

## Address supplied

Cllr Andrew Burns, Council Leader, former Convenor: Transport  
Cllr Lesley Hinds, Convenor: Transport and Environment Committee  
City Chambers  
High Street  
Edinburgh  
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26 January 2017

### An open letter to the addressees and the media

Dear Mr Burns and Ms Hinds

In the last Council Leader's report (12 January 2017) we were told:

"Poor air quality is one of the biggest challenges all cities face", and that "taking the tram to the shops, can make a real difference."

This report arrived one week after two significant publications in the Lancet:

[1] H. Chen et al. (2017) Living near major roads and the incidence of dementia, Parkinson's disease, and multiple sclerosis: a population-based cohort study, The Lancet, on-line 5 Jan. 2017.

[2] L. Calderón-Garcidueñas and R. Villarreal-Ríos (2017) Living close to heavy traffic roads, air pollution, and dementia, The Lancet, on-line 5 Jan. 2017.

These papers comment on research involving "almost the entire adult population in the most populous province in Canada (Ontario)". The sample consisted of some 6.6 million adults.

Peer-reviewed research at this scale is generally accepted to produce sound observations.

The principal conclusion, that living near a major road was associated with a significantly higher rate of dementia, was however neither surprising, nor new. These papers highlight concerns about the health impacts of traffic pollution that have been the subject of peer-reviewed research for many years, with Calderón-Garcidueñas and R. Villarreal-Ríos [2] citing "well established" research going back to 2002 showing that "exposures to complex mixtures of air pollutants in urban environments are associated with oxidative stress, neuroinflammation, and neurodegeneration in humans." They go on to cite earlier work that describes the following impacts and susceptibilities:

- cognitive deficits and altered neurobehavioral performance are seen in seemingly healthy children and teens in relation to exposures to air pollutants

- air pollution-induced placental epigenetic alterations are seen at all trimesters of pregnancy
- cerebrospinal fluid markers of Alzheimer's disease are present in young urbanites.
- women in their 60s have twice the risk of developing Alzheimer's disease than breast cancer.

Calderón-Garcidueñas and R. Villarreal-Ríos [2] however consider Hong et al.'s work to be important because "The significant association of newly diagnosed cases of dementia in the study period between 2001 and 2012 with the proximity to traffic road less than 50 m–300 m versus more than 300 m, and the robust observation of dementia involving predominantly urban versus rural residents, opens up a crucial global health concern for millions of people."

Note a critical descriptor of those 'at risk' here: the key comparator groups are those living more than 300m from a busy road, versus those living less than 50m from a busy road.

In Edinburgh, 300m is the distance between Princes Street and Queen Street.

The Edinburgh Tram project included the planned displacement of traffic from a corridor running along Princes Street to Haymarket that has moved that traffic by 300m and brought it less than 50m away from large numbers of Edinburgh's city centre residents, with Council-predicted increases in nearby residential communities such as Stockbridge.

The closure of Shandwick Place has also forced traffic into Edinburgh's Old Town, creating two busy 'south and north circulars' that take traffic from commercial thoroughfares through more circuitous routes across less suitable roads and closer to residents.

In short, the Edinburgh Tram has displaced traffic pollution from commercial areas to residential areas. On this basis, the available peer-reviewed research suggests that the incidence of adverse air pollution-related health impacts for the city's resident population should be expected to rise.

Though the City of Edinburgh Council predicted that Tram-related traffic displacement would affect the majority of Edinburgh's residents, we don't know by how much this displaced pollution is likely to impact health because no city-wide health impact analysis was ever conducted to inform the decision on whether to proceed with the Tram.

Adverse health impacts are not limited to displaced air pollution. Hong et al.'s paper mentions noise some 16 times, as a health-impacting factor [1]:

"The fact that PM2.5 and NO2 did not fully explain the near-road effect on dementia suggests that additional pollutants or other factors such as noise might play a role. Although we were unable to directly examine these factors, traffic-related noise has been linked to cognitive impairment in a cohort in Germany. In

rat models, noise exposure directly impaired cognition. Additionally, sleep loss from noise contributes to sleep fragmentation, which is associated with reduced cognition.”

In Edinburgh, the planned displacement of traffic has taken the most polluting vehicles – large diesels – and moved them from wide, open, straight tarmac roads to narrow ‘urban canyons’ which typically have cobbled streets. Cobbled streets are much noisier and even more so when being asked to carry the 6-axle 44-tonne lorries that are now prohibited from Princes Street. The ‘urban canyon’ in this case may thus concentrate both air and noise pollution – causing ‘sleep fragmentation’ for residents even when Princes Street is empty and the Edinburgh Tram no longer operates.

In short, it is hard to conceive of a worse outcome for the residents of Edinburgh, and whilst there is much the Council could do at almost zero cost to improve the situation, and without even enacting another Traffic Regulation Order, there has been no substantive progress over the 8 years the above concerns have been raised by concerned residents at Council meetings.

I leave you with Calderón-Garcidueñas and R. Villarreal-Ríos’s concluding statement:

“We must implement preventive measures now, rather than take reactive actions decades from now.”

Please take action urgently – there are steps you can take immediately and they have been widely discussed. Residents cannot afford to wait.

Regards,

Dr Ashley Lloyd  
Former Chair,  
West End Tram Traffic Workshops