IN THE MATTER OF
The Hazelwood Coal Mine Fire Inquiry

SUPPLEMENTARY STATEMENT OF CRAIG WILLIAM LAPSLEY

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Filed on behalf of: The State of Victoria
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Attention: Peter Stewart

I, CRAIG WILLIAM LAPSLEY, of Level 26, 121 Exhibition Street, Melbourne, Victoria, Fire Services Commissioner, can say as follows:

A. Introduction

1. I am the Fire Services Commissioner. This is a statutory office established under s 4 of the *Fire Services Commissioner Act 2010* (**FSC Act**). Although this is a statutory office, the FSC Act falls with the portfolio of Acts administered by the Minister for Police and Emergency Services, the Hon. Kim Wells MP. I am principally based at 121 Exhibition Street, Melbourne, Victoria.

2. My full name is Craig William Lapsley. My date of birth is 10 September 1964.

3. My work history and role description have been set out in my statement dated 20 May 2014.

4. This statement has been prepared in response to a request made by the Hazelwood Coal Mine Fire Board of Inquiry (**Board**) by letter of 28 April 2014 and subsequent letters of 1 May 2014 and 7 May 2014.

5. The letter of 7 May 2014 (**Letter**) requested that this statement cover fire fighter safety and posed certain questions as per the questions attached to the letter of 1 May 2014.

6. This statement has addressed these matters. For simplicity, this statement has adopted the topics set out in the Letter as headings. It has also repeated each of the relevant questions posed by the Board.

7. This statement is comprised of information, in part, from my personal experience and knowledge. Given the scope and nature of the information that I have been requested to provide in this statement, it is also comprised of, in large part, information that I have ascertained from making inquiries of staff working at the State Control Centre, in my office and inquiries of other agencies, including fire services. Where information has been provided as a result of my making such inquiries, to the best of

my knowledge that information is true. I have taken care to ensure that this statement has made it clear when it has addressed or described matters around which there is any residual uncertainty.

B. Fire fighter safety

Question 19 — Outline the steps that were taken to protect the health and safety of the fire fighters (CFA, MFESB, interstate, career and volunteer) involved in fighting the fires in the Mine.

8. The State Controller's Strategic Control Priorities underpin the planning and operational decisions made when managing fire. The first of these is that the protection and preservation of life is paramount. This includes the safety of emergency services personnel and the safety of community members.

9. The Incident Controller provided fire fighters with information, instructions and arrangements for protecting the health and safety of fire fighters at the Hazelwood Mine fire. Agency commanders provided fire fighters with this information through briefings and the Incident Shift Plans **(ISPs)**. ISPs contain, as a standard, information and arrangements on the risks to health and safety fire fighters would likely experience at the incident site and the controls for managing these risks. Due to the size and volume of the ISPs for the relevant period, these documents will be separately provided to the Board.

10. From the morning of 10 February 2014, the Incident Controller received advice on site safety from a Safety Officer and a Country Fire Authority (**CFA**) health support team. The Incident Controller subsequently introduced arrangements to:

    10.1 Rotate work shifts to reduce the time fire fighters spent in the Mine environment;

    10.2 Monitor the level of carbon monoxide **(CO)** in the atmosphere, measured as parts per million (**ppm**); and

    10.3 Measure the carboxyhemoglobin **(COHb)** content of the blood, as a percentage (**%**), of all fire fighters upon their entry to and exit from the mine site.

11. The health support team implemented a draft regional operating procedure, developed during previous fires at the Mine in October 2006 and October 2008, and that outlined a graded system of work arrangements to control the fire fighter exposure to CO. The system applied the COHb blood concentration standards from the SafeWork Australia National Occupational Exposure Standard Documentation for CO. Fire fighters with a COHb of less than 5% were to work their full shift, while fire fighters with a COHB of 5% to 7% were unable to work and were excluded from the site for 24 hours. Fire fighters with a COHb of 8% or above were referred to Ambulance Victoria for further assessment and were excluded from the site for 48 hours. Attached is a copy of the draft Regional SOP — Latrobe Valley Open Cut Coal Mines – Response to fires (version 7a) (**[FSC.0011.001.0133]**).

12. For the duration of the incident, the health support team conducted nearly 60,000 tests on fire fighters to measure their COHb blood content. Of these:

    12.1 97% of the tests (58,000 tests) measured COHb blood content to be less than 5%;

12.2 2.4% of the tests (1,400 tests) measured COHb blood content to be between 5% and 7%; and

12.3 0.4% (197 of the tests - equating to 20 to 25 people overall) measured COHb blood content to be over 8%.

13. On 11 February 2014, a Metropolitan Fire and Emergency Services Board (**MFB**) hazardous materials (**HazMat**) scientific advisor on atmospheric monitoring, in consultation with the mine operator, advised the HazMat sector commander and Incident Controller on the composition of gases in the mine and that only CO exceeded national occupational exposure standards.

14. Late in the evening of 11 February 2014, following a report that several fire fighters had self-presented out-of-hours to the Sale hospital, the Incident Controller ceased fire fighting in the mine pending a review of safe work arrangements.

15. On 12 February 2014, the Incident Controller received advice on the CO atmospheric monitoring program from consultant occupational hygienist Mr Robert Golec (**AMCOSH Pty Ltd**) and advice on workplace health arrangements from Deputy Chief Officer (**DCO**) Mike Smith from South Australian Metropolitan Fire Service (**MFS**) and Dr Michael Sargeant (the CFA Medical Officer).

16. On 12 February 2014, I advised all regions by email that they should not deploy pregnant women and individuals with conditions such as cardiovascular or respiratory disorders to this incident, and crews to be deployed to the incident should also be in a smoke-free environment for the prior 24 hours. Attached is the email of 12 February 2014 from me to the agencies referred to in this paragraph regarding CO exposure risks (**[FSC.0012.001.0001]**).

17. For the night shift of 12 February 2014, the Incident Controller implemented an upgraded system of work to manage the risk of CO exposure based on the specialist advice received. Crew leaders received information about these arrangements through the ISPs and the associated briefing. Each crew leader was required to monitor the CO levels in the surrounding atmosphere by wearing a personal CO monitor, reporting CO levels to their Division Commander every 15 minutes and implementing a graded work system in accordance with these measurements. Where atmospheric CO measured over 50 ppm, fire fighters were to wear breathing apparatus (**BA**), working the maximum time allowed for BA, which was about 20 to 30 minutes depending upon the individual fire fighter breathing rate (this also included the time it took to withdraw from the mine site to clean air). Where atmospheric CO measured over 75 ppm, fire fighters were to don BA and leave the area.

18. At approximately 15:00 hours on 13 February 2014, fire fighters were observed not wearing BA and the Deputy Incident Controller instructed all staff not wearing BA to evacuate the mine immediately. I understand the firefighters found the short duration of working time wearing BA impractical (it was 20 to 30 minutes, including the time to withdraw to clean air). Following consultation with the specialist scientific advisors in HazMatatmospheric monitoring, DCO Mike Smith, Dr. Sargeant and Mr Golec, the Incident Controller confirmed that the instruction to wear BA remained where CO was over 50 ppm, while alternative arrangements, as outlined in points 18 to 20 below, were investigated.

19. On 14 February 2014, the Incident Controller released the Health Management and Decontamination Plan - Latrobe Valley Mine Fires (**the Plan**), developed by the

MFB HazMat atmospheric monitoring scientist, Deputy Chief Officer Mike Smith and Dr Sargeant, and then endorsed by the Chief Officers CFA, MFB and VICSES, and myself. Attached is a copy of the Health Management and Decontamination Plan - Latrobe Valley Mine Fires (version 2) (**[FSC.0011.001.0017]**).

20. Two of Mr Golec's suggestions were not implemented in the Plan:

    20.1 Mr Golec had recommended that COHb limit should be 3.5%, whereas the SafeWork Australia national exposure standard recommends 5% and this level was supported by Dr Sargeant.

    20.2 Mr Golec had also advised on the continued use of BA. However, because fire fighters found this to be impracticable due to the short timeframe they were available to actually undertake work, alternative control measures were determined and implemented as per point 21 below.

21. The Plan introduced a new atmospheric monitoring regime, based on the SafeWork Australia National Occupational Exposure Standard, which allows for a worker to be exposed to a maximum average of 30 ppm CO over an eight-hour period in order to prevent the worker's COHb exceeding 5%. This regime allowed for fluctuations above and below 30 ppm over the eight-hour period, provided the average COHb over an eight hour period did not exceed 5%. The graded system of work arrangements (described in point 3 above) continued to apply. The rationale for this system of work is described in the attached email of 26 March 2014 from C Tonks to Acting Chief Officer MFB, Peter Rau, which explains the exposure standards and action limits used at Hazelwood (**[FSC.0011.001.0009]**).

22. From 15 February 2014, Mr Golec commenced monitoring the exposure of a representative sample of fire fighters for particulates including inhalable dust and metals, respirable dust and silica, volatile organic compounds, polycyclic aromatic hydrocarbons and aldehydes. The test results were all lower than the relevant national occupational exposure standards. Mr Golec continued personal atmospheric contaminant monitoring every four or five days throughout the incident.

23. On 14 February 2014, I engaged Mr Frank Ziegler of Smarter Safer Solutions to perform an audit of compliance with health and safety systems at the fire. Mr Ziegler conducted his audit on 15, 16 and 17 February 2014 and subsequently provided me with an 'action tracker' to outline further steps taken or to be taken. The report (refer attached document) identified 22 areas requiring treatment. I passed these recommendations to the Regional and Incident Controllers for action. On 1 March 2014 and 19 March 2014, occupational health and safety executives from CFA, SES and MFB reviewed the implementation of these recommendations for compliance. They recorded the status of the implementation of the recommendations. Attached is the audit conducted by Mr Ziegler (**[FSC.0011.001.0127]**). Attached is a copy of the action tracker provided to me **(**[FSC.0012.002.0001]).

24. Fire fighters raised concerns about the health risks of exposure to the recycled water used for fire fighting and Mr Golec was engaged to assess the water used for fire fighting using samples collected by the Environment Protection Authority (**EPA**). On 15 February 2014, Mr Golec conducted a risk assessment of the chemical contaminants in the water from the mine and in the Hazelwood pondage. On 18 February 2014, Mr Golec advised the water quality met the standards for potable water (drinking water) for chemical contaminants. He continued monitoring the chemical contaminants in the water for the duration of the incident. Attached is the

email advice from Mr Golec of 15 February 2014 (**[FSC.0012.003.0001]**) and the Water Quality Guideline Values document attached to the email advice (**[FSC.0012.004.0001]**).

25. The Hara pond, the lowest point at the Mine, collected waste water and was designated out-of-bounds for fire fighters. On 23 February 2014, MFB was notified that a number of MFB personnel had been exposed to the water. The area was quarantined, the water tested, including all tests requested by the United Firefighters Union (**UFU**). The tests were conducted by Mr Golec on 24 February 2014, who subsequently concluded the tests on both the water and solids indicated they did not pose a significant risk to firefighters. Each affected fire fighter was contacted directly regarding the results. On 28 February 2014, MFS was asked by Acting Chief Officer of MFB Peter Rau to undertake an independent review of the Hara Dam pumping strategy. The recommendations were passed to the Incident Controller and subsequently implemented. Attached is a copy of the MFS report on this (note the document appears to be mistakenly dated '5 February 2014' — I assume this should read '5 March 2014' given that on the same page the document states that the review was requested on 28 February 2014) (**[FSC.0011.001.0036]**). Attached is an action list prepared an action list to address the fire fighter exposure issues identified (**[FSC.0011.001.0001]**).

Also attached is an internal MFB memorandum setting out summarising the finding of the MFS report (**[FSC.0011.001.0014]**). Also attached is an extract of a crew leader instruction document, among other things, setting safety procedures in relation to the Hara pond (**[FSC.0011.001.0089]** and in particular, page FSC.0011.001.0118 of that document which is a copy of the 'Hara pit' agreement setting out certain processes in respect of activities in that area). Also attached are two emails setting out advice from Mr Golec regarding the Hara pond (**[FSC.0011.001.0013]**) and (**[FSC.0011.001.0012]**).

26. As he was not an expert on the microbiological content of water, on 3 March 2014, Mr Golec engaged Professor Richard Bentham of Flinders University to assess the microbiological content of water collected on 1 March 2014. Professor Bentham provided a preliminary summary of his report to the Regional and Incident Controllers on 3 March 2014 and the full report shortly after. He advised that, of the organisms detected, only Microcystis (a form of *Cyanobacteria spp*. or blue-green algae) in the Hazelwood Pondage presented a significant health risk at the concentrations detected. He advised against fire fighters inhaling or ingesting the water and recommended all fire fighters exposed to the water use personal protective equipment, waterproof gloves and P2 face masks (or better). Crew leaders were advised accordingly. In his report, Professor Bentham stated the absence of fish, bird and animal mortalities in the pondage led to him to surmise the organisms were not of a toxin-forming species. Attached is a copy of Dr Bentham's preliminary summary sent by email on 3 March 2014 (**[FSC.0011.001.0003]**) and a copy of Dr Bentham's full report, Human Health Risk Assessment of Microbiological Quality of Water used for Fighting the Hazelwood Coal Mine Fire (**[FSC.0011.001.0120]**).

27. During the week of 24 February 2014 to 2 March 2014, the Acting Chief Officer MFB agreed for an additional independent occupational hygienist from Bureau Veritas (**BV**), commissioned by the UFU, to be given access to the Mine to collect water samples alongside the EPA. On 7 March 2014, the Acting Chief Officer MFB issued an operational update advising that analysis by both BV and AMCOSH Pty Ltd (Mr Golec) showed that the sampled water did not pose an exposure risk for the contaminants analysed but high levels of coli forms and e-coli had been detected. As a precaution, fire fighters working in the mine were advised to follow several

hygiene directives, including wearing gloves where there was a risk of contaminants, and maintaining personal hygiene. The Acting Chief Officer MFB advised that the fire services would take advice from health authorities to determine exactly what biological testing needed to be done and would also discuss with the UFU the potential for both BV and AMCOSH Pty Ltd to conduct the tests in parallel in the future. Attached is a copy of the update from the Acting Chief Officer MFB Peter Rau of 7 March 2014 (**[FSC.0011.001.0146]**).

28. Fire fighting personnel reported injuries and hazards (called Incident Reports) during and at the end of each shift. The health support team monitored the reports for trends and key issues were identified and raised these with the Incident Controller and other relevant members of the incident management team for action.

29. WorkSafe attended the worksite on two separate occasions and did not identify any areas of concern. Attached is a copy of a WorkSafe entry report prepared in relation to this an entry on 21 February 2014 (**[FSC.0011.001.0148]**).

Question 20 — Detail any medical treatment provided to fire fighters, including numbers hospitalised and the reason they were hospitalised during the course of the fire fight at the Mine.

30. Fifteen fire fighters presented to hospital with one admitted as an inpatient. Fourteen of these fire fighters presented to hospital for CO exposure (and of them, none were admitted). The one inpatient was a fire fighter who sustained a cut while fire fighting at the Mine and which subsequently became significantly infected. The fire fighter was initially treated as an outpatient several days after attending the Mine fire, later returning to hospital for multiple surgeries, which required a stay as an inpatient. Attached is an internal MFB report regarding this hand injury (**[FSC.0011.001.0034]**).

31. MFB subsequently received four WorkCover claims due to injuries sustained during the Hazelwood Mine Fire Event. MFB advised three of these claims are minor, at this stage, whereas the other related to the fire fighter with the cut hand.

32. CFA subsequently received 19 WorkCover claims due to injuries sustained during the Hazelwood Mine Fire Event. CFA advised all the claims are minor at this stage.

Question 21 — Identify the safety advisers who were appointed pursuant to Joint Agency SOP 3.04 during the course of the fire fight. State the relevant qualifications and training of the safety advisers. Outline the activities of those safety advisers.

33. While Standard Operating Procedure (**SOP**) J3.04 Safety Officer (last updated in 2011) applies to all CFA and Department of Environment and Primary Industries (**DEPI**) members engaged in an integrated response to bushfire, its principles apply to other types of incidents and were implemented during the Hazelwood mine fire. MFB is not a signatory to the procedure but supports and uses the concept of safety officers. Attached is a copy of SOP J3.04 Safety Officer (**[FSC.0012.005.0001]**).

34. SOP J3.04 specifies two levels of Safety Officer: a Field Safety Officer, who advises the Sector or Division Commander on safe work practice within the sector or division, and a Safety Officer, who advises the Incident Controller on the management of health and safety risks across the incident. Both levels of Safety Officer were in place during the Hazelwood mine fire.

35. A Safety Officer from either MFB or CFA supported the Incident Controller for each work shift from 11 February 2014 until 25 March 2014. Safety Officers from CFA held the qualifications specified by SOP J3.04, while MFB Safety Officers held the qualifications for the rank of Station Officer or above, which qualified them for this role under MFB arrangements. After 25 March 2014, the Incident Controller performed the safety officer function, along with his other duties, in keeping with escalation/de-escalation principles of incident management and SOP J3.04.

Question 22 — Provide details of the specialist services such as occupational hygienists and occupational health and safety professionals that were available to the Incident Controllers in meeting their responsibilities to the fire fighters.

36. A number of these have previously been referred to in response to Question 19.

37. Dr Michael Sargeant, CFA Brigade Medical Officer, advised the Incident Controller on fire fighter and mine worker health surveillance procedures and occupational exposure standards for carbon monoxide exposure. Dr Sargeant also provided regular oversight of the health program and health testing, and regularly visited the worksite for the duration of the incident.

38. Mr Robert Golec (AMCOSH Pty Ltd) an independent certified occupational hygienist, advised the Incident Controller as follows:

    38.1 Mr Golec assessed and provided advice on the health surveillance program established by CFA Health Support Team and the CO atmospheric monitoring program undertaken by CFA/MFB HazMat technicians and CFA/MFB scientific advisors;

    38.2 Mr Golec was engaged to conduct personal atmospheric contaminant monitoring (particulates, organic compounds) of fire fighters and assess water quality tests on samples collected by the EPA within the mine and adjacent Hazelwood Pondage, throughout the incident; and

    38.3 Mr Golec engaged Professor Richard Bentham of Flinders University to assess the microbiological content of the water.

39. I engaged Mr Frank Ziegler (Smarter Safer Solutions) to perform an audit of compliance with health and safety systems at the Hazelwood mine fire.

40. State-level fire services occupational health and safety executives visited the mine fire on two occasions to review compliance with Mr Ziegler's health and safety audit.

41. Deputy Chief Officer Mike Smith, from the **MFS** provided advice on CO exposure management from smoke inhalation and was on-site from 12 February 2014 through 14 February 2014. Deputy Chief Officer Smith also provided advice to the MFB and CFA scientific advisors during the development and documentation of the Health Management and Decontamination Plan.

42. MFS Assistant Chief Fire Officer Michael Morgan provided advice to the MFB on the Hara Dam pumping strategy (including Ash Pit) on 5 March 2014.

43. WorkSafe inspectors visited the site on two occasions.

44. Four CFA and MFB scientific advisors were deployed to the incident from 11 February 2014 to 25 March 2014 on a rotating basis for day shift and available on-

call for night shift. They provided advice to the Incident Controller, HazMat Sector Commander and HazMat Technicians on atmospheric monitoring procedures and risk assessment within the Mine, with reference to SafeWork Australia Occupational Exposure Standards. They issued CO monitoring data to the EPA and Department of Health (**DH**) scientific and medical officers. All four scientific advisors held degree and higher degree qualifications in pure and applied chemistry and were experienced in HazMat chemistry, atmospheric monitoring and risk assessment during emergency response and were trained and had experience in occupational hygiene consultancy in both government and private industry.

45. Consultant engineers from GHD and an expert panel were engaged to examine the structural stability of the mine and water balancing issues (ensuring the input of fire fighting water did not compromise the stability of the brown coal), information which assisted the Incident Controller develop safe systems of work. Information relating to these consultants is contained in my Witness Statement dated 14 May 2014 and has not been duplicated here.

Question 23 — Provide details of the information and advice provided to fire fighters about the dangers to their health and safety arising from their participation in the fire fight at the Mine.

46. The Incident Controller provided information and advice to fire fighters about the danger to their health and safety arising from fire fighting at the Hazelwood Mine Fire through the ISP and pre-shift briefings, which summarised the content of the ISP and allowed for questions. This information related to a range of generic risks to health and safety including fatigue, heat stress and dehydration, vehicle operation, traffic management, first aid and medical arrangements, and site-specific risks such as CO exposure, power lines, hygiene and the protocols regarding warning sirens in the mine. An ISP was developed for each shift from 10 February 2014 onwards. A separate ISP was developed for each day and night shift or, occasionally, for a 24-hour period.

47. I distributed a Safety Fact Sheet for the Hazelwood HazMat/Fire (SFS) to the Regional and Incident Controller and then to all the staff supporting these people through their respective command structures. The document included information regarding CO sourced from the United States of America Centre for Disease Control. The State Controller also shared the Safety Fact Sheet across all agencies responding to the fire through the State Control Centre knowledge web. Attached is a copy of the SFS referred to above (**[FSC.0011.001.0141]**).

48. The Incident Controller circulated certain specific documents on safety, including the Crew Leader Instruction for CO Management, Strategies for Driving in Open Cut Mines, Coal Haulage from TP7 to Energy Bricks – Traffic Plan and the Hara Pit Agreement. Attached is a copy of the Crew Leader Instruction for CO Management (**[CFA.0004.001.0245]**), the Strategies for Driving in Open Cut Mines (**[CFA.0004.002.0356]**) and Coal Haulage from TP7 to Energy Bricks – Traffic Plan and the Hara Pit Agreement (**[CFA.0004.002.0480]**).

Question 24 — Provide details of the personal protective equipment provided to the fire fighters. Identify any shortcomings in the equipment.

49. MFB and CFA provided their fire fighters with structural fire fighting personal protective clothing (**PPC**) and equipment of an (almost) identical nature, with the exception of different brands of fire fighting trousers and coats, and different brands

of helmet. CFA also provided personnel with wildfire fire fighting personal protective clothing

50. CFA provided the following additional respiratory protective equipment:

50.1 Self-contained breathing apparatus;

50.2 P2 disposable respirator masks;

50.3 Atmospheric monitoring equipment (with the quantities on site listed in brackets after each):

(a) Drager PAC 5500 – Personal CO Monitors (171);

(b) Drager PAC 3500 – Personal CO Monitor (20);

(c) RAE Systems AreaRae – PID, CO, H2S, LEL and Oxygen (50);

(d) RAE Systems Mini RAE 3000 PID - parts per million (ppm) (1) ;

(e) RAE Systems ppb RAE 3000 PID - parts per billion (ppb) (1);

(f) MSA Sirius - PID, CO, H_2S, LEL and Oxygen (2);

(g) Drager X-am 5000 – CO Monitor (approximately 40); and

(h) Drager X-am 7000 – HCN, NO_2, SO_2 and CO_2 (2).

51. There are 94 of the PAC 5500 Personal CO Monitors located at Latrobe Valley CFA brigades for use in the first response to coal mine fires. The remaining monitors were sourced from brigades across the region.

52. CFA and MFB advise they were not aware of any shortcomings with this equipment. There were initial concerns about the expiry date on some of the P2 Disposable Respirator masks, however, these masks were confirmed to be fit for purpose.

Question 25 — Outline the involvement of WorkSafe in relation to the safety of fire fighters at the mine. Was any advice provided to the Incident Controllers by WorkSafe? Was any compliance action taken by WorkSafe?

53. A WorkSafe inspector visited the site on 21 February 2014 and again about one week later. On the first visit, the inspector completed an audit of the health monitoring and produced an Entry Report. On the second visit, the WorkSafe Inspector checked the health monitoring systems for compliance but decided an Entry Report was not required as compliance was maintained. On both visits the inspectors also met with the management of GDF Suez and agency occupational health and safety staff.

Question 26 — Provide your views on what worked well, what did not work well and what could have been done better in relation to the protection of the health and safety of the fire fighters responding to the fires at the Mine.

54. The following aspects relating to the protection of fire fighter health and safety at the Mine worked well:

54.1 Along with the safety of the public, the health and safety of response personnel was the highest priority from the start of the incident and subsequently for its duration;

54.2 The fire services were proactive about safety and their responsibility as employers and took action, as far as was reasonably practicable, to provide a working environment that was safe and without risks to the health of workers. They committed to a culture of continuous improvement where systems of work were regularly updated to ensure controls were in place for the identified risks;

54.3 Where the Incident Controller and Safety Officer were unable to eliminate or reduce the risks to the health and safety of fire fighters to a reasonably practicable level, they instructed fire fighters to cease performing some activities, such as occurred on 11 February 2014;

54.4 The Incident Controller held ongoing engagement with representative bodies regarding safe systems of work and subsequently assessed, addressed and responded to issues when they were identified;

54.5 The Incident Controller appointed a Safety Officer, occupational health and safety personnel and scientific advisors to provide advice on health and safety risks and systems for each shift from an early stage in the incident. Field Safety Officers were also deployed;

54.6 The Incident Controller appointed a Deputy Incident Controller Technical, specifically responsible for managing the HazMat and technical safety aspects of the incident;

54.7 The Incident Controller engaged the on-site assistance of occupational health and safety personnel, brigade medical officers and scientific advisors from an early stage of the incident. In turn, these people also recognised the need for specialist advice from expert occupational hygienists and occupational health and safety professionals at an early stage and then for the duration of the incident;

54.8 Occupational health and safety personnel were able to implement work systems relating to CO exposure developed during previous fires at the Mine in October 2006 and October 2008, at an early stage in this incident; and

54.9 Occupational health and safety personnel and scientific advisors worked well together and under the control of the Incident Controller. They developed joint plans and systems, provided joint advice to the Incident Controller and delivered joint information to fire fighters through the daily ISP.

55. The following aspects relating to the protection of fire fighter health and safety at the Mine could have been improved:

55.1 All parties at the incident needed a shared understanding of their accountability and responsibility for occupational health and safety — in this respect, the responsibilities of those performing the incident control and agency command functions, and the responsibilities of the mine owner needed clarification.

55.2 Currently each of the fire services interprets legislation individually and then develop and use their own procedures for occupational health and safety. There is no state oversight, even though these agencies are all part of

government. During an integrated emergency response, the Incident Controller has to navigate the various arrangements, balancing these with his or her own understanding of the relevant legislation and accountabilities. A single all-agency arrangement would result in the Incident Controller being able to quickly establish sound systems from an early stage in the incident;

55.3 The fire services worked closely with EPA at the incident, however, there was some confusion whether the role of the EPA was to enforce the Incident Controller's implementation of regulations or to provide him with technical support;

55.4 Each of the fire services uses its own system for recording the details of human resources deployed to the incident, which made it difficult for the Incident Controller to maintain an overview of the identity, location and tasking of resources, particularly at the early stages of the incident;

55.5 The potential for a fire within a coal mine is a foreseeable risk for the Latrobe Valley and for Victoria. In retrospect, there may have been benefit in the fire services having more detailed pre-plans ready for managing this type of emergency. A draft regional SOP was used early in the incident and was useful in providing a guide as to response and fire fighter safety measures but this had not been formally approved.

55.6 There were issues with fire fighter non-compliance with the safe work arrangements for CO the agencies established for the Mine fire, therefore potentially compromising their health and safety. However, once this non-compliance was detected, agency commanders were not always consistent in their response to these reports, with the non-compliance sometimes being tolerated. This situation may not have occurred if the agencies promoted a culture of zero-tolerance of non-compliance with safe work practice early in the incident;

55.7 The agencies engaged third party experts to provide assurance on their systems for managing workplace risks and ensuring safe work practice, however, these experts could have potentially been engaged at an earlier stage.

55.8 A number of fire fighters received medical treatment for CO exposure and a range of other issues. Initially, there were no formal arrangements for ensuring the wellbeing of these people on their journey home, although the need for these arrangements was later recognised and arrangements established accordingly;

55.9 Although the scientific advisors from the fire services were on scene and held a sound understanding of the hazards, they didn't work closely with the EPA scientific advisors and the DH scientific and medical advisors, due to their working within different command structures. In the future, technical experts from a range of agencies should form an integrated resource providing advice to the Incident Controller, rather than working within their hierarchical agency structures (which can inhibit interoperability); and

55.10 There was significant learning from this event and it is important this itself be documented to inform the management of similar events in the future.

Significantly, a health monitoring model could be developed from this incident for application to future incidents where a health risk exist.

56. The fire services are currently investigating a suitable methodology to evaluate the longer term health risks to fire fighters from exposure to CO.

Dated: 22 May 2014

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CRAIG WILLIAM LAPSLEY