5.68%	0.6
Wheat Belt	31.9	11.32%	4.2	2	8.2	14.11%	1.1
Great Southern	7.7	2.73%	1.2	1.6	1.6	2.75%	0.3
South Metro	57.3	20.33%	0.8	167.8	6.8	11.70%	0.1
North Metro	58.4	20.72%	0.8	608.5	12	20.65%	0.2
East Metro	63.9	22.68%	0.9	172	12.9	22.20%	0.2
South West	27.6	9.79%	1.5	11.5	6.7	11.53%	0.4

The Kimberley region has a total of 10 FTE authorised officers (at 3.55% of WA total). The Kimberley region sits in between the Pilbara with 8 authorised officers (at 2.84% of WA total) and the Midwest with 11.4 authorised officers (at 4.05% of WA total).

The Kimberley region has a total of 1.2 persons that assist with regulatory tasks. The Kimberley region has less assistants than the Pilbara with 2.2 assistants and the Midwest with 3.2 assistants.

The Kimberley region equates to 2.8 FTE authorised officer per 10,000 people and 0.3 FTE assistant per 10,000 people which combines to be 3.1 regulatory officers per 10,000 people.

Across WA the combined authorised officers and assistants FTE total was 339.9. This equate to 1.3 per 10,000 people. Table 4 provides a summary for combined authorised officer and authorised officer assistants with a range of analytical variation across all regions.

Table 4 Total regulatory numbers (authorised officers and assistants combined) by region

Region	No. FTE authorised officers and assistants	% of WA FTE authorised officers and assistants	FTE authorised officers and assistants per 10,000 people	FTE authorised officers and assistants per 10,000 square kilometres	No. local government areas in region	FTE authorised officers and assistants per local government (average)
Kimberley	11	3.30%	3.1	0.3	4	2.8
Pilbara	10	3.00%	1.6	0.2	4	2.5
Midwest	14	4.27%	2.3	0.2	21	0.7
Goldfields	9	2.62%	1.7	0.1	8	1.1
Wheat Belt	40	11.83%	5.3	2.5	43	0.9
Great Southern	9	2.74%	1.5	1.9	12	0.8
South Metro	64	18.86%	0.9	187.7	11	5.8
North Metro	70	20.71%	1	733.5	11	6.4
East Metro	77	22.59%	1.1	206.7	11	7.0
South West	34	10.09%	1.9	14.3	12	2.8

The total percentage of authorised officers (FTE) in the metro area was 63.73%. The total percentage of authorised officer assistants (FTE) in the metro area was 54.56%. These combine to be a metro percentage of 62.17%. This can be viewed in context with the metro population percentage of 79.97% of the population.

A total of 2 out of 4 (50.00%) local governments in the Kimberley region reported difficulty in recruiting authorised officers in 2019/2020.

Chronic disease factors

Public Health Planning

Across WA, 21.20% of local governments had developed a public health plan.

In the Kimberley region, 0.00% of local governments had developed a public health plan.

The Kimberley region is not yet developed in relation to its local governments adopting public health plans. The legislative requirement for completed public health plans will align with final phase of the *Public Health Act 2016* staged implementation. The DOH will continue to monitor the development of local governments public health plans.

Across the metro area, 58.06% of WA local governments had developed a public health plan.

Alcohol retail outlets

The National Drug Law Enforcement Research Fund (Australia) found that the number of alcohol retail outlets is highest in the more populated LGAs of WA along the coast and inland at Kalgoorlie. This pattern is reversed when taking the estimated residential adult population into account, with the highest number of alcohol outlets per person (adult) occurring in the more remote and less-populated inland LGAs.

The Department of Local Government, Sport and Cultural Industries (DLGSC) regulates alcohol sales outlets across WA and has provided data for this report. The total number of licenced alcohol sales outlets in WA was 5,366.

In the Kimberley region, the total number of licenced alcohol sales outlets was 122 at 2.26% of WA total which is less than both the Pilbara region at 3.33% of WA total, and the Midwest region at 4.54% of WA total. The combined metro total was 3,279 which equates to 60.72% of the WA total. A regional analysis of alcohol sales outlets is provided in Table 5.

Table 5 Total licenced alcohol retail sales outlets by region

Region	No. licenced alcohol retail sales outlets per 10,000 people	No. licenced alcohol retail sales outlets per 10,000 square kilometres
Kimberley	33.8	3
Pilbara	29	4
Midwest	39.5	4
Goldfields	39.1	3
Wheat Belt	43.5	21
Great Southern	41.5	54
South Metro	13.5	2,752
North Metro	13.7	10,471
East Metro	19	3,591
South West	40.6	308

Tobacco retail outlets

The DOH regulates retail tobacco outlets across WA. The total number of licenced tobacco retail sales outlets in WA was 3,423.

In the Kimberley region, the total number of licenced tobacco retail sales outlets was 97 at 2.83% of WA total which is less than both the Pilbara region at 6.57% of WA total, and the Midwest region at 5.34% of WA total. The combined metro total was 2,151 which equates to 62.78% of the WA total. A regional analysis of retail tobacco outlets is provided in Table 6.

Table 6 Total licenced tobacco retail sales outlets by region

Region	No. licenced tobacco retail sales outlets per 10,000 people	No. licenced tobacco retail sales outlets per 10,000 square kilometres
Kimberley	26.9	2
Pilbara	36	4
Midwest	30	3
Goldfields	31	2
Wheat Belt	32	15
Great Southern	18	23
South Metro	10	1,935
North Metro	9	6,512
East Metro	12.3	2,329
South West	13.1	99.7

Policies for preventative illness

Local governments apply policy and planning frameworks to address the causes of preventative illness. Local government policies provide an opportunity to raise awareness amongst the community of public health concerns and guide the implementation of community strategies to improve overall rates of preventable illnesses and reduce the burden of disease across WA.

Local governments provided an indication about a range of their disease prevention policies. A summary of the results for Kimberley, WA and comparative regions is presented in Table 7.

Table 7 Local governments with disease prevention policies across WA and regions

Policy / Region	Alcohol management	Climate change	Healthy eating / fast food	Public open space	Shade	Tobacco / smoke free environment
Western Australia	48.11%	38.95%	21.66%	67.35%	25.44%	31.69%
Kimberley	33.33%	33.33%	33.33%	66.67%	0.00%	0.00%
Pilbara	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%
Midwest	0.00%	0.00%	0.00%	37.50%	37.50%	50.00%
Metro combined	64.17%	72.78%	41.39%	90.28%	48.06%	50.83%

The Kimberley region is moderate in comparison to other regions with its local government uptake for adopting policies on most issues. The Kimberley region was advanced in policy on public open space. The Kimberley region was moderate in its development in relation to its local governments adopting alcohol management, healthy eating / fast food and climate change.

The three metro regions had more local governments with established prevention policies in comparison to non-metro regions in nearly all disease prevention policies.

Regional Price Index

The Department of Primary Industries and Regional Development has published the 2019 Regional Price Index which contrasts the cost of a common basket of goods and services at regional locations to provide an insight into differences in regional consumer goods and services. Table 8 provides a summary across all regions, indexed to the three metro regions.

Table 8 Regional Price Index of the cost of a common basket of goods and services

Region	Food commodity group (2019)	Cigarettes, alcohol and tobacco commodity group (2019)	Clothing commodity group (2019)	Housing commodity group (2019)	Household equipment and operation commodity group (2019)	Health and personal care commodity group (2019)	Transport commodity group (2019)	Recreation and education commodity group (2019)
Kimberley	112.1	117.5	129.0	118.9	109.8	110.2	116.0	120.9
Pilbara	106.1	107.8	108.5	132.7	108.4	121.4	107.2	108.6
Midwest	104.8	108.4	107.8	104.4	107.8	101.2	104.2	109.4
Goldfields	105.1	107.7	100.5	101.7	101.6	104.0	104.0	101.2
Wheat belt	99.5	100.9	96.0	99.3	101.7	98.0	99.7	102.1
Great Southern	97.0	100.1	99.0	103.8	98.7	105.1	100.6	103.8
South West	100.6	100.8	102.5	102.4	102.5	101.4	101.2	104.0
North Metro	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
East Metro	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
South Metro	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Although the regional price differentials do not provide direct evidence of increased chronic disease factors, the increased costs of common goods and services in northern and eastern regions of WA suggest an additional burden to individuals attempting to make similar lifestyle choices in comparison to regions within closer proximity to the metro areas.

The Kimberley region is clearly the most affected region in terms of common goods and services affected by price differentials.

Notifiable disease

The Communicable Disease Control Directorate of the DOH maintains a register of all notifiable diseases across WA and has supplied the data for this section.

Notifiable enteric disease

A combination of food and water regulatory management and monitoring functions are undertaken in response to actual or perceived risks from enteric disease. Food management in particular is often undertaken in response to enteric disease complaints.

Total notifiable enteric disease cases across WA was 6,792 (at 25.5 cases per 10,000 people).

Total notifiable cases of enteric disease in the Kimberley region was 150 (at 41.6 cases per 10,000 people). This was well above the state average and more than both the Pilbara 172 (27.4 cases per 10,000 people) and the Midwest region 163 (26.3 cases per 10,000 people) in total cases per population unit.

In WA, the main enteric disease were:

campylobacteriosis at 3,297 (12.4 cases per 10,000 people) followed by salmonellosis with 2,009 (at 7.5 cases per 10,000 people), cryptosporidiosis (480 at 1.8 cases per 10,000 people), rotavirus (452 at 1.7 cases per 10,000 people), and shigellosis (333 at 1.3 cases per 10,000 people). Additionally, yersinosis, hepatitis A and hepatitis E were present in small numbers.

In the Kimberley region, the main enteric diseases were:

campylobacteriosis with 38 (at 10.5 cases per 10,000 people) followed by salmonellosis with 54 (at 15 cases per 10,000 people), cryptosporidiosis (3 at 0.8 cases per 10,000 people), with rotavirus (4 at 1.1 cases per 10,000 people), shigellosis (49 at 13.6 cases per 10,000 people) and yersinosis ().

As a comparison, in the Pilbara region:

campylobacteriosis (58 at 9.2 cases per 10,000 people) followed by salmonellosis (65 at 10.3 cases per 10,000 people) cryptosporidiosis (18 at 2.9 cases per 10,000 people), rotavirus (12 at 1.9 cases per 10,000 people) and shigellosis (16 at 2.5 cases per 10,000 people).

In the Midwest region:

campylobacteriosis (59 at 9.5 cases per 10,000 people) followed by salmonellosis (42 at 6.8 cases per 10,000 people), cryptosporidiosis (3 at 0.5 cases per 10,000 people), rotavirus (17 at 2.7 cases per 10,000 people) and shigellosis (32 at 5.2 cases per 10,000 people).

The Kimberley region has the highest rate of total cases of enteric disease across the state driven by its high rates of salmonellosis and shigellosis.

Table 9 provides a summary of enteric disease across all WA regions in cases per 10,000 people. Notably the Kimberley region had much higher rates of shigellosis cases than other regions and higher much higher rates of salmonellosis than all other regions.

Table 9 Notifiable enteric disease by population by region

Region	Total notifiable enteric disease cases	Total notifiable enteric disease cases per 10,000 people	Campylobacteriosis cases per 10,000 people	Salmonellosis cases per 10,000 people	Cryptosporidiosis cases per 10,000 people	Rotavirus cases per 10,000 people	Shigellosis cases per 10,000 people
Kimberley	150	41.6	10.5	15	0.8	1.1	13.6
Pilbara	172	27.4	9.2	10.3	2.9	1.9	2.5
Midwest	163	26.3	9.5	6.8	0.5	2.7	5.2
Goldfields	102	19.5	8.6	6.7		1.5	2.7
Wheat Belt	176	23.3	12.2	6.9	0.9	1.7	0.8
Great Southern	109	17.3	10.3	4	0.8	0.5	0.6
South Metro	1,856	26.7	14	7.8	1.3	1.7	1.1
North Metro	1,935	26.3	12.4	7.7	2.7	1.6	1
East Metro	1,637	23.3	11.4	6.8	1.6	1.9	0.8
South West	492	27.1	14.4	8.1	2.5	1.2	0.2

From a year-on-year perspective, all enteric disease cases also display increase above general population increase as can be seen in Figure 4 with average annual cases significantly increasing when comparing the 2008-2013 period average to the 2016-2020 period average.

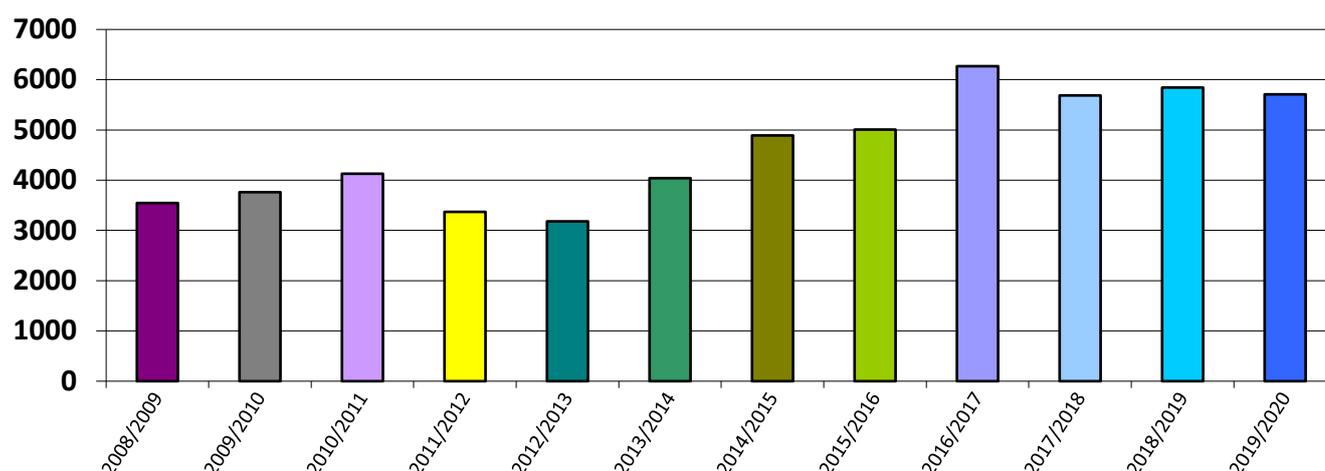


Figure 4 All Enteric Disease Cases across WA by FY

Legionellosis

Legionellosis cases in WA were 64 of which 42 were *Legionella longbeachae* (found predominantly in potting soil and compost) while 22 were *Legionella pneumophila* cases (typically found in water systems).

Legionellosis cases were 0 in the Kimberley region. The Kimberley has less cases of Legionellosis than in the Pilbara (1) and the Midwest region (3).

Notifiable vector borne disease

Vector borne disease as a public health burden will be dependent upon geographic landform where specific vectors such as mosquitoes or other pest species that can be managed through control programs.

Some variation may be evident in regional reported case numbers for local data if there is enhanced monitoring based on the follow-up of the likely disease onset location as opposed to a residential address of a case. Enhanced data can provide for more specific disease monitoring. This report does not consider enhanced data.

Total vector borne disease cases across the state was 600 at 2.3 cases per 10,000 people with 340 Ross river virus/Barmah forest virus cases at 1.3 cases per 10,000 people.

Table 10 provides a summary of vector borne disease across all WA regions. Table 10 indicates that the metro regions are generally low-moderate with respect to rates of vector borne disease.

Table 10 Notifiable vector borne disease by population by region

Region	Total vector-borne disease cases	Total vector-borne disease cases per 10,000 people	Ross river virus/Barmah forest virus cases per 10,000 people	Non-endemic disease (malaria/dengue) cases per 10,000 people	Chikungunya virus infection/arboviral encephalitis cases per 10,000 people
Kimberley	36	10	9.2	0.8	0
Pilbara	25	4	3.5	0.5	0
Midwest	15	2.4	1.5	1	0
Goldfields	16	3.1	1.7	1.3	0
Wheat Belt	11	1.5	0.9	0.5	0
Great Southern	18	2.9	2.1	0.8	0
South Metro	195	2.8	1.5	1.2	0.1
North Metro	113	1.5	0.6	0.9	0.1
East Metro	109	1.6	0.7	0.8	0
South West	62	3.4	2.5	0.7	0.2

The Kimberley region had 36 vector borne disease cases (10 cases per 10,000 people) with 33 of these Ross river virus/Barmah forest virus cases which represented 9.2 Ross river virus/Barmah forest virus cases per 10,000 people.

The Kimberley region total was very high as a regional proportion for total vector borne disease cases.

The Kimberley region total was very high for Ross river virus/Barmah forest virus cases as can be seen when compared to the Pilbara at 3.5 cases per 10,000 people, the South West at 2.5 cases per 10,000 people, the Great Southern at 2.1 cases per 10,000 people, the Goldfields at 1.7 cases per 10,000 people, the South Metro region at 1.5 cases per 10,000 people, the Wheat Belt region at 0.9 cases per 10,000 people, the East Metro region at 0.7 cases per 10,000 people and the North Metro region at 0.6 cases per 10,000 people.

From a year-on-year perspective, Ross river virus/Barmah forest virus cases had a notable increase in total cases across WA during the 2012-2015 period as can be seen in Figure 5.

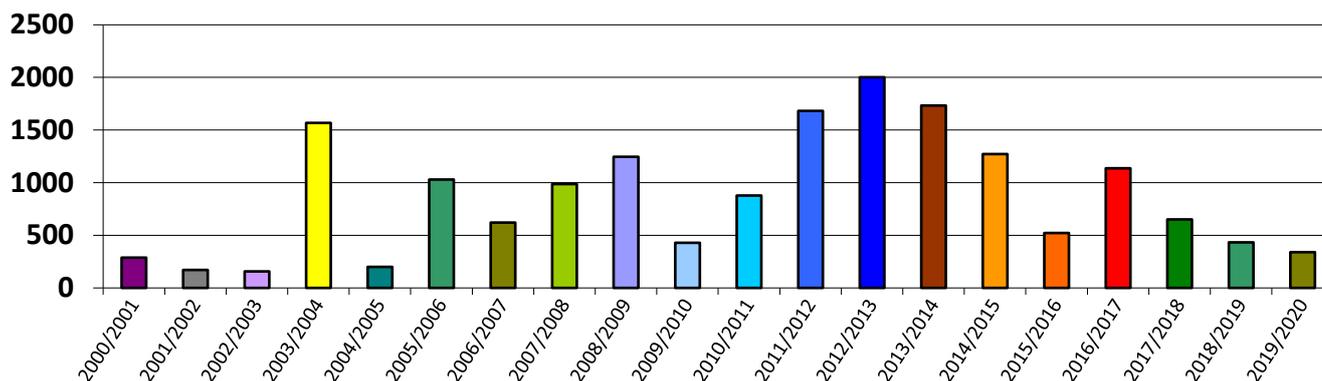


Figure 5 Ross River Virus/Barmah Forest Virus cases across WA by FY

There has been an ongoing increase across a similar time period for non-endemic disease (malaria/dengue) which represent disease onset from various origins from outside WA. Figure 6 provides the year-on-year aggregated non-endemic disease cases for WA.

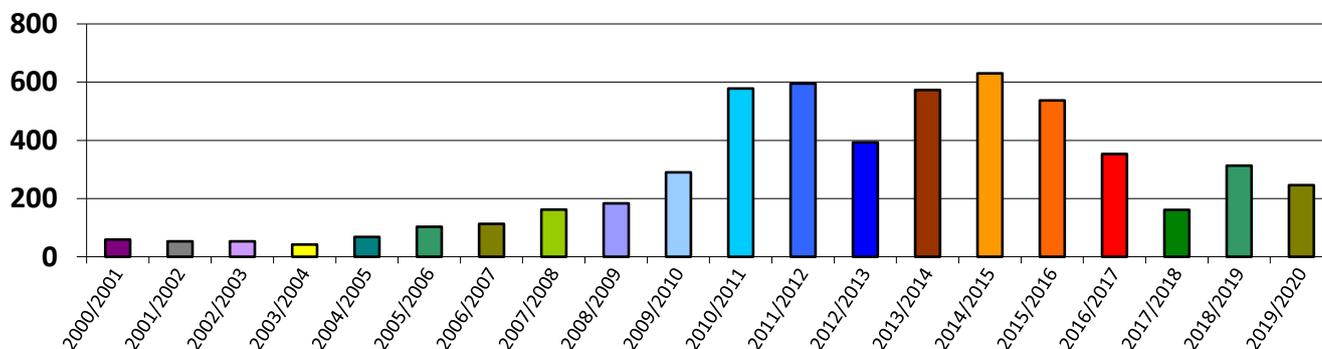


Figure 6 Non-endemic vector borne disease (malaria/dengue) cases across WA by FY

There were 0 Chikungunya virus infection/Arboviral encephalitis cases reported in the Kimberley region. There were 14 total cases of Chikungunya virus infection/Arboviral encephalitis in WA. These were distributed across the metro regions (10) and the South West region (4).

Many areas in the Kimberley region are located in areas that are prone to mosquito prevalence particularly if wetlands are in the vicinity. In the Kimberley region mosquito management plans can be implemented to minimise the potential for mosquito breeding. A Mosquito Management Plan can be developed within the local government strategy.

Notifiable Sexually Transmissible Infections and Blood-borne Viruses in WA

The [Sexual Health and Blood-borne Virus Program](#) of the DOH provides data on sexual health, sexually transmitted infections (STIs) and blood-borne viruses (BBVs). Table 11 provides regional data for the total numbers and rates of STI and BBV diseases in the community.

Table 11 Sexually Transmissible Infections and Blood-borne Viruses by region (per 10,000 population)

Region	Total STI and BBV cases	Chlamydia rate	Gonorrhoea rate	Infectious syphilis rate	Hepatitis B rate	Hepatitis C rate
Metro	13,114	42.23	13.39	1.93	2.10	3.22
South West	878	32.80	9.56	0.78	0.89	4.78
Midwest	392	38.08	15.58	0.96	1.12	7.23
Pilbara	677	56.51	37.78	12.43	2.32	3.15
Kimberley	1,044	148.14	112.87	25.96	4.23	3.39
Great Southern	242	26.60	5.42	0.82	0.82	6.07
Goldfields	491	57.16	20.29	4.10	2.23	7.63
Wheat Belt	244	20.94	4.21	1.05	1.05	4.87

Local government can work with local population health services (metropolitan or country health services) to provide information and guidance to communities in the attempt to reduce the burden of disease from STIs and BBVs. Rates of STI and BBV per 10,000 people can provide indications where local government planning may benefit from health promotion strategies.

The Kimberley region had the highest rates for cases per 10,000 people for chlamydia, gonorrhoea, infectious syphilis and hepatitis B.

Environment-related (EnvR) hospitalisations in WA

The [Epidemiology Directorate of the DOH](#) has provided data on the most common types of environment-related hospitalisations. Data is sourced from the WA Hospital Morbidity Data Collection (2010 – 2019). The International Statistical Classification of Diseases and Related Health Problems, Australian Modification (ICD-10-AM) 11th edition codes were used to identify environment-related hospitalisations due to major and minor disease groupings. Table 12 provides regional data for the total numbers, percentages and rates of EnvR hospitalisations in the community for the 2019 calendar year.

Table 12 Environment-related (EnvR) hospitalisations by region (2019)

Region	Total hospitalisations	Total EnvR hospitalisations	Total EnvR hospitalisations %	Total EnvR hospitalisations per 10,000 people
East Metro	73,524	11,114	15.12	158.5
South Metro	72,391	11,077	15.30	159.5
North Metro	79,463	11,808	14.86	160.8
South West	22,057	3,417	15.49	188.0
Midwest	8,844	1,375	15.55	221.7
Pilbara	4,806	756	15.73	120.3
Kimberley	6,937	1,094	15.77	303.4
Great Southern	8,129	1,319	16.23	209.6
Goldfields	5,926	928	15.66	177.3
Wheat belt	10,636	1,649	15.50	218.5

Local government can work with local population health services (metropolitan or country health services) to provide information and guidance to communities in the attempt to reduce the burden of disease from EnvR hospitalisations.

The data supplied from the WA Hospital Morbidity Data Collection spanning 10 years has been used to generate EnvR hospitalisations data which has been further represented in graph format by year in this report. It should be noted that all values plotted are derived numbers and will be subject to many influencing factors. Two graph formats have been represented for the Kimberley region:

EnvR hospitalisations as a percentage of total hospitalisations, can provide a coarse indicator for the burden of disease. This coarse indicator is dependent on the assumption that the fraction of the EnvR issue in the environment remains constant.

EnvR age-standardised hospitalisation rates are generated by applying weights to count data and can also provide a coarse indicator for the burden of disease.

Figure 7 provides a representation of Kimberley region data for aggregated EnvR hospitalisations as a percentage of all Kimberley region hospitalisations by year between the years 2010 and 2019.

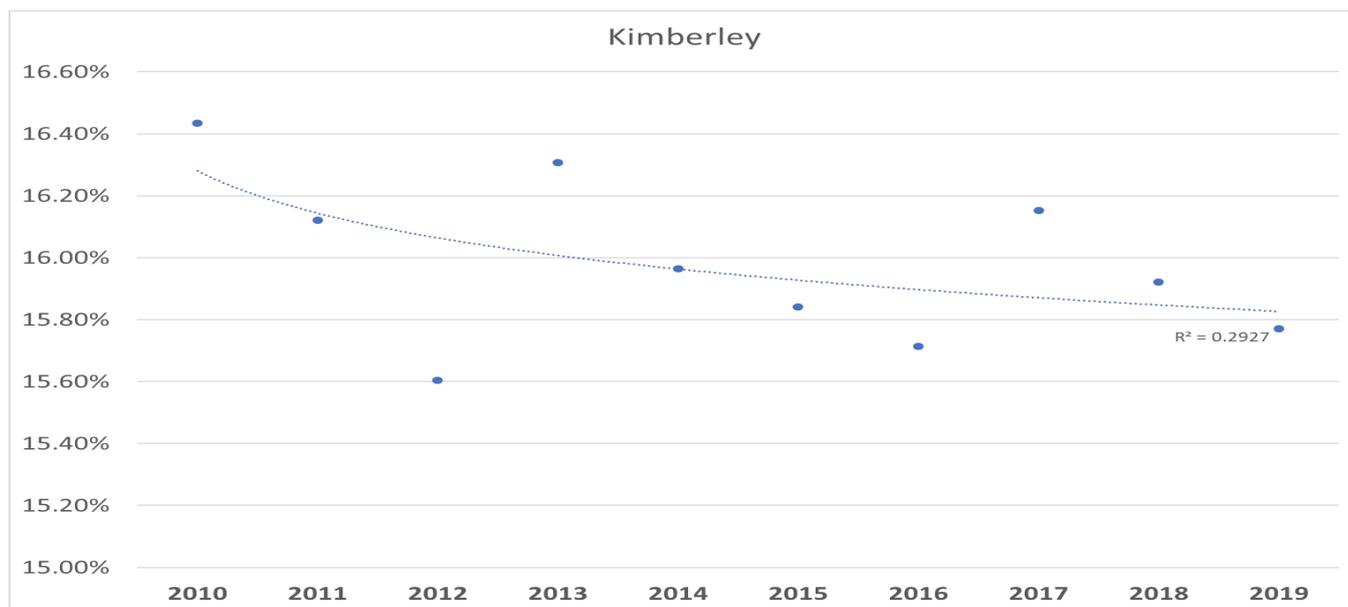


Figure 7 EnvR hospitalisations as a percentage of total hospitalisations across the Kimberley region by year (2010-2019)

The trendline in Figure 7 suggests a decreasing trend in the Kimberley region EnvR hospitalisations as a percentage of all Kimberley region hospitalisations across the time period represented.

Figure 8 provides a representation for Kimberley region EnvR age-standardised hospitalisations rates by year between the years 2010 and 2019.

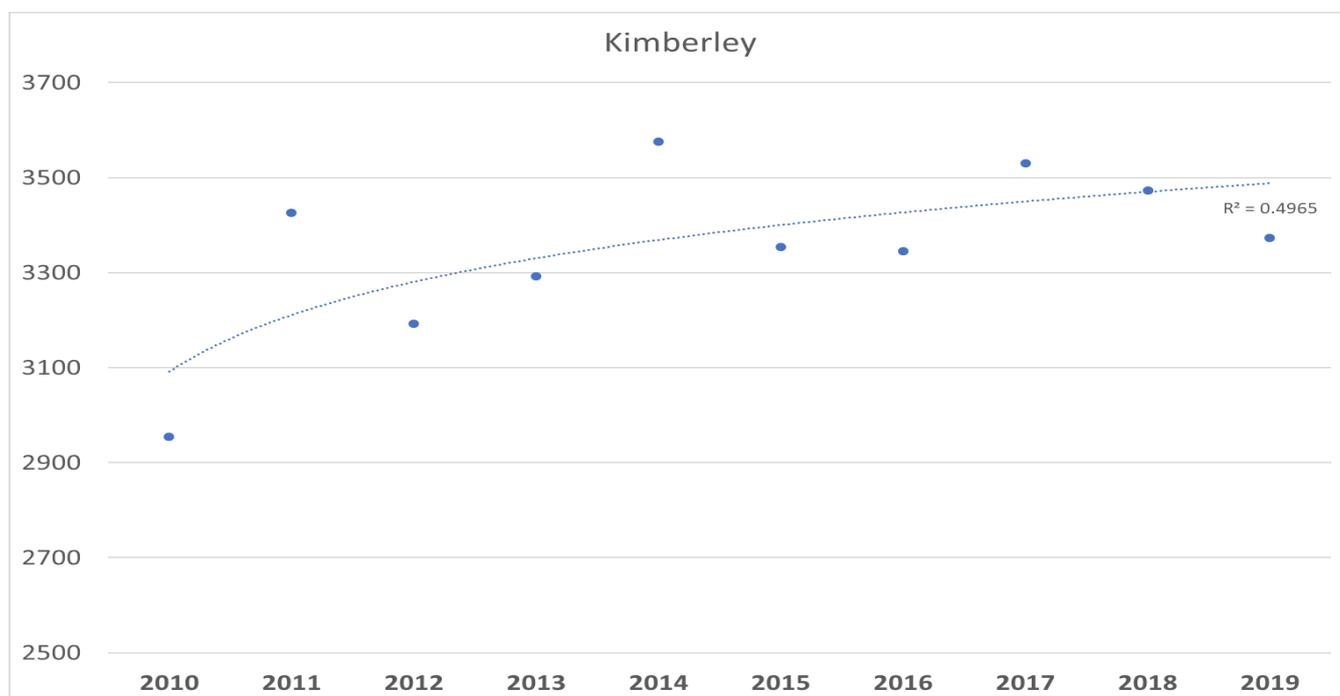


Figure 8 EnvR age-standardised hospitalisations rates (per 100,000 population) across the Kimberley region by year

The trendline in Figure 8 suggests a slight increase in Kimberley region EnvR age-standardised hospitalisations rates across the time period represented.

Table 13 and Table 14 provide regional data for rates of the 10 most common types EnvR hospitalisations in the community by EnvR grouping over the period 2015-2019.

Table 13 Leading EnvR age-standardised hospitalisation rates (per 10,000 population) by region (2015-2019)

Region	Unintentional injuries including dog bite	Falls	Cancer	Mental health / psychosocial	Cardiovascular disease (Not RHD)
East Metro	25.0	25.2	19.8	15.1	15.6
South Metro	26.0	24.9	20.0	13.9	14.4
North Metro	25.7	26.2	20.2	16.4	13.4
South West	29.7	24.6	20.7	13.6	15.6
Midwest	38.2	29.0	22.6	15.8	17.9
Pilbara	28.3	22.3	13.4	10.0	16.0
Kimberley	66.0	46.5	19.0	22.1	25.4
Great Southern	28.7	23.2	22.2	22.0	15.5
Goldfields	29.3	25.1	20.0	16.6	17.0
Wheat Belt	37.4	29.0	21.2	16.7	15.7

Table 14 Leading EnvR age-standardised hospitalisation rates (per 10,000 population) by region (2015-2019)

Region	Diarrhoeal diseases	Lower respiratory infections	Poisonings	Other (as specified)	Chronic lung disease including COPD
East Metro	13.6	8.2	10.5	8.0 (cataracts)	4.2
South Metro	12.2	8.0	8.6	8.6 (cataracts)	3.9
North Metro	11.5	6.7	10.4	7.9 (cataracts)	N/A
South West	9.6	8.2	11.4	9.2 (cataracts)	N/A
Midwest	13.9	14.1	12.3	6.8 (asthma)	8.1
Pilbara	13.0	19.6	8.2	7.7 (asthma)	10.9
Kimberley	26.8	44.5	12.9	26.6 (violence)	13.0
Great Southern	12.5	8.3	13.0	7.3 (cataracts) / 7.6 (asthma)	N/A
Goldfields	13.6	13.7	11.4	6.2 (asthma)	6.1
Wheat Belt	13.4	10.4	12.3	7.9 (cataracts)	N/A

Table 13 and Table 14 suggest that the Kimberley region has the highest population rates for most of the common EnvR hospitalisations groupings with the exception of cancer.

Food safety

Food production, preparation and consumption issues involve significant drivers for risk management in Western Australia.

Enforcement agencies

Across WA there were a total of 278.7 *Food Act 2008* FTE authorised officers. There was also 54.8 persons reported that assisted with the duties of authorised officers. This combines to be a total of 3.1 FTE per 10,000 people. Figure 9 provides a year-by-year overview of the annual variations in total FTE authorised food officers.

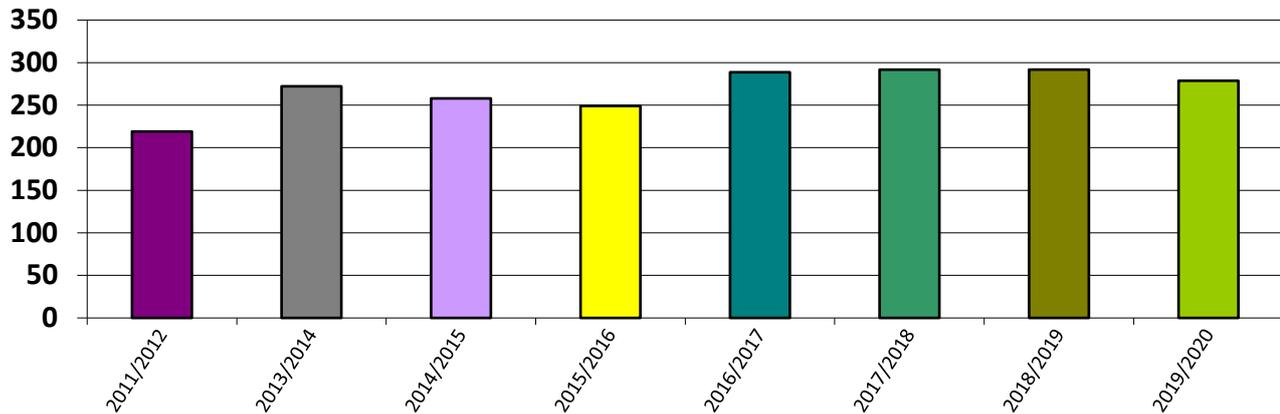


Figure 9 Total FTE Food Act authorised officers across WA by FY

The Kimberley region has a total of 10 authorised officers and 1.2 persons that assist with regulatory tasks. This combines to be a total of 3.1 FTE per 10,000 people.

The Pilbara region has a total of 8 authorised officers and 1.2 persons that assist with regulatory tasks. This equates to a combined 3.1 FTE per 10,000 people. The Midwest region has a total of 11.4 authorised officers and 1.8 persons that assist with regulatory tasks. This equates to a combined 3.1 FTE per 10,000 people.

Food businesses

There was a total of 24,669 food businesses across the state with a total of 30,928 onsite assessments. This equates to an overall WA ratio of 125.37% onsite assessments per food business. Figure 10 provides a summary of the increasing number of food businesses over time.

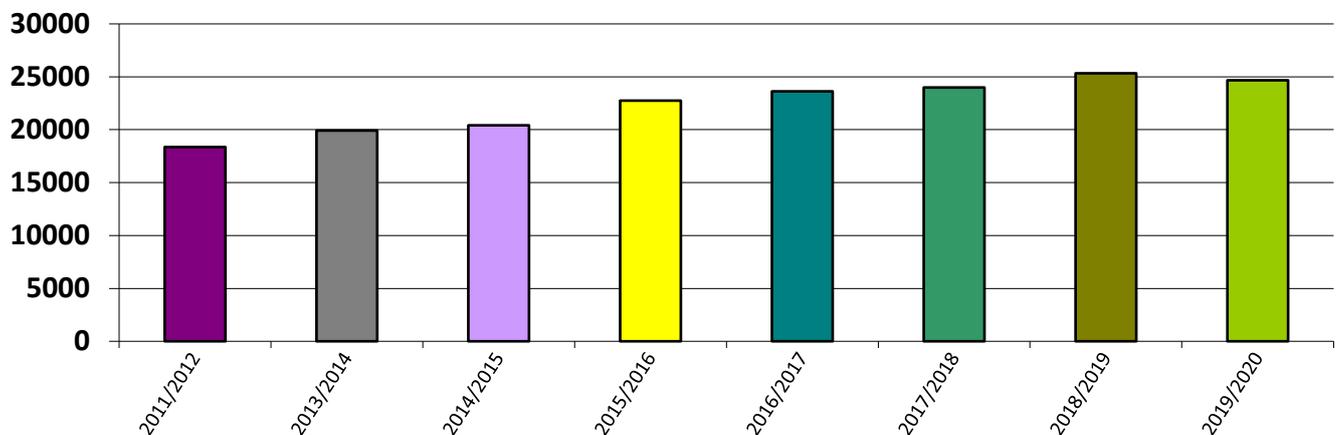


Figure 10 Total number of food businesses across WA by FY

Figure 11 provides a summary of enforcement agency onsite assessments over time. Figure 11 displays evidence of annual variation in onsite assessments and notably for the 2019/2020 FY.

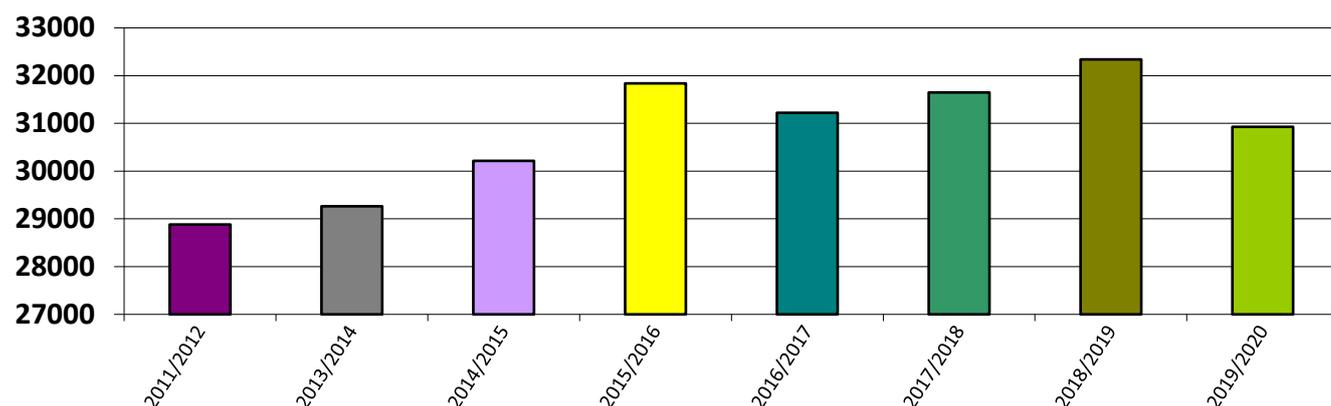


Figure 11 Onsite assessments across WA by FY

In the Kimberley region, there was a total of 528 food businesses (at 2.14% of WA total) with a total of 366 onsite assessments. This represents 69.32% onsite assessments per food business which is lower than the state ratio and lower than both the Pilbara and Midwest regions.

The Pilbara region in comparison had a total of 677 food businesses (at 2.74% of WA total) with a total of 688 onsite assessments (at 101.62% per food business), while the Midwest region had a total of 853 food businesses (at 3.46% of WA total) with a total of 943 onsite assessments (at 110.55% per food business).

The risk profile for food businesses in the Kimberley, WA and comparative regions are summarised in Table 15.

Table 15 Risk profiles applied to food businesses across WA and regions

	High risk food businesses	Medium risk food businesses	Low risk food businesses	Very low risk or exempt food businesses	Total food businesses
Western Australia	2,578	13,799	4,904	2,922	24,669
Kimberley	36	344	97	51	528
Pilbara	111	401	118	29	677
Midwest	96	459	203	90	853
WA proportional distribution	10.45%	55.94%	19.88%	11.84%	100.00% of WA total
Kimberley proportional distribution	6.82%	65.15%	18.37%	9.66%	2.14% of WA total
Pilbara proportional distribution	16.40%	59.23%	17.43%	4.28%	2.74% of WA total
Midwest proportional distribution	11.25%	53.81%	23.80%	10.55%	3.46% of WA total

The Kimberley region has reported a lower percentage of high risk food premises when compared to the remainder of the state as seen in Figure 12.

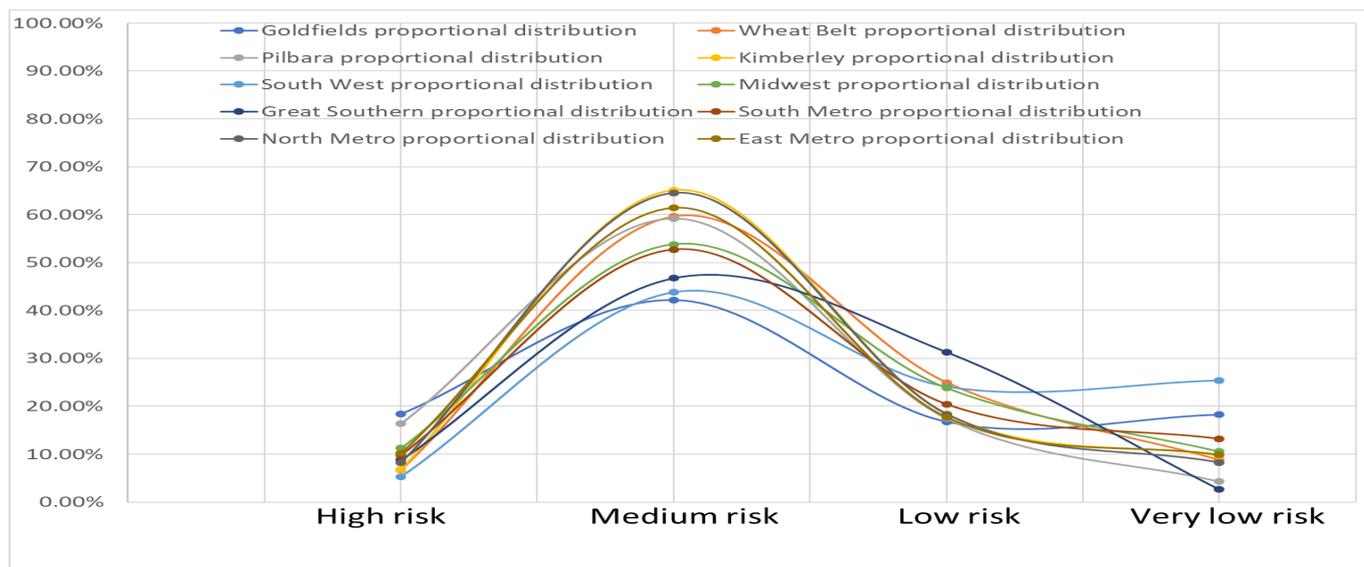


Figure 12 Comparison of risk categorisation in food premises (%) by region

The food business type profile for food businesses in the Kimberley, WA and comparative regions are summarised in Tables 16-18. The Kimberley region food business types have been presented in the same descending order as the WA profile of food business types. An overview of the Kimberley region food business types suggests there is a lower percentage of snack bar / takeaway, charitable organisations and family day care facilities and higher percentage of mobile food operators, retailers and food services food business types. Figure 13 provides a graphical distribution of the food business type profile by region.

Table 16 Food business types across WA and regions (1-9) – Decreasing (WA %)

	Restaurant / café	Snack bar / takeaway	Retailer	Canteen / kitchen	Temporary food premises	Manufacturer	Residential manufacturer / processor	Charitable / community organisation	Mobile food operator
Western Australia	4,921	3,601	2,957	1,581	1,494	1,310	1,207	1,178	1,112
Kimberley	80	51	81	45	42	21	16	10	66
WA proportional distribution	19.95%	14.60%	11.99%	6.41%	6.06%	5.31%	4.89%	4.78%	4.51%
Kimberley proportional distribution	15.15%	9.66%	15.34%	8.52%	7.95%	3.98%	3.03%	1.89%	12.50%
Pilbara proportional distribution	16.25%	4.14%	7.09%	26.14 %	6.35%	0.15%	1.03%	11.82%	7.83%
Midwest proportional distribution	15.24%	9.61%	10.32%	13.60 %	0.12%	2.70%	5.63%	3.63%	7.03%

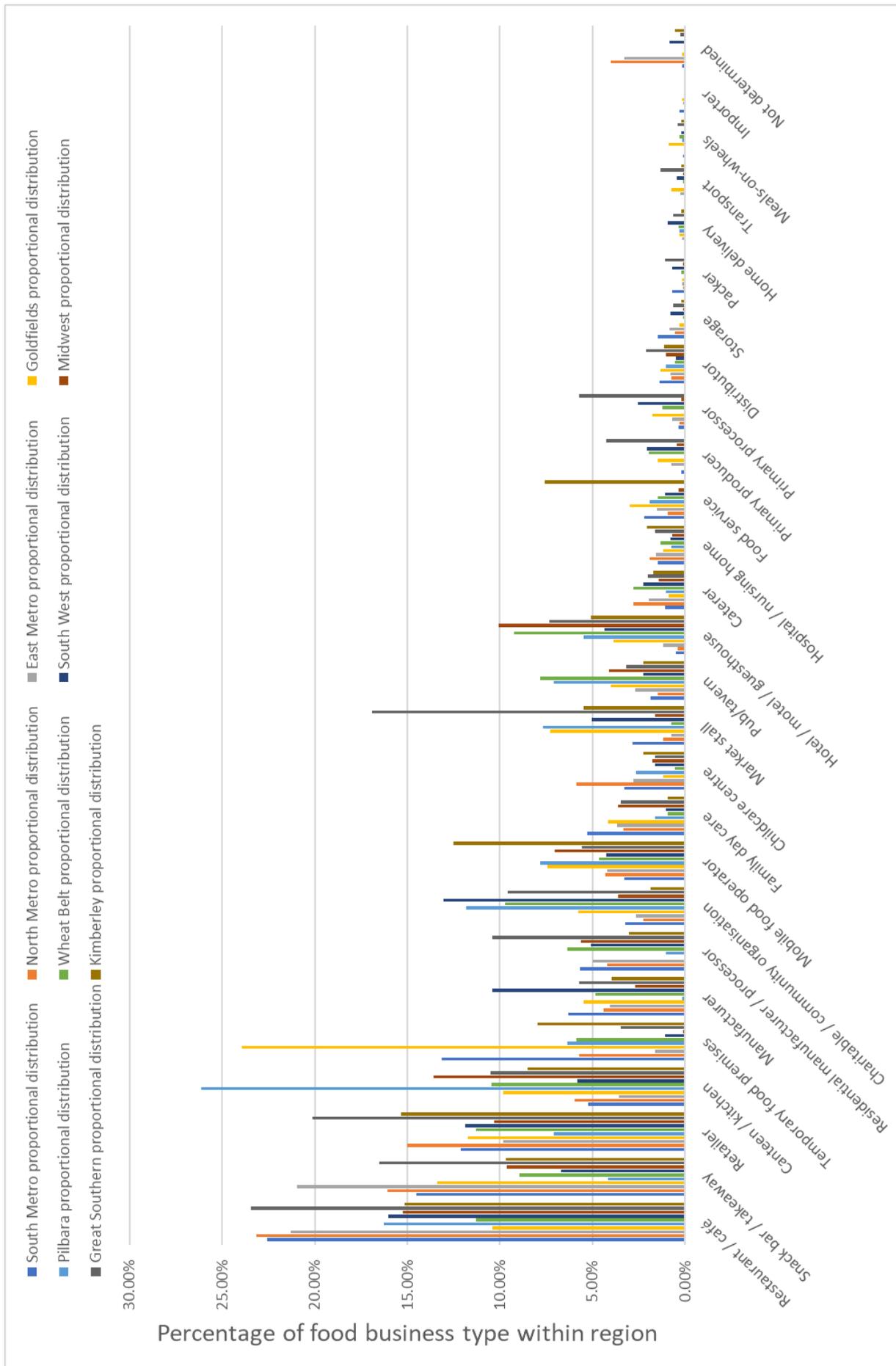
Table 17 Food business types across WA and regions (10-18) – Decreasing (WA %)

	Family day care	Childcare centre	Market stall	Pub/tavern	Hotel / motel / guesthouse	Caterer	Hospital / nursing home	Food service	Primary producer
Western Australia	833	772	692	642	585	469	442	390	343
Kimberley	5	12	29	12	27	9	11	40	
WA proportional distribution	3.38%	3.13%	2.81%	2.60%	2.37%	1.90%	1.79%	1.58%	1.39%
Kimberley proportional distribution	0.95%	2.27%	5.49%	2.27%	5.11%	1.70%	2.08%	7.58%	0.00%
Pilbara proportional distribution	1.62%	2.66%	7.68%	7.09%	5.47%	1.03%	0.74%	1.92%	0.00%
Midwest proportional distribution	3.63%	1.76%	1.64%	4.10%	10.08%	1.41%	0.70%	0.35%	0.47%

Table 18 Food business types across WA and regions (19-27) – Decreasing (WA %)

	Primary processor	Distributor	Storage	Packer	Home delivery	Transport	Meals-on-wheels	Importer	Not determined
Western Australia	288	232	198	87	57	53	30	30	446
Kimberley		6	1		1	1	1		3
WA proportional distribution	1.17%	0.94%	0.80%	0.35%	0.23%	0.21%	0.12%	0.12%	1.81%
Kimberley proportional distribution	0.00%	1.14%	0.19%	0.00%	0.19%	0.19%	0.19%	0.00%	0.57%
Pilbara proportional distribution	0.00%	1.03%	0.00%	0.00%	0.30%	0.00%	0.15%	0.00%	0.00%
Midwest proportional distribution	0.23%	1.06%	0.12%	0.12%	0.00%	0.12%	0.00%	0.00%	0.00%

Figure 13 Profile of food business types across WA – Decreasing (WA %)



Food regulatory

Each local government authority is responsible for the food businesses in their jurisdiction and uses various enforcement tools to promote food safety such as improvement notices, infringement notices, prohibition orders, prosecutions and seizures. In addition to this, regulatory processes such as audits and verification of food safety plans are commonly used.

In the Kimberley region 75.00% of local governments had a compliance and enforcement policy in place. This is higher than the WA state average of 39.93% and is higher than both the Pilbara (25.00%) and Midwest (23.81%) regions.

There were a total of 1,179 improvement notices issued across the state with 57 of these not complied with. There were a total of 405 infringement notices issued across the state however 38 of these were withdrawn. There were a total of 27 prohibition orders issued across the state. There were a total of 16 prosecutions across the state with 11 reported successful prosecutions.

In the Kimberley region, there were a total of 4 improvement notices issued (at 0.34% of WA total) and 0 of these not complied with. There was a total of 0 infringement notices issued within the region. There was a total of 0 prohibition orders issued in the Kimberley and 0 prosecutions. There were 0 seizures within the Kimberley region.

A summary of the enforcement tools used by local government to promote food safety is presented in Table 19.

Table 19 Summary of enforcement tools used to promote food safety by region

	Improvement notices issued	Infringement notices issued	Prohibition orders issued	Prosecutions	Seizures
South Metro	186 (15.73%)	165 (40.74%)	4	8	0
North Metro	120 (10.18%)	36 (8.89%)	5	2	0
East Metro	624 (52.93%)	191 (47.16%)	15	6	1
South West	20 (1.70%)	9 (2.22%)	2	0	3
Midwest	18 (1.53%)	0	0	0	0
Pilbara	141 (11.96%)	0	0	0	0
Kimberley	4 (0.34%)	0	0	0	0
Great Southern	0	0	1	0	0
Goldfields	4 (0.34%)	2 (0.49%)	0	0	0
Wheat Belt	43 (3.65%)	0	0	0	5

Part 8 of the Food Act requires certain food businesses to implement a documented food safety program and have the food safety program audited. The total number of regulatory food safety audits (RFSAs) undertaken across the state was 1,157.

The Kimberley region reported 16 RFSAs (at 1.38% of WA total). In comparison the Pilbara region (1.64%) and the Midwest region (1.90%) also having low number of audits when compared to the metro regions. Total RFSAs in the metro regions combined to be 915 RFSAs (at 79.08% of WA total).

The total number of food businesses across the state that have had a RFSA was 923 which equates to 1.3 audits per business on average.

In the Kimberley region there were 17 food business that have had a RFSA (at 1.84% of WA total) equating to 0.9 audit per business which is higher than the Pilbara region (1.0) and the same as the Midwest region (1.1).

There were 30 RFSA's that led to compliance action across the state with 1 of these in the Kimberley region. There were 7 in the Pilbara region and 0 in the Midwest region, with these three regions combining for 26.67% of the state's total compliance action from RFSA's.

Across WA there were 940 Food Safety Plans (FSPs) verified with the Kimberley region reporting 23 of these (at 2.45% of WA total). As a comparison the Pilbara region (1.91%) and the Midwest region (2.13%) are both lower in total numbers.

Across the state the overall percentage of local governments that measured the refrigerated storage and display temperatures of raw poultry meat for compliance during food safety assessments of retail food businesses was 82.63%. In the Kimberley region this was 100.00% of local governments.

Businesses captured under food standards

Standard 3.3.1 requires food businesses that prepare food for service to vulnerable persons to implement a food safety program. This normally includes food businesses providing food to hospital patients, aged care residents and children in child care centres.

The total number of food businesses captured under Standard 3.3.1 across the state was 1,126.

Figure 14 provides a year-by-year overview of the reported food businesses captured under Standard 3.3.1 displaying a notable increase in total numbers during the period 2014 – 2020.

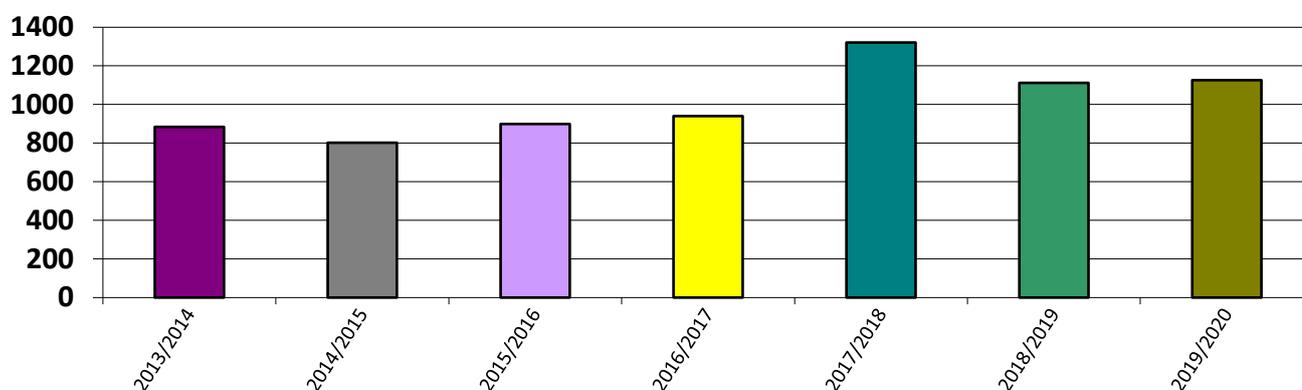


Figure 14 Total food businesses captured under Standard 3.3.1 across WA by FY

In the Kimberley region, the total was 25 which compares to the Pilbara region at 19, and the Midwest region at 21. The combined metro total for food businesses captured under this standard was 846 which equates to 75.13% of the WA total.

Primary production and processing standards of the Australia New Zealand Food Standards Code (the Code) were developed to reduce the incidence of foodborne disease associated with these commodities. Food businesses captured by these Standards are required to register with their local government as the appropriate enforcement agency. These food businesses must operate according to a food safety management statement (FSMS) which must be recognised by the appropriate enforcement agency. Recognition of a FSMS is the process of verifying that the FSMS substantially complies with the Standard.

Western Australia had a total of 521 businesses captured under these standards comprising:

234 dairy business (233 registered, 14 assessed and 219 verified), 75 egg businesses (69 registered, 58 assessed and 59 verified), 96 meat businesses (87 registered, 60 assessed and 68 verified), 32 poultry processors (32 registered, 23 assessed and 27 verified), 16 poultry producers (8 registered, 9 assessed and 8 verified), 59 seafood businesses (55 registered, 19 assessed and 16 verified), and 3 sprouts business (3 registered, 1 assessed and 2 verified).

The Kimberley region had 0 businesses (0.00% of the WA total) in total captured under these standards.

The Midwest region represented 0.00% of the dairy industry, 0.00% of the poultry industry 4.00% of the egg industry, 8.33% of the meat industry, and 20.00% of the seafood industry. 58.33% of industries were registered with 29.17% assessed and 20.83% verified.

The Wheat belt region represented 0.43% of the dairy industry, 28.00% of the egg industry, 6.25% of the meat industry, and 3.08% of the seafood industry. 94.12% of industries were registered with 76.47% assessed and 79.41% verified.

The Pilbara region had 0 businesses (0.00% of the WA total) in total captured under these standards.

Pests and pesticides

Pest species can be a significant driver for public health management activities in WA.

Mosquito surveillance and management

Mosquitoes in WA represent both a nuisance issue and a potential vector for disease. In the Kimberley region 100.00% of local governments that reported undertook mosquito management. The Kimberley was above the WA region average (68.76%) and above the metro combined average (85.00%).

The Kimberley had a high number of current mosquito management plans within local governments that reported (100.00%). The Kimberley was well above the WA average (44.66%) and the metro combined region (43.06%).

Across WA the frequency of mosquito management activities was identified by the percentage of local governments that reported these activities and has been presented for all regions in Table 20 with the Kimberley in bold.

Table 20 Local governments mosquito management activities by region

	Chemical control (e.g. larvicide, residual barrier treatment, fogging)	Cultural control (e.g. public education)	Physical control (e.g. runnelling, etc)
Kimberley	100.00%	100.00%	33.33%
Pilbara	100.00%	100.00%	100.00%
Midwest	25.00%	0.00%	12.50%
Goldfields	50.00%	50.00%	50.00%
Wheat Belt	40.91%	22.73%	9.09%
Great Southern	16.67%	16.67%	0.00%
South Metro	75.00%	75.00%	12.50%
North Metro	60.00%	40.00%	20.00%
East Metro	66.67%	50.00%	16.67%
South West	66.67%	100.00%	33.33%

Mosquito management activities in local governments across the Kimberley region had high levels (100.00%) of cultural (educational) management for mosquito concerns and chemical measures (100.00%), to control mosquitoes across most regions with the Kimberley above the WA region averages respectively (60.09% and 61.60%).

For local governments that reported in the Kimberley region, most (100.00%) undertook **adult** mosquito surveillance which is more than the South Metro (75.00%), East Metro (83.33%) and North Metro (60.00%) region and the WA average (65.77%).

For local governments that reported in the Kimberley region, most (100.00%) undertook **larval** mosquito surveillance which is more than the South Metro (75.00%), East Metro (83.33%) and North Metro (60.00%) region and the WA average (49.90%).

With regard to the mosquito surveillance among Kimberley local governments:

Regular monitoring of adult mosquito 66.67%: abundance and species 100.00%.

Regular monitoring of larval mosquito 100.00%: abundance and species 33.33%.
Abundance only 66.67%.

The total of mosquito complaints across WA was reported at 436 and projected to 790.

Mosquito complaints across the Kimberley region was 44 (projected to 59) at 7.43% of the WA total. This was similar to those projected for the metro regions North Metro (83.6) and East Metro (69.7) and less than the projected number for the South Metro region (290.1). Mosquito complaints across the Pilbara region was 10 (projected to 40) at 5.06% of the WA total.

Pest species

Across WA the frequency of pest complaints was identified by the percentage of local governments that reported this issue and has been presented for all regions in Table 21 with the Kimberley in bold.

Table 21 Local governments reporting complaints about pest species by region

	Feral vertebrates	Midge (biting or non-biting)	Mosquitoes	Other biting insects (including bed bugs, ticks etc)	Other non-biting insects (including ants, termites etc)	Rodents	Weeds
Kimberley	33.33%	0.00%	100.00%	0.00%	33.33%	33.33%	33.33%
Pilbara	100.00%	100.00%	100.00%	100.00%	0.00%	0.00%	100.00%
Midwest	0.00%	0.00%	75.00%	0.00%	0.00%	0.00%	25.00%
Goldfields	75.00%	25.00%	75.00%	25.00%	25.00%	25.00%	75.00%
Wheat Belt	13.64%	4.55%	54.55%	0.00%	9.09%	9.09%	50.00%
Great Southern	16.67%	0.00%	50.00%	0.00%	16.67%	0.00%	66.67%
South Metro	87.50%	50.00%	100.00%	37.50%	62.50%	87.50%	62.50%
North Metro	60.00%	80.00%	80.00%	60.00%	80.00%	80.00%	60.00%
East Metro	16.67%	16.67%	100.00%	16.67%	50.00%	83.33%	66.67%
South West	100.00%	33.33%	100.00%	0.00%	66.67%	66.67%	100.00%

The Kimberley local governments reported receiving complaints across most pest groups however had the highest indications for mosquitoes (100.00%), and the lowest for other biting insects such as bed bugs and ticks and midge (biting or non-biting).

Local government authorities need to consider many issues before, during and after pest control operations. The aim of a pest control program is to document and assist in the development of a pesticide use policy incorporating community views, underpinned by risk and contract management and auditing the outcome of the program.

Across WA 78.56% of local governments had a current pest control program.

In the Kimberley region 100.00% of local governments reported a current pest control program.

As part of their current pest control programs, local governments reported which pests were managed across the following pest groups are presented for all regions in Table 22 with the Kimberley in bold.

Table 22 Local governments with pest control programs managing pest species by region

	Feral vertebrates	Midge (biting or non-biting)	Mosquitoes	Other biting insects (including bed bugs, ticks etc)	Other non-biting insects (including ants, termites etc)	Rodents	Weeds
Kimberley	33.33%	0.00%	100.00%	33.33%	0.00%	33.33%	33.33%
Pilbara	100.00%	100.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Midwest	0.00%	0.00%	25.00%	0.00%	75.00%	75.00%	75.00%
Goldfields	50.00%	25.00%	50.00%	50.00%	0.00%	0.00%	100.00%
Wheat Belt	17.65%	4.55%	64.71%	0.00%	35.29%	29.41%	88.24%
Great Southern	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	100.00%
South Metro	66.67%	50.00%	100.00%	0.00%	33.33%	50.00%	100.00%
North Metro	60.00%	80.00%	40.00%	0.00%	20.00%	40.00%	100.00%
East Metro	20.00%	16.67%	60.00%	0.00%	60.00%	60.00%	100.00%
South West	66.67%	33.33%	66.67%	0.00%	33.33%	66.67%	100.00%

The Kimberley region local governments reported managing pests across most pest groups as indicated above with the exception of other biting insects such as bed bugs and ticks and midge (biting or non-biting).

Pesticide safety

Managing concerns about pests balanced against concerns against pesticide use within the community is a challenge for all local governments.

Not all local governments (33.33%) in the Kimberley region received pesticide complaints whereas in comparison 100.00% of local governments in the North Metro and 75.00% in the South Metro region received complaints about pesticide use by local government. The metro comparison is more appropriate for Kimberley region pesticide use as only 0.00% of local governments in the Pilbara and 12.50% in the Midwest region received complaints.

Each local government is responsible for managing weeds and other pests in their jurisdictions as per their pest control programs. Local governments may choose to undertake this function using internal operators or alternatively may choose to contract out these services.

In WA the total number of pesticide complaints of local government operators was 174 reported complaints (projected to 381.8).

Pesticide use by local government operators within the Kimberley region had 0 reported complaints which can be compared to the Pilbara and Midwest region with none of these regions reporting complaints. Total complaints about local government operators was projected to 272 across the combined metro regions (at 71.24% of the WA total).

In WA the total number of complaints about the pesticide industry's application of pesticides was 10 reported complaints (projected to 15.3).

The Kimberley region reported 0 complaints about the pesticide industry's application of pesticides. This figure was projected to 13.3 across the combined metro regions.

In the Kimberley region, 100.00% of local governments used integrated pest management. Additionally, 66.67% of local governments indicated they have adopted a pesticide use policy.

Across the metro regions 86.11% of all local governments had a current pest control program, 73.89% of the local governments across the metro regions reported using integrated pest management and 49.17% of all metro local governments had a pesticide use policy.

The number of local governments within the Kimberley region that used a pesticide notification plan was 66.67% which was higher than combined metro area average 43.61%.

Emergency management

Severe weather and unpredictable events

The Australian Government Bureau of Meteorology lists 6 severe weather events (5 tropical cyclones and 1 tropical low) that interacted with the Western Australia. Out of the 6, only 4 crossed from the ocean onto the mainland. In total the Kimberley region had 3 event involvements; the Pilbara region had 3 event involvements and the Midwest had 1 involvement.

The [Global Shark Attack File](#) lists 5 shark attacks in WA during the time period for this report. There were 2 attacks in the Goldfields region with 1 fatality, 2 attacks in the Midwest region with no fatalities and 1 non-fatal attack in the North Metro region.

Bushfires

Bushfires data in Western Australia are collected by the Fire and Emergency Services of WA (FESA) and are organised into two categories based on the size of the bushfire.

The total number of large bushfires across the state was 1,018. This represents 4.0 large bushfires per 10,000 square kilometres.

The total number of small bushfires across the state was 3,902. This represents 15.4 small bushfires per 10,000 square kilometres.

In the Kimberley region, the total number of large bushfires was 119 at 9.98% of WA total which is less than both the Pilbara region at 13.84% of WA total, and the Midwest region at 13.69% of WA total. The combined metro total of large bushfires was 149 which equates to 20.19% of the WA total.

The Kimberley region represents 3 large bushfires per 10,000 square kilometres. This is the same as both the Pilbara region at 3 per 10,000 square kilometres, and the Midwest region at 3 per 10,000 square kilometres.

In the Kimberley region, the total number of small bushfires was 259 at 6.32% of WA total which is more than the Pilbara region at 4.59% of WA total, and slightly less than the Midwest region at 6.70% of WA total. The combined metro total of small bushfires was 2,009 which equates to 51.63% of the WA total.

The Kimberley region represents 6 small bushfires per 10,000 square kilometres. This is higher than the Pilbara region at 4 per 10,000 square kilometres, and the Midwest region at 5 per 10,000 square kilometres.

A summary of bushfire data supplied by FESA is presented in Table 23 by region.

Built environment fires

The total number of built environment fires in Western Australia is monitored by FESA and organised into two categories: structural fires and other/rubbish/vehicle fires.

The total number of structural fires across the state was 1,346. This represents 6 structural fires per 10,000 people.

The total number of other/rubbish/vehicles fires across the state was 2,895. This represents 11.5 other/rubbish/vehicles fires per 10,000 people.

In the Kimberley region, the total number of structural fires was 30 at 1.87% of WA total which is less than the Pilbara region at 2.43% of WA total, and less than the Midwest region at 9.70% of WA total. The combined metro total of structural fires was 985 which equates to 63.29% of the WA total.

The Kimberley region represents 8.3 structural fires per 10,000 people. This is lower than the Pilbara region at 6.2 per 10,000 people, and much lower than the Midwest region at 25.1 per 10,000 people.

In the Kimberley region, the total number of other/rubbish/vehicles fires was 125 at 4.10% of WA total which is similar to the Pilbara region at 4.42% of WA total, and the Midwest region at 5.08% of WA total. The combined metro total of other/rubbish/vehicles fires was 1,971 which equates to 66.22% of the WA total.

The Kimberley region represents 34.7 other/rubbish/vehicles fires per 10,000 people. This is greater than the Pilbara region at 21.5 per 10,000 people, and the Midwest region at 25 per 10,000 people. The Kimberley region has the highest proportion of other/rubbish/vehicles fires per 10,000 people across all regions.

A summary of structural fires data supplied by FESA is presented in Table 23 by region.

Road crash and rescue

Road crash and rescue events in Western Australia are attended by FESA when required.

The total number of FESA road crash and rescue events across the state was 2,702. This represents 10.8 road crash and rescue events per 10,000 people and also represents 6,326 road crash and rescue events per 10,000 square kilometres.

In the Kimberley region, the total number of FESA road crash and rescue events was 27 at 0.94% of WA total which is less than the Pilbara region at 1.88% of WA total, and the Midwest region at 3.95% of WA total. The combined metro total of FESA road crash and rescue events was 1,979 which equates to 71.00% of the WA total.

The Kimberley region represents 7.5 road crash and rescue events per 10,000 people. This is less than both the Pilbara region at 8.6 per 10,000 people, and the Midwest region at 18.2 per 10,000 people.

A summary of emergency services data supplied by FESA is presented in Table 23 by region.

Table 23 Fire and emergency services (FESA) summary by region

Region	No. structural fires per 10,000 people	No. other /rubbish /vehicles fires per 10,000 people	No. road crash and rescue events per 10,000 people	No. road crash and rescue events per 10,000 square kilometres	No. large bushfires per 10,000 square kilometres	No. small bushfires per 10,000 square kilometres
Kimberley	8.3	34.7	7.5	1	3	6
Pilbara	6.2	21.5	8.6	1	3	4
Midwest	25.1	25	18.2	2	3	5
Goldfields	12.7	33	14.6	1	2	3
Wheat Belt	12.4	26.3	30.2	14	14	25
Great Southern	12.1	9.9	14.1	18	16	33
South Metro	4.7	10.1	9.7	1,973	234	1,988
North Metro	4.4	7.5	8.3	6,326	745	6,087
East Metro	5.2	11	10.7	2,027	241	2,294
South West	7	10	13.3	101	37	204

Built environment, sensitive populations and air quality

The community recognises many types of risk activities within the built environment. Recognised risks and hazards throughout the community are managed across the three levels of Australian government. As part of the process to manage risks, the jurisdictional boundaries of each local government provide an opportunity to plan accordingly.

Each local government is required to develop a local planning scheme and a local planning strategy in accordance with planning legislation. This planning process creates zones for the separation of the different activity types within jurisdictions such as: industrial estates, agricultural areas, residential areas and commercial zones. Despite the best intentions of good planning and specific zoning of activities, instances of land-use incompatibility can arise especially within the proximity of sensitive populations.

Land-use planning and sensitive populations

The Department of Planning, Lands and Heritage works in conjunction with the Western Australian Planning Commission (WAPC) to approve land-use submissions (including planning schemes and strategies) and set public planning policy.

Land-use is a significant part of our society and creates multiple drivers that require public health management considerations. These drivers may include the following: health risks surrounding proposed development sites, a location's supportiveness and safety for physical activity, air pollution and asthma levels, past or present contamination of a site, nearby sources of pollution, as well as noise and dust. Infrastructure such as highways, large shopping centres and fast food locations can provide both lifestyle convenience as well as potential health impacts.

Certain facilities within the built environment in WA will be associated with sensitive or at-risk populations such as schools, childcare centres, hospitals and prisons. Local government can identify the placements of these facilities during planning activities that involve industry to avoid creating land-use incompatibilities.

Schools

Local governments can consider planning options for safe paths for walking and bicycling, as well as access to public transportation which can improve the safety of travel. Public transportation near schools can maximize safe opportunities for walking and biking to school. Integrating activities with public transport can enhance a community's amenities. The Department of Education has provided specific information about schools in WA.

Across WA the total number of school children year seven and higher was 194,104 (representing 729 per 10,000 people) and the total number year six and lower was 282,014 (representing 1,059 per 10,000 people). The total number of schools in WA was 1,148. The metro percentage of schools was 63.87% and the metro percentage of year seven and higher students was 80.34% and year six and lower students was 79.01%.

The Kimberley region had total numbers of children year seven and higher of 2,600 (at 721 per 10,000 people) and year six and lower of 4,709 (at 1,306 per 10,000 people). The total number of schools in the Kimberley was 42 (at 3.66% of WA total) which sits in between the Pilbara (37) and the Midwest (58).

Family day care / childcare centres

Public health issues in family day care / childcare centres will generally address food premises and about minimising the transmission of disease. The local government may also be interested

in the locations of these facilities while undertaking planning assessments of nearby industry. Data has been sourced from the DOH *Food Act 2008* reporting.

WA has 1,605 family day care / childcare centres in total. The Kimberley region has 17 family day care / childcare centres (at 1.06% of WA total) which is less than the Pilbara region with 29 centres (at 1.81% of WA total) and much less than the Midwest with 46 centres (at 2.87% of WA total).

Prisons

Local government may be involved in public health issues within prisons however this will generally be dependent on the needs of each individual facility. Issues at these facilities may include: food safety, drinking water safety, notifiable disease outbreaks, occupancy monitoring, emergency management and chronic disease issues. Local government may be required to liaise with the Office of the Inspector of Custodial Services and the Department of Justice.

The state has 19 prisons in total. The Kimberley has 2 prisons (at 10.53% of WA total) which is more than both the Pilbara (1) and Midwest (1) regions.

Hospitals

Local government generally provides a minimal regulatory function in regard to hospitals, however, will still be lead organisation with regard to assessing planning approvals. Public health issues in hospitals will typically be related to food premises or water quality issues however may also have special requirements to assist with minimising the transmission of disease amongst hospital populations. The DOH provides specific regulatory services for hospitals where appropriate.

The state has 112 hospitals in total. The Kimberley region has 5 hospitals (at 4.46% of WA total) which is less than both the Midwest region with 11 and the Pilbara region with 8.

Remote aboriginal communities

A DOH survey in 2008 found that the majority (84%) of the WA remote aboriginal community population (approximately 15000 people in total) resided in communities whose usual population was 50 or more people (83 communities). The remaining population (~16%) resided in smaller sized communities (147 communities).

For the purpose of this report, the state has 230 permanently populated remote aboriginal communities. These 230 permanently populated remote aboriginal communities contain the majority of the aboriginal populations living in remote communities.

The Kimberley region has 173 remote aboriginal communities at 75.22% of WA total which compares to the Pilbara (22) at 9.57% of WA total and Midwest (12) at 5.22% of WA total.

The Kimberley has remote aboriginal communities in 100.00% of local government areas within the region.

Caravan Parks

Public health issues for caravan parks and/or camping grounds relate to density of population and shared facilities for cooking, cleaning, washing and abluting. In addition, sites located in remote or regional areas may include specific disaster management and emergency response planning. A supply of potable water is required at all camping locations pursuant to the *Caravan and Camping Ground Regulations 1997*. Site considerations may also include safe vehicle and trailer pathways to prevent vehicles driving over sleeping campers.

Across WA there are 294 caravan parks (and/or camping grounds) in total. The Kimberley region has 39 caravan parks (and/or camping grounds) at 13.27% of WA total. This can be compared to the Pilbara (9) and the Midwest (51) regions.

Offensive trades

Offensive trades can be a source of air quality odour complaints. WA data about the operation of offensive trades suggests that the Kimberley region (50.00%) is greater than the Pilbara (0.00%) and Midwest region (9.52%) in terms of the percentage of local governments with offensive trades within their regions.

Agriculture

The Department of Primary Industries and Regional Development provides advice and information to land-use planners to help them consider the needs of agriculture and food sectors in their decisions. Agricultural land in Western Australia occupies 1,064,700 square kilometres (42% of WA). Areas classified as conservation and natural environments occupy 1,395,200 square kilometres (55% of WA). Grazing of native vegetation occupies 896,500 square kilometres (36% of WA). Agricultural land use that borders residential use can generate air quality complaints for local government.

Industrial land use - EPA separation guidelines

The Environmental Protection Authority (EPA) publishes a guideline that provides planning recommendations for effective separation (buffer zones) to minimise land-use incompatibilities [Separation Distances between Industrial and Sensitive Land Uses \(GS 3\)](#).

Across WA there were 29 (projected to 75.1) submissions received by the local government planning process where the relevant EPA separation distances could not be met. The Kimberley region reported 5 of these (projected to 6.7). The South West region reported the most of any region across WA.

DA Referrals

The DOH receives many different types of planning and environmental referrals (land-use submissions for review and comment) from local government and state government agencies. DOH advice is provided back to these agencies based on the submissions type, and the risk management areas identified within the submission. The DOH received 297 referrals in total from across WA.

Referrals from the Kimberley region totalled 0 which is less than the Pilbara region (28) and the Midwest (7) region. From a year-on-year perspective, the Kimberley region averages less than 10 referrals for land-use related (development or planning) submissions to the DOH for comment each year.

The metro regions combined for 42.33% of all development submissions that were referred to DOH with respect to land-use and planning throughout WA.

Temporary workforce accommodation

The DOH monitors all applications/referrals for temporary workforce accommodation. Environmental health related issues may include food safety, drinking water safety, notifiable disease outbreaks, emergency management and aquatic facilities. Additionally, chronic disease issues have been associated with this type of infrastructure with the fly-in fly-out (FIFO) workforce identified as an at-risk population. This particularly applies to the Kimberley, Pilbara, Midwest, Goldfields and Wheat belt regions.

Regulated environmental activities

There are specific environmental activities that fall under the jurisdiction of the Department of Water and Environmental Regulation (DWER). Local government receives planning approvals for these regulated activities within their jurisdictions and coordinates with DWER when required to undertake local complaint investigations.

The DWER licence and works approvals search website provides the following data. Across the state there were 2,450 environmental licences and works approvals in operation with the two most significant regions being the Pilbara (556) and the Goldfields (342).

In the Kimberley region, there were 99 DWER regulated activities (at 4.04% of WA total) from a combination of environmental licences and works approvals. This represents a low proportion of the total numbers across the state and is much less than both the Pilbara region (556) and the Midwest region (268).

The combined metro regions had a total of 568 regulated activities. This represented a metro percentage of 23.18% of the WA total. Table 24 provides a summary of the top regulated activities across the region with a comparison to the top regulated activities across WA.

Table 24 Top 10 DWER regulated environmental activities (region and WA)

Kimberley region top 10 regulated environmental activities (in descending order of prevalence)	Western Australia top 10 regulated environmental activities (in descending order of prevalence)
Category 54 Sewage facility	Category 54 Sewage facility
Category 64 Class II or III putrescible landfill site	Category 5 Processing or beneficiation of metallic or non-metallic ore
Category 61 Liquid waste facility	Category 12 Screening etc. of materials
Category 5 Processing or beneficiation of metallic or non-metallic ore	Category 62 Solid waste depot
Category 12 Screening etc. of materials	Category 64 Class II or III putrescible landfill site
Category 55 Livestock saleyard or holding pen	Category 61 Liquid waste facility
Category 58 Bulk material loading or unloading	Category 6 Mine dewatering
Category 57 Used tyre storage (general)	Category 61A Solid waste facility
Category 89 Putrescible landfill site	Category 52 Electric power generation
Category 73 Bulk storage of chemicals, etc	Category 57 Used tyre storage (general)

It should be noted that a significant number of industrial premises in WA will not be captured (regulated) under environmental licensing criteria yet may still be the source of complaints from local area industrial emissions.

Radiological management in medical or industrial premises

Radiation safety within the built environment falls under the jurisdiction of the Radiological Council of Western Australia.

Premises that store radiological substances or irradiating apparatus (x-ray devices) are registered with the Radiological Council and will operate under conditions of registration and/or radiation licence.

For any planning concerns about environmental radiation issues the Radiological Council works with the DOH to provide advice regarding sites where naturally occurring radiation issues may be identified such as those associated with tailings from mining operations.

For non-ionising radiation planning issues such as the siting of mobile communication technology, the DOH typically has no specific comment in relation to these proposals however recommends that local government planning departments consider a fact sheet published by the Australian Radiation Protection and Nuclear Safety Agency at:

http://www.arpansa.gov.au/pubs/factsheets/NBN_FixedWirelessBaseStations.pdf

Air quality issues

Air quality concerns can generate complaints to local governments. Many of the complaints reported related to concerns about smoke, odour or dust emissions. The DWER administers the *Environmental Protection Act 1986* that considers the environmental emissions listed above as a source of pollution. The DOH is able to provide technical advice about amenity complaints, however under the *Public Health Act 2016* there is no existing legislative role to regulate air quality. Well considered land-use planning and the use of environmental separation guidelines can play a significant part in each local government's management of air quality.

Not all local governments within the state received complaints about air quality. The percentage of local governments that reported receiving complaints in the Kimberley region was 66.67% which was similar to the WA region average (63.65%). A summary of air quality queries and/or complaints in the Kimberley, WA and comparative regions are presented in Table 25.

Table 25 Complaints about air quality across WA and regions (projections in brackets)

	Complaints related to industrial emissions	Complaints related to dust from construction activities	Complaints related to residential wood heaters	Complaints related to smoke from burn offs	Complaints "other"	Total air quality complaints
Western Australia	97 (166)	279 (499)	181 (350)	252 (461)	390 (677)	1,214 (2,184)
Kimberley	0	3 (4)	0	35 (46.7)	5 (6.7)	43 (57)
Pilbara	0	0	0	0	0	0
Midwest	0	5 (13)	0	0	4 (10.5)	12 (32)
Kimberley percentage of WA total	0.00%	0.80%	0.00%	10.13%	0.99%	2.62% of WA total
Pilbara percentage of WA total	0.00%	0.00%	0.00%	0.00%	0.00%	0.00% of WA total
Midwest percentage of WA total	0.00%	2.62%	0.00%	0.00%	1.55%	1.44% of WA total
Combined metro percentage of WA total	79.72%	82.57%	83.44%	71.23%	26.26%	80.14% of WA total

The total reported number of air quality queries and/or complaints received across WA was 1,214 which can be projected to 2,184. The metro percentage of these was 80.14%.

In the Kimberley region there were 43 total reported complaints (projected to 57). This represented 2.62% of the WA total.

The number of complaints in WA related to industrial emissions was 97 (projected to 166). The Kimberley percentage for these at 0.00%. The metro percentage for these was 79.72%.

Total WA complaints related to dust from construction type activities was 279 (projected to 499). The metro percentage for these was 82.57%.

The Kimberley region was low in dust from construction type activities at 3 (projected to 4) than the metro regions of the North Metro 58 (projected to 127.6) and the East Metro 54 (projected to 99). Complaints about dust from construction type activities in the South Metro region was the highest of the WA regions.

Other WA air quality complaints were reported for residential wood heaters with 181 complaints (projected to 350) and 252 complaints related to smoke from burn offs (projected to 461). The Kimberley is relatively high in these complaints of smoke from burn offs when compared to nearby regions.

The combined metro regions have the majority of complaints related to residential wood heaters (165 projected to 292.2 at 83.44% of WA total) and the majority of complaints related to smoke from burn offs (191 projected to 329 at 71.23% of WA total).

The category of "other" air quality complaints indicates that the Kimberley (5 projected to 6.7) has further air quality issues of an undefined nature representing 0.99% of WA "other" air quality issues.

A comparison of burn permits issued by local governments suggest that the Kimberley region 252 reported (projected to 336) issues more overall numbers of permits than the Pilbara (projected to 120), and the Midwest (projected to 18). This is much less than the number of permits reportedly issued within the North Metro (1,019) and the East Metro (1,387) regions. Burn permits were 64.82% metro issued as an overall state percentage.

The reporting of council burns in the Kimberley region (19 projected to 25) at 6.91% of WA total suggests that it is moderately involved in this process compared to other regions.

Asbestos issues

Local governments have contended with illegal dumping of asbestos products for many years which has created hazardous environments in many urban settings. In January 2017 amendments to the *Health (Asbestos) Regulations 1992* (HAR) were introduced to increase the fines for asbestos-related offences and to allow authorised officers to issue on the spot infringement notices. These were introduced as previous fines had been grossly inadequate for local governments to pursue prosecutions of offences under the HAR. The future *Public Health Act 2016* asbestos regulations will continue to adjust illegal dumping fines to provide a suitable deterrent and/or penalty.

In WA asbestos is a location/period specific issue as within each region there are era specific buildings where asbestos products were used. Therefore, suburbs around WA that post-date this era will have minimal asbestos issue (>1989) or no asbestos issue (>2003).

The *Contaminated Sites Act 2003* provides for specific locations that have (asbestos) contamination to be identified and classified under a legislative structure. DWER is the

enforcement agency for this legislation with DOH providing technical advice to DWER in this area upon request. Data about contaminated sites has not been provided in this report.

Asbestos remains an issue within older urban areas with 66.67% of local governments in the Kimberley region experiencing complaints about asbestos. On average, across WA 78.26% of local governments in each region experienced asbestos complaints. Within the Pilbara region 100.00% of local governments experienced complaints about asbestos and 50.00% of local governments within the Midwest region and 100.00% of local governments in the metro regions.

Across the state there was 838 reported complaints relating to asbestos which projects to a total of 1,698 complaints. Asbestos from a metro perspective was 64.90% of all complaints. This does suggest that the non-metro areas had relatively high complaint numbers proportional to their populations.

A summary of asbestos related queries and/or complaints in the Kimberley, WA and comparative regions are presented in Table 26.

Table 26 Complaints about asbestos across WA and regions (projections in brackets)

	Complaints related to demolition / renovation / damaged asbestos-containing material	Complaints related to illegal dumping of asbestos material	Complaints related to fire damaged asbestos	Complaints related to high-pressure cleaning of asbestos-cement products	Complaints "other"	Total asbestos complaints
Western Australia	333 (665.3)	228 (426.6)	31 (69.5)	16 (58.8)	230 (477.9)	838 (1,698)
Kimberley	4 (5.3)	5 (6.7)	1 (1.3)	0	0	10 (13.3)
Pilbara	6 (24)	1 (4)	3 (12)	0	3 (12)	13 (52)
Midwest	13 (34.1)	1 (2.6)	0	0	14 (36.8)	28 (73.5)
Kimberley percentage of WA total	0.80%	1.57%	1.87%	0.00%	0.00%	0.78% of WA total
Pilbara percentage of WA total	3.61%	0.94%	17.27%	0.00%	2.51%	3.06% of WA total
Midwest percentage of WA total	5.13%	0.61%	0.00%	0.00%	7.70%	4.33% of WA total
Combined metro percentage of WA total	58.23%	78.29%	26.76%	4.76%	75.18%	64.90% of WA total

WA totals for the various types of asbestos queries and/or complaints were: complaints related to demolition/renovation/damaged asbestos-containing material at 333 (projected to 665.3) and illegal dumping of asbestos material at 228 (projected to 426.6) and also some additional low numbers of queries and/or complaints related to fire at 31 and high-pressure cleaning of asbestos-cement products (e.g. roofs) at 16.

The Kimberley region reported 10 asbestos queries and/or complaints in total (projected to 13.3) which is less than the Pilbara 13 (projected to 52) and the Midwest 28 (projected to 73.5).

The types of asbestos queries and/or complaints in the Kimberley region were mostly related to demolition/renovation/damaged asbestos-containing material (4 projected to 5.3) at 0.80% of the WA total and illegal dumping (5 projected to 6.7) at 1.57% of the WA total. One complaint related to fire (1) was reported with no high-pressure cleaning of asbestos-cement products (e.g. roofs) reported. The South West was the primary region reporting complaints of high-pressure cleaning of asbestos-cement products (95.25%).

Anecdotal evidence collected by DOH has suggested that local government considers infringement notices to be an effective tool for asbestos management. Across the state there was 3 (projected to 5.4) infringement notices issued. The data shows that the South Metro region (1) and the Goldfields (2) the only two regions to issue infringement notices.

Across the state there was 44 (projected to 81.3) improvement notices issued. The Kimberley region reported 0 improvement notices issued. The metro regions reported 36 issued in total, the Pilbara region reported 0 improvement notices and the Midwest region reported 0 notices issued.

Urban toxicology

Urban toxicology has been reported within the survey as issues associated with heavy metals, hydrocarbons and other chemical pollutants including illicit substances and their associated contaminants in premises.

Other chemical pollutants (not air quality)

On average 31.58% of local governments within regions reported queries and/or complaints about other chemical pollutants (not air quality). The metro average was 42.50%.

In the Kimberley region 33.33% of the local governments that reported indicated that they received queries and/or complaints about other chemical pollutants (not air quality). The percentage was much lower in the Pilbara (0.00%) and in the Midwest regions (12.50%).

Across WA there were:

- 14 reported complaints/queries (projected to 25.4) relating to heavy metals (with 92.13% of these metro cases);

- 20 reported complaints/queries (projected to 49.9) relating to hydrocarbons (with 34.47% metro cases);

- 11 reported complaints/queries (projected to 21.3) relating to pesticides (with 31.92% of these metro cases).

The Kimberley region had (0) complaints related to heavy metals and 2 reported relating to hydrocarbons. Other non-metro regions with hydrocarbons complaints were Goldfields (3) and Kimberley (2). There were no chemical pollutant complaints (0) related to pesticides across the Kimberley region. There were additionally 1 chemical pollutant complaints related to pesticides reported in the Midwest and 0 reported in the Pilbara region.

Across WA there were 6 (projected to 18.8) complaints/queries relating to "other" chemical pollutants (with 0.00% of these reported Kimberley region cases).

Clandestine drug laboratories, cannabis grow houses and smoke houses

On average across WA 28.50% of local governments within regions reported queries and/or complaints about clandestine drug laboratories or smoke houses. The metro average was 63.06%.

In the Kimberley region 33.33% of the local governments that reported indicated that they received queries and/or complaints about clandestine drug laboratories or smoke houses. The percentage was much lower (12.50%) in the Midwest and (0.00%) in the Pilbara region. The Kimberley represented a higher percentage of local governments receiving these queries in comparison to these two regions.

Across WA there were:

5 complaints/queries reported (projected to 9.5) relating to cannabis grow houses (with 100.00% of these metro cases);

21 reported complaints/queries (projected to 39.8) relating to clandestine drug laboratories (with 68.34% of these metro cases);

16 reported complaints/queries (projected to 31.2) relating to smoke houses (with 74.36% of these metro cases).

The Kimberley region had 3 reported complaints related to smoke houses similar to the South Metro region (3) and the East Metro region (2). The Kimberley had 0 reported complaints related to cannabis grow houses and 0 in total related to clandestine drug laboratories (with the most being 5 in the Great Southern region).

Residential premises

The introduction of the *Public Health Act 2016* provided an opportunity to review the provisions currently in place regarding residential premises including houses unfit for human habitation. Several reporting questions were asked related to hoarding and squalor to try and gauge the extent of these issues in WA and the number of cases where hoarding and squalor co-exist.

Hoarding

Previous surveys of local government recognised an inherent difficulty of both qualifying and quantifying hoarding cases. The widely accepted international definition of compulsive hoarding is made up of three primary characteristics: the acquisition of and failure to discard a large number of possessions that appear to be useless or of limited value, living spaces are cluttered to the point that they can't be used for the activities for which they were designed, or significant distress or impairment in functioning caused by the hoarding.

Hoarding may or may not occur with the incidence of squalor. Squalor describes an unsanitary living environment that has arisen from extreme and/or prolonged neglect. This in turn may pose immediate or longer-term health and safety risks to people or animals residing in the affected premises, as well as in the community. Provisions allowing a house to be declared unfit for human habitation are generally the primary tool used to address hoarding and squalor and these provisions are to be developed in regulations under the *Public Health Act 2016* with updated penalties.

Hoarding is predominantly a metro issue with 74.34% of all reported cases within the metro area. One local government reported having 29 cases in their area, accounting for over 60% of all reported cases in the region. Previous local government comments to the DOH regarding hoarding and squalor commonly cited the resource intensive nature of these cases and the need for involvement of mental health services. Hoarding is also likely to be a function of

residential plot-size, where large country land-plots will more likely be deemed as extended “storage” of materials.

Across WA there were 110 (projected to 203.4) known cases of hoarding. This approximates at 0.8 cases per 10,000 people.

There were 43 of these (projected at 80.7) of residents known to be hoarders and living in squalor at 0.3 cases per 10,000 people.

There were 0 hoarding cases reported in the Kimberley region.

Table 27 provides a summary for percentage of cases of squalor in reported cases of hoarding in the Kimberley, WA and comparative regions. Figure 15 provides a graphical interpretation of the data for the likely percentage of cases of squalor in reported cases of hoarding across WA where the trendline suggests between 40% and 50% of cases.

Table 27 Cases of hoarding and squalor across WA and regions (projections in brackets)

	Cases of hoarding	Cases of hoarding & squalor	Percentage of cases of squalor in reported cases of hoarding	Cases of hoarding per 10,000 people
Western Australia	110 (203.4)	43 (80.7)	39.68%	0.8
Kimberley	0	0	N/A	0
Pilbara	0	0	N/A	0
Midwest	1 (2.6)	0	0.00%	0.4
Metro combined	88 (151.2)	32 (52.7)	34.85%	0.7
Metro percent	74.34%	65.30%	N/A	N/A

The projected figures in the Kimberley region suggest 0 cases of hoarding per 10,000 people.

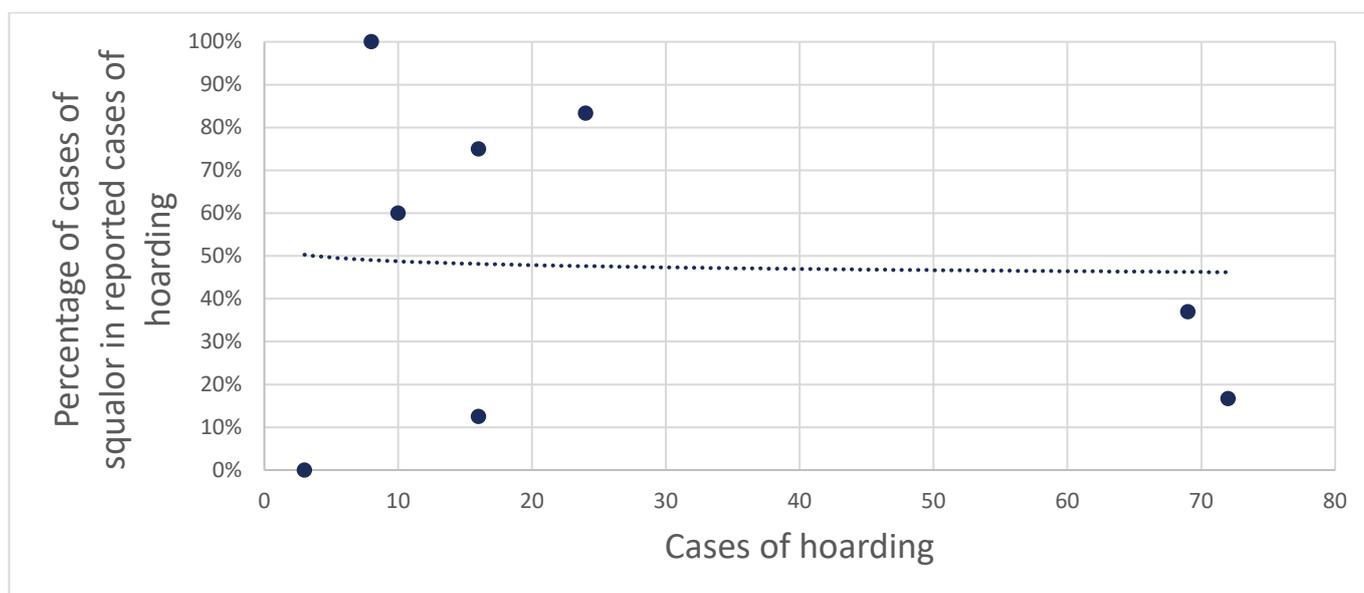


Figure 15 Regional cases of squalor in reported cases of hoarding across WA

Houses unfit for habitation

Across the state there were 75 (projected to 136.8) houses declared unfit for habitation. This equates to 0.5 cases per 10,000 people or 1.4 houses declared unfit for habitation per 10,000 dwellings.

A total of 0 houses were reported within the Kimberley region as having been declared unfit for human habitation. This can be compared to the Pilbara region reported total of 3 (projected to 12) at 8.77% of the WA total and the Midwest region reported total of 2 (projected to 5.2) at 3.80% of the WA total.

The metro percentage of houses declared unfit for habitation was 57.09% of the WA total.

Mould in housing

Throughout the state there were a total of 125 reported complaints related to dampness or mould in housing (projected to 253.8). The combined metro percent for this issue was 69.94%.

There was a total of 4 complaints related to dampness or mould in housing (projected to 5.3) in the Kimberley region at 2.09% of the WA total.

A reported total of 5 complaints of dampness or mould in housing in the Kimberley region were considered resolved with one of these (1) were identified as being in government housing.

There were 6 reported complaints in total in WA related to dampness or mould in government housing.

Residential housing has many other issues that can absorb local government resources. These issues include complaints from noise and residential disagreements and behavioural disputes. These types of residential management issues have not been included in this report.

Skin penetration premises

It is a regulatory responsibility of local government to monitor skin penetration premises operating in their local area. To support future reviews of the *Public Health Act 2016* it is necessary to understand the management of skin penetration businesses that are operating across WA under the *Health (Skin Penetration Procedures) Regulations 1998*.

There were 1,421 skin penetration premises reported to be operating across the 66 local governments that responded. This was projected to 2,710 skin penetration premises operating across the state. This projection has been determined from the premises reported as: high risk, medium risk and low risk premises.

A summary of skin penetration premises in the Kimberley, WA and comparative regions are summarised in Table 28.

Table 28 Skin penetration businesses operating across WA and regions (projections in brackets)

	High risk skin penetration premises	Medium risk skin penetration premises	Low risk skin penetration premises	All skin penetration premises	All skin penetration premises per 10,000 people
Western Australia	446 (779)	579 (1,179)	398 (756)	1,421 (2,710)	10.2
Kimberley	5 (7)	10 (13)	12 (16)	27 (36)	10
Pilbara	4 (16)	19 (76)	8 (32)	31 (124)	19.7
Midwest	0	0	0	0 [44]	7.1 *
WA proportional distribution	28%	44%	28%	100.00% of WA total	N/A
Kimberley proportional distribution	18.61%	36.94%	44.44%	1.33% of WA total	N/A
Pilbara proportional distribution	12.90%	61.29%	25.81%	4.58% of WA total	N/A
Midwest proportional distribution	N/A	N/A	N/A	1.62% of WA total *	N/A
Combined metro proportional percent	82.99% of WA total	76.67% of WA total	84.15% of WA total	80.68% of WA total	N/A

*Previous data collection used to estimate projected value

Across WA the total number of high risk skin penetration premises were reported at 446 (projected to 779), medium risk was reported at 579 (projected to 1,179) and low risk was reported at 398 (projected to 756). This represents a ratio distribution of: 28%, 44% and 28%.

The reported total for skin penetration premises for Kimberley region was 27 (projected to 36). This represents 1.33% of the WA total.

High risk skin penetration premises for the Kimberley region was reported at 5 (projected to 7), medium risk was reported at 10 (projected to 13) and low risk was reported at 12 (projected to 16). This represents a ratio distribution of: 18.61% (high risk), 36.94% (medium risk) and 44.44% (low risk).

In comparison high risk premises for the Pilbara was reported at 4 (projected to 16), medium risk was reported at 19 (projected to 76) and low risk was reported at 8 (projected to 32). Thus, the reported total for Pilbara was 31 (projected to 124). This represents a ratio distribution of: 12.90% (high risk), 61.29% (medium risk) and 25.81% (low risk).

The reported total for skin penetration premises for Midwest region was 0 (projected to 44). Previous DOH data collection has projected 44 skin penetration premises.

An overview of risk categories for skin penetration premises is presented in Figure 16 showing the general relationship curves between high, medium and low risk percentages for each region with most regions designating the highest percentage of skin penetration premises in the medium risk category.

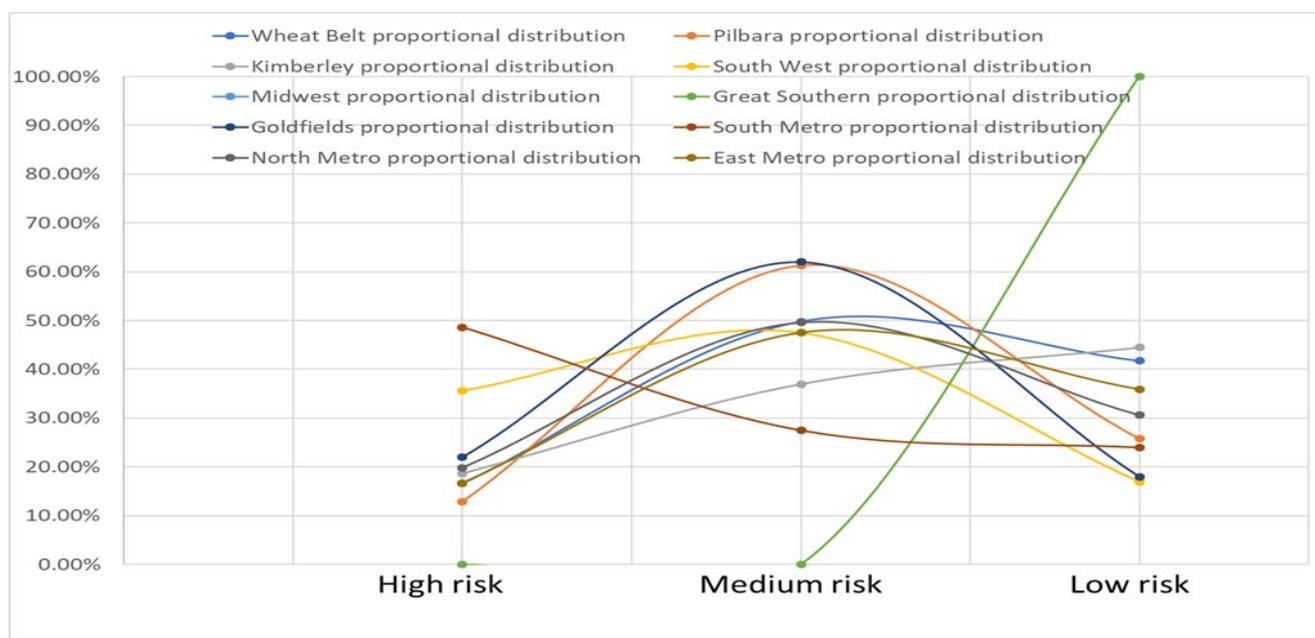


Figure 16 Comparison of risk categories for skin penetration premises (%) by region

The Kimberley region represents 10 skin penetration premises per 10,000 people. The South Metro and North Metro regions represent 11.2 and 14.2 skin penetration premises per 10,000 people respectively. The East Metro region represents 5.2 skin penetration premises per 10,000 people. The Pilbara represents 19.7 skin penetration premises per 10,000 people.

Skin penetration risks are strongly linked to urban environments with the South Metro, East Metro and the North Metro regions totalling 80.68% of the skin penetration premises in the state. The South West region was next largest with a further 9.00% with the Pilbara at 4.59% and the Goldfields next at 3.90%.

Although the Goldfields region represents just 3.9% of the state it also represents 19 skin penetration premises per 10,000 people which is the highest in WA. It is interesting that both the Goldfields region and Pilbara region data indicates a higher ratio of total number of skin penetration premises relative to population. This is likely due to the nature of the employment and sub-cultural trends in its population when compared to the Kimberley region.

Method for local governments inspections of skin penetration premises can differ across regions. Table 29 provides a summary of inspection methods across Kimberley, WA and comparative regions. The results from this table indicate that methods are varied across WA local governments.

Table 29 Methods of inspection of skin penetration businesses by local government across WA and regions

	Conducted inspections on a regular basis in accordance with risk-rating	Conducted inspections on a regular basis regardless of risk-rating	Conducted inspections only in response to a complaint
Western Australia	39.38%	40.90%	39.62%
Kimberley	33.33%	0.00%	66.67%
Pilbara	0.00%	100.00%	0.00%
Midwest	N/A	N/A	N/A
Metro average	24.72%	38.61%	38.75%

An overview of inspection methods for skin penetration premises is presented in Figure 17 showing the distribution of method for each region with a relatively evenly spread of method type. The slight majority of method of inspections skin penetration premises is represented by regular inspections in accordance with risk-rating.

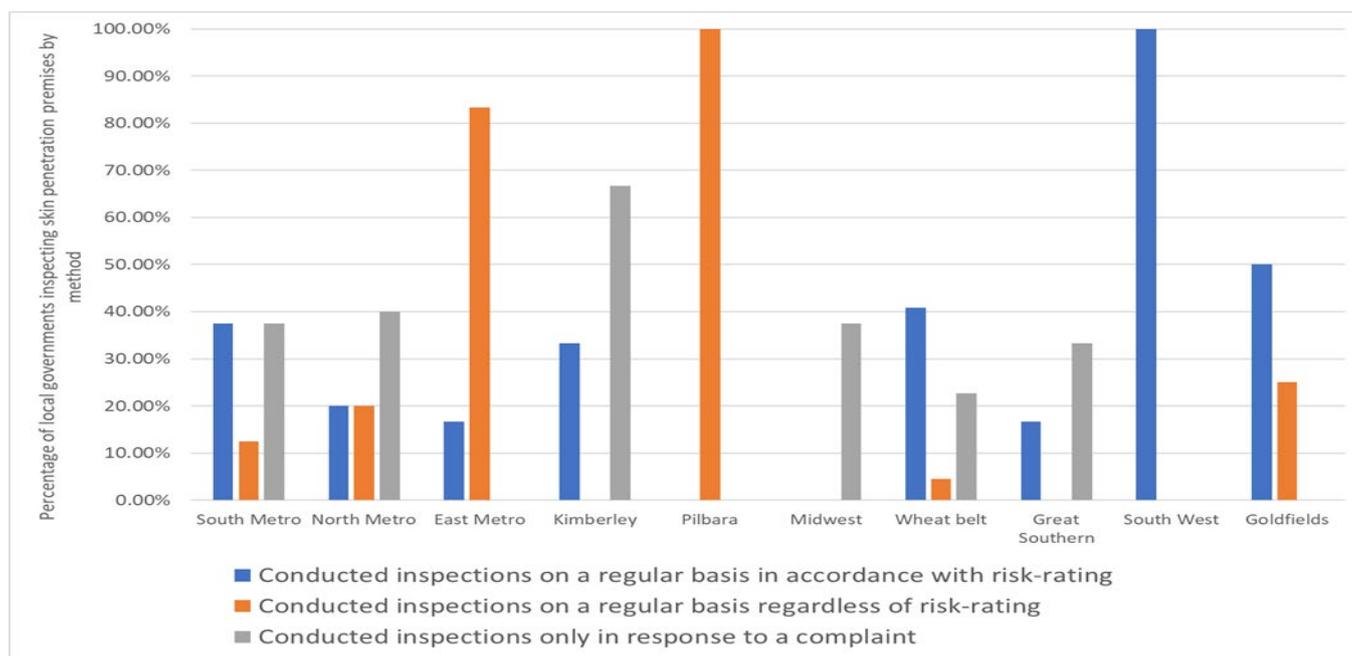


Figure 17 Percentage of local governments inspecting skin penetration premises within regions by method

Across WA there were 37 reported complaints (projected to 78) about skin penetration premises. A total of 30 reported complaints (projected to 52.8) were recorded by metro local governments (67.61%).

The Kimberley region had 1 (projected to 1.3) complaint which was 1.66% of WA total.

There were no complaints regarding hairdressing premises across the Kimberley region.

Lodging houses

Environmental health risks associated with lodging houses are currently regulated by local government using local laws which provide for lodging house management controls. Model local laws have provided all local governments with an ability to maintain standardised lodging house local laws. Local governments periodically amend their own local laws to keep them updated in order to protect the health of the occupants of lodging houses (houses of multiple occupancy).

Throughout WA 77.55% of local governments reported that they maintained a register of lodging houses. This number was 100.00% in the Kimberley region. Across the metro region 68.61% of local governments maintained a register of lodging houses.

Across WA there were 292 reported (projected to 624) lodging houses registered. The total number of lodging houses (registered and unregistered) may be approximated to 800.

There were 46 registered lodging houses reported for the Kimberley region (projected to 61) which is less than the Pilbara with 22 reported (projected to 88) and greater than the Midwest region with 3 reported (projected to 7.9).

The Kimberley region represents 9.82% of registered lodging houses across the state. Lodging houses in the combined metro area represent 21.44% of the state's total with the two largest region percentages reported for the Wheatbelt (19%) and Goldfields (19%).

Inspections of registered lodging houses are conducted around the majority of the state. The total number of inspections around the state was reported at 225 (projected to 456.1). This represents approximately three out of every four lodging houses (73.07%) inspected annually.

The Kimberley region conducted 38 inspections (projected to 50.7) which represents 82.71% annual inspections of registered lodging houses. The combined metro regions (with a total projected number of inspections of 110.3) had a similar rate of inspection at 82.44%. The Pilbara reported 0.00% inspection rate while the Midwest was at 100.00%.

A summary of lodging house information across Kimberley, WA and comparative regions is presented in Table 30.

Table 30 Lodging house information across WA and regions (projections in brackets)

	Percentage of local governments with lodging houses registered	Registered lodging houses	Inspections of registered lodging houses	Percentage of registered lodging houses inspected annually	Registered lodging houses percentage of WA total
Western Australia	77.55%	292 (624)	225 (456.1)	73.07%	100.00%
Kimberley	100.00%	46 (61)	38 (50.7)	82.71%	9.82%
Pilbara	100.00%	22 (88)	0	0.00%	14.10%
Midwest	75.00%	3 (7.9)	3 (7.9)	100.00%	1.27%
Combined metro	68.61%	(133.8)	(110.3)	82.43%	21.44%

The Kimberley region had 1 reported complaint about registered lodging houses and there were no reports of illnesses linked to any lodging houses.

Public buildings

A recent review of the *Health (Public Buildings) Regulations 1992* suggested that the preferred option for the future management of public buildings in WA, was to propose a new definition of a public building which is to be centred on risk and will exclude outdoor events which are to be addressed under a standalone legislative tool. A number of local governments provided comments regarding the current legislative framework. In general, the definition of a public building was considered to be too broad, and it was suggested that it be amended to exclude lower risk buildings. It was also noted that events should have a separate approval process from public buildings.

Across the state there were 2,625 public buildings reported to be operating in WA across the 66 local governments that responded (for a projected WA total of 5,120). This projection has been determined from the sum of public buildings reported as: high risk, medium risk and low risk.

Not all local governments categorised public buildings by risk. The Kimberley region had 66.67% of local governments that categorise public buildings by risk which was lower than the South Metro (87.50%) and North Metro region (80.00%) and the East Metro region (100.00%). The metro average was 89.17%. The WA region average was much lower at 65.61%.

Table 31 provides a summary of categorisation methods across the Kimberley, WA and comparative regions. The results from this table indicate that WA local governments generally use internally developed protocols as a method to categorise risk.

Table 31 Methods to categorise risk for public buildings across WA and regions

	Local governments that use internally developed protocols to categorise risk	Local governments that use “no formal approach” as a risk assessment method	Local governments that use “other” as a risk assessment method
Western Australia	49.26%	25.58%	0.00%
Kimberley	33.33%	33.33%	0.00%
Pilbara	N/A	N/A	N/A
Midwest	25.00%	25.00%	0.00%

The East Metro region in comparison had a few local governments report “no formal approach” to categorise public buildings risk (33.33%) with the rest using internally developed protocols (50.00%). The South Metro region reported 75.00% of local governments use internally developed protocols to categorise risk for public buildings as opposed to 0.00% using “no formal approach” risk assessment method. The North Metro region reported 60.00% of local governments use internally developed protocols to categorise risk for public buildings as opposed to 20.00% using “no formal approach” risk assessment method.

Across the state there were 267 reported high risk public buildings (projected to 487) at 9.51% total buildings, 842 reported medium risk public buildings (projected to 1,619) at 31.62% total buildings and there were 1,516 reported low risk public buildings (projected to 3,015) at 58.87% of total buildings. Thus, the WA distribution ratio was 9.51% high risk, 31.62% medium risk and 58.87% low risk public buildings.

The reported total for Kimberley region was 81 (projected to 108). This represents approximately 2.11% of the WA total of public buildings.

A summary of total public buildings by risk category and proportional representation across the Kimberley region, WA and comparative regions are presented in Table 32.

Table 32 Public buildings by risk category across WA and regions (projections in brackets)

	% of local governments that categorise public buildings by risk	High risk public buildings	Medium risk public buildings	Low risk public buildings	All public buildings	All public buildings per 10,000 people
Western Australia	65.61%	267 (487)	842 (1,619)	1,516 (3,015)	2,625 (5,120)	19.2
Kimberley	66.67%	10 (13)	38 (51)	33 (44)	81 (108)	29.9
Pilbara	0.00%	0	0	0	[102] *	16.2 *
Midwest	50.00%	0 (0)	2 (5)	8 (21)	10 [237] *	38.2 *
WA proportional distribution	N/A	9.51%	31.62%	58.87%	100.00%	N/A
Kimberley proportional distribution	N/A	12.31%	46.94%	40.74%	2.11% of WA total	N/A
Pilbara proportional distribution	N/A	N/A	N/A	N/A	1.99% of WA total *	N/A
Midwest proportional distribution	N/A	0.00%	19.85%	80.15%	4.63% of WA total *	N/A
Combined metro proportional percent	89.17%	77.33% of WA total	60.53% of WA total	68.04% of WA total	66.55% of WA total	16.0

*Previous data collection used to estimate projected value

High risk public buildings for the Kimberley were reported at 10 (projected to 13) at a ratio of 12.31%, medium risk public buildings were reported at 38 (projected to 51) at a ratio of 46.94% and low risk public buildings were reported at 33 (projected to 44) at a ratio of 40.74%. The Kimberley distribution ratio was 12.31% high risk, 46.94% medium risk and 40.74% low risk public buildings.

Public buildings risks are strongly linked to urban environments but not specifically the metro regions with the South Metro, East Metro and the North Metro regions totalling just 66.55% of all public buildings in the state.

There were no public buildings reported for the Pilbara. Previous DOH data collection has projected 102 total buildings. There were no risk categories reported for public buildings for the Pilbara.

There were no high risk public buildings reported for the Midwest region while medium risk was reported at 2 (projected to 5) at a ratio of 19.85% and low risk was reported at 8 (projected to 21) at a ratio of 80.15%. The Midwest distribution ratio was 0.00% high risk, 19.85% medium risk and 80.15% low risk public buildings. The reported total for Midwest region was 10. Previous DOH data collection has projected 237 public buildings in the Midwest region. This represents approximately 4.63% of the WA total of public buildings.

An overview of risk categories for public buildings is presented in Figure 18 showing the general relationship curves between high, medium and low risk percentages for each region with most regions designating the highest percentage of public buildings in the low risk category. The data suggest that local governments classified their high risk, medium risk and low risk buildings with an overall similar type of proportion across WA.

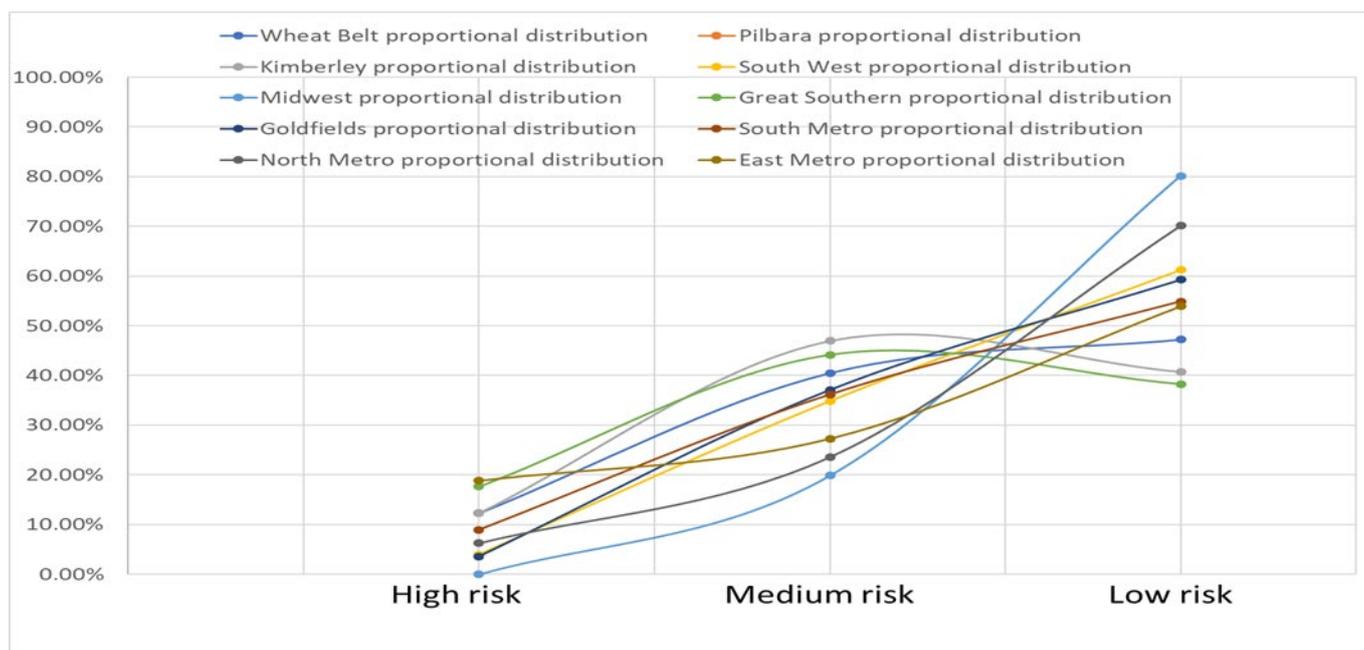


Figure 18 Comparison of risk category for public buildings (%) by region

There were 1,720 reported inspections of public buildings (projected to a total of 3,411). This projection has been determined from the inspections of public buildings reported as: high risk, medium risk and low risk.

Across the state inspections of high risk public buildings were reported at 323 (projected to 586) and as ratio to the number of high risk public buildings was 120.33%. Inspections of medium risk public buildings were reported at 693 (projected to 1,367) and as a WA ratio was 84.49%. Inspections of low risk public buildings were reported at 704 (projected to 1,457) and as a WA ratio was 48.31%.

Inspections of high risk public buildings for the Kimberley were reported at 27 (projected to 36) or 276.92% inspections of high risk public buildings. Inspections of medium risk public buildings were reported at 9 (projected to 12) or 23.53% inspections of medium risk public buildings and inspections of low risk public buildings were reported at 10 (projected to 13) or 29.55% inspections of low risk public buildings. Overall the inspection rate for Kimberley region was higher than the WA rate for high risk, and lower for medium risk and low risk public buildings.

A summary of public buildings inspections and inspection rates across the Kimberley, WA and comparative regions are summarised in Table 33.

Table 33 Inspections of public buildings by risk category across WA and regions (projections in brackets)

	High risk public buildings	Medium risk public buildings	Low risk public buildings	All public buildings
Western Australia inspections	323 (586)	693 (1,367)	704 (1,457)	1,720 (3,411)
Western Australia % inspections of public building type	120.33%	84.49%	48.31%	66.61%
Kimberley inspections	27 (36)	9 (12)	10 (13)	46 (61)
Kimberley % inspections of public building type	276.92%	23.53%	29.55%	56.76%
Pilbara inspections	N/A	N/A	N/A	0
Pilbara % inspections of public building type	N/A	N/A	N/A	N/A
Midwest inspections	0	3 (8)	12 (32)	15 (39)
Midwest % inspections of public building type	0.00%	160.00%	152.3%	150.38%
Combined metro % inspections of public building type	73.23% of WA total	63.59% of WA total	61.89% of WA total	64.52% of WA total

There were no risk categories reported for public buildings for the Pilbara.

For comparison inspections of high risk public buildings for the North Metro (142%) were reported at 51 (projected to 112.2), inspections of medium risk (89%) was reported at 120 (projected to 264) and inspections of low risk public buildings (41%) was reported at 163 (projected to 358.6). For further comparison inspections of high risk public buildings for the South Metro (136.08%) were reported at 96 (projected to 132), inspections of medium risk (86.26%) was reported at 247 (projected to 339.6) and inspections of low risk public buildings (32.89%) was reported at 143 (projected to 196.6).

An overview of inspections of public buildings by risk category is presented in Figure 19 showing the general relationship curves between high, medium and low risk percentages for each region with most regions inspecting the highest percentage of high risk public buildings. The data suggest that local governments inspect their high risk, medium risk and low risk public buildings with an overall similar type of proportion across WA.

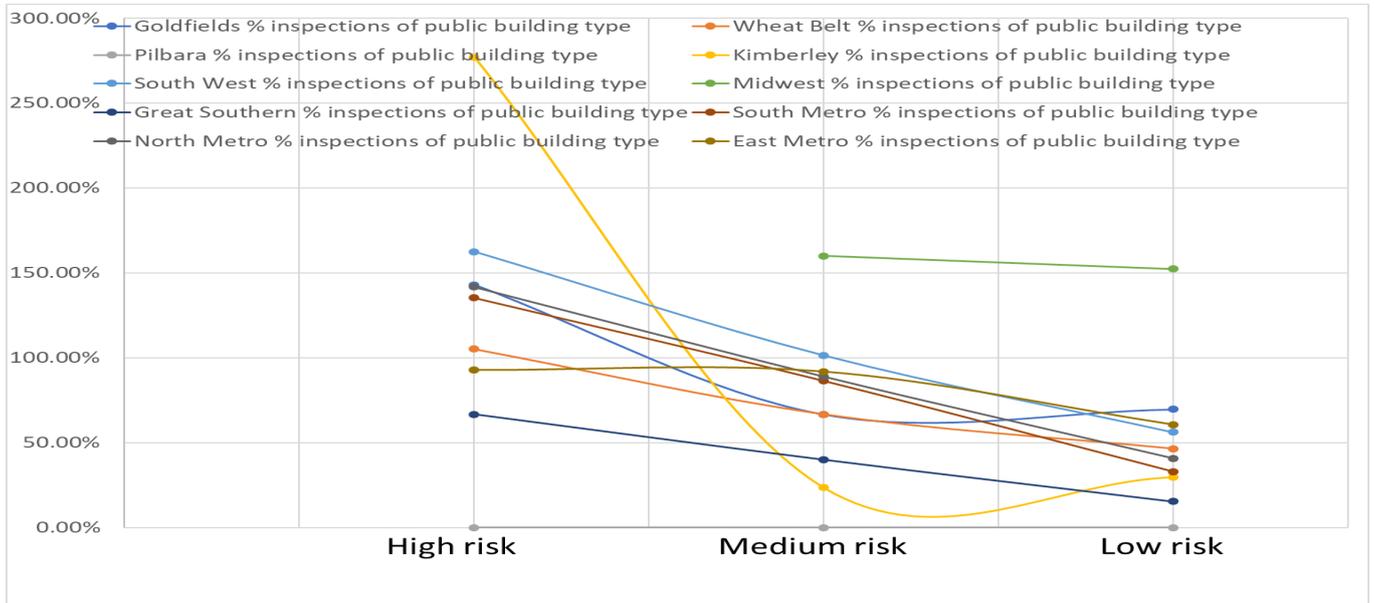


Figure 19 Comparison of inspections of public buildings by risk category (%) by region

Section 39 certificates are associated with the regulatory approval of public buildings in relation to liquor licensing under the *Liquor Control Act 1988*. Across WA there were 188 reported Section 39 certificates issued (projected to 389).

The Kimberley region issued 9 section 39 certificates (projected to 12) which was less in number to projections for the South Metro (63.2), North Metro (105.6) and East Metro regions (55). The Kimberley region represented 3.09% of all section 39 certificates issued. The Pilbara region represented 1.03% of all section 39 certificates issued. The Midwest region represented 8.10% of all section 39 certificates issued. The combined metro region accounted for 57.58% of all section 39 certificates issued.

Event management

In WA, public buildings and events have been historically been linked under the same legislative instrument with this having been a source of issue for many local governments. Anecdotal evidence has identified that the assessment of events applications has become an increasingly time-consuming process. The proposed regulatory structure will look to provide a risk-based approach to event regulation and provide flexibility to allow for adaptation to emerging trends.

In order to project total events numbers in WA, two different projections have been made in this section. This first has used total patron numbers at events and the second has used local government risk categorisation of events.

The reported WA total for approved events with an estimated attendance of more than 15,000 persons was 34 (projected to 60) representing 2.03% of all events. Approved events with an estimated attendance of more than 1,000 and less than 15,000 persons was 324 (projected to 635) representing 21.50% of all events. Approved events with an estimated attendance of less than 1,000 persons was 1,136 (projected to 2,258) representing 76.47% of all events.

The aggregated number for total approved (reported by patron number) events in WA was 1,494 for a projected total of 2,952. Table 34 provides a summary of events by patron numbers (attendance) across the Kimberley, WA and comparative regions.

Table 34 Total approved events reported by patron numbers across WA and regions (projections in brackets)

	Events with estimated attendance of more than 15,000 persons	Events with estimated attendance of more than 1,000 and less than 15,000 persons	Events with estimated attendance of less than 1,000 persons	All events based on attendance estimates	All events per 10,000 people
Western Australia	34 (60)	324 (635)	1,136 (2,258)	1,494 (2,952)	11.1
Kimberley	0	8 (11)	47 (63)	55 (73)	20.3
Pilbara	0	11 (44)	77 (308)	88 (352)	56
Midwest	0	0	29 (76.1)	29 (76.1)	12.3
WA proportional distribution	2.03%	21.50%	76.47%	100.00% of WA total	N/A
Kimberley proportional distribution	0.00%	14.60%	85.54%	2.48% of WA total	N/A
Pilbara proportional distribution	0.00%	12.50%	87.50%	11.92% of WA total	N/A
Midwest proportional distribution	0.00%	0.00%	100.00%	2.58% of WA total	N/A
Combined metro percent	90.17% of WA total	72.89% of WA total	58.58% of WA total	62.30% of WA total	N/A

The Kimberley region total for approved events with an estimated attendance of more than 15,000 persons was reported at 0, approved events with an estimated attendance of more than

1,000 and less than 15,000 persons was reported at 8 (projected to 11) and events with an attendance of less than 1,000 persons was 47 (projected to 63).

There was a total of 934 events reported by risk categorisation which is projected to a total of 1,613 events within the state. The projection of 1,613 has been determined from all events reported as: high risk, medium risk and low risk. The projected total for events by patron numbers (2,952) is larger than total events by risk (1,613) by a factor of approximately 1.7 which suggests that total events by risk represents just 54.64% of all events in WA.

Using total patron numbers, the Kimberley region totals to a reported amount of 55 and a projected total of 73 with the Kimberley region representing 2.48% of events in WA.

The WA total for approved high risk events reported for the state were 113 (projected to 193) representing 6.52% of all events, approved medium risk events were reported at 385 (projected to 621) representing 21.04% of all events and approved low risk events were reported at 436 (projected to 799) representing 27.07% of all events.

Table 35 provides a summary of events by risk categorisation across the Kimberley, WA and comparative regions.

Table 35 Total approved events reported by risk across WA and regions (projections in brackets)

	Local governments that categorise events by risk	High risk events	Medium risk events	Low risk events	All events based on risk
Western Australia	41.61%	113 (193)	385 (621)	436 (799)	934 (1,613)
Kimberley	66.67%	4 (5)	12 (16)	39 (52)	55 (73)
Pilbara	0.00%	0	0	0	0
Midwest	25.00%	0	1 (2.6)	1 (2.6)	2 (5)
WA proportional distribution	N/A	11.94%	38.51%	49.54%	54.64%
Kimberley proportional distribution	N/A	6.84%	21.92%	71.23%	4.54% of WA total
Pilbara proportional distribution	N/A	0.00%	0.00%	0.00%	0.00% of WA total
Midwest proportional distribution	N/A	0.00%	50.00%	50.00%	0.32% of WA total
Combined metro percent	58.89%	81.88% of WA total	86.87% of WA total	79.87% of WA total	82.80% of WA total

Approved high risk events for the Kimberley region were reported at 4 (projected to 5), approved medium risk events were reported at 12 (projected to 16) and approved low risk events were reported at 39 (projected to 52). The reported total for Kimberley region based on risk was 55 (projected to 73). This represents just 100.00% of events classified by attendance in the Kimberley region.

The data clearly indicates that not all local governments categorised events by risk. Of the local governments that reported in the Kimberley region, only 66.67% reported that they categorise events by risk which is higher than the Pilbara (0.00%), South Metro (50.00%), North Metro (60.00%) and the East Metro region (66.67%). The metro average was 58.89%. Across WA just 41.61% of local governments used risk to categorise events.

This range of events method categorisation for local governments have been listed in Table 36 across the Kimberley, WA and comparative regions.

Table 36 Events method categorisation across WA and regions

	Local governments using DOH Guidelines risk classification tool	Local governments using internally developed protocols	Local governments using “no formal approach”
Western Australia	29.92%	28.06%	0.00%
Kimberley	33.33%	33.33%	0.00%
Pilbara	0.00%	0.00%	0.00%
Midwest	12.50%	12.50%	0.00%
Metro average	29.17%	32.78%	0.00%

Events risks are generally a state-wide issue with the combined metro regions totalling just 62.30% of the attendance reported events in the state.

An overview of risk categories for events is presented in Figure 20 showing the general relationship curves between high, medium and low risk percentages for each region which suggests that most regions designate the highest percentage of events between the low risk category and the medium risk category.

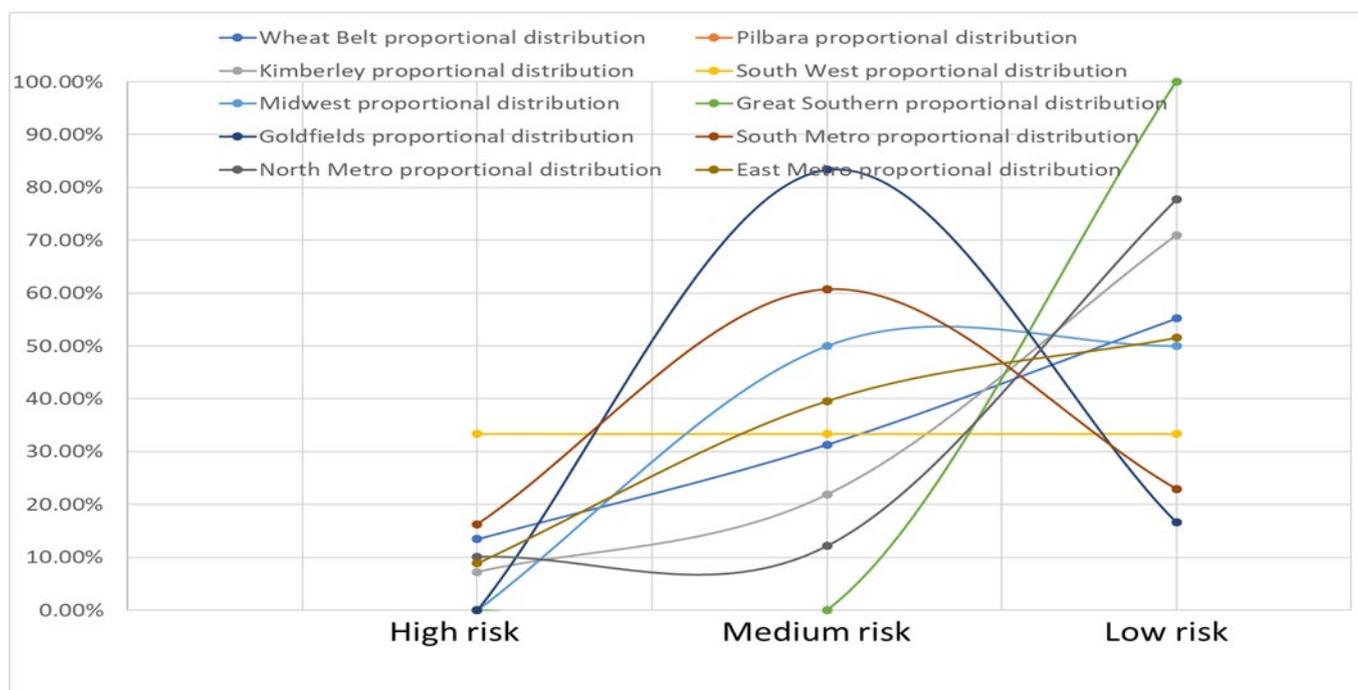


Figure 20 Comparison of risk category for events (%) by region

The relationship between patron numbers and risk category is difficult to compare directly as risk categories consider multiple variables. While total persons attending an event are a strong

indicator of risk for that event, other factors will also contribute to classify events at a higher risk rating. Issues such as alcohol availability, density of patron areas and other hazardous attractions at events will also be of importance to the classification.

Figure 21 has been presented to provide a simple overview of the relationship between the percentage of events based on attendance and the percentage of events based on risk categorisation.



Figure 21 Comparison of event category by patron numbers (%) versus risk assessment (%) across WA

Not all local governments within the metro regions captured complaints related to events. The Kimberley region reported 33.33% of local governments captured complaints related to events. This was lower at 0.00% in the Pilbara and higher in the Midwest at 50.00% and ranged between 66.67% to 100.00% in the metro regions.

Water facilities and infrastructure

Many local governments have responsibilities for ensuring water quality to their residents.

Aquatic facilities

To inform evaluations of future reviews of the *Public Health Act 2016* and the *Health (Aquatic Facilities) Regulations 2007* it is necessary to monitor information on the different aquatic facilities operating across WA. It is currently the responsibility of local government to monitor and regulate aquatic facilities operating in their local area.

Table 37 provides a summary of aquatic facilities across the Kimberley, WA and comparative regions.

Table 37 Aquatic facilities operating across WA and regions (projections in brackets)

	Public swimming pools	Public spa pools	Hydrotherapy pools	Floatation tanks	Water playgrounds, spray parks, wave parks and water slides
Western Australia	631 (1,189)	116 (224.6)	30 (58)	44 (90.8)	30 (53.7)
Kimberley	128 (171)	0	0	1 (1.3)	2 (2.7)
Pilbara	0	0	0	0	1 (4)
Midwest	6 (15.8)	6 (15.8)	0	0	2 (5.2)
Kimberley percentage	14.36%	0.00%	0.00%	1.43%	5.03%
Pilbara percentage	4.71%	0.00%	0.00%	0.00%	7.45%
Midwest percentage	6.63%	7.03%	0.00%	0.00%	9.68%
Combined metro percentage	52.91%	75.16%	69.14%	74.34%	59.59%

There were a reported 631 public swimming pools operating in WA which projected to a total of 1,189 public swimming pools within the state.

The Kimberley region reported 128 public swimming pools operating (projected to 171) at 14.36% of WA total.

The metro regions accounted for just under half (52.91%) or 629.1 projected public swimming pools in the state.

The number of public spa pools across WA was reported at 116 (projected to 224.6).

The Kimberley region reported 0 public spa pools.

The metro region accounts for the majority (75.16%) of the public spa pools in the state.

The combined metro region accounted for 69.14% of hydrotherapy pools, 74.34% of floatation pools and 59.59% of water playgrounds, spray parks, wave parks and water slides.

The Kimberley region had 14.36% of public swimming pools and 0.00% of public spa pools across WA and had a low projected number of floatation tanks (1.43% of WA total) and a reasonably high number of water playgrounds, spray parks, wave parks and water slides (5.03% of the WA total). This indicates that this region has a moderate aquatic facility resource requirement for local government in comparison to other regions.

Drinking water

Local government has a responsibility to ensure that residents within each jurisdiction have access to quality drinking water. This role varies in requirement across regions depending on the availability of the licensed provision of drinking water within an area.

Water fountains

Across WA there was reported a total of 1,069 local government operated water fountains (projected to 2,096).

The Kimberley region reported 51 (projected to 68) water fountains (at 3.24% of the WA total) which is less than the reported total of 60 (projected to 240) in the Pilbara region (at 11.45%) and more than 8 (projected to 21) in the Midwest region (at 1.00%). A large proportion of local government operated water fountains were provided across the combined metro region with 764 in total (projected to 1273.4) at 60.76% of the WA total.

Testing of water fountains was only undertaken in a few regions (12.95% of WA).

The Kimberley region had 33.33% of local governments that responded to testing water at water fountains within their jurisdictions. Some limited testing was undertaken (microbiological testing only) in the Kimberley region. In comparison no testing (0.00%) was undertaken in the Pilbara. The metro regions combined had 11.11% of local governments that responded test water at water fountains within their jurisdictions.

Stand pipes and bulk water carting

Stand pipes for carting potable water were operated by local governments in 149 locations across the state (projected to 308). The Kimberley region reported 2 (projected to 2.7) stand pipes for carting potable water (at 0.88% of WA total). The combined metro area projected number was 31.2 (10.13% of WA total).

Stand pipes for carting non-potable water were operated by local governments in 93 locations across the state (projected to 190.3). The combined metro area projected number was 43.6 (at 22.91% of WA total) with 1 of these reported (projected to 1.3) in the Kimberley region at 0.68% of the WA total. The Pilbara in comparison had 4 projected at 2.10% of WA total.

Local governments registered bulk water carting business in 25.14% of jurisdictions across WA.

The Kimberley region had 0.00% of local governments that reported a process to register bulk water carting business that operate within their jurisdictions. In comparison the Pilbara also had 0.00% of local governments with a registration process. The Midwest had 12.50%. The metro combined region average was above this at 17.50%.

Drinking water supplies not supplied by a licensed drinking water scheme supply

Many local governments undertook testing of drinking water supplies not supplied by a licensed drinking water scheme supply.

The number of premises that self-supply drinking water and also provide drinking water to members of the public across WA was reported at 492 (projected to 1150.1). In the Kimberley

region, the reported number was 23 and the projected number was 30.7 which represents 2.67% of WA total.

In comparison the Pilbara reported 0 and the Midwest (projected at 55.1 and 4.79%) region was higher in projected numbers for premises that self-supply drinking water than the Kimberley. The combined metro percentage of the WA total was 12.78% which makes this only a marginal metro issue.

Table 38 provides a summary across WA where local governments provided a service to test self-supplied drinking water.

Table 38 Local governments service provision to test self-supplied drinking water across WA and regions

	With routine frequency	As a fee for service	As an incident response	Based on request
Western Australia	37.82%	22.65%	22.92%	32.58%
Kimberley	66.67%	33.33%	33.33%	0.00%
Pilbara	0.00%	0.00%	0.00%	100.00%
Midwest	25.00%	0.00%	0.00%	12.50%
Metro percentage	39.72%	12.50%	12.50%	12.50%

Across WA 48.70% of local governments provided a service to test self-supplied drinking water.

The Kimberley region had a high rate of 66.67% of local governments that tested when compared to the Pilbara (100.00%), the Midwest (62.50%), North Metro (40.00%), South Metro (62.50%) and the East Metro (16.67%). The metro average was 39.72%. The Kimberley tested exclusively using microbiological and chemical testing (66.67%).

A number of premises that self-supply drinking water and provide drinking water to members of the public were owned and/or operated by the local government. Across the state this number was reported at 62 (projected at 139.8). In the Kimberley region, the projected number was 5.3 and 3.79% of the WA total. This compares to none (0) in the Pilbara region and (10.5 projected and 7.51%) in the Midwest region. The combined metro percentage of the WA total was 12.78%.

The Kimberley region local governments had no responsibilities for testing drinking water quality at remote aboriginal communities.

Environmental water bodies and incident management

Natural water bodies for recreational purposes may create pose public health risks for the community. Natural water bodies include the ocean, a river or a lake for recreational activities such as swimming, fishing or paddling. Many local governments monitor the water quality in these sites throughout the state and implement certain measures wherever water quality levels became problematic for human health, enjoyment or use.

Environmental and/or recreational water bodies

The Swan-Canning River system has many testing sites as one of the primary recreational water bodies in the state. The WA coast has many swimming recreational water sites, but the ocean is usually efficient at flushing out poor water quality environments.

Environmental water bodies

Table 39 provides a summary of environmental and/or recreational water bodies across the South Metro, WA and comparative regions.

Table 39 Environmental / recreational water bodies across WA and regions (projections in brackets)

	Rivers and estuaries / inlets	Ocean and marinas / harbours	Lakes	Lagoons, creeks, brooks and streams	Waterholes and rock pools	Dams and reservoirs
Western Australia	45 (96.5)	86 (188.8)	34 (61.8)	211 (297.2)	310 (420.7)	15 (27.7)
Kimberley	14 (18.7)	9 (12)	3 (4)	200 (266.7)	305 (406.7)	2 (2.7)
Pilbara	0	1 (4)	0	0	2 (8)	0
Midwest	6 (15.8)	6 (15.8)	0	1 (2.6)	2 (4.2)	1 (2.6)
Kimberley percentage	19.38%	6.36%	6.47%	89.74%	96.67%	9.75%
Pilbara percentage	0.00%	2.12%	0.00%	0.00%	1.90%	0.00%
Midwest percentage	16.37%	8.37%	0.00%	0.87%	1.00%	9.39%
Combined metro percentage	22.90%	37.61%	45.15%	1.35%	0.43%	16.61%

Across the state there were 45 reported rivers and estuaries/inlets (projected to 96.5). In the Kimberley region this number was 14 (projected to 18.7) at 19.38% of the WA total. This is higher than both the Pilbara at 0 and the Midwest region at 6 (projected to 15.8). The South West region had the largest projected total of any region (32) followed by the Kimberley region. The metro accounted for 22.90% of reported rivers and estuaries/inlets.

There were 86 reported ocean and marinas/harbours across WA (projected to 188.8). In the Kimberley region this number was 9 (projected to 12) at 6.36% of the WA total. This is more than both the Pilbara at 1 (projected to 4) at 2.12% and the Midwest region at 6 (projected to 15.8). The metro accounted for 37.61% of the state's ocean and marinas/harbours with the South West region contribution at 38.14% of the WA total.

There were 34 reported recreational lakes across WA (projected to 61.8). In the Kimberley region, the projected number was 3 (projected to 4). This compares to 0 in the Pilbara region and 0 in the Midwest region. The metro region accounted for 45.15% of reported lakes in the state. There is some likelihood that the WA total of lakes may be understated.

There were 211 reported lagoons, creeks, brooks and streams across WA (projected to 297.2). In the Kimberley region, the reported number was 200 (projected to 266.7). The Pilbara region (0) and the Midwest region (1) both reported very few of these environmental water bodies. The majority of these water bodies were reported in the Kimberley region.

There were 310 reported waterholes and rock pools across WA (projected to 420.7). In the Kimberley region, the reported number was 305. There were low reported numbers in the

Pilbara region (2) and the Midwest region (2). The majority of these water bodies were reported in the Kimberley region.

There were 15 reported dams and reservoirs across WA (projected to 27.7). In the Kimberley region the reported number was 2 (projected to 2.7) compared to 0 reported for the Pilbara region and 1 in the Midwest region. The majority of these water bodies were reported in the Goldfields region.

Environmental water monitoring

There were a reported 53 (projected to 105.3) recreational water sites that were incorporated into either State or other local governance/management arrangements. The Kimberley region had 6 (projected to 8) of these in its management. This can be compared to the Pilbara region with 0 and the Midwest region with 12 (projected to 31.5). There was an even distribution of these throughout the state with the Midwest as the highest region.

Sites that were privately owned and/or managed in WA were reported at 110 (projected to 148.9). The Kimberley region had 100 of these with the Pilbara region reporting 0 and the Midwest region 1. This is primarily a non-metro local government consideration.

There were 48 reported (projected to 113.2) sanitary inspections undertaken for environmental and/or recreational water bodies in WA. The Kimberley region had 0 (projected to 0) sanitary inspections at 0.00% of WA total. The Pilbara region had 0 (projected to 0) at 0.00% of the WA total and the Midwest region had 0 with the South West region (35.34% of the WA total) the first and the Goldfields region the second most inspections (with 28.27% of the WA total).

There were 173 reported microbial monitoring sites in WA (projected to 358.1). The Kimberley region had 6 (projected to 8) sites at 2.23% of the WA total. The South West region had the most in WA. The South Metro region had 84 (projected to 115.5) and together the combined total of the South Metro and the South West regions was 73% of the WA total.

Microbiological testing overall was reported at 1,622 (projected to 3,441) for WA. The South West region accounted for 1,272 or 36.96% of these tests, the South Metro region accounted for 1,049 or 30.49% of tests while the North Metro region accounted for 702 or 20.40% of these.

Testing for algae at environmental water sites was 98% metro testing with most of these in a single local government area in the East Metro region.

The number of recreational water bodies experienced at least one algal bloom within the last financial year in WA was reported at 17 (projected to 38). In the Kimberley region this was 0. The combined metro total suggest that the occurrence of algal blooms is likely to be either a South West or metro issue at 52.13% of reported incidents within the state.

Algal blooms in WA were reported in the ocean 5 times and in the rivers and estuaries/inlets 8 times with 3 ocean and 1 river algal bloom reported in the South Metro region.

Local media statements or social media health warnings were issued in relation to an environmental/recreational water body a total of 21 times (projected to 46.4) in WA with 43.23% of these reported in the South West region and 23.90% reported in the South Metro region. The East Metro region had 19.92%.

Environmental and/or recreational water body sites were investigated 43 times (projected to 80.8) across WA. The Kimberley region reported 0 of these. The South Metro region accounted for 37.21% of these, the Wheat belt accounted for 46.51% and the South West accounted for 6.98%.

Health warning signs were erected at an environmental and/or recreational water bodies 22 (projected to 49) times across WA. The East Metro region accounted for 27.27% of these. The South Metro region accounted for 31.82% of these. The South West accounted for 22.73%. The North Metro and Goldfields regions were both 9.09% of the WA total.

Wastewater overflow incidents

There were 161 (projected to 335.5) notifications for wastewater overflows received by local governments across the state. The Kimberley region reported 10 (projected to 13.3) and accounted for 3.96% of the WA total. This total is similar to the Pilbara region at 3.58% and the Midwest was 5.48% of the WA total. The combined metro regions total accounted for 56.27% of all notifications.

There were 117 (projected to 235.6) site inspections that related to these wastewater overflow notifications throughout WA. The regional response rate for site inspections was relatively even across regions with the Kimberley region completing 11 inspections (projected to 14.7) at 6.24% of the total.

Of all WA reported site inspections 21 required multiple visits but just 3 of these occurred in the Kimberley region. There was 1 additional instance that required additional directions and/or actions to be issued for either clean-up, remediation, or on public health grounds subsequent to a site visit and/or inspection however none of these occurred in the Kimberley region.

Overall environmental/recreational water body issues in the Kimberley region represented a higher than average resource burden in terms of investigations, warnings and general testing requirements.

Wastewater management and recycled water

Wastewater management

It is currently a combined responsibility of local government and the DOH to manage wastewater operations across the state. The Government Sewerage Policy 2017 required all premises to be connected to reticulated sewerage where it is available. The data in this section informs future evaluations and reviews of the *Public Health Act 2016* and the future management of wastewater operations across WA.

There are several licensed organisations operating wastewater and sewerage schemes in WA. Throughout the state 6.44% of local governments operate a sewerage scheme. In the Kimberley region this number was 0.00% which is the same across the other metro regions.

Each local government may approve a range of options for wastewater removal where access to reticulated sewerage is not available. Across WA there were 896 (projected to 1,926) applications received to install an on-site wastewater system.

The Kimberley region reported 30 (projected to 40) which represented 2.08% of the WA total. The Pilbara region represented 2.70% of the WA total. This is less than the East Metro with 405.2 or 21%. The combined metro area accounted for 36.54% of the WA total. The Pilbara was 13 (projected to 52) at 2.70% of the WA total. The Midwest was 5.72% of the WA total.

In total there were 787 (projected to 1695.8) on-site wastewater installations approved across the state.

There were 27 reported (projected to 36) on-site wastewater installations approved in the Kimberley region which represented 2.12% of the state's total. In comparison the Pilbara reported 11 (projected to 44) representing 2.59% of the state's total and the Midwest reported

36 (projected to 94.5) at 5.57% of the WA total. The combined metro area accounting for 32.16% of the WA total.

The reported number of secondary treatment system installations approved for WA was 228 (projected to 487). The Kimberley region reported 8 (projected to 11) approved at 2.20% of the WA total. The East Metro region at 27.50% and the Wheatbelt at 18.27% combined to be about half of the state's total. The combined metro area accounting for 40.62% of the WA total.

The number of septic tanks and leach drain installations and alterations (primary treatment) approved in WA were 490 (projected to 1140.1). The Kimberley region reported total was 12 (projected to 16) which makes this method of application in the Kimberley region 1.40% of total WA approvals. The Wheatbelt (at 20.74%), the South West (32.63%) and the East Metro were the three major regions with relatively high numbers of septic tank and leach drain approvals. The combined metro area for septic tanks and leach drain installations was 21.26% of the WA total.

Table 40 provides a summary of onsite wastewater management across the Kimberley, WA and comparative regions.

Table 40 Onsite wastewater management across WA and regions (projections in brackets)

	Applications received to install an on-site wastewater system	On-site wastewater installations approved	Secondary treatment system installations approved	Septic tanks and leach drain installations and alterations (primary treatment) approved
Western Australia	896 (1,926)	787 (1695.8)	228 (487)	490 (1140.1)
Kimberley	30 (40)	27 (36)	8 (11)	12 (16)
Pilbara	13 (52)	11 (44)	1 (4)	0
Midwest	42 (110)	36 (94.5)	1 (2.6)	34 (89.2)
Kimberley percentage	2.08%	2.12%	2.20%	1.40%
Pilbara percentage	2.70%	2.59%	0.82%	0.00%
Midwest percentage	5.72%	5.57%	0.53%	7.82%
Combined metro percentage	36.54%	40.62%	40.62%	21.26%

With regard to wastewater maintenance reports, the total received was reported as 2,842 (projected to 5,167) for WA while the number expected to be received was reported as 7,822 (projected to 14,514). The calculated return rate for wastewater maintenance reports was in the order of 36%. The Kimberley numbers haven't been presented here as there are some issues with the reported data for these items.

There were 97 reported sewerage spills complaints (projected to 199.8) received across WA. The Kimberley region total was 8 (projected to 10.7) at 5.36% of the WA total and can be compared to the Pilbara region at 2 (projected to 8) at 4.00% and the Midwest region at 2

(projected to 5.2) at 2.60%. The combined metro complaints represent 46.40% of total sewerage spills complaints in the state.

There were 102 wastewater investigations completed (projected to 204) across WA. The Kimberley region total was 8 (projected to 11) at 5.25% of the WA total and is higher than the Pilbara region at 0 and lower than the Midwest region at 7 (projected to 18.4) at 9.03% of WA total. These combined metro investigations represent 48.87% of total wastewater investigations in the state.

Kimberley region had 12.50% local governments with responsibilities for wastewater management remote aboriginal communities. The WA average of local governments with these responsibilities was 7.92%.

Recycled water schemes

There were 32.80% of local governments in WA that operated a recycled water scheme. Furthermore 24.47% of local governments in WA operated a recycled water scheme with a quality management plan.

In the Kimberley region just 66.67% of the local governments that reported operated a recycled water scheme approved by the Chief Health Officer. Similarly, 0.00% of local governments in the region had a current recycled water quality management plan (100% of those with a system) and all areas irrigated using recycled scheme water included in the Department of Health approval conditions for the scheme (at 100% of those with a system).

This issue of recycled water schemes is primarily a non-metro consideration with 9.72% of metro local governments operating a recycled water scheme.

Conclusion

Future reporting management

It is a combined responsibility of local government and the DOH to manage public health risk requirements across the state. This report represents a collaboration of local government and the DOH to provide data for public health planning and resource management activities.

One of the aims of this reporting process is to phase out (where possible) the need for projecting reported totals across regions and the state. While this report had 66 out of a possible 137 local governments provide data, it is the intention of this reporting process that future data collection will approach the levels of participation evident in the mandatory annual reporting of the *Food Act 2008*. The DOH will work with local government to develop the systems of each jurisdiction to enable systematic annual reporting.

The Metropolitan Environmental Health Management Group has nominated a representative group of local government practitioners to provide guidance with the content and structure of future collected data. The DOH will liaise with this group to identify improvements to future reporting.

Cycle

The DOH provides the 2019/2020 report with a view to improved timeliness for future years. This has been enabled with improved (automated) processing of raw data to analytical data.

The reporting cycle for future years is suggested as follows:

- April-June – Annual survey instrument and questionnaire finalised and published
- July-August – Local government collates and provides data to the DOH
- August-September – DOH collates state data and undertakes cleaning of LG survey data

- September-October – DOH creates reports and publishes final products
- November-December – DOH collates and reviews feedback for future data collections

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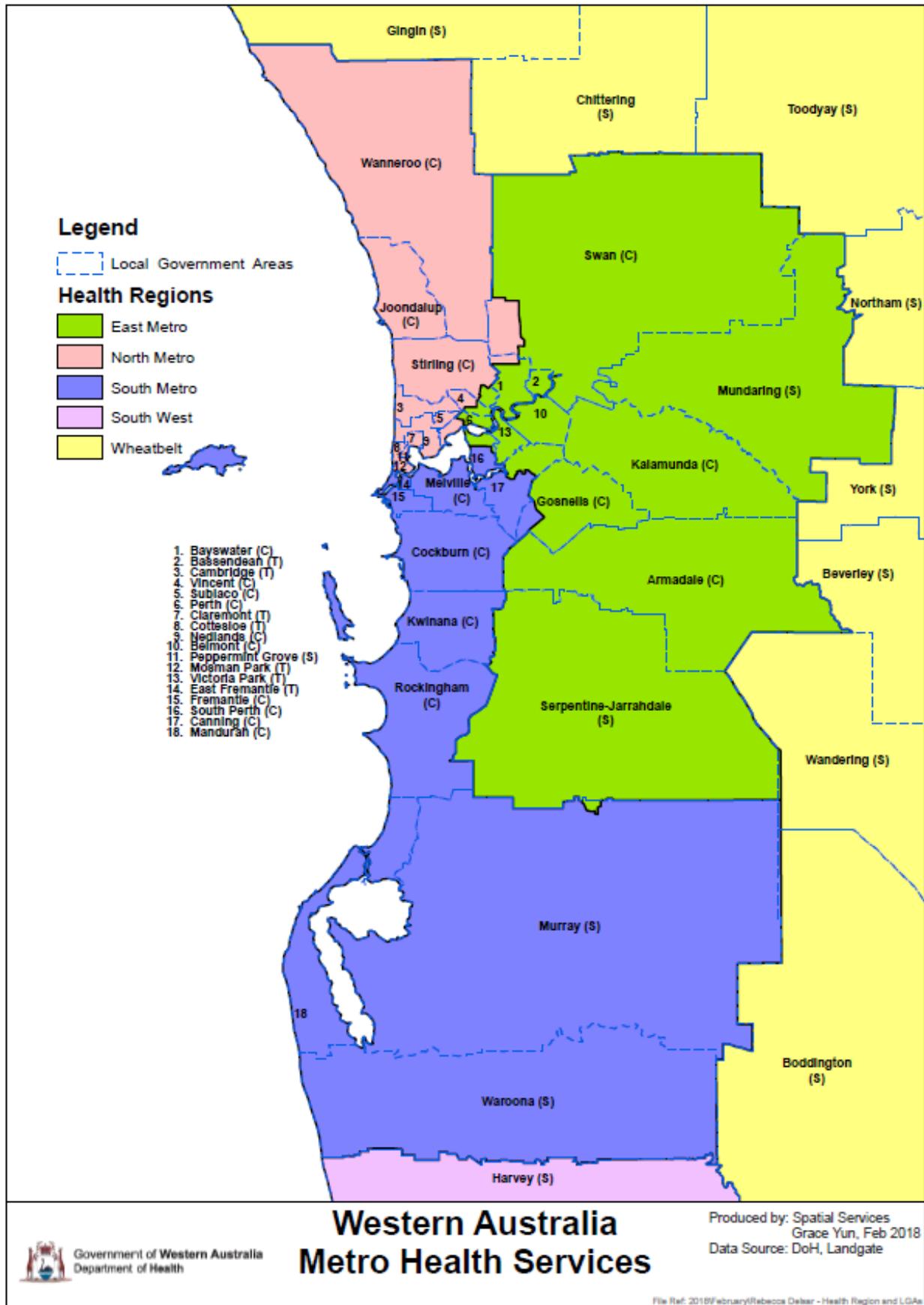
Contact

Constructive feedback from local government is encouraged during the November-December feedback cycle with the aim to create a reporting structure of ongoing value to all those that have management responsibilities in the public health / environmental health disciplines.

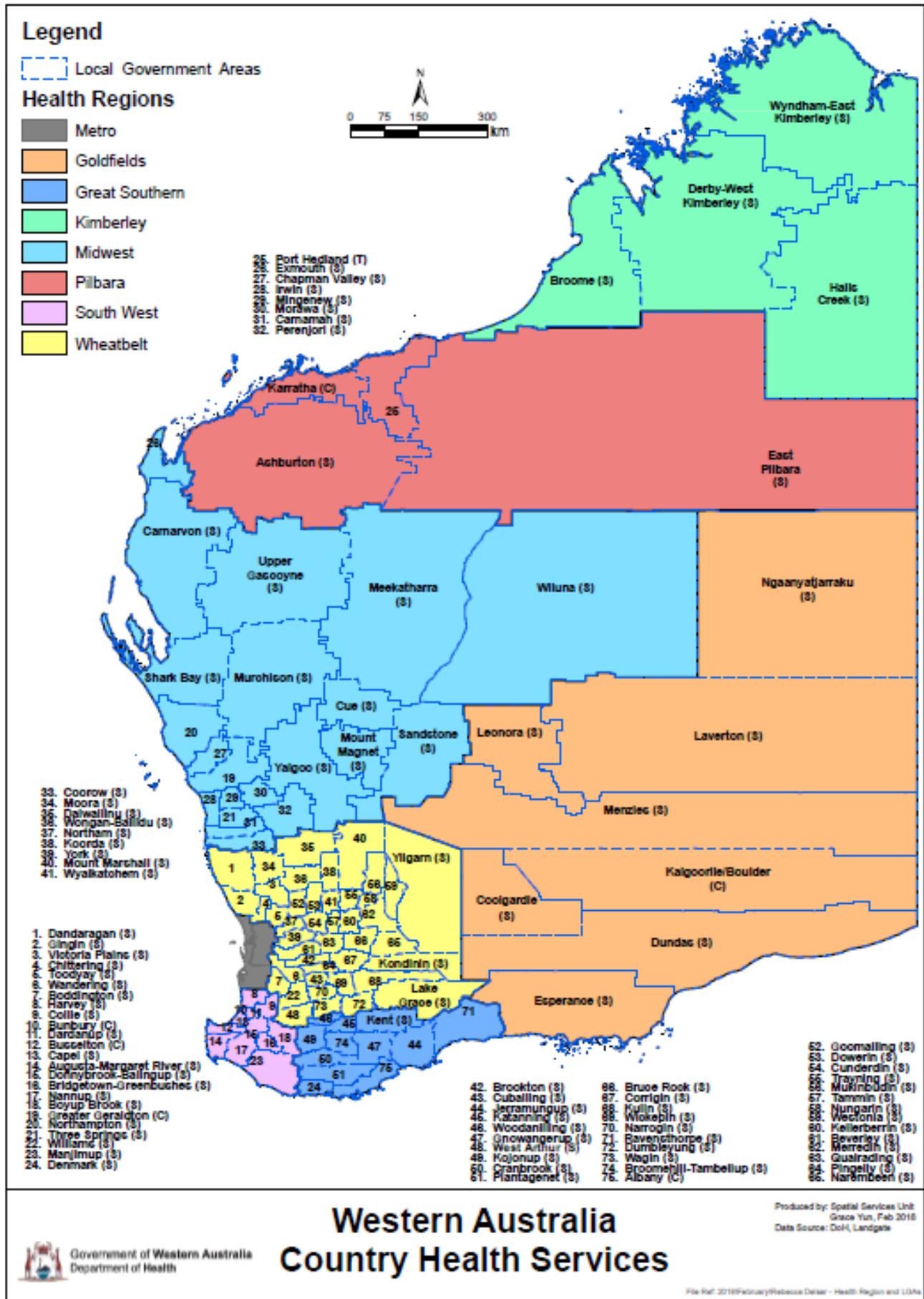
To make a comment / provide feedback please email:
eh.eSubmissions@health.wa.gov.au

Appendices

Appendix 1: Map of WA metropolitan health regions



Appendix 2: Map of WA country health regions



Appendix 3: Enforcement agencies by health region

East metropolitan

Cities of Armadale, Bayswater, Belmont, Gosnells, Kalamunda, Perth, Swan; Towns of Bassendean, Victoria Park; Shires of Mundaring, Serpentine-Jarrahdale.

Goldfields

City of Kalgoorlie-Boulder. Shires of Coolgardie, Dundas, Esperance, Laverton, Leonora, Menzies, Ngaanyatjaraku.

Great Southern

City of Albany. Shires of Broomehill-Tambellup, Cranbrook, Denmark, Gnowangerup, Jerramungup, Katanning, Kent, Kojonup, Plantagenet, Ravensthorpe, Woodanilling.

Kimberley

Shires of Broome, Derby-West Kimberley, Halls Creek, Wyndham-East Kimberley.

Midwest

Cities of Greater Geraldton. Shires of Carnamah, Carnarvon, Chapman Valley, Coorow, Cue, Exmouth, Irwin, Meekatharra, Mingenew, Morawa, Mt Magnet, Murchison, Northampton, Perenjori, Sandstone, Shark Bay, Three Springs, Upper Gascoyne, Wiluna, Yalgoo.

North metropolitan

Cities of Joondalup, Nedlands, Stirling, Subiaco, Vincent, Wanneroo. Towns of Cambridge, Claremont, Cottesloe, Mosman Park. Shire of Peppermint Grove.

Pilbara

City of Karratha, Town of Port Hedland, Shires of Ashburton, East Pilbara.

South metropolitan

Cities of Canning, Cockburn, Fremantle, Mandurah, Melville, Rockingham, South Perth. Towns of East Fremantle, Kwinana. Shires of Murray, Waroona.

South West

Cities of Bunbury, Busselton, Shires of Augusta-Margaret River, Boyup Brook, Bridgetown-Greenbushes, Capel, Collie, Dardanup, Donnybrook-Balingup, Harvey, Manjimup, Nannup.

Wheatbelt

Shires of Beverley, Boddington, Brookton, Bruce Rock, Chittering, Corrigin, Cuballing, Cunderdin, Dalwallinu, Dandaragan, Dowerin, Dumbleyung, Gingin, Goomalling, Kellerberrin, Kondinin, Koorda, Kulin, Lake Grace, Merredin, Moora, Mt Marshall, Mukinbudin, Narembeen, Narrogin, Northam, Nungarin, Pingelly, Quairading, Tammin, Toodyay, Trayning, Victoria Plains, Wagin, Wandering, West Arthur, Westonia, Wickepin, Williams, Wongan-Ballidu, Wyalkatchem, Yilgarn, York.

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