

SUMMARY OF FSS SYSTEMS AND PROCESSES REVIEW

The purpose of this review (the **Review**) is to assess, report on and make recommendations with respect to systems and processes in place for forensic Deoxyribonucleic Acid (**DNA**) testing conducted by Queensland Health, Forensic and Scientific Services (**FSS**), Forensic DNA Analysis Unit to assist in determining whether those systems and processes are reliable, conducted to an acceptable standard and achieve quality reporting of DNA results and matching.

In assessing these matters, the Reviewer is to specifically consider and address in their report the following:

- (a) Whether FSS forensic DNA testing adheres to contemporary best practice across all aspects of its systems and processes;
- (b) Whether adequate internal quality assurance is in place, including measures in place to test that the equipment and software is properly functioning to the required level of sensitivity and any validation processes to ensure that reporting is accurate based upon the samples supplied;
- (c) Whether adequate external quality assurance and accreditation is in place, including an assessment of the NATA accreditation outcomes;
- (d) The adequacy and reliability of the equipment and software in use;
- (e) Any issues that can be identified arising from the introduction of PowerPlex 21 and STRmix, and if so, whether these issues have been adequately addressed;
- (f) Whether sufficient experienced personnel are in place and any identified gaps in expertise or resourcing constraints;
- (g) Adequacy of the training and continuing professional development program in place relevant to the scope of the Review;
- (h) Sample management by FSS, including adequacy of handling, packaging, preservation, transport, storage and security of samples;
- (i) Adequacy of systems and processes in place to generate and match DNA profiles;
- (j) Adequacy of extraction processes for DNA material, including to ensure the quality and quantity of DNA extracted;
- (k) Adequacy of quantification processes to estimate how much DNA is extracted from samples;
- (l) The approach leading up to and reporting of "No DNA detected" or "DNA Insufficient for further processing" at the quantification stage, including the apparent approach taken by FSS that samples returning this result do not progress to the amplification or other subsequent stages, with the apparent outcome that the PowerPlex 21 DNA profiling kit and statistical analysis using STRmix software is not utilised in samples where it is reported "No DNA detected" or "Insufficient DNA detected"

- (m) The appropriateness of the established limits or thresholds of detection below which samples at a quantification level are reported as "No DNA detected" or "DNA Insufficient for further processing", including by reference to other comparable jurisdictions;
- (n) Whether any additional steps ought to be in place prior to reporting "No DNA detected" or "DNA Insufficient for further processing", including but not limited to circumstances where it might be expected that DNA would be detected from the samples;
- (o) The approach taken where there is apparent contamination of samples;
- (p) The approach taken where there is an apparent mix of DNA;
- (q) Adequacy of the PCR amplification stage resulting in copies of target DNA to enable detection, including through the use of PowerPlex 21 DNA and STRmix;
- (r) Adequacy of the electrophoresis stage to separate and detect the targeted DNA;
- (s) Systems and processes relating to the interpretation of DNA profiles obtained;
- (t) Systems and processes relating to the comparison and matching of DNA profiles;
- (u) Systems and processes relating to the reporting of DNA profiles;
- (v) Whether there are appropriate systems and processes in place when a report or result is amended, such that the rationale and impacts to relevant stakeholders are clearly articulated and understood;
- (w) Whether DNA profile information supplied to the QPS is reliable and accurate in accordance with accepted and relevant Australian and International standards; and
- (x) In addressing the preceding questions, include in your consideration the following:

Further media reporting has also raised issues about FSS's DNA profiling of samples from sexual assault-related cases. This media reporting relies on data published in a 2020 study published by Matt N. Krosch entitled '*Variation in forensic DNA profiling success among sampled items and collection methods: a Queensland perspective*' (2021) Australian Journal of Forensic Sciences 53(6) 612-625.

While specific cases may be examined to inform the Scope of the Review set out above, given that the Review is focused on systems and processes and so as not to prejudice any ongoing or future criminal matters, **excluded** from the Scope of the Review is a re-analysis of DNA samples, inclusion of any information in the Review Report about specific cases or inclusion in the Review Report of any issues relating to a specific identifiable case.