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REPORT

Report to: Walter Sofronoff KC, Commissioner
Commissioner of Inquiry into Forensic DNA Testing in Queensland

Report Date: 20 October 2022

Request: This report has been requested by the Commission of Inquiry into Forensic DNA Testing in Queensland.

The instructions to the expert provided by the Commission of Inquiry can be found at Appendix 1.

The main purpose of this report is to:

1. Review the documentation provided and determine whether the scientific testing process for use of the DNA IQ instrument was scientifically sound and conducted in accordance with international best practice.
2. Consider the audit and investigation reports and whether the analysis employed was scientifically sound and in accordance with international best practice.

Information Reviewed: The index of information provided and considered as part of the development of this report can be found at Appendix 2.

Qualifications I commenced my career at Victoria Police in 1996 as a forensic biologist, attending crime scenes, with expertise in biological fluid identification and DNA analysis. In 2000 I joined New South Wales Police as a Forensic DNA Specialist working on legislative reform, policy development, the investigation of high-profile murder cases, cold case reviews and the highly publicised mass DNA screen in the town of Wee Waa, NSW. After moving to the Australian Federal Police (AFP) in 2002 as Team Leader of the Biology Team, I coordinated the DNA analysis of all samples involved in the disaster victim identification and criminal investigation of the Bali Bombing in October 2002 and advised on the associated legislative change. Whilst at the AFP I commenced my PhD at the University of Canberra in species identification of Diprotodontia for wildlife crime investigations, which I completed in 2011. I joined the National Institute of Forensic Science (NIFS) in 2008 and succeeded to Director NIFS in 2015. I am the Chair of Standards Australia committee CH041 and ISO committee TC272 – Forensic Sciences, developing forensic specific Australian and international Standards respectively. I am the current President of the International Forensic Strategic Alliance and represent them on the International Criminal Court Office of the Prosecutor Scientific Advisory Board. I am currently the Director of Forensic Science SA. My Curriculum Vitae can be found at Appendix 3.

Introduction

1. The Promega Corporation DNA IQ™ System (DNA IQ) is a method used for the isolation (extraction) of DNA from biological material. It can be used to extract DNA from various types of biological material including blood, semen, and saliva. The method also effectively removes contaminants and inhibitors of the downstream DNA amplification (copying) process.
2. The extraction method comprises three general steps: lysis, washing, and elution. The first lysis step breaks open the cell membranes, denatures (breaks apart) proteins and inactivates enzymes, to release the DNA and prevent any degradation of the DNA. In step two, the DNA IQ uses magnetic bead resin to bind the DNA so that the samples can be washed removing any inhibitors. Step three uses an elution buffer to remove the DNA from the beads into solution ready for downstream processing.
3. There is no recognised international best practice for a specific methodology that should be applied to the extraction of DNA from biological material and methods utilised are highly laboratory dependant. The DNA IQ method can be performed manually, automated using liquid handling robotics, or a combination of manual and automatic steps (usually the lysis step is performed manually, with the washing and elution steps automated).
4. At Queensland Health Forensic and Scientific Services (QHFSS), the DNA IQ method (version 1) was released 24 October 2007 (see FSS.0001.0080.6560) and the DNA IQ method was implemented as a fully automated process on 29 October 2007 (see Statement of Allan Russell McNevin WIT.0040.0077.0001, paragraph 263). This is supported by the statement of Thomas Nurthen (WIT.0050.002.0001, paragraphs 20-21 and also the Change Register (see statement of Justin Howes, WIT.0016.0188.0001, attachment JH-52, page 512).
5. According to the statement of Thomas Nurthen (paragraph 21), a fully manual process had been validated but was not implemented until around February 2008. Although I note the implementation of the manual method is not supported by other statements or the Change Register.
6. In order to improve the extraction of DNA from casework samples, a process with manual lysis followed by automated washing and elution (off deck lysis) was also introduced 19 March 2008 (see statement of Thomas Nurthen, paragraph 21, statement of Allan Russell McNevin, paragraph 263 and the Change Register (statement of Justin Howes, attachment JH-52, page 513).
7. In February 2008, the first case of a contamination of a sample was reported (see Opportunity for Quality Improvement (OQI) 19330, and Statement of Justin Howes, WIT.0016.0188.0001, paragraph 91). Subsequent further contamination events were identified through April, May and June (for example see OQIs 19349, 19477, 19767, 19768) and investigations conducted as contamination events were identified.
8. At a management meeting on 10 April 2008, it was decided that an Analytical Issues Log would be created to keep track of issues in the DNA IQ method (Statement Justin Howe, paragraph 96).
9. In mid-July an audit was conducted (see Audit 8227, FSS.0001.0057.3107) and the results reported in August 2008.
10. On 27 July the automated DNA IQ extraction procedure was halted and additional requirements for the review of samples processed through the automated DNA IQ method was implemented (Statement Justin Howe, paragraph 101).
11. The laboratory reverted back to the previous chelex method for DNA extraction on 28 July 2008 (Statement of Cathie Allen, WIT.0019.0016.0001, paragraph 182 and attachment CA-91, page 3137, and statement of Justin Howes attachment JH-52, page 514).

12. An external review was commissioned and conducted by Dr Theo Sloots and Dr David Whiley, who visited the laboratory on 12 November 2008 and provided a report on 14 November 2008 (Statement Justin Howes, paragraphs 104 and 125-127).
13. Advice was sought from Crown Law, which was received in December 2008 (Statement Justin Howe, paragraph 106). A meeting with the Director of Public Prosecution (DPP) was held on 4 December 2008 to brief the DPP on the issue (Statement of Cathie Allen, paragraph 184)
14. Advice was received from Crown Law on 19 December 2008 regarding disclosure of adverse results. Statements were then amended to include a notification to readers regarding the issues with the results (Statement of Cathie Allen, paragraphs 185-186).
15. The manual method of DNA IQ was not re-implemented until 19 June 2009 and the automated process was not re-implemented until 20 August 2009 (see statement of Allan McNevin, paragraph 314).

Comments and Opinions

Question 1. Whether the methods, systems and processes in relation to using the DNA IQ instrument was consistent with international best practice when issues arose in and around 2008.

Methods

16. DNA extractions can be performed manually (off deck), via an automated liquid handling system (on deck), or by a combination of the two methods. The latter is usually conducted by manual (off deck) handling of the initial lysis steps, followed by automated liquid handling (on deck) of the remaining steps in the DNA extraction methodology.
17. Manual handling to remove the cellular material from substrates (such as swabs) into a liquid form (lysate) for subsequent automated processing, can produce more reproducible results as swabs and other physical substrates can interfere with the pipetting process in robotic platforms. This is because robotic platforms may not have the flexibility to deal with different types of substrates and their variable position in the tubes, which are not standardised sufficiently for an automated system.
18. Implementation of a method into casework should be preceded by an appropriately designed validation or verification study. Generally, if the method has been robustly validated (according to international guidelines) and successfully implemented into a laboratory elsewhere and the proposed method is unchanged from that validation, then the method only needs verification to demonstrate that the method operates as expected in the new laboratory. If the method has not been validated robustly elsewhere, then it should be validated prior to use so that the limitations and operating parameters of the method are clearly understood.
19. If the method has been demonstrated to operate as expected and produce reliable and reproducible results, then it can be implemented through appropriate training of scientists.
20. If the automated method released in October 2007 (FSS.0001.0080.6560) and the off-deck lysis method released in March 2008 (FSS.0001.0080.6644) have been appropriately validated, then they can both be considered appropriate to use.
21. The DNA IQ system is a reliable and robust method for extracting DNA from forensic samples.
22. The use of the manual and automated DNA IQ methods for the extraction of forensic samples is within the bounds of expectation for this methodology. The DNA IQ method is designed specifically for the extraction of DNA from forensic (and paternity) samples (see https://www.promega.com.au/products/forensic-dna-analysis-ce/dna-isolation/dna-iq-system/?catNum=DC6701).

23. The use of these extraction methods and the implementation of the methods was not outside of what would be considered good practice for a forensic DNA laboratory in 2008.
24. There is evidence to suggest that the application of the method in an automated protocol may not have been sufficiently validated when originally implemented, as documented in the External Review of Operations Report – Drs Sloots and Whiley, FSS.0001.0024.0805. The report states "*it may appear that the original issue concerning the cross-contamination of samples in the deep-well plates could have been prevented if this change in procedure had been fully validated against existing protocol when the new method was introduced.*" This would indicate that the validation of the automated method could have been more robust.
25. In the document "*Project 13. Report on the Verification of an Automated DNA IQ™ Protocol using the MultiPROBE® II PLUS HT EX with Gripper™ Integration Platform*" (August 2008, no document number supplied), I note the following text: "*The MultiPROBE® II PLUS instrument comes pre-loaded with an automated DNA IQ™ protocol. Unlike the other laboratories, however, we did not validate the included protocol, but instead validated a manual DNA IQ™ protocol which was based on the CFS automated protocol (PerkinElmer, 2004), followed by verification of an automated protocol based on the validated manual method."* (see page 1).
26. There are differences between the in-house verified protocol (which was based on the validated manual method) and the pre-loaded protocol that came with the MultiPROBE®. This included the use of a lysis step using extraction buffer, and the use of a SlicPrep™ 96 Device (Promega Corp., Madison, WI, USA), so that samples could be processed in a 96 well format (8 x 12 sample format) (see Project 13 Report, page 1). Additionally, I note that the volumes used for the extraction method were over three times the amount than used in the manufacturers protocol (see Promega Technical Bulletin "DNA IQ™ System – Small Sample Casework Protocol").
27. The manufacturers recommended protocol adds 100-250uL of lysis buffer to each sample tube (page 7, amount depending on the casework sample type). The QHFSS implemented method adds 1007uL of lysis buffer to each sample well in the automated process (see SOP document #24897v2, FSS.0001.0080.6622, page 8, section 7, point 3). This represents a significant increase in the extraction volume of each sample. Whilst larger volumes are still within the bounds of accepted practice, it should have elicited closer attention to the impact of these volumes on the method and results when moving to an automated platform.
28. I note the final elution volume for both methods is 100uL (noting the manufacturers protocol permits a range). I also note the manufacturers protocol states: "A lower elution volume ensures a higher final concentration of DNA."
29. I note that in the validated automated QHFSS method introduced on 20 August 2009, the lysis volumes were reduced to 53uL (see SOP document #24897v6, FSS.0001.0080.6734, page 11, 9.5.2). I also note the extraction buffer was reduced from 500uL (#24897v2) to 300uL (#24897v6). The final volume of the eluted DNA in solution remained at 100uL in both versions.
30. It is therefore reasonable to consider that the significantly higher volumes used in the initial automated method may have contributed to the occurrence of the contamination events.
31. This supports the contention that the verification of the automated platform method was insufficient to thoroughly test the impact of the larger volumes.
32. In the Project 13 Report, the contamination check consisted of five extraction batch runs, using the checkerboard and zebra-stripe patterns for sample layout of the platform (page 9, section 6.3). Significantly, it is noted that one of the runs was invalidated due to the presence of an unknown profile that could not be identified. This should have resulted in further testing. Therefore, the verification of the automated method is not consistent with expected good practice.

Training

33. Training should be consistent with the Methods and Standard Operating Procedures (SOPs) used in the laboratory and be fit for purpose to demonstrate scientists have been trained sufficiently to properly follow and understand methods and SOPs. Training should culminate in the scientist being authorised as competent (if appropriate) to perform the relevant tasks. Training should also be ongoing to ensure continued competence of scientists.
34. The QHFSS training module for the Automated DNA Extraction with the DNA IQ™ Kit (document 24896V1, dated 31/10/2007, FSS.0001.0080.6495) required scientists to demonstrate the successful completion (under the guidance of a trainer) of five automated sample extraction batches and 25 written theory-based questions. These are mapped against Key Performance Criteria (KPCs), which have been determined as part of the development of the training module, to represent key aspects of the method/SOP that the scientist should understand. Demonstration of the successful extraction of five extraction batches containing a routine number of samples is sufficient to train and demonstrate competency in the method. However, this is only true if the batches are representative of any variations in how the methods may be performed (e.g., slight changes in the procedure). If the variations in the methods are significantly different (e.g., manual versus automated processing), then further replicates should be included.
35. This approach was included in the requirements for Demonstrated Ability (Part A) for batch extractions in the next version of the extraction training module (see document 24896V2, dated 05/08/2008, FSS.0001.0080.6502), which introduced off-deck lysis to the training for automated DNA extraction.
36. I note that the off-deck lysis was introduced in March 2008, but the training manual was not updated until August 2008. It is best practice to keep the training manuals consistent with the current methodology and practices. This would ensure that there is a documented process for the scientists to maintain their competency in the relevant testing methods. I note there may have been training provided in the revised method that is not captured in the information provided.
37. The inclusion of a requirement to demonstrate competence in the manual DNA IQ™ method was introduced into version three of the training manual (see document 24896V3, dated 14/08/2009, FSS.0001.0080.6511). I note the manual method was implemented 19 June 2009.
38. As the off-deck lysis process follows the same general steps as the full manual process, only a small amount of training should have been required.
39. It should be noted that subsequent changes to the method post demonstration of competence should be clearly communicated and understood by scientists. It is evident that some staff members were not comfortable with the level of continued training in changes to the methods/SOPs (see FSS.0001.0057.3107).
40. The contamination events identified in FSS.0001.0057.3107 and in OQIs 18580, 19349, 19477, 19768, and 20231 appear to be complex in nature and the exact origin was unable to be fully resolved, however a number of possible sources were identified (see FSS.0001.0024.0805 for summary). It is unlikely that a revised training program would have prevented these contamination events.
41. Extraction controls should be checked for each extraction batch prior to the sample results being released to the case reporting scientists and subsequent communication to the client. Therefore, it would be anticipated that any contamination events would be identified relatively quickly and steps to identify the source and mitigate further events conducted. From the OQI records, it can be seen that most contamination events were identified “real-time”, appropriately recorded, and investigated.

42. There should also be a clear process for staff to raise issues and seek remedies. I note that Audit Report 8227 (FSS.0001.0060.4883) details numerous comments from staff regarding issues with the automated extraction process. These include issues with the tip chute receptacle (2.4.13.6), the plate not fitting into the deck correctly (2.4.13.8, 3.10), and condensation on the top of wells (page 12). These issues are more likely related to the contamination events. As they have been identified and raised by staff as part of the review, it supports the contention that staff training is adequate and that the contamination issues stem from equipment/consumable related failures.

Environmental Monitoring

43. The QHFSS Environmental Monitoring procedure (23602V3) details accidental contamination, monthly and yearly environmental monitoring sampling requirements to identify potential surface contamination, including specific surface areas to be tested.
44. The Anti Contamination Procedure (22857V2) details laboratory layout, personal protective equipment (e.g., laboratory coats, gloves, masks) requirements, monthly clean, and environmental monitoring.
45. Records were provided for the results of the environmental monitoring sampling and DNA testing; however, it is not clear whether critical areas are tested more frequently or whether all areas listed in the environmental monitoring procedure have actually been tested. It is recommended that a system be put in place to track that identified critical areas have been tested as appropriate. For example, from the excel spreadsheet (FBE-07-08) the water bath handle was tested regularly, however the clothesline was only tested once. This may be due to a risk-based approach; however, this is unclear as it is not documented.
46. Overall, the testing regime is as would be expected in 2008 considering the level of sensitivity of the testing methods and the monitoring controls can considered good practice at that time. Modern testing systems are considerably more sensitive, which has increased the awareness of and need for environmental monitoring in recent years.
47. There is however limited information in the procedure documents regarding the deep clean process. The procedure states that the deep clean should *"…include cleaning of items not cleaned during the normal examination process i.e., chairs, computers, fridge handles etc*." It is recommended that further information should be included in the procedure detailing what should be cleaned in the deep clean and how. I note I was not provided with any records of the deep cleans. Records of deep cleans should be maintained.
48. When considering best practice, I would expect to see greater clarity concerning the deep clean procedure and records of them being undertaken. Monthly deep cleans is an appropriate timeframe for this activity.

Question 2. Whether the identification, investigation/s and resolution of the DNA IQ issues was appropriate and consistent with international best practice

49. Considerable work has been conducted by QHFSS in reviewing the issues experienced in relation to the automated DNA extraction process. This work is of a high standard. The identification, investigation and recommendations undertaken by QHFSS were appropriate and consistent with best practice.
50. I note there were some delays in the communication of the issues to the DPP, as a meeting was not held with the DPP until 4 December 2008. This may have been due to the need to work through governance processes including an external review and seeking advice from Crown

Law. Therefore, whilst the communication was delayed, this timeframe is not outside the timeframe expectations for an issue of this significance.

51. Quality assurance should encompass a principle of continuous improvement. Therefore, methods and systems should be regularly reviewed to identify further opportunities for improvement. This should be based in a quality culture where any errors provide learnings and staff feel comfortable to identify errors, seek solutions, and opportunities for learning in a positive focussed environment. A punitive quality environment will promote errors to be hidden and not recorded, so that the learning and quality improvement will not be identified. All human-based systems will incur errors and so it is important to foster an environment where these errors can be easily identified and rectified.
52. **Audit 8227** (FSS.0001.0057.3107) was very thorough. I note nine extraction batches were reviewed as follows:
    - Off-deck (retained supernatant) x 1
    - Off-deck (no retained supernatant) x 3
    - STORstar lysate x 1
    - Automated DNA IQ (Casework), elution x 1
    - Automated DNA IQ (Reference) x 3
53. I would have preferred to see at least two of each type of extraction process reviewed as part of the audit.
54. I also note that it is not clear which scientists conducted the extraction batches. It would have been useful to identify the scientists (potentially using a code) to ensure a broad range of the scientists were reviewed. This would facilitate the identification of any user differences.
55. The recommendations noted in the audit report 8227 were appropriate.
56. The **extraction batch audit** (FSS.0001.0060.5715) was useful in that it identified further contamination events and a quality improvement (Batch Comparison Macro) to check samples within batches to each other.
57. It is not clear from the **Audit 9642** (FSS.0001.0060.5699) report, what was actually conducted as part of the audit as the method is not detailed. Whilst the findings and observations (which are appropriate) indicated that the audit may have been robust and included the observation of an extraction process, this cannot be ascertained for certain. I would expect that the audit report would contain more information regarding how the audit was conducted and what methodology was used. The audit report should contain sufficient information that it could be replicated by another scientist. This ensures there is sufficient information to appropriately review the audit report.
58. It is therefore difficult to comment on the appropriateness of the audit. The recommendations contained in the audit report appear reasonable.
59. The **report of Drs Sloots and Whiley** (FSS.0001.0024.0805) provides insufficient detail to comment on the appropriateness of the review. However, the findings contained in the report appear appropriate.

Question 3. Whether the amended methods, systems and processes implemented for using the DNA IQ instrument was consistent with international best practice

60. The manual method of DNA IQ was re-implemented on 19 June 2009 and the automated process was re-implemented on 20 August 2009 (see statement of Allan McNevin, paragraph 314).

61. If the amended methods have been demonstrated through validation/verification to operate as expected and produce reliable and reproducible results, then they can be considered suitable for implementation and use.
62. I note that QHFSS returned to their previously validated chelex DNA extraction method (see statement of Allan McNevin, paragraph 314, statement of Cathie Allen, paragraph 182 and attachment CA-91, page 3137, and statement of Justin Howes attachment JH-52, page 514), whilst they revalidated the DNA IQ method. Whilst the chelex method is an inferior method to the DNA IQ, I do not believe there would have been an alternative process that could have been employed at the time that would have allowed the QHFSS laboratory to continue using the DNA IQ method.
63. The research conducted into the root cause of the contamination was extremely thorough and it is evident that the cause was complex and multi sourced. Whilst there were a few instances of human error, the main causes of the contamination are equipment related and therefore more systemic. A full review was therefore required. This was the approach taken by QHFSS and therefore reasonable and appropriate.
64. It was noted that not all documents were not dated, or version controlled (it is however noted that documents may have been dated through an electronic record storage system). It is strongly recommended that all documents and reports should contain date and version control information within the text of the document to align with best practice.

Question 4. If any deficiency in the methods, systems or processes for use of the DNA IQ instrument or the resolution of the issue that arose in and around 2008 is found, the impact of that deficiency on:

a. Whether the obtaining of a useable DNA profile from a sample by the laboratory was reliable and accurate;

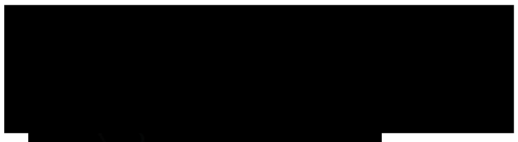
65. Given the number of contamination events that occurred when using the DNA IQ method in 2007-2008, it could be that the method was not sufficiently validated. It is surprising that the level of contamination was not identified during the validation.
66. I note that the contamination events were almost all related to within extraction batch (well to well) contamination, in that contamination events did not generally go across extraction batches. This means that batches can be checked for well-to-well contamination and determine which samples have DNA results that on the balance of probabilities not as a result of contamination (for example if the profile is unique within the batch)
67. Samples and DNA results whose results cannot be demonstrated to not have originated from a contamination event cannot be relied upon.
68. Samples that have DNA profile results that have undergone the relevant quality assurance checks, including the checking of relevant control samples (e.g. extraction reagent blank, positive and negative controls), could be considered reliable and accurate.
69. QHFSS went through this process to determine which results were compromised and which results could be relied upon. The process for doing this analysis was appropriate.

b. Whether DNA profiles obtained by the laboratory are reliable and accurate.

70. QHFSS completed an extensive review of the results generated from the DNA IQ method 2007-2008. Given the amount of work conducted and the thoroughness of the work, once this was completed, the remaining results that have undergone the relevant quality assurance checks,

including the checking of relevant control samples (e.g. extraction reagent blank, positive and negative controls), could be considered reliable and accurate.

71. I did not find any significant failings that would indicate that the final results released were not reliable.



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Appendix 1 – Amended Instructions to expert

Amended Instructions to expert

Linzi Wilson-Wilde

12 October 2022

Background

1. The Commission of Inquiry into DNA testing in Queensland was announced by the Queensland Premier on 6 June 2022 and commenced on 13 June 2022.

2. The Commission was prompted by a number of issues raised publicly regarding the adequacy of forensic DNA testing undertaken at the Queensland Health Forensic and Scientific Services (QHFSS).

3. General and specific concerns have been raised regarding cross contamination of samples using DNA IQ testing instrument in the QHFSS DNA Analysis Unit.

4. In and around 2008, it was discovered that the seals from the DNA IQ products (consumables) in the extraction phase were leading to cross-contamination amongst different, unrelated samples. The issue was documents in various OQIs. Once the laboratory discovered the issue, there was a retrospective assessment of all the samples that were processed with the relevant consumables. The issue affected many batches of samples.

5. QHFSS conducted both an internal audit, and procured an external audit, of the issue.

Overview of engagement

6. You have been engaged to review the documentation provided and determine whether the scientific testing process for use of the DNA IQ instrument was scientifically sound and conducted in accordance with international best practice.

7. In addition, you will also consider the audit and investigation reports and whether the analysis employed was scientifically sound and in accordance with international best practice.

Instructions

8. You are instructed to:

   (a) consider the briefed material;

(b) provide advice to the Commission as to:

1. Whether the methods, systems and processes in relation to using the DNA IQ instrument was consistent with international best practice when issues arose in and around 2008, including consideration of the following particular issues:
    i. Whether the process that QHFSS introduced, first using automated liquid handler platforms in October 2008 and then commencing processing with 'off deck lysis' in March 2008, to perform automated DNA IQ extractions was consistent with international best practice
    ii. Whether adequate training following the implementation of DNA IQ could have prevented the contamination issue, with reference to Audit 8227 "Process Audit of Automated DNA IQ System (including Off-Deck Lysis)" (3.3 - Audit Report - 'Audit 8227. Process audit of automated DNA IQ System (including off-deck lysis)' (Cheng, Clause.pdf where:
        - it was identified that "KPC's for the off-deck lysis and STORstar components are not included in the DNA IQ training module, but are integral to the DNA IQ protocol" at [3.1];
        - it was identified that "some staff members … feel that they are frequently exposed to changes in protocols and methods, and are required to adapt quickly" at [3.12]; and
        - a number of recommendations were made relating to training at [4.1]-[4.7].
    iii. Whether the monitoring of environmental conditions and protocols relating to laboratory maintenance and cleaning of DNA IQ instruments between October 2007 and May 2009 were consistent with international best practice.
2. Whether the identification, investigation/s and resolution of the DNA IQ issues was appropriate and consistent with international best practice, including consideration of the following particular issues:
    i. Whether Audit 8227 was an appropriate response to the OQIs raised and carried out in a manner consistent with international best practice
    ii. Whether the recommendations of Audit 8227 were appropriate and whether other recommendations would be expected or preferred.
    iii. Whether Audit 8752 was an appropriate response to the ongoing DNA IQ contamination issue and carried out in a manner consistent with international best practice;
    iv. Whether Audit 9642 was an appropriate response to the ongoing DNA IQ contamination issue and carried out in a manner consistent with international best practice;

v. Whether the recommendations of Audit 9642 were appropriate and whether other recommendations would be expected or preferred.

vi. Whether the recommendations from Drs Sloots and Whiley's report were appropriate and whether other recommendations would be expected or preferred.

vii. Whether QHFSS' response to the other audits and reports were appropriate and consistent with international best practice.

3. Whether the amended methods, systems and processes implemented for using the DNA IQ instrument was consistent with international best practice;
4. If any deficiency in the methods, systems or processes for use of the DNA IQ instrument or the resolution of the issue that arose in and around 2008 is found, the impact of that deficiency on:
    i. Whether the obtaining of a useable DNA profile from a sample by the laboratory was reliable and accurate;
    ii. Whether DNA profiles obtained by the laboratory are reliable and accurate.

9. To provide that advice, please:

(a) consider all the enclosed material;

(b) discuss with Counsel Assisting the Commission the adequacy of the instructions and brief to be able to provide the advice sought by **14 October 2022**;

(c) provide a draft report for discussion with Counsel Assisting the Commission, by ~~**28 September**~~ **14 October 2022**; and

(d) provide a final report no later than ~~**3**~~ **17 October 2022**.

Appendix 2 - Index of information provided and considered

No.	Document	Date	Inquiry Reference
1.	**Letter to Expert**		
1.1	Letter of instructions to Linzi Wilson-Wilde		
2.	**Terms of Reference**		
2.1	Terms of Reference - Commission of Inquiry into DNA Testing in Queensland	10/06/22	
3.0	**Audits/Reviews**		
3.1	Report – 'Investigation into a partial DNA profile negative extraction control sample' (Cheng, McNevin)	Undated	FSS.0001.0057.3100
3.1a	Report – A review of DNA extraction control results obtained in the first six months of 2008' (Harvey & McNevin)	Undated	FSS.0001.0065.5065
3.1b	Report – A review of DNA extraction control results obtained in the second six months of 2008' (Harvey & McNevin)	Undated	FSS.0001.0060.5790
3.2	Audit 8227 Checklist	Undated	FSS.0001.0060.4876
3.3	Audit Report – 'Audit 8227. Process Audit of the Automated DNA IQ System (including Off-Deck Lysis) (Cheng, Clausen, Muharam)	Aug 2008	FSS.0001.0057.3107
3.4	Presentation – Audit 8227: Process audit of the DNA IQ System	17/09/08	FSS.0001.0060.4883
3.5	Audit Report – Extraction Batch Audit	Sep 2008	FSS.0001.0060.5715
3.5a	Presentation – Extraction Batch Audit	17/09/08	FSS.0001.0060.5730
3.5b	Report (Desley Pitcher) – DNA Extraction Modifications	03/10/08	FSS.0001.0070.3708
3.5c	Report (Desley Pitcher) – DNA Extraction Modifications	06.11.08	FSS.0001.0070.3710
3.6	External Review of Operations Report – Drs Sloots & Whiley	14/11/08	FSS.0001.0024.0805
3.7	Presentation – "Update on DNA Analysis Issues"	15/12/08	FSS.0001.0024.4152
3.8	NATA Report on reassessment (Item 4.9.1)	27/01/09	FSS.0001.0024.3564

No.	Document	Date	Inquiry Reference
3.9	Audit Report – 'Audit 9642: DNA IQ method of extracting DNA from casework and reference samples audit' (Sultana & Brady)	Aug 2009	FSS.0001.0060.5699
3.10	Audit #9642 Response		FSS.0001.0056.7885
4.0	**OQIs/Audit Entries**		
4.1	#18580	10/01/08	FSS.0001.0002.2199
4.2	#19349	23/04/08	FSS.0001.0002.2245
4.3	#19477	12/05/08	FSS.0001.0002.2268
4.4	#19767	14/06/08	FSS.0001.0002.2279
4.5	#19768	14/06/08	FSS.0001.0002.2282
4.6	#20231	24/07/08	FSS.0001.0002.2310
4.6a	#8752 (Audit of all extraction batches)	28/07/08	FSS.0001.0056.7891
4.7	#20351	08/08/08	FSS.0001.0002.2312
4.8	#20367	11/08/08	FSS.0001.0002.2320
4.9	#20368	11/08/08	FSS.0001.0002.2324
4.10	#20369	11/08/08	FSS.0001.0002.2328
4.11	#20422	20/08/08	FSS.0001.0002.2333
4.12	#20432	21/08/08	FSS.0001.0002.2336
4.13	#20437	21/08/08	FSS.0001.0002.2340
4.14	#20615	04/09/08	FSS.0001.0002.2344
4.15	#20617	05/09/08	FSS.0001.0002.2348
4.16	#20690	15/09/08	FSS.0001.0002.2353
4.17	#20925	06/10/08	FSS.0001.0002.2359
4.18	#21050	13/10/08	FSS.0001.0002.2366
4.19	#21222	28/10/08	FSS.0001.0002.2373
4.20	#21309	06/11/08	FSS.0001.0002.2381
4.21	#9175 (DNA IQ External Audit – Sloots & Whiley)	12/11/08	FSS.0001.0056.7799

No.	Document	Date	Inquiry Reference
4.22	#21589	05/12/08	FSS.0001.0002.2407
4.23	#21718	15/12/08	FSS.0001.0002.2418
4.24	#22438	12/03/09	FSS.0001.0002.2448
4.25	#9642 (DNA IQ Follow up audit)	24/08/09	FSS.0001.0060.5799
5.0	**Correspondence**		
5.1	Meeting Minutes (Biology Team) (see p. 6, 3.8)	10/04/08	FSS.0001.0003.2453
5.2	Meeting Minutes (see 2.1 and 2.2)	02/06/08	FSS.0001.0003.5587
5.3	Meeting Minutes	23/06/08	FSS.0001.0003.5593
5.4	Meeting Minutes	30/06/08	FSS.0001.0003.5597
5.5	Meeting Minutes	11/07/08	FSS.0001.0003.5571
5.6	Memorandum – Vanessa Ientile – DNA IQ Extractions	14/07/08	FSS.0001.0024.0802
5.7	Meeting Minutes	21/07/08	FSS.0001.0003.5581
5.8	Meeting Minutes	04/08/08	FSS.0001.0003.5560
5.8a	Management Team Meeting Minutes	05/08/08	FSS.0001.0079.5294
5.9	Meeting Minutes (Analytical Team) (see p. 3, 3.5)	11/08/08	FSS.0001.0002.6861
5.10	Meeting Minutes	12/08/08	FSS.0001.0003.5548
5.10a	Meeting Minutes (Analytical Team) (see p. 2, 3.5)	18/08/08	FSS.0001.0002.6912
5.11	Meeting Minutes	21/08/08	FSS.0001.0003.5554
5.12	Meeting Minutes	08/09/08	FSS.0001.0003.5615
5.13	Meeting Minutes	15/09/08	FSS.0001.0003.5622
5.13a	Meeting Minutes	15/09/08	FSS.0001.0002.6896
5.14	Meeting Minutes	30/09/08	FSS.0001.0003.5629
5.14a	Meeting Minutes (Forensic Reporting and Intelligence Team Meeting)	02/10/08	FSS.0001.0070.3907
5.15	Meeting Minutes	07/10/08	FSS.0001.0003.5605
5.16	Meeting Minutes	20/10/08	FSS.0001.0003.5610

No.	Document	Date	Inquiry Reference
5.16a	Presentation – MP11 Enhancements	13/11/08	FSS.0001.0070.3925
5.17	Meeting Minutes	09/03/09	FSS.0001.0002.7217
5.18	Meeting Minutes	26/03/09	FSS.0001.0003.2867
5.19	Correspondence from Cathie Allen to Department of Justice and Attorney-General	May 2009	DPP.0052.0009.0004
6.0	**Spreadsheets**		
6.1	Issues Log – 2007 – 2009		FSS.0001.0010.8973
6.2	List of OQI's – 2003 – 2022		FSS.0001.0002.1723
6.3	Audit 8227 OQIs		FSS.0001.0060.5049
6.4	Analytical Issues Log		FSS.0001.0010.8992
6.5	Minor Changes Log		FSS.0001.0002.3879
7.0	**Miscellaneous**		
7.1	Technical Manual – DNA IQ Casework Pro Kit for Maxwell 16	2010	FSS.0001.0010.6421
7.2	Technical Manual – DNA IQ™ System – Small Sample Casework Protocol	2006	
7.3	Correspondence from David Neville to Michael Keller re: potential contamination	26/02/09	QPS.0001.1117.0001
8.0	**SOPs**		
8.1	SOP – DNA IQ Method of Extracting DNA from casework and reference samples		FSS.0001.0070.4340
9.0	**Supplementary Material**		
9.1	Additional OQIs: • OQI #18893 – FSS.0001.0002.2210 • OQI #19213 – FSS.0001.0002.2240 • OQI #19330 – FSS.0001.0002.2242 • OQI #21062 – FSS.0001.0002.2368 • OQI #21715 – FSS.0001.0002.2416 • OQI #22882 – FSS.0001.0002.2507		
9.2	Additional correspondence:		

No.	Document	Date	Inquiry Reference
	• Management Team Minutes (Extraordinary meeting – 140708) – FSS.0001.0080.2579 • Email from Vanessa Ientile (28 July 2008) – FSS.0001.0080.2646 • Management Team Minutes (Extraordinary meeting – 28 July 2008) – FSS.0001.0080.2657 • Audit 8827 Meeting Notes – FSS.0001.0080.2861		
9.3	Additional Investigation Reports: • Investigation into contamination of negative and positive extraction control re: OQI 19349 • Investigation into mixture found in FTA evidence sample re: OQI 19767 • Investigation into negative control with peaks re: OQI 19768 • Investigation into negative extraction control with a partial DNA profile re: OQI 20231 • Investigation into positive control with extra peaks		FSS.0001.0080.2541 FSS.0001.0080.2591 FSS.0001.0080.2651 FSS.0001.0080.2750 FSS.0001.0080.3123
9.4	Extra Batch Contamination Notes: • Extraction Batch Contamination – OQI #20422 • Extraction Batch Contamination – OQI #20437 • Extraction Batch Contamination – OQI #20615 • Extraction Batch Contamination – OQI #20690 • Extraction Batch Contamination – OQI #20925 • Extraction Batch Contamination – OQI #21050 • Extraction Batch Contamination – OQI #21222 • Extraction Batch Contamination – OQI #21309		FSS.0001.0080.2773 FSS.0001.0080.2780 FSS.0001.0080.2790 FSS.0001.0080.2815 FSS.0001.0080.2824 FSS.0001.0080.2833 FSS.0001.0080.2836 FSS.0001.0080.2843
9.5	SOPs – Environmental Monitoring and Anti-Contamination Procedure		
9.6	SOPs – DNA IQ Extraction with the DNA IQ Kit Training Module (all versions):		

No.	Document	Date	Inquiry Reference
	1. #24896v1 (31.10.07) – FSS.0001.0080.6495 2. #24896v2 (05.08.08) – FSS.0001.0080.6502 3. #24896v3 (14.08.09) – FSS.0001.0080.6511 4. #24896v4 (16.05.11) – FSS.0001.0080.6521 5. #24896v5 (10.12.12) – FSS 0001 0080 6532 6. #24896v6 (30.03.15) – FSS.0001.0080.6541 7. #24896v7 (07.11.16) – FSS.0001.0080.6551		
9.7	SOPs – Automated DNA IQ Method of Extracting DNA: 1. #24897v1 (24.10.07) – FSS.0001.0080.6560 2. #24897v2 (11.01.08) – FSS.0001.0080.6622 3. #24897v3 (27.03.08) – FSS.0001.0080.6644 4. #24897v4 (21.05.08) – FSS.0001.0080.6677 5. #24897v5 – FSS.0001.0080.6710 6. #24897v6 (13.08.09) – FSS.0001.0080.6734 7. #24897v7 (09.11.10) – FSS.0001.0080.6759 8. #24897v8 (27.06.12) – FSS.0001.0080.6789 9. #24897v9 (03.01.14) – FSS.0001.0080.6816 10. #24897v10 (12.06.15) – FSS.0001.0080.6574 11. #24897v11 (30.01.17) – FSS.0001.0080.6604		
9.8	MPII Maintenance Logs and Cleaning Diaries: • MPII ExtA Calibration 2007 • MPII ExtA Diary 2007 Reference • MPII ExtA Diary 2008 • MPII ExtA Diary 2009 (Jan-May) • MPII ExtA Maintenance Log 2007 • MPII ExtA Maintenance Log 2008 • MPII ExtA Maintenance Log 2009 • MPII ExtB Calibration 2007 • MPII ExtB Diary 2007 (Oct-Dec) • MPII ExtB Diary 2008 • MPII ExtB Diary 2009 (Jan-May)		

No.	Document	Date	Inquiry Reference
	• MPII ExtB Maintenance Log 2007 • MPII ExtB Maintenance Log 2008 • MPII ExtB Maintenance Log 2009		
9.9	Statement of Catherine Allen, only references: • Statement (paragraphs [168] – [198]; and • Exhibits CA-87 (start p 3050) – CA-121 (end p 3322)		WIT.0019.0016.0001
9.10	Statement of Justin Howes, only references: • Statement (paragraphs [89] – [136]); and • Exhibits JH-41 (start p 398) – JH-58 (ending p 606)		WIT.0016.0188.0001
9.11	Records of environmental monitoring: • FBE Jan-May 2009 • Spreadsheet FBE 07-08 • FBE0107 and FBE0207 Data		
9.12	Statement of Allan McNevin, only references: • Statement (paragraphs [262] – [317]); and • Exhibits ARM 104 (start 1410) – ARM 119 (end p 1840).		WIT.0040.0077.0001
9.13	Statement of Thomas Nurthern		WIT.0050.002.0001 WIT.0050.0003.0001
10.0	**Further Supplementary Material re validations**		
10.1	Response to the COI request for written information re validation of DNA IQ methods	18.10.2022	
10.2	QIS 24897 V1		FSS.0001.0080.6560
10.3	Project 9. Report on the Evaluation of Commercial DNA Extraction Chemistries		
10.4	Project 13. Report on the Verification of an Automated DNA IQ™ Protocol using the MultiPROBE® II PLUS HT EX with Gripper™ Integration Platform		
10.5	QIS 24897 V3		FSS.0001.0080.6644

No.	Document	Date	Inquiry Reference
10.6	Project 11. Report on the Validation of a manual method for Extracting DNA using the DNA IQ™ System (PDF version)		
10.7	Project 21. A Modified DNA IQ™ Method Consisting of Off-Deck Lysis to Allow Supernatant Retention for Presumptive Identification of α-Amylase (scanned version)		
10.8	Project 22. A Modified DNA IQ™ Method for Off-Deck Lysis Prior to Performing Automated DNA Extraction (scanned and draft versions)		
10.9	Emails (x4) re off deck lysis reports		
10.10	Project 13 verification of extraction chemistry (word doc)		

Appendix 3 – Curriculum Vitae Linzi Wilson-Wilde

Curriculum Vitae

Prof Linzi Wilson-Wilde OAM

A strategic thinker and proven high achiever with a demonstrated understanding of the law enforcement and government operating environments (State and Federal). Strong leadership networks nationally and internationally. In demand as an advisor and collaborator. A strong background in delivering policy, legislation and quality operational services. A recognised data orientated decision maker, well respected in the forensic and law enforcement communities.

Qualifications

Doctor of Philosophy
University of Canberra 2011

Postgraduate Diploma of Science
La Trobe University 1996

Bachelor of Science Degree
La Trobe University 1995

Current Positions

Forensic Science SA (FSSA)
Position: Director FSSA onwards

As part of the Attorney-General's Department (AGD) South Australia, responsible for the development, coordination and implementation of strategies to ensure FSSA meets appropriate ethical, professional and quality standards in the provision of forensic services. Provide leadership and management oversight in developing innovative approaches to scientific issues. Meet business objectives, fostering a team approach.

Delivered a new three-year strategic plan and Innovation Roadmap for service delivery over the next 10 years Manage financial and human resources by implementing a new financial accountability framework, realising significant financial savings.

Provide advice to the Minister, AGD Chief Executive and AGD Corporate Executive on forensic science matters. Establish strong effective relationships with the judiciary, the Coroner, the Director of Public Prosecutions, police and defence, as well as national and international counterparts and academic institutions.

Flinders University: Professor of Forensic Science,

Leverhulme Research Centre for Forensic Science, Dundee University: Honorary Fellow

Awards/Recognition

2022 John Harbour Phillips Award – For sustained excellence to forensic science

2021 Victoria Police Service Medal – Ten-year service, Victoria Police

2019 University of Canberra Distinguished Alumni Science and Technology

2017 W.R. Hebblewhite Medal, Standards Australia (recognises exceptional and dedicated contributions in standardisation nationally and internationally).

2014 Inductee into the Victorian Honour Roll of Women.

2010 National Managers Certificate – Recognition of work excellence, AFP.

2009 National Managers Group Certificate – Operation Observe, AFP.

2003 Medal in the Order of Australia. For service as part of the police joint Bali bombing investigation and victim identification process, known as Operation Alliance.

2003 Operations Medal – Operation Alliance, AFP.

2002 Directors Certificate – Operation TOMO, NSW Police.

Professional memberships

Member of the Australian and New Zealand Forensic Science Society.
Current position: member.
Past positions held: President of the Australian Capital Territory branch, Committee member of the New South Wales branch and Secretary and Treasurer of the Victoria branch.

Member of the International Society for Forensic Genetics.
Current position: member.

Member of the Australian Academy of Forensic Science.
Current position: National Committee member.

Career History

Australia New Zealand Policing Advisory Agency (ANZPAA) National Institute of Forensic Science (NIFS)
Position: Director NIFS 2015-2021

Developed the strategic direction for the Institute. Implemented a new operational framework, created a new governance structure, attracted significant (40%) additional ongoing funding, implemented a 3-year rolling Strategic Plan, coupled to an annual Business Plan and established a quarterly reporting framework. Created increased transparency and accountability for NIFS and its groups, aligned to stakeholder needs, increasing value.

Refreshed the NIFS branding, implemented a transparent budgeting model and redesigned all reporting to the laboratory Directors and Police Commissioners. Revitalised the Certification body AFSAB, reducing risk to NIFS' and its stakeholders, increasing confidence in the services.

Completed the implementation of the NIFS Review. Completed a foundational review of the Institute. Reviewed the status of forensic science in Australia and New Zealand and created a Research and Innovation Roadmap for future investment via the creation for a Research and Innovation Strategy. Lead a 44-country ISO consortium in the development of international standards for forensic science and reviewed national service delivery in fingerprints and drug analysis to reduce analysis times and cost.

Developed and implemented the Engender Change program to promote diversity and inclusion in forensic science.

Australia New Zealand Policing Advisory Agency (ANZPAA) National Institute of Forensic Science (NIFS)
Position: General Manager NIFS 2008-2015

Managed the Institute, providing leadership and strategic direction. Managed the integration of the Institute into ANZPAA. Managed major research and development projects, including Forensic Science Standards (National and International), Peroxide Explosive Detection, Ballistics National Training Curricula Review, Rapid DNA, Next Generation Sequencing and NIFS Review Implementation. Provided the daily management of the Institute, including budgets, systems and programs and supervision of NIFS team members, secondees and interns.

Managed the development of policy for the Institute, jurisdictional and nationals environments, including Familial Searching, Predictive DNA testing, New Psychoactive Substances, CCTV guidelines and Digital Imaging Guidelines. Coordinated information transfer and the development of forensic science disciplines on a national level, including the Chemical Warfare Agent Laboratory Network (CWALN), ANZPAA Disaster Victim Identification Committee (ADVIC) and the Australasian Field Forensic Science Accreditation Board (AFFSAB). Managed the Specialist Advisory Group and Workshop Programs.

Australian Federal Police, Forensic Services
Position: Project Officer, Science and Technology Strategic Unit 2006-2010

Developed the Science and Technology Strategic Plan and the Science and Technology Business Plan for the whole of agency AFP. Developed the Concept of Operations for the creation of a Science and Technology Strategic Unit, which was later implemented. Also played a lead role in the development and evaluation of science and technology practices AFP wide.

Led and managed specific science and technology related projects and facilitated and maintained the AFP science and technology research and development program. Also acted as Coordinator of the unit at the inception of the unit.

Additional Information

Law enforcement security clearance to Negative Vetting 2.

PRINCE2 project management qualification (foundation level).

First Aid Trained to level 2.

Career History

Australian Federal Police, Forensic Services
Position: Team Leader of the Biological Criminalistics Team 2002-2006

Led the team, implemented new DNA processes and software to streamline and improve DNA turnaround times. Led the agency to gain its first accreditation in Bloodstain Pattern Analysis.

Coordinated the DNA analysis of all samples involved in the disaster victim identification and criminal investigation of the Bali Bombing in October 2002, for which I received a Medal in the Order of Australia.

Involved in the drafting of legislation to aid the analysis of DNA samples for the Bali bombing and assisted the review committee in the subsequent review of the legislation.

AFP representative to the Biology Special Advisory Group (BSAG) coordinated by the National Institute of Forensic Science. BSAG representative for the DNA Users Advisory Group for CrimTrac (the body responsible for the National DNA Database).

Coordinator Laboratory Services (Biology, Chemistry, Documents, AV) – 15th April 2005 to 9th June 2005 and 6th October 2005 to 28th February 2006.

New South Wales Police, Forensic Services Group
Position: Forensic DNA Specialist 2000-2002

Responsible for the use of DNA analysis in the investigation of high profile and unsolved cases and training within NSW Police in all aspects of DNA analysis.

Established the method of collecting DNA samples (and training police officers, the collection of DNA samples, storage and transport to the laboratory) in the mass DNA screen in the town of Wee Waa. This method became the established standard in most states and territories in Australia.

Involved in the drafting of the NSW Forensic Procedures legislation and provided evidence to the Parliamentary Standing Committee on Law and Justice in the review of the legislation.

Served on the Working Group on Law Enforcement and Evidence for the Australian Law Reform Commission Report into the Protection of Human Genetic Information, released in 2003

Victoria Police, Victoria Police Forensic Science Centre, Biology Division
Position: Case-Reporting Scientist 1996-2000

Trained in: Crime Scene Analysis, DNA Analysis, Evidence Recovery, Case Management, DNA Statistics, Hair and Fibre Analysis, Damage Analysis, Blood Stain Pattern Interpretation.

Validated the Profiler Plus System for DNA Analysis.

Trained Scientists in: Chelex DNA extraction, DNA Quantitation using the Quantiblot method, Electrophoresis using the ABI 377 sequencer and interpretation of DNA profiles using Genotyper Software.

Deployed to Vietnam to train scientists in the method and use of DNA profiling.

Media Examples

ABC Radio Adelaide – 24 April 2021 – Somerton Man case (begins at 1:15)
https://www.abc.net.au/radio/adelaide/programs/breakfast/breakfast/13309162

ABC news – April 2021 – Somerton man case
https://www.abc.net.au/news/2021-04-24/mysterious-somerton-man-to-be-exhumed-by-sa-police/100092750

Adelaide Advertiser – 4 April 2021 – Feature article
https://www.adelaidenow com.au/news/south-australia/dna-expert-dr-linzi-wilsonwilde-also-a-role-model-for-women-in-the-field/news-story/5ba5af9128c93d3f5cb966264798bfd2

Adelaide Advertiser – 3 December 2020 – FSSA Director position announcement
https://www.adelaidenow com.au/news/south-australia/worldrenowned-dna-expert-dr-linzi-wilsonwilde-to-head-forensic-science-south-australia/news-story/10d6359fc5a82e83f9239e86d8b8fcd2

ABC Local Radio – 21 October 2016 – Overnights talkback segment regarding DNA profiling
http://www.abc.net.au/radio/programs/overnights/dna/7956818

4BC – 24 July 2014 – Discussion regarding MH17 and Disaster Victim Identification
http://www.4bc.com.au/blogs/2014-4bc-mornings-audio-blog/mh17-forensic-insight/20140724-3chaw.html

ABC News - 22 September, 2012 7:59pm AEST – Regarding ANZFSS International forensic science symposium
http://www.abc.net.au/news/2012-09-22/international-forensic-symposium/4275690

ABC July 2012 – Discussion regarding the Chamberlain case
http://www.abc.net.au/news/2012-07-09/forensics-in-the-spotlight/4118518

4BC - 19 June, 2012 - 2:47 PM – Discussion regarding DNA evidence
http://www.4bc.com.au/blogs/4bc-blog/dna-evidence/20120619-20lic.html

4BC – May 2012 – Discussion regarding the Baden Clay case
http://www.4bc.com.au/BadenClay

ABC TV 7:30 Report – November 2010 - CSI for Wildlife
http://www.abc.net.au/7 30/content/2010/s3061809.htm

Government-Based Committees

Interpol Forensic Science Managers Symposium Committee
Position: Committee Member 2019 to current.

International Organization for Standardization (ISO) – Technical Committee – TC 272 - Forensic Sciences
Position: Committee Chair 2013 to current.

Standards Australia - Committee – CH-041 Forensic Analysis
Position: Committee Chair 2016 to current. Previous: Committee Member 2011 to 2016.

International Criminal Court (ICC), Office of the Prosecutor Scientific Advisory Board
Position: Vice Chair 2019 to current. Previous: Committee Member (International Forensic Strategic Alliance Representative) 2016 to 2019.

Australian Criminal Intelligence Commission (ACIC) – Law Enforcement Information Systems Capability Committee (LEISCC)
Position: Committee Member – (ANZPAA Observer) 2018 to2021.

ANZPAA John Harber Phillips Award Committee
Position: Committee Chair 2014 to 2021.

CrimTrac (now ACIC) – Strategic Issues Group (CrimTrac SIG)
Position: Member (ANZPAA Observer) 2012 to 2016.

Senior Managers of Australia and New Zealand Forensic Science Laboratories (SMANZFL)
Position: Ex-officio Committee Member and International Liaison Officer 2015 to 2016.

Standards Australia - Committee – CH0-39 Body Fluids
Position: Committee Member 2014 to 2016.

CrimTrac (now ACIC) – National DNA Investigative Capability (NDIC) Evaluation Committee
Position: Member 2014 to 2015.

CrimTrac (now ACIC) – National Criminal Investigation DNA Database Users Advisory Group (NCIDD UAG)
Position: Member 2008 to 2014. Held positions on various advisory committees for CrimTrac since 2000.

Senior Managers of Australia and New Zealand Forensic Science Laboratories (SMANZFL) - Biology Specialist Advisory Group (BSAG)
Position: Member 2000 to 2006.

Australian Law Reform Commission (ALRC) - Working Group into the Protection of Human Genetic Information
Position: Working Group Member 2002 to 2003.

Non-Government-Based Committees

International Forensic Strategic Alliance (IFSA)
Position: President 2019- current. Previous: Member (ANZFEC Representative).

International Association of Forensic Science (IAFS) 2020 Symposium Advisory Committee
Position: Committee Member 2017 to current.

Australian Academy of Forensic Science (AAFS) National Council
Position: National Council Member 2019 to current.

Deakin University – School of Life and Environmental Sciences Forensic Sciences Advisory Board
Position: Member 2012 to 2016.

Non-Government-Based Committees

National Association of Testing Authority (NATA) - Forensic Science Accreditation Advisory Committee (FSAAC)
Position: Member 2012 to 2016.

International Society for Forensic Genetics (ISFG) - Organising Committee for the 2013 World Congress
Position: Vice President, Chair of the Scientific Committee 2011 to 2013.

Community Board – John Street Early Childhood Cooperative
Position: Chair of Board 2010 to 2012.

Australia New Zealand Forensic Science Society (ANZFSS)
Australian Capital Territory Branch Committee Position: President and Member 2002 to 2006.
Victorian Branch Committee Position: Treasurer, Secretary and Member 1997 to 2000.
New South Wales Branch Committee Position: Member 2000 to 2002.
Discipline Chair for Management and Quality for the 2018 ANZFSS Symposium
Discipline Chair for Science and Justice for the 2014 ANZFSS Symposium.
Discipline Co-Chair for Wildlife Forensics and Entomology for the 2010 ANZFSS Symposium.

Publications

Wilson-Wilde, L. (2021). The merits of women. *Australian Journal of Forensic Sciences*, 53(4), 373-377.

Wilson-Wilde, L. (2021). A new era for NIFS. *Australian Journal of Forensic Sciences*, 53(3), 253-255.

Wilson-Wilde L. (2021) The State of Forensic Science in Australia and New Zealand. *Forensic Science Review* 3, 1 *In Press.*

Ballantyne, K. N., and Wilson-Wilde L. (2020) Assessing the reliability and validity of forensic science–an industry perspective. *Australian Journal of Forensic Sciences* 52, 3, 275-281.

Bruenisholz, E., Vandenberg, N., Brown, C. and Wilson-Wilde, L. (2019) Benchmarking Forensic Volume Crime Performance in Australia between 2011 and 2015. *Forensic Science International: Synergy.* 1, 86-94.

Bruenisholz, E., Wilson-Wilde, L., Delémont, O. and Ribaux, O. (2019) Deliberate fires: from data to intelligence. *Forensic Science International,* 301, 240-253.

Wilson-Wilde, L., Romano, H. and Smith, S. (2019) Error rates in proficiency testing in Australia. *Australian Journal of Forensic Sciences,* https://doi.org/10.1080/00450618 2019.1569154.

Ward, J., Johnson, R. and Wilson-Wilde, L. (2019) Gender equity: How do the forensic sciences fare? *Australian Journal of Forensic Sciences,* https://doi.org/10.1080/00450618 2019.1568556.

Morgan R. and Wilson-Wilde, L. (2019) Assessment of the Potential Investigative Value of a Decentralised Rapid DNA Workflow for Reference DNA Samples, *Forensic Science International,* 294, 140-149.

Kelty, S. F., Julian, R., Bruenisholz, E. and Wilson-Wilde, L. (2018). Dismantling the justice silos: Flowcharting the role and expertise of forensic science, forensic medicine and allied health in adult sexual assault investigations. *Forensic Science International*, 285, 21-28.

Wilson-Wilde, L. (2018). The International Development of Forensic Science Standards—A Review. *Forensic Science International,* 288, 1-9.

Wilson-Wilde, L. (2018). Invited Editorial Australasian Forensic Science Summit 2016. *Australian Journal of Forensic Sciences*, *50*(3).

Publications

Wilson-Wilde, L. and White, J. (2018). Australasian Forensic Science Summit 2016: external environments towards 2030. *Australian Journal of Forensic Sciences*, *50*(3), 275-281.

Wilson-Wilde, L., Smith, S. and Bruenisholz, E. (2017). The Analysis of Australian Proficiency Test Data over a Ten-Year Period. *Forensic Science Policy & Management: An International Journal*, *8*(1-2), 55-63.

Bruenisholz, E., Delémont, O., Ribaux, O. and Wilson-Wilde, L. (2017). Repetitive deliberate fires: development and validation of a methodology to detect series. *Forensic Science International*. 277, 148-160.

Wilson-Wilde, L. and Pitman F. (2017) Legislative and Policy Implications for the use of Rapid DNA technology in the Australian context. *Forensic Science Policy and Management*. 8(1-2), 26-3.

Wilson-Wilde, L. (2017) Invited Editorial - The Future of the National Institute of Forensic Science – Implications for Australia and New Zealand. *Australian Journal of Forensic Sciences* 49 1-8.

Wilson-Wilde, L.., Yakovchytsb, D., Neville, S., Maynardb, P. and Gunn P. (2016) Investigation into Ethylene Oxide Treatment and Residuals on DNA and Downstream DNA Analysis. *Science and Justice,* 57(1), 13-20.

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Brandi J. and Wilson-Wilde L. (2013) Standard Methods. In: Siegel JA and Saukko PJ (eds.) *Encyclopedia of Forensic Sciences, Second Edition, vol. 3, pp. 522-527. Waltham: Academic Press*.

Wilson-Wilde, L. M., Brandi, J. and Gutowski, S. J. (2011). The future of forensic science standards. *Forensic Science International: Genetics Supplement Series*, *3*(1), e333-e334.

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Wilson-Wilde L. and and Kogios R. (2011) "DNA Profiling in Criminal Investigations" in *Expert Evidence, Freckelton and Selby (eds), Chapter 80*Wilson-Wilde, L. (2010). Combating wildlife crime. *Forensic science, medicine, and pathology*, *6*(3), 149-150.

Wilson-Wilde, L. (2010). Wildlife crime: a global problem. *Forensic science, medicine, and pathology*, *6*(3), 221-222.

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