The Department of Planning and Infrastructure
GPO Box 39, Sydney NSW 2001
Attention: Rebecca Sommer
Rebecca.Sommer@planning.nsw.gov.au

22 November 2013

Dear Ms Sommer,

Submission: T4 Project RTS and PPR (PWCS) - Application No 10_0215

This submission is on behalf of the Coal Terminal Action Group Dust and Heath Committee. The Committee strongly objects to this project on the basis that the community health, environmental, and socioeconomic impacts will far outweigh any short-term benefits the project claims it will deliver.

We formally request the opportunity to present to the Planning Assessment Commission when it is called.

There are six supporting documents accompanying this submission. They are:

Appendix A. Coal Dust in Our Suburbs Report – residential air quality monitoring
Appendix B. Coal Train Signature Study Report – trackside air quality monitoring
Appendix C. Sick of Coal: Community attitudes toward the proposed fourth coal-loading terminal in Newcastle
Appendix D. Best practice guide for fugitive dust minimisation measures
Appendix E. Assessment of Measures Planned for T4 for Fugitive Dust Mitigation against Current Best Practice
Appendix F. EA for Bunbury Port Berth 14A expansion and coal storage and loading facility

We have read the Department's privacy statement and give consent for our details to be published. We have not given any reportable political donations.

Yours sincerely,

Fee Mozeley
Coal Terminal Action Group
Coordinator - Dust and Health Committee
169 Parry Street, Hamilton East NSW 2303

James Whelan
Coal Terminal Action Group
Chair - Dust and Health Committee
169 Parry Street, Hamilton East NSW 2303

The Coal Terminal Action Group Dust and Health Committee has been established to provide the community with independent information and advice upon which to consider the T4 proposal and other port development projects.

Since mid 2012, the Dust and Health committee have undertaken the following activities:

1. Collated and presented particle pollution monitoring data from all publicly available sources (EPA, NCC, PWCS, Orica and other companies);

2. Interpreted these data to present a comprehensive and independent assessment of current levels of particulate pollution (PM1, PM2.5 and PM10) which identified 200 exceedances of national standards during 2012;

3. Assessed the current reporting arrangements and recommending arrangements to ensure monitoring results are communicated in an accessible and timely manner;

4. Assessed the adequacy of the current monitoring network and developing recommendations for improving the network's coverage and integration;

5. Proposed studies to adequately assess current particulate pollution sources (including diesel exhaust emissions), in particular fine particle pollution levels and associated health impacts;

6. Compiled the findings of this study into a report for public release;

7. Recommended measures to mitigate particle pollution levels and community health impacts;

8. Submitted evidence to the Senate Inquiry into the Health Impacts of Air Quality and addressing their hearing in Newcastle;

9. Published a guide to World's Best Practice to minimise particle pollution from coal trains, terminals and stockpiles;

10. Monitored particle pollution levels in residential areas in Newcastle and the Lower Hunter; and publishing the 'Coal Dust in Our Suburbs' report;

11. Responded to the Australian Rail Track Corporation's assessment of pollution from coal trains. A leaked version of this report showed it had been 'doctored', sparking calls for a Special Commission of Inquiry. This was examined in detail on an episode of ABC's current affairs program 'Stateline' prompting this response from EPA Chair Barry Buffier;

12. Monitored particle pollution beside the Newcastle coal corridor and released the 'Coal train pollution signature study'. This research was featured in an episode of ABC's science program Catalyst on 22/8/13.

13. Developed communication materials to enable Newcastle residents to clearly understand the likely air quality impacts of T4; and,

14. Identified further necessary studies and advocating for their funding.

Background

The role of the Committee is to oversee relevant studies and to ensure active communication with community groups and members and relevant government agencies. Membership of the Committee is: James Whelan (Chair, Hunter Community Environment Centre), John Hayes (Correct Planning & Consultation for Mayfield Group), Keith Craig (NCCCE, Stockton Community Action Group), George Barnes (Correct Planning & Consultation for Mayfield Group), Rick Banyard (Property Owners Association), John Nella (Stockton Community Action Group, Orica Community Reference Group), Zoe Rogers (NCCCE, Climate Action Newcastle, The Wilderness Society) and Fee Mozeley (Coordinator, Hunter Community Environment Centre).

The Committee seeks independent advice as required to inform data analysis and interpretation and to help communicate findings to the community. Advisors have included: Associate Professor Nick Higginbotham (Newcastle University School of Medicine and Public Health), Associate Professor Howard Bridgman (University of Newcastle), Associate Professor Adrian Barnett (Queensland University of Technology), Associate Professor Linda Selvey and Dr David Shearman (Doctors for the Environment) and Dr Ben Ewald (GP and Epidemiologist, University of Newcastle School of Medicine and Public Health).

Community groups in Newcastle and the Hunter are concerned about the dust pollution and diesel exhaust emissions associated with coal transport and handling because of the impacts of coal dust on health. This is especially the case in residential areas adjacent to the rail corridor and coal loading facilities.

Dust and air quality concerns were raised in many of the 500+ submissions relating to the proposed PWCS fourth coal-loading terminal (T4) and were a key concern mentioned by residents in a survey of 580 households in Newcastle suburbs. Furthermore, monitoring of particle pollution in eleven locations throughout Newcastle and the Lower Hunter discovered that particle pollution levels regularly exceed the National Standard, particularly in areas closest to coal infrastructure (coal terminals and coal rail infrastructure). We submit the results of the study in the 'Coal Dust in Our Suburbs' report as evidence of the existing air quality impacts that should be taken into account when considering T4 (see Appendix A).

During December 2012 and January 2013, community groups monitored air quality at eleven residences in Newcastle and the Lower Hunter to assess the level of particle pollution in residential areas close to coal trains and stockpiles.

The report presents an overview of the study, and presents the results from sites where substantial air pollution issues were indicated during this monitoring period. The analysis of monitoring data and the conclusions drawn are based upon independent analysis and interpretation carried out by air quality experts Associate Professor Howard Bridgman and Dr Jill Sweeney.

There is a lack of data about ambient air quality in localities within close proximity to industrial (specifically coal) infrastructure around the Port of Newcastle and along coal rail lines in Newcastle and the Hunter. Coal loaders, stockpiles, trains and rail corridors are substantial sources of coal-related particle pollution, which is of significant concern to many residents in Newcastle and the Hunter. For these reasons, the Coal Terminal Action Group, which comprises more than twenty community and environment groups, initiated monitoring of PM_{10}, $PM_{2.5}$ and PM_1 at eleven representative sites in Newcastle and the Lower Hunter, from Carrington (the Newcastle suburb closest to coal loading) to Lochinvar (a rural location in the Lower Hunter).

Air Quality in Newcastle

Comprehensive international studies demonstrate direct causal links between particle pollution and adverse health impacts, particularly respiratory and cardio-vascular diseases such as asthma, hypertension, heart disease and lung damage. It is also well established that there are no known 'safe' levels of exposure to particle pollution, below which there are no health effects (WHO, 2013).

Air quality in the Upper and Lower Hunter exceeds health standards. The National Environment Protection Measure (NEPM) for Ambient Air defines the national standard for particle pollution. According to the NEPM, particle concentrations averaged over 24 hours should remain below 50 micrograms per cubic metre ($\mu g/m^3$). The NEPM allows for five exceedances of this standard in a calendar year, to account for natural events such as bushfires and dust storms. However, locations around Newcastle and the Hunter are already experiencing far more than five exceedances of this standard each year. This is demonstrated by EPA monitors throughout the Hunter and by the industry-funded ambient air quality monitor in Stockton, which recorded thirteen exceedances of the PM_{10} standard in less than four months.

The NEPM standard for 24 hour average PM10 concentration has been exceeded 77 times during the last ten years, as illustrated in the Figure 1. Levels of PM10 above the NEPM standard were recorded at all three monitoring Lower Hunter sites.

To illustrate the potential impact of T4 on ambient particle pollution in Newcastle, we have added 5ug/m3 to every 24-hour average during 2003-2013. PWCS' modelling of air quality impacts (Table 8.4 Volume 1 p157) predicts an additional particle load of between 1-17.9ug/m3 at each of 10 monitoring locations during construction, operation and construction/operation phases. Adding 5ug/m3 is a conservative estimate of the additional particle load. The results of this exercise (Figure 2) show the NEPM standard would have been exceeded 133 times. This is a conservative estimate, as there were more than 1000 days (334 days for the Wallsend monitor, 680 for Newcastle and 181 for Beresfield) during this 10-year period when data was unavailable. The obvious conclusion is that particle pollution levels will exceed the NEPM standard with increased frequency and reach significantly higher levels with the additional burden generated by T4.

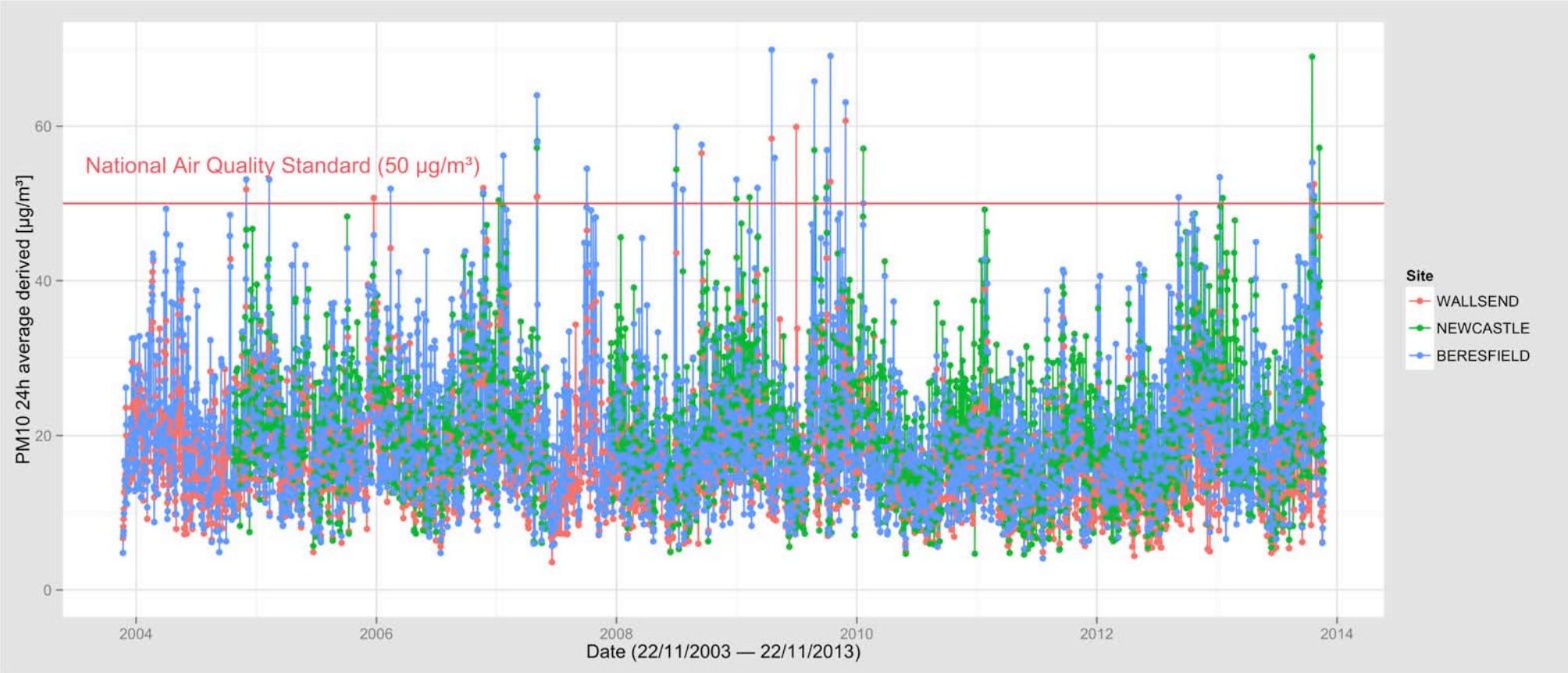

Figure 1: 24hour average PM10 concentrations 22/11/2003 to 22/11/2013

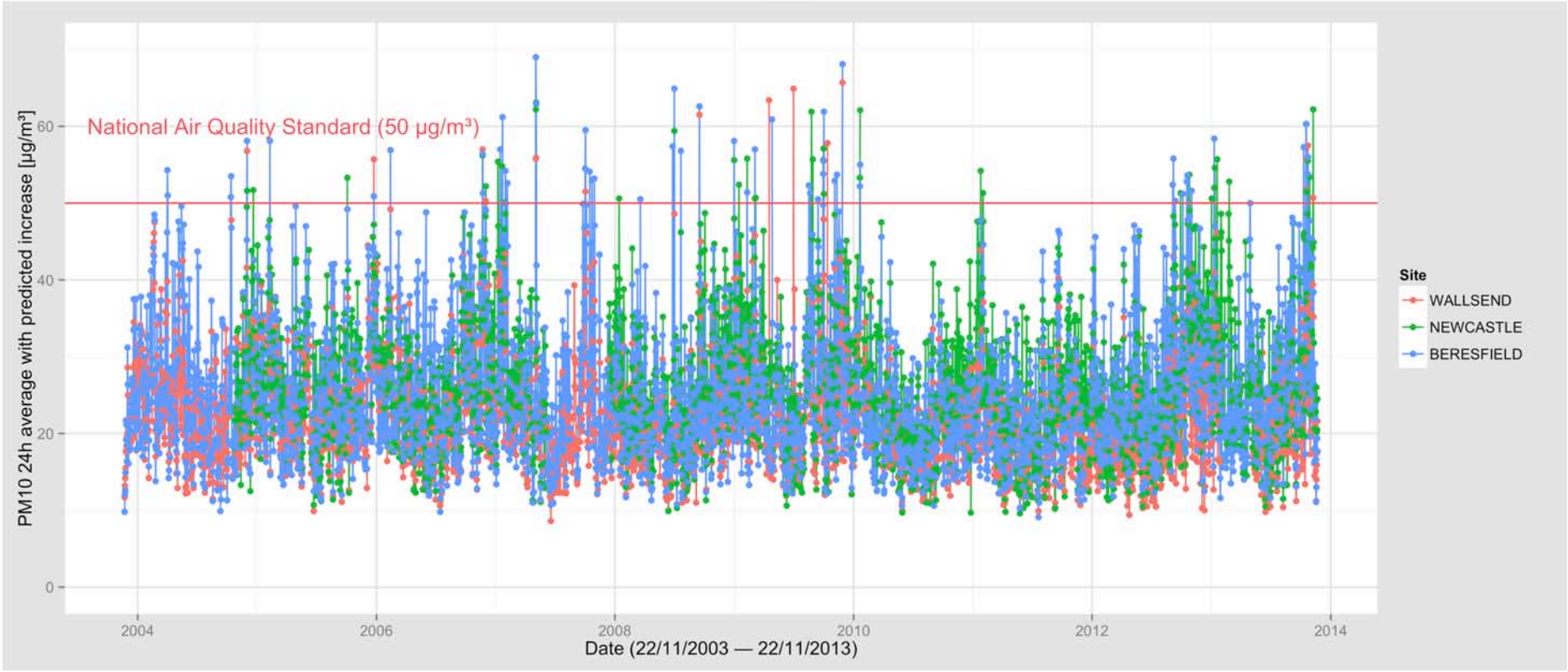

Figure 2: 24hour average PM10 concentrations 22/11/2003 to 22/11/2013 assuming an additional 5ug/m3

Residential Air Quality Study

The monitoring undertaken during our study of suburban coal dust revealed concentrations of particle pollution well above the NEPM standard. Particle concentrations in Tighes Hill and Carrington reached or exceeded the NEPM for PM_{10} on five of the seven days of monitoring. In Carrington, the NEPM standard was exceeded on every day of monitoring, and three 24-hour PM_{10} averages were above 75μg/m^3 - 50% higher than the standard.

Monitoring demonstrated that the suburbs closest to the Port of Newcastle and industrial infrastructure such as coal loaders and coal train lines, experience worse air quality (PM_{10} and $PM_{2.5}$) compared with the Newcastle EPA monitor. Particle concentrations in Mayfield, Mayfield East, Tighes Hill and Carrington are generally two to four times higher than recorded by the EPA's monitor during the same time period. The EPA monitor is approximately three kilometres away from the nearest source of coal infrastructure.

In summary, the residential air quality study provides a rationale for decisive intervention to improve urban air quality in Newcastle and the Lower Hunter, specifically in those locations near coal infrastructure. Findings from this monitoring demonstrate the air quality standard has been reached and exceeded in multiple locations. This must be taken into account in the assessment of future development applications with potential air quality impacts.

Coal Train Air Quality Study

The Coal Terminal Action Group Dust and Health Committee more recently undertook a study of particulate pollution from coal trains (see Appendix B). With more than 100 coal trains passing through residential areas each day, Lower Hunter residents have become increasingly concerned and informed about the impacts of pollution from uncovered coal wagons, and supportive of measures to reduce this pollution.

Between Monday 15 July and Wednesday 17 July, members of several community groups monitored particle pollution levels in residential areas of Beresfield, Hexham and Mayfield. With expert advice and assistance, we monitored particle pollution concentrations while 73 loaded and unloaded coal trains passed. The Osiris equipment utilised for the study allowed for concurrent monitoring of four particle sizes: PM_1 and $PM_{2.5}$ that are associated with combustion (e.g. train locomotives) and the larger PM_{10} particles, which are more indicative of coal and TSP (coarse fractions up to PM_{30} in size).

The study aimed to answer two research questions:

1. What is the particulate profile (signature) of loaded and unloaded coal trains?

2. What is the increase in particulate matter associated with the passage of loaded and unloaded coal trains, measured by comparisons with pre-train particle concentrations? Is the proportion of increase the same across all particulate fractions (PM_{10}, $PM_{2.5}$ and PM_1)?

The study was the first of its kind in Australia. Crowd-funded by more than 100 donors, the study was entirely designed and conducted by members of community groups. They were advised and assisted by experts and academics and utilised industry-standard equipment. The results of the study were analysed by University of Newcastle public health researchers.

In June 2013, before this study commenced, community members were shocked to learn that an industry study[1] of the particle pollution caused by coal trains had been dramatically modified at the last moment to reverse many of its conclusions and understate the amount of pollution

caused by coal trains. Unlike that study, our investigation was not designed to differentiate between train types. It deliberately focused on loaded and unloaded coal trains.

A total of 73 coal trains were observed during the three days of monitoring. The corresponding pollution data were analysed to generate 'signatures' which depict particle concentrations before, and during the trains' pass by. The method compares a two-minute average pollution level before each train to a two-minute average while the train was passing by the monitoring equipment. Eight signatures are examined in this study. These signatures were selected to demonstrate an indicative range of signatures under various conditions (wind direction, wind speed, train speed, train type etc).

All coal train signatures were associated with a significant increase in PM_{10} particle pollution levels. In the case of Signatures 1 and 5, this represents increases of 94% and 427% respectively for loaded coal trains. Signature 6 found significant increased PM_{10} concentrations, 1210% above background. In sum, coal trains increase PM_{10} levels by between 94% and 1210%. While coal trains pass, particle pollution concentrations increase up to 13 times pre-coal train levels.

While the study was not intended to compare different types of trains, a number of freight and passenger trains were captured in our signature measurements. We noted city link trains did not produce a definable signature, while freight trains and the XPT did show signatures in some cases, but they were much smaller in comparison to those observed for coal trains, and of much shorter duration.

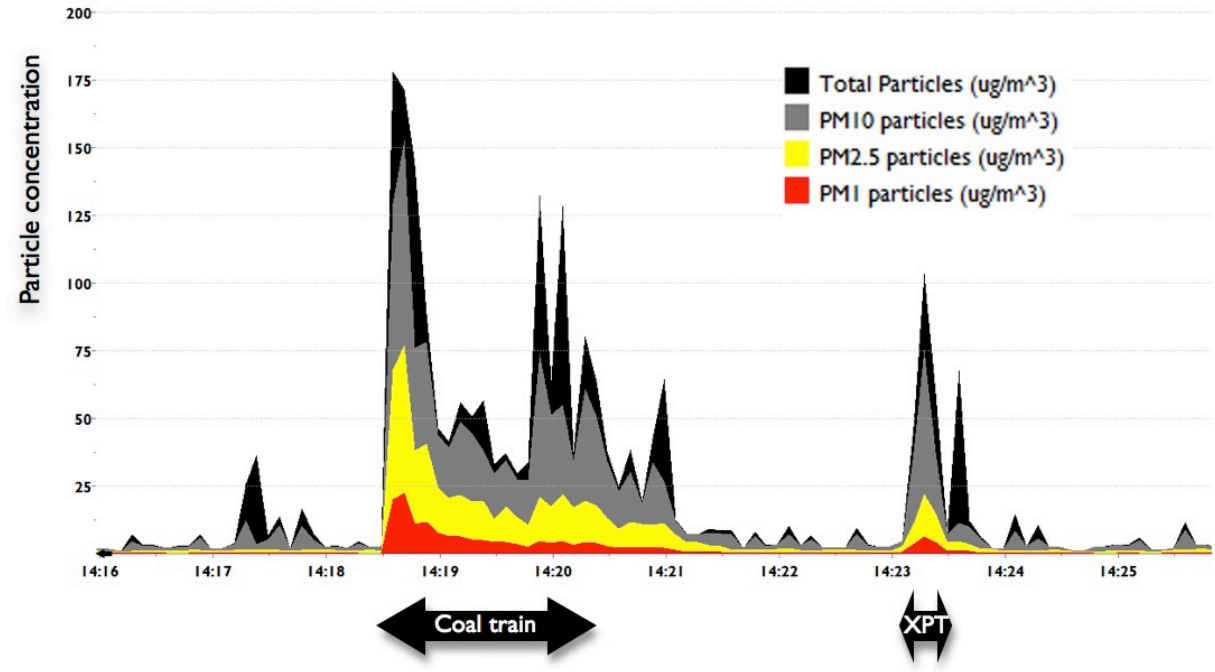

Figure 3. Coal train pollution signature captured 14:18 Tuesday 16/07/2013

The results of this study warrant decisive action by the New South Wales Government. The Coal Terminal Action Group commends this study to the Department of Planning and Infrastructure and the Planning Assessment Commissioners.

Improving air quality

Newcastle regularly experiences elevated levels of particle pollution. Measures must be taken to improve air quality by tracking the most significant sources of particle pollution.

PWCS commissioned modeling of the particle pollution consequences of constructing and operating T4. In general, this modeling predicts that PM_{10} concentrations in areas of Newcastle closest to the coal corridor and coal terminals will increase by between 6.8ug/m^3 and 17.9ug/m^3. The proponent asserts that this is a modest increase and that it will not result in more frequent exceedances of the national air quality standards. There are two major problems with this assertion.

First, it is widely accepted that there is no particle pollution concentration below which human health is not adversely affected (WHO, 2013). Concentrations of particles smaller than ten microns in diameter (PM_{10}) have a range of serious respiratory and cardiovascular health impacts, even at levels much lower than the national standard of 50ug/m^3.[2] Every increase of 10ugm/m^3 in PM_{10} concentrations results in an increase of between 1-3% in the range of adverse health impacts.[3] The increased concentration of particle pollution that the T4 proponents predict, will have a significant health impact, whether or not the national standard is exceeded.

Second, PWCS' modeling was based on the EPA's 2010 pollution monitoring in the Lower Hunter. NSW Health and others observed in submissions on the T4 Environmental Assessment that particle concentrations during 2010 were at their lowest point for a decade. As the following figure (based on EPA data) demonstrates, using any other year between 2006 and 2012 as a baseline year would have demonstrated regular exceedances of the World Health Organisation guideline of 20ugm/m^3 (indicated by a red line in this figure).

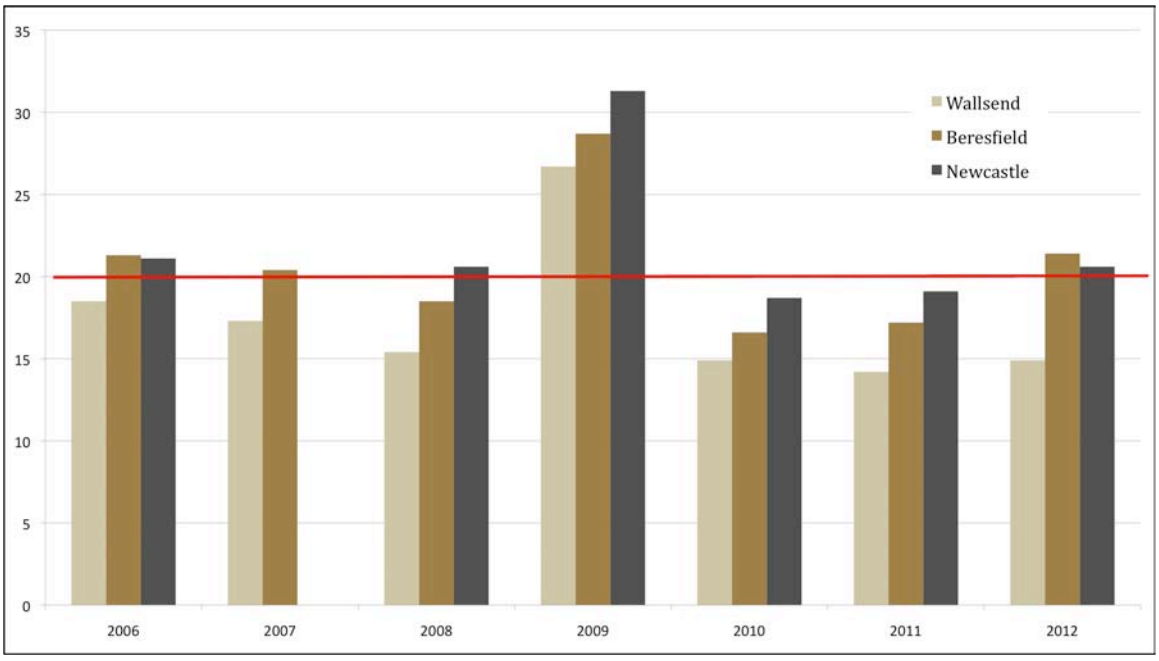

Figure 4: Annual PM_{10} averages at EPA Lower Hunter monitoring sites 2006-2012 (ug/m^3)

If the additional particle pollution associated with the construction and operation of T4 were to be added to this figure, the WHO standard would be exceeded at each of these three Lower Hunter monitoring locations each year.

Page 156 of the PPR refers to the assessment of increased particle pollution associated with construction and operation of T4 (compared to 2010 levels). This assessment is significantly different from that in the EA. There is no explanation for why this is the case. It is reasonable to conclude that one or both of these assessments is incorrect.

Table 8.4 on page 157 shows that 24 hour average PM_{10} levels exceeded the NEPM standard at all ten assessment locations on the worst-case day of the year in 2010. PM_{10} concentrations will increase by up to 15ug/m^3 (29.6%) during construction, 17.9ug/m^3 (35.3%) while construction and operation coincide and 6.8ug/m^3 (13.4%) during operation only. Location 10 (Hexham) will experience the worst impacts. $PM_{2.5}$ concentrations will increase by up to 4.7ug/m^3 (25%) while construction and operation coincide, 3.3ug/m^3 (17.5%) during construction and 4ug/m^3 (21%) during operation only. Again, Hexham will experience the worst impacts.

Short-term (24 hour average) particle pollution levels in Newcastle also exceed the National Environmental Protection Measure (Ambient Air) standard. Air pollution monitoring conducted in Newcastle by the EPA and Orica demonstrates regular exceedances of the 24-hour average NEPM standard for PM_{10} of 50ug/m_3. Recent PM_{10} monitoring in Stockton has also shown regular exceedances of the NEPM standard. The OEH has issued several air pollution alerts for the Lower Hunter during 2013 at times that the rolling 24 hour average PM_{10} level exceeded the NEPM standard. Yet the PPR (p.158 Table 8.5) predicts that there will be just one exceedance of the PM_{10} standard with or without T4. This is incongruous.

In short, **Newcastle's air quality must be improved**. This conclusion is supported by studies of community opinion such as the survey (see Appendix C) commissioned by the Coal Terminal Action Group in 2012 which found that 74% of Newcastle residents are either 'very' or 'somewhat' concerned about the impacts of a fourth coal terminal and 69% expressed concern about the impacts of coal trains passing through Newcastle suburbs. This observation is consistent with NSW Health's submission on the T4 Environmental Submission, which noted that it was,

> … evident to Hunter New England Population Health staff that the expansion of coal loading facilities was one of the greatest stated concerns for residents in neighbouring suburbs of the Port of Newcastle. Residents anecdotally report increasing coal dust impacts as coal handling and loading has expanded. PWCS currently report frequent inquiries from the community regarding noise and dust.

NSW Health note that there is "both a community and public health expectation that particulate levels should be reduced in inner city Newcastle not increased."[4]

The EPA recently announced the commencement of a 12-month study of the sources of particle pollution in Newcastle and the Lower Hunter. This 'particle characterisation' study will analyse particle pollution monitored at several sites adjacent to the site of the proposed T4 in order to identify their size and composition. This is a very significant study and has not been attempted previously. Its findings will provide a much more detailed understanding of particle pollution in Newcastle and be of direct relevance to the assessment of PWCS' proposed coal terminal. Arguably, the study is essential in order to assess and manage the likely impacts of T4.

The CEO of PWCS has indicated that the terminal is no longer required to satisfy contractual commitments and that it has been officially 'de-triggered'.[5] Construction of T4 is not expected to commence for at least four years (2018).[6] This provides more than enough time to wait for and then consider the findings of the Lower Hunter Particle Characterisation Study. Given that this is a NSW government led study, and given the lack of intention to commence construction within this period, this is a logical pathway.

Managing and minimising air quality impacts

Rejecting T4 will not be sufficient to improve Newcastle's air quality or ensure particle pollution remains below the NEPM and WHO standards. Measures must be taken to significantly reduce particle pollution from the three existing coal terminals and from the tens of thousands of uncovered coal wagons that pass through (and close to) residential areas in the Lower Hunter each year. A strict reading of the Terms of Reference for the Planning Assessment Commission's assessment of PWCS' proposal suggests this is beyond Commissioners' powers. However, the NSW government has a statutory obligation to manage public health issues.

In June 2013, the Coal Terminal Action Group published 'Protecting Communities from Coal Dust: A guide to best practice dust minimisation' (see Appendix D). The Guide was based on an extensive literature review and drew on comparable reviews and guides developed in Australia and internationally. The Guide demonstrated that the Newcastle's three existing coal terminals, including two operated by the T4 proponent PWCS, fall well short of best practice.

An assessment of T4 was conducted based on the best practice guide mentioned above (see Appendix E). It has drawn on information provided by PWCS in the Environmental Assessment and the Preferred Project Report to assess what measures PWCS plan to put in place to protect local residents from the harms of dust pollution. Best practice involves implementing an overall strategy that addresses these approaches and techniques in a comprehensive way that stops dust impacting on neighboring communities.

The measures identified by PWCS for T4 will not protect community health and do not meet current best practice standards. In all activities associated with coal terminal functions including: conveyors, transfers, conveyor belts, stage loaders, stockpiles, stacking and reclaiming, transportation and terminal design, **T4 fails to meet current best practice.**

Best practice dust minimisation for a modern coal terminal includes either avoiding or covering coal stockpiles. Thousands of people live within 500 metres of T1, the oldest of Newcastle's three existing coal terminals. Fine particles can be expected to travel at least this distance before depositing. An estimated 32,000 people live within 500 metres of the coal corridor. Best practice dust minimisation entails covering and washing coal train wagons.

Monitoring studies conducted during 2013 by both the Australian Rail Track Corporation and the Coal Terminal Action Group indicate that unloaded coal wagons are an even more significant source of PM_{10} particle pollution than loaded coal wagons (see Figure 2). This may be because of the greater exposed surface area in an empty coal train wagon and the fact that the (smaller) exposed surface of a loaded coal wagon is generally 'profiled' and washed. Both covering and high-pressure washing is necessary for coal wagons whether they are full or empty.

Figure 5 compares a two-minute average pollution level before each train to a two-minute average while the trains were passing by the monitoring equipment. It shows that unloaded coal trains are also a significant source of pollution.

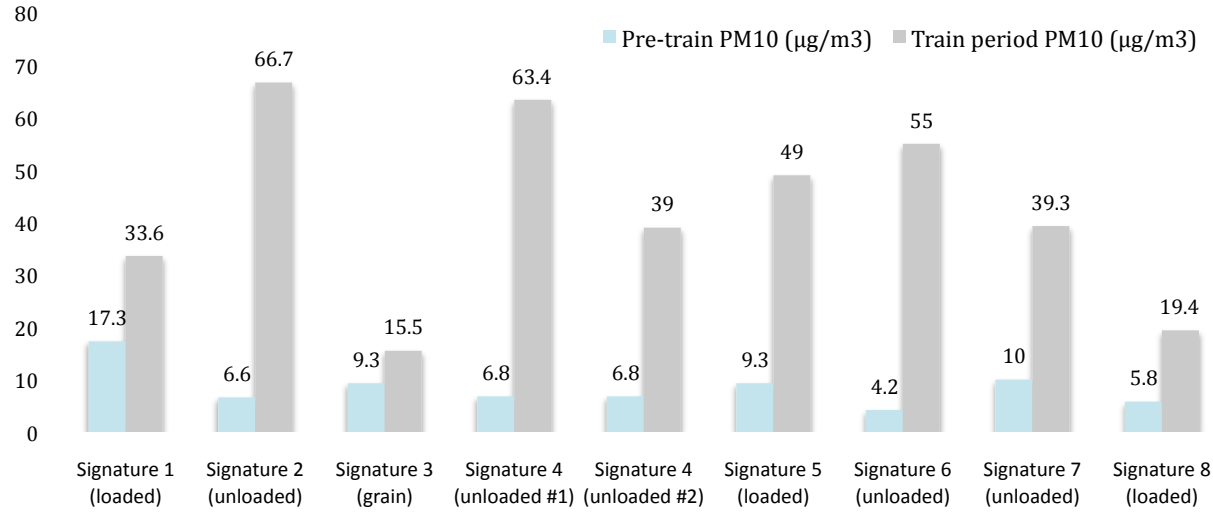

Figure 5: Particulate concentrations (PM10) associated with train signatures.

Figure 5 shows that all coal train signatures were associated with a significant increase in PM_{10} particle pollution levels. In the case of Signatures 1 and 5, this represents increases of 94% and 427% respectively for loaded coal trains. Signature 6 increased PM_{10} concentrations significantly, up to 1210%. In sum, coal trains increase PM_{10} levels by between 94% and 1210%. While coal trains pass, particle pollution concentrations increase up to 13 times pre-coal train levels. Signature 3 represents a grain train.

Mining magnate Clive Palmer has committed to covering coal wagons servicing his North Queensland mines.[7] Environmental Assessment for the Bunbury Port Berth 14A expansion and coal storage and loading facility proposal acknowledges that fully enclosed infrastructure and covered coal wagon is current best practice (Appendix F). In the section on air quality it states:

> *Coal dust is the key atmospheric emission that could result from the operation of the proposal. The proponent proposes to implement world best management technologies at the site to help minimise fugitive dust emissions, including:*
> - *Fully enclosed coal stockpiles that incorporate dust suppression water spray systems;*
> - *Fully enclosed conveyors with provision for controlled wash-down of spillage;*
> - *Fully enclosed transfer points fitted with misting sprays; and*
> - *A ship loading facility that will be fitted with fully enclosed boom conveyors and telescopic chutes, and covered rail wagons to minimise fugitive emissions.*

The Preferred Project Report does not attempt to assess the impacts of the coal wagons that will transport coal to the proposed coal terminal, or to propose how these impacts may be mitigated. This is unacceptable.

On page 161 of the PPR, there is cursory reference to coal trains, based on the first of the two reports published by the Australian Rail Track Corporation. EPA reviewers rejected the methodology and conclusions of this ARTC report, and ARTC was instructed to undertake a second study.

The second study, published in May 2013, is neither considered nor cited in the PPR. It is important to note that the data collected during the second ARTC study are currently being re-analysed by Professor Louise Ryan at the behest of the NSW Chief Scientist. The study's methodology and conclusions were described as 'deeply flawed' by technical reviewers. In short, **the NSW Government has not yet received reliable advice concerning the extent to**

which coal trains contribute to elevated particle concentrations in urban areas. Without this advice, the NSW Government would be ill advised to approve a development that would increase coal train movements by 50% in the world's largest coal port.

DPI analysis of EA submissions; inadequacy of PWCS response to submissions

The Coal Terminal Action Group was advised that NSW Planning would analyse submissions and prepare a summary. This does not appear to have occurred. If the Department has examined submissions, they would have noted that the PPR does not address material concerns that were raised in submissions, including those made by government agencies. NSW Health, for instance, expressed concern that the EA only considered particle pollution impacts on houses within 20 metres of the coal trains and recommended examining impacts on houses located further from the tracks. NSW Health also recommended that PWCS assess potential impacts of diesel emissions. The PPR fails to address either of these recommendations.

Recommendations

That the assessment of T4 be postponed until:

1. The Lower Hunter Particle Characterisation study is complete. The findings of this study are essential to a responsible assessment of the air quality impacts.

2. The NSW Government receives definitive and reliable information about particle pollution associated with the passage of loaded and unloaded coal trains through urban areas in the Lower Hunter.

Appendices (see accompanying files)

A. Coal Dust in Our Suburbs Report – residential air quality monitoring
B. Coal Train Signature Study Report – trackside air quality monitoring
C. Sick of Coal: Community attitudes toward the proposed fourth coal-loading terminal in Newcastle
D. Best practice guide for fugitive dust minimisation measures
E. Assessment of Measures Planned for T4 for Fugitive Dust Mitigation against Current Best Practice
F. EA for Bunbury Port Berth 14A expansion and coal storage and loading facility

References

[1] http://www.hcec.org.au/20130703/leaked-coal-dust-report-sparks-call-special-commission-inquiry
[2] Air pollution increases heart attacks, October 2013, European Society of Cardiology http://www.alphagalileo.org/ViewItem.aspx?ItemId=135162&CultureCode=en
[3] American Journal of Respiratory Critical Care Medicine 153(1) pp. 3-50 http://www.ncbi.nlm.nih.gov/pubmed/8542133
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