

27 March 2017

Submission on Auckland Council's Draft Air Quality Bylaw for Indoor Domestic Fires

Thank you for the opportunity for Auckland Regional Public Health Service (ARPHS) to provide a submission on Auckland Council's Draft Air Quality Bylaw for Indoor Domestic Fires.

The following submission represents the views of ARPHS and does not necessarily reflect the views of the three District Health Boards it serves. Please refer to Appendix 1 for more information on ARPHS.

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Support for proposed bylaw

1. The Auckland Council (Council) Regional Plan: Air, Land and Water (Regional Plan) previously regulated the use and installation of indoor domestic fires in Auckland. Now the Unitary Plan has come into effect, the rules in the former Regional Plan have expired. However, the Unitary Plan does not regulate indoor domestic fires. Auckland Council has subsequently proposed a bylaw to address this regulatory gap, and also intends to update the definition of the Auckland Urban Air Quality Area.
2. The following outlines Auckland Regional Public Health Service's (ARPHS) position on Council's proposal:
 - ARPHS supports the adoption of a proposed bylaw to re-establish the regional rules for indoor domestic fires previously contained in the former Regional Plan (option A2 as outlined in the Statement of Proposal – 27 February 2017). ARPHS recognises a sense of urgency is needed to rectify the regulatory gap before winter 2017.
 - ARPHS supports Council's proposal to update the Auckland Urban Air Quality Areas to reflect the urban zones in the Unitary Plan and the Auckland Council District Plan: Hauraki and Gulf Islands (Option B3). We note this option covers where urban expansion has taken place and increases the number of properties included. Therefore this approach best represents the population health risks associated with exposure to adverse air quality.
3. However, while ARPHS supports the intent of the proposed bylaw, we consider more needs to be done to reduce harmful emissions from indoor domestic fires, with a focus on protecting Aucklanders' health.
4. ARPHS recognises there is limited scope to expand the options outlined in the Statement of Proposal, but hopes the proposed bylaw provides a catalyst for future engagement with tighter controls in mind for indoor domestic fires.
5. The future growth and urban intensification of Auckland is likely to increase the number of people exposed to harmful emissions. ARPHS is keen to engage with Auckland Council and other stakeholders to consider alternative initiatives that will help to reduce the level of harmful emissions from indoor domestic fires and avoid the use of prohibited materials as a fuel source for indoor domestic heating.

Adverse health impacts from indoor domestic fire emissions

6. The use of wood and coal as a source of fuel for indoor domestic heating results in a range of contaminants being emitted into Auckland's air sheds, including particulate matter (PM₁₀ and PM_{2.5}), carbon monoxide (CO), nitrogen oxide (which oxidises to form nitrogen dioxide, NO₂), as well as other contaminants.
7. Particulate matter is a primary pollutant emitted by indoor domestic fires. The health effects of particulate matter are predominantly respiratory and cardiovascular.¹ Importantly, studies have shown that there is no evidence of a safe level of exposure, or a threshold below which no adverse health effects occur. Susceptible groups with pre-existing lung or heart disease, as well as elderly people and children, are particularly vulnerable.
8. Since the World Health Organisation (WHO) air quality guidelines were updated in 2005, scientific evidence continues to confirm and strengthen the causal link between particulate matter and adverse health outcomes.² Both short and long term exposure to fine particles has been associated to health impacts, and a 2016 WHO expert consultation³ has recommended a review of the available evidence for various averaging times for PM_{2.5} exposure, especially in relation to short-term exposure (e.g. 1-hour), as emerging evidence suggests adverse health effects at much shorter timescales than previously considered.
9. The International Agency for Research on Cancer (IARC) recently classified particulate matter (PM₁₀ and PM_{2.5}) as carcinogenic.

Indoor domestic fires impact on Aucklanders' health

10. While Figure 1 below illustrates that coal and wood as a fuel source for heating Auckland households is trending downwards, the emissions caused from the burning of this coal and wood have a disproportionately high impact on Auckland's ambient air quality during winter months.

¹ Kuschel, G, Metcalfe, J Wilton, E et al (2012). *Updated health and air pollution in New Zealand study, volume 1: summary report*. Prepared for Health Research Council of New Zealand, Ministry of Transport, Ministry for the Environment and New Zealand Transport Agency. Retrieved from www.hapinz.org.nz

² World Health Organisation. (2013). *Review of evidence on health aspects of air pollution – REVIHAAP Project. Technical Report*. Retrieved from <http://www.euro.who.int/en/health-topics/environment-and-health/air-quality/publications/2013/review-of-evidence-on-health-aspects-of-air-pollution-revihaap-project-final-technical-report>

³ World Health Organisation. (2016). Regional Office for Europe. *WHO Expert Consultation: Available evidence for the future update of the WHO Global Air Quality Guidelines*. Meeting report Bonn, Germany 29 September – 1 October 2015. Copenhagen, Denmark. Retrieved from http://www.euro.who.int/data/assets/pdf_file/0013/301720/Evidence-future-update-AQGs-mtg-report-Bonn-sept-oct-15.pdf

	New Zealand			Auckland		
	2001	2006	2013	2001	2006	2013
Electricity	937716	1051095	1168914	281379	327207	360234
Wood	582267	574482	542280	117612	111780	99318
Bottled gas	368121	388743	227742	92976	105465	70932
Mains gas	175419	185829	176775	46149	54855	56901
Coal	121170	98229	60999	21744	17151	10050
No fuels used in this dwelling	36207	33177	44829	19005	18513	25854
Solar power	12318	15159	23409	3777	4407	5610
Other fuel(s)	14130	29304	23118	3231	5418	4839

Figure 1: Fuel types used for home heating in households – Source: Census data 2001 to 2013

11. As highlighted in Council’s State of Environment Report 2015,⁴ indoor domestic fires account for approximately 72% of PM₁₀ and PM_{2.5} emissions during the winter months. On average nearly eleven tonnes of particulate matter is emitted on a winter weekday as a result of indoor domestic fires.⁵ This alone is nearly triple the average amount of particulate matter emitted from all sources on a summer weekday.
12. Using 2006 as the base year, the Updated Health and Air Pollution in New Zealand (HAPINZ) 2012 study calculated the health impacts and social costs associated with emissions from domestic fires used for home heating in the Auckland region. Due to domestic fire emissions, the study found that each year in the Auckland region:
 - 112 adults over 30 years old die prematurely.
 - Approximately 26 cardiac and 50 respiratory hospital admissions occur.
 - There are approximately 191,000 restricted activity days for all ages.
13. ARPHS notes Council⁶ updated the HAPINZ model using 2013 Census and recent PM₁₀ monitoring data to estimate the health effects and costs for the Auckland region in 2013. While the number of premature deaths, cardiac admissions, and respiratory

⁴ Auckland Council. (2015). *The Health of Auckland’s Natural Environment in 2015*. Retrieved from <http://www.aucklandcouncil.govt.nz/EN/planspoliciesprojects/reports/Documents/stateofenvironmentreport2015.pdf>

⁵ Auckland Council. (2016). *2016 Air Quality Report Card*. Retrieved from <http://stateofauckland.aucklandcouncil.govt.nz/air-quality-report-card/auckland-reporting-area-2016/>

⁶ Nunns, P. (2015). Proposed Auckland Unitary Plan hearings - Statement of evidence of Peter Gordon Rogan Nunns on behalf of Auckland Council – Topic 035 Air Quality. Retrieved from <http://www.aupihp.govt.nz/>

admissions decreased by about 10% with this assessment, ARPHS notes the estimated 273,907 restricted activity days for all ages represents a significant increase.

Additional initiatives and/or regulations are necessary

14. While the proposed bylaw is necessary to address the current regulatory gap, ARPHS considers more needs to be done in Auckland to address the public health issues associated with air pollution from indoor domestic fires.
15. The 2012 Auckland Plan sets a directive to reduce emissions from home heating, transport and other sources to improve air quality. It also sets a target to reduce PM₁₀ emissions by 50% by 2016 (based on 2006 levels) and achieve a further 20% reduction by 2040. Figure 3 shows annual average PM₁₀ concentrations at monitoring sites throughout the Auckland region from 2006 to 2013 (sites with less than three years' worth of annual data were excluded).

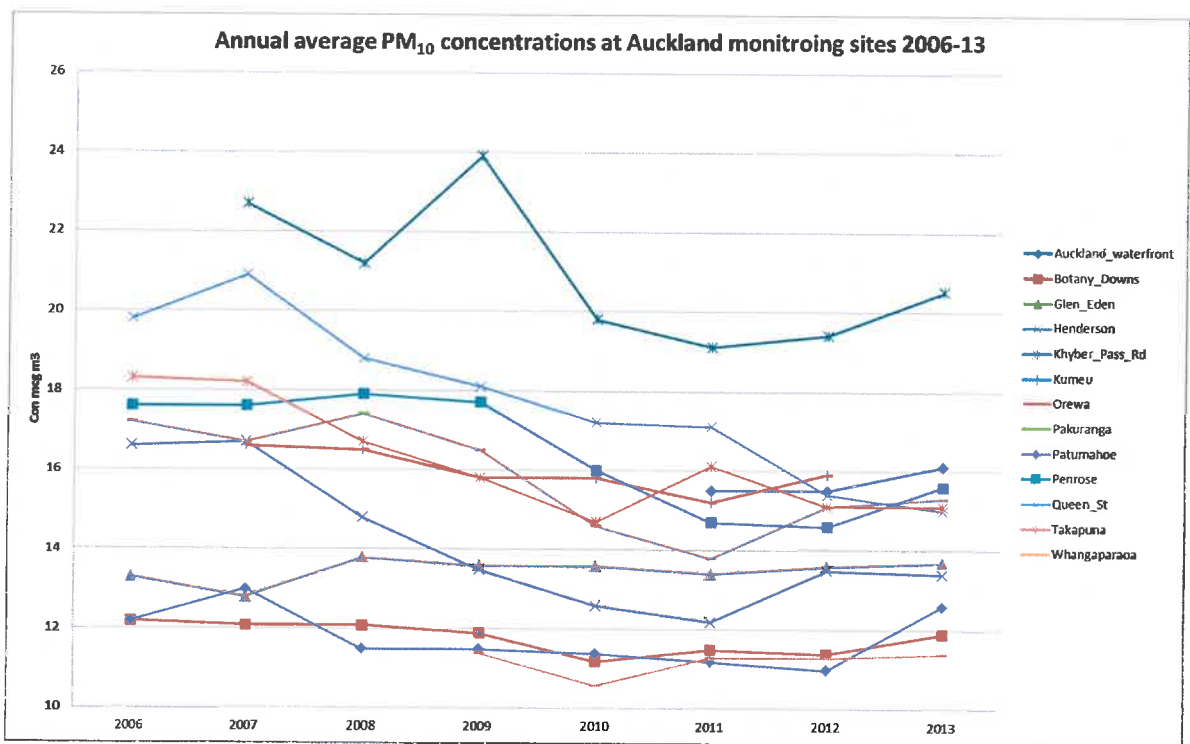


Figure 2: Data from Auckland monitoring sites – data sourced from Mfe⁷

16. The Auckland Plan Targets: Monitoring Report 2016⁸ (monitoring report) states that PM₁₀ emissions from home heating sources decreased by 20.4% in 2011 on 2006 levels. However, it is unclear to ARPHS as to what progress has been made since 2011 on

⁷ Data accessed via <https://data.mfe.govt.nz/table/2625-pm10-concentrations-in-towns-and-cities-200613/data/>

⁸ Wilson, R., Reid, A and Bishop, C (2016). Auckland Plan targets: monitoring report 2016. Auckland Council technical report, TR2016/042. Accessed via <http://www.knowledgeauckland.org.nz/assets/publications/TR2016-042-Auckland-Plan-targets-monitoring-report-2016.pdf>

reducing home heating emissions. The monitoring report notes that the 2016 update to the home heating survey has been deferred due to budget constraints.

17. In late 2014 a draft air quality bylaw⁹ was presented to Council's Governing Body proposing new rules for indoor domestic fires, including:

- Prohibiting the use of coal for home heating.
- Requiring the removal of pre 2005 wood/coal burners that do not meet the design and thermal efficiency standards under the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (AQNES) and the disablement of indoor open fires in the Auckland urban air shed by the owner of those fires before a property is sold.
- Prohibiting the use of existing indoor open fires in the Auckland urban airshed on 1 October 2016.
- Prohibiting the use of existing wood/coal burners in the Auckland urban airshed that do not meet the design and thermal efficiency standards of the AQNES on 1 October 2018.

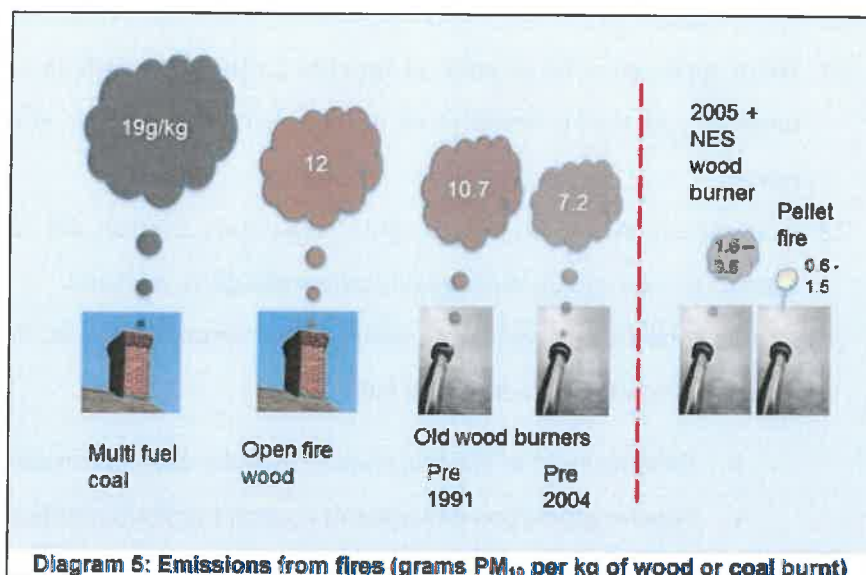
18. An accompanying 'statement of proposal' report¹⁰ from council officers provided the rationale for the tighter regulations, estimating that indoor open fires and older (pre 2005) solid fuel burners cause about 87% of PM₁₀ emissions from indoor home heating due to their inefficiencies and age. This report also noted that open fires (the most polluting and least efficient) and older (pre 2005) wood burners are estimated to make up about 80% of the approximate 100,000 home heating fires in use in Auckland.

19. The following diagram taken from the same report¹¹ illustrates the fine particle emission rates between various types of indoor domestic fires.

⁹ Auckland Council (2014, October 30). *Governing Body Agenda and Minutes*. Auckland. Retrieved from http://www.aucklandcouncil.govt.nz/EN/AboutCouncil/meetings_agendas/committees/Pages/home1.aspx

¹⁰ *Ibid*

¹¹ *Ibid*



20. Thus it seems clear gains can be made in reducing air contaminants from targeting existing indoor domestic fires that do not comply with the AQNES.
21. At the time there was no opportunity to comment on the 2014 draft air quality bylaw as it did not make it to the public consultation stage, but ARPHS supports the general principle of it. ARPHS would want to ensure that the health benefits gained from the reduction in pollutants would not financially overburden low income groups, and notes financial assistance to low income households was being considered as part of the proposal. Figure 3 below suggests that a number of low income households could potentially have been affected if the 2014 draft air quality bylaw was implemented, when taking into account the high percentage of 'noncompliant' indoor domestic fires in Auckland.

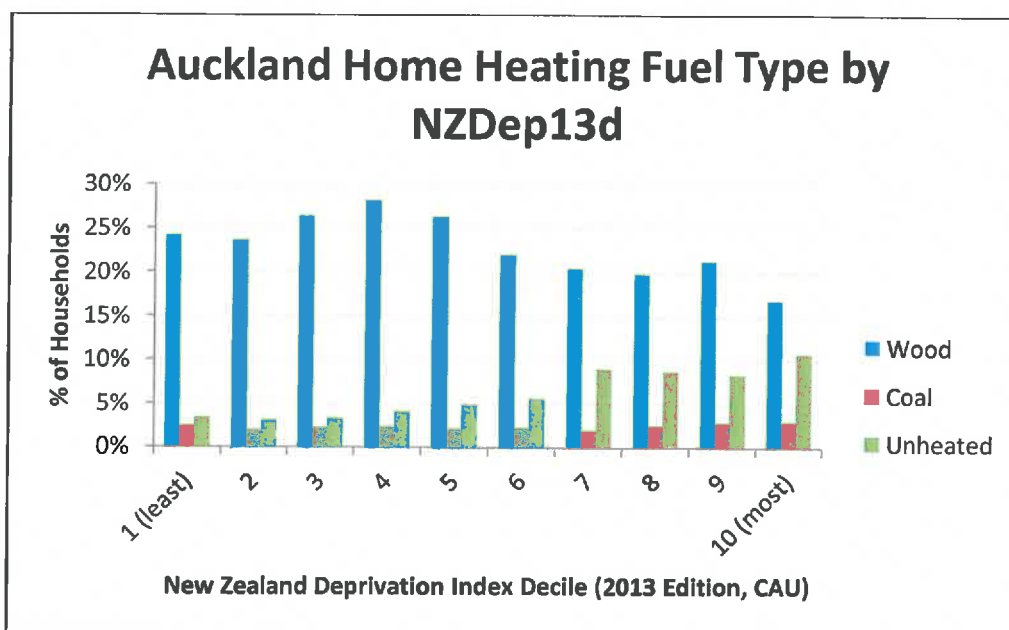


Figure 3: Auckland home heating by fuel type – source 2013 census

22. There appeared to be no political appetite for the 2014 draft air quality bylaw due to the financial cost that it would place on members of the public affected by the proposed rules.
23. Nonetheless, ARPHS considers tighter regulatory controls are required, and considers aspects of the draft 2014 air quality bylaw should be revisited.
24. Adoption of tighter regulatory controls for indoor domestic fire emissions could be supported by other initiatives, including:
- Enhancement of existing education and public awareness campaigns;
 - Further promotion of Auckland Council’s pollution hotline to
 - help identify noncompliance;
 - educate the public about the pollution issues associated with domestic indoor fires.
25. If elected councillors deem regulatory approaches as proposed in 2014 draft air quality bylaw to be inappropriate or too heavy handed, then there needs to be greater incentives available to encourage home owners to upgrade or replace their older indoor domestic fires. For instance, Council could establish a subsidy programme to encourage households to convert to clean forms of heating (especially since the Energy Efficiency Conservation Authority’s subsidies for heat pumps discontinued in 2012).
26. At present, Council’s “Retrofit your Home” program allows homeowners in Auckland to access up to \$5,000 in financial assistance to access several different home improvement interventions, including clean heat interventions. However, this financial assistance is in the form of a loan, and in ARPHS’s view, appears to provide little incentive for a homeowner to replace or upgrade their indoor domestic fire, as the homeowner is required to pay back the loan via a targeted rate over a nine year period, with interest charged on the outstanding amount. In comparison, Rotorua’s ‘Hot Swap Loan’ scheme is interest-free.
27. ARPHS is interested to know how many households have taken advantage of the “Retrofit your Home” loan scheme to upgrade or replace their old wood/coal burner.

Long Term Plan (10 year budget) funding

28. There needs to be adequate funding in place to support any future initiatives and associated foundational work. Therefore, ARPHS supports specific funding being allocated to this issue in next year’s Long Term Plan (10 year budget).

Other home heating matters

29. Unflued gas heaters pose a substantial health risk to the households using them, and are associated with increased rates of a wide variety of health conditions. They emit nitrogen dioxide, carbon monoxide, and other pollutants into the indoor environment, thereby reducing indoor air quality.¹² Unflued gas heaters also release water vapour, making households damp, which in turn contributes to numerous health problems.¹³
30. ARPHS is still aware of retailers in Auckland that sell unflued gas heaters, and is keen to work with Council to explore any potential strategies to reduce unflued gas heater use in Auckland housing.

Conclusion

31. Thank you for the opportunity to submit on the Auckland Council's Draft Air Quality Bylaw for Indoor Domestic Fires.

¹² Information Team Community and Public Health (2015). *Unflued Gas Heaters – Position statement and background paper for the Canterbury District Health Board*. Retrieved from <https://www.cdhb.health.nz/AboutCDHB/corporatepublications/Documents/CDHB%20Unflued%20Gas%20Heaters%20PositionStatement.pdf>

¹³ *Ibid*

Appendix 1 - Auckland Regional Public Health Service

Auckland Regional Public Health Service (ARPHS) provides public health services for the three district health boards (DHBs) in the Auckland region (Counties Manukau Health and Auckland and Waitemata District Health Boards).

ARPHS has a statutory obligation under the New Zealand Public Health and Disability Act 2000 to improve, promote and protect the health of people and communities in the Auckland region. The Medical Officer of Health has an enforcement and regulatory role under the Health Act 1956 and other legislative designations to protect the health of the community.

ARPHS' primary role is to improve population health. It actively seeks to influence any initiatives or proposals that may affect population health in the Auckland region to maximise their positive impact and minimise possible negative effects on population health.

The Auckland region faces a number of public health challenges through changing demographics, increasingly diverse communities, increasing incidence of lifestyle-related health conditions such as obesity and type 2 diabetes, infrastructure requirements, the balancing of transport needs, and the reconciliation of urban design and urban intensification issues.