Formal Written Statement

1. Johanna Suze Veth states:

2. My full name is Johanna Suze Veth. I am a forensic scientist employed by the Institute of Environmental Science and Research Limited, known as ESR, at Mt Albert, Auckland.

   I have completed a Master of Science Degree with First Class Honours in Forensic Science in 2004 and a Bachelor of Science Degree in Pharmacology in 2001, both awarded by the University of Auckland. Since joining the Forensic Biology group of ESR in May 2002, I have worked as a technician and then as a scientist since June 2004, specialising in the area of forensic biology including DNA analysis. I have provided expert witness testimony on many occasions.

3. ESR is a Crown Research Institute and its functions include the provision of independent forensic testing and advice. The ESR forensic laboratories are accredited to an international standard in the field of Forensic Science Testing.[1]

4. I have been asked to provide the following information:

   1. The instructions you received as part of your engagement in the Sofronoff Inquiry including any letter of instruction (as to the latter, you have today sent this Commission such a letter – please would you attach that letter to your statement);
   2. Your recollection, in chronological order, of the following matters:
      a. Whether you detected any issue with DNA yield from extraction and if so, in what circumstances and how;
      b. If you detected such issues, when you so detected them and whether you discussed the issues with anyone and, if so, with whom, when and the substance of those discussions;
      c. Any other steps that followed any such issue being detected and raised with the Sofronoff Inquiry, including when and with whom;
   3. Whether Adjunct Professor Linzi Wilson-Wilde was involved in any of your discussions or activity with the Sofronoff Inquiry.

Instructions from Commissioner Sofronoff

5. I have attached the letter I received from Commissioner Sofronoff, dated 15 August 2022, which provides some background information to the Inquiry and his instructions to me.

Chronological sequence of events related to DNA yield

6. In order to aid my recollection I have relied heavily on emails sent and received during the relevant timeframe. Where I refer to specific times of the day, these are Aotearoa/New Zealand time.

7. The specific timeframe in question is from approximately 12 November 2022 to 24 November 2022. From late August 2022 Dr Bruce Budowle and I had been

[1] *ANAB, the ANSI National Accreditation Board provides accreditation services to the forensic laboratories of ESR to the international standard of ISO/IEC 17025. ANAB provides accreditation services to public and private sector organisations and is a subsidiary of the American National Standards Institute (ANSI.)*

engaged by The Commission of Inquiry into Forensic DNA Testing in Queensland to perform a number of tasks, including a review of the Queensland Health Forensic and Scientific Services (QHFSS) Blackburn casefile, a quality investigation report into a poorly performing reagent: Proteinase K (Pro K), and a report reviewing the Blackburn case prepared by Dr Kirsty Wright.

8. On 12 November 2022 I sent a draft of the report related to the Blackburn casefile review that Dr Budowle and I had prepared to Ms Laura Reece, Counsel Assisting to the Inquiry and Senior Legal Officer Mr Geoffrey Wong.

9. I understand from an email sent by Ms Reece to me and Dr Budowle on 13 November that the report had been forwarded to Dr Wright for review.

10. The report contains a number of possible explanations as to why there may have been poor recovery from several bloodstains collected in relation to the Blackburn investigation. There is also a response to concerns Dr Wright had raised in her report that a faulty batch of the Pro K reagent, which is a key component of the extraction process, may have been responsible for these poor results. The casefile itself did not contain pertinent laboratory information such as batch information or quantitation data for the samples and associated positive and negative controls. However, Dr Budowle and I had received clarification that the DNA profiling results obtained from extraction positive controls had 'passed' and in our report we noted that this indicated that a faulty batch of Pro K was unlikely to be the reason for the poor results from the case samples.

11. On November 13 or 14, Ms Reece forwarded an email from Dr Wright. In this email Dr Wright discusses reviewing some documents related to the Pro K issue that had been provided to her. I understand from this email that Dr Wright had requested this information in an effort to determine if any of the Blackburn case samples had been included in batches extracted using the faulty Pro K reagent.

12. She notes that quantitation values for the positive extraction controls for two of the batches containing Blackburn case samples were unusually low. I understand this data was derived from a spreadsheet that collated data in relation to the investigation into the poorly performing Pro K reagent. Dr Wright quite rightly points out that extraction positive control profiling results can still 'pass' despite having a low quantitation value. In effect, the quantitation value is a better indicator of the efficacy of the extraction.

13. In this email, Dr Wright requested the extraction positive control concentration values for all extraction batches containing Blackburn samples and the concentration values from <u>all</u> extraction positive controls from the 6 to 12 month period around the time that the Blackburn case was being processed.

14. On 14 November in the afternoon, Ms Reece and I met via Teams to discuss, among other things, Dr Wright's email. After this meeting I sent an email to Ms Reece requesting that QHFSS provide the following information:

    What type pf Pro K (manufacturer) and lot number was used in the extractions of the following samples. Also the Quantitation result for the associated <u>extraction</u> positive controls:

    - *Sample 585592064 (Swab A) on batch FCW21GM20130717_03)*
    - *Sample 572573279 (V14 - not amplified)*
    - *Sample 585528112 (ML4 - not amplified)*

- *Sample 572572967 (S16) on batch FGM21CW20130319_01*
- *Sample 572439205 (L14a) on batch FGM21CW20130503_01*
- *Sample 644371283 (L4c) on batch FCW21GM20140604_01*
- *Sample 572984158 (F1) on batch FCW21GM20140516_04*

It would be useful to have some understanding of what was being used for extraction positive controls in casework extractions in 2013. Was it neat blood aliquoted into individual tubes? Was it a punch taken from a bloodstain stored on FTA card? Something else?

15. After the meeting, Ms Reece forwarded a document 'OQI 29947'. In the email Ms Reece explained that this document had been provided to her on 22 September 2022 by Ms Susan Hedge, Counsel Assisting to the Inquiry. This document outlines a quality incident where partial DNA profiling results were obtained from an amplification positive control and three extraction positive controls in the same batch. It had been suggested that this issue may have been related to the faulty Pro K reagent.

16. I do not recall if I read this document as I believed that the best strategy was to find out once and for all whether or not the faulty Pro K had been used on any of the samples in the Blackburn case.

17. Later that evening Ms Reece provided a document that contained the Pro K lot number for at least one of the batches containing Blackburn case samples that had demonstrated poor DNA recovery. The Pro K used was from a <u>different</u> manufacturer to that which had been found to be faulty.

18. It was also during this time period that Dr Budowle and I were asked if we could meet with Dr Wright to discuss the issues raised in our respective reports and determine if there were any matters that were in disagreement.

19. On 15 November I was granted access to a number of additional documents to review, although I do not recall exactly which documents. In an email to Mr Wong that afternoon, I noted that by cross-referencing several documents I was able to determine which Pro K was used in some of the Blackburn extraction batches.

20. Later that afternoon, Ms Reece forwarded an email from Dr Wright to myself and Dr Budowle. Dr Wright had reviewed a spreadsheet containing all positive control quantitation data from 2012-2013. She summarised the data as follows and asked that Dr Budowle and I consider these findings ahead of our meeting which was scheduled for the following day at midday:

    - *There were 1713 lysis extraction controls for blood batches.*
    - *The mean was 2.14 ng/ul*
    - *The four batches of blood extractions from the BLACKBURN evidence of concern had pos ctl concentrations of 0.592, 0.416, 0.677, and 1.82.*
    - *You can see the lowest three values are at the left tail of the histogram. They are 3.6, 5.1, and 3.2 times less than the mean blood ext ctl concentration.*

21. These data confirmed that bloodstained samples in the Blackburn case were extracted in batches where there was also a low yield of DNA from the associated extraction positive control, compared to extraction positive controls in other extraction batches.

22. However, the spreadsheet containing the positive control quantitation data did not contain any batch information, nor was it possible to determine what type of extraction batches or methods to which they related. We still could not identify why these particular batches had extraction positive controls with low DNA yield.

23. On the morning of 16 November I opened a spreadsheet called "QP1300165446_all_samples Ext_Pos_Quant" which I believe had been provided by Commission staff the day before. This spreadsheet contained all the Blackburn sample barcodes, extraction batch numbers and, crucially, the associated positive controls and their quantitation values.

24. Due to the way this spreadsheet was laid out I could immediately see that the Blackburn bloodstained samples that produced unexpectedly poor results were in batches that were extracted using a different method to other samples in the case.

25. The Blackburn samples that had not caused concern were extracted in batches whose batch names included "MAX" which I inferred meant these were extracted on the Maxwell liquid handling robot.

26. The bloodstained samples were extracted using a method that had a different batch naming convention – instead of "MAX" these had "EXT" in the batch names.

27. It was immediately obvious from the associated extraction positive control quantitation data that the DNA recovered from positive controls in the "EXT" batches was significantly lower than that recovered in the "MAX" batches.

28. At 10:38AM I emailed the spreadsheet to Dr Budowle and explained what I had found. We met via Teams an hour later to discuss these data. My recollection of this meeting is that we discussed that a poorly performing extraction method could explain most, if not all, of the poor DNA recovery from bloodstains in the Blackburn case. However, we were not able to determine exactly what the extraction method was but given the laboratory was using the Maxwell robot for automated extractions, we theorised that perhaps the "EXT" batches were manually extracted batches.

29. Immediately following this meeting, Dr Budowle and I met with Dr Wright via Teams. Ms Reece was present only at the beginning of the meeting to facilitate introductions and ground rules. Mr Wong was present for the entire meeting in a note-taking capacity.

30. I do not recall the details of the meeting with Dr Wright. However, emails following the meeting indicate that I likely showed the "QP1300165446_all_samples Ext_Pos_Quant" spreadsheet to Dr Wright and raised the possibility that there may have been a poorly performing extraction method.

31. Immediately following the meeting, at 3:54PM I emailed Dr Wright the "QP1300165446_all_samples Ext_Pos_Quant" spreadsheet. I also emailed the "Copy of 1982-1438" spreadsheet which I had received from Mr Wong shortly before the meeting. This spreadsheet contained a list of all of the Blackburn samples and their associated batches. In my email to Dr Wright, I noted *"Given which samples are in manual batches there does seem to be compelling evidence that whatever caused the poor recovery from the positive controls could also be an explanation of the poor recovery from some of the Blackburn samples."*

32. At 3:38PM Dr Budowle and I received an email from Ms Reece asking if we could submit our final report on the Blackburn case before the end of day. Also included in the email recipients list was Mr Michael Hodge KC, Counsel Assisting. I replied

to all at 4:10PM stating *"…a discovery right before the meeting with Kirsty of an issue that could be a compelling reason why poor results were obtained from some samples (including the S series swabs) needs some further reflection and I want to make sure that matter is properly addressed in the report."* I proposed to submit the final report by the beginning of the following working day, Queensland time.

33. Ms Reece followed up asking what the nature of the issue was. Included in this email exchange were Dr Budowle, Mr Hodge and Mr Wong. I replied to all stating *"There is evidence to suggest that DNA was not being recovered optimally from manually extracted batches when compared to automated batches. Several samples in Blackburn were extracted manually including the first set of bloodstained samples from Ms Blackburn's shirt, some of the bloodstained "S" series samples from the scene, the vehicle samples that were described as bloodstained and the ML series from the white 'Effekt' T-shirt. This may also explain why the results from many of the trace samples which were extracted in automated batches had comparatively good results compared to the bloodstained samples."*

34. On 17 November at 9:55AM I emailed a finalised report on the Blackburn case to Ms Reece, Dr Budowle, Mr Hodge and Mr Wong. The possibility that the manual extraction method was not recovering DNA optimally was mentioned in the Executive Summary at paragraph 3 and discussed more fully at paragraph 41.

35. In an email exchange with Ms Reece and Dr Budowle on 18 November, which discusses some further investigation Dr Wright had undertaken in relation to the extraction method issue, I stated *"To be honest, there is very little more that we (Bruce and I) can say on this matter. We have proposed (extrapolated) that there might be a problem with the manual extractions based solely on 4 epos quantitation results (and that the samples that appeared to have poor DNA recovery coincidentally are in those batches.) The epos data are suggestive but the lab needs to look into this matter beyond the Blackburn batches. It is also entirely possible there is a reason for this difference in epos quantitation results that we are unaware of."*

36. It should be noted at during this period Dr Budowle and I were trying to complete another report for the Commission which related to the validations of STRmix™ and PowerPlex 21. We were also being asked to review several new documents and emails that were unrelated to the extraction method question, and review all of the Blackburn sample results and comment on retesting opportunities.

37. On 22 November at 12.30PM I met with Ms Reece and Ms Hedge. According to an email from Ms Reece, the purpose of the meeting was to discuss the issue with the manual extraction method and consider what could be done to further investigate it. I have no recollection of the details of this meeting.

38. Later that day, at 4PM I met with QHFSS scientist Mr Allan McNevin via Teams to discuss the data related to the poor DNA yields from extraction positive controls associated with Blackburn case samples and the apparent connection to a specific extraction method. The meeting invitation, which was sent by "ADMIN DNA Inquiry" had the subject line "Discussion with Allan McNevin and Jo Veth re spreadsheets." Aside from myself and Mr McNevin, also present were Ms Reece, Ms Hedge, Legal Officer Mr Jac Thong, and Ms Sara McRostie who I understood to be Mr McNevin's legal representative.

39. I do not have a clear recollection of the meeting. However, Mr McNevin provided important information that I documented in emails to Dr Budowle and Dr Wright directly after the meeting.

40. Specifically, Mr McNevin explained the naming convention of the batches and associated positive controls and clarified that the method we had presumed to be a manual method was in fact a manual lysis method (batches with CWIQLYS in the designations) followed by automated extraction on the MultiProbe II robot (at this stage the batches are assigned the CWIQEXT designation.)

41. Mr McNevin also clarified the meaning of the codes given to the extraction positive controls in the "all positive control quantitation data from 2012-2013". Essentially, positive controls with a "Blood" designation were likely used in batches extracted on the Maxwell automated platform, whereas positive controls with the "DNA" designation were likely used in batches extracted on the Multiprobe.

42. In my email to Dr Budowle, I stated "*When I asked Allan if he had an explanation for why the EPOS quants from the off-deck lysis/Multiprobe batches were so much lower than those from the maxwell-extracted batches, he said he thought it was something to do with the maximum binding capacity of the beads used in that method."*

43. As a result of this meeting I amended the report of our Review of DNA Analysis Undertaken in the Blackburn Case so that references to issues with a manual extraction method were replaced with the MultiProbe method. I sent the report to Ms Reece and Mr Wong on 23 November at 8:25AM.

44. On 23 November, Dr Budowle emailed me the Promega protocol for DNA IQ extractions using the Maxwell automated platform, the QHFSS protocol for "DNA IQ Method of Extracting DNA from Casework and Reference Samples" (using the MultiProbe II" automated platform - document 24897V7 dated 09/11/2010) and the QHFSS validation document for the "Phase 1 Report - Verification of Promega DNA IQ for the Maxwell 16" (Project 70.)

45. On 24 November at 1:08AM, Ms Reece emailed spreadsheet "Positive Extraction Controls 2012-2013 batch type and date" and PDF "Notice 2022-00333 item 1" to Dr Wright, Dr Budowle and myself.

46. The spreadsheet was similar to the previous spreadsheet we had received that collated positive control quantitation data except that there was more explanatory information.

47. The PDF was a document composed by Mr McNevin explaining the information in the spreadsheet and summarised the different types of extraction batches. The document does not address the noticeable differences in DNA recovery from positive controls processed in batches on the Maxwell versus batches processed on the MultiProbe II.

48. Later that day, Dr Budowle, Dr Wright and I presented our findings at a Commission hearing. During the course of that hearing, possible issues with the MultiProbe II extraction method were raised.

49. Earlier this year, on 13 September 2023, my colleague Ms Heidi Baker sent the Project 13 document to me via Teams. This was when I first became aware of the document.

Adjunct Professor Linzi Wilson-Wilde

50. On 23 November 2022, Ms Reece sent an email to Dr Budowle and me containing Professor Wilson-Wilde's report that she prepared for the Sofronoff Commission the exploring whether the use of rayon swabs with 70% ethanol was properly validated. I did not reply to this email, nor did I contact Professor Wilson-Wilde directly about her report.

51. I have had no contact with Professor Wilson-Wilde. At no time was she involved in any of the meetings I had that were related to my work for the Sofronoff Inquiry. Nor have I had any contact via email or other electronic medium with her.

I confirm the truth and accuracy of this statement. I make this statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

29 October 2023

Commission of Inquiry into Forensic DNA Testing in Queensland

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Our ref: COI/DOC/22/2289

15 August 2022

Ms Johanna Veth
Senior Scientist – Forensic Biology
Institute of Environmental Science and Research Limited (ESR)
Sent: [redacted]

Dear Ms Veth,

Re: Commission of Inquiry into Forensic DNA Testing in Queensland

Opinion concerning the Shandee Blackburn laboratory issues

Thank you for agreeing to assist the Commission in its investigation.

Background

1. Shandee Blackburn was murdered on 9 February 2013. She was killed by multiple stab wounds. Investigating police immediately began submitting samples for DNA testing to the DNA Analysis Unit conducted by Queensland Health (called "Forensic and Scientific Services" or "FSS").
2. John Peros was charged with her murder. FSS found no DNA referable to Shandee Blackburn in samples taken from Peros's car – indeed, with two exceptions, no DNA at all in over 50 samples taken from his car. Nor did they find Peros's DNA on the victim's body. This evidence was led at Peros's trial. Peros was acquitted.
3. In July 2019 a Coroner conducted an inquest into the death and in August 2020 found that "Miss Blackburn died due to injuries sustained in an incident involving violence with Mr John Peros who used a bladed instrument".
4. On 10 June 2022 the Queensland Government established this Commission to investigate the processes and methods used in testing by FSS. Among other things, the Commission is investigating whether the analysis of DNA samples by FSS has been in accordance with best practice.
5. The Commission has been given information about three matters that might bear upon the subject matter of its investigations. In addition, the Commission has been furnished with the report of an experienced forensic scientist about these and other matters.

<u>Faulty Dishwasher</u>

6. FSS keeps a log of reports concerning incidents that might compromise the quality of reported results - called "Opportunity for Quality Improvement" or "OQI".
7. OQI 34043, raised on 22 March 2013, concerns positive extraction controls and reference samples that were giving low quantitation values and poor profiles. The author of the OQI proposed that these results might have been caused by a faulty dishwasher in which the residue of a caustic detergent was left on a measuring cylinder which was then used to prepare a Proteinase K reagent. The resulting high pH of the Proteinase K, it was thought, might have compromised the extraction process leading to low quants and poor profiles.
8. The investigation into this matter commenced on 22 March 2013 and ended on 6 May 2013. The time period during which the defective reagent was used covers some of the period during which samples from the Blackburn investigation were submitted.

<u>Incorrect injection times in Genetic Analyzer</u>

9. In 2013, FSS was using two 3130xl Genetic Analyzers. On 8 July 2013 an OQI was raised after it was discovered that one of these instruments had been operating with an incorrect injection

time: 3 seconds instead of 5 seconds. The ensuing investigation was completed on 6 August 2013. The time period during which the incorrect setting was in use covers some of the period during which samples from the Blackburn investigation were submitted.

Validation of Powerplex 21 and STRmix

10. Powerplex 21 and STRmix were validated by December 2012 and implemented thereafter. The 3 second injection time was in use during the validation of Powerplex 21. Indeed, it may be that it was in used during the validation of one or both of the Genetic Analyzers themselves.

Opinion of Dr Kirsty Wright

11. Dr Wright is a forensic biologist who, in a newspaper's podcast first broadcast in 2021, offered her opinions about the quality of the work done by FSS in the Blackburn investigation. Her opinions were based upon documents and information that were available to her at the time. At the Commission's request, Dr Wright has now provided a report of her opinions based upon case documents that the Commission has provided to her.

Requirements

Would you please advise:

a) Whether the work done by FSS in the Blackburn case was done in accordance with best practice.
b) Whether the way in which the matters referred to in OQI 34034 and OQI 34817 were dealt with, or resolved, was in accordance with best practice.
c) Whether the matters referred to in OQI 34034 and OQI 34817 had, or could have had, any effect upon the analyses performed by FSS in that case.
d) Whether the validation of the Genetic Analyzers, Powerplex 21 or STRmix were performed in accordance with best practice and, if not whether any failures had, or could have had, an effect upon the results of DNA testing in the Blackburn case.
e) As to the soundness of the opinions of Dr Wright.
f) As to any other matter that you think is relevant concerning any of these matters or the way in which FSS does its work.

If you require any further information or clarification about these instructions, please contact Laura Reece Counsel Assisting on [redacted] or [redacted]

I thank you again for your opinion on this issue.

Yours sincerely,

[redacted]

Walter Sofronoff QC
Commissioner
Commission of Inquiry into Forensic DNA Testing in Queensland

(enclosed)