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Submission on the Clean Air for New South Wales Consultation Paper

Pacific Environment welcomes the opportunity to provide comment on the NSW Government's Clean Air for New South Wales (CAfNSW) Consultation Paper. Pacific Environment is an environmental consulting firm with a specific focus on air quality management. Our national practice of over 50 air quality specialists includes a local team with collective input from experts in air quality, meteorology, policy, ambient monitoring, stack testing, environmental technology, carbon and climate, and toxicology. Throughout our work, we remain committed to improving the environmental performance of production, development and environmental policy.

As part of our practice, we recognise the importance of the role that the CAfNSW framework is to serve in the progression of air quality management in NSW, as well as the need for balanced, targeted and effective policy that achieves the best possible public health outcomes for NSW.

This submission addresses the following areas of the Consultation Paper:

- 1. The clean air metric.**
- 2. Analysis of air quality issues.**
- 3. Assessment of priorities.**

Detail of our response, including recommendations is provided in the following sections.

1 THE CLEAN AIR METRIC

Within the Consultation Paper, the Clean Air Metric (CAM) is proposed for the "*purpose of tracking our progress in ensuring that the management of air quality in NSW delivers the most positive health outcomes for the people of NSW*". Whilst the concept of a CAM is endorsed, it is noted that there are a range of technical challenges that would need to be overcome in order to arrive at a single metric that comprehensively reflects the success of policy with respect to human health endpoints. Unless the CAM is able to achieve this outcome, there is the potential that it is not able to adequately represent overall air quality performance, or be able to track the effectiveness of policy measures to improve air quality.

Recognising the potential role of this metric within the CAfNSW framework, we offer the following comments for consideration:

- Use of Long-Term Statistics**

The Consultation Paper proposes to formulate the CAM on the basis of a 3-year rolling average. It is noted that a significant number of air quality issues in NSW relate to short-term pollutant exposures and associated acute and sub-acute health endpoints (e.g. those for ozone and particulate matter). It is considered that the prevalence of short-term pollution events is unlikely to be effectively represented within a 3-year average statistic, due to both the length of the averaging period and effects of inter-annual variability. There also exists the potential that an increase in short-term pollution events could be obscured by progressive reductions in annual average pollutant levels.

Accordingly, it is recommended that the CAM incorporate measures to reflect performance against potential health outcomes associated with short-term pollution events.

- **Interaction with Policy Objectives**

It is recommended that the CAfNSW framework should articulate how, and to what degree, the CAM would interact with policymaking. The level of rigour to be applied in the construction of the CAM would depend whether it is simply applied retrospectively as a reporting instrument, or whether it would be actively integrated into air quality policy, such as the prioritisation of a particular policy measure to address an observed CAM trend, or the evaluation of a prospective policy's benefits based on the estimated improvements to the CAM. If integrated into policy decision-making, it is considered critical that health endpoints are reflected in a comprehensive and balanced manner.

- **Population Weighting and Social Equity**

It is noted that the linear^a population weighting proposed for the CAM would largely remove the influence of air quality performance in non-urban areas^b. Whilst this may be appropriate to total population exposure, it does raise the issues of social equity, whereby the air quality that someone breathes in an urban area is of greater significance than that experienced by people in a rural setting. It is recommended that the role of the CAM be clearly defined in the context of the existing NEPM standards including measures to uphold social equity.

- **Representativeness of Monitoring Sites of Population Exposure**

The assessment of exposure reduction opportunities requires a comprehensive understanding of the pollutant levels to which people are exposed. The NEPM ambient air quality monitoring networks have been established for the purpose of measuring air quality within airsheds, where measurements are reflective of urban background levels, in exclusion of the specific influence any one pollution source. The data offered by this type of monitoring is quite separate from that required in an exposure-reduction context. If the CAM is to track progress in reducing total exposure, it is considered essential that an understanding of variability of exposure within the population is obtained. Without an understanding of spatial and temporal variability of peak exposure levels there is the potential for exposure reductions (as a fraction of existing exposure) and associated benefits to be overestimated. There is also the potential that the benefits of policy measures relevant to peak exposures are underrepresented.

- **Combination of Multiple Pollutants, and Threshold and Non-Threshold Pollutant Effects**

As a multi-pollutant metric that reflects health outcomes, the combination of pollutants within the CAM should include a consideration of threshold and non-threshold pollutant effects, mechanisms for cumulative pollutant effects and the relative weighting of measured pollutants. It is noted that the United States AQI incorporates non-linear response ranges for individual criteria pollutants which could be relevant in a CAM context. The methodology applied in the AQI (whereby the maximum pollutant value is adopted for each location) would be considered overly simplistic for adoption within the CAM setting.

^a As implicit in a total exposure model.

^b e.g. a large rural centre such as Wagga Wagga would carry a 0.8% weighting in the CAM.

2 ANALYSIS OF AIR QUALITY ISSUES

With regard to the Consultation Paper's analysis of air quality issues, we provide the following comments:

- The Consultation Paper presents an analysis of the 2008 Greater Metropolitan Region (GMR) air emissions inventory in the context of identifying key emission sources, and the potential scale of emission reduction opportunities. We note that the analysis does not include a qualification of the influence of GMR boundaries on the analysis, or adequate qualification of the link between emissions and exposure. The identification of excluded sources is considered important in the context of the scale of emission reduction opportunities, whilst an understanding of the links between emissions and exposure is considered fundamental to the assessment of the effectiveness of emission reductions in improving ambient air quality.
- The analysis of air quality issues presents limited information on peak urban exposures to air pollution. Given the population density present in many urban areas near to key transport infrastructure such as highways, an understanding of these levels is considered fundamental to the assessment of exposure reduction opportunities.
- The analysis of air quality issues contains limited monitoring data for rural population centres. It is noted that campaign monitoring would provide an opportunity to characterise air quality in rural population centres for which monitoring data is not currently available. With the focus of fine particulate impacts on health, it is considered that PM_{2.5} particle characterisation data consistent with that presented within *AIRBORNE PARTICLE COMPOSITION AND SOURCES* (p.23) would provide useful insight into air quality within these regions.
- The limitation of particle speciation data to annual average restricts the ability of the data to identify sources that form a key contribution to short-term particulate levels. As noted in Section 1, exceedances of short-term air quality standards represent a significant issue within NSW.

3 ASSESSMENT OF PRIORITIES

We agree with the Consultation Paper's proposed principles for the framework that could be used to identify priority actions. That is, that priority actions should:

- **Target emissions sources that have large impacts on air quality and human health.**
- **Provide the most cost-effective responses, and deliver the best net gains for the community based on the findings from economic studies.**

However, we believe that the costs of measures, and the gains in human health and environmental outcomes, should be based on the *marginal* principle. Specifically, priorities should be established based on analyses of whether measures are likely to deliver marginal gains in health and environmental costs that exceed their marginal costs. Priority actions should be those with the greatest net marginal benefits.

An important implication of using the marginal principle is that it requires understanding the potential change in costs and benefits from further abatement. Therefore, while understanding existing air quality issues (i.e. 'the baseline') is important, understanding the marginal change to air quality and associated exposure from potential measures, should be the key factor for determining priorities. Furthermore, in order to understand marginal economic impacts, a better understanding of the impacts of marginal changes in emissions in NSW air sheds may be required. For example, there appears to be an opportunity to improve the understanding of how marginal changes in emissions of precursors to secondary PM_{2.5}, such as NO_x and SO_x, could affect concentrations of secondary PM_{2.5}.

In general, we strongly support proposed measures related to increasing information and knowledge about emissions, exposure, and impacts. Better information about air quality and its impacts facilitate more robust economic analysis, and therefore is aligned with the Consultation Paper's stated goal of prioritising measures that deliver the best net gains for society.

In prioritisation of air quality issues, we note that within the Paper, there appears to be limited assessment of the links between emissions and exposure, and the materiality of proposed actions (especially in the context of population exposure). For example, we note an apparent disconnect between the scale of impacts of wood smoke, and the measures proposed to reduce these impacts. Whilst the impacts of residential wood combustion are well articulated within the consultation paper, the adequacy of the proposed measures is not assessed. Residential wood combustion constitutes a large emission source that is concentrated directly within high density populations, and prevalent during periods of poor dispersion. As outlined in Section 2, the availability of the most recent particle characterisation study would likely reinforce the importance of abatement measures for residential wood heating.

4 CLOSING

We hope that this submission makes a meaningful contribution to the CAFNSW consultation process. Further, we would welcome the opportunity to extend this contribution within the Clean Air Summit later this year. Please do not hesitate to contact the undersigned should you have any queries regarding this submission.

Kind regards,



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(on behalf of Pacific Environment)

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