IN THE MATTER OF
The Hazelwood Mine Fire Inquiry

SECOND STATEMENT OF PAUL TORRE

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I, Paul Torre, of 200 Victoria Street, Carlton, Victoria, Team Leader of Analysis and Predictions, Environment Protection Authority, can say as follows:

Introduction

1. My full name is Paul Torre. I am the Team Leader of Analysis and Predictions in the Monitoring and Assessment Unit at the Environment Protection Authority (**EPA**) of 200 Victoria Street, Carlton, Victoria. I hold the position of Principal Expert (Air Quality). I am also an authorised Emergency Response Officer and am regularly asked to assist in incidents involving discharges with air quality that have environmental impacts.

2. I have given some thought to the context in which my First Statement dated 16 May 2014 was made to the Inquiry which was prepared for the assistance of the Board in response to a letter that raised seven specific questions. I would like to set out the context of the air monitoring and assessment undertaken by EPA since it first became involved in the response to the Hazelwood mine fire to assist the Board interpret the monitoring that was undertaken by EPA. I have therefore prepared a Second Statement to add to what I had to say in my First Statement.

3. This Second Statement describes my understanding of EPA involvement and air monitoring from the first day I attended in the LaTrobe Valley on 12 February 2014 until 19 February 2014. I was appointed as the initial and primary Science Officer during the Incident and was involved throughout most of the Incident. The role of Science Officer was to provide scientific support to the emergency incident and was rotated amongst other trained scientists at the EPA as the Incident continued. The Science Officer role coordinated the science activities required by the Incident Control Centre and was heavily supported by the science team based at the EPA's Centre for Applied Sciences in Macleod (the Science team).

4. My area of expertise is on air quality impacts. In doing this I will assess a number of factors, including the sources of pollution and the nature of the emissions. It would be very rare for me, or other EPA Science Officers or Laboratory Emergency Response Officers to attend an emergency event, with air monitoring equipment. EPA has very limited air monitoring equipment for measuring air emissions from emergency incidents.

5. It is customary for me and other EPA air quality experts when responding to an emergency incident and as part of the initial impact assessment to undertake a number of actions- which will vary according to the nature of the emergency incident. My primary focus is to identify what is required to make an air quality assessment and environmental impacts. Firstly I will identify the available tools required for the incident. This may include assessments from the air quality forecasting team (based at the EPA's Centre for Applied Sciences in Macleod), the Bureau of Meteorology modelling, particularly available smoke modelling and satellite images. I will also identify other observations such as location and levels and thickness of smoke and areas of impact. A core component is the collaborative approach taken with the other emergency agencies such as the CFA, MFB Scientific Officers who are usually in attendance at an incident and have monitoring equipment. As a result of this initial assessment, it may be determined that air quality monitoring is required.

10th and 11th February

6. Prior to EPAs direct involvement in this Incident the Assessments and Monitoring Unit had been issuing Smoke Advisories in the morning of 11th February given the level of bushfire activity in the East Gippsland region. These Smoke Advisories were

issued based on data from the Traralgon Air Monitoring Station, satellite images and knowledge of the bushfires. From the around the 10th and 11th February the Assessment and Monitoring Unit already had under consideration the potential of air quality monitoring.

7. On 11th February I was appointed by EPA Executive Management Team as the Science Officer to support the Emergency Response as a result of the Mine Fire. I worked with the Air program team to evaluate options for monitoring.

8. Based on our understanding of the fires at the Mine, and the poor air quality evident from the Smoke Advisories, satellite images and reports of the incident, we were able to make a number of immediate assessments of the need for air quality monitoring. It was our assessment that the priority was to put in place a system for particulate ($PM_{2.5}$ and Visibility Reduction) that would automatically log and transit data. The immediate and obvious decision was to recommission the former East Morwell Air Monitoring Station located at 70 Hourigan Road (**Morwell East**) and to prepare sampling and data acquisition/communication equipment for transport and deployment. This would provide us with air quality data that would be generally representative of air quality in Morwell. Also once operational the East Morwell station could provide monitoring for other air pollutants, with reliable instruments and telemetry that could feed data results directly to EPA website and to EPA Air quality forecasting team for an assessment of air quality impacts and to assist in issuing Smoke Advisories.

9. However, even at this time we anticipated the need for additional air quality monitoring closer to the Mine Fire where a higher impact of smoke was likely and therefore started the planning process of the identification other mobile equipment, such as a particulate monitor that could be deployed in the residential area near the Mine. This would provide indicative levels of particles in the smoke. Therefore the Science team organised the hire of some portable Visibility Reduction monitors (**DustTrak**) that would provide estimates of $PM_{2.5}$. We were also exploring other options for mobile air monitoring equipment.

10. We expected that as Morwell East would require a number of sequential actions before it would it would be fully operational. This including: power, re-fit, instrument warm up, calibration, installation of data acquisition system and modem. There was also a requirement of having 24 hours of data to enable an appropriate air

quality assessment against the air quality guidelines. It would therefore take some days before providing data reports.

11. Prior to departure to Morwell I contact the Tasmanian EPA for assistance in the calibration of the DustTrak monitoring equipment, which the Air Program team continued to work with Tasmania EPA and others to identify and obtain suitable air monitoring equipment for deployment.

12. On 12 February 2014, I arrived in Morwell and inspected the Hazelwood Mine from the Highway and then attended in Traralgon at the Regional Control Centre (**RCC**).

13. I commenced an evaluation of the air quality impacts and monitoring and equipment requirements. As part of this process I liaised with other emergency agencies and the EPA Emergency Management Liaison Officer. This confirmed the preliminary assessments made by the Science team of the need for an immediate system to establish particles and smoke. This could not be undertaken from Morwell East only and the need for an additional site and portable equipment was verified.

14. I also became aware at this time of some reported CO readings from the Mine. On this basis I advised the Science team to also hire some hand-held CO monitors and to identify portable CO equipment (similar to a Dustrak) that could log and transmit data. I wanted similar capacity to monitor CO in the community.

15. I knew that one of the Science Team technicians was installing the instruments to Morwell East. As power had not been disconnected the instruments were operational and logging $PM_{2.5}$ using the standard method (BAM) by the end of that day and ready for a technician to install the data and acquisition system to enable transmission directly to EPA website.

13 February 2014

16. On 13 February 2014 I attended at the staging area at the Hazelwood Incident control Centre. I established that the CFA had, at that time a number of AreaRAEs in use to detect CO in relation to fire-fighting.

17. I liaised with the CFA and recommended that the AreaRAEs be strategically placed – one at the Mine Perimeter to enable “worst case scenario” readings.

18. I then prioritised the need for an appropriate location for an additional air monitoring station in Morwell. While I was undertaking these assessments, I was also in regular contact with my colleagues as to the various initiatives underway. I confirmed the 52

Hazelwood Road, Morwell South (**Morwell Bowling Club**) as a potential suitable location with the EPA Incident Commander.

19. The portable DustTrack was installed at South Morwell Bowling Club to monitor particles. An air monitoring site was established here as quickly as possible because this was just about as close to the fire as it was possible to have an EPA monitoring site as there was an available tract of land next door.

20. $PM_{2.5}$ and visibility reduction measurements were measured and logging data at Morwell East. The EPA technician was fitting the data acquisition system and modem to enable the transmission of data.

21. We discovered that the Morwell East was logging data but was still unable to connect to the Macleod server. There was an issue with the modem which needed to be replaced.

22. $PM_{2.5}$ monitoring also commenced at the Morwell Bowling club with use of the DustTrak.

23. EPA CO monitoring rounds, using hand-held monitors commenced including schools, childcare centres, aged care facilities but no significant readings were obtained.

24. This enabled EPA to put together a preliminary picture of air quality in Morwell however there was hardly any overlap in time in the two data sets so the picture was very incomplete.

25. CO was sampled at the perimeter of the mine on the northern perimeter wall to check levels of CO leaving mine towards Morwell.

26. At this stage, only hand-held monitors were being used as it was judged highly to give indicators of CO in the Morwell town. We considered it unlikely that significant levels or duration of CO would make it into town.

14 February 2014

27. On 14 February 2014, I attended at the Traralgon RCC.

28. I attended Morwell East to discover a fault with the modem meaning that data could not be transmitted. With an EPA technician we worked to resolve this issue.

29. EPA hand-held surveys were undertaken in Morwell to assess the extent of the plume of CO at:

    (a) 250 Commercial Road, Morwell

    (b) corner of Hoyle Avenue and Harold Street Morwell

    (c) corner of Vary and Bolger Street Morwell

    (d) Morwell Police Station

    (e) Morwell Centary Rose Garden

30. There were no recordings of elevated CO levels were reported in the Morwell township by EPA monitoring.

31. To ensure good reliable measures and high quality data we used Australian standard methods for measurement. With indicative data we needed to undertake correlation with the standard monitors. For example,

    (a) Traralgon PM_{10} was measured with a TEOM (transverse element oscillating microbalance). This is a common and standard instrument used throughout the EPA network. It is well correlated with the reference standard for PM_{10} and with appropriate corrections gives an accurate measure.

    (b) Morwell East and Morwell South $PM_{2.5}$ were each measured with a BAM (beta attenuation monitor). This is a new generation type of particle monitor that will become the EPA standard. It also correlates well with the reference standard. Plus Partisol PM_{10} at Morwell South. Partisol data is included as Measured (Morwell South) for the PM_{10} graph and table.

    (c) Kernot Hall, Uniting Church and the second Morwell South used smaller and simpler DustTrak optical instruments. These measure both PM_{10} and $PM_{2.5}$ simultaneously, but need to be specially calibrated. They provide an indicative particle measure which is not as accurate as the standard instrument but nevertheless correlates adequately with the TEOM and BAM measurements. An exact uncertainty has not been determined, and thus the concentration values will be 'indicative'. However this instrument

still gives a very good measure of exceedence, especially those resulting from high particle concentrations.

32. Therefore the task to obtain and interpret information about air quality before the EPA was significant and complex.

33. At that time, the only available and relevant protocol for air quality monitoring, recording and notification by DH and EPA was the *Bushfire Smoke, Air Quality and Health : Air quality assessment and community health protection messaging: an integrated approach* (February 2014) which I understand has been provided to the Board by John Merritt. The Bushfire Smoke protocol uses measurement of PM10 on 24 and 1 hour averages and accords a Bushfire Smoke Advisory Level. The actions for each category are either low level or high level Bushfire smoke advisories which are issued by the CHO.

34. I attended the community meeting that evening.

15 February 2014

35. I travelled from Traralgon back to Melbourne in the morning.

36. I was called to the State Control Centre to assist in the development of the CO Protocol. DH started to work on the development of a protocol for CO. I also participated in a phone conference with Chris Webb, Tim Bessel Browne and the MFP regarding how to obtain as much CO information as possible. We worked with the CFA/MFB to locate their Area-Rae Monitors to sample CO for notification and reporting at strategic locations throughout Morwell.

37. EPA's monitoring objective was to measure CO in the vicinity of the mine where CO levels may be high, in the Morwell South residential area. The plan was to locate a base station to form the centre of the monitoring network and monitors would then be located spatially east, west and south over an area of up to 4 KM to provide an indication of the extent of the CO levels across the residential area.

38. We liaised with the CFA/MFB to roll out the monitoring network to provide as much information as possible about the spatial extent of CO and its impact in the residential area. Continuous air monitoring data was required to determine 10 minute average, 1 hour average, 4 hour average and 8 hour averages.

39. As part of the development of the CO protocol, a draft matrix was prepared by DH and EPA and provided to the RCC and ICC to assist with messaging and providing the community with information about CO levels and assessment of health risk.

16 February 2014

40. On 16 February 2014, I drove from Melbourne to Morwell. There had been a noticeable change in the air quality, and visibility was down to 300 metres to 500 metres. Air quality was now poor in Morwell East.

41. I arrived in Morwell at about 5.45PM and attended a meeting at the SCC.

42. I worked on the operationalization of the CO protocol with representatives of DH and the Incident Controller. A first draft of a Data Analysis and Monitoring Strategy (DAMS) was prepared to cover the scope and purpose of the EPA in the new RCC/ICC structure. (The first version of the DAMS was provided on 17th February and I understand has been provided to the Board by Mr Merritt.)

43. The biggest limitation with the monitoring network system was that the base station could only collect the raw 6-12 second readings and had no capability in calculating and reporting average concentrations.

44. Together with EPA Incident Commander Liz Radcliffe of EPA I prepared and compiled an air monitoring update which was dispatched by email to DH, CHO and RCC which included a report on air quality forecast for the next 12-24 hours. This was maintained as a contingency until automated reporting on 19th February – to be generated should trigger levels be reached.

17 February 2014

45. Mobile Laboratory was being prepared for transport to Morwell Bowling Club.

46. I organised for regular 12 hour reports and forecasts to be provided to DH.

47. The operational components of draft CO protocol were finalised. A monitoring contingency was developed for the manual CO monitoring network for the CO protocol until an automatic data collection, averaging and transmission system was put in place. The contingency was for the CFA/MFB operator to report data directly to the EPA Scientific officer and directly contact the Scientific Officer when triggers were reached. The EPA Scientific Officer would then follow the CO protocol.

18 February 2014

48. The new draft CO protocol was now in place.

49. The CO and SO_2 monitors were installed at the Morwell East station and the site requirements and location for MoLab at the Morwell Bowling were completed.

50. Ash samples were taken in Morwell and sent for analysis.

19 February 2014

51. On 19 February 2014, instruments were calibrated at Morwell East, Molab was transported to Morwell bowling club, power connected, equipment equilibrated calibrated and logging of air monitoring measurements commenced. The pollutants monitored at this site were:

    (a) $PM_{2.5}$

    (b) CO (ppm)

    (c) SO_2 (ppm)

    (d) API (visibility reduction)

    (e) Meteorology

Dated

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PAUL TORRE