



Francis Street

Community
information



Monitoring program - Final report

EPA Victoria has completed a 12 month air quality monitoring and noise assessment project in Francis Street, Yarraville¹. The program began in May 2012 and finished in June 2013 and has provided EPA with up to date information about pollution impacts for this area. The findings are summarised below.

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Summary

Francis Street in Yarraville has an estimated 20,000 cars and trucks travelling each weekday between Williamstown Road and Whitehall Street.

During the 12 months of air monitoring EPA measured major air pollutants associated with motor vehicle emissions. These included:

- Two types of small particles; those less than 10 micrometers in diameter (PM_{10}), which is also found in windblown dust, and particles less than 2.5 micrometers in diameter typically from burning or combustion, including fuel.
- Nitrogen dioxide (NO_2) and benzo(a)pyrene, pollutants also associated with the burning or combustion of fuel.

Noise monitoring was also undertaken at three sites in Francis Street in fortnightly blocks throughout the year.

Air pollution was measured at higher levels to EPA's other fixed air monitoring stations in the residential suburbs of Footscray and Alphington in Melbourne.

Results for PM_{10} monitoring exceeded the daily standard three times in 12 months. The annual goal for PM_{10} which states that no more than five days should be exceeded annually was met.

Results for $PM_{2.5}$ monitoring did not breach the daily advisory reporting standard but were slightly above the annual advisory reporting standard during the 12 months of monitoring for this fine particle.

Pollutants, nitrogen dioxide (NO_2) and benzo(a)pyrene were below the annual standards.

Consistent with previous quarterly reports as part of EPA's Francis Street program, noise levels were measured at levels high enough to impact residents. Based on the World Health Organisation Guidelines for community noise², road traffic noise levels measured in Francis Street are high enough to cause annoyance and disturb speech and sleep.

What was found?

Noise

Noise monitoring was undertaken at three different sites in Francis Street during weekdays and weekends. This was done in fortnightly blocks. The sites were:

- Site A: Between Stephen Street and Hyde Street
- Site B: Between Beverley Street and Stephen Street
- Site C: Between Beverley Street and Hughes Street

Noise levels measured during 2012-13 were found to be greater than previous measurements in 2001 and 2002 (Figure 1).

HOW ARE THE MONITORING RESULTS ASSESSED?

Noise

Noise levels are measured in decibels (dB)⁷. The results have been compared against World Health Organisation Guidelines for community noise².

Air

PM_{10} and NO_2 levels were compared against state³ and national⁴ air quality objectives and goals. The objectives have been set at levels that are designed to protect human health and wellbeing; however exposure by sensitive groups to air pollutants can also result in health impacts even when levels are below existing national standards or objectives⁵.

The national air quality goals are for no more than five days annually to exceed the daily PM_{10} objective; and no more than one day for the NO_2 objective.

For $PM_{2.5}$, the Ambient Air Quality National Environment Protection Measure (AAQ NEPM) specifies the use of advisory reporting standards for assessment⁴.

Benzo(a)pyrene was assessed against the National Environment Protection (Air Toxics) Measure, 2004⁶.

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Lower noise levels at Site B are thought to be due to a high fence to the east of the property. Site C was the same location of noise monitoring in 2001 and 2002 providing an opportunity for measurements to be compared over this time (Table 1).

	Weekday	Saturday	Sunday
2001	73.2	68.5	66.9
2002	74.3	70.4	68.0
2012-13 Site C	76.0	73.1	71.1

Table 1: Noise levels [LA10 18hr dB(A)] measured at Francis Street in 2001, 2002 and 2012-13.

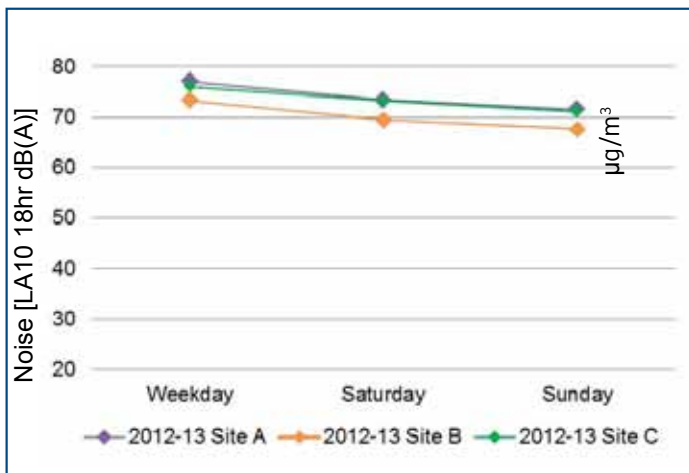


Figure 1: Average noise levels recorded at Francis Street in 2012-13.

Despite an increase in noise levels from 2002 to 2012-13 there has only been a 0.7% increase in the number of trucks travelling on the street during this time (Table 2).

	Trucks	All vehicles
2002	5,757	18,495
2012	5,800	20,019
% Change from 2002 to 2012	0.7%	8.2%

Table 2: Average weekday traffic volumes along Francis Street (East of Williamstown Road) in 2002 and 2012.

Air

Particles PM₁₀

The PM₁₀ air quality objective (50 µg/m³) was not met on three days during the twelve months of monitoring at Francis Street.

Two of the days that exceeded the PM₁₀ objective (12-Jun-2012 and 8-Mar-2013) were associated with poor air quality during the mid-late morning when light northerly winds prevented dispersion of air pollutants.

The PM₁₀ objective was also exceeded on 25-Jan-2013 when a widespread windblown dust event occurred across Melbourne, which was associated with a strong wind change during the early morning. PM₁₀ levels at Brooklyn and Dandenong also exceeded the PM₁₀ objective on this day.

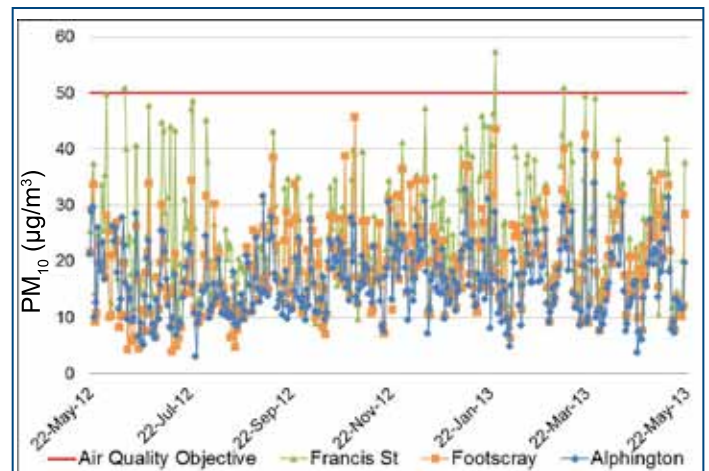


Figure 2: Daily PM₁₀ averages recorded at Francis Street

Particles PM_{2.5}

The PM_{2.5} annual standard for the twelve months of monitoring was 8.2 µg/m³, which exceeded the annual PM_{2.5} advisory reporting standard (8 µg/m³). Measurements of PM_{2.5} were below the daily PM_{2.5} advisory reporting standard (25 µg/m³) but were generally higher than levels recorded at Alphington and Footscray monitoring stations.

	Max. daily peak (µg/m ³)	12-month average (ppb)
Advisory Reporting Standard	25.0	8.0
Francis Street	19.9	8.2

Table 3: Daily and 12 month average PM_{2.5} levels measured at Francis Street (31 May 2012 - 4 Jun 2013)

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Nitrogen Dioxide (NO₂)

NO₂ levels measured at Francis Street were generally higher than levels measured elsewhere in Melbourne, but remained well within the state and national daily (120 parts per billion) and annual (30 parts per billion) air quality objectives.

	Daily max. 1hr avg (ppb)	12 mth avg (ppb)
Air Quality Objective	120	30
Francis Street	55	15
Other sites in Melbourne	52 (Dandenong)	9

Table 4: Daily maximum and 12 month average NO₂ levels measured at Francis Street (22 May 2012 - 21 May 2013)

Benzo(a)pyrene

Benzo(a)pyrene levels were below the annual air toxics. Monitoring Investigation Level criteria of 0.3 ng/m³.

	Average (ng/m ³)
Monitoring Investigation Level	0.30
Francis Street	0.06

Table 5: 24-hour benzo(a)pyrene levels measured at Francis Street (31 May 2012 - 29 May 2013)

How air pollution affects health?

Everyone can potentially be affected by air pollution when concentrations of pollutants are very high. Research shows that different groups of people are sensitive to different types of air pollution. The prevalent air pollutant measured in Francis Street was small particles (PM₁₀ and PM_{2.5}). These particles at elevated levels may affect older adults, children and people with asthma, lung and cardiovascular (heart) disease.

For general information on air pollution visit: www.betterhealth.vic

References

1. **Francis Street: Air pollution and noise monitoring**, EPA Victoria (2012), available at <http://www.epa.vic.gov.au/~media/Publications/1460.pdf>
2. **Guidelines for Community Noise, World Health Organisation** (1999), available at <http://www.who.int/docstore/peh/noise/guidelines2.html>
3. **State Environment Protection Policy (Ambient Air Quality)**, Victoria Government Gazette No. S19, 9 Feb 1999 (amended Dec 2001), available at www.epa.vic.gov.au
4. **National Environment Protection (Ambient Air Quality) Measure**, National Environment Protection Council, available from www.ephc.gov.au
5. **Review of National Environment Protection (Ambient Air Quality) Measure**, National Environment Protection Council, available at <http://www.scew.gov.au/sites/www.scew.gov.au/files/consultations/50d14908-edc7-df44-099a-3aca53792ac1/files/aaq-discppr-review-aaq-nepm-discussion-paper-aq-standards-final-201007.pdf>
6. **National Environment Protection (Air Toxics) Measure**, National Environment Protection Council, available from www.ephc.gov.au
7. **EPA Noise Fact Sheet**, Publication 1467, available at www.epa.vic.gov.au

MORE INFORMATION

Visit www.epa.vic.gov.au
or phone EPA on
1300 EPA VIC (1300 372 842)
for further information.

Francis Street Monitoring Program - Supplementary Report

Community information



This supplementary report expands on EPA Publication 1546¹.

EPA Victoria completed a 12-month air quality monitoring and noise assessment project in Francis Street, Yarraville¹. The program began in May 2012 in response to community concern. EPA continued monitoring selected pollutants until September 2013, and these results are summarised below.

Summary

EPA has measured air quality in Francis Street against daily and annual health based standards.

The daily PM₁₀ air quality objective (50 µg/m³) was not met on five days during the additional monitoring period, which lasted from 22 May 2013 to 17 September 2013 for PM₁₀.

This brought the total number of days exceeding the daily PM₁₀ air quality objective to seven for the 2013 calendar year, not meeting the goal of no more than five days exceeding the daily PM₁₀ air quality objective in a calendar year.

Nitrogen Dioxide (NO₂) levels at Francis Street remained within the state and national air quality objectives.

What was measured?

Noise

Noise monitoring was not continued in the additional period. For the full results and analysis of the noise levels, please refer to EPA Publication 1546¹.

Air

EPA continued measuring two major air pollutants associated with motor vehicle emissions until September 2013.

This included:

- Small particles of less than 10 micrometers in diameter (PM₁₀), which is also found in windblown dust.
- Nitrogen dioxide (NO₂), which is a pollutant associated with the burning or combustion of fuel.

More information on these air pollutants is available on EPA's website <http://www.epa.vic.gov.au/your-environment/air/air-pollution>.

No further monitoring was done for particles less than 2.5 micrometers in diameter (PM_{2.5}) or benzo(a)pyrene (B(a)P).

For the full results and analysis of PM_{2.5} and B(a)P, please refer to EPA Publication 1546¹.

Particles as PM₁₀

The daily PM₁₀ air quality objective (50 µg/m³) was not met on five days during the additional monitoring period.

The five days that exceeded the daily PM₁₀ objective during this period were all associated with poor air quality

during the morning (generally from 7 and 10am) when light northerly winds prevented dispersion of air pollutants. Poor air quality was also recorded at Francis Street during the early evening (between 6 and 9pm) on two of these days.

In all, there were eight days that exceeded the daily PM₁₀ air quality objective during nearly 16 months of monitoring at Francis Street.

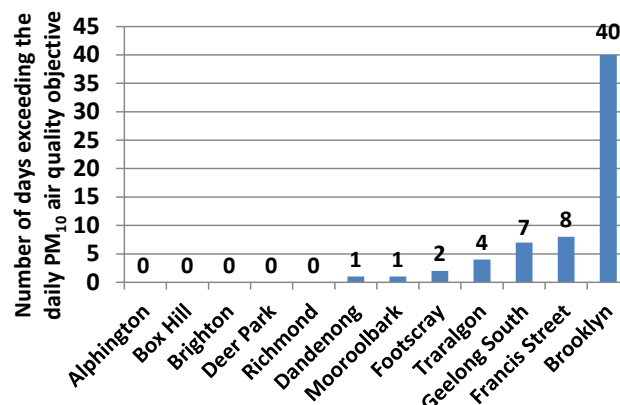


Figure 1: Number of days that the state² and national³ daily PM₁₀ air quality objective was exceeded at EPA Victoria air monitoring stations (22 May 2012 to 17 Sep 2013).

Nitrogen Dioxide (NO₂)

NO₂ levels measured at Francis Street were generally greater than levels measured elsewhere in Melbourne, but remained well within the state and national daily (120 parts per billion) and annual (30 parts per billion) air quality objectives.

How were the monitoring results assessed?

Air

PM₁₀ and NO₂ levels were compared against state² and national³ air quality objectives and goals. The objectives have been set at levels that are designed to protect human health and wellbeing; however exposure by sensitive groups to air pollutants can also result in health impacts even when levels are below existing national standards or objectives⁴.

¹ Francis Street monitoring program - Final report, Publication 1546, available at www.epa.vic.gov.au

² State Environment Protection Policy (Ambient Air Quality), Victoria Government Gazette No. S19, 9 Feb 1999 (amended Dec 2001), available at www.epa.vic.gov.au

³ National Environment Protection (Ambient Air Quality) Measure, National Environment Protection Council, available from www.ephc.gov.au

⁴ Review of National Environment Protection (Ambient Air Quality) Measure, National Environment Protection Council, available at <http://www.scew.gov.au/sites/www.scew.gov.au/files/consultations/50d14908-edc7-df44-099a-3aca53792acl/files/aaq-discppr-review-aaq-nepm-discussionpaper-aq-standards-final-201007.pdf>

