

**INQUIRY INTO HEALTH IMPACTS OF EXPOSURE TO
POOR LEVELS OF AIR QUALITY RESULTING FROM
BUSHFIRES AND DROUGHT**

Organisation: Ms Jess Miller, Councillor, City of Sydney Council
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Submission to the Inquiry into the health impacts of exposure to poor levels of air quality resulting from bushfires and rough

April 2020

Councillor Jess Miller, Deputy Chair of the Environment Committee,
City of Sydney Council.

April, 2020

Dear Committee Chair Hon Greg Donnelly MLC, Deputy Chair Hon Emma Hurst MLC and Committee Members,

On behalf of the residents, businesses and visitors to the City of Sydney, thank you for the opportunity to input into the *inquiry into the health impacts of exposure to poor levels of air quality resulting from bushfires and drought*. While the terms of reference for this Inquiry focus very specifically on the health impacts of poor air quality as a result of bushfire and drought, this submission focuses specifically on the ways in which these impacts are currently measured, and provides the Committee with some background information on some of the challenges and opportunities that the City of Sydney have identified with the ongoing measurement and monitoring of air pollution to help better inform policy decisions and protect the health of our residents.

Specifically, this submission seeks to highlight both the issues and opportunities for improved air quality monitoring, not just as a direct result of the bushfires smoke which brought the issue to the very fore of public debate throughout January and February of 2019-2020 but also to ensure that there is a better understanding of chronic ongoing exposure to air pollution as a result of other pollutants such as particulate matter released by cars, diesel trucks, coal-fire power stations and other sources of pollution that are a result of increased urbanism, density and reliance on fossil-fuel energy for power and transportation.

We are extremely fortunate that the air pollution levels brought about by the bushfires in Sydney was temporary. In many densely populated cities in the world, high levels of PM2.5 and PM10 in the air are simply part of the 'cost of living' in a big city. But that is not a price that I believe the people of the City of Sydney are willing to pay and that the decrease of congestion and air pollution experiences throughout the COVID19 lockdown has in fact reminded people throughout our City of the value of clean air and clear skies both of which are critical to the health, wellbeing and global reputation of our City as an attractive and liveable place for out 200k-odd residents and 1.3 million people who work and visit the City each day.

Summary:

My experience as a City of Sydney Councillor has revealed that currently:

- The **community does not trust the current methodology used by the NSW EPA** to measure air quality because it only measures ambient air quality and not what they are breathing at a human level where pollution is present. Currently the NSW EPA does not meet its air pollution obligations, but there is no compliance or recourse action for this, nor are there consequences for pollution exceedences where they are known;
- Without accurate air pollution monitoring at the street level, roadside, on construction sites, in classrooms, childcare centres and among vulnerable communities **the City of Sydney is severely limited in what we can do at a local level to counter these negative effects** and mitigate the health risks and financial and reputation costs of polluted air; and
- There is a **significant opportunity** for the NSW Government to take learnings from the NSW Bushfires and increased community interest in air pollution monitoring and responses to lead **global best practice** if it can from part of a NSW Government Clean Air Act (in the absence of any Federal Policy that does the same thing) This would demonstrate what a 'Smart City' approach actually is and enable local government to play a role in deploying new technology that offers cost-effective, responsive and data-driven policy decisions that improves the quality of the air that our residents breathe in a tangible way - through strategic planning, urban greening and transport plans.

I appreciate that the many submissions that you will receive as part of this process will be very technical in nature, mine is not. Instead it seeks to demonstrate that if the the NSW Government were to take a leading and proactive role in measuring and mitigating air pollution, it is taking a once in a generation opportunity to ensure the long-term health of our communities, but also ensure that our cities live up to their global reputation as the clean, green places worthwhile visiting. A reputation that will be critical as we as a local and State economy rebuild and recover from the current COVID19 crisis.

Sincerely,

Councillor Jess Miller, Deputy Chair of the Environment Committee & Independent Councillor at the City of Sydney



Sydney2030/Green/Global/Connected



What we know:

That the population within the City of Sydney is set to increase from **1.3 million to 2.1 million by 2050**.

The existing NEPM AAQ is so weak that currently the NSW Government's Environmental Protection Authority **does not meet its existing obligations** under the current National Environment Protection (AAQ) Measure within the City of Sydney, and when standards are exceeded, there is no consequence, penalty or recourse.

This contributes to a chronic health problem that is greatly exacerbated by acute shock such as bushfires.

While existing air pollution monitors located nearby the City of Sydney (located mostly in park lands) record ambient air quality the current NEPM AAQ standards **do nothing to enable local government to measure, manage or mitigate** the level of exposure people experience along our roadsides, in their homes, classrooms, schools, work sites or while travelling throughout our local government area.

A 2017 study conducted by the Clean Air & Urban Landscapes Hub in Sydney revealed that the average roadside concentration of PM_{2.5} was 17µm, which **is double that prescribed** as 'acceptable' under the existing NEPM.

Air quality and pollution levels are increasingly becoming a **major source of concern among our urban population** and in particular among my communities and those of the surrounding local government areas.

As you will no doubt see from the various submissions to this review, public health experts, doctors, and respiratory experts are reporting higher than average incidences of illnesses like bronchitis and asthma, especially during periods of increased urban heat.

When bushfire smoke is added to this equation the result is increased morbidity.

Among the broader City of Sydney population, parents of small children, carers of elderly parents, workers on construction sites and City businesses - particularly those with outdoor dining on main streets and increasingly congested roads - are worried and expect that ensuring clean air become a **core priority of government**.

Media coverage of the failure of government to adequately provide air pollution monitoring, has resulted in a high level of concern among the community.



Sydney's air quality monitors placed mostly in parks, not streets

SYDNEY'S air pollution warning system has been exposed as a farce, with not a single monitor in the inner city, and most of the rest located in tree-lined parks.

DANIELLE MESSURER, The Daily Telegraph



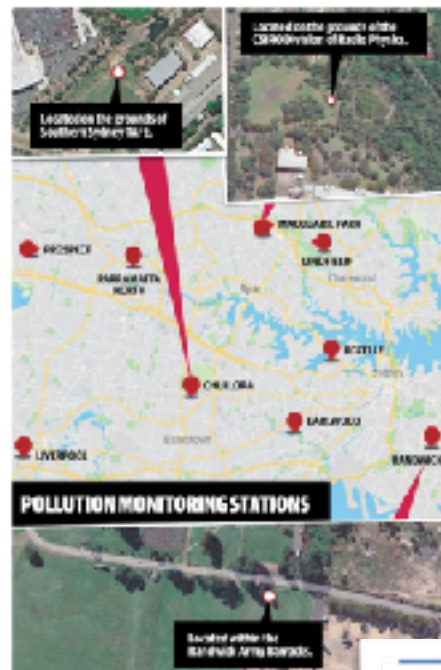
THE air Sydney's parks breathe may not be as clean as they are being told.

The city's air pollution warning system has been exposed as a farce, with not a single testing station in the car-clogged inner city, and most of the rest located in tree-lined parks.

The Daily Telegraph has revealed the NSW Office of Environment and Heritage.

There is not a single monitor in the inner city, where emissions from vehicles and industry make air pollution higher than in leafy outer suburbs.

This is despite guidelines the OEH uses rating city stations as "peak effort" that are "especially useful for air quality compliance monitoring".



The OEH's official Air Quality Index rated the air in Sydney as "fair" almost 90 per cent of the time last year.

Sydney Deputy Lord Mayor Jess Miller said the failure to even quality test made the whole system deficient.

Aircon, closed windows keeps kids too drowsy to learn

AIRCONDITIONING is leading to alarming concentrations of carbon dioxide in classrooms across Sydney, putting our children's ability to learn at risk.

CLARISA RYE, The Daily Telegraph

Subscriber only | July 5, 2019 6:22pm



Concentrations of CO2 higher than 1000 ppm increases drowsiness risk by 40 to 80 percent.



- 'Natural flu jab' is misleading, doctor
- Principals discover secret, modification to ease stress

CENTRAL SYDNEY

City of Sydney Council: Mayor calls for air quality monitoring station

A campaign to investigate poor air quality near congested roads has been championed by a Sydney Council.

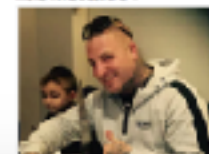
Laura Sullivan, Central Sydney

Subscriber only | March 12, 2019 11:45am



City of Sydney Council wants air pollution monitoring in the CBD.

MORE NEWSLOCAL >



Cannitham hills se sai

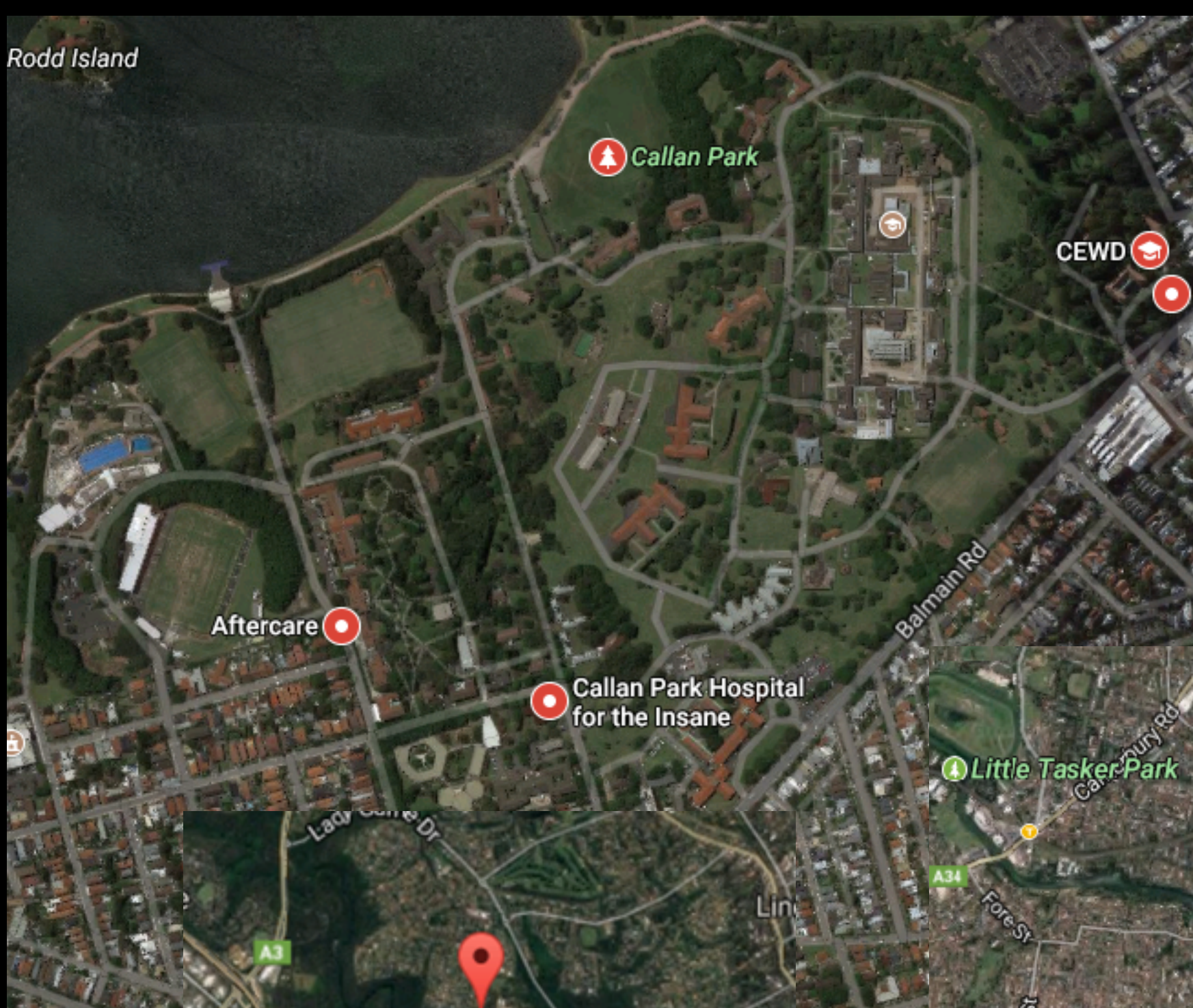
- 'Mother' of famous CBD pub dies
- The latest Sydney drinking hole taking the city by storm

A campaign to investigate poor air quality near congested roads is being championed by City of Sydney Council.

The
Daily Telegraph

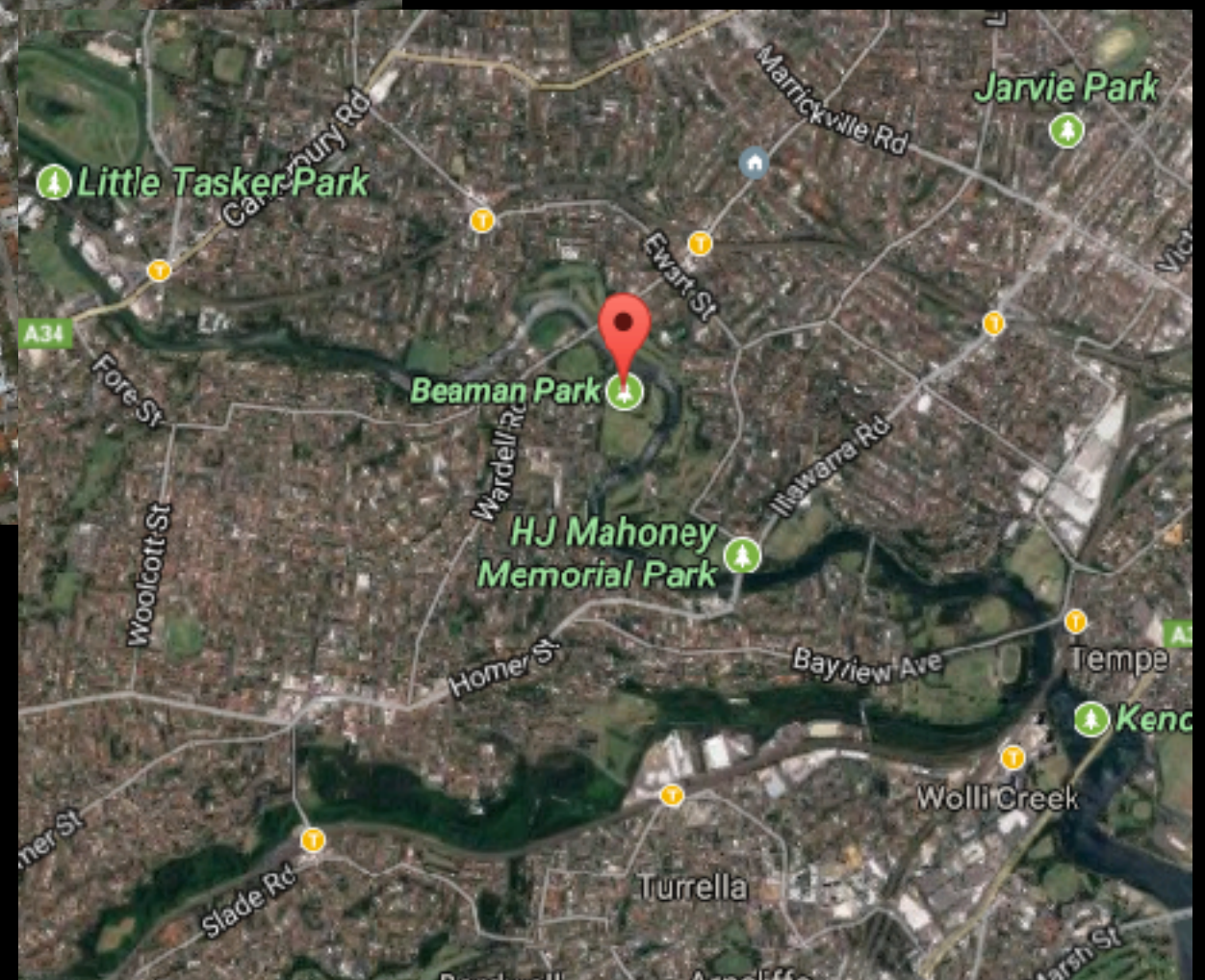
The
Daily Telegraph

Rodd Island



The Location of current NSW EPA air pollution monitors nearby the City of Sydney - in parks.

As a result of ongoing advocacy, the State Government has since December 2019 installed one temporary monitor that was put in place within the City of Sydney and Cook + Phillip Park and another proposed for Green Square.



Who (and what) is most at risk of poor air quality?

1. Residents, workers and visitors:

The current proposed changes to the Federal NEPM don't account for how people move throughout urban environments. So while there is a policy vacuum at the Federal level, this is not a good enough reason for the State Government to do nothing.

Currently the City of Sydney has no regulatory authority when it comes to air pollution monitoring, and the NSW EPA's deficiency in this area makes it impossible for us to adequately measure and therefore mitigate the impact of air pollution exposure to residents and visitors to the City.

If we were funded to better measure air pollution through a range of wearable or stationary devices, we would be much better positioned to make strategic decisions that protected people from exposure i.e. appropriate locations of childcare centres, pedestrian routes, park locations, street tree planting, urban greening etc.

At the Federal level the proposed changes to the NEPM **enshrine sub-standard air quality measures** and prohibit the City of Sydney from:

- Increasing our capacity to adequately monitor or manage air quality to protect residents, workers and visitors to the City of Sydney
- Effectively manage or measure air pollution 'hot spots'
- Make informed strategic planning decisions that avoid exposing already vulnerable people ('population at risk') to poor air quality
- Take any legal action or recourse when the State Government monitoring fails to:
 - Meet its existing obligations
 - Identify a source of pollution that currently exceeds existing acceptable levels

2. People who work outdoors or on construction sites:

Over the past year, residents, community groups and environmental innovators who participated in the '**Breathable Sydney Hackathon**', have raised awareness that people who work outdoors - on construction sites, infrastructure workers, rangers, police are people 'most at risk' of poor air quality.

Even without the added impact of bushfire smoke, workers exposed to silica and hebel risk significant long-term health impacts as over time, these known carcinogens cause 'silicosis' - a disease caused by the retention of crystalline silica in the lungs, inhaled often as a result of cutting, drilling or sanding artificially produced stone (Colinet et al 2011).

In the CBD alone, there are at least 20 active construction sites (Build Sydney 2019) where monitoring of this exposure simply does not take place. The existing air quality legislation in NSW and at the Federal level does not address this type of exposure. Were legislation stronger at the State level through a Clean Air Act it is expected that better compliance and mitigation outcomes would be achieved through cooperation between State and local governments, and the private sector.

3. Children

As at June 2018, almost half of the City of Sydney residents were aged 18-34 years the largest group being aged 25-29 years old. Comparatively, we have a very high proportion of children that currently the NSW Government fails to protect from the effects of air pollution.

The City's ongoing efforts to reduce traffic congestion, while increasing productivity and lowering emissions would be greatly enhanced by better air pollution monitoring and State and national government standards. In particular, access to effective and real-time monitoring would enable us to locate active transport corridors away from congested areas thereby reducing air pollution exposure, especially nearby schools and childcare centres. We would also hope to see 'Significant Infrastructure' projects prioritised on the basis that they did not further contribute to air pollution i.e. coal mines, and motorways.

Current legislation also fails to consider that infants in prams are especially 'people at risk' - given that as they travel through the City they are 'closer to tailpipe height and hence are at risk for larger PM2.5 exposure than adults (Wadlow et al, 2018 p2). It is well documented that exposure to not only PM2.5 but NO2 through the burning of fuel by diesel and petrol engines even at small levels of exposure, pose an unacceptable and irreversible risk of asthma and reduced lung and brain function in children aged between 7-11 years of age.

Finally, legislation does not take into account levels of carbon dioxide children are being exposed to **indoors** - specifically in their classrooms where it has been documented by Professor Matt Santamouris that due to poor ventilation, that levels of up to 4000ppm are being recorded, four times that of the recommended 1000ppm threshold for students.

Clearer guidance and leadership at the State and Federal level would provide an excellent opportunity and clear directive to other levels of government that the health of children and their ability to learn in an environment that isn't sending them to sleep, is a top priority.

4. Sydney's global reputation as a city with clean air and clear skies

International education is Australia's biggest service export. For every international student enrolled in Sydney 20 jobs are indirectly created. According to the Committee for Sydney's *Sustaining the Advantage* report, Sydney's environment and liveability is one of the key factors that makes it a globally competitive city when attracting students, workers and visitors.

It is therefore of paramount importance that the State Government introduce and enforce the strictest possible measures for air quality - not just in response to smoke that comes from bushfires, but through a whole range of pollution in a way that addresses the year round health impacts of SO2, NO2 and O3 through ambient measurement and extend the remit to include PM2.5 & PM10 in a way that acknowledges the real impact of air pollution on place liveability and Sydney's global reputation as a city with clean air and clear skies.

The opportunity:

As a City of Sydney Councillor, my expectation is that the Inquiry carefully consider how the decisions made by the State Government influence the lives of real people that I represent and who live, work and visit the most densely populated city in Australia - Sydney.

As outlined, the standards we currently have do not go far enough protect people from the adverse impacts of everyday air pollution on our streets, in our classrooms and childcare centres, in their homes, on worksites or as they travel through our city let alone respond adequately to bushfire smoke.

At the very least, we would like for the Inquiry to consider:

- The introduction of monitoring protocol that is contextually relevant, place-based and that sets standards that enable State and local governments to address real exposure to pollutants to people most at risk
- Introduce regulation that allows for a diversity of monitoring technology that includes wearable devices, indoor monitors, roadside stationary monitors and ambient monitoring and makes this data available as a real time decision-making tool to government and communities
- Devise a framework that prevents the NSW EPA's failure to meet the existing NEPM regulatory monitoring obligations
- Enable clear punitive measures by way of fines to polluters who constantly breach existing standards
- Consider the provision of funding to local government to work with the community to experiment with different types of air pollution monitoring technology and locations as part of Smart Cities funding packages

Furthermore we ask that the State and Federal Government build upon the *2015 Clean Air Agreement and Plans* by introducing legislation through the design and implementation of a **Clean Air Act** if not Federally, then locally. This would recognise that NSW's air pollution monitoring standards fall well below those of the USA, EU and China and embed into legislation clean air as a priority.

As evidenced by the lack of a single air pollution monitor in the City of Sydney up until December last year, the *National Environmental Protection Act (1994)*, *2015 Clean Air Agreement and Plans*, fundamentally fail to deliver acceptable global standards of clean air to people living, working and visiting Australia's most dense urban areas.

Research into the health implications of exposure to NO₂, SO₂, O₃, PM 2.5 and PM 10 clearly state that exposure of these gases - especially to children - have devastating neurological, respiratory and overall health impacts. Simply put - we do not have time for reviews that propose 'legislative acupuncture', we need a surgical and serious approach to these reforms.

As part of the Inquiry review, I request that the Committee seriously consider:

- It's role in enabling the NSW State Government's EPA to consistently fail to meet existing standards and obligations
- How cities such as London, Paris, Beijing, Shanghai are others are effectively measuring and monitoring air pollution in their cities, and what opportunities there are to learn form the C40 Air Quality Network for best-practice examples such as [Breath London](#).
- How new 'smart' technology such as air pollution monitors and sensors can be used to inform local land use policies, building design codes, and give parents, carers, and the general public the information they need to protect their health for example, by choosing the safest route their child might take to or from school on any given day, based on accurate, realtime air pollution levels in their local area
- Take into account how 'living' (street, trees green walls) infrastructure solutions might be better supported and encouraged to help ameliorate and protect people living in urban areas from air pollution.

As this is an issue of critical and urgent importance to my constituents in the City of Sydney, I am very willing to do all that I can to help support and assist the Inquiry to achieve the best possible outcome from this review.

Thank you for your consideration.

Councillor Jess Miller

E:



Additional information

Appendix

Currently there are four wearable air pollution monitoring devices that could potentially be used in a Citizen Science-style experiment.

1. Plume Labs



What:

Favourably reviewed in New Scientist, we are in discussion with London-based Plum Labs about the possibility of this wearable technology in Sydney.

Available:

June/July 2018

Cost:

\$268 each retail

Data management & access:

Negotiable.

Licensing: TBC

2. Airbeam2



What:

Similar to Plume but with more of a focus on PM 2.5

Available:

Now

Cost:

TBC

Data management & access:

\$336 retail.

Licensing:

TBC

3. CAUL Hub



What:

Wearable technology based on people on bicycles, privacy issues re GPS tracking still being ironed out.

Available:

TBC

Cost:

TBC

Data management & access:

TBC

Licensing: TBC

4. Aeroqual

What:

PM2.5 portable monitors (though not necessarily wearable). This requires both units to operate. They are much more sensitive. OEH have been testing using various models and we are meeting with them soon to discuss their findings.

Available:

Yes

Cost:

The Sensor (left) costs \$700

The portable reader (right) costs \$1300

Data management & access:

Unsure

Licensing: TBC



Research References

Title	Released	Org
Annual report on Air quality variability in Sydney	Soon to be released	CAUL
Shows a large discrepancy between current ambient monitoring and roadside levels of PM2.5. Considers new monitoring methods and warns against exercise near roads.		
Independent Air Quality Review - Westconnex M4-M5 Link	Feb 2018	NSW Planning and Environment

Notes that the EPA and NEPM air quality standards do not apply to road projects. There is no NSW guideline for measuring the impact of road projects.

Report of WCX AQCommunity Consultative Committee	Nov 2017	Sydney Motorways Corporation
Review of the damage caused by PM2.5 and other pollutants and the projected levels against traffic predictions.		
Including Health in Environmental Assessments of Major Transport Infrastructure Projects: A Documentary Analysis	May 2017	USYD research (in the International Journal of Health Policy)
Advocates for greater consideration of health impacts.		
Clean Air NSW	2016	OEI
Policy advocating for clean air in NSW. Notably includes 'stakeholder engagement' as a priority.		
Impacts on health of air quality in Australia	2013	Parliamentary Enquiry
The original enquiry noting that the EPA should be monitoring air quality due to negative health outcomes for residents. It singles out PM2.5 as needing more regulation.		

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