

A critical review of the New Zealand Law Commission Report 144: *The Use of DNA in Criminal Investigations*

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Overview

The NZ Law Commission Report 144 *The use of DNA in criminal Investigations* (NZLC R144) proposes a framework for improved regulation of DNA profiling practice in New Zealand (see Box 1 for a timeline of actions). Their central claim is that the existing legislation, *Criminal Investigations (Bodily Samples) Act 1995*, is no longer fit for purpose. Specifically, it has not kept pace with technology and, further, needs to be brought into line with contemporary thinking on Privacy, Human Rights and Treaty of Waitangi obligations (regarding Te Ao Māori and Tikanga).

Reform is a tricky balancing act. All would probably agree that it is high time to review policy and practice in this area. Nothing can be expected to stay adequately up to date on all developments in molecular biology and bioinformatics: e.g., analysis methods for trace and ancient materials or familial searching of DNA profile databases, *aka* DNA databanks. Equally, all would probably agree that it is the very hallmark of a civilised society that it should pay all due regard to matters of Human Rights and Privacy. However, a social contract exists that sacrifices some of these rights for the sake of justice and in the interest of public safety.

DNA profiling is now well understood and widely accepted by the New Zealand public at large. It features in just about every detective story on TV and has an outstanding record of success in the hands of New Zealand Police investigators and the Institute of Environmental Science and Research Ltd (ESR) analysts. Hence it is important to make rules that do not hinder this work (a point well

Box 1. A brief history of NZLC R144

1. In Oct 2017, NZLC set up a website on DNA Profiling.
2. In Dec 2018, NZLC published their Issues Paper on DNA Profiling (NZLC IP43, 2018).
3. On 20 Oct 2020, NZLC presented NZLC R144 to the Hon. Andrew Little in his role as Minister Responsible for the Law Commission.
4. On 27 Nov 2020, the Hon. Kris Faafoi, Minister for Justice, tabled NZLC R144 before the house.
5. As required, no more than 120 working days later, on 24 May 2021, the New Zealand Labour Government presented their response to the House of Representatives.

taken by NZLC). Also, it is essential not to create novel and unwarranted concerns in people's minds.

The result is a monumental work, 579 pages, with no less than 193 recommendations. This article addresses each of the key areas above as presented in the report from a strictly '*If it ain't broke*' perspective. It also examines the central proposal to establish a new DNA Oversight Committee to supervise DNA profiling, casework and databanking [Ch. 5]. This body would have five to seven variously skilled members, at least three of whom should be Māori, plus one person from the Independent Police Conduct Authority (IPCA).

Structure of the Report

Overall, the text of NZLC R144 is comprehensive, scholarly and inclusive. It provides a full overview of DNA profiling practice in New Zealand in comparison with what is done overseas. It has a strong foundation on *The Criminal Inves-*

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tigations (*Bodily Samples*) Act and its later amendments; hereafter CIBS (1995). Respect for Human Rights issues (particularly Privacy) and the Treaty of Waitangi is evident throughout; see NZLC R144 2.30 – 2.51 for an explanation of Māori cultural values in this regard. Key points are a call to update CIBS (1995) with detailed requirements for new integrated data and legal frameworks managed by a DNA Profiling Oversight Committee (OC).

Each section of NZLC R144 reviews the existing situation and identifies areas where the NZLC Advisory Group saw the need for improvement. Options for reform are presented alongside the results of consultations with interested parties and a survey of comparable jurisdictions. They conclude each chapter by making a set of recommendations and explaining their rationale for each one. This consistent structure throughout aids reader comprehension and makes it easy to locate particular pieces of information.

It is difficult to do full justice to such a large document in a single review. Thus, the author has chosen to select a number of individual topics of particular significance and explore the NZLC R144 recommendations and emergent issues.

Problems with the existing legislation

The NZLC R144 view on this matter is clearly laid out in Ch. 3, where they raise six areas of particular concern with CIBS (1995). Their original claims are that existing legislation lacks a clear purpose, is not comprehensive, and is rather complex and confusing. These shortcomings alone should be enough to merit a thorough revision of the law. Much can be attributed to the passage of time during which experiences of DNA profiling in action have revealed these deficiencies. For instance, many concerns expressed by NZLC here and elsewhere relate to the increasing use of DNA profiling to solve high-volume property crime. This application has been made possible by new technologies to analyse trace (*aka* 'low copy number' or LCN) DNA evidence. This is found by human contact with objects causing the transfer of skin cells or saliva.

Omissions from CIBS (1995) relating to two central issues, a general failure to accommodate Human Rights and Te Ao Māori¹, are particularly important to NZLC. At the outset NZLC does recognise that there is significant overlap between these two considerations as they entail largely congruent values. However, it may seem clear that the former can be taken care of by closer regulation of DNA profiling and DNA DataBank management. Catering effectively for the latter may be more difficult but is seen by NZLC to be of particular concern because Māori are said to be overrepresented in the DNA testing regime (NZLC R144 3.18 – 3.23). The importance of cultural differences is highlighted in Box 2 and NZLC R144 15.27 shows how tikanga obligations² may come into conflict with police operations. For instance, by identifying DNA with whakapapa creates responsibilities at

Box 2. Treaty of Waitangi issues

DNA Profiling is not mentioned in the Treaty of Waitangi because it did not exist at the time, but Treaty of Waitangi principles (NZLC 2.17 – 2.29) can be applied. These include partnership, active protection and equity. In this context for NZLC R144 the issues come down to encouraging greater Māori participation in all aspects of DNA profiling and the wider recognition of Māori cultural values (NZLC 2.30 – 2.48). The report contains a valuable explanation of tikanga and its principles of whakapapa⁴, whanaungatanga⁵, personal tapu and mana and kaitiakitanga in relation to forensic examination. Any revision of CIBS (1995) would be well advised to pay close attention to this source (after NZLC 2.50). There is not space enough in this short review to cover all of these in the detail that they merit, except to point out that many of them overlap extensively with the personal rights issues discussed in the text.

The concept of *Tikanga Māori* deserves special mention as serious misunderstandings may occur because, as NZLC 2.50 states, there are “some important differences between tikanga Māori and Pākehā values and concepts” in how they provide sets of guiding ethics for “doing things right” (NZLC 2.31 and references). Tikanga principles apply because personal bodily samples and genetic data are considered tapu by Māori because they are taonga and reflect on mana and whakapapa. There are also significant whanaungatanga responsibilities connected with being a relative. Manāakitanga, all due care and respect, must be shown in handling Māori data etc. with respect given to kaitiakitanga, guardianship over all such matters.

all levels of Māori society to exercise kaitiakitanga³ because by providing DNA information one person could bring others to the attention of the police.

Contrary to NZLC, the method of DNA profiling *per se* is not itself the issue here because it is only a tool and neutral to ethnicity. Answers must be sought in wider societal understanding. However, one must agree with NZLC that DNA is of special significance to Māori in many aspects (NZLC R144 3.16). For these reasons, and state obligations under the Treaty of Waitangi, it is plain that fullest Māori input should be sought in drafting any future legislation and also extend to any and all future discussions regarding kaitiakitanga partnership over Māori DNA profiles in databanks. This a topic of direct concern to the Māori Data Sovereignty Network | Te Mana Raraunga (NZLC R144 2.32). It is also elaborated on in works on guidelines for biobanking and genomic research from Māori and Indigenous Governance Centre | Te Mata Hautū Taketake, albeit with ambiguous authority. The further matters about Human Rights in general and Human Privacy in particular as seen by NZLC are outlined in Boxes 3 and 4 respectively.

Finally, I note that CIBS (1995) does not make any provision for a DNA profiling oversight committee. This important new proposal in NZLC R144 is considered in full later.

¹ The Māori world, see: *Te Ao Māori / The Māori world, Māori ki Te Whare Wānanga o Ōtākou, University of Otago, New Zealand*

² Customary system of values and practices, see: *tikanga – Māori Dictionary* (maoridictionary.co.nz)

³ Guardianship, see: *kaitiakitanga - Māori Dictionary* (maoridictionary.co.nz)

⁴ To recite in proper order, see: *whakapapa – Māori Dictionary* (maoridictionary.co.nz)

⁵ Relationship, kinship, sense of family connection, see: *whanaungatanga – Māori Dictionary* (maoridictionary.co.nz)

Box 3. Some notes on Human Rights values

These are laid out as regards DNA profiling in NZLC R144 2.52 – 2.83 which recognises that the practice raises some “important constitutional values and principles”. These list four of these in 2.53 and two further ones in 2.73 – 2.77 and 2.78 – 2.82. These are given below with some brief observations:

- (a) *Protection of privacy* – this is covered extensively in the text and Box 4
- (b) *Protection of bodily integrity* – minor intrusion is necessary to obtain samples
- (c) *Freedom from discrimination* – the technology is not useful for ethnic profiling
- (d) *The rule of law* – NZLC R144 points out many areas where CIBS (1995) could be improved.
- (e) *The right against unreasonable search and seizure* – this is strictly an operational concern for NZ Police and IPCA
- (f) *The right to hold property* – see section on DNA Banking protocols

Obtaining casework samples

These processes are the subject of NZLC R144 Ch. 11-13. Samples may be taken directly either from suspects, or from volunteers (for elimination purposes) or as part of a mass screening exercise. They may also be obtained indirectly from crime scenes or discarded items, e.g., cigarette ends. Sampling methods include via buccal swab or fingerprick. These methods are certainly less intrusive than drawing venous blood but are still worrying when they must be taken by force under a court order. Either way it is recognised as important that all those persons providing their biological material should do so with informed consent and have a reasonable opportunity to consult with a lawyer. It would seem prudent that, during the informed consent process, the New Zealand Police should provide the individual concerned with a written notice explaining what will happen to their sample, what information will be obtained from it (i.e., only a DNA profile), and what will (and can) be done with the data obtained (see later). In this regard the principles of DNA databanking may be helpful. These are not discussed explicitly in NZLC R144 but they would seem to be much in line with their thinking. In short, all biological material taken by New Zealand Police would remain the property of the individual from which it came. Owners should be able to request the return or destruction of all such material once it is no longer needed. Such issues may be particularly important for some Māori individuals as all bodily material is considered tapu⁶. Once again, this signals the need for Māori input into formulating any new legislation.

These considerations apply not only to material such as blood samples and swabs, but also to any DNA extracts and the profile data obtained from them. Interestingly, NZLC Recommendation 93 comes out against taking DNA samples from relatives of suspects. This could potentially be a valuable detection tool in some instances. NZLC R144 cites reliability and whakapapa⁷ issues as grounds for this recommendation. This author is not

⁶ Sacred, see: *tapu* – Māori Dictionary (maoridictionary.co.nz)

⁷ Genealogy, see: <https://maoridictionary.co.nz/search?idiom=&phrase=&proverb=&loan=&histLoanWords=&keywords=whakapapa>

Box 4. Privacy issues surrounding DNA profiling data

When any organisation holds personal information about an individual it raises privacy issues. These are generally straightforward:

1. The individual should know what information is held.
2. They should be able to examine it.
3. They should be able to challenge the holder if they feel it is incorrect in any way.
4. They should have a reasonable expectation that incorrect data should be changed.
5. They should be informed why it is held and with whom it might be shared.
6. They should know what it might be used for.
7. They should have a reasonable expectation that the data will be removed or destroyed once its retention no longer serves the original purpose.

All of these considerations are easily met by DNA Profiling procedures via the informed consent and DNA Banking protocols described here.

There is one important caveat. Genetic information is not strictly private information because we hold it in common with our relatives. Hence, there is a sense in which they also hold interests in one's DNA profile because reference to it may serve to identify them via a familial search (see text).

fully convinced by their arguments here and, in any case, it would be valuable to have some direct statement(s) on this matter from Māori themselves.

DNA databanking

The chain of custody between New Zealand Police and ESR Ltd scientists for biological samples and DNA extracts is complex because these samples come from various sources including crime scenes, suspects, elimination testing, missing persons, and participants in mass screening exercises. Also, one should not forget those from investigative staff and the analysts themselves (two categories not considered by NZLC R144). They pass through many stages, starting from crime scene examination, through pre-trial retention, to archival (including post-conviction). As NZLC R144 clearly points out, a range of concerns apply to each type at each stage. Equally, data obtained from analyses of all such materials may be classified in the same way and stored in a searchable set of electronic files known as a DNA databank. Here, NZLC R144 suggests that all such data should be held in a common data management environment. This makes excellent sense from a quality assurance and best practice point of view. Under this scheme, each different group of profiles would be classified into a partition called ‘an index’ – viz casework 99/21 for a particular sequential investigation (#99 in date order) carried out in 2021, etc. This can be achieved by tagging each record with an individual code and index identifier in a master hierarchic relational database *aka* the DNA DataBank. As records move through the system, their identifier tags can be updated, but not their code tags.

The main analytical tools used by ESR are called GlobalFiler (for known persons) and Identifier (for crime scenes): see NZLC

R144 Ch. 6 for a description. These methods return data from 21 and 15 short tandem repeat sequence (STR) DNA targets, respectively. The resultant profiles are simply lists of the variant forms (alleles) found at target site, i.e., 15 and 10 repeats at target sites 1 and 7, 16 at target site 2, etc. These can be found in Ch. 6.11-6.16 with an informative diagram in Ch. 6.9. A special form of this analysis called Y-STR (Ch. 6.24 – 6.26) is based on male sex chromosome STR markers. It is valuable in sexual assault cases where the conventional methodology might return a mixed signal from offender and victim. Other methods, including MiniSTR (6.28) and mitochondrial (mtDNA) analysis, (Ch. 6.29) are also available. Of special note is the LCN method used for investigation of contact evidence (Ch. 6.30 – 6.34). New techniques are also on the horizon (Ch. 6.38 – 6.46), and their potential future introduction into casework is accommodated by the proposed management scheme.

It is important to have a clear picture of this process and the data structure because the DNA DataBank records can be searched. New casework profiles are entered as ‘enquiries’ in a system that is much like that used by the global DNA sequence repository known as GenBank (www.ncbi.nlm.nih.gov/genbank/). The search enquiry is then run across the appropriate index or indices with the software looking for full or partial matches. A perfect match is strong evidence of identity between the sample (e.g., a blood stain on a broken window) and the person whose record is in the index (e.g., someone suspected of home invasion). A partial match may indicate a first degree relative of a person known or unknown to the New Zealand Police. The New Zealand public will be familiar with this process through the services of commercial DNA testing companies like Ancestry* (www.ancestry.com) or TV programmes like ‘The DNA Detectives’ (www.tvnz.co.nz/shows/dna-detectives).

The DNA profiles themselves are innocent enough, being just a set of allelic character states at a series of otherwise anonymous genetic loci. In short, a person’s DNA profile information is seemingly not of use either to the person themselves or to anybody else. This is except for use in identification and for revealing relationships. So, although the information itself may not be of interest or concern, its use(s) certainly are of both interest and concern. These issues extend to first degree relatives since they have a majority of stored DNA profile information in common with the person whose record is on file. This raises special concerns when one considers traditional Māori views on whakapapa and tikanga (see Box 2).

In Ch. 20 of NZLC R144 consideration is given to the storage and retention of DNA DataBank records and would require the removal of some existing records from various indices in the present DNA databank. For instance, it may be deemed ‘culturally inappropriate to leave samples and records from living and dead people in the same system’ (Ch. 20.42). Their scheme would seem to be a retrograde step. This is, at least, because considerable resources have already been expended to collect them and a great deal more would be required to remove them. The key question is: What is the risk posed by leaving them *in situ*? This would seem to be that they may be picked up later as full or partial matches in future casework investigations or re-examination of evidence from ‘cold cases’. Such events might serve to incriminate some people or their relatives or, more importantly, to exonerate them. In short, by retaining such profiles

the state is asking some individuals (and/or their close relatives) to give up their chance of being easier to find in relation to future crimes that they may be involved with or commit. In any case, individuals whose records are presently on the DNA DataBank can, in some circumstances, apply to the New Zealand Policeto have them removed.

The proposed DNA Profiling Oversight Committee

In Ch. 5 NZLC R144 lays out what it sees as the shortcomings of management under the present system of distributed responsibilities; via New Zealand Police, ESR Ltd etc. (Ch. 5.6 – 5.18). After all the usual NZLC procedures and considerations, they conclude by prescribing a DNA Profiling Oversight Committee (Recommendation 8). This would have a panel of experts from various areas (Recommendations 9 – 12) with a number of advisory roles, some management (approval) functions, and responsibility for engagement activities (Recommendation 13 – 15). In support of these recommendations they describe similar systems operating elsewhere (Ch. 5.68 – 5.79), including UK, Ireland, and Canada, while noting that both Australia and New Zealand stand apart from the others by not having an independent body with exclusive oversight.

A wide range of skills and experience is required among those who would sit on NZLC’s new body. These are fully laid out in Recommendation 9 for the seven constituent members and one extra member who must belong to the Independent Police Conduct Authority (IPCA). They conclude (Recommendation 10) with the entirely unsupported assertion that no less than three of the eight must be Māori; see below for further discussion. There is no doubt that the basic concept of a DNA Profiling Oversight Committee has merit as judged from widespread practice overseas. However, there are many reasons for thinking that the idea as presented should be extensively revisited. First, it seems fundamentally unwise to have a body with a mix of advisory and regulatory roles. Second, DNA Profiling is a complex technology, and operational decisions are best left in the hands of the practitioners themselves, e.g., regarding DNA analysis methods (Recommendation 14 a.) or using the DNA DataBank for research purposes (Recommendation 14 d.). The review of complaints (whether general or specific is not made clear) would seem best left to the IPCA or the judiciary. Third, engagement functions (Recommendation 14 i.) should be delegated to specialised technical communications staff recruited for the purpose.

Finally, the matter of Māori participation requires evaluation. This seems to be catered for in part by Recommendation 9 iv. as a person with expertise in ‘*te ao Māori and tikanga Māori*’. It is unclear if the ‘*no less than three members ... must be Māori members*’ include this person. This requirement is not necessarily a bad thing *per se* but must be justified beyond the vague sentiments expressed about ‘*The Māori caucus*’ in (Ch. 5.90 – 5.92). Also, these persons need to be more closely defined, given the various definitions of ethnicity used by the New Zealand Government and its agencies (see Box 5). Presumably, selecting persons who are both well-known and well-respected would satisfy the criteria.

Box 5. Difficulties around the definition of ethnicity in New Zealand

In several places NZLC R144 expresses reservations about the potential inclusion of ethnicity information in the DNA DataBank (pp. 186 – 191). These are raised by NZLC despite the fact the NZ Police and ESR have advised that population-based information is necessary for the unbiased calculation of exclusion statistics. In part these reservations arise from a misleading notion of ‘ethnicity’ taken from Statistics NZ (14.22). Here, the term ethnicity has a social science definition of ‘*cultural affiliation*’ (self-determined). In contrast, ethnicity is much better seen as the interface between ancestry and culture. Genetic analysis returns strictly ancestry-based information.

There is little doubt that sets of ancestry informative forensic markers could be obtained to distinguish say those of European and those of Polynesian (including Māori) descent. This is because their gene pools have diverged during thousands of years of geographic isolation. Contrasting population histories means that the latter gene pool contains a more restricted set of genetic information than the former. This information is of crucial medical significance, but it is not the forensic question. This is: Does the DNA DataBank contain an adequate representation of contemporary NZ ethnic groups to provide properly structured statistics?

The author notes in passing that those Māori individuals with whom he has consulted over the years have consistently explained that iwi membership is most often decided on an ancestry basis involving a blood quantum, whakapapa information and in-group approval. This is altogether different from the gold standard Statistics NZ definition (above) which is the one that courtroom evidence requires⁸.

Conclusions

NZLC R144 represents the cumulation of a lot of hard work and detailed thinking. Its approach and layout are exemplary, as outlined in the Introduction. Nonetheless, such a wide-ranging survey cannot hope to get everything right and NZLC R144 does have some significant problems. Equally, in a short review like this, one cannot expect to cover everything in such a large body of work. Rather, it is better to allow some omissions in an attempt to gain more general coverage and to give special attention to a few detailed areas where comment seems essential.

The new NZLC report is to be commended for recognising the deficiencies in CIBS (1995) and calling for reform. Equally, it performs very well in sticking to its central agenda by focussing on Human Rights issues and insisting on greater recognition of Māori cultural values and requiring greater Māori participation in redrafting legislation and involvement in the management of DNA Profiling. The report is right to give emphasis to Human Privacy issues, but one might fairly think that NZLC R144 is overcautious. In fact, DNA Profiling represents very little in the way of threat to the liberty of the individual New Zealand

citizen. It is a tool for identification, much like fingerprints and photographs. This author agrees with NZLC R33 that utmost caution should be exercised in judicial trials where the prosecution depends largely or exclusively on DNA evidence. Its application is now predominantly used for the investigation of high-volume crime rather than murder and other crimes of violence. It will always be necessary to store a lot of DNA profiles because there is, by definition, a lot of high-volume crime. The fact that someone’s DNA profile is in our national DNA DataBank can provide their best defence if they later come under suspicion for a crime they did not commit. Retention of DNA profiles may serve as deterrent to those planning future crimes. DNA profile records may prove especially valuable in cases where those earlier convicted of simple home invasion go on to commit more serious offences. The rare use of DNA profile databank entries to track down relatives or to answer enquiries from overseas merits wider public consultation.

A particularly significant proposal in NZLC R144 is to set up an overview body, more or less in line with overseas practices – noting that these can be quite variable (Ch. 5.69 – 5.76). Establishment of such a review body seems particularly valuable, provided that it remains strictly advisory and strictly confined to areas that it is best equipped to handle.

In closing, I note that on 24 May 2021 the Minister of Justice responded on behalf of the New Zealand Government. The response noted the valuable work done by the New Zealand Law Commission and have accepted that the CIBS Act (1995) ‘*should be repealed and replaced with a new, comprehensive and modern Act*’. They also agree that governance and oversight of the DNA regime would be strengthened by setting up an independent oversight body, but hold that it would be prudent to delay decisions on the structure and responsibilities of such a body until later in the drafting process. It is also clear to all parties that this will be a major legislative exercise requiring multi-agency input and active Māori involvement. The new legislation that will eventually be drafted will have to go through a Select Committee stage as it passes through the House to become law. This process will allow extended time for public submissions and debate.

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⁸ See: (PDF) ‘Marrying’ demographic and genetic measures? New tools for understanding New Zealand population sub-groups (researchgate.net)