



*Oaths Act 1867*

## Statutory Declaration

QUEENSLAND

TO WIT

I, Stephen Donald Smith, do solemnly and sincerely declare that:

1. My full name is Stephen Donald Smith. I reside at an address known to Resources Safety and Health Queensland (*RSHQ*).
2. On 29 July 2020 I swore a statutory declaration for the purposes of the Coal Mining Board of Inquiry (*my First Statutory Declaration*) addressing the High Potential Incidents (*HPIs*) relevant to the terms of reference at Oaky North Mine, Moranbah North Mine and Grasstree Mine during the period 1 July 2019 to 5 May 2020 (*the relevant period*).<sup>1</sup>
3. My First Statutory Declaration relevantly included:
  - (a) A summary of my qualifications and experience, and my current role as the Regional Inspector of Coal Mines (*RIOM*), North Region, at [2] to [14]; and
  - (b) An outline of the process for reporting HPIs at [15] to [24].
4. In addition to overseeing the Inspectorate's response to the HPIs at Oaky North Mine, Moranbah North Mine and Grasstree Mine described in my First Statutory Declaration, I also had oversight of the HPIs at Grosvenor Mine.
5. This is an addendum to my First Statutory Declaration, specifically addressing those HPIs at Grosvenor Mine during the relevant period.
6. I am not part of the investigation team for the serious accident that occurred at Grosvenor on 6 May 2020. My only involvement in the investigation has been the one

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<sup>1</sup> SST.001.002.0001

occasion in the week following the serious accident, when I attended the mine to relieve Deputy Chief Inspector of Coal Mines, Shaun Dobson. While I was at the mine I went underground to the longwall on two occasions. On the first occasion I collected ventilation readings, and on the second occasion I went to ensure the personal effects of the injured coal mine workers were not left in the crib room or on the equipment at the maingate. I have had no other involvement in conducting the serious accident investigation.

### **Grosvenor HPIs - Overview**

7. From November 2019, I received each of the HPI notifications when they were emailed to all the inspectors, after the HPI was entered into the system by the relevant inspector. I was also personally responsible for taking three of the HPIs for the Grosvenor Mine (*the mine*).
8. I have, as the RIOM with oversight of the inspectors throughout the relevant period, reviewed all of the Form 1As and Form 5As for the HPIs from the relevant period, as well as the Lotus Notes database entries for the purpose of making this statement. These documents are available to all inspectors in Lotus Notes.
9. The HPIs for the relevant period occurred across two longwalls, namely longwalls 103 and 104. In the Form 5As, pre-drainage is identified as an issue for longwalls 103 and 104. References in the Form 5As include a less than adequate pre-drainage program in the lower seams and gas make greater than expected, in excess of the system capacity.<sup>2</sup> In some of the Form 5As for longwall 104 there is also reference to the strategy to drain the P seam not having been completed as proposed to allow for unconstrained production from gas delays.<sup>3</sup> Having identified these issues, the mine needed to develop and implement strategies to manage risk and prevent recurrence.
10. Once production has commenced, longwalls are designed to keep moving. When an issue arises on a longwall, deciding whether or not to stop longwall operations is a delicate balance between the risks of continuing production (including the available means by which those risks can be managed so as to maintain them at an acceptable level), and the different risks that may be introduced by stopping production, particularly for extended periods of time.

<sup>2</sup> For example: AAMC.001.009.0336 (2 July 2019); AAMC.001.009.0340 (3 July 2019).

<sup>3</sup> For example: AAMC.009.009.0388 (18 March 2020); AAMC.009.009.0392 (19 March 2020)

11. In my experience, some of the ways that a mine may manage risks while the longwall is in operation include:
- (a) Modifying production to reduce the rate at which methane is emitted from the face, which may be achieved by:
    - (i) Modifying the set methane levels at which the shearer is automatically slowed or stopped (making those values more conservative);
    - (ii) Producing in uni-di (rather than bi-di);
    - (iii) Reducing their cutting rate to produce coal more slowly;
  - (b) Increasing the available post-drainage, for example by drilling additional goaf gas drainage bore holes if they will assist (noting that a balancing exercise is required because more drainage holes will not always be effective, and excessive drainage holes have the potential to introduce other risks associated with increased oxidisation in the goaf); and
  - (c) Reviewing and managing ventilation with a view to generally increasing the efficiency of the ventilation system, and by using localised ventilation control devices to control gas behaviour in particular areas of the mine, including in and around the tailgate area.
12. After reviewing the documents relating to the HPIs at Grosvenor during the relevant period, it appeared there were a number of exceedances on or around longwall 103 in the middle of 2019. However, following some changes made by the mine after an inspection on 2 July 2019, the reported exceedances decreased significantly later in 2019.
13. While there had been issues with exceedances prior to July and in July 2019 on longwall 103, the interaction between the Inspectorate and the mine, and the history of HPIs from July 2019 onwards indicates to me that the mine's actions in managing these issues was generally effective. As a result, the Inspectorate had no reason to believe, prior to the startup of longwall 104 that the mine did not have the ability to take appropriate action to manage methane on the subsequent longwall. Such actions could include:
- (a) Production activities such as reducing the cutting rate, producing in uni-di, or modifying monitor set points that slow or stop the shearer;
  - (b) Increasing post drainage capacity;

- (c) increasing the efficiency of the ventilation.
14. I have also considered the exceedances which actually occurred on longwall 104 once it had commenced operations, and whether the circumstances of those exceedances were such that the Inspectorate ought to have deployed an inspector to the site at the time, or issued a directive. In my view, the following is relevant:
- (a) The first exceedance<sup>4</sup> was of relatively short duration, peaked at 2.56% and was thought to have been caused by an interruption to ventilation while the shearer was in the tailgate, which caused methane to be brought out of the goaf;
  - (b) Five of the exceedances related to issues with the goaf skids, including equipment failures or ancillary issues associated with the repair of the goaf skids.<sup>5</sup> At this time, early in the longwall, there were only three goaf holes online. The goaf hole that was affected was drawing the most methane and when it went offline the drainage systems ability to manage methane was compromised until it could be repaired;
  - (c) Three of the exceedances were due to a disturbance to the ventilation system,<sup>6</sup> possibly caused by a goaf fall (as I explain in more detail at [142] and [153]-[158] below);
  - (d) Five were registered on the canopy sensor only<sup>7</sup> (including four in a twenty-four hour period) the details of which are set out at [145]-[146] and [161]-[170].
15. Given the above considerations, on the basis of information known to the Inspectorate, and having regard to the contents of the Form 1As and 5As and the nature and level of the exceedances, in my view, intervention by deployment of an inspector to the site at the time, or issuing a directive, was not required. The pre-drainage issues identified by the mine nevertheless required the mine to continuously, carefully and proactively manage the risks associated with methane at Grosvenor.
16. The *Coal Mining Safety and Health Act 1999* (Qld) (**CMSHA**) is risk-based legislation, which focuses on creating a concept of on-site ownership of safety and health issues. The CMSHA requires the mine, which has the knowledge and expertise about the local

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<sup>4</sup> HPI#14 on 18 March 2020

<sup>5</sup> HPI#15 on 19 March 2020, HPis #16, #17 and #18 on 20 March 2020

<sup>6</sup> HPI #20 on 23 March 2020, HPI #22 on 6 April 2020 and HPI #23 on 7 April 2020

<sup>7</sup> HPI#21 on 4 April 2020, and HPis #24, #25, #26, #27 on 21 April 2020

conditions at their mine, to manage risk to ensure it always remains at an acceptable level.

#### **Planned site inspection at Grosvenor**

17. After the HPIs subject to the terms of reference had occurred and prior to the serious accident at Grosvenor on 6 May 2020, I was directed by the Chief Inspector to undertake an inspection at Grosvenor Mine. This occurred during a Monday morning Weekly Inspectorate meeting. During those meetings, there is a review of HPIs received on the weekend, and there is often a discussion of other HPIs received during the week.
18. I cannot recall the exact words the Chief Inspector used when he directed me to attend at the mine, other than the inspection purpose was to include checking for compliance with section 243A of the Regulations following the directive that had been issued.
19. This was action being taken by the Inspectorate in relation to methane related issues at Grosvenor.
20. My normal practice when I am going to conduct an inspection at any mine would be to review the recent history of HPIs through Lotus Notes. This would involve me looking at the Form 1As and Form 5As. As part of any subsequent inspection I would make inquiries regarding the effectiveness of the preventative or corrective actions nominated by the mine, and whether they have been implemented.
21. The direction was to conduct an inspection at each of Grosvenor, Grasstree and Moranbah North mines, and I had scheduled 13 and 14 May 2020 for the Grosvenor and Moranbah North inspections.

#### **Improvements to the Inspectorate process for dealing with HPIs**

22. I have in this statement explained that the circumstances of the individual exceedances were such that the Inspectorate was not, in my view, required to deploy an inspector to the site at the time, or issue a directive in response to the individual exceedance.
23. The initial notification of the exceedances at Grosvenor were received by a number of different inspectors.
24. At the time of the HPIs at Grosvenor during the relevant period, Lotus Notes did not automatically flag a mine's prior history of HPIs. One change that has already been made to the Lotus Notes database is that a mine's history of HPIs is automatically flagged for the benefit of the inspector receiving a notification. I am also aware of the

other enhancements that are underway and planned with respect to the Inspectorate's recording, analysis and investigations of HPIs, as outlined in the statutory declaration of Peter Newman (NPE.001.001.0001 at [26] to [29]), which is available as an exhibit on the Board's website.

25. These developments will enhance the Inspectorate's ability to collectively analyse and respond to trends revealed by the reporting of HPIs at a particular mine, and across industry more widely.

### **Longwall 103 exceedances**

26. There were a total of thirteen exceedances on longwall 103 during the relevant period.
27. A number of exceedances had occurred during the month of June 2019 at Grosvenor mine, which prompted an inspection at Grosvenor by Inspector of Mines (*IOM*) Keith Brennan on 2 July 2019. In the MRE of 2 July 2019<sup>8</sup>, it records that there had been interactions between the Inspectorate and the mine in relation to gas exceedances. The MRE details that the inspection by IOM Brennan included a review of recent gas exceedances and recent HPIs, and a review of questions and responses between the SSE and IOM Paul Brown, with the responses covering trigger points and possible reduction of shearer speed, barometric lows/ high and diurnal effects and goaf drainage. It also details that IOM Brennan was informed of controls the mine had introduced to reduce exceedances, including a bi-di cutting sequence whereby the shearer's movements are slowed or stopped based on methane levels recorded on the inbye tailgate sensor, that a lateral gas drainage hole located at 1760 was due to come online and the gas drainage capacity was currently at 10,000 litres per second.
28. IOM Brennan's inspection coincided with the first methane exceedance during the relevant period and he was in fact at the mine when the exceedance occurred. The inspection carried out by IOM Brennan was a planned inspection, organised in response to a series of seven exceedances which occurred at Grosvenor in June 2019.
29. During the opening meeting, IOM Brennan was informed by the Executive Head of Underground Operations, Glen Britton, that substantial funding had been budgeted for gas drainage.<sup>9</sup>
30. While underground at the longwall, IOM Brennan observed a number of ventilation control devices, such as butcher flaps and venturi air coolers in place to reduce methane

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<sup>8</sup> RSH.002.138.0001

<sup>9</sup> RSH.002.138.0001

- levels in the rear walkways. There was also a temporary flushing shield in place on shield #149.
31. During his inspection, I am aware IOM Brennan suggested measures the mine should consider to manage their gas, including:
- (a) Performing a ventilation change, changing the bleeder roadways from intake to return, in an attempt to reduce methane levels entering the face; and
  - (b) Cutting in uni-di instead of in bi-di.
32. The particular conditions present at each mine must be accounted for by the mine, and it is the mine's responsibility to assess and implement appropriate strategies. However, given the knowledge base of the Inspectorate, and as occurred on this occasion, the Inspectors do, at times, suggest measures the mine should consider to manage issues such as gas.
33. Following IOM Brennan's inspection, Grosvenor mine voluntarily ceased longwall operation for 36 hours, during which time:
- (a) An Investigation Management Team (*IMT*) was formed by the mine,<sup>10</sup> the minutes from which disclose that they made both short and long term plans to manage methane ventilation and post-drainage and ultimately resolved to take action by:
    - (i) Making a significant ventilation change in the way suggested by IOM Brennan, which they planned to implement on 16 July 2019;<sup>11</sup> and
    - (ii) Increased gas drainage generally, and specifically by drilling another goaf gas drainage hole in the short term on longwall 103.<sup>12</sup>
34. The ventilation change occurred on 15 July 2019, one day earlier than originally planned.
35. Between IOM Brennan's inspection and the mine's ventilation change on 15 July 2019 there were five methane exceedances (inclusive)<sup>13</sup>, the last of which was directly related to the ventilation change occurring at the time, and happened whilst there were no coal mine workers underground (a precaution taken whilst the mine made the change).
36. Ventilation changes are not a simple exercise. They require careful planning and the performance of calculations in order to determine whether there is sufficient ventilation

<sup>10</sup> See RSH.002.095.0001

<sup>11</sup> See RSH.001.002.0304

<sup>12</sup> See RSH.001.002.0304. See further at [3839].

<sup>13</sup> HPI#1 to HPI#5

volume for the change to be made and how it can be implemented in a way that is most likely to be successful.

37. The IMT developed:
- (a) a short term ventilation strategy which included the modelling, planning and execution of the ventilation change to put the bleeder road on return;<sup>14</sup>
  - (b) a long term ventilation strategy which included commissioning an additional shaft to exhaust for longwall 104 start-up;<sup>15</sup>
  - (c) a short-term goaf drainage strategy to review their core samples and add an additional goaf hole at chainage 1690;<sup>16</sup>
  - (d) a long term goaf drainage strategy, including identifying potential goaf gas sources and areas for longwall 104, completing a review of the SGE model against actuals, and increasing specific gas emission (**SGE**) resolution to identify areas with predicted higher goaf gas.<sup>17</sup>
38. Importantly, the five exceedances in late July 2019 occurred in the context of the IMT already having formed a plan to significantly increase goaf gas drainage over the longer-term, which the Inspectorate had been advised Anglo had budgeted for, and there was a plan to add the additional goaf drainage hole at chainage 1690 in the short-term.
39. After July 2019, there was a significant and sustained reduction in exceedances (3 in 5 months) over the remaining life of longwall 103. The exceedances involved a goaf fall<sup>18</sup>, equipment movement near the tailgate<sup>19</sup> and a floor blower respectively<sup>20</sup>. The cause of each was identified by the mine and importantly went unrepeated in the life of longwall 103.
40. During this period, on 6 August 2019, IOM Paul Brown attended Grosvenor mine to participate in a safety reset meeting.
41. I am aware from a review of IOM Brown's MRE<sup>21</sup> that following the safety reset meeting IOM Brown attended the Technical Services Department to receive an update on gas drainage activities as part of the follow up for methane exceedances on the longwall,

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<sup>14</sup> RSH.002.095.0001

<sup>15</sup> RSH.002.095.0001

<sup>16</sup> RSH.002.095.0001

<sup>17</sup> RSH.002.095.0001

<sup>18</sup> HPI#11 on 17 August 2019

<sup>19</sup> HPI# 12 on 19 October 2019

<sup>20</sup> HPI#13 on 7 November 2019

<sup>21</sup> RSH.002.141.0001

also including some incidents involving methane discharging from the floor in development.

42. The MRE reveals that IOM Brown was satisfied that plans were progressing to improve the gas drainage system in a staged and controlled manner. It further reveals that IOM Brown discussed the fine balance between reducing or eliminating methane exceedances and not creating another hazard involving spontaneous combustion.
43. Following the proactive steps of the Inspectorate in suggesting ventilation changes (and in turn the mine standing down longwall production for 36 hours and forming an IMT to review gas ventilation and drainage), the mine informed the Inspectorate that they had made the suggested changes. Further, the mine detailed that they had both short and long term strategies to increase goaf drainage, resulting in the reduction in exceedances over the remaining life of longwall 103.
44. The actions of the Inspectorate in relation to each of the exceedances over this period were appropriate, and in all the circumstances no additional action beyond that which was taken was reasonably required on the information known to the Inspectorate.

2 and 3 July 2019 – HPI# 1 and HPI#2

45. The exceedance on 2 July 2019 occurred at 2.36pm, while IOM Keith Brennan was at the mine conducting an inspection in relation to gas exceedances. The exceedance on 3 July 2019 occurred at 5.03am.
46. I have reviewed the Form 1As<sup>22</sup> and Form 5As<sup>23</sup> for these two exceedances and the MRE dated 2 July 2019,<sup>24</sup> which IOM Brennan completed after his inspection. It is evident that IOM Brennan identified some issues with the ventilation system during his inspection, in that the bleeder road was bringing in up to 0.5% of methane onto the face before production had even started.
47. By way of brief explanation, IOM Brennan proposed a change to the ventilation system by putting the bleeder road on return, in the manner illustrated in the below diagram. This was designed to avoid the intake ventilation passing by the sealed goafs of the old longwalls, as well as the goaf of longwall 103, and collecting methane as it passed by them.

<sup>22</sup> AAMC.001.009.0255 (2 July 2019); AAMC.001.009.0257 (3 July 2019).

<sup>23</sup> AAMC.001.009.0336 (2 July 2019); AAMC.001.009.0340 (3 July 2019).

<sup>24</sup> RSH.002.137.0001.

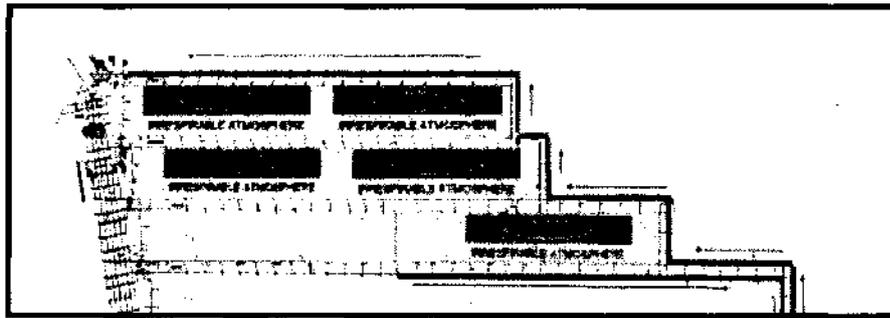


Figure 1: Extract from RSH.001.002.0310 at RSH.001.002.0312

48. In addition, it appears IOM Brennan discussed that the mine consider moving to uni-directional cutting.
49. It is clear from the Form 1As that for both exceedances the shearer was cutting from maingate to tailgate and was approaching the tailgate when an increase in CH<sub>4</sub> was observed at the inbye sensor. The outbye sensor eventually exceeded 2.5% on each occasion. Following the advice from IOM Brennan, the mine indicated they would stand the longwall down for 36 hours to develop a plan for gas management.
50. Based on the MRE of IOM Brennan, the actions the Underground Mine Manager (*UMM*) Wouter Niehaus had said would occur – that is a stand down and the creation of an IMT – did occur.
51. I have reviewed the IMT meeting minutes provided by the mine.<sup>25</sup> The longwall was stood down for 36 hours, and the IMT identified short and long-term steps that could be taken to manage gas, including placing the bleeder road on return.
52. In the Form 5A's for these two exceedances the mine has indicated that the gas make was greater than expected in excess of system capacity, and that less than adequate methane recovery / dilution has occurred. In my view, this is relevant to the issues Grosvenor was aware of relating to pre-drainage, which are identified above at paragraph [9], and the operational steps the mine need to take to manage those issues. On the basis of the information the Inspectorate had at the time, it was understood the mine was working to improve their goaf drainage capacity and that the IMT had resolved to take a number of actions to improve ventilation.
53. Given the circumstances of these exceedances, the content of IOM Brennan's inspection, the IMT minutes, and the email and oral communications between the mine and Inspectorate, I do not consider that a further response by the Inspectorate to these HPis was required at the time. This is because of the cause of the exceedances and the

<sup>25</sup> RSH.002.095.0001

Inspectorate was aware of the short and long-term steps the mine said they were taking to improve ventilation and goaf drainage.

11 July 2019 – HPI#3

54. I have reviewed the Form 1A<sup>26</sup> and Form 5A<sup>27</sup> for this exceedance which reveals that a floor blower contributed to elevated levels of gas (2.79% methane) at the longwall at 1:36am. The likely root cause of this is that the pre drainage work of the seam below may not have been sufficient. This is not something that can be quickly fixed once the longwall is operational. If this is the cause of the floor blowers, the mine will be required to manage the additional risks associated with insufficient pre-drainage as it continues to mine the seam. Suspending operations has the potential to introduce an increased risk of other principal hazards (for instance, spontaneous combustion and strata control issues), which must be balanced with the risk posed by the gas exceedance, and the prospect of reducing that risk by continuing to mine forward (i.e. mining past the floor blower). For a gas exceedance, the mine will have withdrawn coal mine workers until the methane level subsided. The protective systems have operated to shut down power to the face in each of the exceedances during the relevant period. The mine must investigate the incident, and consider how to prevent its recurrence.
55. The Form 1A reveals that the exceedance was reported to IOM Brennan via telephone at 7:44am.
56. At 8:20am, after the Inspectorate was notified of the HPI, the UMM sent an email to IOM Brennan, a copy of which I have seen.<sup>28</sup> The email detailed the drainage and ventilation strategy that the mine was in the process of implementing, including:
- (a) a forthcoming ventilation change to reduce methane intake levels by 0.3%;
  - (b) an expansion plan for gas drainage capabilities.
57. Importantly, I note that the methane concentrations registered on 2, 3, 11, 14 and 15 July 2019 would not have exceeded 2.5%, had the planned ventilation change suggested by IOM Brennan been able to be implemented immediately and in a way which achieved the expected reduction in methane.
58. In addition to identifying the issues with gas make and less than adequate methane dilution / recovery that are noted for the exceedances on 2 and 3 July 2019, the Form

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<sup>26</sup> AAMC.001.009.0259

<sup>27</sup> AAMC.001.009.0344

<sup>28</sup> RSH.001.002.0304

5A also notes that the pre-drainage program in lower seam(s) had been less than adequate. The preventative action states that the mine will identify areas of high-risk floor gas release and implement a plan for floor gas drainage to remediate future areas of concern. As noted at [9], a number of the Form 5As identify an issue with excess methane or less than adequate pre-drainage. As is explained at [43], on the information available to it, the Inspectorate understood short and long term plans had been developed to increase goaf drainage by the mine and were in the process of being implemented. The preventative action in the Form 5A is another operational measure the mine have identified that they can take to try and prevent reoccurrence of HPIs associated with floor blowers.

59. Given the circumstances of the exceedance and the action being taken by the mine following Inspector Brennan's inspection, I do not consider that a further response by the Inspectorate to the HPI was required at the time. This is because of the cause of the exceedance and the Inspectorate was aware of the short and long-term steps the mine said they were taking to improve ventilation and goaf drainage.

14 July 2019 – HPI#4

60. I have reviewed the Form 1A<sup>29</sup> and Form 5A<sup>30</sup> for this exceedance, which was taken by one of the Central region IOMs. It is very similar to the HPIs that occurred on 2 and 3 July. The shearer was cutting from maingate to the tailgate and was stopped at shield 82 when the inbye sensor reached 2.3%. Despite slowing and ultimately stopping the shearer as a precaution, the outbye sensor still reached 2.52% shortly afterwards.
61. It is clear from the exceedances in early July, the inspection undertaken by IOM Brennan on 2 July 2019 and the MRE of that date, that the mine was taking steps to change the ventilation system – which is one of the factors contributing to these exceedances.
62. There was ongoing interaction between the Inspectorate and the mine at this time, particularly between IOM Brennan and the UMM, to ensure the addressing of the issue as per the 2 July 2019 MRE and the ventilation change that was to occur.
63. As with some of the earlier Form 5As, the Form 5A for this HPI also notes that the mine intend to develop a plan to increase goaf gas drainage capacity for peak SGE areas of the mine. As is outlined at [37] and [43] above, on the information available to it, the

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<sup>29</sup> AAMC.001.009.0263

<sup>30</sup> AAMC.001.009.0352

Inspectorate understood that short and long term plans to increase goaf drainage had been developed and were in the process of being implemented.

64. Having regard to the circumstances of the exceedance, the action the mine said it was taking to improve ventilation following Inspector Brennan's inspection, and the mine's short and long term plans to increase goaf drainage, I do not consider that further action was required by the Inspectorate at that time.

15 July 2019 – HPI#5

65. I have reviewed the Form 1A<sup>31</sup> and Form 5A<sup>32</sup> for this exceedance and as identified above, this HPI related to the planned ventilation change that had been suggested by IOM Brennan in early July. Given the circumstances in which this exceedance occurred, further action by the Inspectorate was not required. It is relevant that at the time the ventilation change was made, the longwall was not in production and people had been removed from the areas expected to be affected by the change.
66. The Form 1A indicates that the methane concentration peaked at 2.71% on the outbye sensor. Included with the Form 1A were diagrams and graphs showing the successful reduction in intake methane levels on the longwall main gate sensors following the ventilation change. The email to which the Form 1A was attached also included a table showing the results of the ventilation change.<sup>33</sup>
67. The Form 1A shows that the mine identified that the ventilation change increased the quantity of air along the longwall face, as well as the differential pressure across the longwall face. The ventilation change had resulted in the goaf fringe being increased and pulled additional CH<sub>4</sub> out to the tailgate.
68. The Form 5A reveals that another issue identified by the mine was that the regulator, a device used to control ventilation flow, was opened over a duration of five minutes, rather than over a longer period, due to the Ventilation Officer's concerns about fatigue management. Rapid pressure changes are more dynamic than slower controlled pressure changes. This would have caused the change in ventilation flow to occur more quickly than planned, which likely resulted in the airflow picking up more methane, thus contributing to the exceedance.
69. As with some of the earlier Form 5As, this Form 5A notes that the mine intend to develop a plan to increase goaf gas drainage capacity for peak SGE areas of the mine. As is

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<sup>31</sup> AAMC.001.009.0266

<sup>32</sup> AAMC.001.009.0348

<sup>33</sup> RSH.001.002.0309

outlined at [37] and [43] above, on the information available to it at the time, the Inspectorate understood short and long term plans to increase goaf drainage had been developed and were in the process of being implemented. Similarly, short and long term plans to improve ventilation had also been developed. The ventilation change that occurred on this day was part of the implementation of that plan.

21 July 2019 – HPI#6

70. I have reviewed the Form 1A<sup>34</sup> and Form 5A<sup>35</sup> for this exceedance and it is apparent that the mine considered the fact the barometer was falling contributed to this exceedance.
71. The control room noticed the tailgate gas levels rising, so the mine stopped production and parked the shearer at the main gate, which is a favourable position in terms of ventilation across the face. Despite these measures, the gas levels continued to rise and peaked at 2.51% at the outbye sensor. The inbye sensor did not register an exceedance. In my view, this may explain why the mine considered the low barometer pressure caused additional gas to exit the goaf.
72. Issues like this are operational events that the Act and Regulations require the mine to manage. In the Form 5A for this exceedance, and for others, the mine has indicated it has a goaf drainage capacity issue at Grosvenor which it is working to address. As is outlined at [37] and [43] above, the Inspectorate had been notified of the short and long term steps the mine was taking to increase goaf drainage capacity. Given the circumstances of this exceedance, and the steps the mine had taken to improve ventilation, and said they were taking to improve goaf drainage, I do not consider that further response by the Inspectorate to this HPI was required at the time.

22 July 2019 – HPI#7

73. I have reviewed the Form 1A<sup>36</sup> and Form 5A<sup>37</sup> for this exceedance and they indicate that a goaf fall has come forward beside the tailgate shields, which normally forms a break off point for the roof. The inbye sensor registered a peak methane concentration of 2.85% and the outbye sensor registered 2.89%.
74. Typically, in a longwall the operator wants that part of the roof between the shield and pillar to stay with the longwall as it moves forward. It is preferable for the goaf to fall in right behind the shields, because that avoids the issues associated with the roof

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<sup>34</sup> AAMC.001.009.0269

<sup>35</sup> AAMC.001.009.0356

<sup>36</sup> AAMC.001.009.0769

<sup>37</sup> AAMC.001.009.0360

standing up and a cavity forming which may fill with gas. However, if the goaf flushes in beside or past the tailgate shields, it can interfere with the airflow and cause gas management issues.

75. The Form 5A reveals that the mine considered the flushing event caused a temporary restriction in the longwall ventilation circuit.
76. In circumstances like this, where the goaf has flushed in beside the tailgate shields, ordinarily the best thing to do after the exceedance has cleared will be to mine forward and advance the shields past the obstruction in order to re-establish full ventilation flow. In my view no further response by the Inspectorate, on the information known to it, was required.
77. As with earlier Form 5As, this Form 5A notes that the mine intend to develop a plan to increase goaf gas drainage capacity for peak SGE areas of the mine. As is outlined at [37] and [43] above, on the information available to it, the Inspectorate understood that short and long term plans to increase goaf drainage had been developed and were in the process of being implemented. Given the circumstances of this exceedance, and the steps the mine had taken to improve ventilation, and said they were taking to improve goaf drainage, I do not consider that further response by the Inspectorate to this HPI was required at the time.

23 July 2019 – HPI#8

78. I have reviewed the Form 1A<sup>38</sup> and Form 5A<sup>39</sup> for this exceedance. There is reference to a cavity forming on the longwall face from roof support #44 to #27 that resulted in rock rilling in over the face. The Form 1A notes that it has introduced an increase in resistance to airflow that has allowed for gas to be scoured from the goaf behind the shields and carried across the face. The outbye sensor registered a peak methane concentration of 2.71% and the inbye sensor registered 2.55%.
79. The longwall was not operational and on planned maintenance for six hours prior to resuming production in uni-di (rather than bi-di) to reduce the impact of gas production when the shearer is cutting towards the tailgate (as had been suggested by IOM Brennan on 2 July 2019). This exceedance occurred only shortly after the mine had resumed production, however notes taken by IOM Paul Brown in Lotus Notes<sup>40</sup> indicate that he was informed the barometer was low at the time.

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<sup>38</sup> AAMC.001.009.0273

<sup>39</sup> AAMC.001.009.0372

<sup>40</sup> RSH.002.116.0001

80. An exceedance shortly after resuming production following a long break may be unexpected because no new methane has been released from coal being cut and the ventilation should have been relatively stable. In this case the exceedance is explained by the rock rilling in over the face restricting ventilation.
81. In circumstances like this where a longwall face roof cavity has developed, ordinarily the best thing to do after the exceedance has cleared will be to mine forward and advance the shields in order to re-establish uninterrupted ventilation flow.
82. The Form 1A reveals that at the time of this exceedance the gas drainage system was operating at peak capacity with all goaf drainage holes producing methane as planned. The mine has indicated in its Form 1A that it will be undertaking additional exploration and gas reservoir modelling to better understand the current gas make.
83. The Lotus Notes Incident Notification<sup>41</sup> reveals that the UMM spoke to IOM Brown about the potential influence of lower seams on the goaf and indicated that long-term, more drainage plant was required. The notes record that IOM Brown enquired about whether the mine had experienced an improvement by producing in uni-di (instead of bi-di) and the UMM indicated it had.
84. In my view no further action was required by the Inspectorate in relation to this exceedance in circumstances where:
- (a) The mine was implementing short and long-term goaf drainage strategies (detailed in IMT minutes);
  - (b) The Form 1A revealed that the mine understood the cause of the exceedance and was aware of the underlying gas drainage deficiency, and had identified that additional exploration and modelling was required; and
  - (c) The notes taken by IOM Brown and the Form 1A reveal the mine was undertaking ongoing exploration in order to better understand the impact of other potential gas reservoirs on goaf gas drainage and to improve the drainage capacity.<sup>42</sup>
85. As with earlier Form 5As, this Form 5A notes that the mine intend to develop a plan to increase goaf gas drainage capacity for peak SGE areas of the mine. As is outlined at [37] and [43] above, on the information available to it, the Inspectorate understood that

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<sup>41</sup> RSH.002.116.0001

<sup>42</sup> RSH.002.116.0001; AAMC.001.009.0273

short and long term plans to increase goaf drainage had been developed and were in the process of being implemented.

24 July 2019 x 2 HPIs – HPI#9 and HPI#10

86. I have reviewed the Form 1As<sup>43</sup> and Form 5As<sup>44</sup> for these exceedances and it appears they are very similar to those which occurred on 22 and 23 July 2019, when the goaf flushed in at the tailgate shield, and where a cavity formed in the roof.
87. On both occasions on 24 July 2019, while dealing with a cavity, the shearer has retreated from the tailgate to allow the tailgate shields to be advanced. This has resulted in a goaf fall and flush of methane from the goaf.
88. The first exceedance occurred at 12:15pm and registered a peak methane concentration of 3.39% at the inbye sensor and 3.12% on the outbye sensor. At the time of the exceedance the shearer had been parked for over ten minutes when the goaf fall occurred causing a sudden release of methane into the tailgate roadway.
89. The second exceedance occurred around an hour and half after the first, lasted just 55 seconds, and registered a peak methane concentration of 2.7% on the inbye sensor, and 2.56% outbye. Like the first exceedance, the shearer had stopped producing more than ten minutes before the exceedance, and a goaf fall associated with the same cavity occurred releasing the methane that caused the exceedance.
90. The indication that these are operational events, most likely brought about due to the geological conditions surrounding the longwall, is supported by the fact there are no further exceedances for almost a month.
91. The broad options when negotiating a cavity are to mine through it or to implement strata support. These are operational decisions for the mine. As the protections systems were working, and the mine was aware of the cause of the exceedance, I do not consider further action was required by the Inspectorate at this time, on the basis of information known to it, in response to either exceedance.
92. The Form 5As for both exceedances note that the mine intends to develop a plan to increase goaf gas drainage capacity for peak SGE areas of the mine. As is outlined at [37] and [43] above, on the information available to it, the Inspectorate understood that

<sup>43</sup> AAMC.009.009.0275 (HPI#1); AAMC.009.009.0277 (HPI#2)

<sup>44</sup> AAMC.009.009.0364 (HPI#1); AAMC.009.009.0368 (HPI#2)

short and long term plans to increase goaf drainage had been developed and were in the process of being implemented.

17 August 2019 – HPI#11

93. I have reviewed the Form 1A<sup>45</sup> and Form 5A<sup>46</sup> for this exceedance and it is the first exceedance where the tailgate drive sensor tripped, and the mine were unable to find an obvious cause at first instance. A review of the Form 5A confirms that once the mine investigated they spoke to a coal mine worker who heard a goaf fall, and could therefore confirm that to be the most likely cause of the exceedance.
94. This exceedance registered on the inbye sensor at a peak methane level of 2.79%. An exceedance was not recorded on the outbye sensor. Methane levels were measured at over 2.5% on the inbye sensor for approximately two minutes. The short duration and relatively low level of the exceedance tended to confirm the mine's conclusion about the likely cause being a goaf fall.
95. This exceedance is in the meeting minutes dated 19 August 2019, which would indicate it was spoken about at the weekly meeting.
96. A review of the Form 5A indicates a number of actions the mine were taking in relation to goaf drainage, including the purchase of additional gas monitoring skids and blower skids, and additional reticulation lines if required by the modelling to accommodate additional gas drainage capacity.<sup>47</sup> The purchase of the gas monitoring skids and blower skids appears to align with the long term goaf strategy identified by the IMT to purchase and install blowers.<sup>48</sup> Given the cause of the exceedance and the actions the mine said they were taking, I do not consider further action was required by the Inspectorate at this time, on the basis of information known to it, in response to the exceedance.

19 October 2019 – HPI#12

97. I have reviewed the Form 1A<sup>49</sup> and Form 5A<sup>50</sup> for this exceedance. It seems the mine considered that they needed to look at the limits they had set on the monitor outbye to direct the shearer to stop and/or move away from the tailgate.

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<sup>45</sup> AAMC.009.009.0279

<sup>46</sup> AAMC.009.009.0376

<sup>47</sup> AAMC.001.009.0380

<sup>48</sup> RSH.002.095.0001 at page 0004

<sup>49</sup> AAMC.009.009.0281

<sup>50</sup> AAMC.009.009.0380

98. The inbye sensor registered a peak methane concentration of 2.67% and remained above 2.5% for 90 seconds. The outbye sensor peaked at 2.62% and remained above 2.5% for just under two minutes.
99. It seems the shearer control systems had not reacted fast enough to stop the shearer at the programmed point and prevent the methane concentration exceeding the notifiable limit.
100. The Form 5A reveals that the exceedance occurred at the barometric low for the day, which was the lowest barometric pressure recorded in the preceding thirteen weeks. My understanding of the proposed preventative action is that the mine intended to reduce the point at which the shearer stopped from 1.9% to 1.6% until a review of the barometric pressure influence on the tailgate gas make had been performed.
101. Having regard to the influence of the barometer on the exceedance, and the mine's indication it was reviewing the influence of barometric pressure influence on tailgate gas, combined with the reduction in the ceiling settings for the shearer whilst the review was being undertaken, I do not consider any further response by the Inspectorate was required at the time.
102. As is outlined above at [11], reducing the shearer set levels to modify production levels is one operational choice the mine can make to reduce risk when they are dealing with difficult gas conditions.

7 November 2019 – HPI#13

103. I have reviewed the Form 1A<sup>51</sup> and Form 5A<sup>52</sup> for this HPI and it reveals that the mine considered the gas came up from the floor in this instance and led to a methane exceedance which tripped the power. This is similar to the HPI which occurred on 11 July 2019.
104. The outbye sensor registered a peak methane concentration of 2.73%. The tailgate drive sensor tripped the power. There was 236m remaining of longwall 103. This is a relatively infrequent floor blower occurrence for longwall 103, which registered only one other exceedance where a floor blower was the cause in the relevant period.
105. The Form 5A indicates that the mine recognised the pre-drainage program in the lower seam beneath longwall 103 had not prevented these exceedances and a trial of GML

<sup>51</sup> AAMC.009.009.0283

<sup>52</sup> AAMC.009.009.0384

holes was underway in relation to longwall 105 to target the immediate gas reservoir in the floor.

106. In circumstances where the mine was communicating that it was aware of the source of the methane and had identified steps it was proposing to address the issue, in my view there was no requirement for additional action by the Inspectorate at the time.

### **Longwall 104 generally**

107. I believe Longwall 104 started at Grosvenor Mine on 9 March 2020. All of the HPIs in 2020 at Grosvenor related to longwall 104.
108. As part of the Inspectorate's continued interaction with the mine, an inspection occurred on 15 October 2019.<sup>53</sup>
109. At that inspection, IOMs Malcolm Brownnett and Geoff Nugent spoke to the mine about their gas management. The mine identified that panels beyond longwall 104 had high insitu gas content. An underground inseam gas drainage programme had commenced to achieve effective gas management. In relation to longwall 104, the mine recognised that gas management treatment had not been developed and implemented at the time of longwall 104's development, and as a result, gas emission hazards were expected to be encountered.<sup>54</sup> The mine informed the Inspectorate that risk based controls would be proactively applied for effective gas management in order to manage those hazards and ensure an acceptable level of risk was achieved. This MRE indicates that the mine was aware they would need to manage methane carefully in longwall 104.

### **Longwall 104 exceedances**

110. There were a total of fourteen exceedances on longwall 104 during the relevant period reported to the Inspectorate.
111. All of the exceedances on longwall 104 occurred early in the life of the longwall when the goaf was relatively small and therefore more likely to be impacted by issues such as equipment failure.
112. A number of the exceedances can be grouped with other exceedances that shared some similar features, for example:

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<sup>53</sup> RSH.002.145.0001

<sup>54</sup> RSH.002.145.0001

- (a) Five of the exceedances related to issues with the goaf skids, including equipment failures or ancillary issues associated with the repair of the goaf skids.<sup>55</sup>
  - (b) Three of the exceedances related to a disturbance to the ventilation system,<sup>56</sup> possibly caused by a goaf fall;
  - (c) Five were registered on the canopy sensor only<sup>57</sup> (including four in a twenty-four hour period).
113. A more detailed overview of those exceedances is set out above at [14] and I consider the features of each exceedance in more detail below.
114. As I have set out above at [9] and elsewhere, the mine had identified limitations with their pre-drainage program and was aware these limitations were a contributing factor to a number of the exceedances on longwall 103 and 104. The identification of this issue required the mine to take steps to manage the risks associated with insufficient pre-drainage. The content of the Form 1As and 5As generally indicates that the mine was aware of this requirement.
115. Further, the communications the mine had with the inspectorate throughout the life of longwall 103 had confirmed that the mine had short and long term plans in place to improve ventilation and post drainage, given the issues with pre-drainage.

18 and 19 March 2020 – HPI#14 and HPI#15

116. I have reviewed the Form 1As<sup>58</sup> and Form 5As<sup>59</sup> for these exceedances and it reveals that:
- (a) The first exceedance (HPI#14) occurred on 18 March 2020 at 9.33pm. A peak methane concentration of 2.56% was registered on the inbye sensor. The exceedance lasted two minutes before the methane concentration fell back below 2.5%.
  - (b) The second exceedance occurred at 6.50am on 19 March 2020 (HPI#15). A peak methane concentration of 3.01% was registered on the inbye sensor. The exceedance lasted forty-three minutes.

<sup>55</sup> HPI#15 on 19 March 2020, HPIs #16, #17 and #18 on 20 March 2020

<sup>56</sup> HPI #20 on 23 March 2020, HPI #22 on 6 April 2020 and HPI #23 on 7 April 2020

<sup>57</sup> HPI#21 on 4 April 2020, and HPIs #24, #25, #26, #27 on 21 April 2020

<sup>58</sup> AAMC.009.009.0288 (18 March 2020); AAMC.009.009.0290 (19 March 2020)

<sup>59</sup> AAMC.009.009.0388 (18 March 2020); AAMC.009.009.0392 (19 March 2020)

- (c) Both exceedances were reported to IOM Malcolm Brownnett, who attended Grosvenor for a planned inspection on 19 March 2020.
117. Upon a review of the MRE for IOM Brownnett's inspection,<sup>60</sup> it does not appear the inspection was planned specifically in relation to gas, but rather was a general inspection.
118. These two exceedances, the inspection, and the ongoing interaction between Grosvenor and the Inspectorate afterwards, resulted in a focus by the Inspectorate on the location of the section 243A sensor at Grosvenor Mine (and indeed, at some of the other Anglo mines). This eventually led to me issuing a directive and this is outlined in further detail below.
119. For the first exceedance on 18 March the explanation of the mine was that the ventilation had scoured the goaf and pulled some gas out from behind shields while the shearer was in the tailgate.
120. The explanation for the second exceedance was that while double chocking the shields to carry out maintenance on the longwall, an exceedance had occurred. The shearer had been stopped for 175 minutes beforehand. Double chocking is a process that is often carried out where there are concerns with strata control. It involves pulling the shield up close to the AFC, and bringing the canopy tip of the shields almost up against the face. This provides additional support to the roof. However, if you only double chock at one location in the wall you can affect the airflow by changing the resistance across the face of the longwall. While this may have contributed, the Form 1A noted that a goaf skid had an issue with blockages in its filters which reduced its extraction flow rate and contributed to the exceedance. The Form 1A identified that a dual skid would be set up to allow cleaning of the filters without reducing the goaf gas extraction capacity.
121. The Form 5A notes that P seam gas drainage was not completed to the proposed strategy to allow longwall 104 unconstrained production from gas delays, and that numerous delays with lateral hole drilling had been experienced when drilling through fault planes.
122. This indicates the mine has identified that the gas load on longwall 104 will be greater than was originally planned had the P seam strategy been completed. In those circumstances, the mine cannot produce unconstrained and needs to look at their operational decisions when operating the longwall, for the reasons identified at [9]-[11]

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<sup>60</sup> RSH.002.163.0001

above. That is, the mine need to consider how fast they are cutting coal, whether their shearer settings are appropriate, and whether they cut in bi-di or uni-di. These are the types of actions the mine must manage to ensure they don't release too much methane out the tailgate, given they have a higher gas load than was originally planned.

123. The Form 5A also notes that the P seam drainage strategy for each longwall block is to be designed and completed prior to the longwall production phase. This appears to be a recognition by the mine that one of the controls they need to implement for future longwall blocks is to ensure that this strategy is completed.
124. Based on the information known to the Inspectorate at the time, I do not consider that any further action was required by the Inspectorate in relation to these exceedances.

20 March 2020 – 3 x HPIs – HPI# 16, HPI#17, HPI#18

125. There were three HPIs reported on 20 March 2020. I have reviewed the Form 1As<sup>61</sup> and Form 5As<sup>62</sup> for these exceedances and it reveals that two of these were reported to IOM Paul Brown and one was reported personally to me. Each was about issues with the goaf skids, either the flame arrestors, filters or a cylinder losing pressure – and were therefore similar to the exceedance reported on 19 March 2020 to IOM Brownett.
126. The Form 1A provides that the first exceedance occurred at 2.20am and the second just over an hour later at 3.30am. They were both reported to IOM Brown. The Form 1A reveals that for the first exceedance they had stopped production to clean the flame arrestor on the goaf skid. During this process the goaf gas extraction was reduced, and they had a spike in methane. Production had been stopped for half an hour before that point in time.
127. At 3.30am the shearer was at 133 shield position and the crew could see the gas was rising, so they stopped the shearer before the exceedance occurred.
128. The third exceedance occurred at 2.36pm on 20 March 2020 and Mr Niehaus called me at 4.43pm. The outbye sensor had recorded a peak of 2.55%. The shearer had been stopped for 53 minutes prior to the exceedance. Mr Niehaus informed me during this phone call that the goaf drainage sled had shut down. The reason for this was because the carbon dioxide cylinder on the goaf sled had lost pressure. This cylinder is part of the protection system on the goaf sled required to keep the system operating. The loss

<sup>61</sup> AAMC.009.009.0294 (HPI#1); AAMC.009.009.0297 (HPI#2); AAMC.009.009.0300 (HPI#3)

<sup>62</sup> AAMC.009.009.0404 (HPI#1); AAMC.009.009.0408 (HPI#2); AAMC.009.009.0412 (HPI#3)

of pressure in the cylinder led to the goaf hole being shut off and the methane has been released from the goaf out via the tailgate.

129. In this situation, where the goaf sled stopped operating because a portion of the goaf sled system had failed, there was potentially a maintenance issue with the carbon dioxide cylinder. The mine seemed to know why the gas exceedance had occurred, and how to fix it.
130. During my discussion with Mr Niehaus he informed me that he had reported two exceedances to IOM Brown in the morning and he explained that they were also about the goaf sled system. He told me those exceedances were related to the cleaning of the flame arrestors. In circumstances where I was made aware of recent similar exceedances being reported to another IOM, my normal practice would be to examine those exceedances in Lotus Notes.
131. While the issues were slightly different, it was apparent to me that they were all related to the goaf sled drainage system and that the mine had indicated it knew what the problem was and were taking corrective action to resolve it. As the Form 5A reveals, they had determined that putting in a second goaf sled would allow them, in the future, to operate one goaf sled while carrying out maintenance on the other sled.
132. All three of the Form 1As detail that the mine has stopped production before the exceedances occurred which indicate the mine is using operational measures to manage methane. The mine have several devices designed to stop them running the shearer into the tailgate when there is an excess of gas in there, which is a strong safety mechanism. For example, the mine has progressively lowered the settings, and the location, at which the shearer will be slowed or stopped.
133. In my view, on the basis of what was known by the Inspectorate, no further action by the Inspectorate in relation to the exceedances on 18, 19 and 20 March 2020 was required.
134. Following the exceedances on 18 and 19 March, but prior to me taking the third exceedance, I participated in a telephone meeting with the UMM for Grosvenor on the morning of 20 March 2020. I do not recall everything that was discussed at this meeting, but as a result I engaged in an ongoing dialogue with the mine about methane sensors detailed from [177].

22 March 2020 – HPI# 19

135. On 22 March 2020 at 6.15pm I received another phone call about a HPI that had occurred at 10.22am in the morning. I have reviewed the Form 1A<sup>63</sup> and Form 5A<sup>64</sup> for this exceedance. It was also related to the goaf sled system. I was informed by Mr Niehaus that the sled had been tripped while carrying out maintenance, which had shut the hole and led to the gas exceedance.
136. A worker was calibrating an oxygen sensor. The sensor ordinarily trips when it registers an oxygen concentration of 8%, but for the purposes of allowing the skid to continue operating during the maintenance, the trip point was set to 12%. Despite the implementation of this control it did not work as intended and still tripped at 8% with the effect that the goaf hole closed, leading to the exceedance. Despite their efforts to fix the issue quickly, it took several attempts to get the sled back in full operation.
137. From my conversations with Mr Niehaus, the mine appeared to know what had caused the gas exceedance, it was a maintenance issue, and they had previously indicated to me that they were planning to install a second sled to allow goaf drainage to continue during sled maintenance work.
138. I did not consider that any immediate response by the Inspectorate was required.
139. I consider it relevant that the mine only had three goaf sleds running over this period because of how early it was in the longwall, and the one they were having continual issues with was the goaf sled that had been running at the highest volume. I was aware of this information at the time of taking these notifications. I do not consider further action was required by the Inspectorate in all the circumstances given the information that was known to the Inspectorate.

23 March 2020 – HPI#20

140. The final HPI that I personally received occurred on 23 March 2020 at 6.28am. In the phone call Mr Niehaus told me that there had been an exceedance, the goaf hole hadn't failed but the mine had experienced a pressure change which kept the drainage restricted and over-pressurised the goaf. The shearer had been stopped for 53 minutes prior to the exceedance.<sup>65</sup> It was again considered to be related to the goaf drainage sled. The Form 1A confirmed that a restriction in the detonation arrestor reduced the goaf hole flow rate back and limited how much gas was being extracted from the goaf.

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<sup>63</sup> AAMC.009.009.0304

<sup>64</sup> AAMC.009.009.0396

<sup>65</sup> RSH.002.104.0001

This resulted in more gas going out the tailgate. The protection systems in the mine worked as the longwall operation had stopped before the exceedance occurred.

141. The Form 1A<sup>66</sup> included all the actions that were taken, which included turning the goaf hole off and cleaning the detonation arrestor. The Form 1A also contained the pressure graphs indicating what occurred. At that time, I did not consider that further action by the Inspectorate was required.
142. The Form 5A<sup>67</sup>, which I received about a month later, revealed that the failure was not related to the goaf sled, but rather may have been influenced by a loss of ventilation related to some ventilation doors that had partially opened following a goaf fall.
143. In the Form 5A the mine had identified what they believed had actually happened – despite the reasonable original assumption that the exceedance was related to continued issues with the goaf sled. This indicated they had carried out an inspection. The Form 5A identified actions that needed to be carried out, including documenting the IMT process and ensuring adequate drainage for each longwall block. Upon review of the Form 5A, I did not consider that further action by the Inspectorate was required.

4 April 2020 – HPI#21

144. I have reviewed the Form 1A<sup>68</sup> and Form 5A<sup>69</sup> for this gas exceedance and they outline that the shearer was cutting to the maingate when it lost power after the canopy sensor shut down following the goaf stream entering the longwall area.
145. This is the first example of an occasion where power was lost following an exceedance at the canopy sensor (2.97%), but where neither of the two prescribed monitors, the outbye monitor (1.87%) or the inbye monitor (1.34%), had measured an exceedance. Furthermore, the tailgate drive and shearer sensors were both below 1% methane concentration. This combination of readings may indicate layering of the gas near the canopy sensor, or it may be influenced by the proximity of the canopy sensor to the goaf stream.
146. The shearer was not near the tailgate but it seems that the shields had been brought in and as a result the goaf has likely been brought closer to the face, creating some

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<sup>66</sup> AAMC.009.009.0310

<sup>67</sup> AAMC.009.009.0400

<sup>68</sup> AAMC.009.009.0310

<sup>69</sup> AAMC.009.009.0424

resistance and bringing some of the goaf stream gas across the canopy with the main ventilation.

147. The Form 1A outlines that hurdles were put in place to dilute the gas by increasing the speed of the air up higher in the roadway. This is one way to manage the airflow and goaf stream within the longwall tailgate area.
148. At this stage I was already getting information from the mine in relation to which sensor was being used for what purpose. As outlined above, I had commenced communications with Mr Niehaus in advance of this date and there was ongoing interaction between the Inspectorate and the mine. This eventually resulted in the issuing of a directive.
149. This Form 5A also notes that the gas make is greater than expected in excess of system capacity. This does not mean there is nothing the mine can do to manage methane, but rather that they are not doing enough to manage it. In this instance, it appears the mine's operational controls have not worked and they need to examine them. As is outlined at [9], where the mine is aware that their pre-drainage hasn't been sufficient and there will be a higher gas load on the longwall, they have to ensure operational controls are used effectively.
150. The Form 5A also refers to "No Longwall Ventilation Set Up Work Order for the new sensor installation location." I read this to mean that despite the sensor being installed, there has not been a work order in relation to that installation included in the mine's safety and health management system.
151. I did not consider any additional actions by the Inspectorate, beyond those I was already undertaking, were required at the time. Further exceedances were registered on the canopy sensor on 21 April 2020, which I deal with from [161] below.

6 and 7 April 2020 – HPI#22 and HPI#23

152. I have reviewed the Form 1As<sup>70</sup> and Form 5As<sup>71</sup> for these gas exceedances. The Form 1As reveals that these exceedances were reported to IOM Brennan at the same time at 4.36pm on 7 April 2020.
153. The first exceedance refers to issues with the movement of brattice stoppings, which may have been caused by a goaf fall, and the need to use pogo sticks to secure them. The peak methane concentration was 2.56%, registered on the outbye sensor. In addition, the shearer was cutting towards the tailgate as the methane was increasing

<sup>70</sup> AAMC.009.009.0319 (6 April 2020); AAMC.009.009.0315 (7 April 2020)

<sup>71</sup> AAMC.009.009.0416 (6 April 2020); AAMC.009.009.0420 (7 April 2020)

and stopped by automation when the inbye tailgate sensor registered 1.8% methane concentration. The outbye monitor had shown slightly higher readings than the inbye monitor.

154. The Form 1A reveals that the mine immediately took steps to rectify the issue with the brattice stoppings. The ventilation officer and UMM gave instructions to install pogos on the inbye side of the stoppings to prevent influence from suck back after a goaf event.
155. The 7 April 2020 exceedance lasted for six minutes and peaked at 2.52% methane concentration on the outbye sensor. The inbye sensor did not register an exceedance. This indicates that the methane has not been drawn out from the tailgate (which would cause an exceedance at the inbye sensor), but rather has travelled via C Heading, bypassing the inbye sensor, and resulting in an exceedance outbye.
156. The Form 1A reveals the location of the exceedance as having been identified at the tailgate return roadway 3-4 cut through B heading, the location of the outbye sensor. As was the case with the exceedance on 6 April 2020, the additional methane likely came from inbye C heading roadway. IOM Brennan's note in Lotus Notes<sup>72</sup> reveals that the UMM told him the barometric pressure was low. If the stoppings are not adequate, the barometric low may allow methane to bleed into C heading.
157. It seems to me having now reviewed the material in relation to both of these exceedances, that there is a similar pattern of the methane registering an exceedance on the outbye sensor on B heading, but not registering an exceedance on the inbye sensor on B heading. This indicates to me that the methane has come from the goaf and travelled down the C heading roadway, bypassing the B heading inbye sensor, before rejoining the B heading roadway and registering an exceedance at the outbye sensor.
158. It is possible the goaf fall which disturbed the brattice stoppings on 6 April 2020, and the resultant remedial action, has not prevented the methane from leaking out during the barometric low on 7 April 2020. This mechanism does not appear to have been repeated during the relevant period.
159. The Form 5As for these two exceedances note that there has been less than adequate methane pre-drainage, recovery or dilution and less than adequate use of ventilation control devices to prevent goaf gases from entering C Heading. As is outlined above, the Inspectorate was aware, on the information available to it, that the mine was working

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<sup>72</sup> RSH.002.132.0001

to manage the issues associated with their pre-drainage and less than adequate dilution of methane.

160. I do not consider that the way the mine had chosen to manage the risk in this situation required any intervention by the Inspectorate at the time. The mine had identified that that the use of ventilation control devices to prevent goaf gases from entering C heading was less than adequate, and had decided to take action to bolster their integrity as outlined in paragraph [154] above.

21 April 2020 – 4 x HPis – HPI#24, HPI#25, HPI#26, HPI#27

161. I have reviewed the Form 1As<sup>73</sup> and 5As<sup>74</sup> for these four exceedances, all of which were registered on the canopy sensor. The first two exceedances occurred in the early hours of the morning on 21 April 2020 and verbal reports were made to Keith Brennan at 1.04pm. The next two exceedances occurred at 1.06pm and 11.06pm on 21 April 2020. Separate verbal reports were made to IOM Brennan for each of these exceedances.
162. On each of these four occasions the canopy sensor measured an exceedance above 2.5% but the inbye and outbye monitors in the tailgate remained well below 2%. The peak sensor readings were as follows:

Exceedance	Canopy Sensor	Duration <sup>75</sup>	Inbye Sensor	Outbye Sensor
12:58am	3.08%	9 minutes	1.48%	1.49%
1:54am	2.55%	<1 minute	1.66%	1.49%
1:06pm	2.66%	<1 minute	1.6%	1.42%
11:06pm	5.04%	10 minutes	1.47%	1.38%

163. On each occasion the electrical protection systems operated and the electrical ignition sources have been cut off when the sensor at the canopy shield exceeded 2%.
164. The Form 1A for the first exceedance at 12:58am notes that the goaf was hanging up in the tailgate roadway 20-25 metres and sitting back 5 metres from the shields. The importance of the goaf hanging back is that this creates space behind the shields for

<sup>73</sup> AAMC.009.009.0327 (HPI#1); AAMC.009.009.0325 (HPI#2); AAMC.009.009.0323 (HPI#3); AAMC.009.009.0329 (HPI#4)

<sup>74</sup> AAMC.009.009.0428 (HPI#1); AAMC.009.009.0432 (HPI#2); AAMC.009.009.0436 (HPI#3); RSH.001.002.0568 (HPI#4)

<sup>75</sup> Period of time over which the methane concentration was recorded at greater than 2.5%.

methane to enter, and the ventilation system can then scour behind the shields and pick up the gas that is accumulating in cavities.

165. On the first occasion the shearer stopped at shield 118. Reviewing the second exceedance it appears that the methane from the first exceedance did not have a chance to dilute sufficiently before the shearer was started again and cut to shield 134. After the second exceedance the mine altered the local ventilation measures to control the goaf gas.
166. The third exceedance occurs almost 12 hours later and appears to be the same problem, where the shearer is moving into the tailgate and the ventilation is dragging gas out of the goaf. The shearer stopped at shield 141 when the canopy sensor reached a methane concentration of 2%.
167. At the time of the fourth exceedance, the shearer had cut out of the tailgate and was heading back towards the maingate. It was stopped at shield 144 when the canopy sensor exceeded 2% and shut it down.
168. The fourth exceedance is the most concerning because the canopy sensor recorded a methane concentration of above 5%. The sharp rise, and the location of the canopy sensor, indicates layering or a large flush of the goaf stream. The methane was elevated for 10 minutes before it reduced. Neither of the tailgate roadway monitors outbye recorded an exceedance. In fact, neither of those sensors registered more than 1.5% methane concentration.
169. IOM Brennan was notified of this exceedance at 4:41pm on the following day, 22 April 2020. At that time, there had been no further exceedances for over 17 hours.
170. The exceedances on 21 April 2020 indicate that the local ventilation controls at the tailgate need adjusting. This is something that a longwall ERZ Controller is required to manage on a regular basis and which was identified by the mine in their Form 1As.
171. As the longwall retreats, the tailgate conditions change and the ERZ Controller has to adapt the local ventilation controls to suit those conditions.
172. The canopy sensor takes readings that would previously have been taken by an ERZ Controller using a personal gas detector. The information it provides is continuous, where before it was not. This provides the mine with realtime information about what is happening at the tailgate and helps the mine to identify if local ventilation controls are required, or need adjusting.

173. Although the mine reported four exceedances in twenty-four hours, these localised exceedances on the canopy sensor were recording information indicating to the mine that local ventilation control changes were required at the tailgate. Based on the notifications received, in my view no response by the Inspectorate was required at that time.
174. The Form 5As for these exceedances did not come through until 22 May 2020, after the serious accident. The Form 5As recorded that the mine proposed to conduct a trial of alternate ventilation configurations in the tailgate area of longwall 104. Based on results of the proposed trial, the mine intended to update its Safety and Health Management System.

#### **Section 243A sensor**

175. I have outlined some of my dealings in relation to the section 243A sensor at paragraphs [80] to [87] of my First Statutory Declaration.
176. On 20 March 2020, following the inspection the previous day by IOM Brownett, I was part of a phone meeting with the Grosvenor Underground Mine Manager, Mr Niehaus. Inspectors Brownett and Geoff Nugent were also present. I cannot recall all the details of the conversation but I do recall there was discussion about the location of the tailgate gas sensors at Grosvenor. Following the meeting I recall that IOM Nugent said he believed, based on what had been said during the meeting, that Grosvenor may have their section 243A sensor in the wrong location.
177. This led to a process whereby I sought information from Grosvenor (and other mines) as to where their longwall return airway sensors were located and how they were being managed.
178. On or around 1 April 2020 I spoke to Mr Niehaus and asked him to provide me with an explanation of the location and functionality of his tailgate roadway sensors. He did this and I reduced his explanation to writing. I also spoke to the UMM's at other mines and asked them for the same information.
179. On 1 April 2020 at 1.32pm I emailed<sup>76</sup> Mr Niehaus my written description and asked if he could confirm that I had expressed the functionalities of the sensors correctly. He responded that day with a diagram from Grosvenor's Second Workings SOP which he said clarified the gas monitoring and control system on the longwall.<sup>77</sup>

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<sup>76</sup> RSH.002.029.0002

<sup>77</sup> RSH.002.029.0001

180. On 2 April 2020 at 7.27am<sup>78</sup> I sent the Deputy Inspector and Chief Inspector a word document containing the advice I had received from each of Anglo's UMM's about the location and functionality of the CH4 monitors in their respective longwall tailgates.
181. On 7 April 2020 at 10.53am<sup>79</sup> I wrote to Mr Niehaus and requested a copy of the risk assessment(s) Grosvenor had conducted regarding the installation of the CH4 monitor in the shield canopy of the last tailgate shield and the CH4 monitor in the tailgate roadway within 400 metres of the faceline.
182. On 8 April 2020 at 1.00pm,<sup>80</sup> Mr Niehaus sent me the risk assessment I had requested and explained that Grosvenor had included the installation of the additional CH4 sensor as required by section 243A(2) of the Regulations. He stated that in addition to that sensor, Grosvenor has an additional sensor located within 400 metres of the longwall face to control the gas concentration in the entire longwall return roadway at below 2.5%. He further outlined that he was aware Grosvenor had experienced a number of CH4 exceedances during the past weeks. Their longwall goaf was still forming, and they had not passed square on the block as yet. He stated that their controls have been adequate, and they have stopped longwall cutting operations well in time to ensure the shearer had not been cutting or closer than 60 metres to the tailgate corner on all occasions.
183. As a result of my inquiries, I believed I had evidence that confirmed that Grosvenor mine had the sensor that was required pursuant to section 243A of the Regulations in the wrong location. It was clear the mine considered that a sensor located on the canopy shield at the tailgate met the requirements of section 243A of the Regulations.
184. The Inspectorate did not share this view and, as a result, I issued a directive to the SSE at Grosvenor dated 9 April 2020,<sup>81</sup> requiring them to comply with section 243A of the Act.
185. Grosvenor confirmed they had satisfied the requirements of the directive on 9 April 2020. As far as I am aware, the mine elected to retain the canopy shield sensor at the tailgate, but they had calibrated the inbye tailgate sensors to trip at 2%, as required by section 243A of the Regulations.
186. The following MRE's and Directives are relevant to the Grosvenor 243A sensor:

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<sup>78</sup> RSH.002.043.0001

<sup>79</sup> RSH.002.030.0002

<sup>80</sup> RSH.002.030.0001

<sup>81</sup> RSH.002.032.0001

- (a) 9 April 2014 (Directive)<sup>82</sup>;
- (b) 9 April 2014 (MRE)<sup>83</sup>; and
- (c) 9 April 2014 (MRE).<sup>84</sup>

187. I am aware that on 15 April 2020, Grosvenor mine sought a review of the directive. On 12 June 2020, the Chief Inspector issued the review decision.<sup>85</sup> The directive was not set aside, but instead was varied to clarify the powers that were exercised.

#### **Grosvenor's email of 17 April 2020**

188. Following the issuing of the directive on 9 April 2020, on 17 April 2020 Mr Niehaus sent an email to IOM Geoff Nugent, to which I was copied.<sup>86</sup>

189. In simple terms, the email outlined that on previous occasions fall material in the tailgate roadway was cleared by using the shearer in circumstances where there was a methane reading of over 2% methane concentration, but less than 2.5%, for an extended period of time. Mr Niehaus' expressed a concern about the introduction of the s243A sensor in the location required by the legislation (and my directive) and the requirement that it trip power to the shearer at 2%. He was concerned that if the mine had the same experience with fall material in longwall 104 as they had experienced in longwall 103, the mine would no longer be able to use the shearer to clear the tailgate and therefore restore ventilation.

190. One of the options proposed in the email to IOM Nugent requested an exemption from the Inspectorate in relation to the requirements of s243A.

191. I am aware that IOM Nugent spoke to Mr Niehaus and responded to his email confirming that the Inspectorate does not give exemptions and that the risk he had identified would need to be managed by the mine.

192. I recall that after IOM Nugent had sent that email I called Mr Niehaus and discussed that as he was aware of the strata hazard following the experience in longwall 103, that the hazard was foreseeable, and that it would have been prudent to ensure it was considered in the second workings risk assessment for longwall 104. I reiterated that there is no ability to provide exemptions to the requirement to maintain the section 243A sensor at 2% and that the mine is expected to manage the risk.

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<sup>82</sup> RSH.002.032.0001

<sup>83</sup> RSH.002.036.0001

<sup>84</sup> RSH.002.034.0001

<sup>85</sup> RSH.002.042.0001

<sup>86</sup> RHS.002.041.0001

### Learning from Incidents

193. In my review of the HPis for Grosvenor as outlined above, I reviewed all of the Form 1As and Form 5As for the HPis from the relevant period, as well as the Lotus Notes database entries for the purpose of making this statement. These documents are available to all inspectors in Lotus Notes. My review above is based upon those documents.
194. The Learning From Incidents (**LFIs**) prepared by Grosvenor mine were not provided to the Inspectorate at the time of each of the HPis covered by the terms of reference.
195. I have now reviewed those LFIs.<sup>87</sup>
196. In those LFIs, pre-drainage is identified as an issue for longwalls 103 and 104, including 'gas make (SGE) greater than expected in excess of system capacity', and 'less than adequate methane recovery / dilution'. In some of the LFIs for longwall 104, there is also reference to the strategy to drain the P seam not having been completed as proposed to allow for unconstrained production from gas delays.
197. The LFIs provide confirmation that the mine recognised it had gas drainage issues, and was aware it was not going to be able to produce unconstrained due to these issues. This is a recognition that the mine had to adjust its operational mining practices to manage the issue. As I explain above, the drainage issues mean the mine was required to continuously, carefully and proactively manage the risks associated with methane. As I further explain in my statement above, there are a variety of means by which that can potentially be achieved.
198. A general comment I wish to make with respect to the LFIs is that it would appear to me that the LFIs appear to have normalised the issues with drainage and the HPis that have occurred, and address the immediate cause, for instance, equipment failure, rather than the true underlying cause of the drainage strategy not having been completed
- (a) An example is the LFI of 3 April 2020, where it is recorded that the P seam lateral gas drainage holes are not seen as a critical control (See AAMC.001.003.0030 @ 0051). In that same LFI, @, 0045, it asks the question as to 'what / which critical controls failed', and it records 'nil'.

<sup>87</sup> AAMC.001.003.0219; AAMC.001.003.0235; AAMC.001.003.0254; AAMC.001.009.0462; AAMC.001.009.0509; AAMC.001.009.0444; AAMC.001.009.0478; AAMC.001.009.0517; AAMC.001.009.0534; AAMC.001.009.0552; AAMC.001.003.0030; AAMC.001.003.0002; AAMC.001.003.0016; AAMC.001.009.0568

- (b) A further example is the LFI of 16 July 2019, where the 'Gas make (SGE) greater than expected in excess of system capacity' is not considered to be a failure of a critical control (see AAMC.001.003.0219 @ 0222 and 0226).
199. A further general comment I wish to make with respect to the LFIs is that in a number of the LFIs, preventative actions don't sufficiently address nominated causal failures. Some examples are:
- (a) With respect to the LFI dated 2 August 2019 (AAMC.001.009.0462), the event factors as listed @ 0465, and Why Tree Analysis @ 0471, identify limitations with the ventilation and gas management system, however the preventative action is confined to the development of a plan to increase goaf drainage capacity and provides no indication of how that plan would be achieved.
- (b) With respect to the LFI dated 20 April 2020, the event factors includes 'Gas make (SGE) greater than expected in excess of system capacity' (see AAMC.001.003.002 @ 0005). The preventative actions do not address this causal factor (see @ 0006).
- (c) With respect to the LFI dated 1 May 2020, the event factors include 'less than adequate methane pre-drainage / recover / dilution'. The preventative actions do not appear to address this causal factor. (See AAMC.001.003.0016 @ 00422 and @ 0023).
200. With respect to the LFI dated 3 April 2020 (AAMC.001.003.0030), I make the following comments:
- (a) This LFI reveals that GRO4L004 was 'abandoned due to available time prior to LW 104 start up by the Underground Mine Manager (verbal meeting)' (AAMC.001.003.0030 at 0048). This reduces their opportunity to further lower seam gas content.
- (b) The LFI states "Issues at MNM prompted change in LW014 planned Uni-Di operation to Bi-Di operation for increased production profile" (AAMC.001.003.0030 at 0048) This appears to suggest Grosvenor had decided to mine in bi-di for increased production.
- (c) As I note at paragraphs [128] and [129] above, HPI # 18, which occurred on 20 March 2020, was reported to me as having occurred because the carbon dioxide cylinder on the goaf sled had lost pressure. The LFI for this HPI has a discrepancy,

in that 'Event 5' records that a failed nitrogen bottle regulator was involved (see AAMC.001.003.0030 @ .0049).

- (d) The Form 1A<sup>88</sup> for HPI # 20 records that TG inbye sensor peaking at 1.99%, and the outbye sensor peaking at 2.55%. That is a difference of 0.56%. There are discrepancies in the LFI concerning the inbye sensor reading. The inbye sensor reading is recorded as being 2.5% at one point in the LFI<sup>89</sup> (a difference of .05%), but at another point in the LFI, the difference between the inbye and outbye sensor is said to be 0.7%.<sup>90</sup> The Form 5A does not assist in clarifying the discrepancy concerning the inbye sensor reading as it does not record the reading.<sup>91</sup> The Hazard and Incident Report form contained in the LFI for this exceedance also does not record the inbye sensor reading.<sup>92</sup> My presumption is that the Form 1A is more likely correct as the ERZ controller did not mention that the inbye sensor went over 2.5%, and further, it would be very curious if only a very small amount of methane bypassed the inbye sensor.
- (e) This LFI also confirms that one of the actions that the mine manager said they would take, namely, installing a second sled, had actually occurred.<sup>93</sup>

201. With respect to the LFI dated 19 May 2020 (AAMC.001.009.056), I make the following comments.

- (a) This LFI records HPI#24 through to HPI#27, which I address at paragraphs [161] to [174] above. These HPIs are described in the LFI as event numbers 1, 2, 3 and 6<sup>94</sup>.
- (b) The LFI also records events 4, 5, 7 and 8.<sup>95</sup> I have consulted the Inspectorate's database and can find no record of these events having been reported to the Inspectorate as HPIs.
- (c) I note that Hazard and Incident Report form that corresponds to event 7 appears to have the words "DNRME HPI" crossed out.<sup>96</sup>

<sup>88</sup> AAMC.001.009.0307

<sup>89</sup> See event 7 in the table at AAMC.001.003.0030 @ 0033

<sup>90</sup> See Event 7 in the table at AAMC.001.003.0030 @ 0050

<sup>91</sup> AAMC.001.009.0400

<sup>92</sup> AAMC.001.003.0030 @ 0065

<sup>93</sup> See AAMC.001.003.0030 @ 0049

<sup>94</sup> See AAMC.001.009.0568 @ 0578 to 0579

<sup>95</sup> See AAMC.001.009.0568 @ 0578 to 0579

<sup>96</sup> See AAMC.001.009.0568 @ 0595

202. If the Inspectorate had knowledge of the content of the LFIs, including that some of the canopy sensor exceedances were not reported to the Inspectorate, intervention by the Inspectorate would have occurred. As outlined at paragraphs [17] to [21] above, intervention by the Inspectorate, in the form of an inspection at Grosvenor mine, had been planned at the request of the Chief Inspector of Coal Mines.

*Further investigation and compliance action relevant to gas management*

203. The Inspectorate has maintained a focus on gas management at Grosvenor mine, both during the relevant period, and during the preceding period from January 2016 to June 2019 (*the preceding period*).

204. The following MREs that I have reviewed indicate that during the relevant period, Inspectors attended Grosvenor Mine and issued MREs at least in part in relation to gas management:

- (a) 2 July 2019;<sup>97</sup>
- (b) 8 August 2019;<sup>98</sup>
- (c) 15 October 2019;<sup>99</sup>
- (d) 19 February 2020;<sup>100</sup>
- (e) 19 March 2020;<sup>101</sup>
- (f) 9 April 2020;<sup>102</sup>
- (g) 9 April 2020;<sup>103</sup> and
- (h) 15 April 2020.<sup>104</sup>

205. During the preceding period, the following MREs indicate that the Inspectorate was similarly focussed on gas management.

- (a) 9 February 2016;<sup>105</sup>

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<sup>97</sup> RSH.002.138.0001

<sup>98</sup> RSH.002.141.0001

<sup>99</sup> RSH.002.145.0001

<sup>100</sup> RSH.002.160.0001

<sup>101</sup> RSH.002.163.0001

<sup>102</sup> RSH.002.036.0001

<sup>103</sup> RSH.002.034.0001

<sup>104</sup> RSH.002.164.0001

<sup>105</sup> RSH.002.241.0001

- (b) 10 February 2016;<sup>106</sup>
- (c) 11 February 2016;<sup>107</sup>
- (d) 1 April 2016;<sup>108</sup>
- (e) 6 June 2016;<sup>109</sup>
- (f) 5 July 2016;<sup>110</sup>
- (g) 22 August 2016;<sup>111</sup>
- (h) 30 August 2016;<sup>112</sup>
- (i) 31 August 2016;<sup>113</sup>
- (j) 5 September 2016;<sup>114</sup>
- (k) 6 September 2016;<sup>115</sup>
- (l) 13 September 2016;<sup>116</sup>
- (m) 21 September 2016;<sup>117</sup>
- (n) 21 September 2016;<sup>118</sup>
- (o) 15 December 2016;<sup>119</sup>
- (p) 8 February 2017;<sup>120</sup>
- (q) 3 May 2017;<sup>121</sup>
- (r) 4 May 2017;<sup>122</sup>

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<sup>106</sup> RSH.002.242.0001

<sup>107</sup> RSH.002.243.0001

<sup>108</sup> RSH.002.244.0001

<sup>109</sup> RSH.002.245.0001

<sup>110</sup> RSH.002.246.0001

<sup>111</sup> RSH.002.247.0001

<sup>112</sup> RSH.002.248.0001

<sup>113</sup> RSH.002.249.0001

<sup>114</sup> RSH.002.250.0001

<sup>115</sup> RSH.002.251.0001

<sup>116</sup> RSH.002.252.0001

<sup>117</sup> RSH.002.253.0001

<sup>118</sup> RSH.002.254.0001

<sup>119</sup> RSH.002.255.0001

<sup>120</sup> RSH.002.256.0001

<sup>121</sup> RSH.002.257.0001

<sup>122</sup> RSH.002.258.0001

- (s) 2 June 2017;<sup>123</sup>
- (t) 19 July 2017;<sup>124</sup>
- (u) 12 September 2017;<sup>125</sup>
- (v) 13 October 2017;<sup>126</sup>
- (w) 20 October 2017;<sup>127</sup>
- (x) 26 October 2017;<sup>128</sup>
- (y) 9 January 2018;<sup>129</sup>
- (z) 18 January 2018;<sup>130</sup>
- (aa) 20 February 2019;<sup>131</sup>
- (bb) 1 March 2018;<sup>132</sup>
- (cc) 16 March 2018;<sup>133</sup>
- (dd) 19 March 2018;<sup>134</sup>
- (ee) 17 April 2018;<sup>135</sup>
- (ff) 9 May 2018;<sup>136</sup>
- (gg) 9 May 2018;<sup>137</sup>
- (hh) 6 August 2018;<sup>138</sup>
- (ii) 21 September 2018;<sup>139</sup>

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<sup>123</sup> RSH.002.259.0001

<sup>124</sup> RSH.002.260.0001

<sup>125</sup> RSH.002.261.0001

<sup>126</sup> RSH.002.262.0001

<sup>127</sup> RSH.002.263.0001

<sup>128</sup> RSH.002.264.0001

<sup>129</sup> RSH.002.265.0001

<sup>130</sup> RSH.002.266.0001

<sup>131</sup> RSH.002.267.0001

<sup>132</sup> RSH.002.268.0001

<sup>133</sup> RSH.002.269.0001

<sup>134</sup> RSH.002.270.0001

<sup>135</sup> RSH.002.271.0001

<sup>136</sup> RSH.002.272.0001

<sup>137</sup> RSH.002.273.0001

<sup>138</sup> RSH.002.274.0001

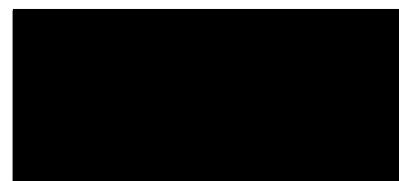
<sup>139</sup> RSH.002.275.0001

(jj) 11 December 2018;<sup>140</sup> and

(kk) 13 March 2019.<sup>141</sup>

206. Further to the foregoing MREs, I note that Directives were issued to Grosvenor mine on 6 October 2016,<sup>142</sup> 21 December 2016,<sup>143</sup> 9 May 2017,<sup>144</sup> 12 September 2017,<sup>145</sup> and 9 April 2020.<sup>146</sup>

I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1867*.



Signature of declarant/deponent

Taken and declared before me at Mackay this 1st day of February 2021

*Handwritten signature*



A Justice of the Peace /

Commissioner for Declarations

*Signature*

<sup>140</sup> RSH.002.276.0001  
<sup>141</sup> RSH.002.277.0001  
<sup>142</sup> RSH.002.237.0001  
<sup>143</sup> RSH.002.238.0001  
<sup>144</sup> RSH.002.239.0001  
<sup>145</sup> RSH.002.240.0001  
<sup>146</sup> RSH.002.032.0001