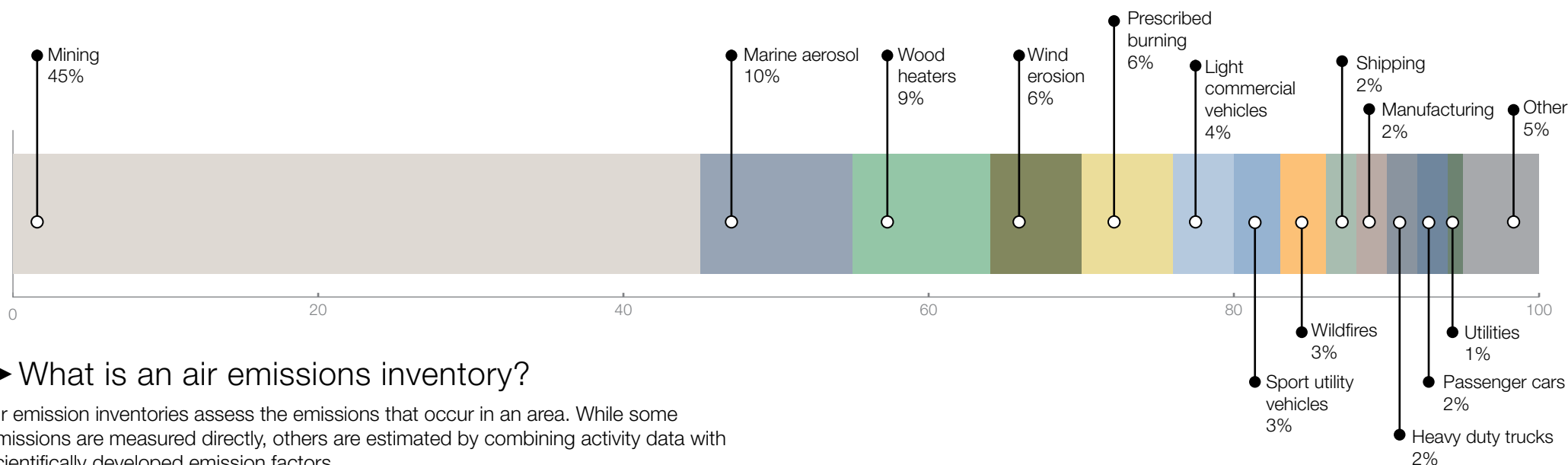




Perth Air Emissions Study 2011–2012: Particulate matter $\leq 2.5 \mu\text{m}$ (PM_{2.5})

The Perth Air Emissions Study 2011–2012 estimated emissions from natural and man-made sources, and assessed the significance of these emissions. Emissions were also spatially allocated to identify major emission source areas.

Particulate matter $\leq 2.5 \mu\text{m}$ (PM_{2.5}) represents particles with an aerodynamic radius of 2.5 microns or less. For comparison, an average human hair is 100 microns wide. PM_{2.5} comes from burning fuel and waste, and from physical processes like handling of bulk materials (e.g. quarried rocks, sand) and wind erosion. It can also be generated through chemical reactions of gases in the atmosphere.



► What is an air emissions inventory?

Air emission inventories assess the emissions that occur in an area. While some emissions are measured directly, others are estimated by combining activity data with scientifically developed emission factors.

► Biggest particulate matter $\leq 2.5 \mu\text{m}$ source?

Commercial and industrial facilities produced 49% of all PM_{2.5} emissions.

Mining and quarries outside of Perth were the most significant sources of PM_{2.5} emissions.

Marine aerosol was the largest, non-industrial source of PM_{2.5}. Marine aerosol can be described as the 'wind erosion of the sea'. Sea spray is picked up by the wind with the fine particles generated dispersing into the atmosphere. Marine aerosol mostly impacts coastal areas.

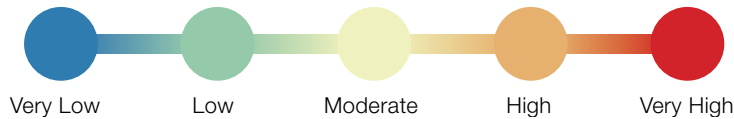
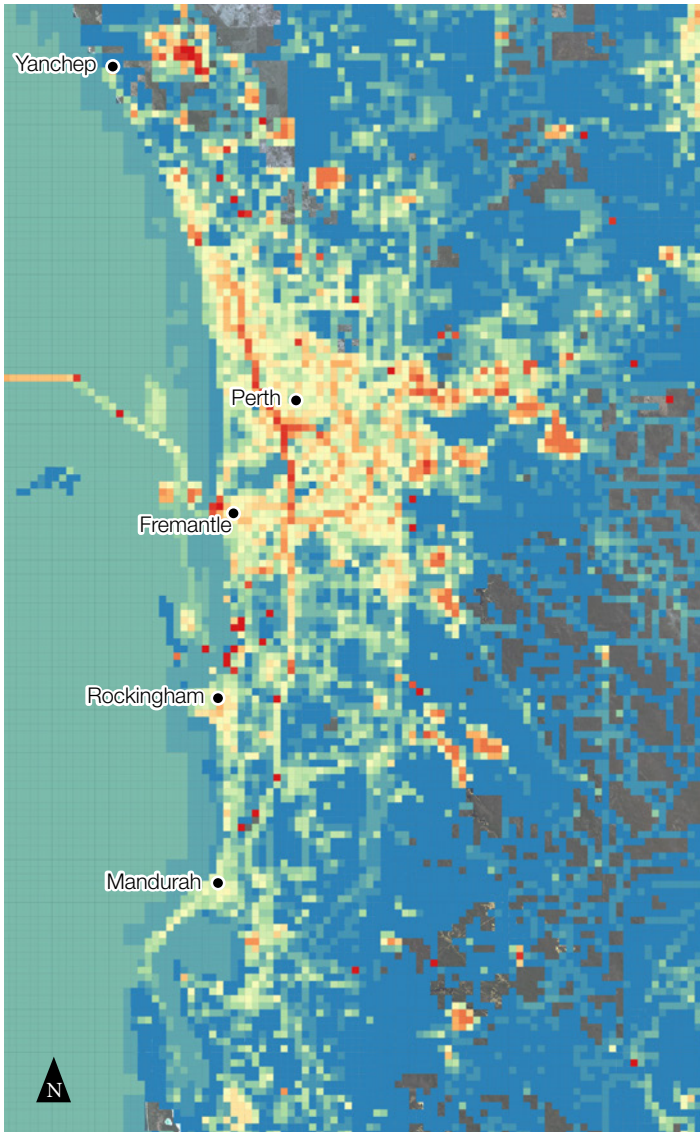
Wood smoke from domestic wood heaters was a significant source. In the Perth Hills, where wood heater use is more common, it was the largest contributor of PM_{2.5}.

► For more information

Visit: www.der.wa.gov.au/our-work/programs

Contact: npi@dwer.wa.gov.au

Emission Hotspots



- Legend**
- Bushfire event.
 - Emissions from vehicles along major roads is a significant PM_{2.5} source.
 - Mining emissions are the largest PM_{2.5} emission sources, represented as single red dots along the north and south coast, and the eastern edge of the map
 - The Kwinana Industrial Area contains several heavy industries reporting to the National Pollutant Inventory, which are major sources of PM_{2.5}.
 - Shipping emissions are concentrated into a single channel. Anchorage zones, where ships 'park' until a berth is available, can also be seen.
 - Marine aerosol is one of the largest PM_{2.5} sources in the area. Emissions are proportional to wind speed, which is higher in more open waters.
 - Wood smoke emissions are most notable from suburbs in the Perth Hills, where wood heater ownership is greater than other areas of Perth.
 - Prescribed burning emissions cover large areas.
 - Agricultural activity results in large cleared areas of land exposed to wind erosion. Agricultural burning, as part of weed management practices, also produce PM_{2.5} emissions.

