

Reference: **Inquiry into the decision to commit funding to the Perth Freight Link Project**

My submission relates to the last point of the reference: “any other matters”.

I wish to draw the committee’s attention to:

1. the question of the Perth Freight Link and diesel particulate pollution
2. the link between the privatisation of the Port of Fremantle and the Perth Freight Link.

1. Perth Freight Link and diesel particulates

I believe that if the public health ramifications of the diesel particulate fallout from the Perth Freight Link (PFL) were to be properly evaluated then the project would be untenable.

I attach an information sheet that I authored for the Fremantle Road to Rail campaign (R2R) entitled “*Four things you should know about diesel particulate pollution*” (<http://freeroad2rail.org/resources>).

By virtue of my employment and community activities I have gained an understanding of the research into diesel particulate matter (DPM).

That brochure is an attempt to explain in plain English what DPM is and its enormous range of deleterious health impacts.

My background with the PFL and its preceding forms

I helped to establish the R2R group about five years ago, when I became aware of the then plans to widen High Street, Fremantle to facilitate truck movements to the Port of Fremantle.

I was motivated to do so after I attended a meeting convened by the Gibson Park Precinct committee (a residents’ forum fostered by Fremantle Council). There I heard a representative of the Department of Transport say that the intention was to run “high efficiency B-double” trucks 24 hours a day, seven days a week to the Port.

When I asked about the diesel particulate fallout from that, my question was evaded.

My education in DPM

I have been interested in the topic of particulates since I was employed in the early 1990’s by South Sydney City Council to coordinate a community campaign to close the Waterloo Incinerator (see: http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0014/120281/histories-of-Green-Square.pdf).

At the time of the forming of the R2R group I was aware of the so-called Harvard Six Cities project findings. That study followed a cohort of 8,111 adults in six cities in the northeast and midwest of the United States for 14 to 16 years beginning in the mid-1970s.

Its findings were subjected to criticism, were re-examined in detail and withstood the scrutiny (for details of the original study and subsequent investigations see: <http://www.epa.gov/ncer/science/pm/hei/Rean-ExecSumm.pdf>).

The Harvard Six City Project and the much larger American Cancer Society (ACS) Study led by Dr. Arden Pope were responsible for the US EPA enforcing new National Ambient Air Quality Standards for fine particles in 1997.

I contacted a British expert in particulates, Dr. Dick Van Steenis and he rang me on a number of occasions from the UK and educated me in the latest research, of which he was well-informed. He provided me with his personal list of over 200 scientific sources on particulates, which broadened my knowledge.

Dr Van Steenis died in 2013 after years of giving expert testimony in UK investigations into sources of particulate pollution. His research technique was very simple: he would map prevailing winds around the pollution source, gather health data from the surrounding areas and compare downwind to up wind areas – to telling effect.

He informed me of the vast array of health effects generated by particulates. It is far more than the asthma, bronchitis and cancer of which most people are aware.

He said that the electrical charge that binds the toxins to the carbon core of each microscopic particle means that the particles join together in the bloodstream once they enter the body.

These agglomerations of matter cause strokes and congestive heart failure. As the body attempts to expel the toxic particles, they cause cancer in the liver, kidneys and bladder.

Also, Dr. Van Steenis told me, the constant stream of particles entering the body mobilises the immune system to the lungs, triggering autoimmune system disorders such as thyroid conditions and hormone disorders including endometriosis.

When Dr Van Steenis became aware of my family's circumstances, that we live within 350 metres of a major source of diesel particulates – in fact, caught between two major roads with prevailing winds blowing towards us - he was very forceful in his advice.

He said that I should sell the house immediately to preserve my children's health. Failing that, I should seal the house completely against the outside air, install an air conditioner with a suitable air filter and only breathe the filtered air.

Fremantle R2R solutions for transport issues

These discussions led me to the establishment of the Fremantle Road to Rail campaign group. The primary aim of R2R is for sustainable freight transport planning for Fremantle Port.

R2R holds that eliminating the empty running of trucks (30 – 35% of all trucks), moving the empty container park and increasing the percentage of containers moved by rail to a minimum of 30% would massively reduce the number of trucks on the road.

We believe that only after proper transport management has been used to reduce the problem should infrastructure projects be planned. We see no indications that the PFL has been based on any kind of transport management or other planning – even its route has not been finalised.

Main Roads WA failure to engage with issue of DPM

Most significantly for me, I see no genuine engagement with the question of diesel particulate pollution.

The Main Roads WA (MRWA) website dismisses as a “myth” that the “extension of Roe Highway will increase pollution, in particular diesel emissions” (<https://project.mainroads.wa.gov.au/roe8/mythbusters/Pages/Environment.aspx>). However, it fails to actually prove that claim.

The claims of MRWA must be questioned on these bases:

- are the claims true?
- are the claims relevant?

The MRWA claims fail both tests.

The website proclaims: “An air quality assessment was conducted using an internationally accepted air dispersion model (CAL3QHCR) that considered construction impacts and heavy vehicle use on Roe 8 up until 2031.”

It goes on that DPM emissions are predicted to be “well below the National Environmental Protection Measure (NEPM) ambient air quality criteria”.

It then mentions two further “air quality factors”:

- trucks will not be stopped by traffic lights
- emissions “produced in line with Perth Freight Link are regarded as minor in comparison to existing levels”.

One has to pursue a link to the referenced report to see the justifications for these claims. The report is “Roe Highway Extension - Public Environmental Review, appendix V”.

That report is five years old and relates to an outdated planning proposal, not the PFL. It relates to the Roe 8 Extension proposal, not the PFL, which extends well beyond the Beeliar Lakes area.

The report predates by two years the World Health Organisation classification of DPM as a Category 1 carcinogen (see http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf).

Internationally, authorities are adjusting acceptable DPM levels in light of the WHO report. The existing Australian NEPM will inevitably change as international standards filter through.

For Main Roads to claim that its 2010 plan would meet the then existing NEPM levels is no comfort today, now that we know that the NEPM standard is insufficient.

More importantly, there is no linking of its findings to public health data, rendering the entire exercise useless. The whole point of emissions monitoring is to compare it to public health data.

Simply comparing emissions to a national air quality standard conveys nothing about what effects the emissions are having on people. It is like claiming that it is safe to collide with a truck that is travelling within the speed limit – adherence to an abstract standard is not the same as ensuring public safety.

Moreover, one reads on page 15 of the MRWA Environmental Review document that it draws on air quality data collected in 2006. There is information included about air quality measurements done over a wide grid around the Beeliar Wetlands, with no apparent dates given for that monitoring, so the methodology appears opaque.

Also meaningless is the MRWA statement: “Heavy vehicles using the Roe Highway extension will bypass six sets of traffic lights, reducing stop-start traffic and exhaust emissions”.

Nowhere in any scientific study of DPM of which I am aware is the elimination of traffic lights indicated as a solution to the problem. If MRWA sincerely believes that it has solved the challenge so simply then it should inform the World Health Organisation!

Based on this hodgepodge of information MRWA draws satisfaction that it can massively increase the number of diesel trucks along the entire length of the PFL and not significantly increase emissions.

I conclude that the MRWA-proclaimed “myth busting” claim about diesel particulate pollution is deliberately misleading propaganda.

What MRWA should be doing about DPM analysis

What MRWA should be doing is a base line health survey of areas around the existing truck route along High Street and Stirling Highway and compare areas on the basis of the prevailing winds.

The Department of Health collects such health data, it isn't hard to obtain.

The health data should be matched with the current number of trucks using the route. The methodology is well established and easy to apply.

We can then arrive at an estimation of the health effects of the PFL.

I believe that such an analysis would render the PFL project unfeasible.

2. Perth Freight Link and the sale of Port of Fremantle

Finally, I do not believe that the rationale MRWA has presented for the PFL project makes real sense. It is claimed that linking Perth Airport to Fremantle Port by road will have a tremendous, positive economic effect upon WA.

There is already a freight rail line linking those two areas. The obvious thing to do to achieve those economic benefits would be to first maximise the use of that resource.

Discerning the real motivation for the PFL has to be achieved by deduction, given that the publicly available explanations are irrational.

I believe that the ultimate motivation for this project is the determination to privatise Port of Fremantle.

The Port delivers around \$50 million in revenue to the state of Western Australia. Privatising it would deliver a monopoly of WA container shipping to a private operator, ready to profit-gouge.

The experience of private operation of the WA grain freight transport system has been disastrous. The private operator, Brookfields, has driven parts of the system into the ground, refusing to maintain it and finally shutting down the Tier Three sections.

If such an operator gained control of the Port - with the transport system publicly provided via the PFL while the Port's profits were private - Fremantle and WA would be presented with a terrible situation. There would be no inducement for such an operator to use the freight rail system at all.

The profits would be privatised while the transport costs – especially the public health burden of increased diesel particulate pollution – would be socialised.

I believe that this is an invidious situation.

Four things you should know about diesel particulate pollution.

1. What is diesel particulate matter (DPM)?

DPM is the ultra-fine particles that come from diesel engines.

Nearly all diesel particulates are less than 1 micrometre in size. DPM is a mixture of fine, ultrafine, and nanoparticles.¹

DPM includes both solids (such as elemental carbon and ash) and liquids, such as condensed hydrocarbons, water, and sulfuric acid.²

2. Is diesel particulate matter dangerous?

Yes.

The World Health Organisation has classified DPM as a Category 1 carcinogen - the highest category of cancer hazard.³

Other Category 1 carcinogens include arsenic, asbestos, radium and tobacco.⁴

3. Why is DPM dangerous?

About 90 per cent of DPM is less than 0.03 micrometres in diameter.⁵

This means that most of the particles coming out of a diesel truck are not only invisible, they are so ultra-fine that they can pass through the human body's defences.⁶

The tiny particles carry an electrical charge that binds to them the toxic mix that is formed when diesel is burned in the engine.⁷

4. What are the health effects of these particulates?

Starting in 1974, the so-called "Harvard Six Cities Study" tracked the lives of 8,111 randomly selected residents of six U.S. cities until 1989.

It proved that there is a direct correlation between particulate pollution and mortality⁸.

Scientific studies since then have confirmed the findings.

Ill health effects include:

Cancer -

- exposure to ozone and PM correlated with development of and mortality from lung cancer⁹
- increased biological markers associated with risk of lung cancer¹⁰
- increased oxidative DNA damage predictive of cancer risk¹¹
- increased rates of breast cancer¹²

Cardiovascular -

- increased cardiovascular disease mortality and morbidity in both short term and long term exposures to PM 2.5¹³
- increased hospital admissions for serious cardiac arrhythmias¹⁴
- increased probability of admission for acute myocardial infarction¹⁵
- increased ischemic heart disease, arrhythmias, congestive heart failure¹⁶ and bio markers (HRV) associated with increased cardiac morbidity and mortality¹⁷

General health -

- increased mortality from cardiac, respiratory and kidney disease in all members of communities with coal exposure¹⁸
- long term exposure linked to decreased life expectancy from cardiopulmonary mortality¹⁹
- prenatal exposures linked to altered immune system development²⁰.

Neurodevelopmental problems in children and adults -

- increased incidence of autism spectrum disorder (ASD)²¹
- increased incidence of behaviours associated with attention deficit hyperactivity disorder (ADHD)²²
- lowered IQ²³
- increased behavioural symptoms of anxiety, depression, social problems, rule breaking, and aggression²⁴
- neurobehavioural development in children benefited from the shutdown of a coal-burning plant²⁵

Lung function -

- decreased pulmonary function²⁶
- inhibited children's lung development²⁷
- causes and worsens asthma, resulting in increased hospitalization²⁸

Strokes -

- increased hospital admissions for strokes²⁹
- significant increase in stroke mortality associated with increase in PM³⁰
- increased risk of stroke associated with increased exposure to small PM, black carbon, and nitrous dioxide³¹
- increased risk of stroke and death from stroke for postmenopausal women³²

¹ Diesel Exhaust Particle Size, https://www.dieselnet.com/tech/dpm_size.php

² Diesel Exhaust Particle Size, https://www.dieselnet.com/tech/dpm_size.php

³ http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf

⁴ <http://www.iarc.fr/ENG/Classification/ClassificationsGroupOrder.pdf>

⁵ <http://www.me.umn.edu/centers/cdr/reports/crce43ts.pdf>

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- ⁶ Diesel particulates are invisible but dangerous,
<http://www.hussgroup.com/cdc/en/infocenter/PM.php>
- ⁷ Measurement of electrical charge on diesel particles
Heejung Jung; David B. Kittelson,
http://experts.umn.edu/pubDetail.asp?n=David+B+Kittelson&u_id=1451&oe_id=1&o_id=17&id=28944442438
- ⁸ "An association between air pollution and mortality in six U.S. cities",
<http://www.nejm.org/doi/full/10.1056/NEJM199312093292401>
- ⁹ Long-term concentrations of ambient air pollutants and incident lung cancer in California adults: results from the AHSMOG study. Adventist Health Study on Smog,
Beeson WL1, Abbey DE, Knutsen SF
<http://www.ncbi.nlm.nih.gov/pubmed/9831542>
- ¹⁰ Biomarkers of ambient air pollution and lung cancer: a systematic review.
Demetriou CA, Raaschou-Nielsen O, Loft S, Møller P, Vermeulen R, Palli D, Chadeau-Hyam M, Xun WW, Vineis P.,
<http://www.ncbi.nlm.nih.gov/pubmed/22773658>
- ¹¹ Ultrafine particulate matter and high-level benzene urban air pollution in relation to oxidative DNA damage
Patrice H. Avogbe, Lucie Ayi-Fanou, Herman Autrup, Steffen Loft, Benjamin Fayomi, Ambaliou Sanni, Peter Vinzents and Peter Møller,
<http://carcin.oxfordjournals.org/content/26/3/613.full>
- ¹² Postmenopausal Breast Cancer Is Associated with Exposure to Traffic-Related Air Pollution in Montreal, Canada: A Case–Control Study
Dan L. Crouse, Mark S. Goldberg, Nancy A. Ross, Hong Chen, and France Labrèche
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2974696/>
- ¹³ Particulate Matter Air Pollution and Cardiovascular Disease,
Robert D. Brook, MD, et al.
<http://circ.ahajournals.org/content/121/21/2331.full>
- ¹⁴ Peters A, Liu E, Verrier RL et al, Air pollution and incidence of cardiac arrhythmia. *Epidemiology* 2000; 11(1):11-17
- ¹⁵ Main Air Pollutants and Myocardial Infarction, A Systematic Review and Meta-analysis, Hazrije Mustafić et al.
<http://jama.jamanetwork.com/article.aspx?articleid=1104975>,
- ¹⁶ Fine particulate air pollution and hospital admission for cardiovascular and respiratory diseases, Dominic F, Peng RD, Bell ML, Pham L, McDermott A, Zeger SL, Samet JM.,
<http://www.ncbi.nlm.nih.gov/pubmed/16522832>
- ¹⁷ An epidemiological appraisal of the association between heart rate variability and particulate air pollution: a meta-analysis,
Nicky Pieters, Michelle Plusquin, Bianca Cox, Michal Kicinski, Jaco Vangronsveld, Tim S Nawrot1,
<http://heart.bmj.com/content/98/15/1127.full>
- ¹⁸ Mortality from heart, respiratory, and kidney disease in coal mining areas of Appalachia,
Michael Hendryx
http://www.appalachianvoices.org/images/uploads/2011/07/heart-resp-kidney_2009.pdf
- ¹⁹ Mortality from ambient air pollution, World Health Organisation Global Health Observatory (GHO) data,
http://www.who.int/gho/phe/outdoor_air_pollution/burden/en/
- ²⁰ Prenatal Exposures to Persistent and Non-Persistent Organic Compounds and Effects on Immune System Development,
Irva Hertz-Picciotto, Hye-Youn Park, Miroslav Dostal, Anton Kocan, Tomas Trnovec and Radim Sram
<http://onlinelibrary.wiley.com/doi/10.1111/j.1742-7843.2007.00190.x/full>
- ²¹ Ambient Air Pollution and Autism in Los Angeles County, California,
Tracy Ann Becerra, Michelle Wilhelm, Jørn Olsen, Myles Cockburn, and Beate Ritz
<http://ehp.niehs.nih.gov/1205827/>
- ²² Associations between Traffic-Related Black Carbon Exposure and Attention in a Prospective Birth Cohort of Urban Children,

Yueh-Hsiu Mathilda Chiu, David C. Bellinger, Brent A. Coull, Shawn Anderson, Rachel Barber, Robert O. Wright, and Rosalind J. Wright

<http://ehp.niehs.nih.gov/1205940/>

²³ Prenatal Airborne Polycyclic Aromatic Hydrocarbon Exposure and Child IQ at Age 5 Years, Frederica P. Perera, DrPH, Zhigang Li, MPS, Robin Whyatt, DrPH, Lori Hoepner, MPH, Shuang Wang, PhD, David Camann, MS, Virginia Rauh, ScD

<http://pediatrics.aappublications.org/content/124/2/e195.abstract>

²⁴ Prenatal Exposure to Air Pollution, Maternal Psychological Distress, and Child Behavior Frederica P. Perera, DrPH, PhD, Shuang Wang, PhD, Virginia Rauh, ScD, Hui Zhou, MSc, Laura Stigter, MA, David Camann, MS, Wieslaw Jedrychowski, PhD, Elzbieta Mroz, MSc, and Renata Majewska, MSc <http://pediatrics.aappublications.org/content/early/2013/10/02/peds.2012-3844>

²⁵ Benefits of Reducing Prenatal Exposure to Coal-Burning Pollutants to Children's Neurodevelopment in China

Frederica Perera, Tin-yu Li, Zhi-jun Zhou, Tao Yuan, Yu-hui Chen, Lirong Qu, Virginia A. Rauh, Yiguan Zhang, and Deliang Tang,

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2569101/>

²⁶ Health Aspects of Air Pollution with Particulate Matter, Ozone and Nitrogen Dioxide, Report on a WHO Working Group Bonn, Germany 13–15 January 2003

http://www.euro.who.int/__data/assets/pdf_file/0005/112199/E79097.pdf

²⁷ The Effect of Air Pollution on Lung Development from 10 to 18 Years of Age, W. James Gauderman, et al.

<http://www.nejm.org/doi/full/10.1056/NEJMoa040610>

²⁸ An analysis of asthma hospitalizations, air pollution, and weather conditions in Los Angeles County, California,

Paul L. Delamater; Andrew O. Finley; Sudipto Banerjee

http://scholars.opb.msu.edu/pubDetail.asp?t=pm&id=84860012217&n=David+P+Lusch&u_id=2904&oe_id=1&o_id=2

²⁹ Fine particulate air pollution and hospital admission for cardiovascular and respiratory diseases, Dominici F., Peng RD, Bell ML, Pham L, McDermott A, Zeger SL, Samet JM.

<http://www.ncbi.nlm.nih.gov/pubmed/16522832>

³⁰ Acute Effect of Ambient Air Pollution on Stroke Mortality in the China Air Pollution and Health Effects Study,

Renjie Chen, MD; Yuhao Zhang, MD; Chunxue Yang, MPH; Zhuohui Zhao, PhD; Xiaohui Xu, PhD; Haidong Kan, PhD

<http://stroke.ahajournals.org/content/44/4/954.abstract>

³¹ Ambient Air Pollution and the Risk of Acute Ischemic Stroke,

Gregory A. Wellenius, ScD, et al.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3639313/>

³² Long-Term Exposure to Air Pollution and Incidence of Cardiovascular Events in Women,

Kristin A. Miller, M.S., David S. Siscovick, M.D., M.P.H., Lianne Sheppard, Ph.D., Kristen Shepherd, M.S., Jeffrey H. Sullivan, M.D., M.H.S., Garnet L. Anderson, Ph.D., and Joel D. Kaufman, M.D., M.P.H.

<http://www.nejm.org/doi/full/10.1056/NEJMoa054409>