

# AIR QUALITY

## Annual Monitoring Summary 2015



### Background

Nelson has four airsheds, A – Nelson South; B1 - Tahunanui, B2 - Stoke and C – Nelson North. Council started monitoring air quality small smoke particles (PM<sub>10</sub>) in the Victory Square area (Airshed A) in 2001 and Airshed B1 in 2002. Monitoring was re-established in Airshed B2 in 2015 after stopping in 2010; and in 2014 in Airshed C after stopping in 2009. The National Environmental Standard for air quality (NES) for PM<sub>10</sub> is 50 micrograms per cubic metre (µg/m<sup>3</sup>). Only one exceedance is allowed in any 21 month period. In 2001, in Airshed A, maximum concentrations of PM<sub>10</sub> reached 165 (µg/m<sup>3</sup>) and the annual average concentration was 42 µg/m<sup>3</sup>. The NES was exceeded on 81 days.

### What drives air pollution in Nelson?

Nelson is surrounded by hills and has a settled climate with little wind to blow smoke away. During winter, when smoke from chimneys is at a maximum, Nelson's clear skies mean that the air near the ground can be colder than the air above. This cold air can trap smoke from domestic chimneys, factories and vehicle exhausts, holding it near the earth's surface. The result of this still, clear weather pattern is that, during winter, smoke concentrations can be much higher than normal for a city of this size.

Research undertaken in 2014 into the sources of emissions showed that 91% of winter air pollution was due to domestic heating. By contrast industry contributed 5% and vehicles around 4%.

It is important to note that the smoke output from a fire varies according to the model of burner, the fuel burnt and the techniques used to light and load the fire. Generally the hotter the fire burns the less smoke it produces. Open fires and outdoor burning tend to produce the most smoke (per piece of wood) and modern wood burners and pellet fires the least. During the spring and summer periods, natural sources such as sea salt and dust can comprise a significant proportion of fine particles.

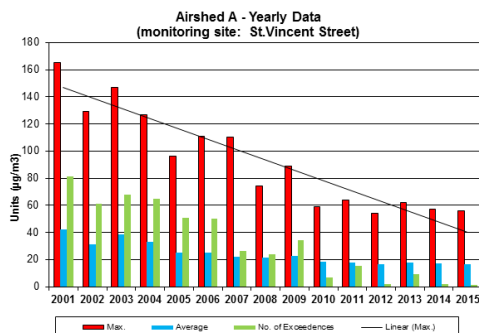
Air quality in Nelson can also be affected by chemical pollution not related to burning. Standards are in place for these pollutants and their levels are monitored.

### Key Results for 2015

In 2015, all airsheds complied with the NES. Interpretation of these results should take into account that the mild, windy winter weather experienced over recent seasons may have resulted in lower emissions and better dispersion of smoke particles.

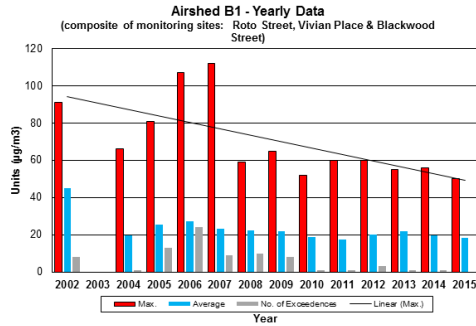
#### Airshed A

Air quality monitoring has shown a steady reduction in PM<sub>10</sub> emissions in Airshed A since 2001. In 2015, the maximum PM<sub>10</sub> concentration recorded was 56 µg/m<sup>3</sup> and the NES was only exceeded on 1 day. The annual average concentration was 16 µg/m<sup>3</sup>.



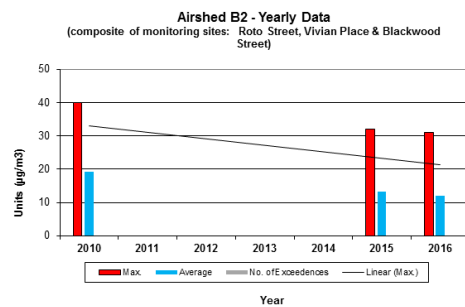
#### Airshed B1

There were no NES exceedances in the Tahunanui area in 2015. The maximum recorded PM<sub>10</sub> concentration was 50 µg/m<sup>3</sup> in October, and the annual average concentration was 18 µg/m<sup>3</sup>. Airshed B1 showed a marked reduction in both smoke concentrations and number of days the Standards were breached.



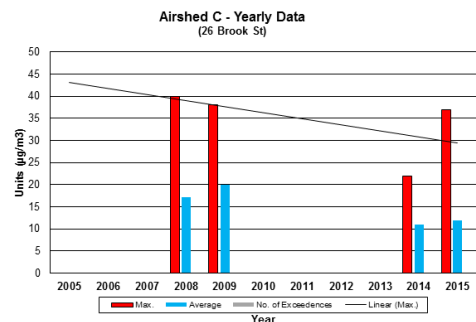
#### Airshed B2

In May 2015 the Council re-established a monitoring site in the Stoke area. There were no NES exceedances recorded in this airshed. The maximum PM<sub>10</sub> level recorded was 32 µg/m<sup>3</sup>, and the annual average concentration recorded was 13 µg/m<sup>3</sup>.



#### Airshed C

Monitoring in the Brook area (Airshed C) did not show any NES breaches, although the maximum concentration increased from 22 µg/m<sup>3</sup> in 2014 to 37 µg/m<sup>3</sup>.



# What are we doing about it?



## Nelson Air Quality Plan

Nelson City Council has an operative Air Quality Plan which places controls on activities affecting air pollution. Plan rules prohibit outdoor burning in urban areas, the use of open fires and the installation of enclosed burners in houses that do not already have an enclosed burner.

In 2015, given significant improvements to Nelson's air quality and community concern that people were living in cold homes, Council undertook to review the Air Quality Plan.

A key focus for the review is to consider whether there are opportunities to provide a wider range of home heating options.

A Plan Change was notified in 2016 to provide for Ultra-Low Emission Burners to be installed into up to 999 homes without solid fuel burners in Stoke (Airshed B2) and up to 599 homes in Airshed C. The Plan Change (PC A#) became operative on 19 September 2016.

A full review of the Air Plan will take place in 2017. It is also worth noting the Government have announced a review of the NES to take place in 2016.

Council has contributed to the Nelson Tasman Healthy Homes Scheme that seeks to install insulation into homes where residents have high health needs. 151 homes were insulated in 2015/16 under this scheme, up from 113 in 2014/15.

## Other measures

Even clean burners contribute to air pollution when poor fuel is used. Burning wet wood produces more smoke, burning treated timber can release arsenic, and burning plastic produces dioxins.



Nelson City Council established the Good Wood scheme to encourage people to buy and burn dry, untreated timber. There are currently seven wood merchants registered with the Good Wood scheme.

Council also runs a community education scheme to improve how people operate their woodburners.

Council's Eco-Design Advisor provides a free service giving advice about keeping our houses warm.



## Industrial emissions

The Council is working with industry to reduce its contribution to air pollution through the resource consents process.

Improvements have been made with many emitters installing cleaner burner technology, including Nelson College for Girls, Nelson Hospital and AlSCO Laundry.

## Stay up to date

You can now check Nelson's real time air quality information through the national Land, Air Water Aotearoa (LAWA) environmental database which is available through the Council's website [nelson.govt.nz](http://nelson.govt.nz), search = LAWA.

## Prevailing weather conditions for 2015

Nelson's worst air quality usually occurs during June and July, when cold and still conditions occur.

In winter 2015, temperatures were slightly cooler than average, but average wind speed was above the 8 year average, and could have dispersed smoke emissions more quickly.

These conditions are likely to have resulted in lower smoke concentrations than normal, particularly in Airshed A.

